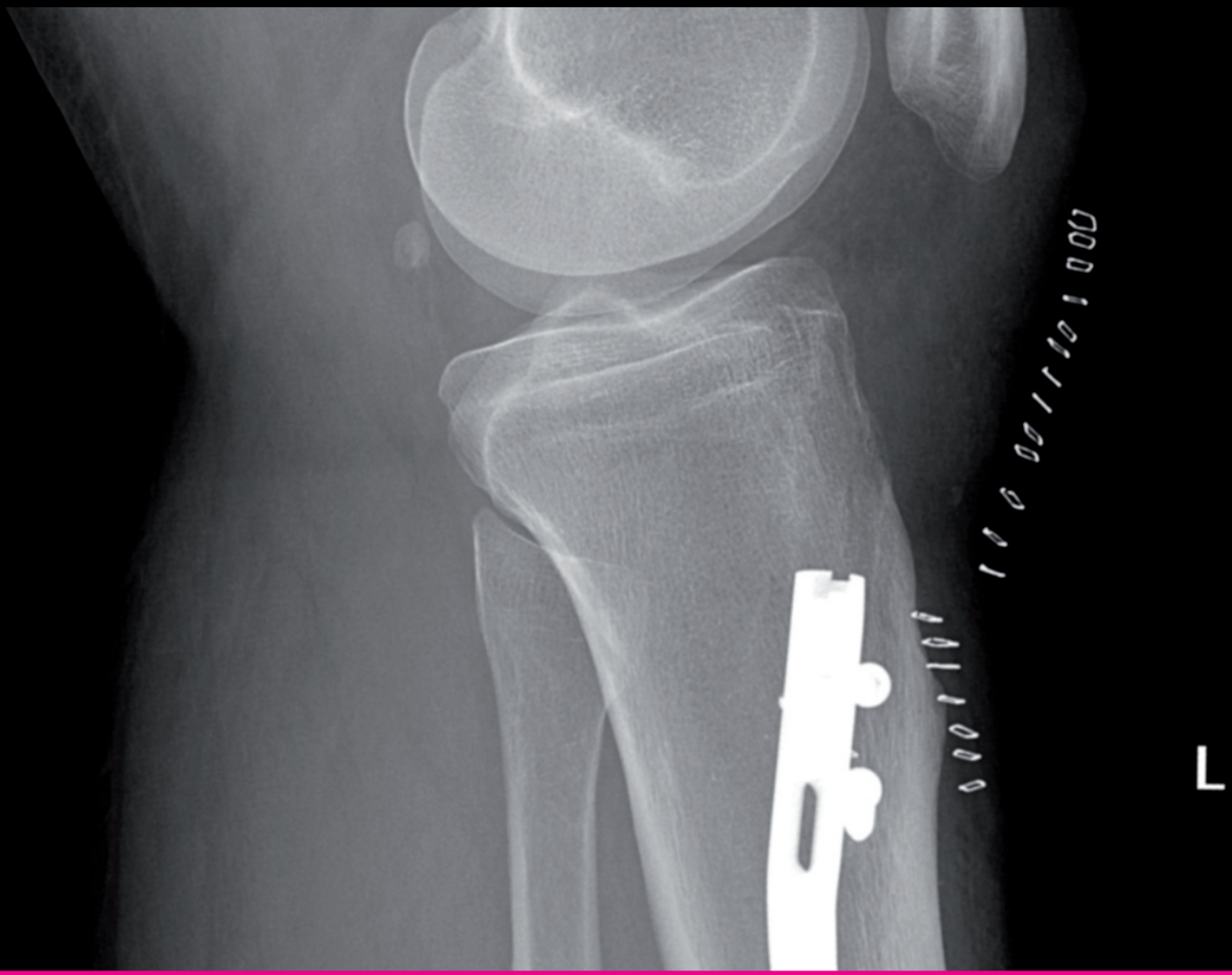
THE WEAKEST LINK



INTER-ORGANISATIONAL COMMUNICATION
ABOUT (NEAR-) INCIDENTS IN THE HEALTH CARE CHAIN

Greet van der Kaap

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INTER-ORGANISATIONAL COMMUNICATION ABOUT (NEAR-) INCIDENTS IN THE HEALTH CARE CHAIN

Greet van der Kaap

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PROEFSCHRIFT

ter verkrijging van
de graad van doctor aan de Universiteit Twente,
op gezag van de rector magnificus,
prof.dr. H. Brinksma,
volgens besluit van het College voor Promoties
in het openbaar te verdedigen
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door

Geertje van der Kaap
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te Peize

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Introduction

Witnessing an error

On 11-11-2011, my partner, B. was involved in a motor cycling accident in France. On that unfortunate day, his left leg got jammed between the motor and the oncoming car, and the lower leg fractured in different pieces. In France, the surgeon operated on the leg, joining the fractures with a pin, and took X-rays to verify that the surgery had gone well. After a few days, B. went back home to The Netherlands. A few days after his arrival back home, he fell and heard a crack. Because the leg was swelling very quickly, the patient called the GP, who in turn called an ambulance that transported B. to hospital. In hospital, for the second time, X-rays[1] were taken and five different specialists talked with the patient, and witnessed the swollen leg. B. expressed his concern about hearing a crack. Different surgeons reassured B. that nothing was wrong, and complimented the French doctor for doing such a fine job.

A few weeks later, the swelling had decreased. Now, B. could see that part of his lower leg was easy to dislocate. He consulted the GP, who shared the patients' concern about the movable tibia, and decided to send the patient to hospital again. In the hospital, x-rays were taken for the third time. A resident saw B. at the emergency room (ER) and suggested nothing was wrong, for the second and third x-rays showed no changes. B. then lost his patience and stressed that a movable under leg, in his eyes, was not normal. The resident called one of the five surgeons that had seen the patient two weeks earlier. This surgeon said he[2] had taken a better look at the x-rays, and found that in France; one of the screws was accidently placed beside the pin. After a few months, the surgeon operated mister B. again, a bigger pin was placed, and again, with x-rays, the screws were checked. Luckily, over time, mister B. recovered.

This is an example of a patient that became a victim of several errors that happened while travelling through the health care chain. First, the misplaced screw in hospital in France. Second, the missed x-ray, which could have been taken to verify the actions during surgery. Third, back in the Netherlands, five different specialists, who all missed the misplaced screw on the second x-ray. Fourth, the resident, who seemed to trust the judgement of the specialists. These errors caused serious temporary injury, prolonged hospitalisation, delay of the treatment, and extra costs.

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[1]This x-ray is placed on the cover of this thesis.
[2]For professionals in health care, every time 'he' is used, 'he/she' is intended.

This patient survived the incident, but others are not so fortunate. In the Netherlands, it is estimated that between 1,500 and 6,000 patients die due to medical error (Willems, 2004).Thankfully, many times things do go right, but when things go wrong, do professionals learn from them?

In this example, the patient moved between different links in the health care chain, even between different countries. Do professionals from different organisations, from different links, communicate to each other about the things that go wrong? Does the French physician know what had happened or is he still under the impression that he did a fine job? The health care system can be seen as a chain, with the different organisations, like GPs, pharmacies, ambulance services, hospitals, and nursing homes as links of a chain. Any chain is no stronger than its weakest link. In order to learn, one has to communicate. Some errors are easy to miss, for example something that happens in a leg, and can only be assessed by looking at x-rays. Others are easier to detect, like for example a discharge letter that has different information about medication compared to the accessory medical chart.

Communication after the incident has occurred

When patients are harmed after (near-) incidents, sometimes this news hits the national media. In 2011, in a Dutch hospital, over hundred patients were infected with resistant bacteria[3]. Twenty-seven patients died, but for only three patients, it could be established their death was directly caused by the infection. For the other patients it is unclear if this was due to the bacteria or something else. Over 4.000 patients shared a room with patients that were infected, and multiple visitors of these patients were exposed too. In May 2011, the media stirred up the situation, the hospital was all over the news[4]. The Health Care Inspectorate (HCI)[5] judged harshly, stating that it was culpable negligence; the prevention of infections in the hospital failed. This judgement was based on the fact that the breakout happened over a long period (approximately two years from the first exposure until the last). The HCI blamed the management as well as different professionals in the hospital for not performing their tasks as expected. Professionals, like the microbiology professionals, the advisers' infection prevention team, physicians, and nurses, all should have taken measurements to ensure patients' safety. The report from the inspectorate is made public, because of the great impact

[3]Klebsiella bacteria.
[4]http://nos.nl/video/244934-maasstad-ziekenhuis-kampt-al-maanden-met-resistente-bacterie.html.
[5]In Dutch'*Inspectie Gezondheidszorg (IGZ)'.*

it had on many people: "*The commotion in society for the inspectorate is an important motive to disclose the reports about this calamity"* (IGZ, 2012, p. 9).

This calamity, this incident, gives us a glimpse of the manner in which communication can take place after an error occurs. In the media, judgements are made about who is to blame. The inspectorate too, after thorough investigation, assigns who is to blame, who has responsibility for the event. In this case, the general manager stepped down and is now interim manager in another hospital in the Netherlands.

Learning from mistakes

The example is interesting because the incident happened under our noses, for the whole' world to see. In no time, everybody had an opinion. Different parties (for example sports fans, so called experts and journalists) communicated about the perceived event. The matter was analyzed in the media and different causes and circumstances were mentioned. Over all, time seemed to be of great importance, as the brake-out happened over a period of almost two years. Some could not understand what had happened. Others blamed the professionals. Many condemned the management for giving wrong directions. Strangely enough, only a few blamed 'the system'. To err is human[6], where people work, people will make mistakes. Systems can be designed to prevent these human errors. For example, when making a withdrawal, one first has to take out the card, before the money is distributed, to prevent leaving the card in the cash dispenser.

It is clear that we can – and perhaps should – learn from this calamity with the bacteria. Most people would like to prevent this incident, as well as that of the misplaced screw. When incidents harm people, we want to prevent them. On the cover of this thesis, you will see a few white flowers. One of them has a small red line. Is it a mistake of nature, or not? Some see the result as something beautiful; they even prefer the flower with the small red line. Thinking about it more carefully, according to whom should the flowers be white? Who decides if something is an error?

When citing Einstein: *Anyone who has never made a mistake has never tried anything new*[7]it becomes clear that in order to avoid mistakes, one should stop discovering new things. On internet, one can find the phrase: *I have learned so much from my mistakes.... I'm thinking of*

[6]A Dutch proverb is '*vergissen is menselijk*'.
[7]http://rescomp.stanford.edu/~cheshire/EinsteinQuotes.html.

making some more[8]*.* Mistakes can also lead to new knowledge, to better performance. Therefore, we would like to learn from mistakes, at the same time we would like to avoid the negative outcomes.

People can learn from error, in day-to-day life as well as in work settings. One can learn from one's own mistakes or from mistakes made by others. To learn from each other's mistakes, one has to communicate. The report about the bacteria breakout is a good example of communication that can prevent others for making the same mistakes. However, this is an exceptional example of communication about incidents. Things that go wrong in the professional setting, like the health care system, are not always communicated in public. Moreover, what about communication *within* the professional setting? Professionals, when performing their work, communicate with others about things that go wrong. How does communication in the professional setting about errors work? How do we learn from things that unintentionally go wrong? Do we always want to prevent them?

Errors as part of everyday life

Errors are not exclusive for the health care sector. Errors happen in everyday life, for example at home or in the working space. Not only professionals in the health care sector are 'hung out to dry' in the media. Public condemnation seems to be one of the prices when errors are disclosed. Talking about errors in a western culture, where public condemnation and lawsuits are lurking around the corner, takes courage. On the other hand, talking about errors is essential for learning. In this thesis, we will argue that professionals in the health care system talk about errors in different ways. However, although communication is an essential ingredient for learning, communication does not always result in learning. The focus of this research is the way communication works - or does not work - in learning from errors in healthcare.

[8] www.facebook.com/pages/Ive-learned-so-much-from-my-mistakes-Im-thinking-of-making-a-few-more/115260235166800 (June 2012).

Table of contents

1 Theoretical framework: Inter-organisational communication and learning

1.1 Introduction

The main content of this chapter concerns the theoretical framework and research questions of this dissertation. Over the last couple of decades, it has become clear that patients in the health care system run the risk of being unintentionally harmed. In the United States, the number of deaths due to incidents in hospitals is estimated to be between 44,000 to 98,000 per year (Kohn, Corrigan, & Donaldson, 2000). In the Netherlands, approximately 1,735 deaths per year occur in hospitals because of an event during treatment that is unintended and avoidable (Wagner & De Bruijne, 2007). Although it is not to say that these patients had not died because of the disease itself, adverse event and (near-) incidents at the least are aggravating for patients, family, and professionals who are confronted with them.

'Things that go wrong' do not stop at the front door of an organisation. A general practitioner (GP), for example, referred an 82-year-old woman with respiratory problems to hospital. This patient had an allergy for penicillin. Somewhere in the transfer, the information about the allergy disappeared. In hospital, a professional gave her penicillin. After getting an anaphylactic shock, the patient died[9]. This is just one example of the many incidents that occur in health care organisations. Such (near-) incidents in health care can emerge between (representatives of different) organisations within the health care chain. In order to learn from them, communication is essential, within, as well as between organisations (inter-organisational learning). The focus of this research is on communication about (near-) incidents between professionals of different organisations within a health care chain in the Netherlands.

1.2 Hazardous care

Worldwide it is estimated that adverse events in hospital admissions differ between countries in a range from 2.9% – 16.6%. Outside hospitals, approximately 3% – 35% of the outpatients experience adverse events that are related to medication (Murff, Patel, Hripcsak& Bates, 2003). Although in many segments of health care reporting systems of adverse events emerge, they are not waterproof. Exact figures are therefore still difficult to produce.

[9]See for this and more examples the button *'medicatie incidenten'* on: www.medicatieveiligheid.info (d.d. 12-01-2012).

In all organisations where people work, things can go wrong. Some working environments are more hazardous than others are. When things go wrong in the chemical industry, the oil industry, or in aviation, effects can be catastrophic, such as the airplane crash in Tenerife (1977), the oil leak in the Gulf of Mexico (2010), the nuclear disasters in Tsjernobyl (1986), and Fukushima (2011). In Tenerife, two airplanes collided at the runway. The thick fog made it difficult to see. However, not the weather was seen as one of the main causes of the accident but miscommunication between the captain and the control tower. With Tsjernobyl, causes are attributed due to design errors, personal errors and errors in political decisions. Although the Fukushima disaster was originally attributed to the tsunami after an earthquake, bad maintenance made the situation worse. The BP oil leak in the Gulf of Mexico is still under investigation. However, here as well, there is not just one cause. When things go wrong, it is often difficult to attribute them to one single cause. Later on in this chapter, I will further address the problem of attribution when things go wrong in health care systems.

At first glance, the abovementioned catastrophes differ in outcome. In Tenerife, 583 passengers died almost instantly. Due to the explosions, in Tjernobyl 31 people were killed. The effects of the oil leak as well as Fukushima are more long-term. In contrast, in health care there is not one big event, not one big catastrophe. When things go wrong here, at its worst, it is a (personal) disaster, not infrequently ending with death. Nevertheless, the outcome of ± 1,735 deaths per year in hospitals in the Netherlands alone, due to things that go wrong, makes it a hazardous environment also.

The health care system is complex, because different professionals in different organisations contribute to the care of one patient. These different organisations are links of the health care chain (see chapter two). Professionals from different links of the health care chain have to share medical information during the care process. As mentioned in the introduction, medical information (for example on allergies) can get lost, sometimes resulting in the death of patients. In addition, information not only can be lost, it can also be wrong. Yearly, a medical insurance company in the Netherlands, responsible for 70% of the hospitals, receives on average 25 claims from patients who had wrong side surgery (Bergsma, Sloots&Hamersma, 2009). Sometimes the transferred information is contradictory. For example, a physician in a hospital writes a discharge letter to the GP. In the content of this letter is stated that a certain medication has to be stopped. In the addendum of the letter, under medication to use, the same medication is prolonged. For the GP the question remains which information is right, the letter, or the addendum.

During the patients' journey through the health care chain, several things can go wrong, different (near-) incidents can happen. These (near-) incidents do not remain within the walls of one organisation. First, (near-) incidents regarding information exchange (missing, wrong, or contradictory) can cause other (near-) incidents like the example of the anaphylactic shock or the left-right interchange. Secondly, effects of (near-) incidents that happened in one link can rise to the surface in the next link. For example, hours after injecting medication that is thinning the blood instead of thickening it bleedings may appear. If during these hours the patient is discharged, or transferred to a nursing home, the next link will witness the consequences of the (near-) incident. If the next link is not informed about the (near-) incident, they could react too late or make the wrong deduction. Thirdly, (near-) incidents in one organisation can happen under the same conditions as in other organisations. (Near-) incidents in the distribution of medication in hospitals have the same patterns as for example in nursing homes. If one organisation has learned from (near-) incidents, talking about it could help other organisations. In the health care chain, at the least (near-) incidents are annoying, and at the worst, they can lead to a premature death. Professionals can learn from (near-) incidents and try to avoid the negative outcomes by communicating about them.

1.3 Theoretical frame

1.3.1 Errors, failures, (near-) incidents and adverse events

This study integrates research on ‘learning from things that go wrong’ from different research areas: psychology, sociology, communication, and medical science. Part of psychological literature uses the term error. An error can be defined as: “*unintentionally being wrong in conduct or judgment. Errors may occur by doing the wrong thing (commission) or by failing to do the right thing (omission)*” (Runciman, 2006, p. S42). Error thus is attached to persons; someone has to be wrong in conduct or judgment. Someone does the wrong thing, or fails to do the right thing. A more neutral term that increasingly is used in psychological and sociological literature is failure: “*a deviation from expected and desired results*” (Cannon & Edmondson, 2005, p. 300). Cannon and Edmondson suggest that errors and failures are both linked to a person's responsibility and therefore attached to individuals.

In medical literature less 'personal' terms like incident, (near-) incident and adverse event are increasingly used. An incident can be defined as: “*an event or circumstance which could have resulted, or did result, in unintended or unnecessary harm to a person and/or a complaint, loss or damage*” (Runciman, 2006, p. S42). The difference between an incident and a near incident refers to the presence or absence of an effect: a near incident does not

reach patients. From all the incidents with medication (15,000), reported in a Dutch, national wide system, 24% did not reached the patient.

Although an incident always reaches patients, this does not always result in harm. When harm is obvious, the term ‘adverse event’ is used. The terms adverse events and (near-) incidents, in contrast to error and failure, are not exclusively attached to persons. A (near-) incident can be related to specific circumstances, for example the design of a medical instrument such as infusion-pump technology (Husch, Sullivan, Rooney, Barnard, Fotis, Clarke, et al., 2005). Therefore, an error or failure can result in a (near-) incident, but not all (near-) incidents are due to (personal) errors or failures.

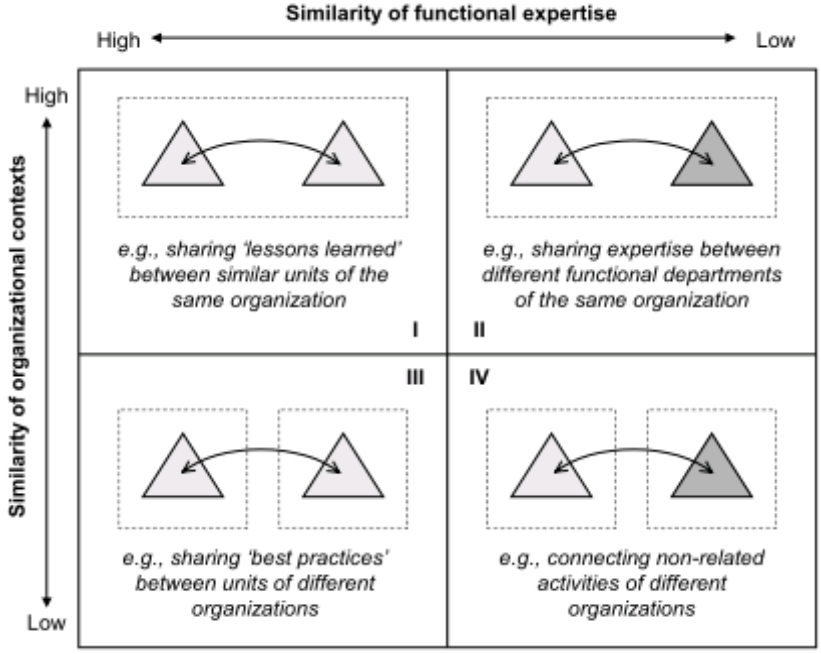
Although errors, mistakes, failures, (near-) incidents, and adverse events are defined differently, one conclusion is the same: in order to learn from them, one has to communicate about them. Because the focus is on the medical environment, the health care system, from here on the term '(near-) incident' is used. Using this more neutral term can be less threatening to the persons involved, as it does not necessarily place blame on someone. When things go wrong, at the least this can be annoying, for example when having to recalculate the dosage again. From things that go wrong, small, or disastrous, we can learn.

1.3.2 Communication and learning

Many researchers argue that learning from (near-) incidents within organisations depends on intra-organisational communication (Edmondson, 1996; Rochlin, 1999; Sexton, Thomas, &Helmreich, 2000; Edmondson, 2003; Edmondson, 2004; Van Dyck, Frese, Baer &Sonnentag, 2005; Homsma, 2007). As stated by Van Dyck and colleagues, a stimulating factor in the process of learning is a culture where people can talk about (near-) incidents, ask questions, and share their thoughts and worries. Talking about (near-) incidents can lead to shared knowledge and improved organisational performance (Van Dyck et al., 2005; Homsma, Van Dyck, De Gilder, Koopman&Elfring, 2009; Van Dyck, Van Hooft, De Gilder, &Liesveld, 2010). Previous studies have focused mainly on intra-group knowledge sharing within a single organisation. However, these findings from previous studies cannot automatically be transferred to the process of learning in different departments or organisations. To date, not much is known about the dynamics of inter-organisational communication processes that occur in a chain of interrelated organisations, for example the health care chain. The current research fills this gap by exploring inter-organisational communication about (near-) incidents between individuals with different professions within - as well as between - different organisations in the health care chain.

Communication about (near-) incidents can be seen as part of knowledge sharing. Knowledge sharing can be distinguished in four types, based on similarity of functional expertise and organisational contexts: within, and between organisations (Boer, 2005, see Fig. 1.1).

Fig. 1.1: Intra- and Inter Contextual Knowledge Sharing (Boer, 2005)



First, 'lessons learned' can be shared between similar units within one organisation (Type I). Secondly, expertise can be shared between different functional units of the same organisation (Type II). These two types of knowledge sharing are forms of intra-organisational learning. Thirdly, 'best practices' can be shared between similar units of different organisations (Type III), and fourthly, non-related activities can be shared and related between different organisations (Type IV). The third and fourth types are forms of inter-organisation learning (Boer, 2005). In his thesis, Boer mainly focuses on intra-organisational knowledge sharing. The present study will address the process of inter-organisational knowledge sharing. We want to know if professionals share information about (near-) incidents, e.g. knowledge sharing between (type III and IV) organisations, and if they do so, is this knowledge sharing between similar units or can we see knowledge sharing between different units.

The main focus of our research is the way professionals make sense of (near-) incidents and communicate about them in order to shape a ‘learning’ chain. Our aim is to discover whether professionals communicate about near (incidents) and if so, with whom. To share knowledge, to share information about (near-) incidents, one has to communicate.

Communication is a complex concept, however, as there is no generally accepted definition of communication. Communication is "f*requently discussed in terms of the context in which it occurs*" (Boer, 2005 p. 29). The context here is the transfer of medical information between different professionals in different organisations in the chain. During this transfer, (near-) incidents occur and professionals do or do not communicate about these (near-) incidents.

Barker and Gaut distinguish different communication perspectives that may be helpful to study communication. One of the perspectives they offer is the circular/interaction based model. This model, like many communication perspectives, starts with the *source*, in our case the professional in the health care chain. This source has a *message*, uses *channel(s),* and communicates with a *receiver*. Besides these basic elements of communication (source, message, channel(s) and receiver), the circular/interaction model is extended with *barriers* that can occur during a communication process. Communication takes place within a system that sometimes stimulates, but also can hinder communication. The circular/interaction model also includes *feedback*(Barker &Gaut, 2002).

The circular/interaction model is one way of looking to the communication process. This model is relevant for this research, because it takes into account the system in which communication takes place, and cultural[10] aspects from both source and receiver are important. Although this model is not complete, it is suitable for our purposes; examining communication processes within the health care chain. As Barker and Gaut state: *"any single model by necessity is incomplete because it focuses on some aspects of communication and not on others"* (Barker &Gaut, 2002, p. 10). Therefore, the circular/interaction model is combined with a framework offered by Lingard.

We focus within this context of the health care chain on communication between two or more professionals. Lingard offers a framework that is "*useful for examining group discourse in complex social settings*" (Lingard, Espin, Whyte, Regehr, Baker, Reznick, et al., 2004, p. 331). She states that what people discuss (*content* of message) depends on three critical factors: *audience*, *goal*, and *context*. The central theme of this research is communication about (near-) incidents. To examine what professionals talk about (content of message), when discussing (near-) incidents, thus depends on to whom they communicate about this (audience). Secondly this depends on the reason to communicate about (near-) incidents. Thirdly, we have to take into account the context: in this case transfer of medical information.

Although helpful in examining communication between professionals, Lingard's framework under-exposes the system in which communication takes place, in our case the health care

[10]Later on in this chapter, the concept of culture will be explained some more.

chain. To take into account also the system, I combine Lingard's framework of *content*, *goal*, *audience*, and *context* within the circular/interaction based model. In the next paragraph, this model is explained in more detail.

1.3.3 Communication about (near-) incidents in the health care chain

When studying communication processes in the health care chain I used concepts of the circular/interaction model combined with Lingard's framework. The communication event in this research is the 'exchange of information about (near-) incidents'. This communication event occurs within a *context*, here the transfer of medical information. This context is part of a bigger *system*: the health care chain in the Netherlands, between links in that chain.

The communication event in our research, the exchange of information about (near-) incidents, happens between a *source* and one or more *receivers*. The *source* here is the professional who starts the conversation about (near-) incidents. First, in order to be able to communicate about (near-) incidents, one has to detect them. The professional who starts the conversation can be the one who detects the (near-) incident. However, the one who detects does not necessarily have to be the one involved in the incident itself. A nurse for example, can inject medication that is thinning the blood instead of thickening it. Hours after injecting that medication, bleedings can appear. The one who discovers the bleedings and therefore detects the (near-) incident can be another nurse, even from another ward or another organisation. So the *source*, the professional who starts the conversation about (near-) incidents, can be the one who is involved and detects, but it can also be the person who only detects the (near-) incident. The *receiver* can be the one involved in the (near-) incident, as well as someone who can detect potential effects of the (near-) incident.

The term *message* is comparable with the term *content*, used by Lingard, the exchange of information regarding the (near-) incident. The *content* of the message, in our case the exchange of information about (near-) incidents, can differ and will be examined. Professionals use one or more *channels* to communicate about (near-) incidents. The channels we focus on are channels used for interpersonal communication (face-to-face, telephone, and/or email) as well as less personal communication channels like written (digital) reporting systems. The exchange of information is *goal*-directed, can contain possible feedback loops and can contain barriers. We will explore these *goals*, feedback loops, and barriers. In sum, this study focuses not only on the question if professionals talk about (near-) incidents. Research questions are also what do they talk about (*content* of

message), with whom (*audience*), with what reason (*goal*), and under which conditions and circumstances (*context*).

The research concentrates on formal as well as informal communication processes about (near-) incidents. Formal communication processes are structured in organisations, with dictated means and goals. An example of a formal communication process is an incident reporting system. Informal processes happen spontaneously, for instance talking with a close colleague about an incident, when fetching coffee together (Barker &Gaut, 2002).

1.3.4 Organisational culture

People working together in an organisation share basic assumptions about the 'right way to perform the work'. These shared assumptions are part of the organisational culture: "*A pattern of shared basic assumptions learned by a group as it solved its problems of external adaption and internal integration, which has worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems*" (Schein, 2010, p. 18). Hence, people in a group learn from each other the correct way to perceive, think and feel about their work and about the way to deal with (near-) incidents.

Professionals work together in a system, an organisation. The organisations in the health care chain are structured around professionals, classified by Mintzberg as professional bureaucracies; with processes of standardization of skills and knowledge (Mintzberg, 1979). On average, professionals in professional bureaucracies have a high level of education. Compared to other types of organisations, the organisational culture in professional bureaucracies is shaped by professional standards outside the organisation. The correct way to perceive, think, and feel about their work is largely provided by the profession, such as the Hippocratic Oath for physicians.

Professionals, in their daily actions, structure organisations, and at the same time, their behaviour is shaped by the structures. "*We actively make and remake social structure during the course of our everyday activities*" (Giddens, 1989, p.705). Thus, the ways professionals deal with (near-) incidents shape the structures within the organisation, and vice versa: structures shape the ways professionals deal with (near-) incidents. We explain this with an example about the incident reporting system.

Organisations can create a structure like a safety management system to communicate and learn from (near-) incidents. At the same time, these structures shape the way professionals

talk about (near-) incidents. Hospitals are obliged (since 2008) to have safety management systems and an incident reporting system can be part of it[11]. This reporting system 'shapes' the way professionals report (near-) incidents. Depending on the questions asked, professionals will give information about the (near-) incidents. In the hospital we examined, in the reporting system one can indicate with whom one has talked about the (near-) incident. Depending on the way professionals use it, the system also will be reshaped. In the eighties, the first reporting form originally was designed by and for nurses. When the reporting system evolved and digitalised, other professionals started to use the system. After a while, it was discovered that there was a category missing; professionals could not choose the nurse as a category to whom they had talked to about the (near-) incident. In the original usage, nurses chose 'colleague' when they had talked about it with other nurses. Because other professionals had started using the reporting system as well, the category 'colleague' had to be changed into 'nurse'.

Reporting systems can create an 'organisational memory' and the data they yield can be analysed and used to learn from (near-) incidents. Learning can be promoted if organisations have a standardised reporting system with quantitative as well as qualitative data (Legemaate, Christiaans-Dingelhoff, Doppegieter, & De Roode, 2006). Chapter three of this dissertation describes the structures organisations already have in place in order to learn from (near-) incidents. Data are explored from different incident reporting systems on source (who reports), content (what is reported) and audience (to whom is communicated about the (near-) incident).

1.3.5 Organisational culture and communication about (near-) incidents

Aspects of organisational culture can both stimulate and hinder communication about (near-) incidents. People do not talk about (near-) incidents when they are uncertain about the reaction of others; when they fear 'blaming and shaming' (Reason, 2000; Gjerberg&Kjølsrød 2001; Husted &Michailova 2002; Reason & Hobbs, 2003, Amalberti, Auroy, Berwick &Barach, 2005; Awad, Fagan Bellows Albo Green-Rashad De La Garza, et al., 2005; Makary, Sexton, Freischlag, Holzmueller, Millman, Rowen, et al., 2006). People are in fear of embarrassment, punishment, and litigation. Besides this fear, lack of improvement is a second barrier that hinders communication about adverse events (Leape, 1999).

[11]For more about safety management systems in hospitals in the Netherlands, see: www.vmszorg.nl.

Professionals may not report incidents because they do not perceive any quality improvement.

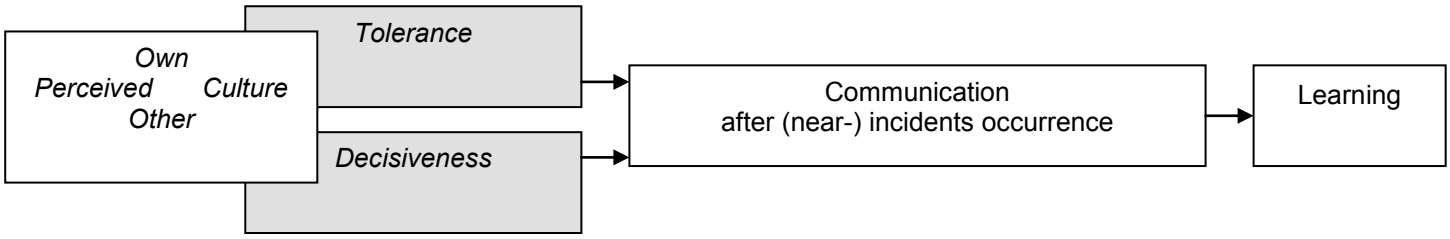
The studies mentioned here emphasize reasons why professionals do not talk about (near-) incidents. However, our study intends to uncover communication patterns that do occur. The same aspects that hinder communication can be reversed to conditions of the system that make it easier to talk about (near-) incidents. A non-punitive safety climate is positively associated with communication (Snijders, Van Lingen, Molendijk, & Fetter, 2007; Snijders, Kollen, Van Lingen, Fetter, &Molendijk, 2009A; Snijders, Kollen, Van Lingen, Fetter, & Molendijk, 2009B). Transparency is higher when professionals experience a blame free culture instead of 'blame and shame' (Molendijk, Borst, & Van Dolder, 2003).

Previous research has found that in order to learn from (near-) incidents professionals have to experience tolerance (Homsma, 2007). Organisations that were characterised by their employees as tolerant had an organisational culture of openness to talk about errors. If managers did not look for someone to blame after an error occurred, employees felt it was easier to talk about it: "*We have an open culture, in which everything can be discussed ... and errors are not punished*" (Homsma, 2007, p. 22). Conversely, in more intolerant organisations employees tended to cover up errors. Another contributing factor is that professionals witness changing conditions under which (near-) incidents occur. When professionals only experience tolerance, openness is increased, for example, and more incidents will be reported. However, openness alone does not stimulate learning. In order to learn, one must also show initiative to prevent similar errors to occur in the future. "*We have to see improvement in how they react to errors, because then they will continue to improve*" (Homsma, 2007, p. 24).

An organisational culture that combines tolerance with decisiveness encourages communication and learning. These insights are applicable within a department or organisation. In this research, inter-organisational knowledge sharing is the central theme. Besides the perceived own organisational culture, the professional also has assumptions about the culture of the other link in the chain. In chapter three, we describe the assumptions professionals have about tolerance and decisiveness about their own culture. However, because our focus is on inter-organisational knowledge sharing, we especially pay attention to the assumptions about tolerance and decisiveness of other organisations in the different links. We explore these assumptions about other organisational cultures and the relationship

with communication after a (near-) incident has happened (Chapter 4; Fig. 1.2).

Fig. 1.2: Tolerance and Decisiveness in the Health Care Chain



1.3.6 Incident characteristics

We focus on inter-organisational knowledge sharing about (near-) incidents in the health care chain. A patients' journey through the chain involves information transfer from one link to the other. This information can be lost, wrong, or contradictory, such as in the example where information about a patient's allergy is not passed on in the chain (see introduction). What happens if information about discharge medication is contradictory? For example, in a hospital, a patient has received the wrong medication. The same day, this patient is discharged. When GPs are well informed about the incident, they can react to potential side effects of the wrong medication. Because effects of (near-) incidents can take time, they can be detected in another place, in the next links. What do professionals do if they discover (near-) incidents in another link? Do they confront professionals in the previous links with lost, wrong, or contradictory information? Do they warn professionals in the next links about potential harm? What makes a (near-) incident important enough to talk about?

As research has already shown, learning co-depends on the consequences of the (near-) incident. Especially incidents with serious negative outcomes have a positive influence on learning (e.g. Cannon & Edmondson, 2005; Homsma et al., 2009). Participants that rated an incident as severe, more often described that the incident had led to new insights and ideas and implementation of improvement than incidents that where rated as not severe at all (Homsma et al., 2009). In health care, (near-) incidents are also rated, for example using a risk assessment matrix, based on Shell (Willems, 2004). This Risk assessment matrix has two dimensions: severity of consequences and likelihood of repetition. Both severity and likelihood are estimated by the professionals themselves, the reporter of the (near-) incident. The reporter can estimate a (near-) incident as severe (death); major (serious permanent injury); moderate (serious but temporary injury); minor (small injury and little special treatment); or negligible (no inconvenience or injury). For example, professionals rate the consequences as being severe when a patient can die due to the (near-) incident.

Professionals rate likelihood as the chance a (near-) incident will occur again. The reporter can estimate the occurrence of a (near-) incident as almost certain (within hours or days), likely (within several weeks), possible (within several months), unlikely (not more than once every 1-5 years), or rare (repetition not likely). Both severity and likelihood define the rating risk level: extreme (4), high (3), moderate (2), or low (1) risk (see Table 1.3 and Appendix 4).

Table 1.3: Risk Assessment Matrix: Consequences and Likelihood

Consequences →	Severe	Major	Moderate	Minor	Negligible
Likelihood of repetition ↓					
Almost certain	4	4	3	2	2
Likely	4	4	3	2	2
Possible	4	3	3	2	1
Unlikely	4	3	2	1	1
Rare	3	2	2	1	1

An example of a low (1) risk (near-) incident with negligible consequences and rare likelihood is a reported (near-) incident regarding blood transfusion[12]. The (near-) incident was detected by a nurse, after a call from the lab that blood for patient X was ready. The nurse, before giving the transfusion, checked the lab results, which showed no low values. The nurse questioned why patient X needed the blood transfusion. Later on, the nurse discovered that a resident had ordered the blood for after surgery. For some reason the OR was cancelled, but the cancellation of the blood transfusion was forgotten. It had no consequences for the patient because the near incident was detected before it reached the patient. The professional who reported the incident estimated that it was unlikely to happen again. According to the risk matrix, this incident thus constitutes rare likelihood and no negligible consequences, therefore a low (1) risk incident.

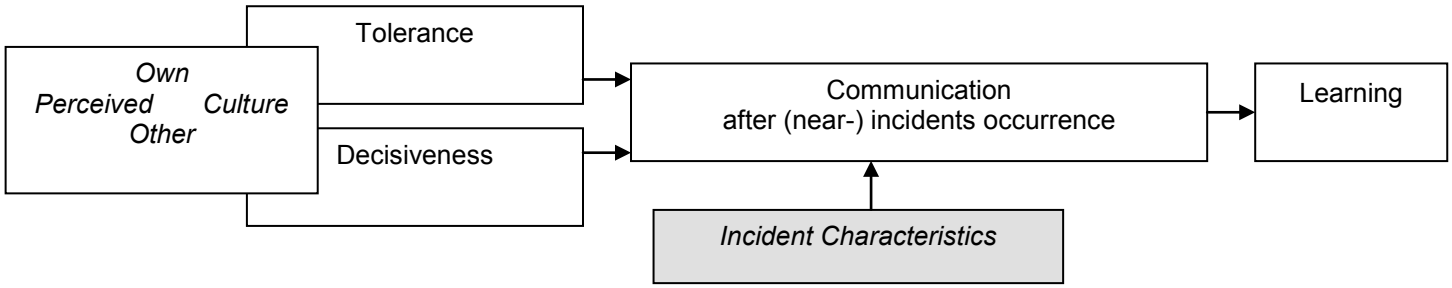
An example from the incident reporting system of the hospital with extreme (4) risk incident was an incident that happened during transfer. A patient was admitted to hospital after referral of a GP. The GP had deliberated with the cardiologist of the hospital about this patient with possible shock after major heart attack. The patient somehow was announced to the ER as having collapsed, with a blood pressure rising from 80/50 to 110/60, and with light chest pain. Based on this announcement, the ER did not have a crash-team ready. When ambulance personnel arrived, the situation was much more serious and the patient was

[12]Incident reporting system hospital (IRSH, 2006-2007).

already dying. The cardiologist came right away, and after a while, he decided to stop treatment so the patient died. The nurse expected this kind of incident to happen again within weeks; he reported the incident as severe (death) and likely to occur again, therefore an extreme (4) risk incident.

Based on the risk level it is decided how to manage (near-) incidents. In the hospital that uses the risk assessment matrix, extreme (4) and high (3) risk incidents are managed by a reporting committee patient care (MIP[13]). This committee consists of nurses, managers, and physicians who analyse the (near-) incident and, based on the outcome of the risk assessment matrix, decide about the next steps to take. The committee further analyzed the example of the diseased patient. Moderate (2) and low (1) risk incidents, like the blood transfusion incident, are analyzed on department, or ward level. The present study explores if professionals make risk assessments and if so, whether these risk assessments play a part in communication about (near-) incidents (Chapter 5; Fig. 1.4).

Fig. 1.4: Incident Characteristics in the Health Care Chain



Tolerance and decisiveness are two aspects of organisational culture. Incident characteristics refer to the (near-) incident itself. In addition, what is the role of the professional?

1.3.7 Attribution processes

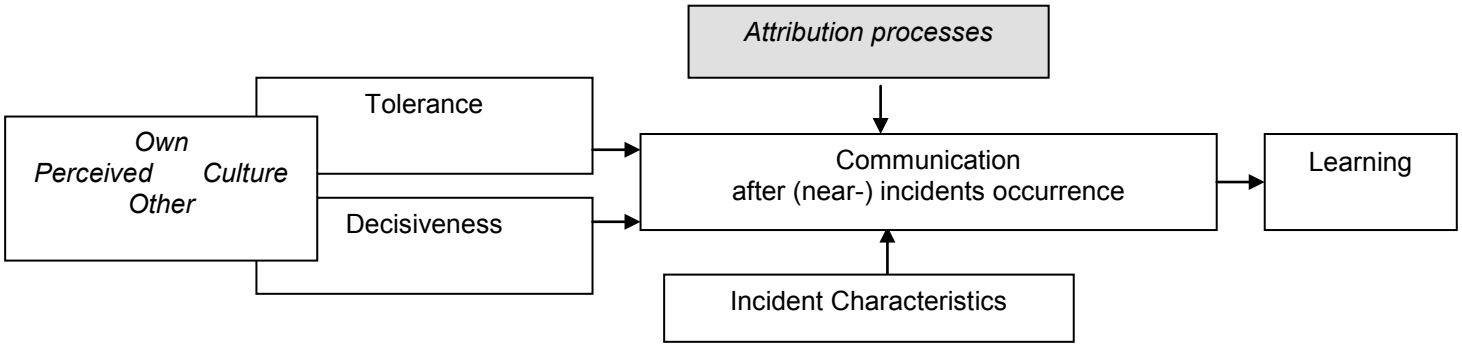
In everyday life, people try to understand why things happen. We, as humans, interpret events; try to explain why someone does what he does, why people achieve success or failure. The attribution theory explains how we do that, how humans attribute causes to success or failure (Weiner, 1985). The attribution model has three dimensions: locus of control, stability, and controllability. The first aspect, locus of control, is that employees

[13]In Dutch hospitals there is a *MIP*: '*MeldingscommissieIncidentenPatiëntenzorg*'.
In Dutch nursing homes the patients are called clients; thus the committee is *MIC.*

ascribe the causes as being factors within the person (*internal* locus) or factors within the environment (*external* locus). Secondly, they ascribe the cause as something expected to be constant (*stable*) or as fluctuating (*unstable*). Thirdly, employees experience personal control; they review the situation as being something they can control (*controllable*), or something beyond their control (*uncontrollable*).

Homsma (2007) investigated the way professionals make attributions after error occurrence and the influence of attribution on error handling and learning behaviour. In line with earlier research, he discovered that participants, who ascribed causes as being a factor within themselves (*internal*) as well as fluctuating (*unstable*), felt a higher level of *control*. However, although people experienced a higher level of control, this did not lead to better strategies. In line with Homsma, we examine the way professionals make causal attributions about the locus of control (internal or external), stability (stable or instable), and controllability (controllable or uncontrollable). I explore these three components of the attribution process to see if they differ between links and/or professionals within the chain and if these attribution processes have consequences for communication about (near-) incidents, and thus for learning (Chapter 6, Fig.1.5).

Fig. 1.5: Attribution Processes in the Health Care Chain



1.3.8 Learning from communication about (near-) incidents

Overall, communication about (near-) incidents in the health care chain is examined to explore to what extent this communication results in learning. When individuals identify and correct a (near-) incident and intend to do the same thing differently the next time, they learn at an individual level. For organisations, the next step is organisational learning. Argyris distinguishes two types of organisational learning; single loop or double loop. Single loop learning involves the process of identifying and correcting (near-) incidents and sharing this information. Not only the individual learns from the (near-) incident, but colleagues or other

employees in the organisation can also learn. In the case of double loop learning, not only (near-) incidents are identified and corrected, but also organisational changes are made. In double loop learning, the underlying conditions that contribute to the (near-) incident are changed as well (see for example Argyris, 1977 & 2002). Although in all the three cases (individual learning, organisational single loop learning, and organisational double loop learning) communication can take place, the impact will differ. When professionals detect and correct their own (near-) incidents, they are not obliged to communicate about it. When professionals detect and correct other (near-) incidents, they can talk about it with the persons involved. In both cases, there is individual learning that stops with the person involved. When professionals share information about (near-) incidents, communication is essential, but single loop learning does not change the organisation as a whole. When professionals use information from (near-) incidents to diagnose and improve organisational processes, double loop learning is promoted. When communication about (near-) incidents also changes the way professionals learn, for instance the implementation of a safety management system, triple loop learning is promoted.

Tucker and Edmondson see problem solving behaviour as one of the barriers that hinder double loop learning. They developed a model of first-order and second-order problem solving behaviour. Within first-order problem solving, individuals correct and solve the problem. This is seen in individual learning as well as in single-loop learning. Within second-order problem solving actions are taken to address the underlying causes of the problem (Tucker & Edmondson, 2002A; Tucker, Edmondson, & Spear, 2002B; Edmondson, 2004). Second order problem solving can result in double loop learning.

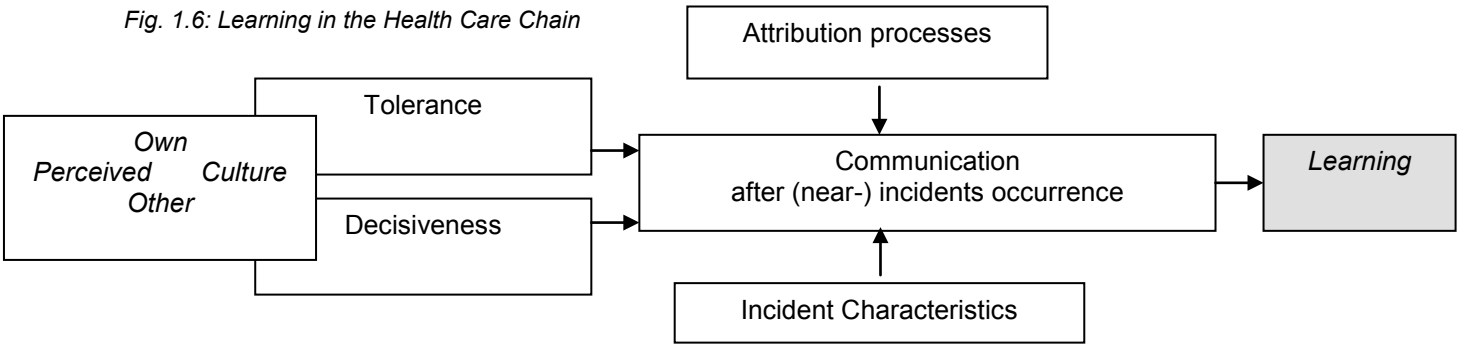
In health care, according to Tucker and Edmondson, one of the barriers of second order problem solving is the emphasis on individual vigilance: "*an industry norm that encourages nurses and other health care professionals to take personal responsibility to solve problems as they arise*" (Tucker & Edmondson, 2002A, p. 63). This norm, they say, is explicitly developed by professions in health care organisations. Following the norm, it can be seen as soft to help other professionals or to bother them with your questions, especially when they are busy. Thus, individual caregivers are encouraged to solve their problems, without thinking about the consequences for the system. This first-order problem solving "*keeps communication of problems isolated so that they do not surface as learning opportunities*" (Tucker & Edmondson, 2002A, p. 60).

I have examined if professionals in the health care chain feel they have to solve their own problems (first-order problem solving) and explore if this attitude affects communication in the chain. We also examine what kind of learning processes occur within the organisation

and between organisations in the health care chain; individual, organisational single loop or organisational double loop learning. We will argue that although organisations in the chain differ, they also have overlapping processes. They therefore can learn from each other's solutions. For example, the way (near-) incidents regarding the distribution of medicine are resolved in a nursing home can be useful for other organisations, such as a hospital.

The research model used in this dissertation is based on a model describing error management in organizations, as developed by Homsma (2007, p. 12). I will use his (slightly adapted) model in this dissertation to explore how processes at the individual and organisational level affect communication and learning after (near) incidents occurrence in the health care chain (Fig 1.6).

Fig. 1.6: Learning in the Health Care Chain



1.4 Summary

In this chapter, I have argued that in order to learn from things that go wrong in the health care chain it is important to communicate. I have outlined the theoretical framework of this research. It will be explored if communication patterns between different professionals between different organisations in the health care chain in the Netherlands result in forms of inter-organisational, single, double or triple loop learning. This study intends to uncover communication patterns that do occur. Therefore, the main research questions of this thesis are:

RQ1. What is the content of the message that professionals talk about, when they share information about (near-) incidents, and with whom (audience) do they communicate in the health care chain? (Chapter 3)

RQ2: To what extent do tolerance and decisiveness, as aspects of organisational culture (context), contribute to communication about (near-) incidents between professionals in the health care chain? (Chapter 4)

RQ3: How do incident characteristics and risk assessments play a role in communication about (near-) incidents in the health care chain? What makes a (near-) incident important enough to talk about in the chain? (Chapter 5)

RQ4: How do attribution processes regarding the occurrence of (near-) incidents relate to the way professionals communicate about (near-) incidents? (Chapter 6)

Because the main focus is the health care chain, central to this thesis are the (near-) incidents that professionals communicate with other links in the chain:

RQ5: Is there inter-organisational knowledge sharing between professionals in the health care chain and does this communication results (goal) in double or even triple loop learning? (Chapter 7)

In the next chapter I introduce the context; the health care chain. I describe the complexity of that chain as well as the methods used in this research (Chapter 2).

2 Research background & method

2.1 Introduction

In the previous chapter, I have argued that health care involves risks beyond one organisation and takes place in a system of multiple organisations the health care chain. Communication about (near-) incidents between different links is essential for inter-organisational learning in the chain. The focus of the present research is on the system: the health care chain in one region of the Netherlands. In this chapter, I introduce the different links that are examined in the chain. For each link, the type of organisation is described, in terms of size and professionals working there (*facts and figures*). Secondly, I describe the responsibilities of the interviewed professionals in each link (*professionals and responsibilitie*s). Communication about (near-) incidents take place in a context, in this case the process of exchange of medical information during the transfer of the patient in the chain. Thus, thirdly, the formal communication about medical information that is exchanged between different links in the chain is described (*transfer of medical information*).
After introducing the system, in the final part of the chapter, the methods of this present research are explained.

2.2 Background: Different links in the health care chain

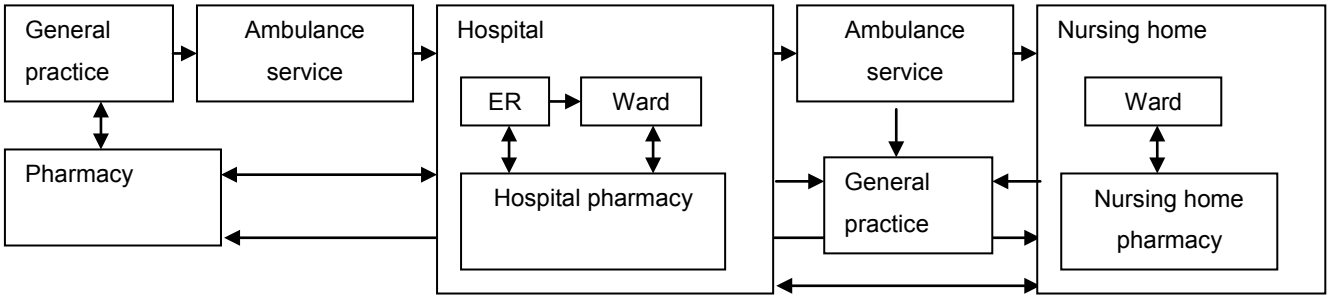
Primary care is directly accessible for every individual in the Netherlands: the GP, the dentist, a primary psychologist, home care, the infant health care, and the physiotherapist. In comparison to most other countries, in the Netherlands the GP has an almost unique position as the gatekeeper: *"hospital care and specialist care (except emergency care) are only accessible upon referral from the GP"* (Schäfer, Kroneman, Boerma, Van der Berg, Westert, Devillé, et al., 2010, p. XXV). The GP, ideally in dialogue with his/her patients, refers to other professionals in the chain, for example to specialists in hospitals. The ER has a special position. Although it is part of the hospital, the ER belongs to the primary care. Therefore, everybody is – in principle – able to get access to the ER. Later on, when discussing after-hours care more extensively, I will address the problem of this blurred line between primary and secondary, referred care.

Because of the unique gatekeeper position of the GP, patients in the Netherlands usually begin their journey into the health care chain by contacting a GP. GPs refer patients to specialists in hospital. Patients depend on the judgment of the GP; the GP has to make decisions about the patient's condition. Is the problem something the GP can solve, or is it

something specialised help is needed? In the Netherlands, only 4% of the contacts with a GP results in referral to hospital (Schäfer et al., 2010).

Usually, patients consult specialists in outdoor policlinics. In this research, policlinics are left outside the scope. The focus is on the more acute situations, where patients enter hospital through the emergency room (*hospital ER*). If patients are unable to travel to hospital using their own transportation, an ambulance is called (*ambulance service*). If patients are admitted, they will be transferred to a ward (*hospital ward*). In hospital, frequently medication is given (*hospital pharmacy*). After being treated, patients can be transferred to a nursing home (*nursing home*). After hospital or nursing home, again most patients fall under the care of their GPs. Along the line, if patients need medication, a pharmacist enters the picture (*pharmacy*) (see Fig. 2.1).

Fig. 2.1: Example of the Health Care chain



The provision of health care is complex and is not exclusively the domain of one organisation. We can see these organisations as links, connected with each other in a chain that supplies health care. A chain is defined as "*a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a sourceto a customer*" (Mentzer, DeWitt, Keebler, Min, Nix, Smith, et al., 2001, p. 4). A chain is a form of inter-organisational cooperation between autonomous organisations. You can see explicit examples of health care chains concentrated for example around the care of patients with diabetes or chronic obstructive pulmonary diseases (COPD) or patients who had a stroke. In these complicated cases professionals representing different organisations usually come together to make working agreements. These explicit examples of chains are more or less managed. There sometimes are working agreements between different links about the way to treat the disease. On the other hand, all patients receive care from organisations in a chain, with or without working agreements. In that process of delivering care, all organisations exchange medical

information with other links in the chain. Professionals do not have to see themselves explicitly as ‘links’ in a chain. Implicitly or explicitly, a chain exists whether professionals in that chain perceive this or not. In a chain, organisations are interdependent in the delivery of a product or service to a patient (Jurriëns, 2005).

Although hospitals depend on the GPs for sending in patients, the health care chain is a chain of ‘supply’ and not of demand. When GPs present patients to other professionals like specialists, specialists, in turn, decide if patients are really theirs. Specialists make their own evaluation if a specific patient is in the right spot. After additional diagnosis, they can decide that the patient is better off with another specialist. The interdependence within the chain is blur; not only do hospitals depend on GPs to ‘supply’, there is some kind of dependence of GPs on specialists to accept patients and that makes the health care chain complex. An important process within the health care chain is the transfer of medical information.

Sometimes, during that transfer, medical information may be lost, become contradictory, or turn out to be wrong. This can have severe consequences, such as in the case of the missed penicillin allergy (chapter 1). During the transfer of medical information (near-) incidents happen (e.g. Britten, Stevenson, Barry, Barber & Bradley, 2000; Gandhi, Sittig, Franklin, Sussman, Fairchild & Bates, 2000; Gandhi, 2005; Lingard, Whyte, Espin, Ross Baker, Orser& Doran, 2006; Greenberg, Regenbogen, Studdert, Lipsitz, Rogers, Zinner, et al., 2007; Holden, Watts, & Walker, 2010; Lyons, Standley, & Gupta, 2010; Ong&Coiera; 2010). This research explicitly focuses on professionals who transfer medical information from one link to the other, starting with the gatekeeper, the general practitioner.

2.2.1 General practices

2.2.1.1 Facts and figures

In 2010, in the Netherlands there are almost nine thousand general practitioners (GPs), working in more than four thousand general practices, with an average of roughly two thousand patients (Hingstman&Kenens, 2010). Most GPs (88%) work as free entrepreneurs. GPs receive a registration fee per registered patient from health care insurance companies. On top of that, they receive a handling fee for a consultation and/or a service performed. From the general practices, 42.3% are solo practices, 31.5% two GP practices, and 26.1% are group practices. General practices increasingly merge into health care centres together with for example (infant) welfare care and pharmacies. A minority of the GPs (12%) are

employees within general practices or work as substitutes[14], on duty in evenings and weekends or replacement during vacation or illness.

For the care after office hours (evening and weekend shifts), ten years ago many out-of-hours services[15] were established. Nowadays, there are 128 out-of-hours services and most general practices are affiliated with these services. GPs that have not joined an out-of-hours service, in evenings and weekends, by rotation are available for their own patients.

2.2.1.2 Professionals and responsibilities in general practices

Besides GPs, in most general practices practice assistants[16] are employed. They usually have the first contact with patients, generally by telephone. If patients feel sick and need an expert opinion, they usually call a general practice to make an appointment for a consultation. Practice assistants take the first triage. The aim of this triage is to determine the right action, for example the choice between regular appointments, house calls, or an immediate action: calling an ambulance. Practice assistants must decide (in consultation with the GP) how acute the medical health problem is, if patients are able to visit the GP in the practice, and which professional is needed. Practice assistants ask questions following specific (computerised) protocols. For example, a person calls the general practices and says he feels tightness in the chest and he feels clammy. This patient here mentions two out of three indications for a possible heart attack. The answers lead the practice assistant to the protocol that indicates actions taken in case of a heart attack. According to this protocol, the practice assistant deliberates with the GP, the GP makes an immediate house call, and at the same time, the ambulance service is called. When visiting the patient, the ambulance nurse has the means to make an electrocardiogram and together they can decide to refer the patient to hospital.

In most cases, with less acute symptoms, practice assistants make appointments with patients in the practice. Between 2005 and 2008, on average 72.8% of the Dutch population has consulted a GP at least once a year. This average patient had 5.6 contacts, whereof 2.5 consults at the general practice, 0.2 house calls, 0.7 telephone consultations, and 2.2 contacts for repeat prescriptions (Verheij, Van Dijk, Abramse, Davids, Wennekes, Van der Hoogen, et al., 2008). Eighty percent of the Dutch general practices nowadays also have an

[14] also called 'doctor on call' or locum GP.
[15] In Dutch *'Huisartsen Post (HAP)'*.
[16] In Dutch '*doktersassistente'*.

(advanced) practice nurse[17]. A practice nurse works according to specific guidelines within specific areas. They can take care of patients with diabetes mellitus, COPD, monitoring cardiovascular diseases (do for example blood pressure check-ups) and care of the elderly. Per 1000 registered patients from general practices, per year almost 20% is referred to hospitals (Verheij et al., 2008).

After office hours, patients can visit GPs at out-of-hours services. For many people, it is not always clear what to do when something happens after office hours. They have different options. In the first place, they can call the GP or the affiliated out-of-hours service. Secondly, in case of emergency, they can call the national emergency number 112. Thirdly, patients can also go straight to an ER of a hospital. Many times patients contact an ER for problems that could have been solved (cheaper) by GPs at out-of-hours services. To make it easier 66.4% of the out-of-hours services are situated in or around a hospital[18]. In the future it is possible that out-of-hours services more and more melt together with ER's of hospitals. One of the recent recommendations of the board of the Dutch health care[19] is to create health centres where first and second level care are combined in so called 'one and a half level care' (Bos, Koevoets, &Oosterwaal, 2011).

2.2.1.3 GPs and the transfer of medical information

Most GP practices and out-of-hours services register information about patients in computer-based programs called HIS[20]. In the Netherlands, there are approximately seven different systems used[21]. Within these systems, basic information of patients is registered, such as the patient's name, social security number, date of birth, gender, and address. Besides this basic information, the patient's medical information is registered according to a protocol, for example the protocol *SOEP*: *Subjective, Objective, Evaluation,* and *Plan.* According to this protocol, GPs begin with registering the *Subjective*: the reasons for contact. Then they register the *Objective*: the examination they performed. After that, they register the *Evaluation*: the (tentative) diagnose. The last step is the *Plan*: the planed actions for treatment, cross-reference, prescription, or requests for further examination (Verheij et al., 2008). When GPs want to do diagnostic tests, like blood tests or x-rays, they get the help of

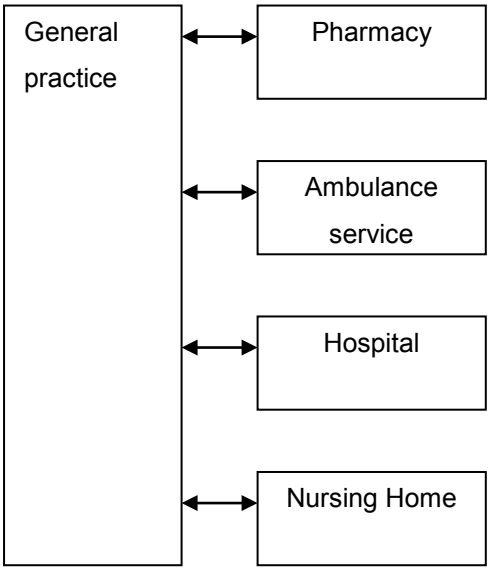
[17] In Dutch '*Praktijk Ondersteuner Huisarts (POH)'*. This sometimes is translated as Nurse Practitioner, but the term*nurse* in the Netherlands is exclusive for professionals with a background as registered nurse. A POH's background includes registered nurses as well as practice assistants.
[18] www.zorgatlas.nl.
[19] In Dutch '*Raad voor Volksgezondheid en Zorg (RVZ)'.*
[20] GP information system, in Dutch *'Huisartsen Informatie Systeem'.*
[21] Mostly used systems are MicroHis, Promedico, Arcos, OmniHis, Medicom, Promedico ASP, and Mira.

professionals in hospitals. Some hospitals nowadays have a special centre for diagnostic, where patients of GPs can go to for tests.

When GPs refer patients to another organisation in the health care chain, this *SOEP* information ideally is transferred to the next link. In the examined health care chain, agreements were made between GPs, the ambulance service, and the hospital. They agreed about the way written medical information from GP offices to the next link formally should be transferred: with the use of special forms, developed for that purpose.

Within this chain, professionals working in GP offices exchange medical information with professionals from pharmacies, ambulance service, hospital, and nursing homes (see Fig. 2.2).

Fig. 2.2: Exchange of Medical Information between GPs and Other Links



2.2.2 Pharmacies

2.2.2.1 Facts and figures

Most GPs used to have an in-house pharmacy. Nowadays, in only few towns or villages in the Netherlands (7%) GPs have an in-house pharmacy. Most pharmacies are public pharmacies (± 2,000 in the Netherlands). Approximately three thousand pharmacists and sixteen thousand pharmacist assistants are working in public pharmacies (Griens, Janssen-Hoge, & van der Vaart, 2009). Most pharmacists in 2009 are self-employed, 35% of the public pharmacies at that time are branch offices.

2.2.2.2 Professionals and responsibilities in pharmacies

By law, pharmacies are restricted in selling prescribed medication. Besides prescribed medication, pharmacies also sell non-prescribed medication. Since 2007, part of this non-

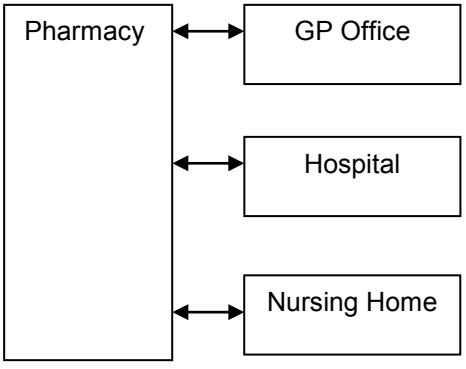
prescribed medication is also available outside pharmacies and drugstores. Patients receive prescriptions from physicians (a GP or a specialist). At the front desk, patients give the prescription to pharmacist assistants. Assistants deliver the medication to patients; give user information, or advice about non-prescribed medication. Generally, the pharmacist in the end is responsible for the overall distribution of medication. (Van Mil, Tromp, & de Jong-van der Berg, 2000). If medicine is on stock, patients get the medicine right away. If it is a very unusual medicine, it has to be ordered first.

2.2.2.3 Pharmacies and the transfer of medical information

Usually, on a prescription you will find the basic patient characteristics: name, social security number, date of birth, gender, and address. Secondly, it is common to write down the name of the prescriber and telephone number on the prescription. The medication-information on the prescription exists of the name of the medicine, strength, dosage, period of usage, the way the medicine has to be taken in (oral, rectal, injection and so on), and possible consequences for the driving ability. Mostly it is registered if the medicine is new or if it is a repeat prescription. Sometimes (with kids) the weight is mentioned. In 2008, a guideline is developed to transfer information about medication in the chain[22]. In this guideline, it is defined that every prescriber, at all times, should have access to the actual medication patients are using. In addition, in case of emergency this information should be available at least within 24 hours. Besides the information described above, allergies, counter indications and serious side effects must be transferred.

Within the chain researched, professionals working in pharmacies have exchange of medical information with professionals from GP offices, hospital, and nursing homes (see Fig. 2.3).

Fig. 2.3: Exchange of Medical Information between Pharmacies and Other Links



[22]Guideline*: Richtlijn overdracht medicatiegegevens in de keten, versie 1.0 d.d. 25 april 2008.*(www.medicatieoverdracht.nl).

2.2.3 Ambulance service

2.2.3.1 Facts and figures

The ambulance services in the Netherlands are divided over 25 regions[23]. There are almost seven hundred ambulances on the road. They do more than a million runs a year. Of those runs, almost 44% is a so-called A1-run; for emergency life threatening situations. Besides that, there are A2-runs; less life threatening but still an emergency (23%). Thirdly, there are the B-runs (33%). Those runs are planned and scheduled[24]. When an emergency happens, one calls 112. The first they speak are centralists working in control rooms. In these control rooms, police, fire department, and ambulance services work together. The centralists, like GP practice assistants, use protocols to help them decide which service is required.

2.2.3.2 Professionals and responsibilities in the ambulance service

Until the eighties of the last century, many ambulances were parked at local garages. At a quick rate, ambulance services are professionalised and nowadays ambulance personal is responsible for much more than 'just' transporting patients. Every ambulance has a certified ambulance driver and a registered ambulance nurse. They attend first-aid trauma. The first ambulance that arrives mostly coordinates big accidents. A call usually enters through the centralist. According to protocol, the centralist decides which ambulance to send. The ambulance nurse, together with the ambulance driver, responds to the call.

In the Netherlands, there is a norm that 97% of the residents must be helped within 15 minutes. Centralists look at electronic maps with real time locations of ambulances to see which ambulance to send. Ambulance drivers are responsible for driving the ambulance as fast as possible to the right place. The speed of the drive depends on the type of run. An emergency run (A1) requires speed driving with lights and alarms as fast as possible, within limits of safety for ambulance personnel, patients and other vehicles. When it is an A2- or B-run, drivers have to drive within the legally permitted maximum speed. Ambulance drivers more and more depend on Global Positioning Systems (GPS) to point out the fastest route. Ambulance nurses take care of patients and perform the necessary medical actions. Over time, responsibilities for ambulance personal have grown strongly. Since several years,ambulance personnel[25] at the out-of-hours service work together with GPs to make out-of-hours house calls.

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[23] In Dutch '*Regionale Ambulance Voorziening(RAV)'.*
[24] www.zorgatlas.nl.
[25] This function is a combination of an ambulance nurse and a driver, in Dutch '*visite team assistent*', freely translated as a house call team assistant.

2.2.3.3 Ambulance services and the transfer of medical information

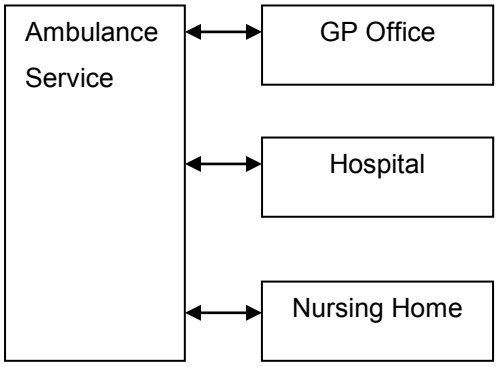
Essential information for ambulance drivers is the address where the patient is present. The basic information ambulance nurses need, depend on the type of run. In the case of A2 or -runs, mostly a GP or specialist indicates the run. The basic information like name, social security number, date of birth, gender, and address is present, as well as the organisation to send in the patient. When an A1 run takes place, sometimes non-professionals make the call. In addition, patients can be unconscious. In both cases, it is more difficult to get the basic information. In addition, if more hospitals and/or dependences are available, ambulance personal have to decide where to send in patients.

To take care of patients, ambulance personal uses the international ABCDE protocol. First, they deal with the airway (A), breath, (B) and circulation (C) of patients. After that, they also look at the disability (D) and the expose / environment (E). They use a written form with carbon copies for transfer of medical information (white original, yellow copy, and white copy). When they deliver patients to hospital, nursing homes, or other care organisations, they keep the white original and leave the other two at the scene. The yellow copy goes into the written dossier of that organisation. The white copy can be used by the organisation who received patients to give feedback to the ambulance service. This organisation for example can give feedback if the first working diagnosis was the right one. They can also give feedback by reporting their own check-ups like breathing frequency, blood pressure and so on. They can give feedback about the way they felt the ambulance personal took care of the patient; specific the support of breathing and circulation; if used medication and/or drips were right. They can give feedback about the transfer itself. On this white copy the name and address of the ambulance service is noted, with a remark to stimulate sending the copy back. At this moment, the ambulance service in the chain is the only organisation with this official feedback procedure. Besides the written information, the ambulance professionals transfer the information verbally, according to the international procedure *MIST*: Mechanism injuries, Identified injuries, Signs, and Therapy. To be more specific: M stands for Mechanism injuries, for example *"car runs into cyclist."* I stand for Identified injuries, for example "*broken leg".* S stands for Signs, for example, "*leg has an unnatural posture*," but also the signs found according ABC protocol, like for example blood pressure. Finally, the T stands for Therapy, which first-aid actions the ambulance nurse took. For example, "*leg is fixated."* The ambulance service participates in a regional consultative body for acute care[26], together with different out-of-hours services and hospitals in the region. Goal of this regional consultation is to attune acute care.

[26]A regional consultative body for acute care, in Dutch '*RegionaalOverleg Acute Zorg (ROAZ)'.*

Within the chain researched, professionals from ambulance service have exchange of medical information with professionals from GP offices, hospital, and nursing homes (see Fig. 2.4).

Fig. 2.4: Exchange of Medical Information between Ambulance Service and Other Links



2.2.4 Hospital

2.2.4.1 Facts and figures

In the Netherlands, specialist medical assistance and related nursing care to patients is organised in 137 hospital locations and 83 outdoor policlinics, organised in 91 organisations of which there are eight university hospitals. Per year almost 1, 8 million (re-)admissions take place[27]. Yearly, they have approximately 500,000 outpatient visits and ± 45,000 admissions and ± 45,000 day-treatments. The hospital has two different locations with a total of almost 10,000 beds and almost 5,500 professionals are working there. Nurses work within divisions, like the Emergency Room (ER), Intensive Care Unit (ICU), Operating Room (OR), a ward, or policlinic (for outpatient visits). The divisions are grouped around a cluster, a specialism like for example surgery. Specialists work in clusters can be employed in a hospital, for example in most university hospitals. Many specialists are self-employed and work together in professional partnerships[28], grouped around a cluster. Residents, periodically, work within clusters. In the near future, there will be one new built location.

2.2.4.2 Professionals and responsibilities in the hospital

When patients in acute situations enter a hospital, usually by ambulance, they go to the ER. All other, non-acute admissions take place on a ward. On the ER, ambulance nurses transfers patients to ER nurses, preferably in the company of physicians. As described before, the transfer takes place according to MIST. Physicians can be specialists or ER-residents[29]. Who will be present, mostly depends on the estimated gravity of the condition of the patient. It also depends on information, given before patients arrive. Ideally, centralists

[27] www.zorgatlas.nl.
[28] In Dutch '*maatschappen'*.
[29] On the ER, residents are required to have followed a special Advanced Trauma Life Support (ATLS) training.

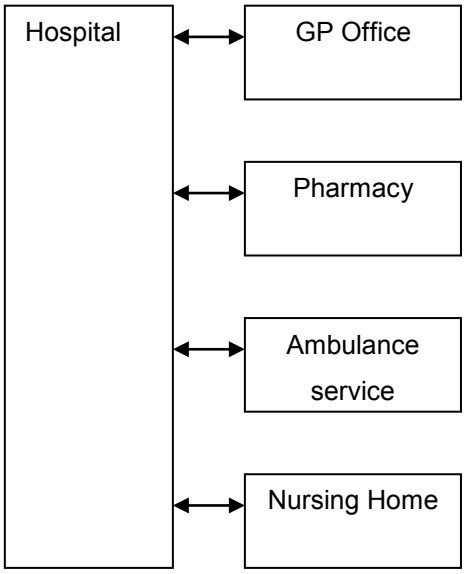
will announce all trauma and other A1-runs to the receptionist of the ER. GPs often deliberate with specialists before sending in patients. In case of big traumas, a special team is called to the ER, many times including anaesthetists and surgeons. When patients enter hospital by own transportation ER nurses do the first triage and then decide which specialist is necessary, according to protocol. Non-acute patients, who are sent in by GPs, usually start with a visit to a specialist, a so-called outpatient visit. During the outpatient visit, the specialist can decide to an admission on a ward within the cluster, this specialist is related to (for example the ward from the surgical cluster if the specialist is a surgeon).

2.2.4.3 Hospital and the transfer of medical information

When patients go to the appointed ward, they will have an admission conversation with nurses from that ward. Nurses ask questions about the condition of the patient and registers information like for example name, social security number, date of birth, gender, address, home medication information, (tentative) diagnosis, and allergies. There are two forms of written dossiers: one paper version and one computerised version. The information of patients mostly is written down in an electronic information system from the hospital. Both an electronic as well as a paper file is made right after the first outpatient visits to specialists. Sometimes a letter from the GP is included in the paper file. When patients are transported with an ambulance to the ward, the ambulance copy is included too. At the same time, ambulance nurses will transfer the information verbally to nurses of the ward.

Within the chain researched, professionals working in hospital have exchange of medical information with professionals from GP offices, pharmacies, ambulance service, and nursing homes (see Fig. 2.5).

Fig. 2.5: Exchange of Medical Information between Hospitals and Other Links



2.2.5 Nursing homes

2.2.5.1 Facts and figures

Patients[30] enter nursing homes for a variety of reasons, from different places. They can go to a nursing home from home or from hospitals, for example to recover after treatment. In the Netherlands, there are approximately 1,500 nursing homes. In the past, there was a difference between revalidation centres, homes for long-term care[31], and homes for the elderly[32]. Over time, this difference is disappearing. Homes more and more combine care for the elderly, long-term care, and sometimes revalidation centres[33].

2.2.5.2 Professionals and responsibilities in nursing homes

When patients are transferred to a nursing home, the nursing home physician takes over the care. Many times, depending on the type of care, they have to deliberate with two other parties involved: the specialist from the hospital and the GP of the patient. When nursing home physicians want to do diagnostic tests, like blood tests or x-rays, like GPs, they get the help of professionals in hospitals. Some hospitals nowadays have a special centre for diagnostic, where patients can go to for tests. Mostly, nursing home physicians deliberate with GPs about the necessary to do the tests. Besides employed professionals, the direct care of patients in nursing homes is also in the hands of a large group of volunteers.

2.2.5.3 Nursing homes and the transfer of medical information

As in hospitals, the patients first have an admission conversation with a nurse. Again, nurses ask questions about the condition of the patient and registers information like for example name, social security number, date of birth, gender, address, home medication information, (tentative) diagnosis, and allergies. Like hospitals, there are two written dossiers: one paper version and one computerised version. When patients are transported with ambulance to nursing homes, again, the written transfer is the ambulance copy. Like in hospital, ambulance nurses will usually do a verbal carry-over to nurses of the nursing home.

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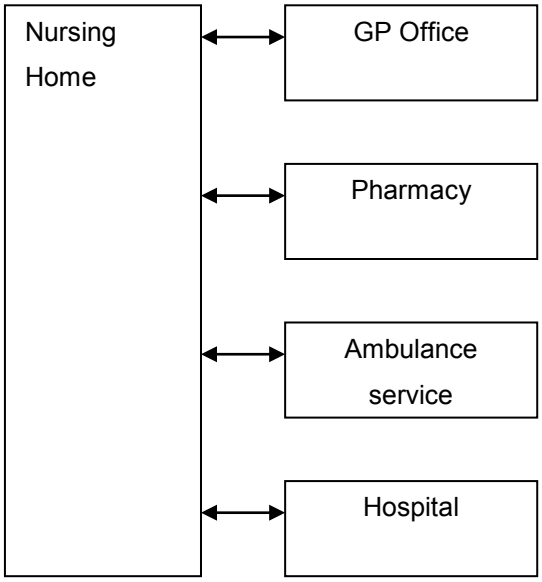
[30] In nursing homes, persons who are admitted are called clients. To avoid confusion, here the term *patients* is used.
[31] In Dutch '*verpleeghuis'.*
[32] In Dutch '*verzorgingstehuis'.*
[33] www.zorgatlas.nl.

Within the chain researched, professionals working in nursing homes have exchange of medical information with professionals from GP offices, pharmacies, ambulance service, and hospital (see Fig. 2.6).

Fig. 2.6: Exchange of Medical Information between Nursing Homes and Other Links



2.2.6 Back home

When patients are discharged from for example a hospital or nursing home, the GP is responsible again, although sometimes partly. This depends on the continuance of the treatment started by the specialist. If the patient's illness continues, specialists mostly will monitor that condition. GPs are responsible for the overall care; specialists are responsible for the special care of the special condition. Specialists for example prescribe medication for the special condition. Therefore, GPs and/or pharmacies retrieve discharge information from the organisation that discharged the patient. Mostly, this discharge information still at first is handwritten. Sometimes over a period, GPs receive the official discharge letter. This information sometimes also is available in the computer system of the hospital. Most GPs in this research were able to retrieve information electronically from the hospital system.

In sum, the present research focused on patients' journey from general practices to hospital and from hospital to nursing homes or back to the patients' own home. I have included an ambulance service because, for various reasons, some patients are unable to use their own transportation. Many patients also use medication (temporarily), so pharmacies are included as well (see also page 26, Fig.2.1). The choice of this route is arbitrary, but would appear to be the most comprehensive one, to the best of our ability to conduct the research.

To be able to answer the research questions (see chapter one), I used an explorative approach, gathering quantitative, as well as qualitative data. In the next paragraph I will elaborate some more on the two methods used. In the researched chain, there is centre for patient safety (CPS). Central to this centre is patient safety within the chain. Professionals from the centre organise for example meetings, give education, and provide background

information for professionals from different organisations within the chain. The researched organisations in the chain are all affiliated with this centre. In the next paragraph is explained how the data is gathered, using the centre as the starting point for my research.

2.3 The present research: Methods

To answer the research questions, I have used a multi-method, combining quantitative and qualitative data collection. The strength of this triangulation is that:"... *it allows researchers to be more confident of their results"* (Jick, 1979, p. 608). The combination of methods is used to answer the overall research question: Is there inter-organisational knowledge sharing between professionals in the health care chain and does this communication results (goal) in double or even triple loop learning? (RQ5)

Quantitative data collection from incident-reporting systems is used to examine behaviour, to examine what professionals' actual report in the formal systems. Secondly, qualitative data can help design the interview protocol for the qualitative data collection.

Qualitative data collection is used to explore opinions, to explore how professionals perceive communication about (near-) incidents in order to learn in the chain. As Tourish and Hargie state, qualitative research gives the opportunity of getting new unexpected information (Tourish&Hargie, 2004). Another reason for choosing qualitative in-depth interviews is the fact that talking about things that go wrong for many people is sensitive. Normally, qualitative methods have a greater risk of getting socially desirable answers. However, because of the sensitiveness of the subject when using quantitative methods this risk is even greater (Silverman, 2005). To avoid socially desirable answers the anonymity of the respondents was also stressed. Thirdly, a face-to-face interview has the advantage of interaction and of 'going into the subject'. Qualitative methods can obtain specific detailed information. By not putting the respondents in a straitjacket of a structured questionnaire with fixed answers, respondents can talk openly about their thoughts and feelings (Bradley, Curry, & Devers, 2007). We therefore have underlined that the interviewers had an open attitude and did not show any (non-) verbal judgment regarding answers of the respondents.

2.4 Quantitative data collection

2.4.1 Procedure

In the first phase, I explored data from incident reporting systems in one particular region of The Netherlands. Three organisations delivered these data: a hospital, an out-of-hours service (out-of-hours service), and an ambulance service. This formal incident reporting system was developed explicitly for learning within the organisation. The main goal for the organisations was to analyse (near-) incidents within the department and / or within the organisation.

2.4.2 Analyses

The quantitative data was electronic as well as written data. For analysis purposes, these data were transferred to Statistical Package for the Social Sciences (SPSS, Version XX). Central to the analysis of the quantitative data is RQ1: What is the content of the message that professionals talk about, when they share information about (near-) incidents, and with whom (audience) do they communicate in the health care chain? Data were analysed on knowledge sharing within as well as between organisations (See also chapter 1, intra- and inter contextual knowledge sharing). It was explored if existing incident report systems are suitable for inter contextual knowledge sharing too (see chapter 3). The used incidents are numbered using a notation, as in the example OIRS:112. OIRS stands for Out-of-hours Incident Reporting System, AIRS for Ambulance Incident Reporting System, and HIRS for Hospital Incident Reporting System. The number 112 is the incident reporting number in SPSS.

2.4.3 Research sample

The data were obtained from three organisations over a period from June 2006 to December 2007. From the out-of-hours service, 16 reported incidents were used, compared with 230 incidents from the ambulance service and 2277 reported incidents from the hospital. Taking the size of the three organisations in account, there are respectively 0.1; 1.1; and 0.4 reported (near-) incidents per professional per year in out-of-hours service, ambulance service and hospital. Thus in the ambulance service the most (near-) incidents per professional were reported and in the out-of-hours service professionals reported the least

(near-) incidents. In chapter three, I take a closer look at these differences in the scale of reporting.

2.4.4 Limitations

The quantitative data that is used from the out-of-hours service, ambulance service, and hospital paint a picture, only for some links of the chain. For practical reasons, other links are left out of this analysis. Therefore, we can only draw conclusions about the actual behaviour of these three links, and not the whole chain. Secondly, with quantitative data, we can describe in figures how many professionals report, what they report and to whom they have communicated about the (near-) incidents. Quantitative data is not very suitable to explore why professionals do or do not communicate about (near-) incidents. To explore in-depth the reasons professionals have to communicate, qualitative data collection is used.

2.5 Qualitative data collection

Qualitative data collection is used to explore how professionals experience communication about (near-) incidents within the chain to increase understanding. To conduct a semi-structured interview protocol, I used both information from the incident reporting systems and theoretical insights described in chapter one (for the semi-structured interview protocol, see Appendix 2).

2.5.1 Procedure

The semi-structured interview starts with some background information about the respondent (e.g. profession, department, experience). The interviewer then started by asking the respondents to explain how the information transfer between different organisations took place. From that angle, the interviewer zoomed in on (near-) incidents. Respondents elaborated about (near-) incidents within as well as between organisations. Next, communication about these (near-) incidents was a topic. Respondents were asked with whom they talked about (near-) incidents. Did respondents perceive tolerance and / or decisiveness when talking about (near-) incidents, within as well as between organisations (RQ2, see Chapter 4)? Respondents talked about the (near-) incident characteristics and explained if and how they made risk assessments (RQ3, see Chapter 5). Finally, they talked about and the way they attributed causes (RQ4, see Chapter 6).

The interviewers elaborated with the respondents about the way they handled (near-) incidents and if so, with whom they discussed it, and in particular if communication extended outside the department or the organisation. The central theme in the interviews was communication regarding (near-) incidents; who said what to whom with what effect, i.e., communication between departments and between organisations. We talked about real critical incidents that occur during a task performance. Professionals were asked to give a definition of the term (near-) incident. The interviewers used the term incident and near incident. The term adverse event was only used if respondents indicated that an incident had resulted in actual harm. During the interviews, most professionals quickly associated a (near-) incident with the word error. As stated before, communication is associated with the fear of blaming and shaming. To avoid any potential negative connotations associated with the word error, the interviewer stressed that the research did not aim to discover causes but to gain an insight into the communication patterns of (near-) incidents, adverse events, errors, mistakes, and failures. We therefore use the term (near-) incident. The term adverse event is only used when a respondent did so. We used error if a respondent used ‘fout’, mistake if a respondent used ‘vergissing’ and failure if a respondent used ‘falen’. Although the focus was the (potential) harm of the *patient*, ambulance personnel also mentioned harm inflicted on *themselves* by patients or bystanders. These incidents are outside the scope of my research and therefore excluded[34].

A team of students from the university helped to carry out the interviews. First, we discussed the interview protocol in three different meetings. Secondly, I carried out most interviews together with one student. At the end, some interviews were carried out by the students themselves.

2.5.2 Analyses

All interviews were audio-recorded and written out completely. In the qualitative data analysis software Atlas.ti, these digital text-files were imported. This program makes it easy to code the interviews in different ways. I used grounded theory approach to uncover perceptions and experiences regarding communication about (near-) incidents (Glaser, 1999). Goal of this inductive method is not to 'prove' existing theories, but to uncover new insights. We therefore combined two analysis styles, the template (theory-based) analysis style (using

[34]See for research regarding harm inflicted on ambulance personnel for example De Koning, 2010.

theory to guide the interviews), and the immersion/crystallisation (intuitive) analysis style (using data to amplify theory).

The first analysis style, the template (theory-based) analysis style: *"text is organised according to pre-existing theoretical or logical categories, to provide new descriptions of previously known phenomena"* (Malterud, 2001, p. 486). From theory, the concepts tolerance and decisiveness are seen as conditions of organisational culture that stimulate communication about (near-) incidents in order to learn. In the present research, professionals not only described how they perceived tolerance and decisiveness within their own organisations, they talked about how they perceived other organisations in the health care chain too (see chapter 4).

The second analysis style, the immersion/crystallisation (intuitive) analysis style, is used when coding the data in Atlas.ti. Where on the one hand codes derived from theoretical concepts (theory-based analysis style), on the other hand data was used to get new insights. Within the immersion/crystallisation (intuitive) analysis style, text is examined thoroughly. By doing so, important aspects are crystallised and data reorganised to distinguish its meaning. For example, the concept of autonomy is an aspect that was uncovered that way. During the coding process, data 'revealed' that professional autonomy played a part in communication about (near-) incidents. In chapter six I describe that, despite less tolerant and non-decisive organisational cultures, some professional groups do communicate with other links in the chain. They do so, because they need other professionals to solve the problem that emerged from the (near-) incident. These professional groups have less professional autonomy. Thus, findings in the data during coding amplify theories of communication about (near-) incidents. Two researchers coded all interviews. This double coding method is used to increase interrater-reliability. In the next chapters, quotes are used to underline findings. The used quotes are numbered using a notation, as in the example R22:221. This example stands for respondent (R) number 22 and line 221 in Atlas.ti.

2.5.3 Sample qualitative data

Eighty-eight in-depth interviews were conducted from April to August 2009. The sample of eighty-eight respondents was drawn from different links in the health care chain of one and the same region in the Netherlands. From these eighty-eight professionals interviewed, 41 professionals are male, 47 are female. At four different general practices, five professionals were interviewed (5 GPs). At nine pharmacies, sixteen professionals were interviewed (9 pharmacists, 7 pharmacist assistants). Within one ambulance service, seventeen

professionals were interviewed (8 ambulance nurses, 3 ambulance drivers, 3 house call team assistants, and 3 centralists). Within one hospital, thirty-four professionals were interviewed (9 ER nurses, 7 residents[35], 9 nurses from a surgical ward, 7 specialists, 1 pharmacist). At four nursing homes, seventeen professionals were interviewed (9 nurses, 8 nursing home physicians) (See Appendix 3).

In line with the qualitative method, I used saturation of answers to decide if I had to interview more of the same type of professionals. After a while, saturation occurs when interviewing different professionals of the same professional group does not yield new answers. When this saturation appeared, no more professionals of the same group were interviewed. Important in that case was the ability of the questioner to get all the answers possible. I believe I have obtained the maximum possible, given the questions asked and the period of the data collection. Thus, I present a variegation of patterns concerning communication about (near-) incidents in the health care chain.

Respondents were selected through snowball sampling. The first respondents that were interviewed were contacts of the centre for patient safety (CPS). Through contacts of this centre, we were introduced in the different links of the health care chain. Professionals were asked if they were willing to participate in a study about communication and patient safety in the chain. Like a snowball, the sample grew by asking the respondents if they new colleagues who wanted to participate in the present research.

Respondents could choose the most suitable time, during working hours or leisure time, and the most suitable place, in the organisation or at home. Almost all interviews (84) took place during working hours. At their own request, for practical reasons, three ambulance nurses and one general practitioner were interviewed at their homes. The interviews took place without the presence of third parties to avoid external influences.

2.5.4 Limitations

The present study excluded patients because the aim is to get insights in the process of inter-organisational learning between different professionals. Because of their particular nature, we also excluded organisations for the (mentally) handicapped and organisations that provide home care. Within the chain, there are limitations in the examined links. Patients in a hospital are often transferred to an operational room, a holding, and sometimes an intensive

[35]Physicians who finished medical school, and who may or may not be in training to become a medical specialist.

care unit. I was forced to exclude these professionals from my research because there was no commitment to participate. Although the manager of the operation room repeatedly asked for cooperation, there were no volunteers.

Within the approached sample, fifteen respondents would not or could not participate. The most common reason was lack of time. Although we offered different times, it sometimes was not possible to make an appointment. Looking at the professions, we could not detect any pattern in rejections. During the interviews, there was one mishap. A physician walked out halfway during the interview. The reason he stated was that he felt the interviewer did not have the right medical knowledge to take the interview. Later on, we tried to talk him around but he kept refusing. After playing back this interview, the impression arose that the physician did not want to talk about (near-) incidents. He raised his voice and walked out immediately after the interviewer asked him about (near-) incidents.The voluntary participation of respondents and the use of snowball sampling are not restrictive because the research does not aim to yield insight into the frequencies of communication patterns. The main goal is to reveal communication patterns that do occur in the chain between different professionals.

2.6 Summary

In this chapter I argued that the complexity of health care involves risks beyond the own organisation, making it necessary to view learning and communication as chain-wide phenomena. The health care system was introduced: the different links in the chain. Finally, the methods used in this research, both quantitative and qualitative data collection, were described. In the next chapter, communication patterns regarding (near-) incidents in incident reporting systems are explored, based on the quantitative data collection, explored. What can incident-reporting systems reveal?

3 Incident-reporting systems: An exploration

3.1 Introduction

Central to this chapter is the formal way to communicate about (near-) incidents: the incident-reporting system. First, I explored which professionals (source) report (near-) incidents in the formal system. Next, the focus is on the context; the transfer of medical information in the chain; what kind of (near-) incidents happen during the transfer of medical information? Because this thesis is about communication and learning, explored is to whom professionals report, having communicated about these (near-) incidents (audience). Although the reporting systems are intentionally developed for intra-organisational knowledge sharing, also explored is if there are reported (near-) incidents that are related to other links in the chain. Finally, a first attempt is made to explore within the reporting systems information about the reasons (goal) professionals have to report (near-) incidents. Before describing the results, I begin with the theoretical insights and the methods used.

3.2 Theoretical frame

3.2.1 Error handling: Incident-reporting systems

Talking about (near-) incidents can lead to shared knowledge and improved organisational performance (Van Dyck et al., 2005; Homsma et al., 2009; Van Dyck et al., 2010). Learning can be promoted if data about (near-) incidents are analysed and information is used to learn (Barach& Small, 2000; Kaplan &Fastman 2003; Legemaate, 2006;Legemaate et al., 2007; Leape, Berwick, Clancy, Conway, Gluck, Guest, et al., 2009). According to these theorists, incident-reporting systems should be non-punitive and voluntary; the main goal is examining (near-) incidents to learn for the future, to create an ‘organisational memory’ (Donaldson, 2002).

Leape and others have theorised about the way the health care should transform to a safe environment. They state that transparency is the first of five transforming concepts: “*transparency is a precondition to safety*” (Leape et al., 2009, p. 425). Caregivers need to share information about (near-) incidents among other caregivers, between organisations, with the public and not in the least with the patient involved. One of the methods to create transparency is the reporting of (near-) incidents in a standardised system.

The reporting of (near-) incidents in a system is a formal communication event. What people discuss (*content* of message) depends on the factors *context,receiver* (audience), and *goal* (Lingard, 2004). In this case, the *context* is the transfer of medical information.

3.2.2 The context: Transfer of medical information

In 2004, there was a large-scale study among 74.000 Dutch individuals. They were asked if they were confronted with errors made by medical professionals, as a consequence of the exchange of medical information. Based on the outcomes, the researchers proposed that 6.1 % of all Dutchmen above 18 year were likely to have experienced an error of that kind (Foekema& Hendrix, 2004). In the second phase of their research, over 600 respondents were questioned about these errors in the exchange of medical information. Forty-four percent indicated they received the *wrong* medication. Twenty-four percent had the *wrong* operation. The respondents indicated that, in their eyes, what had happened was due to wrong exchange of medical information. Twenty-five percent could not be treated because information was *missing*. Although this study only focused on patients' experiences, and not on the experiences of medical professionals, it was the first study in The Netherlands that gave an indication of the percentage of errors in the transfer of medical information, with potentially harmful consequences for the patients.

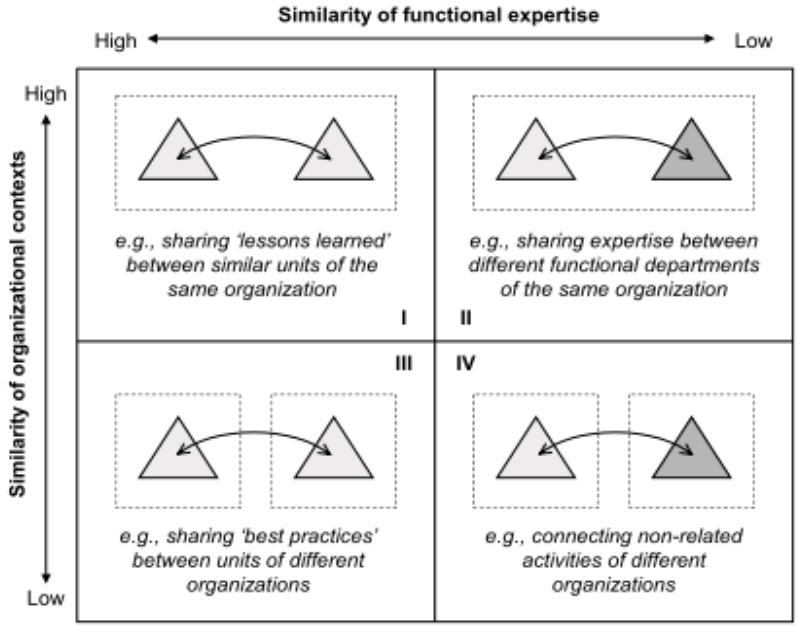
In the present study, I explored the perceptions of health care professionals; what they categorise as (near-) incidents, with a focus on the transfer of medical information. To do so, I have categorised these (near-) incidents in information that was *missing*, *contradictory,* or *wrong* (Greenberg, 2007). An example of *missing* information is an admission form that is partly completed, or missing altogether. An example of *contradictory* information is information about medication that on paper differs from the given verbal instructions. *Wrong* information, for example, is information that is not intended for patient X but for patient Y. The above examples can refer to (near-) incidents about information that is shared within as well as between different organisations in the chain. The incident-reporting systems are explored to see if (near) incidents are communicated with the parties involved (receivers).

3.2.3 Communication: intra- and inter contextual knowledge sharing

From the files from the incident-reporting system, I have examined with whom professionals indicated they have communicated about (near-) incidents. Incident-reporting systems are designed to create an 'organisational memory'. Incident-reporting systems are formal means

to share knowledge about (near-) incidents. As explained in chapter 1, knowledge sharing can happen within different contexts. Professionals can share knowledge between similar (I) and/or different units (II) within the organisation (intra-contextual knowledge sharing), or between similar (III) and different units (IV) between different organisations (inter-contextual knowledge sharing, Boer, 2005, see Fig. 3.1).

Fig. 3.1: Intra- and Inter Contextual Knowledge Sharing (Boer, 2005)



I have examined if communication took place within the organisation, i.e., intra-contextual knowledge sharing. Because the central theme of this thesis is the health care system as a whole, I have also explored if the incident-reporting systems indicate that communication also takes place between different organisations, i.e., inter-contextual knowledge sharing.

3.2.4 Risk assessment

Learning depends on the consequences of an incident. Especially incidents with serious negative outcomes have a positive influence on learning (e.g. Cannon & Edmondson, 2005; Homsma, 2007; Homsma et al., 2009). In order to learn, one has to communicate about the (near-) incident. The question is therefore if professionals communicate more about incidents when the incidents are assessed as high risk.

Within organisations, professionals can make risk assessments, using a semi quantitative instrument: the risk assessment matrix (Markowski&Mannan, 2008). This matrix is a subjective tool, based on estimations made by the professionals themselves. The reporters

of (near-) incidents give estimations on two dimensions: severity of consequences, and likelihood of repetition. In risk matrices, used in health care organisations, both dimensions are subdivided into five categories.

Severity of consequences is subdivided in a five-category scale. In the first category, the consequences are negligible: the patient has no injury or discomfort and there are hardly any extra costs (negligible). In the second category, the patient has small injury or discomfort; there is little extra treatment necessary with little extra costs (minor). In the third category, the patient has serious temporary injury, there is delay of treatment, and the patient has to stay in hospital longer (moderate). In category four, the injuries are permanent, again with a delay of the treatment and prolonged hospitalisation (major). In the fifth category, the patient dies (severe, see Table 3.2).

Table 3.2: Severity of Consequences

Severity of consequences	Description
Severe	patient dies, many extra costs are made
Major	serious permanent injury, prolonged hospitalisation, possible extra costs
Moderate	serious temporary injury, prolonged hospitalisation, delay of the treatment, possible extra costs
Minor	small injury or discomfort, little extra treatment, no prolonged hospitalisation, little extra costs
Negligible	no injury or discomfort, hardly any extra costs

Likelihood of repetition is also subdivided in a five-category scale. Professionals rate if it is almost certain that the (near-) incident will happen again within hours or days (almost certain), or within several weeks (likely), or within several months (possible). When professionals indicate is likely to happen not more than once every 1-5 years, it is rated unlikely. If it happens less than once every five years, it is rated rare (see Table 3.3 on the next page).

Table 3.3: Likelihood of Repetition

Likelihood of repetition	Description
Almost certain	Likely to happen within hours or days
Likely	Likely to happen within several weeks
Possible	Likely to happen within several months
Unlikely	Likely to happen not more than once every 1-5 years
Rare	Repetition unlikely (less than once every 1-5 years)

When professionals have rated severity and likelihood of repetition, one can assess the risk of the (near-) incident that has happened. So based on the two ratings severity and likelihood of repetition, the rating risk level can be defined: extreme (4), high (3), moderate (2), or low (1) risk (see Chapter 1 and Table 3.4).

Table 3.4: Risk Assessment Matrix: Consequences and Likelihood

Consequences →	Severe	Major	Moderate	Minor	Negligible
Likelihood of repetition ↓					
Almost certain	4	4	3	2	2
Likely	4	4	3	2	2
Possible	4	3	3	2	1
Unlikely	4	3	2	1	1
Rare	3	2	2	1	1

Based on the risk level organisations can also decide how to manage a (near-) incident. For example, organisations are obliged by law to report extreme (4) risk incidents to the HCI. In the present research, I have examined the kind of risk assessments professionals make. Examined is what kind of (near-) incidents professionals report in the formal incident-reporting systems. Secondly, explored is if risk level rating affects the way communication takes place within the organisation, between similar (I) and/or different units (II), e.g. intra contextual knowledge sharing, or between different organisations, between similar (III) and different units (IV) e.g. inter contextual knowledge sharing.

3.3 Methods

Quantitative data of (near-) incident reports were used to reveal who (source) talked with whom (receiver) about what (content) when a (near-) incident is reported in the incident-reporting system. Within the chain, three organisations delivered data from their individual incident-reporting systems: an out-of-hours service (16 reports), an ambulance service (230 reports), and a hospital (2,277 reports).

The out-of-hours service delivered reports on paper; both the ambulance service and hospital delivered digital reports. For analysis purposes, the data of all three incident-reporting systems were transferred to computer software for quantitative data analysis: Statistical Package for the Social Sciences (SPSS). The data then was translated to English. In both out-of-hours service and hospital, risk assessment was analysed, within the reporting system of the ambulance service there was no information available on this topic.

3.3.1 Frequency of (near-) incidents

Reported incidents from June 2006 until December 2007 were the subject of analysis. During this time, the hospital introduced the digital system; professionals reported digitally as well as on paper. The reports on paper were excluded from our research for practical reasons. Although not each individual may be equally experienced in using computers, there were no indications to expect differential reporting due to the used means of communication (paper or digital). Only when the comparison is made between the three organisations to calculate the average per professional, the paper reports of hospital were included.

3.3.2 Communication source

Although the reporting systems can be used anonymously, in hospital it was possible to enter the reporter's name. In the analyses, I assigned a unique number to each name, and these numbers were used in specific analyses about the communication source. When reporters did not give a name, they entered email addresses of departments. These were excluded from the specific analyses about the source of communication.

3.3.3 Communication within and between organisations

All (near-) incidents were categorised into three groups: something that happened *within* one *department*; between *differentdepartments* in one organisation; or between *differentorganisations*. (Near-) incidents happening during a consult of the GP with patients at home (during evenings and weekends) or in the out-of-hours service are categorised within the department. When for example both the GP and the centralist were involved, this is categorised as between departments. When (near-) incidents happened and other organisations were involved (the patients' own GP, ambulance service, hospital, nursing home, RIAGG[36]), the incidents are categorised as between organisations, between links in the chain. Central to an ambulance service is the transfer of patients, between different links in the chain. However, not all reports happen between organisations. Reports that for example had to do with failing equipment or something that happened in the ambulance are categorised as within one department. When it happened between the ambulance and the centralist, this is coded as between departments. When other organisations were involved, (the patients' own GP, out-of-hours service, hospital, nursing home, RIAGG), the incidents are categorised as between organisations, between links in the chain.

In hospital, (near-) incidents also happened within single departments, for example on a ward or ER. When the (near-) incident happened and for example both ER and ward were involved, it is categorised as between departments. Like the out-of-hours service and ambulance service, (near-) incidents were other organisations were involved are categorised as between organisations.

3.3.4 Receiver: Communication with different professional groups

Within the three incident-reporting systems it is examined with whom (audience) professionals talked to about (near-) incidents. It should be noted that absence of communication in reporting systems does not mean that professionals did not communicate to parties face to face about the (near-) incidents. Conclusions are restricted to the communication that is reported within the incident-reporting system. Analysed is with which professional groups professionals indicate they have communicated. When (near-) incidents happen between departments and or organisations, it is investigated if these (near-) incidents are communicated to other parties of these other links in the chain.

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[36] in Dutch'*Regionale Instelling Ambulante Geestelijke Gezondheidszorg'*.

The out-of-hours service, compared to hospital and ambulance service, in this case is an ‘odd’ organisation. The out-of-hours service is essentially a replacement for GPs on evenings and weekends. Unlike the other two organisations, most professionals in the out-of-hours service are not employed there. GPs are mostly free entrepreneurs, affiliated to the out-of-hours service, 'doctors on call'. Ambulance professionals too perform duties; are not employed within the out-of-hours service. When communication takes place between professionals within the out-of-hours service, for example between a GP *on call* and the manager from the out-of-hours service, it is categorised as int***ra***-contextual knowledge sharing. When communication takes place between professionals, for example between the GP on duty and GPs or ambulance personnel, who at the time of the (near-) incident not are working within the out-of-hours service, it is categorised as int***er***-contextual knowledge sharing. For the other two organisations, ambulance service and hospital, communication that takes place with professionals within the organisation is categorised as int***ra***-contextual knowledge sharing. Communication with professionals of other organisations is categorised as int***er***-contextual knowledge sharing.

3.3.5 Risk assessment matrix

Both hospital and the out-of-hours service use the risk assessment matrix to make an assessment how to deal with the reported (near-) incident. Ambulance service does not use this system, and is therefore not included in the analysis. Because of the low amount of (near-) incidents from the out-of-hours service (16), the rating risk levels extreme (4) and high (3) are combined into extreme-high risk. The rating risk levels moderate (2) and low (1) are combined into low-moderate risk.

3.3.6 Limitations

Most of the investigated organisations of this thesis have developed a system to report. Some organisations, like GP offices and most pharmacies in our research used simple notebooks where professionals can write down the (near-) incidents. None of the GPs in our research had a standardised reporting system. One GP called it the ‘things-that-can-be-better’ notebook. Apart from incidents, this notebook includes anything individuals want to see changed. Because the notebooks were very different and were used irregularly, I decided not to analyse them. Instead I took a closer look at the (near-) incidents reported in one of the out-of-hours services that all GPs of this research were affiliated with.

Although the pharmacies used written forms to report, during the period, we conducted the research; in none of the pharmacies, there was an overall standardised incident-reporting system in place, also a reason to exclude pharmacies.

In the nursing homes too, handwritten forms were used. Since 2007, different digital reporting systems are available. The nursing homes all have their own system, with different types of issues to report. Analysis of (near-) incidents happens centrally as well as on a departmental level. Because there was not 'one' system, these reporting systems were not analysed.

Presented are thus the results from the incident-reporting systems of the out-of-hours service, the ambulance service, and hospital. In the out-of-hours service, two reports were left out, because they disappeared. Nobody in the out-of-hours service knew what had happened with the reports. In the incident-reporting system of the ambulance service, beside patient related (near-) incidents, 15 reports were made about the aggressive way personnel were approached and one incident where a needle that was used to inject the patient also injured the ambulance nurse. Incidents regarding aggression towards ambulance personnel were left out of the analysis as I concentrated on (near-) incidents concerning patients. Because the digital hospital incident-reporting system was just introduced, there were 315 reports that were used for testing, and therefore deleted.

3.4 Results

In this research, we analysed the incident-reporting systems of three organisations: out-of-hours service, ambulance service, and hospital. These systems did not fall out of the sky, but evolved over time. Therefore, before describing the results, I describe broadly the history of incident-reporting systems.

3.4.1 History of incident-reporting systems within the chain

Reporting (near-) incidents in health care in the Netherlands is in practice since the seventies (De Bekker, 2006). At that time, a code of practice was drawn up, describing how to handle things after an error or accident involving a patient. Since 1974, the first committees for

FONA[37]developed, which reported errors, accidents and (near-) accidents. Professionals in health care used this form to report when actual harm was done to a patient. By law, in 1977, and later in 1984, reporting of errors and accidents became a legal obligation, first for hospitals. From 1984, the term incident was used and the name of the committee changed in a reporting committee for incidents in patient care: MIP. Since 1996, the quality act for care institutions is in force dictates every health care institution to register data on incidents systematically. Since 2008, all hospitals in the Netherlands are obliged to have an incident-reporting system as part of a bigger safety management system[38].

Over time, professionals increasingly acknowledged that they could learn from things that go wrong. The hospital in this thesis became a 'forerunner', especially the cluster of infant care. On the neonatal intensive care unit, since 2002, professionals were asked to report everything that went differently than planned. They developed an incident-reporting form, and in three years time, these reports increased by ± 30 a year (105 in 2002; 164 in 2003; 186 in 2004; Wagner & de Bruijne, 2007). The reporting system spread in hospital like a snowball, starting with those clusters and wards that had a positive attitude towards reporting and were willing to try something new. Over time, the wards and clusters that did not report became a minority. Since 2006, the hospital as a whole has a digital reporting system.

Increasingly, the main goal of the incident-reporting system became learning. To avoid 'blaming the reporter', systems were developed to report anonymously. The different systems in our health care chain vary with regard to the way to report them. The smaller organisations like GPs and pharmacies have verbal and/or handwritten systems. In the larger organisations (hospital, ambulance service, and nursing homes), the systems are mainly electronic. All organisations in our research guaranteed anonymity, although, if someone is willing, handwritten information can be traced down to the source. Certainly verbal reporting (used in some pharmacies) is not anonymous. In hospital and ambulance service, the reporter can leave an email address, but not for analysis purposes. The email address is mainly used so the reporting committee can give feedback, or to ask complementary questions. In the health care chain, over time different systems are developed, which vary with regard to the reported issues as well as the way to report them. In the next paragraphs', I will focus on the out-of-hours service, ambulance service, and hospital.

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[37]This abbreviation is a mixture of Dutch and English'*Fouten(errors), Ongevallen(accidents) en Near Accidents'*.
[38]www.vmszorg.nl.

3.4.2 Frequency of (near) incidents

The smallest of the three organisations is the out-of-hours service, with ± 155 professionals employed and affiliated (± 30 practice assistants and managers, and ±125 general practitioners / substitutes). In 2007, the out-of-hours service had 24,188 consults by telephone; 29,149 consultations at the service; and 7,137 house calls. From June 2006 until December 2007, they reported 16 (near-) incidents.

A little bit larger is the ambulance service, with ± 200 professionals. In 2007, these professionals were responsible for ± 25,000 ambulance transports per year. From June 2006 until December 2007, they reported 230 (near-) incidents.

The researched hospital, with ± 5,900 professionals (whereof ±1,500 nurses and 250 specialists) is the largest organisation of the three. In 2007, there were 475,000 outpatient visits and 40,000 hospital admissions. They reported approximately 9,000 (near) incidents (2,277 digital reports and almost 7,000 paper reports).

Taking in account the difference in size of organisations, professionals affiliated with the out-of-hours service reported the least (near-) incidents (respectively 0.1; 1.1; and 1.5 reported (near-) incidents per professional per year in out-of-hours service, ambulance service and hospital, see Table 3.5).

Table 3.5: Organisation Size and Absolute and Relative Numbers of Reported (Near-) Incidents

	Out-of-hours service	Ambulance Service	Hospital
Number of professionals	155	203	5,900
(Near-) Incident reports	16	230	9,000[1]
Average report per professional	0.1	1.1	1.5

Here the total of all reports (paper as well as digital), in the next tables digital reports (2,277) are used

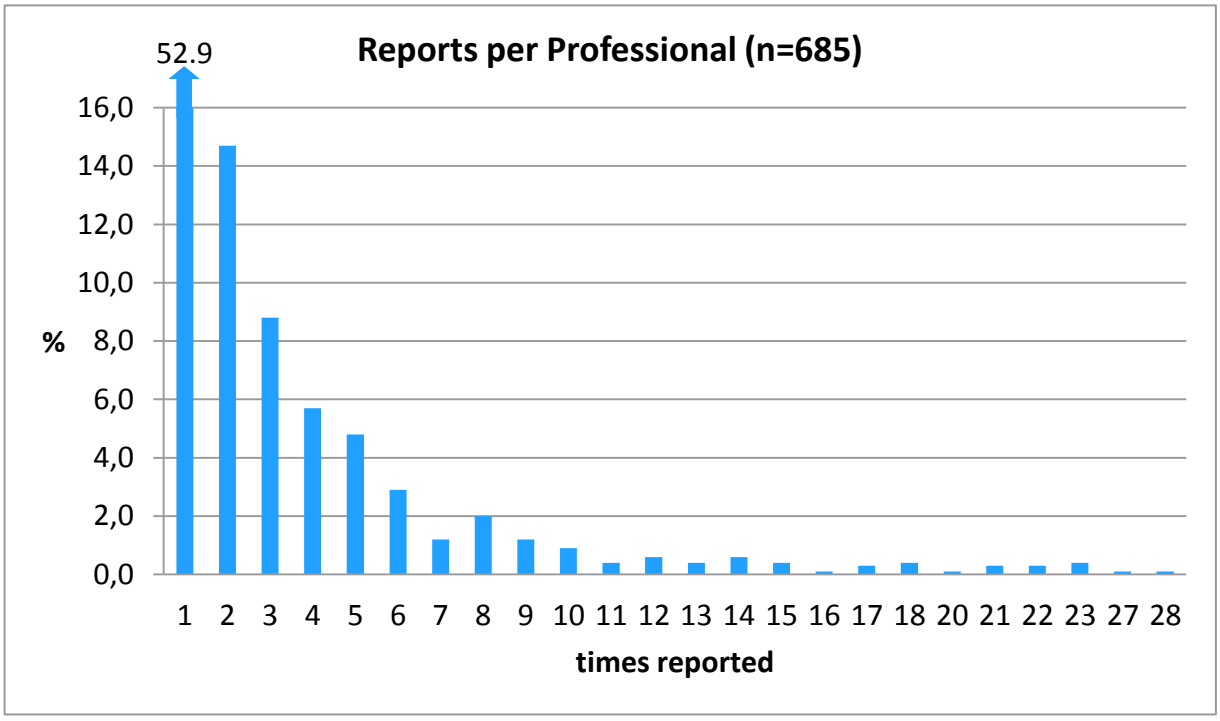
3.4.3 Communication source

Although individuals could report anonymously, in the digital reports of the hospital it was possible to leave a name and email address. Most professionals did so, they filled in their names (2,041 reports, 89.6%), or filled in a department email address (236, 10.4%). In the first one and a half year since the introduction of the digital system, 2,041 reports were made by 685 different professionals that are 11.6% from all professionals in hospital (685 from 5,900 professionals).

It is important that many professionals in the organisation support the system in order to learn from (near-) incidents. When only few professionals support the system, it is vulnerable. If they leave, a system can collapse. An incident-reporting system that is only filled by 'professional' reporters can undermine the learning effect. The digital reporting in the hospital gives indications that reporting is supported by several professionals.

On average, three (near-) incidents are reported per professional (*M*= 2.98, *SD* = 3.82201). The standard deviation from the mean is high; Almost 53.0% (363) professionals reported one (near-) incident digital, 14.7% reported two (near) incidents, and only 8.9% reported eight times or more, with a maximum of 28 (near-) incidents, reported by one professional over a period of one and a half year (see Fig. 3.6 and Appendix 4; Table 4.1).

Fig. 3.6: Reports per Professional in Hospital

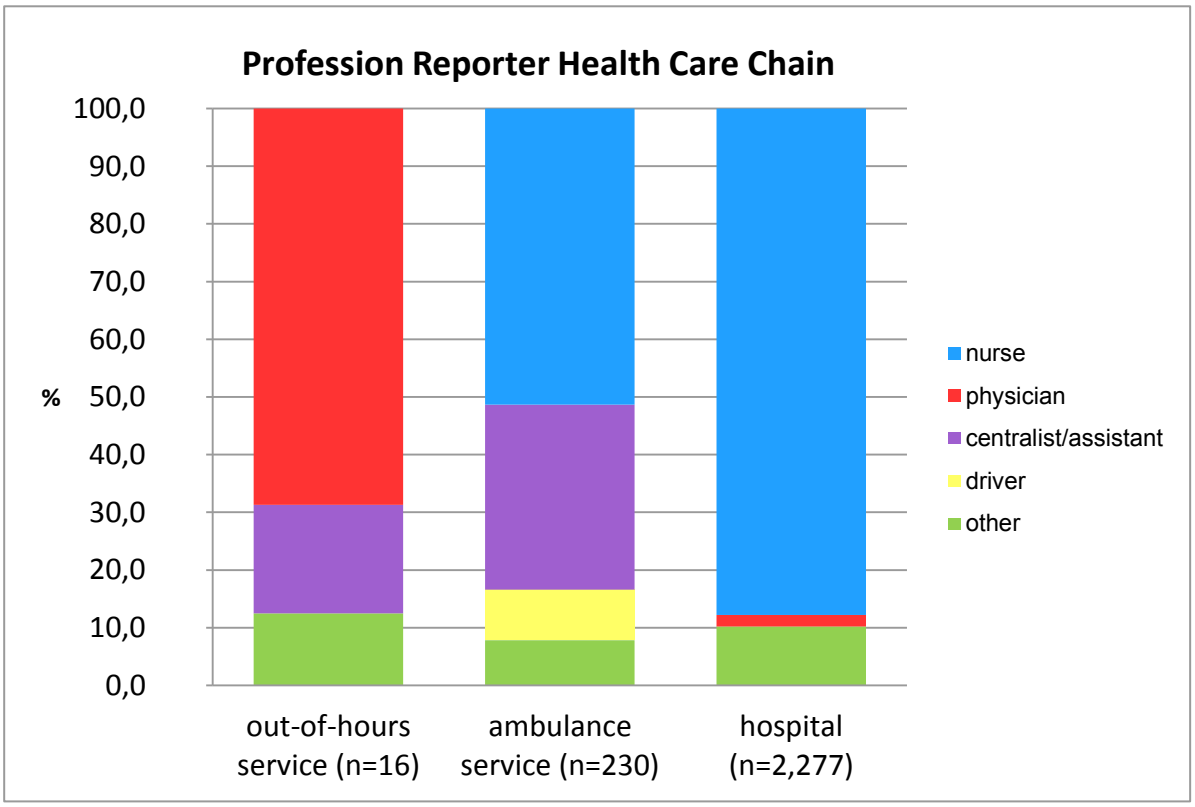


It is difficult to say how many reports one should expect as being 'normal'. (Near-) incidents happen, and a system with view reports probably does not work. On the other hand, to celebrate high amounts of reports is also a bit harsh, as (near-) incidents cause harm for patients. Based on the analysed reports, in the future, when digital reporting is the only means, with an average of almost three reports per person per year, one can estimate around 17,700 digital reports of (near-) incidents.

In all three incident-reporting systems, professionals could indicate their profession. What stands out in the examined cases is the great variation in use of the incident-reporting

system across different professional groups within each organisation (see Fig. 3.7 and Appendix 5; Table 4.2).

Fig.3.7: Profession Reporter Health Care Chain



Within the out-of-hours service, GPs reported the most (near-) incidents, not surprisingly, as being proportionally the largest group in the out-of-hours service (125 from the 155 professionals, 68.8% of the reports). However, with these small numbers of incidents (16) it is impossible to draw strong conclusions.

Although in the ambulance service nurses and drivers are equal in numbers (85 professionals in each group), the nurses reported almost five times more often (52.7% reports by ambulance nurses compared to 8.9% reports by ambulance drivers).

As proportionally the largest group in hospital (± 1,500), nurses obviously are accountable for the greater part of the incident reports (87.8% of the reports). Physicians, compared proportionally with nurses, report much less. For every physician, 0.18 (near-) incident is reported, as for every nurse, 1.33 (near-) incident is reported.

Hence, by comparison, in ambulance service as well as hospital, nurses use the system more frequently than other professionals do in their own organisations. Again, when only

some groups support the system, and other professional groups proportionally underreport, what is the learning effect for those professional groups?

3.4.4 Communication within and between organisations

From the reported (near-) incidents, in all three organisations, more than half concerned the exchange of medical information (respectively 50.0; 53.0; and 65.0% in out-of-hours service, ambulance service, and hospital, see Table 3.8).

Table 3.8: Reported (Near-) Incidents Content Transfer of Medical Information

	Out-of-hours Service	Ambulance Service	Hospital
(Near-) Incident Reports	16	230	2,277
Transfer of Medical Information	8	122	1,481
%	50.0%	53.0%	65.0%

When we take a closer look at the type of (near-) incidents concerning the transfer of medical information, we see a different kind of (near-) incidents. Medical information is missing, wrong, or contradictory. An example of missing information in the out-of-hours service happened during a drive back from a house call with another patient. In the car, the GP took a consultation by phone. The patient had stomach pain that was declining. The GP advised to wait and see. However, the information the GP had in the car was not complete. When the GP came back to the out-of-hours service, he read the entire medical health problem. From this information, the problem seemed to be more cardiovascular. Because his shift was almost over, the GP then transferred the case to the next GP on duty, asking to call the patient back. The second GP called and decided to do nothing because the complaints were almost gone. After the weekend, the patients' own GP diagnosed strong breath problems (dyspnoea), referred the patient to hospital, where he was treated for pulmonary arterial hypertension. The missing information at the least delayed the treatment (OIRS:6).

An example of missing information in the reports of the ambulance service was a case where an ambulance was sent to a drowning person in a pond. In that street there were two ponds, the centralist did not know this. The ambulance first arrived at the wrong pond. From the report itself, it was not clear if the patient already was out of the water, but again, the missing information delayed the treatment and might have had serious consequences (AIRS:105).

In hospital too, delay of treatment can be a result of missing information, as in the example of the patient who was admitted for an operation. The patient should not have had breakfast, but did not know this so the operation was postponed (HIRS:1468).

Wrong information in all organisations had to do with, for example, wrong names of patients, supplying wrong medicines or wrong dosages of medicines. Patients sometimes underwent the wrong operation, for instance on the left instead of the right leg. Thirdly, information became *contradictory*. Medication usage on paper was sometimes different from verbal instructions. Home medication was stopped on ICU, but should have been continued on the ward.

In two organisations the most reported (near-) incidents concern *missing* information (respectively 61.5%; and 57.5% in ambulance service, and hospital). In the out-of-hours service, the most commonly reported problem is *wrong* information (50.0%). Contradictory information is reported the least as a (near-) incident (respectively 25.0%; 10.7%; and 11.3% in out-of-hours service, ambulance service, and hospital, see Table 3.9).

Table3.9: Frequencies Exchange of Medical Information in Three Organisations

	Out-of-hours Service (n=8)	Ambulance Service (n=122)	Hospital (n = 1,481)
Missing	2 (25.0%)	75 (61.5%)	851 (57.5%)
Wrong	4 (50.0%)	34 (27.9%)	463 (31.3%)
Contradictory	2 (25.0%)	13 (10.7%)	167 (11.3%)

The above examples of (near-) incidents concerning missing, wrong or contradictory information, had to do with transfer of medical information. This transfer happens within departments, between departments, or between organisations. Because the chain is the main subject, in the next paragraphs, the (near-) incidents between organisations will be addressed for each organisation separately.

3.4.4.1 (Near-) incidents between links in the chain: Out-of-hours service

From the (near-) incidents regarding the transfer of medical information, three (near-) incidents happened between different organisations. In one case, information was missing. In the other two cases, information was contradictory (see Table 3.10).

Table 3.10: Reported (Near-) Incidents about Exchange of Medical Information (Content) in Out-of-hours Service

		Within Department	Between Departments	Between Organisations	
Content	Missing		1	1	2
	Wrong	2	2		4
	Contradictory			2	2
	Total	2 (25%)	3 (37.5%)	3 (37.5%)	8

These incidents involved the hospital (1), ambulance service (1), nursing home (1), and RIAGG (1).

Case 1.The first (near-) incident happened between multiple organisations: between the GP from the out-of-hours service, the ambulance service, the nursing home and the hospital. The patient was in a nursing home when the GP of the out-of-hours service was contacted. The GP thought of stomach ache (illus). Because the patient was very old, the GP deliberated with the family if it was necessary to send in the patient. The GP also consulted a specialist in internal medicine and they decided to send in the patient. The GP called the ambulance service for an A2-run (no emergency) to bring the patient to hospital. When the ambulance service arrived, the GP was gone. The ambulance nurse was uninformed about the deliberation with family and specialist, thought the patient had a heart attack, and decided to take the patient to another specialist (OIRS:11).

The discussion about the type of specialist was important because the hospital in this case had two departments in two different places in town. The specialist for clinical pictures concerning the abdominal was seated in one department, the specialist for heart diseases in the other. The ambulance professionals decided that it was an emergency, did an A1-run, and brought the patient to the other department. They reported the incident in the incident-reporting system of the out-of-hours service. The MIP committee reviewed the incident in the out-of-hours service, the GP was asked to give a reaction. The GP regretted that the ambulance nurse made a different decision, without consulting the GP. The thing he learned from this, he indicated, was that the next time he had a very sick person, and he had decided

not to do big interventions, the GP would speak to the ambulance nurse directly, not only with a centralist.

Case 2. The second (near-) incident occurred between out-of-hours service and a regional institution for ambulant mental health care (RIAGG). In this case, a mother called about her adult child with a mental history who was sweating and did not feel well. Based on the telephone call, the GP of the out-of-hours service decided the patient probably had side effects of the medication. The GP contacted the crisis centre, which took the case over. Sometime later, an angry psychiatrist called the out-of-hours service, stating the problems had to do with a simple flu and had nothing to do with the patient's mental history, and that the patient should be seen at the out-of-hours service. The patient then visited the out-of-hours service where the GP disputed the diagnosis of the flu by absence of fever. He prescribed a follow up treatment and advised the patient to contact the RIAGG again the next day. In this case the GP found reason to report the (near-) incident in the dispute about the diagnosis and the bad cooperation between him and the psychiatrist. What happened afterwards, is unknown (OIRS:17).

Case 3. In the third case, a patient was discharged from hospital. When the patient kept having complaints, he phoned the specialist at the hospital again. The specialist advised re-admittance as quick as possible and advised the patient to call the out-of-hours service. The last party involved had to call an ambulance. The GP of the out-of-hours service found the specialist could have ordered an ambulance himself and reported the incident (OIRS:4).

In one other case, different organisations were involved. This case did not have to do with the transfer of medical information but more with diffuse responsibilities. It involved a nursing home (OIRS:3). Nursing homes sometimes have their own nursing home physicians. However, many times, the patients' own GP is the one who is in charge. In this case, the incident happened after working hours, therefore the out-of-hours service was approached. The nurse at the nursing home called because four patients in that home did not get their medication. The GP at the out-of-hours service had a consult by telephone with the nursing home. This example of the nursing home is an interesting report, because in one organisation (out-of-hours service) an incident is reported, while the incident itself happened in another organisation. From the report itself, it is unclear if actions were taken.

To sum up, in the incident-reporting system of the out-of-hours service, from the sixteen (near-) incidents reported, five (near) incidents happened between different organisations; three out of five concerned the exchange of medical information in the chain. The incident-reporting system from the out-of-hours service provides evidence for (near-) incidents that happen between different links in the chain. Thirty percent of the reports happen between

organisations. This motivates to communicate between links, to share inter-contextual knowledge in order to learn in the chain.

3.4.4.2 (Near-) incidents between links in the chain: Ambulance service

From the (near-) incidents reported in ambulance service, 122 (near-) incidents concerned the exchange of information (see Table 3.11).

Table 3.11: Reported (Near-) Incidents about Exchange of Medical Information (Content) in Ambulance Service

		Within department	Between departments	Between organisations	
Content	Missing	47	15	13	75
	Wrong	22	12		34
	Contradictory		6	7	13
	Total	69 (56.6%)	33 (27%)	20 (16.4%)	122

From the reported (near-) incidents, in most cases the information was missing (75), secondly wrong (34) and the least contradictory (13). Twenty (near-) incidents happened between different organisations, such as GPs (8), hospital (10) and nursing home (2).

Examples of (near-) incidents between ambulance service and hospital were mostly related to the announcement of the patient on the ER. Ambulance service professionals reported that professionals on the ER did not expect the ambulance. This gives ambulance professionals the feeling of not being well received. In one report, the ambulance nurse complaints about this, and indicates that it even attracted the patients' attention. The patient made an ironic comment about it: *"Gosh, you really feel welcome here"* (AIRS:322). Another example that involved hospital had to do with missing relevant information about the medical condition of the patient. Hospital called an ambulance to take the patient to a specialist in another department on the other side of town. According to the report, the person who did the request suggested that there were no problems with the patient. According to the ambulance nurse, the patient was a very young man with cerebral paralysis. He could not walk, had problems with his speech, and had a high blood pressure. The ambulance nurse indicated that having the information upfront would have prepared him better (AIRS:355). In one report the do-not- resuscitate form was missing. In the incident report, the ambulance nurse on duty emphasized their obligation to resuscitate if there is no written and signed form (AIRS:321).

The reports that involve ambulance service and both GPs and the nursing home were about missing medical information too. The formally agreed transfer form was reported as being absent (AIRS:356; 351; 358; 314; 315). Sometimes the patient or family gave some information, but when there is a language barrier, there was no information at all (AIRS:351). Information about medication or treatment was also reported to be missing. One report concerned differences in perceptions about who should be present during the transfer. For example, a GP, by telephone, requested an ambulance for transportation of an elderly person after a fall. He noted the patient had low blood pressure, so he requested the ambulance nurse to put in an intravenous (IV) drip before bringing the patient to hospital. At the scene, the ambulance personnel met no GP, and found no medical information. A complicating factor was that the patient was difficult to inject. The ambulance nurse who reported the incident had expected the GP to be at the scene, especially when the patient was so critical. In the next chapters, we will address this issue in more detail as one of the problems ambulance personnel have about the presence of the GPs at the scene (AIRS:226).

Twice a report was made that had nothing to do with the transfer of medical information, but concerned a difference of opinion in the type of run. Once, the GP called the ambulance for a patient who had choked, but already recovered. The ambulance nurse reported the incident because in his eyes the patient could have gone to hospital by taxi or with family (AIRS:40). In the second case, it was the other way round. The GP ordered an A2-run (less life threatening than an A1-run but still an emergency). According to the ambulance nurse, the patient deteriorated very quickly, and therefore an A1-run would have been more appropriate (AIRS:7).

To sum up, although less often than GPs, ambulance professionals too, during the transfer between different links of the chain, experience (near-) incidents due to the transfer of information (9%, 20 of the reported 230 (near-) incidents). From the (near-) incidents regarding medical information, missing medical information is seen as the biggest communication problem. While transporting a patient from one organisation to another, ambulance professionals sometimes feel they should have been better informed. In their view, if they had more information, they could have given a better treatment during the run.

3.4.4.3 (Near-) incidents between links in the chain: Hospital

From the reports made by professionals from hospital, 106 involve transfer of medical information with other organisations, like GPs, pharmacies, ambulance service and nursing homes. Again, the information mostly is missing(60), sometimes wrong (30) and few times contradictory (16, see Table 3.12).

Table 3.12: Reported (Near-) Incidents about Exchange of Medical Information (Content) in Hospital

		Within Department	Between Departments	Between Organisations	
Content	Missing	445	346	60	851
	Wrong	291	142	30	463
	Contradictory	55	96	16	167
	Total	791 (53.4%)	584 (39.4%)	106 (7.2%)	1,481

From the 106 reported (near-) incidents that happen between hospital and organisations, the most (near-) incidents happen between hospital and GPs (41).

Examples of these (near-) incidents between hospital and GPs mostly concern the discharge information. Patients, when discharged, usually receive a letter for the GP. In the incident-reporting system, reports were made about patients that were sent home without their discharge information. Sometimes this information is not *missing*, but *wrong*. One patient came back the next day with papers from another patient (*wrong*). Secondly, in the reporting system of the hospital, the transfer of medical information between other hospitals seems to be incident-sensitive (22 times). Here, missing information about possible infections, like the highly contagious and very difficult to treat MRSA[39]-bacteria, is reported as (near-) incidents. Other times, reports were made about missing or wrong information concerning medication. Thirdly, professionals reported that information of patients is not transferred adequately to home care professionals (19). These (near-) incidents also pertain to patients' discharge, i.e., reports about the 'sudden' appearance of ambulances.

(Near-) Incidents regarding pharmacies (12) mostly had to do with wrong or contradictory information about medication patients needed to use at home, and medication prescribed by the specialist. According to one report, the patient had a discharge letter saying he had to use the medication for over a year, but in the medication schedule, this was half a year. According to that same report, the dosages also differed in the letter, compared to the

[39]In Dutch'*MethicillineResistente Staphylococcus Aureus'.*

medication schedule. Eleven (near-) incidents reported between hospital and the ambulance service. Some of these correspond with the reports ambulance nurses had made in their own incident-reporting system (see page 16). Reports of (near-) incidents between hospital and nursing homes (9) were mostly *missing* or *wrong*. Medical information about treatment and medication in nursing homes was missing. Like some GP and home care cases, discharge information was not passed on or information about a possible infection with MRSA-bacteria was missing.

To sum it up, from all the reports in the digital hospital incident-reporting system, 4.7% have to do with sharing medical information between different links of the chain. Compared to out-of-hours service (30%) and ambulance service (9%), there are less (near-) incidents reported in hospital that have to do with inter-organisational transfer. Still, taking into consideration that the reporting systems are developed for intra-contextual knowledge sharing, there is some evidence found in all three reporting systems that underline the need for inter-contextual knowledge sharing, for communication with all the parties involved.

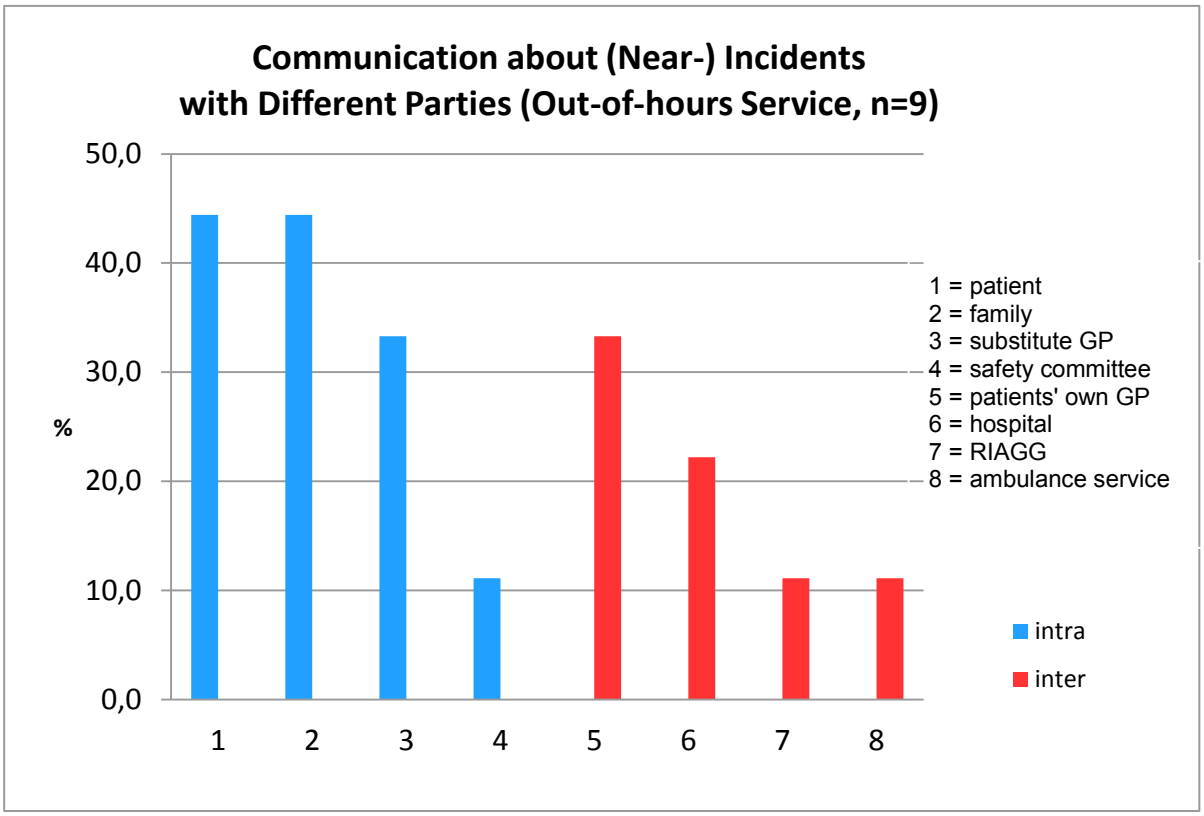
3.4.5 Receiver: Communication with different professional groups

As stated before, incident-reporting systems are designed for intra-contextual knowledge sharing, for creating an 'organisational memory'. In the paragraphs above, the data is narrowed down to (near-) incidents regarding the transfer of medical information. In the next paragraphs, all the reported (near-) incidents are analysed with respect to *message receivers*, i.e., the question with whom professionals communicated about the (near) incident.By analysing all incidents, and not merely (near-) incidents regarding missing, wrong or contradictory information during transfer in the chain, explored is, if knowledge sharing takes place, both via intra-contextual communication (with professionals within the organisation), and via inter-contextual communication (with professional of other organisations).

Out-of-hours service

For comparative reasons we present the next data in percentages, bearing in mind that there are only sixteen (near-) incidents to analyse. From the sixteen (near-) incidents, different professionals from the out-of-hours service communicated about nine reported (near-) incidents with others (56.0 %, see Fig. 3.13and Appendix 4; Table 4.3A).

Fig.3.13: Communication about (Near-) Incidents with Different Parties(Out-of-hours Service)



From these nine (near-) incidents, four cases were discussed with patients, and four with family (45.0%) and three cases were discussed with other GPs in the out-of-hours service. These (near-) incidents are all categorised as intra-organisational communication (intra-contextual).

The out-of-hours service communicated about three (near-) incidents with professionals from other organisations (inter-contextual). In the first case, they communicated with hospital and the ambulance service about a discharged patient who was re-admitted[40]. In the second case, they communicated with a specialist about a patient who was sent to the wrong hospital department. The third case concerned a (near-) incident regarding the RIAGG, and

[40]See also page 13 for more about these examples.

was communicated with that organisation as well. In all three cases, no conclusions can be drawn about the reactions from those parties from the incident-reporting system.

GPs and managers of the out-of-hours service communicated with different professional groups. GPs communicated with different parties within and between organisations. Between organisations, GP communicated with the patients' GP, with patient and family and with external parties like hospital, ambulance service, and RIAGG. One GP discussed a (near-) incident with a colleague, who was also present at the out-of-hours service. This was an incident where the physician reported that the amount of calls grew whereby the time to call them back was already exceeded. The GP called in the help of his colleague to gain time.

Managers talked about two (near-) incidents with patients and family, one of which was discussed with the patients' GP. In both cases, patients and their family made a complaint to the out-of-hours service about what had happened. Both cases concerned disputed diagnoses. In one case, the out-of-hours service was held partly responsible; an insurance claim was made. In this case, the patient's foot had to be amputated, and the claim was the patient was sent to hospital, too late. In this case, the patient had a history of different visits over a period of a month with his own GP. The patient complained about pain in the foot. The GP prescribed painkillers and advised to keep the leg warm. On Saturday, the out-of-hours service was consulted by telephone. Again, medication to control pain was advised, as well as rest. Two weeks later, the foot was amputated. In the medical information, attached to the incident report, the GP said the patient discussed the claim with him too. The manager made an incident report to discuss the case within the out-of-hours service to see if other steps should have been taken. The goal of the report therefore was to learn from it. It is not known if the claim was granted.

In the second case, the GP got a telephone call while driving to another patient. The GP thought of stomach ache, and during the call, the patients' pain decreased. The GP asked a colleague of the out-of-hours service to look at the patient at a later stage. Because the pain again decreased, they decided to wait. On Monday morning, the GP decided to send the patient to hospital, where cardiac problems were established. The family, together with their GP sent in a complaint to the out-of-hours service. The GP who had duty and took the call, contacted the family later on to talk it over. The family was content with this, so the complaint was settled.

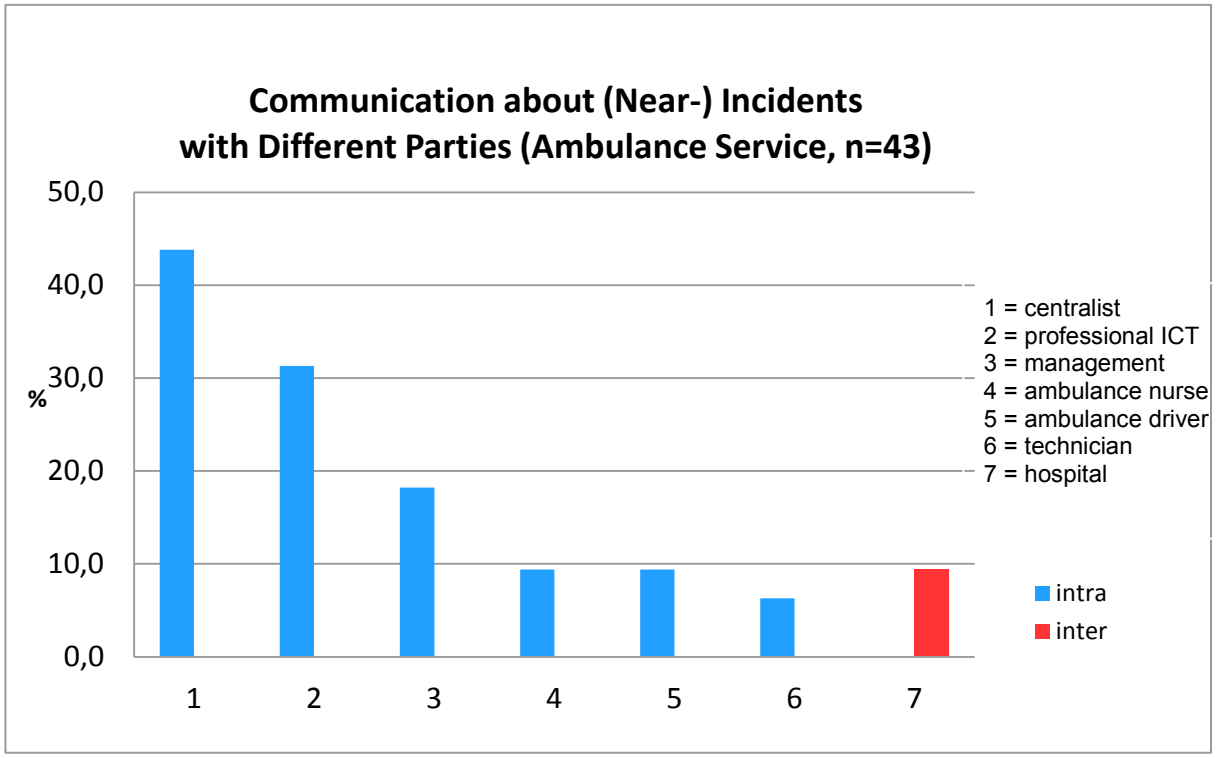
Both examples are (near-) incidents with where patients suffered major problems: an amputated leg, and cardiac problems. It is difficult to conclude what the consequences of the incident were. Later on, risk assessment in the incident-reporting system is discussed in more detail.

Conclusively, GP professionals communicate about the reported (near-) incidents with different parties from different links in the chain (inter-contextual). It seems the communication mainly takes place because of complaints of patients or family. If the inter-contextual communication between different professionals of different links leads to learning, is not known.

Ambulance service

Communication about (near-) incidents is also a category in the electronic reporting system of the ambulance service (to whom reported). Of the 230 reported (near-) incidents from the ambulance service, 13.9% (32) reports were communicated with other parties. From these reports, the communication was mostly intra-contextual (90.7%). In three cases (9.3%), inter-contextual communication took place (see Fig. 3.14 and Appendix 4; Table 4.3B).

Fig.3.14: Communication about (Near-) Incidents with Different Parties (Ambulance Service)



Within the reporting system, we found no evidence that ambulance personnel talked about specific (near-) incidents with GPs. Three (near-) incidents were communicated with the hospital (inter-contextual). One of these (near-) incidents concerned the outpatients' department of the hospital. The ambulance nurse brought the patient in for an appointment. At the outpatients' department, they denied that appointment was made. The patient had to

wait until the specialist had time. The hospital professional expected the ambulance personnel to wait in the hallway with the patient on the ambulance stretcher. The ambulance professionals disagreed. After some discussion, the patient was placed on another stretcher in an inquiry room, so the ambulance could go to the next run.

The second (near-) incident reported back to hospital (intra-contextual) was an emergency call of someone who had cut himself with a Stanley knife. When the ambulance personnel arrived on the scene, it turned out to be a stabbing between two people. The police said they had told the centralist that the ambulance should wait for police back up, but the ambulance personnel did not know this. So far, miscommunication took place between departments in the ambulance service and the police. However, when the patient was announced to hospital, a second miscommunication took place. The ambulance personnel said they told the centralist to inform the hospital that they would bring a patient under police escort. When the ambulance arrived at the hospital, they expected someone with a small stitching wound, not the whole escort.

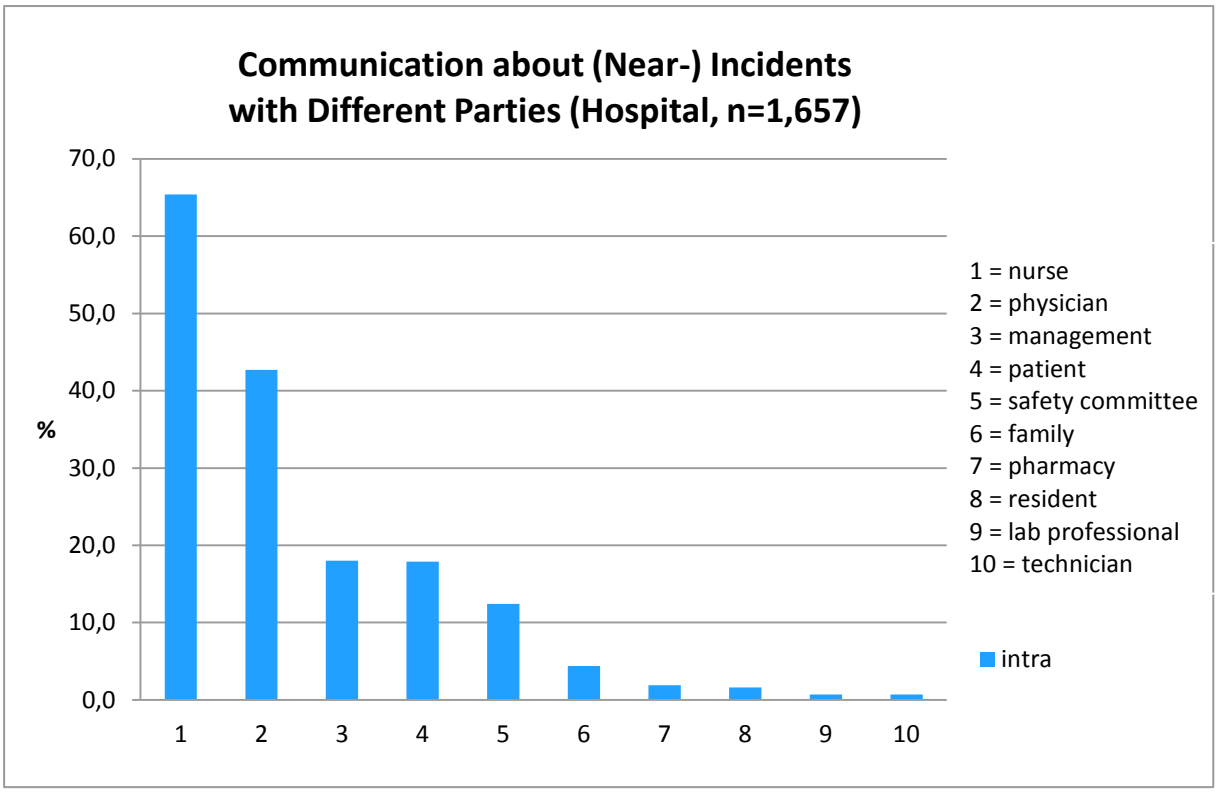
The third (near-) incident that was communicated with hospital afterwards (intra-contextual), had to do with a recently installed discharge office within the hospital. The discharge office requested an ambulance for a patient on one of the wards of the hospital. When the centralist tried to get some medical information, the discharge office could not inform the ambulance service about the medical history of the patient and or the indication for the ride. The call was transferred to the ward, so nurses of the ward could give more information.

The incident-reporting system of the ambulance service, unlike the other two, does not stop after the report of the incident is made by the professional. Within the reporting system, feedback is given about the steps taken after the incident. In all three cases, the ambulance service communicated with the hospital, to avoid these (near-) incidents in the future. In the last case, in the report we could also read the effect of the feedback: the hospital turned back the decision to have discharge office make the calls to ambulances and professionals on the wards were again in charge of calling ambulances, having the information at hand. In this particular case, although the incident-reporting system was primary designed for inter-organisational learning, changes were made in another link of the health care chain, as hospital changed working processes. Based on intra-contextual knowledge sharing, here one could see an example of double loop learning in the chain.

Hospital

In the electronic reporting system of the hospital, communication about the reported (near-) incident is an explicit category (labelled: 'to who reported'). Most respondents some time or another talked with others about (near-) incidents: to patients, direct colleagues, managers, and professionals of other organisations. Results show that in almost three-quarters of the reports (72.8%; 1,657 from 2,277), professionals in hospitals discussed them with other parties. In hospital, professional groups discussed reported (near-) incidents with direct colleagues the most (67.6%; 1,120 from 1,657 reports), here of mainly nurses (65.4%, see Fig. 3.15,and Appendix 4; Table 4.3C).

Fig.3.15: Communicationabout (Near-) Incidents withDifferent Parties (Hospital)



Because of the large numbers of reported (near) incidents in hospital that were communicated, I conducted quantitative analyses (Chi-square tests) to detect systematic differences in communication across professions. Compared with nurses and other professionals, physicians discussed reported (near-) incidents significantly more often with

direct colleagues (respectively 70.2; 89.2; and 16.3% for nurses, physicians and other professionals: $\chi^2(2, N = 1657^{41}) = 122.944, p < .001$.)

Physicians also communicated more frequently about (near-) incidents with patients than nurses and other professionals (respectively 17.7; 32.4; and 16.3% for nurses, physicians and other professionals). This difference approaches statistical significance: χ^2 (2, *N*= 1657) = 5.525, p = .063.

There is no statistical significance between profession and communication with the patient safety committee. All professional groups indicated they have hardly communicated with this committee, respectively 6.8; 8.1; and 4.3% for nurses, physicians and other professionals: χ^2 (2, *N*= 1657) = .959, *p* = ns.

The above results all concern communication within or between departments (intra-contextual). It is not possible to draw conclusions about communication between organisations (inter-contextual). In the incident-reporting system there is no possibility to choose external organisations as answering categories for the question with whom one had communicated about the (near-) incident. Therefore, based on the incident-reporting system, there is no indication for inter-contextual knowledge sharing between hospital and other links in the chain.

3.5 Risk assessment matrix

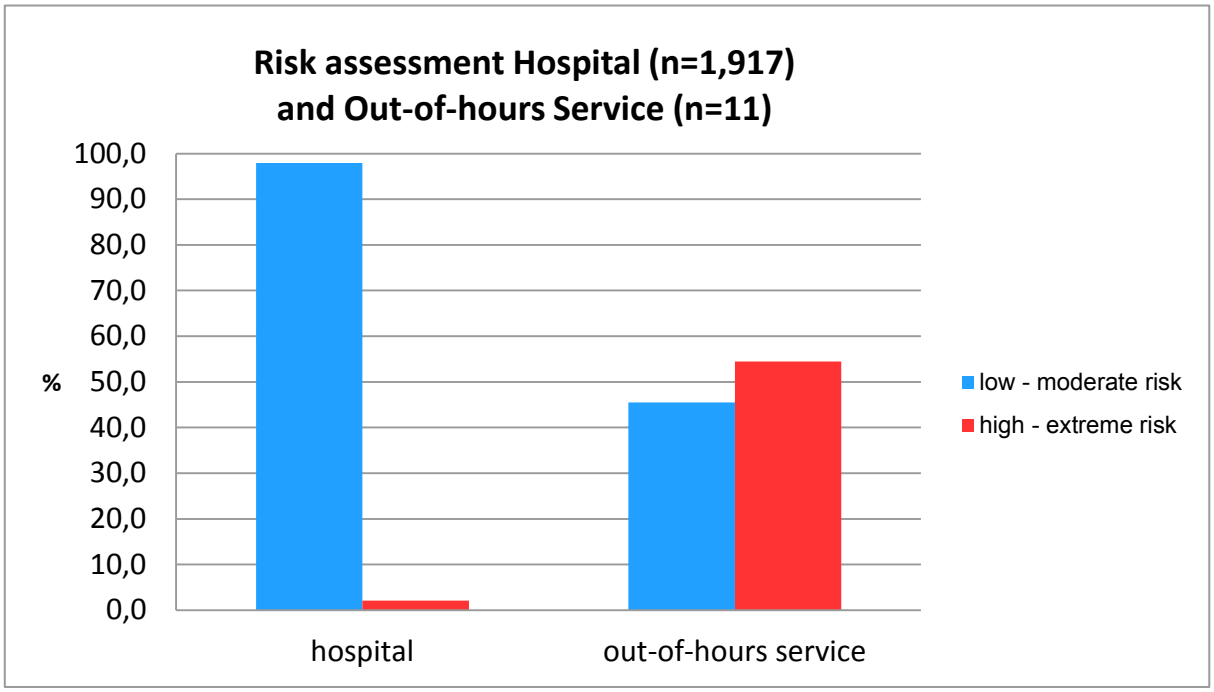
As research has already shown, learning depends on the consequences of a mistake; especially incidents with serious negative outcomes have a positive influence on learning (e.g. Cannon & Edmondson, 2005; Homsma 2007; Homsma et al., 2009). In order to learn, one has to communicate about the (near-) incident. Do professionals communicate about incidents more, when the incidents are assessed as being of high risk? Both the hospital and out-of-hours service use the risk assessment matrix. Professionals indicate, when reporting the (near) incident, its severity, and likelihood of reoccurrence. When the risk is assessed as being low (1) or moderate (2), in hospital the (near-) incident is analysed within departments or units, for example using a decentralised analysis method (DAM[42]). Extreme (4) and high (3) risk incidents are managed by the reporting committee. In out-of-hours service all (near-) incidents, low (1); moderate (2); high (3); and extreme (4), are handled by the MIP. In the

[41]Not all reporters filled in their job description.
[42]In Dutch '*Decentrale Analyse Methode'.*

out-of-hours service, this committee consists of managers and GPs; in hospital, the committee consists of nurses, managers, and physicians. The MIP analyses the (near-) incident and decide on the next steps to be taken. Both organisations report extreme risk incidents to the HCI.

Results from incident-reporting systems show that professionals in hospitals report low or moderate risk (near-) incidents in the system more frequently (97.9%) than (near-) incidents assessed as high or extreme risk (2.1%). In contrast, professionals of the out-of-hours service report more frequently (near-) incidents when they are high or extreme (54.5%), versus 45.5% low or moderate risk (see Fig. 3.16, and Appendix 4, Tables 4.4A-4.4D).

Fig.3.16: Risk Assessment of Reported (Near-) Incidents at Hospital and Out-of-hours



Both organisations differ with regard to number of personnel and patients. In the larger hospital (5,900 professionals) only three (near-) incidents are reported with extreme risk; in the much smaller out-of-hours service (155 professionals affiliated), one incident with extreme risk is reported. It could be suggested that the hospital is safer, but that is clouding the issue. The figure only gives an indication about what is reported, no more, no less.

3.5.1 Risk assessment and Transfer of Medical Information

I have analysed the risk assessment of reported communication incidents to assess whether some communication incidents involve higher risks. In the out-of-hours service, the (near-) incidents concerning *wrong* information were reported as low-moderate or high-extreme, the examples concerning missing or contradictory were reported as high-extreme (see Table 3.17). Tests of statistical significant could not be conducted due to the low N.

*Table 3.17: Risk Assessment * the Exchange of Medical Information (Content) in Out-of-hours Service*

		Missing	Wrong	Contradictory	
Rating Risk Level	Low - Moderate		2 (66.6%)		2
	High - Extreme	2 (100%)	1 (33.3%)	1 (100%)	4
	Total	2	3	1	6

In hospital, most examples of (near-) incidents concerning *missing*, *wrong*, or *contradictory* information were reported as low-moderate. The (near-) incidents concerning *missing*or *contradictory* were reported somewhat more often as high-extreme than the wrong information (respectively 2.2 en 3.1% for missing or contradictory information and 0.5% for wrong information, see Table 3.18). This difference approaches statistical significance: χ^2 (2, *N* = 1225) = 5.688, p = .058 (marginal significant, between .05 and .10)

*Table 3.18: Risk Assessment * the Exchange of Medical Information (Content) in Hospital*

		Missing	Wrong	Contradictory	Total
Rating Risk Level	Low - Moderate	697 (97.8%)	383 (99.5%)	123 (96.9%)	1203
	High - Extreme	16 (2.2%)	2 (.5%)	4 (3.1%)	22
Total		713	385	127	1225

3.5.2 Communication and risk assessment

To explore if risk assessment influences communication, I have examined with how many professionals a reporter communicated, and if this amount increases when the risk is higher. That is, do severe risks elicit more communication? On average, professionals in out-of-hours service talk to ‘two and a half’ professional about the (near-) incidents. The low-

moderate risk (near-) incidents are communicated with one person; the high-extreme risk (near-) incidents are communicated with more than two persons. Because the number of incidents was very small, we cannot draw any definite conclusions regarding specific patterns of communication.

Professionals in hospitals talk to 'one and a half' professional about the (near-) incidents (M= 1.62, SD = .86). They talk to more parties when the actual consequences are high-extreme (M = 2.27, SD = .962) as opposed to low-moderate (M= 1.63, SD = .880; $t(1,562) = -4.363$, $p < .001$).

Thus, professionals in both out-of-hours service and hospital talk to more people about the (near-) incidents when the risk increases.

3.6 Conclusions

Over time, the focus on things that go wrong in health care, shifted from errors, accidents, and harm for patients towards (near) incidents as a source of organisational learning. The three incident-reporting systems that were examined are mainly designed for intra-contextual knowledge sharing.

To let systems work for the goals intended, to create organisational learning, a majority of the professionals should support and use the incident-reporting system. In all three systems, different professional groups do not use the system equally. In hospital and ambulance service, nurses are responsible for the majority of the reports, in out-of-hours service the GPs are. In line with literature, compared proportionally, physicians in hospital still underreport; ± 250 physicians are responsible for 2.0 % of the reports (e.g. Lawton & Parker, 2002; Garbutt, Waterman, Kapp, Dunagan, Levinson, 2008). One reason may be that incident report systems seem to be more suitable for nurses. In hospital, nurses originally developed these systems. An example of how this has an effect on the incident-reporting system is the choice of answer categories. The answering categories are chosen from the perspective of the nurse, as the next example will show.

When the reporting system was developed, one of the questions was with whom professionals had talked about the (near-) incident. Possible answer categories were patient; colleague; physician; member of staff; and so on. The term colleague in Dutch has a slightly different meaning than the term has in English. In English, the term refers to the professionals in the direct surroundings, one works with. In Dutch, the term also refers to professionals with the same occupation, of the same profession. In the incident-reporting

system, the category 'colleague' was meant to be chosen if the reporter had communicated with persons of the same profession. Because nurses originally reported, for them these categories seemed to work fine. When they wanted to indicate they had talked to another nurse, they thus used colleague. However, when professionals other than nurses started using the system, and wanted to indicate they had talked about the (near-) incident with a nurse there was no category to choose from, because this category was missing. Only recently, the category ‘nurse’ was added as an answering category in the reporting system, making it suitable for all professionals involved. This changing the reporting system can be seen as an example of changing a system, used for professional learning, as triple loop learning.

Within the three systems, there is evidence that (near-) incidents happen between different links in the chain. In order to learn from these (near-) incidents, inter-contextual knowledge sharing is required. Especially (near-) incidents that happen during the transfer of patients, that happen due to the exchange of medical information.

In the present study, besides the source of the reports and the content of the reports regarding the transfer of medical information (missed, wrong or contradictory), I also analysed the *receiver,* to whom reported (near-) incidents were communicated.

Incidentally, communication takes place between organisations (inter-contextual communication) as an effect of incident reported in the system. Only the ambulance service seems to be focussed on the aftermath as part of the learning process, filling the reporting system also with feedback. The questions asked in the incident-reporting systems, and the answering categories one can choose, make these systems more internally focused, leaving not much room to report chain-wide (near-) incidents, or to analyse if there is inter-contextual knowledge sharing.

At the end, I explored if organisations differ in reports on the aspect of risk assessment. Intra- or inter-contextual learning also depends on the risk assessments made. When the risks are low (1) or moderate (2), knowledge sharing first takes place between similar units within one organisation (type I), using DAM and by providing verbal and written reports for their own wards. When the risks are high (3) or extreme (4), the MIP handles the incidents and knowledge sharing between different functional units of the same organisation can occur (type II).

Although the out-of-hours service has little reports, the reports are high-extreme risk (near-) incidents. The data presented from the out-of-hours service seems to contradict an intensive study about incident reporting in general practices (Zwart, 2011). These incident reports

mostly were related to work processes, with none or small harm for patients, as opposed to our findings, where GPs reported mostly high-extreme risk (near-) incidents. However, Zwart, while exploring the feasibility of an incident-reporting system by five Dutch GP health care centres, analysed 476 reported incidents over a period of nine months. Compared to this present study with only 16 incidents over a period of one and a half year, it is a bit too soon to draw big conclusions about the type of (near-) incidents reported in general practises and out-of-hours offices. In contrast to the out-of-hours service, in hospital mostly low-medium risks are reported.

Although literature concludes there is more effect in learning from high-risk (near-) incidents, both low risk and high-risk incidents can be an inspiration for learning. Professionals in hospital seem to report more about low risk (near-) incidents, compared with professionals in the out-of-hours service. The incident-reporting system in hospital also tries to uncover what is beneath the surface of the iceberg.

Due to the way, the out-of-hours service is organised, with employed professionals as well as aligned professionals (GPs and ambulance professionals who work on duty), this system seems to be more open for external reports than the two other systems. There is the example of the report made by the ambulance nurse, and the nursing home incident, also reported at the out-of-hours service. In the incident-reporting system of the hospital, it is also not possible to indicate communication outside the organisation, so this system is mainly focused on intra-contextual knowledge sharing. So, because the accessibility is mostly restricted to the internal organisation and the systems differ in subjects to report and way to report; these systems are not simply suitable for learning in the chain.

All systems focus on learning, but communication mostly stays within the doors of the organisation, it is therefore mainly intra-contextual knowledge sharing. Although (near-) incidents do occur between links of the chain, communication about them mostly seems to stay within the organisation. What is discussed here is the reported communication, what professionals have said in the reporting systems about this communication. Professionals can also talk about (near-) incidents without reporting this, for example face to face, or during inter-organisational meetings. Overall, by using an incident-reporting system, 'best practices' or, non-related activities are not yet systematically shared between similar or different units of different organisations (type III and IV).Thus, if communication intra- and/or inter contextual leads to actual knowledge sharing stays unclear. In the next chapters, this will be explored more.

3.7 Some critical notes on incident-reporting systems

The usage of the incident-reporting system is open to debate. A first note is the hindsight bias that occurs when professionals analyse reported incidents. It is difficult for persons, having knowledge of the outcome of an adverse event, to maintain unbiased about the reasons the event occurred (Reason, 1997). According to Reason: "*people greatly overestimate what they would have known in foresight"*(Reason, 1997, p. 38). They also overestimate what others would have known, and misremember what they knew themselves. Hindsight bias can jeopardize learning: "*the very outcome knowledge which gives us the feeling that we understand what the past was all about may prevent us from learning anything from it*" (Fischhoff, 1975, p. 299).

Previous research shows reasons not to report are fear of reprisal; lack of time, trust, lack of feedback and perceived scope of practice (Taylor, Brownstein, Christakis, Blackburn, Strandjord, Klein, et al. 2004; Espin, Regehr, Levinson, Baker, Biancucci, &Lingard, 2007; Espin, Wickson-Griffiths, Wilson, &Lingard, 2010). For example, if OR nurses experienced (near-) incidents as central to other team members' scope of practice, they would not report them. According to Espin, this perceived scope of practice was superior to seriousness of the outcome. Thus, although there was a serious outcome, (high (3) or extreme (4) risk), nurses would not report it if they did not perceive the (near-) incident within their own scope of practice. In chapter six, we will elaborate more on this scope of practice and the relation with responsibility.

According to literature, professionals in health care still underreport. In hospital, in the first one and a half year since the introduction of the system, ten percent of the professionals reported digitally. It is difficult to say if this is much or little, as we still have no idea how many (near-) incidents really happen. It is suggested that what is reported is only the tip of the iceberg. The fact that in hospital a very large amount of the reports have to do with low-moderate (near-) incidents can be an indication that in hospital it is stimulated to report everything, also incidents that normally stay beneath the surface.

Within the three organisations, different professionals are committed to report. If these professionals will keep on reporting in the future also depends on the culture of organisations. Preconditions for usage of a reporting system are a non-punitive / blame free culture and confidence that organisations react on the (near-) incidents reported, and that changes are witnessed (Molendijk, et al., 2003, Taylor et al. 2004; Espin et al., 2007, 2010; Snijders et al., 2007, 2009A, 2009B). In the next chapter organisational culture, specific tolerance and decisiveness will be explored in the context of the chain. Within the incident-reporting systems, no evidence can be found about professionals' perceptions on (blame

free) culture within their organisation or within the chain. Nor can be derived from this data if communication about (near-) incidents leads to many changes., In chapter five, we will also see that incident-reporting systems can be used as a political instrument, as residents explain how the instrument is used by ER nurses to force residents to do certain actions.

In interviews professionals talked about the way they have handled (near-) incidents, and their perceptions on tolerance and decisiveness, within as well as between links in the chain. Central in the next chapter is the question if professionals feel free to talk about (near-) incidents with others, what stimulates communicating about (near-) incidents, and if this communication leads to actual knowledge sharing, within as well as between different organisations in the health care chain.

4 Tolerance and decisiveness

4.1 Introduction

In the previous chapter, it became clear that (near-) incidents do occur between organisations, during the transfer of patients within the health care chain. Central to this thesis is the communication between professionals in the chain about (near-) incidents in order to learn from them. Thus, I have investigated under which conditions professionals communicate in the chain about (near-) incidents. I focus on two specific conditions, two specific aspects of organisational culture: tolerance and decisiveness. Firstly, explored is how professionals perceive tolerance and decisiveness within their own organisation. I describe how professionals experience communication about (near) incidents with other professionals in the same organisation or department (intra-contextual knowledge sharing). If communication within organisations about (near-) incidents is rare or unusual, it may be a big step towards talking to professionals from other links in the chain. Secondly, for each organisation it is described how professionals communicate with other professionals in other links in the chain about working processes in general and, when present, communication about (near-) incidents (inter-contextual knowledge sharing). It is explored how professionals perceive tolerance and/or decisiveness towards (near-) incidents in other links of the chain. The focus of this chapter is on assumptions on tolerance and decisiveness within as well as between organisations.

4.2 Theoretical frame

4.2.1 Organisational culture

Within every organisation, professionals share basic assumptions about the correct way to perceive, think, and feel in relation to the day-to-day working processes. These shared assumptions are part of an organisational culture. Culture as a concept refers to a considerable degree to unconscious and invisible processes: *“We can see the behavior that results, but we often cannot see the forces underneath that cause certain kinds of behavior*” (Schein, 2010, p. 14). Within an organisation the concept of organisational culture refers for example to visible behavioural patterns when professionals interact; the language they use (technical terms); the customs, traditions, and rituals; the written and (less visible) unwritten organisational norms and values; the ideological principles; the embedded skills and the habits of thinking. Members of an organisation share assumptions: *"The culture of a group can now be defined as a pattern of shared basic assumptions learned by a group as it*

solved its problems of external adaption and internal integration, which has worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems" (Schein, 2010, p. 18). The way professionals learn from things that go wrong is part of the organisational culture of an organisation. Consequently, professionals in an organisation share assumptions about correct ways to perceive, think, and feel about how to deal with (near-) incidents. Therefore, to understand why professionals do or do not communicate with each other about (near-) incidents (behaviour), one has to reveal the underlying assumptions.

Professionals within organisations learn the correct way to perceive, think, and feel about (near-) incidents; they learn the matching communication patterns. This is not a one-way process. Organisational culture is dynamic. Professionals, in their daily actions, structure these organisations. At the same time, their behaviour is shaped by these structures (Giddens, 1991). On the one hand, the way professionals do or do not communicate about (near-) incidents is a result of the organisational culture. On the other hand, professionals can change the organisational culture. For example, an organisational culture may be 'not to talk about' (near-) incidents. When some professionals do communicate about (near-) incidents, they can clear the way for other professionals to do so. Within this process, shared assumptions on communication about (near-) incidents are changed. To understand organisational culture, one has to study both the professionals and the structures they are part of, as they are inextricably connected.

4.2.2 Reasons not to communicate about (near-) incidents

There are different reasons why professionals do not talk about (near-) incidents. Barriers to talking about (near-) incidents are and uncertainty about the reaction of others and fear for 'blaming and shaming' (Reason, 2000; Gjerberg&Kjølsrød 2001; Husted &Michailova 2002; Reason & Hobbs, 2003, Amalberti et al., 2005; Awad et al., 2005; Makary et al., 2006). Professionals are afraid of damaging career opportunities, of being punished or being judged by near colleagues[43] (Husted &Michailova, 2002). Most of us find it pleasant when near colleagues value us. As Cannon and Edmondson state: "*Being held in high regard by other people, especially those with whom one interacts in an ongoing matter, is a strong fundamental desire, and most people tacitly believe that revealing failure will jeopardize this*

[43]In contrast to English, in Dutch the notion colleague is used for people who work closely together as well as people who have the same profession. Therefore, the words 'near colleague' are used, to emphasize that it has meant it in the context of people who work together on a daily basis.

esteem" (Cannon and Edmondson, 2005, p. 302). They suggest this fear of losing respect will be stronger among people who know each other and work closely together, among near colleagues. Based in this reasoning, fear should be less of an issue when communication takes place between links within the chain. Fear should be less of an issue between different, les familiar professionals, who do not work closely together (inter-contextual communication).

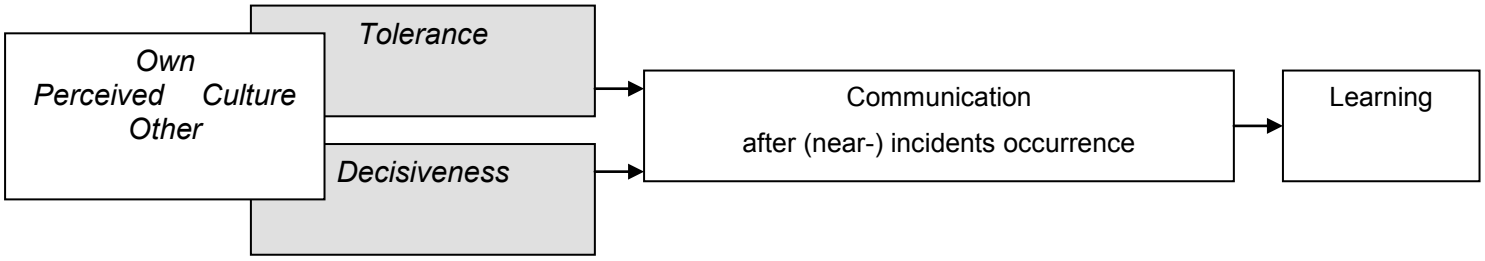
4.2.3 Reasons to communicate about (near-) incidents

As stated before, people are in fear of embarrassment, punishment, and litigation. In contrast, aspects that are barriers can be converted to conditions of the system that make it easier to talk about (near-) incidents. Where blaming and shaming are barriers, the opposite would be a non-punitive safety climate that is positively associated with communication (Snijders et al., 2007, 2009A, 2009B). Such a non-punitive blame free safety climate is comparable to the concept of *tolerance* as an aspect of organisational culture. In a tolerant organisation managers do not look for someone to blame when (near-) incidents happen and employees experience an organisational culture of openness to talk about (near-) incidents (Homsma, 2007). In organisations that are more intolerant, employees tend to cover up errors. In order to learn from (near-) incidents, professionals have to communicate about them. In addition, to do so, professionals have to experience *tolerance* towards the occurrence of (near-) incidents (Homsma, 2007).

Another barrier that hinders communication about (near-) incidents, and therefore learning, is lack of improvement (Leape, 1999) Leape suggests that professionals may decide not to communicate when they do not perceive any quality improvement. They do not experience anything is changing. Therefore, *decisiveness* is the second aspect of organisational culture. If, after communicating about (near-) incidents, professionals witness changing conditions under which (near-) incidents occur, they experience decisiveness. Tolerance and decisiveness are both aspects of organisational culture, are conditions that contribute to learning. *"Whereas organizations with tolerant and indecisive views primarily engaged in activities aimed at minimizing negative consequences, organizations with a tolerant and decisive view towards errors managed to learn from their errors"* (Homsma, 2007, p. 107). Thus, the way in which the organisation deals with (near-) incidents (tolerance and decisiveness) influences the actions taken after a mistake occurs, in our case

communication about (near-) incidents in order to learn from them(Homsma, 2007, see also Fig. 4.1).

Fig. 4.1: Tolerance and Decisiveness



4.2.4 Organisational learning

Tolerance and decisiveness, as aspects of organisational culture, are ways to perceive, think, and feel about how to deal with (near-) incidents. These aspects can stimulate communication, and therefore learning. There are different levels of learning. Professionals, while working can identify and correct (near-) incidents. When they also intend to act differently the next time, professionals have learned at an individual level. At this level, individual learning, professionals are not forced to communicate about the (near-) incident, for they have solved the problem themselves and no other people were affected. They may communicate about what had happened; they may share their experiences with other professionals. Such communication will not automatically lead to the next step, organisational learning. For organisations, to create organisational learning, communication is crucial. Organisational learning is a broad concept, defined by many theorists. This research focuses on organisational learning as the 'collectivity of individual learning' (Wang &Pervaiz, 2003).

Within organisational learning, I distinguish different types: single loop, double loop, and triple loop learning. Single loop learning involves the process of identifying and correcting (near-) incidents and sharing this information (Argyris, 1977B). Within single loop learning, not only the individual learns from the (near-) incident, but direct colleagues or other employees in the organisation can learn too. In previous chapter, a described example[44] is a wrong side operation. Instead of the right knee, for instance, the surgeon operates on the left

[44]Reported in the Hospital Incident Reporting System.

knee. When after such an incident, everybody in the organisation will be informed about it, to avoid wrong side operations from happening again, then single loop learning takes place. Another example that illustrates single loop learning involves incidents where patients get the wrong medication. Afterwards, the patient receives the correct medicine and within the organisation, everybody is alerted. When single loop learning happens, professionals first correct the incident: the patient will have another operation on the right knee; or the right medication is given. Secondly, the incident will be communicated to the professionals within the organisation, in order to alert every one, to pass the knowledge to all professionals involved. Within single loop learning: "*errors are corrected without altering the underlying governing values"* (Argyris, 2002, p. 206). Within the working processes, nothing changes.

With double loop learning, firstly, professionals identify and correct (near-) incidents. Secondly, organisational changes are made. In double loop learning, the underlying conditions that contribute to the (near-) incident are changed as well: *"errors are corrected by changing the governing values and then the actions"* (Argyris, 2002, p. 206). In the case of the left-right switch, professionals evaluate the working process too. They develop new procedures, for example, the marking of the correct body part that has to be operated. In case of administering a wrong medicine, the medicine cabinet is reviewed, for example medication is not stored alphabetically, but by medication effect. Therefore, when a nurse accidently takes the wrong medicine again, it is more likely it will have less damaging effects to the patient.

Besides single and double loop learning, within organisations also triple loop learning can take place. Triple loop learning has to do with how professionals learn. When new structures and strategies for learning are produced, triple loop learning occurs: *"the notion of continual reflection on the learning process, the contexts within which learning occurs, and the assumptions and values motivating the learning and influencing its outcomes"* (Yuthas, Dillard & Rogers, 2004, p. 239). For example, a new way of learning from each other may emerge by organising a symposium where professionals can present new solutions to each other with the purpose to implement new working procedures. The implementation of the incident-reporting system in chapter three is also a form of triple loop learning.

Although in all cases (individual; organisational single loop; double loop; and triple loop learning) communication may take place, the impact of this communication will differ. Within individual learning and organisational single loop learning, communication about (near-) incidents will not take place with the intention to change the organisation as a whole. Only when professionals use information from (near-) incidents to diagnose and improve organisational processes, double loop learning emerges. The impact of communication

about (near-) incidents in double loop learning is that in effect work processes are changed. Within double loop learning, communication about (near-) incidents effects the assumptions; the underlying values and norms about the correct way to do the job. Finally, when communication about (near-) incidents leads to new ways of learning within the organisation, triple loop learning is achieved. To achieve organisational learning, one has to communicate.

4.2.5 Tolerance and decisiveness and learning

Openness to talk about (near-) incidents in order to learn is central in this thesis. Conditions that influence this communication are tolerance and decisiveness. Within a tolerant and decisive organisation, open communication is expected to occur among professionals about (near-) incidents in order to achieve double and/or triple loop learning (see Fig. 4.2).

Fig. 4.2: Tolerance and Decisiveness

	Tolerant	Intolerant
Decisive	+	-
Indecisive	+/-	-

+ = communication about (near-) incidents to achieve double and/or triple loop learning

+/- = communication about (near-) incidents without double loop learning

- = no communication about (near-) incidents

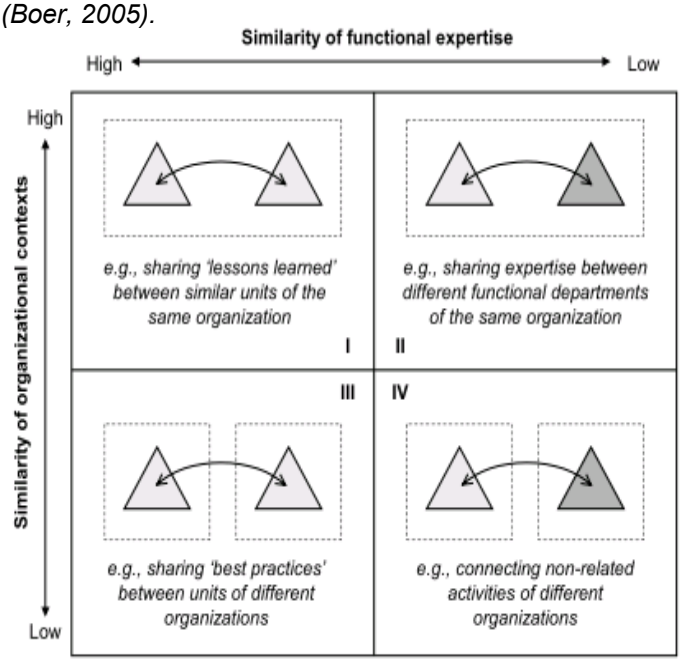
When an organisation is only tolerant, but not decisive, there may be communication about (near-) incidents. However, this communication will not lead to organisational change. If an organisation is decisive, but intolerant towards (near-) incidents, blaming and shaming are lurking around the corner. Professionals will be afraid to communicate. Moreover, an intolerant and indecisive organisation discourages communication and therefore learning altogether.

4.2.6 Tolerance and decisiveness within the chain

An organisational culture that consists of both tolerance and decisiveness will encourage communication about (near-) incidents in order to learn. It has been shown that these insights are applicable within a department or the organisation as a whole. Homsma examined tolerance and decisiveness *within* organisations. As stated, aspects of organisational culture like tolerance and decisiveness can stimulate learning within the organisation; can stimulate intra-contextual knowledge sharing (Homsma, 2007; Boer, 2005). However, so far it is not known to what extent these aspects of organisational culture are relevant *between* different organisations within the health care chain. The issue of patient safety goes beyond the borders of one single organizational unit; see the examples in chapter three. In order to learn in the chain, communication about (near-) incidents should take place between organisations; e.g. inter-contextual knowledge sharing (Boer, 2005).

We can distinguish four different types of knowledge sharing about (near-) incidents. The first type is 'lessons shared' between similar units of the same organisation. For example in a hospital between similar wards, between the same professionals, between 'similar' nurses (intra-contextual knowledge sharing type I, see Fig.4.3).

Fig. 4.3: Intra- and Inter Contextual Knowledge Sharing (Boer, 2005).



Secondly, within organisations, knowledge about (near-) incidents can be shared between different functional departments of the same organisation. For example in a hospital between a ward and a professional partnership, between different professionals, between nurses and physicians (intra-contextual knowledge sharing type II). Thirdly, 'best practices' can be shared between similar units of different organisations. For example between wards of hospital and wards of nursing homes; between the same professionals, between nurses of different organisations (inter-contextual knowledge sharing type III). Fourth, non-related activities can be shared between different organisations. For example, between a ward of a hospital and a GP office; between different professionals of different links in the chain.

In this thesis I have explored whether professionals communicate with different links about (near-) incidents e.g. whether there is inter-contextual knowledge sharing. (Types III and IV, Boer, 2005; see also Fig. 4.3). I have also explored whether conditions like tolerance and decisiveness play a role with inter-contextual knowledge sharing, between different links within the context of the chain.

Although the focus is on inter-contextual knowledge sharing, examined is how professionals perceive their own as well as the other (organisational) culture on tolerance and decisiveness. If within their own organisation communication about (near-) incidents is rare or unusual, it may be a big step towards talking to professionals of other organisations in the chain. The question is, therefore, whether professionals communicate with other professionals about (near-) incidents within as well as between different links in the chain (intra- and inter-contextual knowledge sharing). Does intra- and inter-contextual knowledge sharing result in learning after a (near-) incident occurs, especially in double- or triple loop learning? What assumptions do different professionals have with regard to tolerance and decisiveness in the chain? How do tolerance and decisiveness relate to different types of learning? Do these assumptions differ across the chain between professional groups and/or departments?

Within organisations, different groups can have their own subculture. *"These subcultures share many of the assumptions of the total organization but also hold assumptions beyond those of the total organization, usually reflecting their functional tasks, the occupations of their members, or their unique experiences"* (Schein, 2010, p. 55). Professionals who share functional tasks, professions, or experiences, like for instance physicians, can share assumptions that differ from nurses, although both are working in the same organisation, the hospital. Assumptions also can differ between organisational units, like wards or the ER. Explored is if there is one organisational culture, regarding assumptions on communication about (near-) incidents, or if there are different subcultures. Schein also points out that

professions, like medicine, can transcend organisations. Can we witness behavioural patterns between groups of professionals that transcend the own organisation? That is, when looking at communication about (near-) incidents, is there a pattern of shared assumptions within professional groups?

Firstly, overall, in this chapter I describe to what extent tolerance and decisiveness, as aspects of organisational culture (context), contribute to communication about (near-) incidents between professionals in the health care chain (RQ2). Secondly, explored is if there is inter-organisational knowledge sharing between professionals in the health care chain, if this communication results (goal) in double or even triple loop learning (RQ5).

4.3 Methods

For the qualitative data collection, Eighty-eight in-depth interviews were conducted with professionals in GP offices, pharmacies, ambulance service, hospital, and nursing homes, from April to August 2009 (for more about the sample see chapter two and Appendix 3). To increase understanding, I have used qualitative data collection to explore how professionals themselves experience communication about (near-) incidents, how they experience tolerance and decisiveness within the chain. To conduct the semi-structured interview protocol, besides information from the incident-reporting systems, theoretical insights described in chapter one were used (for the semi-structured interview protocol, see Appendix 2).

First, respondents talked about the way they usually communicate with other professionals in the chain, to elaborate on the transfer of medical information. During this process, we asked if professionals had witnessed any (near-) incidents. If so, professionals described what happened after the (near-) incident occurred, and if the (near-) incident was communicated with other parties in the chain. They discussed how they perceived the other links in the chain, focusing on tolerance and decisiveness.

That all professionals in this research have experienced (near-) incidents between all links in the chain, within as well as beyond their organisation, is something I did not expect. Therefore, the concepts tolerance and decisiveness were broadened a bit. When respondents did not experience (near-) incidents between links, they were asked to elaborate on tolerance and decisiveness in relation to the more general communication process during transfer.

Respondents described communication behaviour about their own as well as other incidents, including reactions of other professionals. Explored is if professionals, as members of a group (organisation e.g. profession), share basic assumptions of the correct way to perceive, think and feel about (near-) incidents and the communication that does or does not take place.

A reporting system is a structured mean of communication about (near-) incidents. As explained in the previous chapter (3), hospital, ambulance service and out-of-hours service have reporting systems, in majority used by nurses. In this current chapter (4), I described how different professional groups experience these systems in terms of tolerance and decisiveness. Have they used this system, and if so, did they experience talking about (near-) incidents in this specific way, lead to change within as well as between organisations?

4.4 Results

For each link in the health care chain I first describe the way professionals experience communication about (near-) incidents within their own organisation (intra-contextual knowledge sharing, types I and II). When professionals in interviews talk about (near-) incidents that happen within the organisation, I elaborate on the way professionals experience tolerance and decisiveness within the own organisation. Secondly, per link I describe the way professionals experience communication about (near-) incidents between different links, between different organisations (inter-contextual knowledge sharing, types III and IV). When professionals in interviews talk about (near-) incidents that happen between organisations, I elaborate on the way professionals experience tolerance and decisiveness between different professionals in different links in the health care chain.

4.4.1 General Practices

4.4.1.1 Tolerance and decisiveness within general practices

All GPs in our research are positive about their own practices. Often they referred to the practice as having an open, trustworthy atmosphere in general. All GPs state that, if necessary, they communicate about (near-) incidents, mostly face-to-face. As we will see, one GP has a written method: a notebook.

Over time, GP offices in the Netherlands became more and more duo- or group-practices (57.7%), and less solo-practice (42.3%, Hingstman and Kenens, 2010). None of the interviewed GPs had a solo-practice. All interviewed GPs stated to deliberate on regular basis with colleagues when they had difficult cases. They emphasized the openness between their direct colleagues, with the other GPs in their practices. One GP gave an example of a (near-) incident he had communicated about with colleagues. The case was a patient with chest pain and an oppressed feeling. The GP advised to breathe slowly and prescribed painkillers. A few hours later, the patient was dead. Although this happened a few years ago, this incident was 'never to be forgotten', he said. The GP talked about this with his direct colleague, as he called it:

> *Among our colleagues, within the safety of our peers (R22:182).*

Although the incident was something to remember, it did not change much in the organisation. The GP called it a wrong assessment, and not something, that could have been avoided. This is an example of intra-contextual knowledge sharing type I, sharing lessons learned between similar units (GPs) within the same organisation. The communication did not result in learning; in this case, communication was more a way of getting it of one's chest.

Another GP mentioned communication about an incident of a missed house call. On Monday, the patient called the GP office and asked the practice assistant if the GP could make a house call. On Friday, the GP saw the request. They discussed this missed house call in the practice:

> *That requires a safe atmosphere. In my experience, it is good; you can talk together about it without any risk (R19:079).*

In this case, communication took place to see why the house call was missed, and to learn from this (type II). The discussion did not lead to different work processes, did not lead to double loop learning.

The GP in the above case always tries to look at incidents as something to learn from:

> *Yes, fellows, errors, the only thing you can do if you want to make it positive, you can learn from it. The only things you learn from are errors, namely. That is weird, yes (R19:087).*

On a regular basis, they consult each other informally about the patients and the way they want to treat them. Besides this form of personal, direct communication, this GP also mentions they have a 'what can we do better' notebook. This notebook is used not purely for (near-) incidents, but for everything, they would like to see to be changed within the practice. They introduced this notebook recently, so the GP could not draw many examples from it yet. According to the GP assistant, these were mostly examples of things the assistants had forgotten, like personal data that was not put in the system the right way, or forgotten results from blood tests (R23). In these cases, patients experienced no injuries from it.

When an incident has a big impact, has negative effects for the patient, they do not write this down in the notebook. Incidents with negative outcomes are discussed face-to-face. An example mentioned is a patient that called the GP office because the patient had retina release in one eye (R23:191). The assistant made an appointment for the next day. In the end, the patient became blind in that eye. The patient was afraid to visit the practice again; it took almost a year before the assistant found out what had happened. After they heard, they discussed this case immediately with all the professionals in the GP office. As a result, all assistants in that GP office now are aware. When patients have eye-problems, they let patients visit the GP office the same day. This is an example of intra-contextual knowledge sharing type I, sharing lessons learned between similar units (GP assistants) within the same organisation. The communication resulted in single loop learning; nothing in the working process is changed. All assistants were made conscious of the already existing procedure.

In another practice, professionals discuss (near-) incidents mainly face to face, during coffee breaks, right after they had happened. According to this GP (R21:618), the main goal for this openness about (near-) incidents is to avoid them in the future. It is not clear if double loop learning takes place here; the GP is vague about that; he says he wants to avoid pitfalls.

All GPs stated that communication about incidents, and thus double loop learning, did not happen on a regular basis yet. As mentioned before, in two cases there is some kind of structured communication; the more formal one; the notebook, and the more informal discussions during coffee breaks. One GP mentioned that in the near future he wanted to

start with a formal, structured mean of communication about (near-) incident in the form of an incident-reporting system.

None of the interviewed GPs had experienced negative reactions from other GPs within their own practices in general, as well as when a (near-) incident had happened. Although they hardly communicate about (near-) incidents yet, in the cases that they did communicate about r, they all experienced tolerance.

In the rare cases GP professionals communicated about (near-) incidents, they experienced a high level of decisiveness. One GP sustains this with an example. A patient called with vague stomach aches, so the GP assistant checked a urine sample. The outcome was negative. Later in the evening, the patient was admitted to hospital with acute appendicitis. After discussing the incident, they decided to d let the assistants go to a communication course, to learn more about in-depth questioning (triple loop learning). This was the only given example to underline that decisiveness.

GPs all say they can change things if they want to. This comes as no surprise, since they mostly are free entrepreneurs. Within their own general practices, the GPs in this research experience tolerance as well as decisiveness towards (near-) incidents and open communication is possible. However, they gave only few concrete examples of (near-) incidents that were discussed, and only once or twice, they could give examples of actions taken afterwards, of double loop learning after intra-contextual knowledge sharing.

4.4.1.2 Tolerance and decisiveness between GPs and out-of-hours services

Out-of-hours services, because of the way they are organised, can be seen as an extension of GP practices. GPs perform duties during evenings and weekends. In our research, all GPs are affiliated with the same out-of-hours service. Therefore, in weekends and evenings, other GPs can see their patients too, and colleagues can decide to do different things. Mostly it is not a problem, but sometimes these differences can lead to discussions.

One time, a GP had a patient, who had complained about chest pain at night. The GP from the out-of-hours service took the call. The next morning, as soon as the GP saw the report in the computer, he called an ambulance. The patient turned out to have had a heart attack.

The GP had planned to communicate about this to the substitute:

> *I should let him know this. I know him well, I wrote a note. A month later, I found the note again and thought I should have sent this. Then I forgot it again and I found a long time had passed by (R21:209).*

The GP did not find this an example of a real incident; it was more something his colleague had passed off too quickly. The GP would have let the substitute know, but time passed by, and after a while the GP found it too late to go back on this case. This GP was a bit negative not only about this substitute, but about all GPs who only work duties in out-of-hours service. This GP did not talk directly to the 'doctors on call' about the problems. He said he had complained about it to management of the out-of-hours service, but did not hear anything back about his complaint. Therefore, in his eyes, the out-of-hours service is not very decisive.

Many GPs indicate that instead of reporting (near-) incidents in the reporting system of the out-of-hours service, they like the direct approach. They like to confront the other professionals themselves. However, communication to colleagues outside their own practice is experienced as difficult; they indicate that this is partly because they do not really know each other. One GP confronted a colleague from another practice about a nurse practitioner (R20). He was irritated because this professional (nurse), in his eyes, acted too much as a physician. There were no real incidents yet, but working at the out-of-hours service, he found there was some commotion about diagnoses. He tried to talk about this with the GP of the practice where the nurse practitioner worked. He experienced a defensive, non-tolerant attitude.

Another GP confronted a substituteabout an incident (R19). At around 7:00 AM a patient had called the out-of-hours service with a dislocated hip. The substitute, who answered the telephone call, advised the patient to call the GP office at eight o clock. In the eyes of the GP, this was unacceptable. He called the substitute, but they disagreed about the way to handle the incident. This GP still feels, although they do not quarrel about it, the incident stands between them. This GP did not report the incident in the reporting system, because, as he states:

> *It is my responsibility to decide if I want to report something. I prefer to say 'You did not do that right' or 'I like to talk to you about that'. However, I feel a hesitation; you are not free, because you do not work together on a day-to-day basis. When you work with each other every day, you feel more trust between one another. Once I had*

> *a substitute, who I felt he really did not do it the right way. You do not leave a patient waiting with a dislocated hip. That is not acceptable, I think (R19:176).*

Interestingly, this seems to contradict earlier findings, that professionals are more afraid of losing respect from direct colleagues, when communicating about (near-) incidents. In this case, this GP fears less known professionals more than his near-colleagues.

None of the interviewed GPs had used the reporting system of the out-of-hours service, because, as they said, there was no reason to do so, yet. So far, they did not feel they had anything to report. One GP experienced an indecisive out-of-hours service. For this reason, he does not use the system:

> *I do not work with it (incident-reporting system), but I know it exists. I have never heard anything about it, no feedback, and I find that a shortcoming, I miss knowing how something went (R19:172).*

Other GPs too did not experience decisiveness towards the out-of-hours service about (near-) incidents. They said they have not received information about (near-) incidents in general. So far, they have not witnessed a change in working processes as an effect of learning from (near-) incidents.

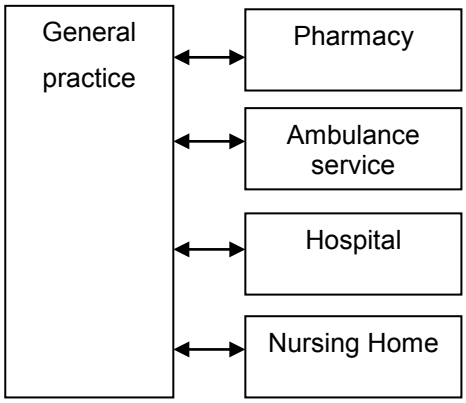
In one of the out-of-hours services in the region, they just started with a feedback system. The system works as follows: when patients are treated in the out-of-hours service, the 'doctor on call' GP can indicate that he would like to receive feedback from the patients' own GP or other GPs, involved with the patient. The feedback system is voluntary, and 77% of the GPs in this out-of-hours service participated. This was a reason to implement it in the investigated out-of-hours service too. None of the interviewed GPs had received or given feedback yet, but they were positive about the possibility. They indicated that feedback is essential in working together. This feedback system focuses on working in general, but in the eyes of the GPs, it could also be used to give feedback about (near-) incidents in order to learn.

In general, GPs see communication about (near-) incidents with colleagues at the out-of-hours service as something difficult, partly due to the 'not really knowing each other', partly due to some intolerant reactions. GPs do not yet experience the out-of-hours service as being decisive. We could not witness intra-contextual knowledge sharing that resulted in double or triple loop learning. Some GPs see changes for the future with the introduction of the feedback system, a form of triple loop learning.

4.4.1.3 General practices and other links

GPs communicate about medical information from patients with pharmacies, ambulance professionals, specialists, and residents in hospital and nursing home physicians (Fig. 4.4).

Fig. 4.4: General practises and Other Links



GPs are all very positive about communication with pharmacists:

> *With pharmacies, we have reasonable contact, which is very good. With one pharmacy we have meetings, do refreshment courses together and so on. They warn us when there are changes in blood results for kidney function. They give advice, which is a good example. With other pharmacies, we have no contact at all (R19:147).*

Another GP reacts positively to the question what do they think when pharmacists call the GP (R21). In his eyes, GPs mostly look in the file to get the right information, but sometimes the prescription is written too quickly. Then they have filled in the wrong dosage or in the meantime, the amount of times to take the medicine has changed. This GP is content with the fact that pharmacists call him about these (near-) incidents; he feels he is open to feedback. He experiences mutual tolerance when (near-) incidents happen. On the other hand, he does not see how to avoid all incidents.
In most cases, GPs see it as inevitable that (near-) incidents regarding wrong information on the prescriptions happen; there is no double loop learning. They all indicate that they see pharmacists as a safety net for (near-) incidents regarding medication.

One GP notices some differences between pharmacies in villages compared to cities. In villages in his eyes they are like ‘hand in glove’, while in the cities pharmacies are divided among themselves and play the game of conquest, which makes communication about (near-) incidents somewhat difficult (R19). On the other hand, this does not hinder inter-contextual learning. He explains pharmacists and GPs have retraining together. This GP office started with sharing information about kidney functions with some pharmacies in the city. When pharmacists know the patients' kidney functions, when distributing medicine, they can take this into account. They can also warn the GP when the dosage is not right

anymore. This kind of inter-contextual knowledge sharing is type IV, connecting in first instance non-related activities (distribution of medication versus interpret blood test) of different organisations (GP offices and pharmacies). Sharing blood test results with pharmacies resulted in double loop learning, in changing work processes.

Although there is inter-contextual, knowledge sharing about (near-) incidents between GPs and pharmacies, communication is mostly one-way. The (near-) incidents discussed here are all incidents made by GPs and discussed with the pharmacists on the pharmacists initiative. GPs are positive about that. None of the GPs confronted pharmacists with (near-) incidents, because they did not witness them, they said. Therefore, assumptions about tolerance and decisiveness towards pharmacies about (near-) incidents were not discussed and double or triple loop learning not witnessed.

The 'knowing each other' is also a theme within the link with the ambulance service. GPs experience more distance between ambulance professionals in general than with the ambulance drivers they work with at the out-of-hours service. Although the 'knowing' is mentioned as a positive thing, the interviewed GPs are also mostly positive about the contacts with all ambulance professionals. Like in the case of the pharmacists, GPs value the specific knowledge and skills ambulance personnel have:

> *As soon as the ambulance arrives, I leave it to them. Unless I see, it is not going well. These lads have a protocol and they (*ambulance nurses*) are experienced, they are better in those things than we (GPs) are (R22:130).*

GPs feel they can talk to ambulance professionals very easily. The cooperation is pleasant and the communication in general is open. In addition, GPs perceive ambulance service in general as decisive. Once, a GP had a problem with one ambulance nurse. He had thought he was not alone and that other GPs experienced problems with this specific nurse. In his eyes, the ambulance nurse acted as being the authority. After the GP had given information to the ambulance nurse, this professional often questioned patients again:

> *In addition, he began to do the anamneses all over again, starts all kinds of new things. Hello, you only have to transport (R21:411).*

He did not see this as an example of a (near-) incident, but more as a general complaint and he e-mailed the ambulance service. He thought the ambulance service acted on it, because he did not see this specific ambulance nurse again.

None of the GPs experienced (near-) incidents with the ambulance service, so tolerance and decisiveness towards (near-) incidents is not discussed, and thus there are no experiences with double or triple loop learning as a result of (near-) incidents.

While GPs did not experience any (near-) incidents with pharmacists or ambulance personnel, they did so with the third link, the hospital. GPs mainly have contact with specialists; in general, GPs are relatively positive about these contacts:

> *I have a good contact with physicians. Never actually, eh… no, never is not … but in general when I call it is a nice conversation and I have the notion that they like it when I call with a good question (R20:596).*

GPs feel specialists are less judgemental towards them than residents are:

> *However, I think nowadays there is more attention to the fact that we have very little to make a diagnosis. We have our clinical view, the patient's story and we can measure the blood pressure or sugar level but that's all (R21:114).*

He ascribes this partly due to changes in physicians, as being more open, and partly due to changes in himself, as being more certain over time. Some GPs see as one of the reasons to be positive about the relationship the fact that GPs and specialists in this region are organised in a medical coordination centre. This centre coordinates between primary and hospital care. Both parties can exchange knowledge about specific clinical pictures.

> *Through centre X (*the medical coordination centre*) between GPs and hospital, that is very pleasant. One effect is that gynaecologists have more contact with the GPs. You can talk with specialists, with each other about different topics (R20:029).*

Through the centre, they get to know each other, and at the same time, share knowledge to improve the treatment of patients. Specialists share new medical insights with GPs and procedures are introduced. This (inter-contextual, type III) knowledge sharing can lead to double loop learning, to changing work processes. One of the examples of double loop learning, one GP gives, happened on initiative of the gynaecologists. They made new working agreements about how to handle problems of patients who are incontinent. GPs indicate this is mostly a one-way sharing: specialists explain new insights to GPs.

Another GP explains that the medical coordination centre also wants to play a role in improving the relationship between both parties. In his eyes, the most common problems between GPs and hospital are due to the way GPs feel they are treated[45]:

> *You notice that through the centre more frequently incidents are discussed about communication and the way GPs are treated by hospital. Or, incidents about the late exchange of medical information, especially information about patients that died in hospital, or patients with serious diagnoses (R20:151).*

The GPs in this region all have access to the electronic data of patients in hospital. So they can get the information themselves, if they want to. Despite that, if a patient for example is deceased, they like to be informed right away, preferably the same day, so they can contact the family. They do not see the late inquire as an example of a (near-) incident.

When talking about (near-) incidents, GPs mention the discrepancies between what is in the discharge letter and the prescriptions. They mention indistinctness about what patient may or may not do after surgery. They see these as examples of incidents due to communication. One GP explains that the medical coordination centre is planning to write a communication plan to improve communication between primary health care and the hospital. For him, this is an example of seeing hospital as decisive towards the discussed communication incidents.

Nowadays many hospitals, our research hospital included, have pharmacy service points, which streamline discharge information about medication between hospital and GP offices, pharmacies and nursing homes. During the interviews, GPs did not refer to this, but this too can be seen as an example of decisiveness of hospital towards (near-) incidents regarding discharge information about medication.

Not all GPs are positive about the contact with some specialists in hospital. One GP experiences some intolerance when confronting a specialist with a (near-) incident. In his eyes, they act defensive when confronted by GPs:

> *However, there are specialists whereby it (*communication*) does not work. They defend themselves, they are not learning, that is an assessment you make (R20:375).*

He explains what happened with an incident with the surgical partnership from the hospital. A patient was admitted in hospital for stomach ache, was operated, and then discharged.

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[45]In Dutch *'bejegening'.*

The same day of discharge, the GP had sent the patient back to the hospital. That evening the patient died. The GP has no idea why, but the fact that the patient died, according to the GP, was not the reason he was upset. The GP was annoyed about how the surgeon reacted after the patient died. The surgeon, in the eyes of the GP, did not take any responsibility for the death of the patient, because he left the guidance of the family in hands of a resident. The GP thought it would have been better if the surgeon had dealt with it personally. When he confronted the surgeon about this, he did not get much reaction, so he brought it up with the surgical partnership:

> *Look, that is very .. yeah that something goes wrong, ok, that is possible, but that the surgeon who is responsible, is not present, that is not done. I think in the end the resident did the guidance. That is bitter. I tried to talk to him but when I did not get much reaction, I put it down to the surgical partnership (R20:418).*

Because this GP had this intolerant reaction, he felt the specific physician did not want to learn, so he would not call him again.

This GP was not the only GP who felt he knocked his head against a brick wall. Another GP once wrote a letter to the hospital with a complaint. Although he experienced a positive attitude towards this initiative, he did not experience any decisiveness. He felt the letter did not help much.

Another GP describes a situation where a patient of 46 years, on Thursday had a very high blood pressure. The GP called the specialist in the hospital, who advised to give the patient medication and to send the patient in, after the weekend, on Monday. The GP had a bad night, called the patient the next morning to see if he was all right. The patient had a headache so the GP called the hospital again:

> *I called at half past ten with: 'this patient is coming in now and you can sort it out, you have to admit him' (R19:139).*

This GP was not pleased that the specialist wanted to wait. The GP was worried the patient would not live through the weekend. On Saturday, the patient died in hospital. The GP felt that if the patient had stayed at home, the GP would have been responsible for his death. He did not hear anything back about this incident from the hospital.

Overall, GPs state that physicians are open for communication, although none had examples of tolerant reactions after (near-) incidents. The example of the centre, that develops a communication plan, is the only example of decisiveness that the GPs gave.

Although GPs mostly have direct contact with specialists, sometimes they have contact with residents and nurses. The reactions from those two professional groups, GPs experience as less positive. They sometimes feel that these two groups picture GPs negatively:

> *Often these are not the specialists. It is the nurses and the residents who blacken the GP (R21:133).*

Once, this GP had sent in a patient by own transportation to the hospital. The ER nurse thought it would have been better if the patient were transported by ambulance, because of the risks. The nurse made a negative comment to the patient about that. The GP felt this was not fair, for the patient had waited a long time in the ER, before the nurse saw the patient:

> *I had sent her in at noon; at 18:00 hours in the hospital, she was in shock (R21:133).*

In this case, the GP experienced that the ER nurse accused him of being responsible for an incident; the GP in her eyes should have sent in the patient with ambulance. The communication between this GP and the ER nurse happened indirectly, through the patient. It was a few weeks later that the GP discovered the patient did not want to be treated by him anymore, because, in the patients' eyes, the GP had missed the diagnosis. The GP did not get feedback from the hospital, but was confronted with the negative outcome through the patient. The GP found this was an easy score, with hindsight bias. After a conversation with the patient, everything was all right again. When the interviewer asked if in this case the hospital gave feedback to the GP about this, in their eyes wrong assessment, the GP responded negatively. The GP did not confront the ER nurse about the incident, either.

The negative attitude also plays a part with residents. Some GP experience residents in hospital as judgemental. Residents sometimes blame GPs for missing a diagnosis. Another GP sees improvement on that theme, he mentions:

> *That has been a problem for a long time, but I must say nowadays residents take us more seriously, that improves the mutual treatment. First, it was like GPs they are... eh... that is somewhat inconvenient haha (*respondent laughs*) that is awkward, but you see that changing (R19:055).*

Another GP sees different subcultures; sees differences between specialism:

> *It depends on the specialism; surgery was like that, although it is less now. They (*residents*) question you as if you take an exam. 'Have you done this and have you*

done that?' That also leads to another way of referring the patient. You used to guess what it could be. That, of course, is not the right way to put it. Now you say 'I am referring this patient with this and that diagnoses (R22:150).

Therefore, instead of being vague himself, the GP changed the way he communicated with the residents. He now does not hesitate, but makes a statement about what is wrong with the patient. He changed the working process, thus double loop learning occurred. When asked if the GP had communicated this 'taking an exam' to the hospital, the GP stated he did not bother:

I do not do that very quickly. I have to see if I can get the right one. I let it slide a bit. There are colleagues of mine who call sooner (R22:094).

Not only getting the right person is difficult in a large hospital, this GP also feels it is difficult because of the anonymity. He states it is easier to call someone if you know him, but in a large hospital, it is difficult to build up a relationship. He also thinks that it is almost impossible to trace who has treated the patient. He feels the patient is admitted by the one, operated by the other, and visits the third physician at the policlinic.

Because GPs have less diagnostic means, for example, they cannot make x-rays, they can send in patients to the diagnostic centre of the hospital. After the diagnostic procedure, the GPs mostly get a phone call about the results. Sometimes the patients go home with a note. Once, a GP got back a patient who was very upset, because the note revealed that he had long cancer:

Once, a boy felt tight in the chest. It was a strange story. My colleague sends him in for an x-ray. De boy came back three hours later with a note saying his chest is full of metastasis. Incomprehensible, I do not think that is the way to communicate. The boy read the note and was terribly upset (R21:355).

The colleague called hospital to give feedback that this was not the way to communicate. He does not know if they have done anything with his feedback.

Overall, GPs feel physicians are open for communication in general. Some GPs have negative experiences with some physicians when communication takes place about (near-) incidents, but they state these negative experiences by themselves are 'incidents' as in not happening often. GPs experience subcultures between different professional groups and experience some intolerance with residents and ER nurses. Although one GP was positive about the decisiveness towards hospital because of the development of a communication

plan to avoid communication incidents, other GPs experience with the hospital is not very decisive. This, in the eyes of these GPs, is mostly due to the largeness of the hospital; the changing of the residents; and the not knowing who in the end is responsible for the patient. Therefore, in the end, communication between GPs and hospital about (near-) incidents stays rare.

None of the GPs talked to nursing homes about (near-) incidents, and they did not elaborate about their assumptions on tolerance and decisiveness towards (near-) incidents in nursing homes. In general, they see nursing homes as being an open organisation. They all are very positive about communication with physicians in nursing homes:

> *In communication, we have something with these (nursing home) physicians. We sometimes discuss patients together (R22:298).*

4.4.1.4 Conclusion tolerance and decisiveness between GPs and other links

Between GPs and the links pharmacies and hospital, some communication takes place about (near-) incidents. GPs experience different subcultures within hospital divided between professional groups: specialists, residents, and nurses. They see specialists are sometimes negative, are less tolerant towards GPs who confront them with (near-) incidents. Despite that, most GPs are positive about the relationship and communication between physicians and GPs in general. The medical coordination centre for many GPs is a good way to be in contact with physicians from hospital. Through this medical coordination centre, some double loop learning is witnessed, although GPs indicate it is mostly the GP who learns from the specialist, who gets information about new ways to treat patients. It does not work the other way round. None of the GPs we spoke witnessed specialists who change routines because of new information received from GPs.
Communication about (near-) incidents does not (directly) take place between GPs and residents or nurses. If something has happened, the GPs hear it back through their patients. Therefore, some GPs are a bit negative about cooperation with these two groups.

GPs have not communicated about specific (near-) incidents with colleagues in ambulance service or nursing homes. Therefore, conclusions about tolerance and decisiveness are hard to make. In general, communication between GPs on one hand and ambulance service and nursing homes on the other is experienced as open and positive.
GPs and pharmacies communicate about (near-) incidents, but compared to hospital, it is quite the reverse. GPs experience pharmacists who ask questions about incidents made by

GPs and indicate they are being tolerant towards these pharmacists about that. Pharmacists feel the same way, as will be revealed in the next section.

4.4.2 Pharmacies

4.4.2.1 Tolerance and decisiveness within pharmacies

The interviewed professionals in the pharmacies perceived their own pharmacies as tolerant organisations. Both pharmacists and assistants felt they could discuss (near-) incidents openly, mostly face-to-face. In all the pharmacies, professionals say it is stimulated to report (near-) incidents. Most pharmacies have written forms to do so. They discuss these reports informally or formally during meetings, with colleagues, as well as with quality managers. As a pharmacist states:

> *We are very open to each other. That is an agreement we have made, that is how it works (R10:144).*

Although most pharmacists indicated that things could go wrong, they sometimes were less mild about their own (near-) incidents.

> *Yes, I felt very bad. When it happens to me, I am very annoyed. I'm the one who does the overall checking, so I enjoy it when I make little or no errors (R01:110-116).*

This pharmacist is glad he never had incidents with serious outcome, where patients are harmed. In chapter 5, we will address the effects of incident outcomes on communication further (incident characteristics). Although pharmacists and assistants mark their organisations as open about (near-) incidents, they sometimes experience negative feelings. For example, an expensive medicine, that should have been kept cold, was left outside the fridge. This was not mentioned to the manager because he was afraid the manager would be very angry about it. According to the assistant, this meant talking with a loud voice, not yelling:

> *More like 'darn that cannot be' (R11:144).*

Another pharmacist had occasionally lost his temper after an incident had happened:

> *I sometimes get angry, especially when it is a very stupid error, or one with very*

> *serious consequences, or when I think it is very 'schlemielig[46]'. So I get angry, yes (R03:331).*

That same pharmacist also stresses the importance of being open, of talking about (near-) incidents. Therefore, non-tolerant reactions are not always a barrier:

> *In my opinion, he (manager) has to know everything that goes on. I do not care if he takes it out of my salary or if I get a scolding, he is the boss and in the end he is responsible. So no matter what has happened, he has to know (R01:144).*

Most pharmacists and assistants experience that serious incidents are resolved immediately, first with the patient. Secondly, there is communication between the one who discovers the (near-) incident and the parties involved; the direct colleagues. The next step is that in most pharmacies the (near-) incidents are written down on forms. In the researched pharmacies, the report was made on paper, not digital. Sometimes this form is the same form used for complaints; sometimes it is a form, exclusively for (near-) incidents. In most pharmacies, the forms are discussed in regular meetings. After this intra-contextual knowledge sharing, if necessary, professionals decide to change routines, to create double loop learning. As a pharmacist states:

> *Together we have to try to find a solution. We change the protocol (R01:055).*

Sometimes the manager takes the first step for double loop learning, for changing work processes (R01). Another pharmacist stresses all pharmacy professionals as being open to change (R02). He talks about professionals taking actions after a (near-) incident:

> *We are open to change; we do a trial to see if it works (R02:347).*

One example of decisiveness, of change after (near-) incidents, has to do with 'buffer patients' (R04). Usually patients get medication boxes and on the boxes, the frequency is noted. Some patients have trouble remembering if they have taken the medication at the right time. They get little bags with all the medication in one bag for one specific time. These patients are called 'buffer patients'. If there are changes for these 'buffer patients', this sometimes goes wrong. For example, for one medicine the dosage was changed from two times a day to once a day. Instead of changing the medicine, an extra line was imported into the system. The patient now got the medicine twice a day, as well as once a day, thus an extra dosage. They did not communicate about these incidents with other pharmacists.

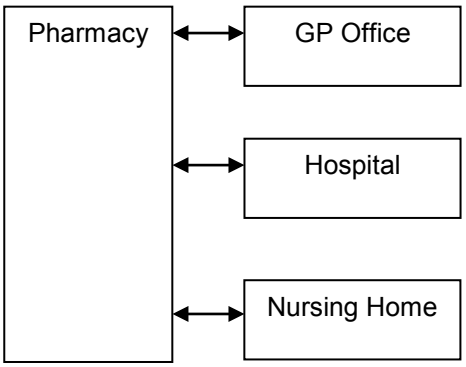
[46]Dutch term that looks like the American-English slang schlemihl, or schlemiel.

Nevertheless, the interviews revealed that in different pharmacies these type of (near-) incidents occurred. Independently from each other, they have changed the routine, and double loop learning happened.

Although sometimes professionals experience some negative reactions from colleagues and/or managers within the pharmacies, overall both professional groups (pharmacists and pharmacists' assistants) experience their own pharmacies as being tolerant and decisive organisations. For pharmacists who are entrepreneurs (like GPs) this decisiveness comes as no surprise, as they control their own work processes. Nevertheless, pharmacists who are employed and therefore more depending on decisions of others, experienced their pharmacies as being decisive towards learning from (near-) incident, as well did pharmacist assistants.

4.4.2.2 Pharmacies and other links

Fig. 4.5: Pharmacies and Other Links



The interviewed pharmacists and pharmacist assistants indicated they mostly have contact with GPs and secretary assistants in general practices, with residents and specialists in hospital, and with physicians in nursing homes.

Most pharmacists we interviewed where very positive about the contact with the general practices, especially with the GPs themselves. Some called the GPs colleagues, others pharmacists talked about friendly relationships with GPs. They all emphasized that they have medical pharmaceutical consultations[47] on a regular basis. Besides these meetings, in general, pharmacists find it is easy to communicate with GPs.

> *We can call them all the time, and they call us for questions. We work together pleasantly, never any disagreements. It is perfect really. They do not mind if we make suggestions like 'it is better if you do that'. They are open to suggestions, yes, and the other way round too (R01:015).*

[47] In Dutch *Medisch Pharmaceutisch Overleg.*

Other pharmacists states to that they have a direct line, and communication is easy. Several pharmacists mention that they feel communication goes smoothly because of the fact that pharmacists and GPs mostly know each other. Pharmacists call GPs about (near-) incidents that happen with the prescription of medication. The most common things that pharmacists deliberate about are (near-) incidents that have to do with prescriptions (imprecision about dosages, two or more medicines that interact with each other (interactions), and indications that plead against the usage of a specific medicine (contra-indications). In all these cases, pharmacists call the professional who described the medicine, mostly the GP. They feel the GPs are tolerant; afterwards many GPs thank the pharmacists for calling. As a pharmacist says:

> *Yes, very open, positive, we get mail back with 'yes, thanks for your action' or 'yes, forgotten thanks' (R01:025).*

Some pharmacists experience intolerant reactions form a GP. One pharmacist hesitated to call a specific GP with questions. According to the pharmacist his attitude was:

> *They react like 'I have prescribed it, so make no fuss about it, and do not interfere'. Like that, but these reactions are exceptions, occurring very sporadically (R04:121).*

This pharmacist tried to avoid contact with this specific GP by putting the questions to the GP secretary-assistant. Only if it was unavoidable, he talked to the GP himself. Although the pharmacist feared the reaction, he kept on calling because he needed the answer. In general, most pharmacists and pharmacist assistants experience it is normal to call the GP for consultations.

Pharmacist assistants also are positive about the way communication works between them and GPs. This respondent experiences rarely negative feelings. Only when the GPs are very busy, pharmacist assistants' experience some abrupt, less tolerant reactions:

> *Well, when they are very busy they maybe a little abrupt, but we do that too, I guess… we keep it as short as possible, maybe they are busy (R17: 098).*

Most (near-) incidents discussed are seen as being the responsibility of the GPs, as prescribers of the prescriptions. The pharmacists state they have a good control system, through which most things that happen are near-incidents. As pointed out earlier, most discussed (near-) incidents are brought on by pharmacies because they feel the GP made a mistake. However, one pharmacists remembered a (near-) incident made by the pharmacy and communicated with the GP. This GP reacted very tolerant by stating that if the GP had

made as few errors as the pharmacists did the GP would be very pleased with himself, suggesting that (near-) incidents where pharmacists are responsible are rare.

Overall, pharmacists and pharmacist assistants are very positive about GPs, find them open when confronting them with (near-) incidents, and experience a tolerant attitude. It is mostly a one-way street: pharmacists confront GPs with things that went wrong at the general practice and seldom the other way round. They experience decisiveness towards the direct incidents, to solve the problem at hand. However, they do not experience double loop learning, thus inter-contextual knowledge sharing do not seem to change anything in the end.

As specialists in hospital prescribe medication too, pharmacists call these specialist mostly about (near-) incidents that have to do with the discharge receipts. Discharge information can be contradictory, wrong, or missing, so pharmacists call hospitals to get it right. Pharmacists and assistants indicate it is difficult to get the attended physician right away, mostly because the telephone number of the prescribed physician is missing. They first talk to the secretary, not getting the right answer, and then they try to get a physician. Therefore, they see hospital as more complex than GP offices and thus more difficult to communicate. One pharmacist complaints about the fact that first he has to explain it to the secretary

> *First you get the secretary, he does not understand the question, does not have the required training. He has to make the decision whether to bother the specialist. Sometimes they (*secretaries*) are easy, like 'you are the pharmacy, excellent, no problem, you know what you are doing' but sometimes you get a reaction (*respondent makes an irritating voice*) like 'my chief, the specialist, is very busy, I do not know if he has time for you'. Then I react short-tempered: 'make time' (R10:025).*

One pharmacist feels in 80% of the time he deliberates with residents and 20% of the time with specialists. Depending on the content of the question, pharmacists do not like to communicate with residents, but with the specialists:

> *If there are common questions about a change in dosage, yes, you just ask the resident, they look it up in the file. However, if you have content questions, for example about interactions or contra-indications, you should talk to the specialist (R04:027).*

Pharmacists experience differences in the way they communicate with specialists, compared to GPs. As stated before, pharmacists feel it is easy to talk to GPs, but with specialists, they use different words:

> *With a specialist, you try to be polite and not to judge, you are humbler because experience has taught you that they are much more open to deliberation. You do not say 'I think you did it wrong because I think you have to do this or that'. This does not apply to all the specialists, that sound negative, but the experience is, you had better say 'I have noticed something, I have learned it differently. There is probably a reason why you did what you did, and can you explain this to me?' You use questions instead of statements (R01:225-227).*

Several pharmacists stated that it is better to ask questions to specialists and to take up a humble position. By doing so, they feel they have a better chance to deliberate with the specialist. Compared to GPs, pharmacists experience a greater distance in knowledge with specialists:

> *You are aware of the fact that the hospital has a lot of knowledge and maybe more than you do yourself. Whether that makes me careful, I do not know, but you start the conversation differently (R01:221).*

This pharmacists' experience is that this works, that by communicating differently most specialists seem to be open for discussion. However, sometimes even a different approach does not help. Pharmacists' emphasise that these are exceptions, but that specialists sometimes grumble, or fly into a rage. Some specialists use a patronizing tone of voice and do not want to discuss it:

> *They are abrupt and blunt, like 'Yes, that's right, I prescribed that, good day madam' yes, that is often the reaction of a specialist. It is mostly a specialist opinion to assume he is quite sure of what he does and that he does not make any mistakes (P3:267).*

The above situations seem to be describing communication patterns in general, not communication about (near-) incidents. The pharmacists themselves experience this too, by emphasizing that they only ask questions, not confronting physicians about (near-) incidents. On the other hand, when a specialist prescribes two conflicting medicines, and the

pharmacist calls to ask questions, in a sense, he communicates about a (near-) incident. In chapter five, different insights about the definition of (near-) incidents are discussed.

Although rare, pharmacists are called by specialists about (near-) incidents. Once, a specialist called a pharmacist because the pharmacist delivered the wrong medicine. This led to palpitations of the heart and the patient was re-admitted. The reaction of the specialist was not very tolerant:

> *He (*the specialist*) swore like a trooper and asked if I was out of my mind to do what I had done. At that point, I had no idea what I had done wrong (R09:065).*

Although it was not pleasant, the pharmacist could understand the specialist's anger, considering the gravity of the situation. He was glad the specialist had called so the next time he would not make the same mistake twice. Negative reactions do not stop communication. Pharmacists balance the negative reactions with the need for information:

> *I have to call that person, I know that person may not be very friendly in response to this question, do I take the chance to call anyway with this maybe insignificant question, do I take the risk of being bawled out… maybe by e-mail you do not get the same reaction (*respondent laughs*) (R05:381).*

One pharmacist thinks that physicians will be more tolerant, more open-minded to input from pharmacists, because pharmacists nowadays are reporting all calls. Not all pharmacists are positive about the possibility this will change things.

Pharmacists do not see hospital as being decisive:

> *Look, we have to call about it, so they hear that something is wrong, only after 20 years I do not have the illusion that they are suddenly going to say: let's do things differently (*respondent laughs*) (R06:263).*

The interviewer asks if the respondent has tried to communicate with specialists, the respondent says no, because he already knows how and why specialists will react. In this case, seeing the organisation as indecisive is a barrier in communication. Another pharmacist once took the initiative to write a complaint to the hospital regarding discharge medication. He got an answer back that the hospital board had received his complaint. They acknowledged the problem, and they internally would pay attention to the problem. This answer left the pharmacist out in the cold, he said.

Pharmacists do not see hospital as decisive; do not witness double loop learning. In their eyes, no changes are made regarding working processes. Over the years different pharmacists, in different pharmacies, had the feeling they saw the same (near-) incidents, regarding discharge medication from hospital to pharmacies happen repeatedly. They joined and decided to collect all reports on (near-) incidents within these different pharmacies regarding hospitals. Another pharmacist also remembered the inventory of (near-) incidents and hopes that they would have at least read some:

> *I cannot say in detail which feedback the hospital has received; I assume there will be some good examples. At a given point it had real volume, I do not assume they have read it all, but they would have discussed some good examples, I guess (R05:105).*

Another pharmacist knew that there was once a meeting, they had the idea to talk about it with a glass of wine, but as he stated:

> *It was cut short for lack of good will (R03:215).*

He is not the only one who feels hospitals are indecisive towards reported incidents. Overall, they experience hospital as an organisation that does not easily change. Some pharmacists think this is due to the changing of residents.

> *I can try to reconstruct the cause, but what is in it for me, it takes a lot of time, and it will not be changed. Every time there is another prescriber. I cannot change the behaviour of all the prescribers (R05:307).*

Other pharmacists too did not feel anything changed for the better. One pharmacist reported to the specialist, but never got feedback on the report (R07). Other pharmacists and pharmacist assistants also felt the effort to change things had no effect. They all stopped gathering (near-) incidents to report to the hospital. One respondent found another way to communicate about (near-) incidents in hospital. Nowadays, he reports to the centre for patient safety (CPS), allied to the hospital:

> *Nowadays we report it to the centre, and hope they can do something with it (R03:215).*

In general, pharmacists do communicate about (near-) incidents to hospital, especially to specialists and residents. Although sometimes they experience intolerant reactions, this is not a reason to stop communicating. On the other hand, decisiveness sometimes does stop communication about (near-) incidents. Most pharmacists do not see hospital as being

decisive. Although pharmacists over the years reported (near-) incidents regarding discharge information repeatedly, there did not witness double loop learning, they did not see working processes changed as a result of their communication. Like GPs, pharmacists too did not mention at that time the already installed pharmacy service point as an effect of communication about (near-) incidents regarding discharge receipts. In the eyes of the pharmacists, only one thing has changed. Because most information nowadays is digitalised, (near-) incidents due to bad handwriting are mostly in the past.

The pharmacists in this research experienced hardly any (near-) incidents with nursing homes. One pharmacist assistant remembers sporadically phone calls from nursing homes who reported that the pharmacy did not deliver certain medication. This pharmacist assistant felt they reacted tolerant towards this feedback from the nursing homes. They tried to deliver the medication the same or next day. Another pharmacist assistant is sometimes a bit irritated about the way nursing homes communicate. They mostly communicate by fax, ordering repeat prescriptions for one month. Sometimes the nursing homes also ask for medication that falls under the opium law. In that case, the pharmacist needs a new receipt from the GP or the nursing home physician. This pharmacist assistant did not experience any decisiveness regarding the procedure on the opium related medication:

> *With opium prescriptions, it happens often and I make a note of it. On the one hand, they understand the problem, but on the other hand, I feel sometimes they just try to see if we deliver that or not. There are always different people (*professionals of the nursing homes*), you never see one person make this mistake three times in a row, but it happens often and they react like 'yehyehheh' they know when I call them, but nothing happens (R12:117).*

In this case, the pharmacist assistant suggests that this inter-contextual knowledge sharing maybe leads to individual learning, but certainly not to organisational double loop learning. To conclude, most pharmacists and assistants do not have much contact with nursing homes about (near-) incidents. Not much is to be said about tolerance. In the one case that communication about (near-) incidents between pharmacies and nursing homes is mentioned, the pharmacist assistant did not experienced decisiveness and witnessed no double loop learning.

4.4.2.3 Conclusion pharmacists and other links

The pharmacists and pharmacist assistants from different pharmacies are positive about the way they communicate with GP offices and hospital in general. When (near-) incidents start of in GP offices, giving wrong, contradictory or missing information, pharmacists call to get the right information. They experience GPs to be open for feedback. None of the pharmacists received spontaneous feedback from GPs about (near-) incidents, happening at the pharmacies. Only once, a pharmacist took the initiative to share knowledge about a (near-) incident that happened in the pharmacy. He experienced the GP in this case as being tolerant. Most pharmacists, at one time or the other, have experienced negative reactions from hospital, especially from some specialists. They all point out that these negative reactions are exceptional, but they do have an effect on the way they look at hospital as being less tolerant. Pharmacists as well as pharmacist assistants do not see general practices, hospital, or nursing homes as being decisive, they do not have the feeling things can change, and they do not witness organisational double loop learning.

The communication between pharmacies and GP offices in general goes smoothly. Both parties seem to accept that pharmacies are the 'back-up system' for GPs, regarding prescriptions. For pharmacists, medication is their core business, whereas it is only part of the job for GPs. Pharmacists keep on confronting GPs with flaws in prescriptions, although, over time, nothing changes, as GPs do not seem to learn from this feedback. Possibly, for pharmacists, it is part of their professional ethics to give feedback. It seems that GPs agree with this method of working.

4.4.3 The ambulance service

4.4.3.1 Tolerance and decisiveness within the ambulance service

Most ambulance professionals experience a tolerant environment within the ambulance service; they feel can talk to each other openly about (near-) incidents. In the GP office, and in pharmacies, intra-contextual knowledge sharing mostly happened face-to-face, and sometimes (near-) incidents were written on paper. In the ambulance service, communication about (near-) incidents happens face-to-face, by telephone, by email and by using a digital reporting system.

Face-to-face communication takes place when the direct teams (ambulance nurse and ambulance driver) evaluate their runs one on one (type I of intra-contextual knowledge sharing). Most professionals indicate that they do that many times. When evaluating runs,

they also discuss (near-) incidents. When changing shifts, colleagues talk to each other about for example stuff that is missing in the ambulance. Different ambulance nurses talked about the difficulty of making the right assessments. Because the hospital has several locations, it is important to choose the right one, depending on the clinical picture. We will see, this is also a theme when discussing (near-) incidents happen with GPs or physicians in hospital (see paragraph 4.4.4.5).

Between runs, with colleagues in the 'living-room'[48], they discuss these assessments to find out if they did not make an error, if it is a (near-) incident or not. Ambulance professionals indicate they talk about these issues, not only during working hours, but also at home, with their partners, or sometimes with colleagues they see outside their work.

Once, every six to eight weeks, meetings between all professionals in the ambulance service take place. One ambulance nurse indicated he sometimes brought in a case to discuss, but this happened too rarely:

> *They tried it for a short period. I brought in a case, I am a fan of it, and there is no better way to learn from case reviews and feedback (R24:210).*

Another colleague feels these case reviews are of no use because everybody had something else to say about what one should have done (R28).During these meetings (near-) incidents are discussed.

Communication about (near-) incidents also takes place by telephone. When, for example, a centralist announces an A1-run and the ambulance nurse later on thinks it is an A2-run, they communicate about that with each other by telephone (intra-contextual knowledge sharing type II). Reasons to do so are practical, as the centralists' station in the incident room, together with the police and the fire department at the other side of the town. Because both parties are physically not stationed at the same place, most communication takes place by telephone.

Within the ambulance service, a digital incident-reporting system is in place. Between midst of 2006 until the end of 2007 ambulance professionals reported 230 (near-) incidents. A part of the reported (near-) incidents have to do with wrong addresses and occur between ambulance driver and centralist. Driving to the wrong address has consequences for the time between the call and the arrival. If delayed, this shows in the computer system, thus for many professionals a reason to report it in the digital system.

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[48]The place where ambulance professionals wait between runs.

Sometimes colleagues use the reporting system, for example to report technical deficiencies, but many times, they do not see the surplus value to report:

> *If I have talked about it with the driver, the colleagues and at home, I am finished with it. Unless it is technical, for example, a stretcher collapsed just like that. These are some of the things we report in the system (R24:206).*

Thus, ambulance professionals' distinguish between what they discuss directly, and what they report in the digital system. Some ambulance professionals feel reporting a (near-) incident in the system is like snitching. They favour the direct, face-to-face approach. Sometimes, professionals in the ambulance service email each other about (near-) incidents, mostly when they establish the other one did not leave the ambulance in the right state. According to the ambulance professionals, communication about (near-) incidents within the organisation happens in an open way, without blaming. However, they do not always feel safe. One ambulance nurse once received a complaint from a bystander, who was dissatisfied about the given care. He had to answer to his manager about this. He felt the manager was partial to stories of the patients' and families.

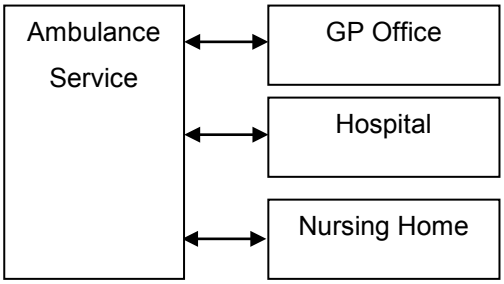
> *That does not feel right. Mostly, these complaints are baseless, so I think, try to look at it from the perspective of the personnel, first protect your personnel (R24:111).*

In this case, the professional did not feel back-upped. On the other hand, most professionals within the ambulance service experience the organisation as open, blame free and tolerant towards (near-) incidents. Although they feel the organisation tries to learn from (near-) incidents by discussing them, over time, things are not really changing. They cannot give examples of changing working processes due to (near-) incidents, of double loop learning. Thus, ambulance professionals do not perceive their own organisation as decisive.

4.4.3.2 Ambulance service and other links

Interviewed ambulance professionals mostly have contact with GPs in GP offices, in hospital mostly with nurses and sometimes with specialists and residents, and occasionally with nurses in nursing homes. Ambulance service is the only organisation that has a formal feedback system. They work with transfer forms, with

Fig. 4.6: Ambulance Service and Other Links



carbon copies. The last copy, the white one, can be used by the other link, to give feedback on the actions, taken by ambulance professionals. During interviews, none of the ambulance professionals had examples of receiving this kind of feedback.

Ambulance professionals have contact with GPs during daytime as well as in evenings, at nights, and in the weekends (out-of-hours services). When transporting patients, ambulance professionals sometimes feel undervalued by GPs:

> *What is annoying is when they (GPs) see me as 'van Gent en Loos' (*Freight Company*) (R29:093).*

This is exceptional, over time, ambulance professionals feel valued for their knowledge and expertise; feel taken serious:

> *There are GPs they welcome you very amicably, they deliberate with you: 'we found this, what do you think? Shall we do this?' Together we decide the policy, the urgency and then I (ambulance nurse) take over the case (R24:028).*

Another ambulance nurse states that it also depends on the way you deliberate:

> *If you ask for advice you get feedback, yes they will listen to you. The experience is that it depends on how you bring the news yourself (R25:115).*

That way to 'bring the news' according to her, is explaining what you have done and asking what could be the right action:

> *I have done this, and that, and this, this, and that, do you know more options for me, or have I done enough? (R25:137).*

This type of deliberating is comparable with the way pharmacists communicate with specialists in hospital, by asking questions.

Although positive, most ambulance professionals are ambivalent about the GPs. On the one hand, they experience that GPs treat them with respect, are positive about them, and deliberate with them. However, at the same time ambulance professionals are negative about the way communication takes place, especially during transfer of care:

> *There is nearly no communication. Often it is like 'O, yes, I think you can manage, I have called, and the note is over there'. That is his way to communicate, so to speak. In my opinion that leaves much to be desired (R24:028).*

Many ambulance professionals see that both parties have different expertise:

> *GPs are glad we are present, a GP is a very broad concept, and they know about everything, but acute care, in acute stress situations, the GP is often at loss what to do. How often does a GP do reanimations? The answer is seldom. We do this more frequently, so when something happens, they are glad you are there (R32:047).*

Different ambulance professionals complain about GPs that do not stay with the patients. According to the ambulance professionals, many times GPs leave the scene. Ambulance professionals sometimes see that as a problem, because in dubious cases, they cannot deliberate. The ambulance professionals who perform duties at out-of-hours services as 'house call team assistants' seem to have more comprehension for not being on the scene:

> *Here in city X with the out-of-hours service, especially they (GP and house call team assistant) cannot always wait, so sometimes they are gone. Unless the situation is serious, most of the time, they will wait, but even that is not always the case (R24:54).*

Another ambulance nurse also sees GPs making an assessment, stay on the scene, or go to another emergency. This comes with the job. He does not see his presence as a big issue.

At best, GPs that leave the scene have left a transfer form with the necessary medical information. Ambulance professionals indicate that many times, there is no or not enough information left. This is an issue in the whole ambulance service, and several times reported to the manager, who repeatedly gave this feedback to the GPs.

> *This needs attention, because if we arrive, it is annoying when again and again, the information is missing (R30:053).*

The ambulance nurse states that lately, the transfer of medical information is much better, so the feedback from the manager of the ambulance service to the GPs seems to have some effect. In this case, there seem to be some decisiveness in the chain, as this ambulance nurse experiences, that the communication is better. No work processes are changed, so double loop learning is not in order and seems not to be necessary. Nevertheless, other ambulance professionals also mention the missing medical information. For example, another ambulance nurse complaints that he has to begin all over again, because of the absence of the information. This ambulance nurse indicates, the manager has to bring it up *again* with the GPs, suggesting over time that this has not really changed. Several

ambulance professionals mention examples of missing medical information from GPs, thus in this aspect, the chain is not very decisive.

Examples of ambulance professionals that communicate with GPs, have to do with assessment of which hospital or moreover to which specialist the patient should be transported.

> *Over time, I have had some differences in opinion with the GP about what it could be, but this always happened in good harmony. Sometimes I am right, and many times the GP is right too (R24:071).*

Other ambulance professionals also indicate that there are discussions with GPs about where to bring the patient, put in an iv-drip or not, give oxygen or not, or if to plank the patient after neck injury. This communication takes place openly, they say, and GPs are open for suggestions. One ambulance nurse called a GP after an incident:

> *Years ago, I had a patient with back pain, the GP had missed that. I planked the patient, and later on, I called him, like 'I thought it could be this or that, so I have done this'. Yes, we have talked it over (R28:089)*

The nurse experienced some irritation but he states that overall the GPs are tolerant towards the ambulance professionals when they bring up other opinions about what to do.

Another point of discussion between ambulance service and GPs is the urgency. Ambulance professionals work with protocol, to decide what type of run one has to carry out. Is an emergency A1-run (with high speed and lights and alarms); a less urgent A2-run (within the legally permitted maximum speed), or a planned B-run needed. The planned B-run is less a discussion, but as a centralist states, about A1- or A2-runs, they sometimes have discussions. An example given is when a patient has a blood pressure of 70/40 the GP can say it is an A2-run because he thinks the patient is stable, but the centralist can overrule this. According to protocol the patient is instable with that kind of blood pressure, thus in the centralists' eyes an A1-run is permitted (R40). Other ambulance professionals too indicate in the end it is the centralist who decides what kind of runs to make. Some professionals in the ambulance service do not share the opinion that protocol is leading. A house call team assistant explains:

> *The centralist works according to protocol. For example chess pain, they enter this in the system, but if the GP says the patient is stable, make it an A2-run, then hopefully*

> *the centralist is not so pigheaded to say it's an A1-run. Mostly this goes well (R37:102).*

He sees GPs as being less sure, when it is a patient they do not know; when it is an unknown patient, they see as a in the out-of-hours service.

> *When it is their own patient, they are more secure, they know the patient's history. However, an unknown patient with chest pain, they mostly send in immediately (R37:110).*

An ambulance nurse is worried about the way the nightshifts are replaced by the out-of-hours services:

> *They (*GPs at the out-of-hours service*) are very often from 'outside'. GPs sell their nightshifts, and they (*'doctors on call'*) are strangers to the patient. That makes communication not any easier (R24:056).*

Overall, ambulance professionals experience positive attitude from GPs and feel free to communicate openly and deliberate about cases. There are some issues, how to perform the job. Ambulance professionals feel they deliberate about issues with the GPs before anything happens, they do not see this communication about (near-) incidents. In general, they feel GPs as being tolerant, although only one confronted a GP with an example. Two issues stand out: urgency (A1- or A2-run), and the transfer of medical information. The urgency is an issue of the responsibility of GPs versus the responsibility of centralists, who work strictly according to protocol. In chapter six, responsibility will be addressed some more.

When ambulance professionals see a problem with GPs, like the missing information, they communicate with the manager, who brings it up with the GPs. Although some witness progress, because the issue of the missing information is brought up regularly, the GP offices are not seen as very decisive on this aspect.

Ambulance professionals communicate with hospital face-to-face when they bring in patients to hospital. Before they arrive, the ambulance service has contact by telephone with the hospital. One centralist explains that in the last months something has changed in the way they work. First, centralists made the announcement of an ambulance to the hospital. The centralist was a link between the ambulance professionals on the ambulance, and the hospital. Because between these links information about the patient got lost, was contradictory or sometimes was wrong, the ambulance service, decided to remove the

centralists' link. Nowadays, the ambulance professionals on the ambulance call the hospital directly. The centralist sees this as a benefit, these more direct lines (R39). This is an example of inter-contextual knowledge sharing about (near-) incidents (wrong, missing, or contradictory information) that has led to double loop learning, to changing work processes in the ambulance service, due to (near-) incidents between the service and hospital.

The announcement itself does not go smoothly either. Ambulance professionals sometimes do not feel welcome in the ER. Not only in interviews, but also in the incident-reporting system of the ambulance service this 'not being welcome' was reported, too:

> *Often, they look at you from the glass door; you just had them on the telephone. It takes a while, before some shows the right room. On a regular basis, there is a discussion in front of patients. Even patients sometimes make remarks like 'you really feel welcome here!' (AIRS: 332).*

On the other side, ER nurses affirm this picture of 'not feeling welcome'. They confirm that they react this way when a patient is not announced. They do so, they say, because it takes time to find out if the patient really is in the right place. Sometimes a patient needs to go to the policlinic or to another department of the hospital on the other side of the town:

> *You see that the ambulance does not feel welcomed. I get that, because you have a little bit of an attitude, like, what is wrong with the patient. They (ambulance professionals) can come like 'We have patient X, is expected at the policlinic, or must be admitted? We have to make phone calls. If the patient needs to be at the ER we fetch a bed, but it is a lot of bother, to find out what is needed exactly. Otherwise, we have a patient in the ER for nothing (R42:702).*

The issue of 'not feeling welcome' is mentioned, but on the other hand, ambulance professionals sympathize with ER nurses. Many ambulance nurses we have interviewed, have worked in the hospital we examined, during their education to become a nurse. Because they know one another in hospital and because they know what the work is about, they understand their point of view. Changing the scenery works both ways. ER professionals also now and then work along with ambulance personnel during training. This can have an enlightening effect: One ambulance chauffeur worked with an ambulance nurse who, a few weeks before, was ER nurse in hospital. After this shift, the ambulance chauffeur

had the feeling the nurse had more understanding for their line of work:

> *Well, I had to do a shift with her, we got a victim right away, 5 stacks with a knife in the back, well that one was gone. There we were, in pitch-black, with only a flashlight, at night. It is a big difference with a hospital, in an ER, surrounded by physicians and instruments (R32:088).*

As an ambulance nurse states:

> *Appreciation is getting better; also because from the ER they walk along with us a few times for a training period, we learn to look in each other's kitchen (R27:224).*

Knowing each other, or at least one's work, seems to enlarge mutual understanding and therefore inter-contextual communication. Overall, ambulance professionals are positive about communication with ER nurses. They do not have any examples of (near-) incidents.

Ambulance professionals with special cases often afterwards check if they were right, to learn to estimate situations better the next time. They see this type of individual learning as part of their job.

Again, like with GPs, there are issues with hospitals, like feeling welcome. Another issue has to do with the fact, that hospital has two different locations. Especially the splitting up of cardiology and traumatology on one side of town and neurology on the other side gives friction. Most ambulance professionals stress the difference between cardiology and neurology, as the next three examples will show:

> *From all the cardio patients you send, only a small percentage actually has a condition, but in general, they are all accepted. With neurology, I think, because it is vague, you do not clearly see what the problem is (R30:126).*

Alternatively, as another ambulance nurse puts it:

> *Cardiology is easy, about your heart, you can measure stuff. With neurology, it is much more difficult (R24:162).*

Another ambulance nurse thinks the difference is due to policy, to the way different specialism work:

> *Cardiology is just clear, how do I say it, you have a phone number, you can call a resident from cardiology, in any case clear because you can just phone and deliberate*

properly, the policy is clear. With other specialism, for example neurology, it is more difficult (R31:065).

Some physicians in hospital are also aware of the problem of two locations. For years, one specialist has fought to have complete care on the two locations (R65:227). In his eyes, it was a management decision to centralise one specialism in one location and the other in the other part of town. This specialist feels handicapped, although he has no concrete examples, he feels patients die because of the division (R65:233).

Patients do not always have clear, specialism separated, complaints. One ambulance nurse reported an incident to his manager about neurology. The patient had banged his head, and had an abrasion. The ambulance nurse brought the patient to the ER of the hospital department, were neurology is situated, because of the head injury. The hospital did not want to accept the patient, because of the abrasion. In the eyes of the ER resident, the patient should go to the traumatology, at the other side of town, to get stitches first. The patient could have been spared an extra ride between the two locations, so the ambulance nurse reported this to his manager, who deliberated with hospital about this. He does not feel the hospital is being decisive, he thinks the attitude of the hospital will not change,. (R29:073).

One ambulance nurse once had a conflict with a neurologist. The ambulance professional wanted to send in a patient to the hospital with, what he thought, were neurological problems. The patient talked a little bit slower, reacted a little bit in slow motion. There was no paralysis yet. The ambulance nurse indicated it was more like a hunch. First, the ER nurse indicated to be afraid to call the neurologist. The ambulance nurse, who previously worked in that same hospital, took over. He called the neurologist, who started to question him about the situation:

*First, he began by asking me about the electrocardiogram (*ECG*), and the results of the other checks. Did the lung specialists know the patient? So I said 'no it is not that', and he said 'it does not sound neurological' I said 'yes, that is up to you'. 'But do I have to come to the hospital for that?' So I said: Yes, I am working too, tonight, that is our line of business, at night people get sick too'. The neurologist said I had a big mouth; he was a little bit unfriendly. Then I said 'I do not think we should communicate this way, this is my personnel identification number, and this is where you can reach me'. With a curse, he hung up the phone (R26: 076).*

The ambulance nurse leaves the patient at the ER, and goes back to the ambulance service. He also calls the centralist to tell him what had happened. Afterwards he went to sleep. In the morning, the centralist calls to say that the neurologist had called to the ambulance service, and asked to call back. At the end of the morning, the ambulance nurse calls back:

> *He apologized, said he had misbehaved. The patient had a haemorrhage and symptoms of paralysis, I cannot be happy about a patient having these problems, but I had a strong feeling to say : 'I told you so' (R26: 076).*

Other ambulance nurses also indicate that calling neurologists out of their beds at night is problematic. The above examples show communication between ambulance service and neurologists do not go smoothly, especially at nights. Ambulance professionals seem to have a solution for better communication, suggest letting residents to take shifts at neurology too, as they do with cardiology. None of the ambulance professionals knows if this changing the work processes is brought up to hospital, thus we cannot conclude anything about decisiveness. Another ambulance nurse sees a solution in another work process. He suggests some kind of decision tree where the ambulance nurse can call someone to deliberate, which location should be the best in curtain cases (R29:077). This idea developed during the interview, so nothing is to say about double loop learning on this item.

Communication about (near-) incidents that happen due to 'being on the wrong place' sometimes do have effect. One ambulance nurse reported an incident to his manager. There was a working agreement between hospital and ambulance service to bring patients with certain cardiac indications to go directly to the cardiology ward. The patient should not be examined in the ER. This would save time, and thus patients. However, one ER resident insisted on examining the patient first in the ER. Another colleague from the ambulance service had the same experience, so the ambulance nurse reported it to the manager. The manager talked it over with hospital. It appeared to be a new ER resident, who was not aware of the work process. In this case, first loop learning occurred: all residents again were informed about these working agreements (R27:244).

The ambulance professionals in this research are ambiguous about specialists in hospital, especially neurologists. They therefore do not always perceive hospital as having an open culture to communicate about (near-) incidents. Like with GPs, ambulance service professionals mostly communicate with their manager when they see 'issues'. The manager gives the feedback to the hospital. Decisiveness is also ambiguous, decisive as well as indecisive examples are given, and double loop learning is not visible for ambulance professionals.

Ambulance professionals overall are positive about communication in general with nursing homes. They feel nursing home physicians really know their patients and mostly the medical information needed for transfer is in order. One ambulance nurse illustrates that:

> *They (*nursing home physicians*) know them better than we do, they know exactly what the reason for transportation is, and why they were send in, for example to hospital. They know what is up (R24:219).*

According to ambulance professionals, this being well informed, is partly due to the fact that most of the time, patients are staying in nursing homes much longer, than for example, in hospital:

> *The patient is well known there, often the nursing home physician visited him so the transfer information is ready (R28:303).*

An ambulance driver states that the type of transport also differs:

> *It is mostly just transport from nursing homes, fact of the matter is that we are not much more than a taxi and the messenger (R36:279).*

The few (near-) incidents mentioned between ambulance professionals and nursing homes had to do with missing information regarding the declarations of non-resuscitation. When, during transport, patients are having a cardiac arrest, the ambulance professionals have to resuscitate. Only when patients have written declarations, professionals do not resuscitate. Ambulance professionals indicate sometimes, they have to ask about it. This is the only issue they see on a regular basis. Again, the manager communicates this issue with nursing homes. The ambulance professionals experience nursing homes regularly as being tolerant when confronted with this missing information. On the other side, like the hospital, they do not feel nursing homes as being decisive, as missing declarations of non-resuscitation, over time keep on being an issue. No examples of second order learning are given too.

4.4.3.3 Conclusion ambulance service and other links

Overall, ambulance professionals see different links as being open for debate. The ambulance professionals in this research are ambiguous about communication with specialists in hospital, depending on the type of specialism. Overall, they do not experience much tolerance or decisiveness from hospital.

Many remarks made by ambulance professionals are not about specific (near-) incidents, but seem to pertain to mutual respect. During interviews, ambulance professionals talk a lot about the fact that they not always feel appreciated, and that they value mutual respect. Ambulance professionals, like pharmacists, keep communicating, despite negative reactions from different groups in the health care chain. It may be that intolerance and/or indecisiveness does not bother these professional groups enough to stop communicating, but it may also be the case that it is part of their job, part of their formal responsibilities to ask for clarification if they notice something that deviates from the protocol.

4.4.4 Hospital

4.4.4.1 Tolerance and decisiveness within hospital

Although seen as one organisation, within hospital, for the different professionals working there, the organisation is structured differently. Nurses work within a division, like the ER, or a ward. Residents, periodically, work within a cluster, for example surgery. Specialist, as the term suggests, are specialised and work within a cluster. Specialist can be employed by hospital. However many times they have professional partnerships with other specialists from the same cluster or specialism. It is therefore difficult to talk about 'the hospital' as a whole, when talking about tolerance and decisiveness. We discuss tolerance and decisiveness within the surgical cluster of one hospital. Described is the view of the ER nurse, the resident, and the nurse of a ward in the surgical cluster (paragraph 3.10.1 and 3.10.2). When discussing tolerance and decisiveness with specialists, I have zoomed in on their professional partnerships (paragraph 3.10.3).

4.4.4.2 Tolerance and decisiveness within the ER

ER nurses overall are positive about the way they can communicate to each other about things that go wrong. They try to communicate directly, for example, right after a patient is transferred:

> *When, together with a colleague, you have taken care of a patient and the patient is transferred to the Intensive Care Unit (*ICU*), then you clean up the room and you sometimes talk it over, like: 'How did it go?' or 'What could have gone differently?'*

When an announced patient enters the ER, it depends on the question, which professionals are on the scene. For example, big traumas require at least two ER nurses, the specialist, the resident, an anaesthetist, and professionals that can take x-rays or ultra-sound scans.In less complicated situations only the ER nurse and a resident are present. Although this does not seem to be protocol for all specialisms, many ER nurses indicate they prefer it so:

> *In any case, with trauma patients you try to let the resident listen in when the patient is carried-over, so he hears it at first hand, what the ambulance nurse has to say. Although it is not procedure, we also do that with other specialism, when, on forehand, you have the feeling it is nice if the resident hears it at first hand (R46:091-093).*

Residents mostly decide to call in a specialist if they think it is necessary. The residents who work on the ER must have followed special education. Some residents still are in training or have not followed that special education yet. In that case, the specialist himself should see the patient too. ER nurses then draw attention to the resident to call in the specialist. When the resident decides not to call, the ER nurses sometimes overrule them:

> *When I think, because someone (resident) did not follow ATLS (*special ER education*), then I call the specialist, in any case, I will inform him (R42:150).*

Most specialists are open for that, but, according to the ER nurse, not all of them see the necessity to visit the ER:

> *But in any case, sometimes you have specialists who simply do not want to visit the ER and then I think, you must visit, no question about it (R42:164).*

In that case, the specialist refused, so the ER nurse called his colleague, who did not like that either. The second specialist was also annoyed and would not visit the ER. The nurse was frustrated but at the same time indicated that at least the specialists talked about it.

According to one ER nurse a resident who is overruled understands this. They just started here, their capability to make assessments is not developed well and:

> *He maybe has the feeling he does not know what to do to make the specialist visit the ER (R43:073).*

Another ER nurse feels some residents can be annoyed, but you have to explain why you

have overruled them:

> *Well, at first, he was irritated, but I took him apart and closed the door and I said 'you probably thought I was annoying' and he said 'yes, I thought you were very annoying'. I then explained why (R45:064).*

Not all residents react positively on feedback, according to ER nurses. Once, an ER nurse had the experience, when changing shifts, one resident frequently forgot to inform the next resident about his patients. Therefore, patients were forgotten and stayed to long on the ER. The ER nurse had made an incident report about this case because of the repeatable character of the incident. After a while, the ER nurse saw the resident again and tried to talkto him:

> *In this case unfortunately a lot of time passed by. The resident did not understand anymore what I was talking about. We finished this conversation quickly. I had addressed the issue and he said 'I do not know what you mean' and then it stopped (R46:155).*

In this case, the ER nurse did not feel individual learning took place. Most ER nurses feel they can be open to specialists and residents:

> *I think my colleagues speak up. When something must be said to a physician, it will be said. It is not like' it is a physician, let I keep my mouth'. That is not the kind of culture here (R47:274).*

Among colleagues, some ER nurses find it difficult to communicate about 'ways to work':

> *I find it difficult, we have many 'old campaigners', they work here longer than I do, who am I to say that they have to work differently. I do it because you can talk about it, like 'why do you do it this way?' or 'I do it like this and that works too' but it stays difficult (R46:169).*

Another ER nurse explains too that giving feedback within the team hits a tender spot (R48:109).Other ER nurses experience a more open atmosphere to talk about things that go wrong. They have meetings where they talk about their own experiences. One ER nurse

remembers one of the meetings that an incident was discussed:

> *We had one nurse who was involved in a very big mistake, made through a sequence of events. Looking back it ended well, but it escalated, it was a very intense situation. It was a nurse with a lot of experience, someone people look up to. That he talked about it was the best of it all. People said that if that could happen to her, it could happen to all of us (R44:141).*

However, as another ER nurse states; overall, in the ER it is mainly the incident reporting that is promoted, not the direct feedback:

> *I notice the reporting an incident in the reporting system is mainly stimulated. I think that is a second step. If you cannot talk about it together, you can write a report. Reporting in the system is not the first step, is my opinion (R47: 135).*

ER nurses do not experience the ER as a decisive department.

> *You give signals, you lie awake at night, but that goes unnoticed, I do not know what that is, it troubles me (R41:286).*

He and other direct colleagues (e.g. R40:153) feel changes go very slow:

> *Actually, tonight we have a meeting, a special meeting, you sit together and talk and figure out changes, it is slow, things sometimes do not happen, people sometimes are less motivated, that happens. Changes are made, but slowly (R42:111).*

One of the reasons the ER nurses indicate there is less decisiveness is the frequently changing of the management:

> *I have been experienced eleven different managers. I do not get the feeling that it comes across, that they do something with it (R41:213).*

This nurse also feels decisiveness depends on the impact:

> *When things go wrong we talk about it openly and we do something about it. I think it is also important to deal with little things, but these are not so important here (R42:574).*

Overall, ER nurses experience an open communication climate. The openness differs between professionals. Most ER nurses feel they can communicate openly with colleagues, residents, and physicians. On the other hand, some ER nurses feel communication with direct colleagues and with physicians about (near-) incidents as difficult. Therefore, they differ in experiencing tolerance towards (near-) incidents within the ER. ER nurses do not perceive the ER as a decisive organisation; they cannot give examples of working processes that are changed after communication took place about (near-) incidents.

Before, we indicated that some ambulance professionals and ER nurses had problems getting a specialist on the ER, to consult with a patient. Residents also experience these difficulties:

> *What I find difficult, you have a patient, he has something, and you know it is not all right. You want to have a neurologist present or a radiologist. Then they give you a hard time (R66:071).*

Like ambulance professionals, residents too experience difficulties due to with different hospital locations.

> *Before you get a cardiologist here, the patient really must have a weak heart. He must have a failure, before he (*the cardiologist*) visits. Yes, these are thresholds, you can do without in a hospital (R69:183).*

In the eyes of the residents, it is very clear that specialists should come to the ER if a resident asks for help:

> *We do not trust the situation and ask for your (specialists) help. Then you should not grumble, you just have to visit (*the ER*), that is that (R66:077).*

Residents feel talking to nurses about (near-) incidents is not always easy. On resident once found out that a patient received the wrong medication from a nurse. This resident reported the incident. Although he did not remember if he talked this specific incident over with the nurse, he indicates that talking about (near-) incidents differs:

> *You have to be attuned to each other, yes, of course, you can say 'hey what are you doing?' Some react one-way and others react differently, I think (R66:129).*

> *Some think you talk nonsense. That person does not want to hear it. Another, well, het thinks it is good to hear (R66:131).*

This resident thinks it is also important that nurses know they always can ask questions and call for help:

> *Better once too often than one time not called and it goes wrong (R66:161).*

About his own conduct, the resident states that he always consults with others:

> *First with the next in line, with a senior resident, or with the chief, or I consult one of the surgeons (R68:150).*

One resident got feedback from physicians that he had made an unnecessary call, but he thinks the choice ultimately is his

> *I have experienced that they said it was not necessary to call. That is what they say, but this is for yourself; how you experience it (R69:087).*

Although hospital promotes open communication about things that go wrong, in practice, this communication can sometimes be confronting. An example of the blunt approach is the surgeon who confronts nurses when they do not follow protocol. Protocol is that there must be an arrow on the body part that is operated, for example the left leg. Sometimes, nurses forget this protocol. There are different ways to bring this under the attention of the nurse responsible for putting down the arrow. One resident explains:

> *Surgeon X summons the nurse to the operation room (OR) with a marker to draw the arrow… That is a bit sour for the nurse, they never forget again… I call to the ward and say: 'Guys, I have a patient without an arrow, which is not right. I rap them over the knuckles' (R68:302-308).*

ER nurses are also mentioning the same example of forgetting to put down the arrow as feedback from the OR to the ER:

> *For example, the OR calls, you have to mark off where surgery has to take place. For example when the patient is operated at the hip, there has to be an arrow on it (R41:339).*

This ER nurse finds is normal that you get this feedback; understands why it is forgotten. Sometimes it is due to the rapidity of the actions on the ER. Sometimes it is blur who has to

do the action, the nurse on the ER or the ward:

> *Things have to happen very quickly here. Sometimes it is blurring if we have to do this, or if the ward should do this. Some professionals think it is our job. Others think it is the responsibility of the ward (R41:341).*

Not all residents experience an open atmosphere yet. The resident, who witnessed the example where the nurse was summoned to the OR, thinks in his opinion people should simply address one another about things that go wrong:

> *There should be an atmosphere where you can address one another. That you can say: 'hey guys, why do you not follow hand wash protocol', or something like that. 'Why do you not change your mouth-cover between surgeries, you know you are supposed to do so'. I think it is better if you could do that. This kind of atmosphere should develop (R68:328-330).*

He experiences differences between confronting nurses or surgeons:

> *You can do that, but it is always a little bit different. You think twice confronting your chief and you think once confronting an OR nurse (R68:346).*

When asked about the use of the incident-reporting system, this resident explains he has aversion towards reporting. He 'learned' that on the ER. He experienced that ER nurses threatened you with reporting.

> *If we do not do what they want us to do quickly enough, they threaten us, like 'I will report this in the incident-reporting system'. That is why I have banished the reporting system. I think it could be a good system, but not in that way (R68:296).*

Other residents have that experience of being threatened with reporting too. One resident also has a supervision role, and in that context, he hears other residents talking about that (R69:143). Another resident finds it difficult to confront others with (near-) incidents, because he is less experienced:

> *I am relatively new and I think, yeh then I tell someone what to do, that feels a little bit… (R70:075).*

Overall, both residents and ER nurses are ambiguous about the tolerance within the ER. ER nurses are positive about the incident report system. Residents see the system more

negatively, as being threatened with it. Both professional groups do not experience much decisiveness on the ER. Both groups did not give examples of double loop learning due to intra-contextual knowledge sharing on the ER.

4.4.4.3 Tolerance and decisiveness within the ward

The nurses from the ward experience the atmosphere on the ward as being safe and open. Most nurses we interviewed reported in the hospital incident-reporting system. Many nurses indicate they report less than they should, mostly because of lack of time:

> *Lately, no, well I had one, but eventually it slipped my mind.. It was my own error, the patient went to OR earlier and I did not gave him his medication yet. I did not report it, I wanted to do it, but ok, that is because of the rush, actually, there was no time left for it (R53:044).*

They find it difficult to decide what to report in the system. At one hand, they see everything that goes wrong should be reported, on the other hand, they do not want to report petty incidents. Most nurses think a reason to report should be that the organisation could change something; they balance the importance for the organisation. Secondly, weighted is the effect for the patient. Nurses see *near*-incidents that happen due to something somebody has forgotten as not important enough to report (see for example R53:054; R54:127; R55:152; R56:094; R58:100). Many times forgetting is seen as in individual problem, not something an organisation can anticipate to. Secondly, *near*-incidents do not cause harm. In the next chapter, we will elaborate more on how harm plays a role in identifying (near-) incidents, reporting, and learning.

Besides the formal way, nurses communicate also face-to-face about (near-) incidents. One nurse explains the reaction of colleagues also depends on the used tone of voice:

> *When you nicely tell someone what your opinion about it is, why he should not have done that, and not in a tone of command, like bossing someone around, than people will accept it (R58:126).*

One nurse has an example of a (near-) incident with contradictory information. According to the medical file, the patient should get an amputation on the left leg, as in the nurse file, the

right leg was noted:

> *You ask the patient; he says left, you think how can that happen? You ask the physician. Yes, it should be the right leg, so he has to change everything back (R51:131).*

Once, this nurse gave the wrong antibiotic to a patient. This professional discovered it a few minutes later, disconnected the iv-drip, and called the physician. The nurse felt that everybody reacted very understanding:

> *Well, you feel very guilty, Oh, god, this can happen, you know? What are the consequences? No as far as we know not. Anyhow, people understand, that is? (R51:201).*

Nurses also indicate that the organisational culture on the ward is mostly one of tolerancetowards (near-) incidents. This does not mean that nurses are not questioned about it:

> *Not like hey what a fool you were, but more, it is good you told us, we could work with it. Nevertheless, hey, how did it happen? Are you busy in your head? Was it busy on the ward? Were you not feeling fit? Not with an accusing attitude, that is not the intention. We do not want to let it happen to our colleagues, that is why (R50:140).*

One nurse states it depends on the type of (near-) incident how tolerant one should be and explains many actions are protocol-lead. For example, there is a second check on medication; it is protocol, and one's own responsibility to do so. If someone decides to leave out the check, and something goes wrong, in her eyes that one is to blame:

> *When later on it appears that you did not do the check, you can be held accountable, in the end, you can be put in front of a disciplinary tribunal[49], you did not do the double check (R56:088)*

This nurse sees breaching protocol as a misdemeanour. Most professionals we interviewed, see breaching protocol as something that should not happen on a regular basis. Nevertheless, when one has good arguments, one should be possible to deviate. In chapter 5 the fine line between (near-) incidents and misdemeanour is discussed some more.

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[49]In Dutch *tuchtraad.*

One nurse is less positive about the openness:

> *You have to ask for feedback from colleagues, which do not come natural (R52:104).*

This nurse once had received some feedback from a colleague; about his sometimes-negative attitude. The colleague had asked him not to be too negative to the young, new colleagues. He appreciated that feedback, and tried to be more positive.

Some nurses also elaborated on communication between different departments within hospital, like between ward and the intensive care unit. One nurse suggests that the difference in work on both departments cause difference in interest.

> *Over there it is a matter of life and death, the other things, they do not bother. For example, if information about the diet, or about the mobility of the patient is unknown. When you confront them with that, you notice they do not care, they take these things easier (R50:052).*

This indifference makes communication a bit more difficult, the nurse states. Nevertheless, they need the extra information, especially when the patient is still very ill, and should be placed in a room alone. The nurse sees the introduction of a consultation intensive care nurse, to be contacted the first twenty-four hours after transfer, as a good thing. This nurse has the right information, and if necessary, can educate nurses on the ward.

Every month, these (near-) incidents from the ward are discussed in a meeting with the reporting committee patient care. They analyse the reports using DAM[50], and written reports are made about the reported (near-) incidents and points of actions taken. During interviews nurses referred to meetings and the written reports. They see benefits in discussing (near-) incidents that way. Sometimes indecisiveness is experienced:

> *Sometimes I have the feeling the hospital sucks, when there is a problem they do not look for solutions. They see how you deal with it, how you can adjust to deal with it, that is the feeling I get (R52:079).*

That same nurse gives an example of decisiveness after (near-) incidents had happened with switching iv-fluid that was entered epidural. The switch was easy to make, because both lines look alike. Nowadays, they have different, distinguished appearances, to avoid future incidents, the nurse explained (R52:149). This is an example of double loop learning,

[50]In Dutch *Decentrale Analyse Methode.*

changing the appearance of the lines to avoid (near-) incidents. Other nurses experience decisiveness too regarding reporting (near-) incidents:

> *Every month, we receive an e-mail from the quality nurse about the reported (near-) incidents of the preceding month. You can see the actions taken (R51:147).*

According to this nurse, not only reported (near-) incidents, but also face-to-face communication creates action:

> *Sometimes, with serious incidents, actions are taken right away and all the nurses are informed (R050: 138).*

The nurse is talking about first loop learning, everybody is informed; they can learn from the incident that had happened. Here, no working processes were changed. In another example, we see double loop learning as result of an incident. A patient once had a morphine pump. The wrong dosage was set, so the patient received eleven times the required dosage. Luckily, the patient survived. After the incident, at the ward a new rule was implemented. From that time on, every time a pump is set, a second nurse has to control the dosage (R57:09).

Another example of an incident with a pump happened due to the instrument itself. The nurse explains a patient received too much morphine, and died sooner than expected. After the incident, the technical staff examined the pump and discovered the pump was designed for usage of a 10 ml syringe. The nurses did not know that, and thought it was designed for a 50 ml syringe, that also fitted the pump. The pump uses the same pressure, but with a bigger syringe, the morphine is injected much faster. The ward did not even have 10 ml syringes of this model. Two things happened after the incident. First, a safety alert went to all nurses in hospital, to share intra-contextual knowledge, type I. Thus, first loop learning was created, sharing lessons learned between similar units of the same organisation. Secondly, a group of professionals drew up an inventory of different pumps used in the hospital, to avoid wrong usage of pumps, to improve policy, to create new work processes and thus double loop learning (R50:156-160).

Overall, nurses on the ward experience the organisational culture as tolerant and decisive, and different examples of first- and double loop learning were given.

4.4.4.4 Tolerance and decisiveness within the professional partnership

When talking to specialists about tolerance towards (near-) incidents, some specialists indicate it is easy towards colleagues:

> *At first between our own colleagues, you discuss for example: 'I would have chosen a longer plate', or 'Why did you do this like that?' (R59:178).*

In this case, no example is given of a (near-) incident, this specialist is positive in general about discussing choices.

One specialist talks about a formal way in which (near-) incidents are discussed among colleagues. Within hospital, all specialisms have a representation in the staff, and meet each other monthly. During these hospital-wide specialist meetings, one of the specialists who is concerned with safety, monthly presents a case about something that went wrong within the hospital care. The specialist, who attends these meetings, feels that over time, they discuss these (near-) incidents more openly, less defensive:

> *Still every month X presents a case what went wrong at the staff meeting? What you see is that one is less defensive, more openly, like listen, and how can we do this better, what should go differently? Why did it go wrong? (R63:011)*

Within his own professional partnership, this specialist also experiences an open atmosphere:

> *We try to have an open structure, transparency that is a modern word. It has many advantages if you do that. You take up a vulnerable position, and then an atmosphere of learning will develop. You will learn from things that went wrong, or should have gone the other way. I think I try, every day to create that atmosphere, with residents, colleagues, secretaries, OR-assistants. Like 'listen, that did not go well, then. That can be better, how can we prevent this?' (R63:019).*

This specialist is not only positive. He feels the first reaction of older colleagues is somewhat defensive (R63:055). He also missed some of his colleagues, for example on the patient safety hospital wide congress that was organised (R63:071).

He is not the only specialist who emphasizes openness within his own professional partnership. Other specialists are positive too. They see communication about (near-) incidents as something that happens daily, during the transfer from one shift to the other or

during daily indication meetings, when talking about complications (R62:213). Communication about (near-) incidents, according to specialists also happens during regular, theme related complication meetings between specialists and residents. One specialist gives an example of hip prostheses and the fact that these prostheses sometimes dislocate. They discuss how the dislocations happen, what percentage they have, and compare this to other hospitals nationally. They wonder if there are ways to avoid it, if there is one specialist who has this problem more often than others. This specialist feels (near-) incidents are discussed openly (R63:155). Other specialists see complication meetings as a form of discussing (near-) incidents too. In the next chapter, we will discuss the fine line between complications and (near-) incidents a bit more.

A specialist from another field confronted another specialist once.

> *Also (feedback) from other specialists. Yesterday for example I got a letter from a colleague specialist who said 'You have missed this diagnosis by that patient, you should have operated on him'. I looked up the file and send back a letter, thanking for the feedback and saying he was right, I did not see it myself… that happens (R59:178).*

This physician thinks that talking about making mistakes also has to do with the period in one's career. He once was approached to let one of his residents play in a promotion film about things that go wrong in hospital. He states:

> *Anonymous or not, it is no good for his career if he starts his first day on the job in a movie where he makes a mistake. That cannot be good, so I advised against it (R59:011).*

This specialist gives feedback to residents too:

> *When I notice residents make wrong diagnoses, I email them with the patient number to warn them 'pay attention, this does not add up with the rest, and will you pay more attention the next time? (R59:170)*

Making wrong assessments happens and specialists feel sick about this:

> *You are very sick of it, yes, I think, so to say, every year you have a patient, you really think, I should have done that differently. That is not ...ehm... they are not things that*

go to the disciplinary tribunal, you do not have to be afraid of that. They are just wrong assessments (R59:343).

This specialist communicates these wrong assessments with colleagues:

Among 'us' the specialists with the same specialisms, you may say so, we are all in one room and the three of us, we sit together at least once a day, you will say 'Look here, the patient I operated yesterday, that looks bad!' Start all over again, they say (R59:351)

His colleague too states it is important to discuss (near-) incidents between peers:

The physicians, they do not listen to nurses. In addition, nurses seem to listen to you, but if push comes to shove, they seek solutions between their own disciplines. Put a nurse in front of nurses and a physician in front of physicians (R64:117).

They see it is important to talk about (near-) incidents, to learn. In his eyes it depends on the type of (near-) incident, he makes a distinction between committing an error and experiencing an error. He thinks, when someone commits an error, one can be blamed. If someone experiences an error, one can learn (R62:121). In chapter five, the distinction between incidents and errors will be explained in further detail.

He confronted a colleague once about the way he communicated with the patient; looking to the computer screen instead of the patient. In his eyes, the colleague stood open for feedback. Nowadays, with big operations, they do together and he does the communication. This is an example of decisiveness, of changing working processes on an individual scale.

One surgeon explains, in his eyes it is unavoidable to communicate about errors, especially in his line of work.

An X-ray does not lie. Look, if you have operated the intestinal tube and afterwards there is a leakage. It can take five days, nobody knows for sure if it was due to a bad circulation or a suture that was not stitched up well. However, if a screw is placed beside instead of in the bone you will see that on an X-ray. In addition, everybody knows you have placed the screw, and that you have made that error, you cannot beat about the bush (R59:359).

Once a week specialists and residents have an obligatory meeting to discuss all particular cases, and failures are discussed here, he explains. Having an open atmosphere is important to this surgeon:

> *It is important that everybody exposes oneself and takes up a vulnerable position during this meeting. If someone says 'I never make an error' then you know that others will not admit their errors too. If one does not admit it, than I am not admitting it either, I have not made an error. We all have attitudes to say it could happen, it just sucks (R59:367).*

Few specialists have reported in the hospital incident reporting system. Sometimes they do it themselves, sometimes they let nurses report. For example, a patient fell of the operating table, and although the specialist was not on the scene at that time, he felt responsible and asked the nurse to report it (R62:253). Another thing he reported was that there was no specific size prosthesis. He did not need it then, but that was not the point, he said:

> *Actually, you should not start an operation if the right size is not available (R62:261).*

This specialist also remembered a report that was made about him by an OR nurse. Between two operations, many times, he receives a list of numbers to call back. Once, the next patient was waiting for OR, and he was not available on time. The nurse reported it, the physician has no problem with that (R62:282).

> *Look, I do not think I have done something wrong, I was doing my work. I understand it is annoying for them, for the process, as they have to wait again (R62:286).*

The specialists all see the system as something for practical usage, to be used to change the organisation. They give examples like the availability of the right size prosthesis.

Not all specialists are positive about the reporting system; one specialist indicates it is too complicated:

> *You have to sit behind a computer, log in, search for the program, walk through it and 20 minutes later, you are ready. That does not work, we, as doctors, do not have time for that (R65:083).*

Overall, specialists are positive about communication within their own professional partnership. They see communication about (near-) incidents as something that happens when discussing complications. Although they feel it is possible, none has specific examples

of communication about specific (near-) incidents; they talk about a tolerant attitude towards (near-) incidents in general. When asked about examples, one specialist explains it is difficult to give, because after things happen, they disappear:

> *Surgeons are very pragmatic, are quick in solving something. When it is solved, it is done (R65:080)*

Tolerance is relatively new, according to one specialist. He remembers he was 'put on the spot' not so long ago, for having too many incident reports in his specialty. The physician then explained they were stimulating reporting in order to learn. The patient safety committee then said 'ok, go on with it' (R64:157). In general, they do not feel being judged by colleagues:

> *A judgment is not made very often, because a relative outsider cannot give the right judgement. When someone is not involved (R65:164).*

Although tolerance is experienced more and more, physicians are less positive about decisiveness. They have no illusion the electronic reporting system changes anything:

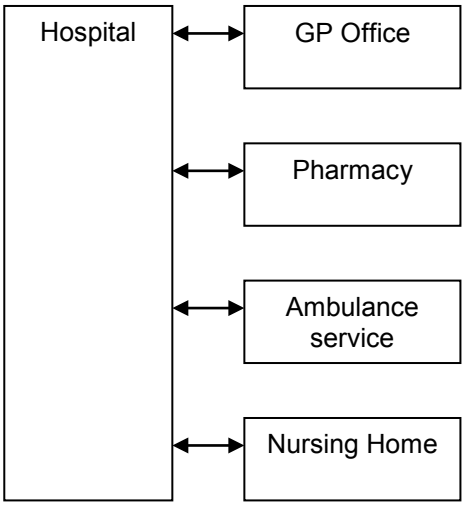
> *The reports are added up and discussed, but nothing happens. It has no single effect. We do these three years now but it is not productive (R060:086).*

All specialists see communication about (near-) incidents as a big part of the routine, of part of discussing the patient with their direct colleagues and the residents. What happens during these meetings is intra-contextual knowledge sharing (Type I), of single loop learning. They do not have concrete examples of decisiveness, of double loop learning in the chain after a (near-) incident had happened.

4.4.4.5 Hospital and other links

Different professionals within hospital talk to different links in the chain. Nurses from a ward and ER nurses mostly have contact in the chain with ambulance nurses, nursing home nurses, and sometimes with GPs. Residents in the chain mostly have contact with GPs, ambulance professionals and nursing home physicians. Specialists, like surgeons, mostly have contact with GPs, nursing home physicians and sometimes pharmacies.

Fig. 4.6: Hospitals and Other Links



Nurses from a ward, in the chain mostly have contact with ambulance professionals, and sometimes with GPs or nursing home nurses.

When a patient enters the ER with an ambulance, the GP or the centralist from the ambulance service mostly announces this patient. One of the problems ER nurses experience, is patients that are not announced. They do not know exactly where this goes wrong, with the GP or with the ambulance service:

> *On regularly basis, the GP does not announce a patient, or the resident, mostly not the resident, but that the GP does not call in advance. Then they (ambulance service) are suddenly on your doorstep with a patient on the stretcher, and that is just very annoying. Firstly, it is annoying for the patient and the ambulance, because it just looks as if they are not welcome. And for us, I think it is important that information is passed on beforehand, what is the history, what is his condition, so you have a clear picture of who's coming in (R41:049).*

We saw this same example 'of not feeling welcome' too when talking to ambulance professionals. ER nurses know and understand that it is difficult to give the right information. For example, a trauma is called in as being stable, but when the patient arrived at the hospital, he had a low blood pressure and was not stable anymore. The ER nurse understands that over time the patient changed:

> *What I give back to the ambulance nurse 'I know you are busy with the patient, but next time let the chauffeur call', just give us a call 'the patient was announced like this, but he changes, he gets a lower blood pressure.' (R45:078).*

ER nurses know they can give feedback to the ambulance service by filling in the white form. Many times, they do not use the form but talk to the ambulance professional directly:

> *It is just; it is not in my system. I take the white form and throw it away. I always, when I absolutely do not agree, say something on the spot (R32:348).*

They feel it has more effect to talk to the professional right away, instead of using the white feedback form:

> *I have said it right away, like 'I do not know if you know it, but it works better if you…' Therefore, you can fill in a feedback form with what went wrong. It is the question if that makes its way back to the right person. I do not think so (R45:132).*

This ER nurse experiences tolerance towards the ambulance professionals:

> *There are different situations where you can (*ask*), yes, 'why did the patient get no iv-drip?' or 'why did you not put the patient on the plank?' The other way around, 'why did you put the patient on the plank?' However, it is easy for us to talk about the ER here; they have to deal with acute situations. They (*ambulance professionals*) must decide immediately and from that angle, you must look at it too, and that cannot always be the right decision (R42:324).*

A special way to discuss situations is a pilot on the ER were big traumas are recorded on DVD. Afterwards the whole team (in and outside hospital) who attended the big trauma views the DVD and talk together about what had happened. The ER nurses who witnessed the DVD are positive. These meetings make it easier to talk between different disciplines, they say. Once, for example, two different settings were discussed with a team of ambulance professionals, ER nurses, residents, and surgeons. On the first DVD, the ambulance professionals kept the patient on the stretcher, transferred the information, and then moved the patient to the bed. On the second DVD, the ambulance professionals moved the patient from the stretcher to the bed and at the same time transferred the information. In this situation, much information got lost. You see other professionals frequently asking about medication and how much infusion was given:

> *Everybody is pulling at the patient and in the meantime, there is transfer of information. You know that only the highlights are remembered and later on, they ask questions again 'what was that again' and 'how much did the patient get?' We talked it over and discussed how to improve the transfer of information (R44:209).*

The ER nurses have the feeling discussing DVDs change things within the chain; the ambulance professionals talk about it with their colleagues, the ER nurses go back to the ER with their findings and make new working appointments. In this specific case, this also led to learning from other links in the chain, by adopting the ABC[51] protocol from the ambulance service. When transferring the patient from the ER to the ICU, before lifting the patient:

> *We do the transfer according to ABC. So what the ambulance does to us, we do upstairs, through which you miss or forget less (R45:316).*

[51]See chapter two for ABC: Airway, Breath, and Circulation.

Residents in the chain mostly have contact with GPs, ambulance professionals and nursing home physicians. Most residents are positive about communication with the GPs. Often, when patients are brought in the ER; information is missing, like medication. Residents then sometimes call the GPs:

> *I did call (*the GP*) now and then, and that went well (R66:051).*

Another resident calls with the GP if the patient has had bad news, for example cancer with metastasis. It is a two way street.

> *The GPs like it too, they give feedback that they think it is pleasant (R69:165).*

Sometimes it is difficult to get the right information from the start. Residents underline that it sometimes can be very busy at the ER:

> *It is difficult, when it is very busy. Sometimes we are with three or four on the ER and then you should cal all four 'I got a call from a GP and this patient is announced'. Then you have to tell the story three times and that does not get you anywhere (R70:061).*

Another resident states that the communication between them and GPs only takes place when something is wrong:

> *Actually only when something goes wrong, you get people on the phone (R70:175).*

Residents find it hard to judge about actions from GPs, they realise that GPs have less means to diagnose:

> *Sometimes it happens, we have the means to examine that GPs do not have. So based on what the GP has found, I probably would have made the same decision (R68:064).*

One resident tried to call back a GP once about a missed diagnosis. The GP called in a patient who had stomach ache. The patient had visited an African country recently. The GP thought of appendicitis. The resident suggested it was maybe better to call the specialist in internal medicine instead of the surgeon. That resident suggested that maybe the patient had malaria. However, the GP kept repeating that he wanted to exclude that it was appendicitis.

When the patient arrived, I saw it from two meters distance: the headache, the movements (R68:072).

The resident later on tried to call the GP:

I tried to call to pass it on, but there was another GP, I do not know, and the next day, I did not feel like calling again (R68:080).

Sometimes communication between residents and GPs goes not well. A resident elaborated about an incident that happened with discharge medication. It was difficult for the resident to find out what the patient was using:

You know, here on the ER, you ask 'which medicine do you use' they answer 'a pink pill and a yellow pill and five or four a day'. You do not find out what somebody is using and eventually you have a list, you hope it is all right. Next, on the ward, another medicine is added and I do not know the patient, but I have to make the discharge note, so I try to type over the medication, and then the pharmacist or the GP calls. In this case, it was the GP that called. He was furious 'the patient now uses this and that and you prescribed it! '(R68:372).

The resident reacted by explaining he had to look it up in the file, that he did not know it either and told the GP to do what he thought was right:

Yes, the physician said this story would have a follow up, and then I think, well I never! I am trying the best I can and still... they want to pull my hair. Next, I hope it will be all right (R68:372).

He never heard anything again about this incident. Communication also depends on the priority that someone gives it:

I just forget, calling a GP back for information, that is, you prioritise this as very unimportant. That is the first thing you forget (R71:180).

Nowadays communication is speeded through digital means like e-mail:

*When you have operated a patient and you have written a discharge note, some GPs immediately are notified in outlook (*e-mail program*) that the letter is received. So when I clicked the 'send' button, within 5 minutes the GP is on the line: so that is*

> *what you have done? No extra medication? OK, thanks! Only occasionally some GP gifs feedback in the sense of: 'why did not you put in the discharge letter that you also registered this or that?' You know (R71:182).*

Another resident is less content with the out-of-hours service:

> *You can call them, but it is difficult, especially during duty-hours, the GPs are not on call or there is an out-of-hours service and then there is a substitute, not the patient's real GP and he cannot access the system. That is a problem (R72:075).*

Overall residents feel they can openly talk with GPs as well as with nursing home physicians. Residents also feel they can communicate easy with ambulance professionals. Once, there was a car accident, a car with a driver and three kids bumped into a truck. Although it went pretty fast, 80 kilometres per hour, the airbags where popped out, the children just walked out of the car. They seemed to be all right, some little pains, bruises. The man behind the wheel complained about pain in the neck. The ambulance professionals only drove the driver to the hospital. The resident worried about the children, and asked the family to bring them in too. The children had bruises from the belt and one had pain in the neck too.

> *We made pictures, everything was ok, but at the same time, one of the children had a spleen rupture, you never know (R68:108).*

There were e-mails exchanged between the resident and the ambulance nurse. He tried to explain to the ambulance nurse that the nurse had made a mistake:

> *They estimated it like that; they thought it was not necessary. I think they made a wrong judgement (R68:124).*

The resident understands that not everybody will be sent in, but in this case:

> *Somehow, it is all right that when somebody lies down on the street that fell from his bike, not automatically is brought in. However, someone who crashed into something with 80 kilometres per hour, that is a higher trauma, in principle, we must see them (R68:128).*

Although they e-mailed, the resident did not have the feeling that the nurse would make another decision the next time. This resident once or twice had contact with nursing homes.

Mostly they call him, to ask him about indistinct medication prescriptions. He is positive about that.

One resident called another hospital once because he did not agree with the policy. A patient, who was moved from one hospital to the other, was announced as stable. When the patient arrived, he was instable, so transportation should have taken place with for example an anaesthetist, according to the resident. The resident of the other hospital checked the story and later agreed with him:

> *Then the resident reviewed the case and decided that I was right and that he should have arranged it differently (R71:114).*

Surgeons in hospital mostly have contact with GPs, nursing home physicians and sometimes pharmacies. Sometimes communication between two links is a revelation:

> *Not so long ago we had an internal quality assessment, and everybody was very positive. Then we received outcomes from a survey among GPs and they had several critical notes: the waiting period to admit a patient was too long, they said, I did not recognise anything (R64:163)*

This surgeon was surprised and had the feeling the GPs were not aware that the waiting time nowadays was one week, and for a hip-operation two months, but that is, according to the specialist, not long, compared to other hospitals. In his eyes, communication should be better towards GPs, so they understand things better.

According to another specialist, some residents are sometimes negative about GPs, while specialists have more understanding for the GPs.

> *Our residents complain sometimes, that patients are referred to hospital on the wrong assumptions or with a bad admittance letter. For example, "Pain in the hip, please your assessment. Residents are more critical than we are. Most specialists know that for a GP it is not simple to diagnose. In addition, if you (GP) have decided to refer the patient, why bother to describe it in so many words. When residents are negative, say it is a worthless consult, I tell them to do the job themselves, that is a different ballgame. Thus, we specialists are not so often discontented about the information from GPs. (R59:086).*

Reasons to communicate with GPs can be that the patient's prognosis is not good. This specialist feels the need to call, because the letter will take too much time. Besides serious diagnoses, discontented patients are the second reason to call the GP, or not being able to diagnose the case. The third reason this specialist indicates is when he feels the GP has referred a patient to the hospital that should have been referred to a nursing home (R59:094).

He gets calls from GPs, mostly because of unclear discharge letters, or patients that will return to hospital, because their complaints are not gone yet (R59:102). A fourth reason, both GPs and nursing home physicians call, he said, is to get advice:

> *To ask for advice, I think that is a good thing. You can send in a patient, but if it is already clear nothing will happen, then we deliberate, like give him an injection or a pill, Well fine, thanks, I do not have to see the patient, then (R59:102).*

This specialist does not think that talking about things that go wrong leads to much change:

> *We still get comments from GPs about the discharge letters from residents that medication is not written down properly. Five years ago that was the case too, apparently we are not succeeded in reporting this back to our residents. Look, now and then I send an email to all surgery residents to pay attention. One year later, they are all replaced with new residents and they do not know anything about it (R59:058).*

This specialist searches one's own heart:

> *I notice that my communication back to the GPs is also bad because I think it is all ready in the file. I have to make a new letter about things I already have on paper that takes time, we tend to work around it (R59:086).*

Another specialist notices that giving feedback to residents is sometimes difficult, due to the quick changing of the residents, thus, the impermanent nature of the residents in his eyes is the reason things don't easily change (R65:069).

> *Specialist do not see a need to communicate with GPs about (near-) incidents that have happened in hospital.*

It has no use, certainly not if you first have repaired it, there will be no benefit I think. Only if it has consequences for the follow-up, for the after-treatment, the GP has to know of course (R59:375).

His colleague once confronted a GP because, in his eyes, the GP made a wrong assessment. A women with knee-complaints, was send in diagnosed as torn meniscus. After a scan, it was discovered the patient had a tumour. The physician called the GP, because in his eyes the GP did not read the signs well:

That woman first was not allowed to go to a specialist, but there were some alarming things, he did not notice. That is possible of course, because a tumour is very rare, but I called and said I informed him now, because of a bit of a fall out from the patient towards the GP, I tried to smooth it out (R62:070).

Sometimes specialists have contact with pharmacists. They get calls when there are (near-) incidents with medication. They mostly do not mind, they see it as a back-up check (R063:295). According to this specialist, communication between hospital, the out-of-hours service, and ambulance service is formalised in quarterly meetings.

Specialists also get feedback from nursing home physicians about discharge letters, they intend to improve that, but they also see nothing really changes (R63:484; R65:061). One specialist indicates, because he also receives missing, wrong or contradictory information from colleague-specialists, he tries to better himself, an example of individual learning (R64:075).

Overall, physicians think it can be helpful to communicate with other links, but they do not do so very often. They see GPs as tolerant towards (near-) incidents, they do not have examples of double loop learning, and they did not elaborate about decisiveness in the other links. They see hospital as not very decisive, despite the inter-contextual knowledge sharing, despite the communication from GPs, pharmacists and nursing home physicians about (near-) incidents regarding discharge information.

After discharge, nurses on the wards communicate with other links. One nurse explains that some patients go home with a stoma after a surgical removal of part of the intestine (R50:064). At home, they get home care. Many times, homecare complains about incomplete or missing medical information after transfer. We found examples of reports also in hospital incident-reporting system (19 reports, see also chapter 3). The nurse explains that, after getting several reports, in a clinical lesson, they decided to pay special attention

towards discharge information from stoma patients. This example shows decisiveness. Nevertheless, the nurse indicates, over time, the problem will occur again, as personnel changes. That is why they have introduced a new type of education: bedside teaching. Nowadays, nurses give new colleagues information through bedside teaching about the transfer of a stoma patient (R50:064). This form of triple loop learning is a result of inter-contextual communication about (near-) incidents between home care and nurses on the ward; of knowledge sharing between different units of different organisations in the chain (type IV). In this case, the nurse on the ward experienced decisiveness in the chain, between hospital and home care.

4.4.4.6 Conclusion hospital and other links

Different professional groups within the hospital have contact with other links in the health care chain. For example, ER nurses mostly have contact with ambulance professionals. They see these professionals as tolerant towards communication about (near-) incidents, although they rarely happen. ER nurses find, the fact that ambulance professionals have a feedback form, positive, but do not use them. Because communication about (near-) incidents hardly ever occurs, they cannot say anything about decisiveness. ER nurses, like residents, see ambulance professionals as working under different circumstances then they do, within the safety of the hospital, having all the diagnostic possibilities at hand.

Residents state they communicate with GPs about (near-) incidents. Communication happens both ways: about missed diagnoses from GPs as well as discharge information from residents. Residents see GPs mostly as tolerant towards this communication, but they know little about decisiveness. No examples are given of double loop learning. The fact that residents are 'learning the skills', can have an effect on the less tolerant attitude towards GPs for missed diagnoses. Unlike specialists, residents seem to forget the differences in working conditions.

Specialists see these differences clearly, when talking about communication with GPs. Because GPs do not have the same diagnostic tools, for specialists, it is normal that GPs call them to discuss cases, to ask questions. They like to share knowledge with GPs. The other way round, specialist that contact GPs for information, seems unthinkable.

Although nurses on the ward seem to communicate hardly ever with other links in the chain, one of the few examples of double loop learning was witnessed there. Overall, the hospital is strongly internally focussed.

4.4.5 Nursing Homes

4.4.5.1 Tolerance and decisiveness within Nursing Homes

The interviewed nursing home nurses as well as physicians mostly think positive about the openness within their own organisation.

> *I think, preventing an incident would be nice, but this will always happen I guess. I think this organisation is very open, like 'that is stupid' or 'how can we correct it' (R73:290).*

Another physician stresses the openness between nursing home physicians:

> *You really have colleagues with whom you can talk things over.. this not only has to do with experience, even after 10 or 20 years you should be able to deliberate with your colleague (R75:133).*

Not all physicians underline this openness:

> *I was astonished. Luckily there is only one manager, but with her, when you make an error it is noted in your personal file. However, mostly you should look for the reasons why this could happen, how to prevent them (R74:178).*

This physician does not agree with the manager, who seems to blame the professional. The manager is responsible for the nurses, who are mostly positive about tolerance. In all nursing homes, there is some kind of patient reporting system, the nurses' use.

> *I talk it over with colleagues, put it in the file, and make an incident report (R81:62).*

Another nurse stresses that reporting a (near-) incident is important:

> *You have to report to see if there is a pattern, where you can work on to improve, not to put someone on the spot (R82:252).*

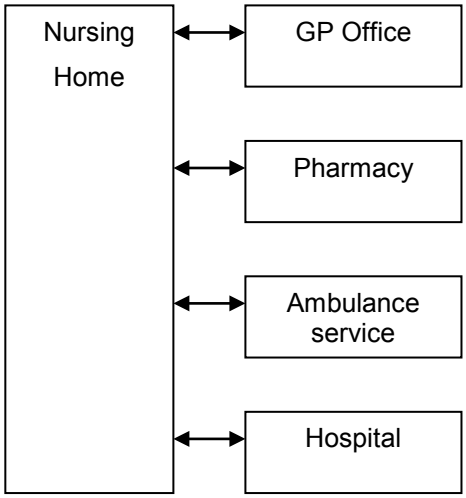
In the nurses eyes the goal is to learn, not to blame. Other nurses confirm this attitude of tolerance (R83:146; R84:193; R85:230; R86:152; R88:210).

In one nursing home the patient safety committee discuss the reports, see if they can spot some over all trends, but the physician does not see structural feedback (R74:178). In another nursing home, there is a structural way. The patient safety committee discusses a few times a year the reports. That is discussed with management teams, who communicate

with departments and teams, to see what they could do with them (R79:309). Thus, most professionals in nursing homes are positive about tolerance, they do not see much evidence of decisiveness, of intra-contextual knowledge sharing that result in double loop learning.

4.4.5.2 Nursing homes and other links

Fig. 4.7: Nursing Homes and Other Links



Nursing home physicians have a special position, compared to specialists and GPs. Where specialists run the show in hospital and GPs do so at home, nursing home physicians stand in between. Patients in nursing homes still have their GP as the main physician. In addition, for special treatment they go to the specialist in hospital. Nursing home physicians take into account both parties and mostly play a more advising role (R75:016). Once, this physician had a patient who was very agitated, quickly irritated:

> *The nurse asked me what to do; I called the GP, to deliberate. He reacts 'you should not call me, but the neurologist'. I tried again, 'I would appreciate it if you, as main physician, would contact the neurologist'. Of course, I had already thought about contacting the neurologist, but if I have done that, than I really would have had an agitated GP! Being a GP is a whole other ball game. They are nice colleagues, but you should not cross the line of what they think belong to them. (R75:258).*

This nursing home physician finds the consulting role somewhat difficult now and then and stresses the importance of knowing the GPs to be able to estimate their reactions.

Nursing home physicians often experience not been taken seriously by specialists in hospitals. One physician is part of a team that work together to improve care for patients who had a stroke. To be able to give the right treatment, he needs to see scans:

> *There is some arrogance with some specialists. I am part of the stroke chain team and when we (*nursing home physicians*) want to have the results of a scan, not all neurologists, but there are some who think it is nonsense: 'you are not capable to judge the scan' they say (R73:131).*

Another nursing home physician sometimes feels undervalued as well:

> *There was a lot of distrust, like 'can you do that?' (R74:053).*

One nursing home physician once reported an incident back to hospital. A specialist in internal medicine treated the patient for kidney functions. The patient was admitted in hospital for an operation. The surgeon prescribed some medication too. The patient was discharged, but in the nursing home, he deteriorated. The combination of medication did not go well, so they sent him back to hospital. The nursing home physician called the surgeon about this.

> *Then I called the surgeon like 'do you know what actually happened?' I have to say they received this very nicely, but it does not change anything (R73:094).*

This physician is positive about the tolerance in hospital, but is less positive about the decisiveness in hospital. According to the physician, this also has to do with scale:

> *Someone is admitted in hospital and the file is on the ward, or with the resident, and you call surgeon A, and resident B, but surgeon C was the supervisor so surgeon A sais he does not know anything. Well, something must really be wrong, will you call again, and otherwise, you think it is OK (R73:102).*

When patients have been to hospital, the discharge letter mostly is sent to the GP of the patient, as being the main physician. Nursing home physicians must take the trouble to get the discharge information themselves, if they want to know what had happened with their patients in hospital. There are agreements made between hospital and nursing homes about the transfer of information. There should be a transfer form with information, but many times this is not complete. There are meetings between nursing homes and hospital, and the matter is brought up repeatedly, but nothing much changes:

> *They promise to behave better, but then they are busy again, or there is a new resident, things like that (R73:222).*

Sometimes, inter-contextual communication about (near-) incidents leads to double loop learning. A physician explains that, when patients get medications that cause interaction between one another, the pharmacists report this. It was customary to put the interaction reports in the post-office box. Sometimes the wrong reports end in the wrong post-office boxes. Once a physician was free a couple of days, thus nobody saw the report. After

discussing this, they changed the working process between pharmacy and nursing home (R73:286).

Another physician has an example of decisiveness after a (near-) incident between nursing home and hospital. Two patients needed blood tests. The physician took blood tests from two patients. The blood was sent to the diagnostic service point[52], where they switched the tests. So one of the patients, by mistake, was diagnosed with kidney insufficiency. On this false information, the nursing home physician sends the patient to hospital. The family of the patient informed the nurse of the nursing home that there was no kidney problem at all. The nursing home physician found out about the incident, after making an inquiry. It seemed the professionals of the diagnostic service point were very busy trying to solve the incident, but forgot to inform the nursing home physician about the switch. At the end, the incident was also discussed with management from the diagnostic service point. According to the nursing home physician, a procedure is started to assure, next time all links in the chain are informed about (near-) incidents that happen in de diagnostic service point.

This is an example of decisiveness between nursing home and hospital. The inter-contextual knowledge sharing resulted in double loop learning, in a new working process after a (near-) incident has happened. Because something changes in the knowledge sharing, one could even state this is an example of triple loop learning.

4.4.5.3 Conclusion nursing homes and other links

Overall, nursing home professionals, especially nursing home physicians, sometimes feel a little bit squashed between different links, between GP and hospital. There is some tolerance between links in the chain, and even one example of triple loop learning was given. On the other hand, nursing homes see hospitals as less decisive, partly due to the largeness of the organisation.

[52]Diagnostic Service Point is a department of hospital, where GPs and nursing home physicians can send patients to for blood tests, x-rays, and scans.

4.5 Conclusions

Different professionals communicate about medical information with different links in the chain during the transfer of patients . During this process, some professionals experienced some (near-) incidents between links in the chain, and these sometimes also led to communication. There is some inter-organisational knowledge sharing between professionals in the health care chain, and sometimes this communication results in double or even triple loop learning (RQ5). However, learning from incidents remains rare.

The central theme in this chapter is the way tolerance and decisiveness effects communication about (near-) incidents within as well as between links in the health care chain. First, I will draw some conclusions about the effect that tolerance and decisiveness have on knowledge sharing and organisational learning within the organisation (intra-contextual). Secondly, I will draw conclusions about inter-contextual knowledge sharing and learning between links in the chain.

4.5.1 Conclusion tolerance and decisiveness within the own organisation

Within different links professionals communicate about (near-) incidents. Sometimes this is formalised in meetings between professionals of one organisation or department (intra-contextual).

Most professionals are positive about the tolerance towards (near-) incidents in their own organisation. Sometimes this tolerance is overshadowed by negative reactions by individuals, yet negative reactions within the organisation do not seem to be a barrier in talking about (near-) incidents. In general, most professionals experience open communication.

Except for GP offices, in most organisations some kind of formal incident reporting system is used, although not all professionals use the formal system. Residents, especially those working on the ER, feel the systems is used against them, as ER nurses use it to intimidate them. GPs in general experience tolerance, but they perceive communication between colleagues through the link the out-of-hours service as problematic, which is partly due to unfamiliarity with each other.

4.5.2 Conclusion tolerance and decisiveness between different links in the organisation

Overall, different professional groups do communicate with others about some (near-) incidents that happen between links in the chain. Professionals, although rarely, do talk about (near-) incidents within the chain. Sometimes communication about (near-) incidents is initiated by patients because they hesitate to be treated again. This gives professionals indications that something has happened. Sometimes there are regular meetings between different links, like between out-of-hours service, ambulance service, and hospital, between GPs and pharmacies, and between hospital and nursing homes. During these meetings, (near-) incidents are discussed, and improvements are discussed.

As described above, professionals seem to talk more about (near-) incidents they are involved in *within* their own organisations. In contrast, when talking to other professionals in other links of the chains, professionals talk more about 'other's' (near-) incidents. For example, pharmacists, within their organisation talk about the wrong medication they have set out. When talking in the chain with GPs and physicians, they talk about (near-) incidents that the physicians can be held accountable for. In chapter six, we will elaborate on responsibility and communication some more.

In general, most links see other links as somewhat tolerant towards communication about (near-) incidents. More specifically, different links experience some negative reactions from some professionals in other links. Even when they experience low tolerance, this is not a reason to stop discussing (near-) incidents, especially for pharmacists and ambulance service professionals. Negative reactions sometimes lead to using different communication means. For example, instead of using the telephone, pharmacists indicated that after a negative reaction, they prefer to use e-mail.

Communication with hospitals seems to be one-way only. Professionals like pharmacists and GP sometimes confront hospitals. However, professionals in other organisations in the health care chain are hardly ever confronted with (near-) incidents by professionals from the hospital.

As stated before, Cannon and Edmondson suggest that people who know each other and work closely together fear negative reactions when communicating about failure. This pattern is not found during our interviews. In contrast, different groups (for example GPs, nurses on wards, specialists) emphasised they preferred talking about (near-) incidents with colleagues, within the safety of their peers. Communicating about (near-) incidents with

professionals one hardly knows, with unknown professionals in other links, is perceived as being more difficult.

None of the links sees others as being decisive. Sometimes they attribute this to the size of the organisation and the fact that professionals like residents rotate clusters and after a while move away to another department or hospital. With changing residents, is not easy to talk to the right professional.

Professionals communicate for different reasons; to get it of one's chest; or to avoid the same (near-) incident in the future. Overall, both tolerance and decisiveness are aspects of organisational culture that stimulate learning. However, both *in*tolerance and *in*decisiveness are no barrier. Despite negative reactions they sometimes get after seeking contact, professionals from pharmacies and ambulance service keep on communicating with other professional groups in the chain. For GPs and nursing home physicians, the lack of decisiveness seems to be more of a barrier; when nothing changes, or double loop learning does not take place, these professionals stop communicating. In chapter six, we will zoom in on how differences in autonomy play a role in communication within the chain.

As stated above, the focus on (near-) incidents that happen inter-organisational, differs for various links in the chain. Professionals of pharmacies and ambulance service experience (near-) incidents with GPs and hospital. The other way round, hospital hardly focuses on (near-) incidents between links. Although on the one hand professionals do acknowledge that in general where people work, (near-) incidents happen, on the other hand, it is difficult to recollect (near-) incidents they are involved in directly. It was difficult to examine tolerance and decisiveness, because not all professionals could recall examples of (near-) incidents in the chain. This leads to the question: what do professionals see as a (near-) incident? In the next chapter, I will take a closer look at the definition of (near-) incidents according to professionals. I will explore what kind of (near-) incidents different professionals communicate about. Is there a 'health care chain culture' about (near-) incidents? Do professionals in the chain share beliefs on what is worth talking about? In the next chapter we will discuss which characteristics of (near-) incidents are related to communication in order to learn.

5 Incident characteristics

5.1 Introduction

Tolerance and decisiveness are aspects of organisational culture that stimulate communication and, eventually, learning from (near-) incidents. In the previous chapter, it was uncovered that professionals perceive tolerance both within their own organisation and between different organisations. When talking about (near-) incidents, most professional groups perceive other links in the chain as being tolerant. However, in the health care chain, only few examples of decisiveness are witnessed. Sometimes, communication about (near-) incidents led to double loop learning, or even triple loop learning, for example in the case of bedside teaching in the hospital to improve the transfer of stoma patients to home care. During interviews, it became clear that communication about (near-) incidents is rare but happens occasionally.

To uncover what makes a (near-) incident important enough to talk about, I examined what kind of (near-) incidents are discussed. Apart from organisational culture, communication about (near-) incidents also depends on the consequences of the incident, i.e., on the incident characteristics. In this chapter, I will first describe what professionals mean when they talk about (near-) incidents. Secondly, I will explore how incident characteristics and risk assessments play a role in communication about (near-) incidents in the health care chain.

5.2 Theoretical framework

5.2.1 Shared beliefs on the definition of (near-) incidents

When talking about learning from (near-) incidents, organisational culture is a pre-condition for communication. Organisational culture, as defined in this thesis, contains shared beliefs, basic assumptions that professionals within an organisation share (Schein, 2010). As concluded in chapter four, communication about (near-) incidents does take place, but occurs differently across professional groups. Nurses and pharmacists communicate with other professional groups about (near-) incidents more regularly than physicians do. Physicians predominantly communicate with their peers. In this chapter, we further examine the incident itself. Do all professional groups in the health care chain share beliefs; do they have the same basic assumptions on what to communicate about, within, as well as between organisations? Can we speak of one organisational culture in the health care chain,

to promote double loop learning from (near-) incidents? In order to formulate organisational culture within the chain, *shared beliefs* on the definition of a (near-) incident are pivotal.

Within most psychological literature about learning, the terms error and failure are used. An error, for example, is defined as "*unintentionally being wrong in conduct or judgment. Errors may occur by doing the wrong thing (commission) or by failing to do the right thing (omission)*" (Runciman, 2006, p. S42). Thus, error is attached to a person; someone has to be wrong in conduct or judgment; someone is doing the wrong thing; or, someone is failing to do the right thing. Secondly, an error is unintended. When someone intentionally does something wrong, it is called a violation (intentional deviation). "*Violations, however, are different from human error, because they are the result of intentional actions"* (Homsma, 2007, p.17). This definition of error focuses on the erroneous act, on the detection and recovery of an error, not on the consequences. Later on in this chapter, I will discuss the fine line between intentional breaching protocol and violations.

A more neutral term that increasingly is used in psychological and sociological literature is failure: "*a deviation from expected and desired results*" (Cannon & Edmondson, 2005, p. 300). Cannon and Edmondson suggest that errors as well as failure both are linked to a person's responsibility and therefore are attached to persons. In medical literature, in health care, less 'personal' terms like incident, (near-) incident and adverse event are increasingly used.

In 1977, in order to be acknowledged for legislation, hospitals in the Netherlands introduced a reporting system for (near-) accidents, and introduced the FONAform, which includes the term error (in Dutch 'fout', see abbreviations, p. 249). This form was mostly used when something really damaging for the patient happened. Most professionals hesitated to use the form, seeing it as a drastic means. Over the years, to reduce hesitation to communicate about errors, the term 'incident' was introduced. From the eighties until now, incident-reporting systems developed. The last decade, to improve reporting, 'safe incident-reporting' is used (VIM[53]), with the emphasis on safe: without consequences for the reporter. Where FONA referred to the more personal term error, VIM refers to the more neutral term incident (Van Everdingen, Smorenburg, Schellekens, & Molendijk, 2006). As error implicates a *person*, talking about the more neutral term (near-) incident can be less threatening, as it does not necessarily place blame on a person. Nowadays, when discussing reports in health care, the more neutral term (near-) incident is used.

[53]In Dutch '*Veilig Incident Melden (VIM)'.*

The formal definition of an 'incident' is "*an event or circumstance which could have resulted, or did result, in unintended or unnecessary harm to a person and/or a complaint, loss or damage*" (Runciman, 2006, p. S42). Both terms - error and incident- focus on *unintended* actions or events. In contrast with error, an incident is not directly attached to a *person*. It is an event or circumstance, not explicitly due to acts of persons. An incident can also be an outcome of circumstances, for example the design of a medical instrument like infusion pump technology (Husch, et al., 2005). The second difference between error and incident is the focus on the consequences. As an error focuses on the erroneous act, an incident focuses on the harm that could have resulted or did result.

In health care literature, a dichotomy is used: incident and near- incident (near miss). The difference between an 'incident' and a 'near incident' refers to the presence or absence of an effect: a near incident does not reach the patient (Runciman, Hibbert, Thompson, Van der Schaaf, Sherman, &Lewalle, 2009). An example is a situation where professionals wear special clothing and gloves to prevent contamination. A nurse, who wears these special clothing, leaves the room to get something and forgets to change clothes. In this case, there is a risk of spreading the virus. Two situations are imaginable: the nurse can encounter another patient (incident) or not (near incident). Over the years, research in aviation revealed that when professionals also reported near incidents, one could learn from these too. Reporting near incidents in aviation had led to "*redesign aircraft, air traffic control systems, airports, and pilot training, and to reduce human error*" (Barach& Small, 2000, p. 762). In line with aviation, in health care systems too, near incidents are reported in order to create double loop learning (see also chapter three).However, is it possible to transport a system, firstly developed in aviation, to the health care chain? What works in aviation, does not automatically work in health care. Vincent, for example, warns us not to overestimate the effects of incident-reporting systems as a 'means' to patient safety. "*Reporting systems can provide warnings, point to important problems, and can provide some understanding of causes*" (Vincent, 2007, p. 51).

When examining attitudes towards reporting on an intensive care: *90%* (of 182) *believed that a confidential reporting system that documents medical errors is important for patient safety"* (Sexton, et al., 2000, p. 747). Other research shows that incident-reporting systems in the past did not reveal everything that had happened (Cullen,Bates, Small, Cooper, Nemeskal, &Leape, 1995; Taylor et al., 2004). In a pediatric setting, professionals indicated they underreport: *"approximately one third of the respondents reported < 20%"* (Taylor et al. 2004, p. 733). It is suggested that one of the reasons for underreporting is the definition of

error. The findings suggest that errors that are more serious were more likely to be reported than less serious ones ore close calls.

By definition, an incident always reaches the patient. However, this does not necessarily results in harm. For example, wrong medication or wrong dosages do not automatically result in harm to the patient. When the event *could have resulted* in harm, it is an incident. In the example of the contamination, when the nurse has contact with another patient, it is not sure that this patient is contaminated. When the patient gets the infection too, there is harm. When harm is obvious, the term 'adverse event' is used. To summarise, the difference between a near incident and an incident has to do with the patients' outcome. The term near incident refers to an event that does not reach the patient. The term incident refers to an event that reaches the patient, with or without obvious harm.

Scientists describe definitions such as the ones mentioned above extensively in literature. However, what do professionals in the field know about them? Do professionals use the neutral words (near-) incident or adverse events? Do they share beliefs on what a (near-) incident is? Do professionals in the health care chain make distinctions too, based on the consequences? Do professionals use terms like (near-) incidents? Is there a pattern to uncover that reveals that professionals experience incidents as less threatening, and therefore easier to talk about?

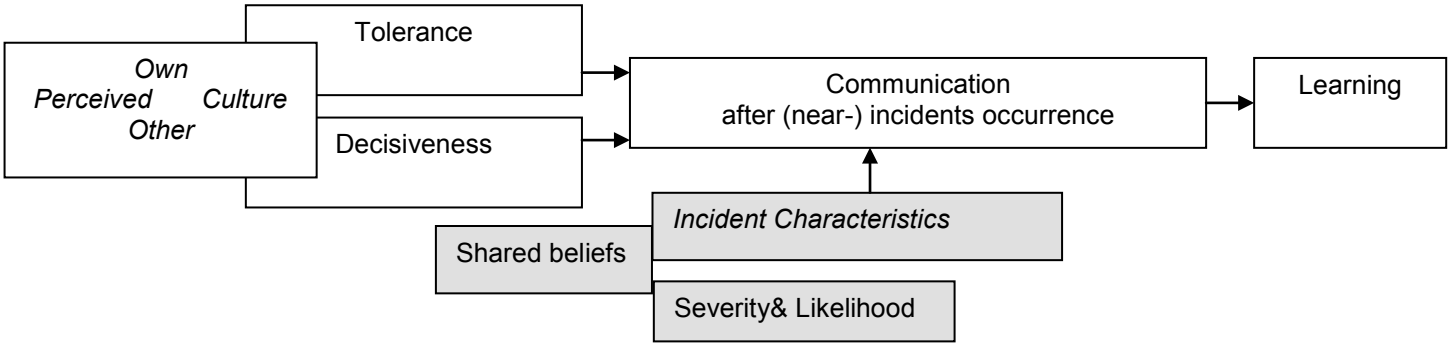
As discussed in chapter three, within organisations, professionals in the health care chain make risk assessments, using a semi quantitative instrument: the risk assessment matrix (Markowski& Manna, 2008). This matrix is a subjective tool, based on risk estimates, made by the professionals themselves. The reporters of (near-) incidents estimate two dimensions, severity of consequences and likelihood of repetition.

First, they estimate the severity of the consequences (harm). Severity of consequences is subdivided, on a scale ranging from consequences that are negligible, where the patient has no injury or discomfort, to severe consequences, where the patient dies (see chapter three and Appendix 4). Severity is an incident characteristic. Previous research in other -non-health- organisations has shown that especially incidents with serious negative outcomes have a positive influence on learning (Cannon & Edmondson, 2005; Husted &Michailova, 2002, Homsma, 2007; Homsma, et al., 2009). Relevant questions in the present case are whether health care professionals talk more often to other professionals when (near-) incidents have serious negative outcomes? In addition, are (near-) incidents that have serious negative outcomes communicated more to different links in health care organisations than (near-) incidents that have hardly any consequences?

Secondly, on the basis of the risk matrix, professionals estimate the likelihood of repetition. Likelihood of repetition too, is an incident characteristic, subdivided in a five-categories scale from 'almost certain that the (near-) incident will happen again within hours or days', to 'rare', to 'it happens less than once every five years' (Chapter 3 and Appendix 4). Both severity and likelihood define the rating of risk level: extreme (4), high (3), moderate (2), or low (1) risk. A relevant question in the present context is whether professionals communicate more easily about (near-) incidents when they are likely to occur again very soon, as opposed to (near-) incidents that happen rarely. I have examined both incident characteristics (severity and likelihood of repetition) in relation to communication in the chain.

In sum, the present research analyses whether there is a pattern between incident and communication about the (near-) incidents. I have explored whether professionals share beliefs about (near-) incidents, and whether incident characteristics play a role in communication about (near-) incidents, especially in the chain (see Fig. 5.1).

Fig. 5.1: Incident Characteristics in the Health Care Chain



5.3 Methods

To answer the research questions I used the eighty-eight in-depth interviews with professionals in GP offices, pharmacies, ambulance service, hospital, and nursing homes, from April to August 2009 (for more about the sample see Chapter 2 and Appendix 3).

As stated, in health care, the term (near-) incident is used. The interviewers therefore used this term and tried to avoid words like error or failure. Only when participants themselves did so during the research, the words errors, mistakes, and failure are used[54]. First, I will

[54]The term error is used when a respondent uses the Dutch word '*fout*'; the term mistake if a respondent uses the Dutch word '*vergissing*'; and the word failure if a respondent uses the Dutch word '*falen*'. The term adverse event (when there is actual harm) is also used only when participants did so.

describe what professionals mean when they talk about (near-) incidents. Secondly, I explore how professionals make risk assessments.

5.4 Results

5.4.1 Defining (near-) incidents in general practices

As concluded in chapter three, the GP offices in our research hardly communicate about (near-) incidents in a formal, structured way. None of the GPs have structured, standardised reporting systems for (near-) incidents. Some GPs use simple notebooks in which professionals can write down (near-) incidents. One GP called it the 'things can be better' notebook. Everything that one wanted to change was reported in that notebook, not only (near-) incidents. When talking about incidents, GPs often used the word error. One GP was musing aloud:

> *What is an error? (R22:170).*

He is answering his own question by wondering if misjudgements or missed diagnoses could be categorized as errors or (near-) incidents:

> *An error is something you miss completely. If you say this and the next day, the patient is deceased. It is a wrong assessment (R22:170).*

Most GPs perceived missed diagnoses as something of a grey area, easy to judge with hindsight bias. Some GPs talk about missed diagnoses in terms of errors, as something attached to them, as part of being a GP. They feel responsible for these missed diagnoses, especially when it has an effect on the patient:

> *The example of the migraine, really, I hold that against myself, as an error. Missing an infarct, in my eyes that is really an error (R20:318).*

Some feel they should not be blamed for making wrong assessments; they do not see missed diagnoses as errors:

> *That is, well... I think these are not errors but assessments. I always say to a GP in training that if they do not dare to make mistakes of this kind, he will be a bad GP. He has to choose a different profession. You have to build in as many safety nets as*

> *possible, so that the wrong assessments are correctible in time. That, of course, is the art of it (R20:310).*

This GP acknowledges that things can go differently than planned, and believes this is part of the job. He also states that it is important to try to avoid the outcome, to minimize the consequences for the patients.

That (near-) incidents are not only due to actions attributable to one person, but due to different things that go wrong, is something one GP notices:

> *It is a sum of things that go wrong, uhm... It is never something you can attribute to one person; however, you address it to one person. It would be convenient if there would be someone who maps the situation. Not looking at individual errors because individual errors will turn less serious then they seemed at first (R20:358).*

Another GP emphasizes that the Dutch word for error (fout) is normative:

> *An error gives a malevolent impression. Nevertheless, what is an error? If, unnecessary, you let someone walk with a fracture, which is an assessment error, of course (R22:170).*

Only one GP sees that it also has to do with circumstances, with the fact that GPs have poor diagnostic facilities:

> *Of course you do things wrong, you are aware of that yourself. You can send in patients too late, or for nothing. That is the insecurity we have to deal with, along with the deficient diagnostic facilities we have as GPs (R21:162-166).*

GPs mostly use the word error. One GP sees the term incident as something comparable with a complaint:

> *What is an incident? For example something people are not content about. On the other hand, they want to be heard (R22:413).*

This GP received a complaint from the parents of a child that had a cough. The GP followed a wait-and-see policy. After one hour, the child became very ill and the parents drove straight to the hospital. Someone on the ER stated to the parents that the GP had not made

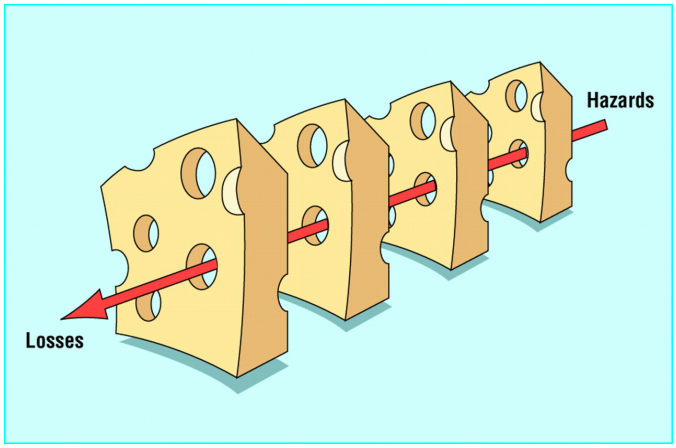
the right judgement call. The parents filed a complaint. The GP did not experience this assessment as something he did wrong. He contacted the parents to explain that the child had a virus, by which the symptoms change very rapidly, and therefore the diagnosis was easy to miss.

Another GP makes a distinction between incidents and errors based on the consequences for the patient. An incident in his eyes is something without consequences whereas an error has consequences for the patient:

> *An error is something that has consequences for the patient, an incident, not yet. An incident becomes an error when the cheese slices fall on each other (R20:322).*

He refers here to the Swiss cheese model (Reason, 2000; see Fig 5.2). Systems can have many build-in defences, safeguards, and barriers. These layers look like Swiss cheese: with big holes in them. These holes are not static; they change position, they open and close. A bad outcome can happen only: "*when the holes in many layers momentarily line up to permit a trajectory of accident opportunity—bringing hazards into damaging contact with victims*" (Figure taken from Reason, 2000, p. 769).

Fig. 5.2: Swiss cheese model, Reason,J. BMJ, 2000;320:768-770



Examples of incidents that have no direct consequences for the patient, according to this GP, are telephone calls that are made a day later than planned. Another example is a prescription that was not sent in properly, because of a hitch in the computerization process. Things that cause the organisation to 'not run smoothly' (R20:326).

When something happens that has consequences for the patient, this GP calls it an error. He underlines this with an example of a missed diagnosis, partly due to 'travelling in the chain'. A patient with a migraine was examined in England. They did a Computed Tomography (CT) scan over there, with no abnormalities. Back in The Netherlands, he visited the GP, who waited two weeks before doing a second CT scan (R20:294). The consequence for the patient was a delay of treatment, at least. This GP sees a dilemma,

choosing between trusting the judgement of others, and doing everything all over again, only trusting his own judgement.

GPs talk about missed diagnoses, mostly with harm for the patient, sometimes so severe that it results in the death of the patient. One GP remembers a patient with chest pains; the GP advised to stay on breathing calmly and prescribed painkillers. The same afternoon the patient died. This incident had a big personal impact:

> *Then something happens to you, inside yourself. Like, I cannot face those people again. However, you try to be there for these people. That went well. However, that is one of the things I will never forget (R22:178).*

Apart from incidents, severity itself is something that does play a big role when talking about communication in the chain. When patients decease in hospital, most GPs indicate they would like to be informed, so they can contact the family. Often, they indicate that they miss that information from hospital. GPs do inform other parties when patients die. One GP called a patient's former GP after her death:

> *She had a special relation with her former GP, whom I also know very well. The GP also asked about her now and then. After her death, I emailed the GP to let him know. Just an announcement, this and this happened (R21:189).*

Most GPs perceived missed diagnoses as something of a grey area, easy to judge in hindsight. Some see it as an error, as something they are personally responsible for. Some feel they should not be blamed for making wrong assessments; they do not see missed diagnoses as errors.

One GP has an example of a (near-) incident that happened partly due to being transferred within the chain. The patient, during the time she had complaints, moved to a nursing home in another area, changing GPs too. The new GP had no medical information, because the medical record was still with the former GP. In the meanwhile, during the weekend, a third GP saw the patient. This GP suspected a tumour in the colon. Overall, it took two months before the patient visited a physician in hospital. Eventually it proved to be a tumour of the stomach. The GP found that it all took a long time, but it was due to the move:

> *I think that if this women had stayed in her own home, and had not moved to the*

nursing home, not the whole roundabout way, she would have gone to hospital sooner (R21:153).

All GPs underline that making the right diagnosis is difficult, and that circumstances can cloud their judgement:

Sometimes you have things you miss, or you are looking in the wrong corner. Someone once visited Indonesia and came back with blood in the faeces. You think of an infection, you get it tested. Three months later, it was all wrong (The patient was diagnosed with colon cancer).These kind of things, you say 'I went this way, it was the other way'. While on the other hand, when someone (who did not visit Indonesia) comes in with blood in the faeces, you would have looked immediately (R19:135).

Over time, insights on what is right and what is wrong also change:

One day the truth is black and a few years later white is the truth. There are new ideas over time. Hundred ways lead to Rome. That is how this works (R22:238).

Another GP too states that insights over time become obsolete:

You have just left school; you have learned that patients over 60 are eligible for colon cancer. Heart failure under 50, no way, you must be older than 50. Over time, you learn to adjust your knowledge. Early 30 and chest pain, it might as well be a heart attack. You have to colour your book learning (R19:143).

A solution for not missing diagnoses is sending in patients more often to hospital:

Nowadays when I hesitate, when I think I will lose sleep over it, I just send them in. Then you will miss less (R20:118).

GP see (near-) incidents as errors, as events, personally attached to them. The examples are mostly about missed diagnoses. A missed diagnosis is something that is part of being a GP. It is something, over time, one can learn, they think, making the right diagnosis will get better. The given examples are rare, are happening not on a regular basis. Each GP has one or two examples of missed diagnoses that have happened over a period of many years, one or two examples during their whole carrier.

The GPs communicate about missed diagnoses with patients, they say. Although they themselves easily use the term error, when talking to patients they try to avoid it:

> *I never say (to the patient) that I have made an error. You should not do that. I think ...eh... That damages the trust they have in you. I just explain to him how it should have gone (R20:306).*

Some GPs communicate with direct colleagues about incidents with a big impact, with severe consequences. A GP, which had a patient who died:

> *You talk it over with colleagues, it is the safety you have within such a group (R22:182).*

Some GPs gave examples of (near-) incidents that where discussed with GP assistants. One of these (near-) incidents had severe consequences, the other example there are no consequences yet. These examples also had to do with missing diagnoses:

> *The assistant took a urine sample for a patient who had a vague stomach ache. It was clean. The assistant consulted with the GP, who decided to wait until the next day. The same evening the patient had a burst appendix (R22:66).*

This communication about the incident resulted in double loop learning, in a communication course for GP assistants (see also chapter four). Another GP explains that assistants sometimes try to protect the GP, and therefore they keep the patients waiting:

> *When patients call in the afternoon for a house call and it does not seem to be urgent, the assistant will plan in the visit for the next day. I do not want that. Maybe it can wait until the next day, but that is something I want to judge for myself, I want to make that decision (R20:533).*

They discussed this in the practice, in order to avoid miscommunication in the future. This communication about the near incident also resulted in double loop learning, in changing procedures. The GP assistants, before making appointments, have to deliberate with this specific GP. The near incident is not discussed with the other GPs, so it is not clear if the procedure has changed there too.

Few GPs talked about (near-) incidents in other links in the chain. Once, a patient was sent home with an obstruction of the colon. The GP got the patient admitted again, but he died in hospital. The GP tried to talk it through with the surgeon, but did not get much of a reaction. He also brought it under the attention of the surgical partnership. The surgeon then pretended ignorance, saying he did not know what was going on. In this case, the GP indicated he communicated with the surgeon, because of the distress to the family:

> *I found this bitterly distressing. This was bitter grief (for the family), the surgeon should have taken responsibility (R20:418).*

GPs indicate they mostly communicate with hospital upfront, to ask questions, to avoid missed diagnoses (R20:596; R22:150).

To conclude, during the interviews, GPs talked about (near-) incidents that happened within as well as between links in the chain. GPs talked about incidents, mostly related to missed diagnoses. Many times, they call them assessment errors; not as neutral events, but as something attached to them. None of the GPs talked about near incidents, about events that did not reach the patient.

The examples the GPs gave had mostly moderate to severe consequences (death or involving serious permanent or temporary injury, with prolonged hospitalisation and extra costs). This outcome corresponds with the out-of-hours incident-reporting system; 55.5% of the reported incidents are moderate to severe (see Table 5.1).

Table 5.1: Frequencies Consequences Risk Assessment in Out-of-hours Service

	Frequency	Percent
Small injury and little special treatment	5	45.4%
Serious but temporary injury	4	36.4%
Serious permanent injury	1	9.1%
Deceased	1	9.1%
Total	11	100.0%

GPs see an incident as something that happens rarely, and is unlikely to happen again (less than once every 1-5 years). This outcome does not correspond with the out-of-hours incident-reporting system. Most reported (near-) incidents are likely to happen again within

several days, weeks, or months (see Table 5.2).

Table 5.2: Frequencies Likelihood Risk Assessment in Out-of-hours Service

	Frequency	Percent
Within months	7	63.6%
Within weeks	2	18.2%
Within hours or days	2	18.2%
Total	11	100.0

Thus, that what professionals report in the system does not correspond with what professionals discuss during interviews. The incidents discussed during interviews, mostly about missed diagnoses, were not reported; according to the GPs. GPs see incidents as strongly related to their work, due to their own action as well as something due to circumstances like poor diagnostic means and rapidly changing knowledge. GPs hardly communicate about most (near-) incidents with other parties in the chain.

For GPs, incidents are not neutral, but events they are responsible for, events that are severe and happen rarely. In the next chapter I will explore if the way professionals attribute (e.g., if they feel responsible) have an effect on the communication about (near-) incidents.

5.4.2 Defining (near-) incidents in pharmacies

In most pharmacies, professionals work with a form, not only to register (near-) incidents, but everything that should be improved is mentioned on it. When asked to give a definition of a (near-) incident, pharmacists use different definitions. One pharmacist explains how the terms incident and error relate:

> *We have an improvement form on which everything that did not go well is reported. For instance, someone stings oneself with a syringe, which falls under the word incident. I think it (incident) is a stronger word than error. Look, when somebody gets the wrong dosage on the label, which is not right. Here, that is registered as an error. However, an incident, I think, is more severe, is something that really has consequences, I suppose (R2:34).*

This pharmacist sees an incident as something with severe consequences. Another

pharmacist too relates incidents to errors:

> *In principle, I am thinking of an error that could have been avoided (R1:35).*

He feels it is something that could have been avoided. Different pharmacists see an incident as errors that happen rarely, as some one-time event (R3:192; R4:199, R5:467; R7:185). The word incident here is more like the term incidental, like a unique event. One pharmacist assistant sees an incident also as something that is severe:

> *Then I think of a more severe error, a serious error we have made. Fortunately, this happens seldom (R13:148).*

This pharmacist assistant gives an example whereby something completely different from what was ordered is delivered. Although in this case there were no real severe consequences, it could have happened. Another pharmacist assistant associates an incident with an accident or event:

> *Interviewer: When I drop the term incident, where do you think of?*
> *R15: ...uh... an accident*
> *Interviewer: What ...uh...*
> *R15: ...uh... an incident… an event I think (R15:190-194).*

This respondent cannot give a concrete example of an incident. Another pharmacist assistant also associates the term incident with persons who become angry:

> *.. All right, an incident with a patient, I think of a prescription that is not there, and the person becomes angry about it. Then you try to explain that we cannot do something about it and... uh… (R11:078-085).*

Other pharmacist assistants too associate incidents with angry people, with the raising of the voice:

> *A slip of the tongue, or a raise of the voice, something like that (R16:233).*

This pharmacist assistant also sees incidents as something they can learn from:

> *What happens, yes, I see them as incidents, you can bundle them to one problem, and you can see what you can do to improve it (R16:233)*

One pharmacist uses a kind of classification:

> *We classify it in uh errors, accidents, near-accidents, yes, or near-errors. An incident I see as an error or an accident if it is severe or not (R6:290).*

The terms he uses look a lot like the abbreviations used in the earlier described FONA-form. This pharmacist makes a distinction between something that reaches the patient or not. An incident is something that reaches the patient:

> *It happens that a wrong medicine arrives at the wrong patient without severe effects, still I think that is an incident (R6:292).*

For this pharmacist, the fact that it reaches the patient is crucial in calling it an incident. The effects, if it really harmed the patient seem to be of less importance. Other pharmacists and pharmacist assistants also mention incidents as something that reaches the patient, for example the deliverance of the wrong medication or dosage (R13:148).

The distinction between something that reaches the patient and something that stays within the pharmacy, for many pharmacists and assistants is crucial. When distributing medication, most pharmacies work with a double or even third check system. First, pharmacist assistants type the prescription into the computer. The output is a label. Then they fetch the medicine box with the right medication from the cabinet. They scan both the printed label and the information on the medicine box. If the two do not match, the system will give a warning (first check). If it is all right, they stick the label on the medicine box. A second person (pharmacist or pharmacist assistant) checks the medication in the box with the information on the label (second check). The pharmacist in the end is responsible, so he normally rechecks the medication the pharmacist assistant gives to the patient (third check). Sometimes, during this process the scan is passed over (first check), or the second and third check are skipped.

Pharmacists and assistants see this skipping of some of the checks as the common cause of most errors that happen during this internal process. Both pharmacist and pharmacist assistants do not perceive these as errors or incidents because it has not reached patients yet:

> *If it (error) is just picked out during our daily control system, then it is not an error. We have set up the control system for that. A real error is… when it left the pharmacy and the patient could have taken the wrong medication, then it is an error (R2:129).*

The pharmacists report incidents, as well as near-incidents, the things that go wrong internally; within the pharmacies, (near) incidents are reported by pharmacists to see if they can learn from it. Pharmacist assistants do not report these internal near-incidents.

Pharmacists also see differences between something that happens in the pharmacy and something that happens in other links of the chain. They see things that happen outside, in other links, as complaints towards these professionals:

> *Things that physicians or nurses do wrong are complaints, actually, because these are not things that went wrong at our place (R2:129).*

Here, control seems to be an issue, is it something they have control over or not. This also has to do with how professionals make causal attributions (see chapter 6).

To decide if they communicate about (near-) incidents that happen in the chain, severity of the consequences are taken into account, especially if they have experienced negative reactions. One pharmacist explains:

> *Well, if it is a physician you know who is unreasonable...you can call him again and*
>
> *you expect a torrent of abuse, nobody waits for that, then you compare the pros and cons, is a patient really in danger? That is no reason not to call. However, when it is a formality, then maybe I will not call him if it is a jerk, yes that has an influence (R1:031).*

For this pharmacist, discharge medication is a source for many errors. Like his colleagues, he will always communicate about discharge medication errors with the hospital (see also chapter 4).

Thus, when talking about incidents, pharmacists use the term error many times; as something, a person has done wrong, instead of a more neutral event. Some considered an angry reaction, like raising a voice, as an incident. Both professional groups see events that happen when a patient has received the medication as errors; they feel responsible for that. Professionals in the pharmacies make a distinction between incidents and near-incidents based on the context of the situation. When something goes wrong inside the pharmacy, pharmacists and assistants see them as near-errors, in accordance with the formal definition of near-incidents as being something that did not reach the patient. The errors that happen after the medication has 'left the pharmacy' are in their eyes, incidents. It is the other way

round; they do not see the event as an incident, *because* it reaches the patient, but because they see incidents as one-time events. When defining incidents, seeing incidents as one-time event, they seem to take likelihood of repetition into account.

Intra-organisational, pharmacist-assistants only communicate about an incident, when it has reached the patient. Pharmacists see incidents as well as near-incidents as things to discuss, as a source to learn from.

Pharmacists do communicate with other links in the chain about (near-) incidents they discover; information they receive from GP offices, hospital or nursing homes that is contradictory, missing, or wrong. Some pharmacists do not define these events as (near-) incidents that parties can learn from, but as complaints, they have toward the professionals in other links in the chain. When communicating in the chain, likelihood and severity are hardly considered. For pharmacists, it is not their job to decide about the right information, about what should be prescribed; and thus they keep on communicating about these events (see more in chapter 6 about responsibility).

5.4.3 Defining (near-) incidents in the ambulance service

Ambulance professionals also struggle with the definition of (near-) incidents and error. The word incident for ambulance professionals is not always associated with something that goes differently than planned. Many ambulance professionals use the term (large-scale) incident when they are talking about big accidents (R27:236). A big accident is a situation where more vehicles and victims are involved, or when different professionals work together, like the fire brigade, police, ambulance service, and sometimes, special trauma teams.

When talking about (near-) incidents, like other professionals, ambulance professionals quickly use the word error. One ambulance nurse talks about the doubts he has about an error. He wonders if a wrong assessment of a patient is an error. One hospital has different locations for cardiology and neurology. Ambulance nurses have to assess to which location they send the patient. When a GP is present, mostly the GP decides. However, ambulance nurses feel responsible for this decision too. Sometimes, ambulance personal disagree with GPs about this. In one example, the GP thought of heart problems, the ambulance nurse of a neurologic bleeding. Although he hesitates, the ambulance nurse brings the patient to the location the GP assigned, to cardiology. Later on, the ambulance nurse deliberated with a neurologist about the symptoms, who went along with the ambulance nurse. Nevertheless,

in the end the GP proved to be right. The ambulance nurse sees this as an assessment problem. He kept brewing over this and talked about it with colleagues. He does not see it as an error, but he indicates it does not feel right. Assessments are difficult, the same ambulance nurse explains:

> *Once I had a patient, I really did not know what he had; he almost died in the ambulance. Looking back, he could not be saved. For a long time I thought: 'could I have done something for this man?' (R24:192).*

The ambulance nurse struggled with the fact that he did not let the spouse accompany the husband. He indicates he has learned from the situation:

> *Now I never leave them apart, I always bring them along. However, is this error? No, more something I am moved by, it makes you insecure, but an error? (R24:192).*

For this ambulance nurse an error is something he did wrong. He grounds this with an example of an eighty-year-old woman:

> *When fetching the newspaper she falls over, has pain in neck and wrist. I brought her to hospital, later on; it turned out to be a vertebral fracture. That was an error, I should have put her on the board, with a collar (R24:192).*

An ambulance nurse reports in the reporting system, what he calls incidents, but gives examples of things that do not cause direct harm for the patient. He talks about information that is missing, the fact that they arrived at the wrong address, that they had problems with navigation, the maps, and the signposts. In all these cases, in his eyes, there was no direct visible damage to the patient. This professional thus calls them incidents. He reports them so the organisation can change them (R25:265).

Different ambulance professionals talked about the fact that, in the eyes of the ambulance professionals, some centralists do not always ask the right questions. Sometimes this (not asking the right questions) also leads to delays:

> *It is an error of assessment, when sometimes, we are at the scene, and I think, a taxi could have done this ride. You do not know this beforehand. On the other hand, it can be more threatening than it looks. The centralist is not always to blame, they have to do everything by telephone, do everything by protocol. I do not grumble then, but I*

> *do grumble in case of a wrong address, that is annoying. This week, we needed to go to an address in village X, but instead of questioning properly, it was in village Y, yes that gives quite a delay (R28:051).*

The 'delay' time is for more ambulance professionals' reason to report in the digital system. Ambulances, in life-threatening situations, need to be on the scene within fifteen minutes. From the moment they leave the ambulance service until arrival, the time is automatically registered. The delays are visible, and ambulance professionals feel the need to explain why the delay happened, thus they report the reason for delay in the incident-reporting system. Reasons are diverse: roadblocks, unknown area, and not getting the right address from the centralist. In the last case, ambulance nurses report (near-) incidents, they feel are caused by others, by centralists. Sometimes, severity is taken into account, when talking about (near-) incidents

> *I thing that it depends on the incident, if it is not too serious... when it becomes severe, it will be fed back (R27:242).*

For ambulance personnel, the term incident is firstly associated with large accidents, where different parties (police, ambulance, fire brigade) are involved. When talking about things to report in the digital reporting system, most ambulance personnel seem to report everything that deviates from the plan, without questioning if the reported incident has consequences for the patient. For example, they report delay, without considering if these delays have an effect on the patient's situation. Professionals from ambulance service hardly take into account severity or likelihood, in the rare cases they communicate about (near-) incidents in the chain. When communicating in the chain, like GPs, they discuss assessments they or other professionals make.

5.4.4 Defining (near-) incidents in hospital

Nurses from the ER and the ward are aware of the definition of (near-) incidents as defined in medical literature. They mostly know the difference between near incidents that do not reach the patient, and incidents that reach the patient. They report patients that stay on the plank to long (R41:157), or records that were mistakenly interchanged (R42:368), and test tubes that were left on the ER (R45:166). Some ER nurses implicate that the event is

something attached to a person who made an error:

> *That you did not do it right (R41:323)*

Another ER nurse sees especially neutral events as a reason to report:

> *When I think, this is not only your problem, but also a process, that does not work well, then I absolutely report (R43:095).*

ER nurses report in the incident-reporting system everything from medication that is given the wrong way or in the wrong doses, to specialists that do not come in the evenings or nights, and patients that have to wait too long, because it is too busy:

> *It was very busy, many patients were waiting in the hallway, after a while I looked at a patient, turned out it was a heart attack (R42:404).*

This ER nurse indicates he has reported it, because of the severity of the consequences, because the patient had a heart attack and later on died. In this case, the working processes changed (see chapter 4). After the incident, they decided the coordinator should only coordinate, should not treat patients. The coordinator should only decide which patient gets first aid, which patient has to wait a little bit, and so on. For other ER nurses, being a coordinator who does not help, is difficult. This ER nurse helped a child who had breathing problems. The ER nurse confronted her colleague about the dilemma:

> *Sure, I know I should coordinate ... but what is more important...helping a child or stay in the coordination room? (R41:219).*

Thus, not all professionals supported the new working processes that were introduced after an incident with severe consequences (death).

For many ER nurses, a reason to report is the potential harm for the patient, the severity of the consequences (R41:323; R43:096; R46:231; R48:073; R49:103):

> *You have to report if there are negative consequences for the patient (R41:323).*

In the incident-reporting system of the hospital, 97.9% of the reported incidents were low or moderate risk (see chapter 3). During interviews, some ER nurses agree that they report

mainly little things (R44:126), but other ER nurses think (near-) incidents with high or extreme risk are reported:

> *I think, the bigger things, are reported sooner than the little things... I think it is trend to report big things sooner (R49:115).*

Some ER nurses indicate that likelihood of repetition is an aspect that helps to decide if a (near-) incident should be reported or not (R42:364-368; R43; 097) One ER nurse gives an example:

> *Recently, I reported the mix-up of patient records. That happens regularly ... I thought 'Now I am fed up with it, I have reported it in the system' (R42:364-368).*

Another ER nurse indicates he reports incidents when it is something that can be changed, or when it happens repeatedly (R46:109). This ER nurse reported an incident once, where a patient had to wait a whole day before being treated. In this case, the first resident forgot to transfer the information to another resident. After a long time, the nurse called the second resident, who then had to examine the patient all over again. Arguments to report, for the nurse, were the likelihood of repetition and severity of the outcome. This ER nurse had the impression that this happened on a regular basis, this should be easy to avoid, and the patient had waited for hours was a reasons to report (R46:143).

Some nurses see near incidents as something to discuss, instead of something only to report. For one ER nurse, a near incident is something you can participate in, you can avoid before it really goes wrong. An example of a patient with a broken foot was given. In a matter of hours, three different residents had looked at the patients' foot, but the overall picture was ignored. The communication among the residents seemed to be absent. The ER nurse confronted the resident and the trauma surgeon about the situation. By discussing it, an incident was avoided, in the eyes of the ER nurse (R43:081).

Many ER nurses decide what, in their eyes is important enough to report in the incident-reporting system. Some state:

> *I do not report enough (R42:356; R43:091)*

Other ER nurses see the incident-reporting system as something where you report (near-) incidents that could not be discussed personally. For example, an ambulance nurse once brought in a patient. The ambulance nurse only transferred the present clinical picture. Later

on, the ER nurse found out that the patient had a complex medical history. The ER nurse confronted the ambulance nurse about that directly by telephone (R46:207). Because they talked it over, there was no reason to report this in the hospital system.

In the above example, within the chain, (near-) incidents between ER and other links happen. As mentioned in chapter two, the ambulance service is the only organisation with an official feedback system, the 'white' feedback form. The ER nurse, who missed the medical history of the patient, did not use the white feedback-form either, for the same reasons he did not report it in the hospital incident-reporting system; he already talked about it with the ambulance nurse.

As mentioned in chapter four, ER nurses complain that they sometimes miss the right announcement when patients visit the ER (R41:049; R42:702; R43:045).They indicate they should have given feedback to the ambulance professionals, using the form. They are aware of this formal means to give feedback. They also have things to put on the form, like the wrong or missing announcement. Other things that should be on the form are patients that should have been planked, or need an IV drip, or positive things, like patients that are delivered properly to hospital. Although they indicate they see the form, as useful, they do not use it, because it is not a habit, *'it is not in my system'*(R41:138; R42:348). Only when it is not possible to discuss it with the other professional in the chain, some nurses do use the form, but as they say, only for little things (R44:126). As another ER nurse states:

> *If there should be a big miss, I did not experience that, then there will be direct contact with the ambulance professional to evaluate it (R48:065).*

Thus, ER nurses are aware of the distinction between both terms incident and near- incident. They use the term for neutral events,

Both severity and likelihood of repetition are reasons for ER nurses to report and communicate about (near-) incidents.

Residents, too, see severity as a reason to communicate about (near-) incidents. One resident once used the feedback form of the ambulance service. There was an accident where a car drove into a truck. Beside the driver, there were three kids in the car. The ambulance professionals brought the driver into hospital. They did not bring in the kids, who

were on their way to a party:

> *Please bring in the kids to, one of them had a pain in the neck, suspicious, well you have to make an x-ray then. We looked at the other kids, it turned out better than expected, but you have to see for yourself. At the same time, it could have been a rupture of the spleen (R68:110).*

There was email communication between this resident and the ambulance nurse too. For the resident it was important to convince the ambulance nurse of the severity of the case, of the fact that this professional made a wrong judgement call. Another resident too, sees severity as an indication to communicate about (near-) incidents (R71:68). This resident indicates that likelihood is important too:

> *It is something structural, that things go wrong. If it is small things that go wrong, with big consequences, or big things that go wrong, with little consequences. If it happens to someone who does not know, you can tell him, and that is it (R71:355).*

For many residents, it is difficult to call something a (near-) incident. They associate (near-) incidents with things they do wrong. They feel they are in a learning position, so making mistakes is part of their job (R66:061; R67:133; R69:105). They deliberate with colleague residents or specialist when they have doubts about the steps taken. This mostly avoids (near-) incidents in their eyes. For example, a resident on the ER saw a patient who had fainted. He complained about back pain, and felt he had to go to the toilet. The resident wanted to prescribe painkillers, but he first deliberated with a physician, who suggested it could be an acute aneurism. On his suggestion, the resident did some further research that confirmed the diagnosis (R68:142). Residents feel they are constantly in a position where their actions can be questioned. They feel there is a safety net. For example, in the case of the judgement of x-rays, resident can miss fractures, but they always look at each other's photos, two residents say (R66:061; R70:091).One resident keeps on doubting about the right definition for an incident. For him, an incident is avoidable. He questions if an incident is also a complication. He gives an example of an inevitable complication: someone who dies after surgery because intestinal leakage (R69:377). He thinks there is a 2% acceptance the complication will occur. For every 100 patients that are operated, two can die, he thinks, this is inevitable. If it is avoidable, he thinks, it is an incident:

> *Maybe we can call an avoidable complication an incident. Maybe we should say that, at least, or not? (R69:403).*

This resident is not the only one who questions what an incident is. Another resident explains that sometimes, with hindsight, things could be more efficient. For example, blood tests. After getting the results, he sometimes wants to know more, so again a blood test must be taken (R66:055). Other residents also indicate that with hindsight, it is easy to judge (R67:143).

Some residents have reported (near-) incidents in the system. One resident reported an incident where a nurse had given the patient the wrong medicine (R66:087-093). Another resident reported an incident where a patient was in decompensation and the chest became tight. They discovered it in time, so the patient survived (R70:41). Another example of something he reported was a patient with a dislocated shoulder who had waited three hours, before someone helped him. Therefore, it was more difficult to repair the shoulder (R70:145).

Residents have different reasons to report. Some think you have to report everything, one can learn from (R70:145; R71:062). Sometimes, other residents take into account severity (R67:095; R71:084) and likelihood:

> *If you see something goes wrong structurally, then it is wise to report (R68:298).*

For some residents it does not always has to have an effect on the patients:

> *Little things can have big consequences; big things can have little consequences (R71:084).*

Although this resident is clear about what to report (everything), he never did so. He likes the direct approach more; talk it over right away. Other residents also indicate they would have reported things. They mostly give up because they feel reporting is time-consuming (R66:047; R67:107; R68:290).

Like GPs, for residents too, there are many ways to skin a cat (R66:121). Others see differences between hospitals (R67:149) or between professionals (R67:203). Another resident refers to differences between protocol and practice. According to him, protocol dictates that planked patients, as soon as they enter ER, should be lifted off the plank, on to a normal bed. In the current hospital, however, they first take x-rays before moving a patient. He disagrees with these working proceedings, and instructs the nurses to work according to protocol. Although the nurses do engage in discussions with him, he gets his way (R68:192).

Few residents communicate with other links in the chain about (near-) incidents. One resident did so when children were involved in a car accident and the ambulance nurse did not send them in for check-up (see also chapter four). This resident informed the ambulance nurse, because, he said, it could have been severe, they could have a ruptured spleen (R68:110). This resident also tried to call a GP back, to confirm that the first diagnosis of the resident was right. The GP had sent in a patient, because the GP thought it was appendicitis. On the telephone, the resident already explained it was possible malaria. After examining the patient, the resident tried to inform the GP, but there was another GP, and the resident gave up calling (R68:070).

Many residents are called by nursing home physicians about discharge letters that have wrong, missing or contradictory information, mostly about medication (R66:177; R67:167; R68:372; R70:175). It is a pity that nursing homes only call when something goes wrong, according to one resident:

They never pay a compliment, tell you that you did a good job (R70:175)

Residents also receive calls from pharmacists about prescriptions (e.g. R66:193; R67:177). They mostly like the deliberation and warnings, but state they have to think for themselves too.

Thus, residents feel they have a special position, being trainees. They also feel there is a grey area, concerning (near-) incidents. They sometimes find it difficult to define incidents. Some do communicate about (near) incidents, and report them in the system. For some, severity and likelihood play a role.

Nurses on the ward, like ER nurses, are acquainted with the official meaning of near incidents and incidents. Nurses who work on the ward see an incident as something that has or could have had consequences for a patient:

> *It is something, it should not have happened, but looks like going to happen where patients could have negative consequences (R53:081).*

Another nurse sees an incident both with consequences for the organisation as well as for the patient.

> *The definition of an incident? Ehm... an incident is eh... an event where a discipline within the hospital experienced danger by being victim of an event, or near victim.*

Naturally, an incident is also an event in relation to a patient. An event where a patient is in danger, or almost in danger. Ehm... I think this is a fair description of the term incident (R54:335)

For one ward nurse there is a difference between a (near-) incident and a misdemeanour. When nurses do not follow protocol, this professional sees anything that happens because of that not as a (near-) incident:

When later on, it appears that you did not do the check, you can be held accountable,

in the end, you can be put in front of a disciplinary tribunal, you did not do the double check (R56:088)

Like all professional groups so far, surgeons too differ in defining an incident. As one physician philosophises:

An error is a result. You can do something wrong, a mistake. With the right arguments, you can go another way, than it is no mistake. A complication is an error you have expected. Mostly you know possible complications upfront. Look, avoidable or inevitable, that is the issue. When it is avoidable, there is mostly an underlying error (R064:177-187).

For specialists there is a grey area between incidents and complications. Like GPs, making diagnoses is also a grey area, but unlike GPs, some surgeons do not see the missing of a correct diagnosis as an incident:

Giving the right diagnosis, we do not consider as being an incident. Because, well it is like with the disciplinary board[55]. If you make the right diagnosis, which is …, you just can miss a diagnosis. You have to act carefully. If you have acted in honour and decency, and not… (R59:186)

This specialist refers to the disciplinary board. In the Netherlands, pharmacists, physicians, and nurses[56] are three of the eight professions that are registered in a special law[57] and can

[55]In Dutch: '*tuchtrecht*'.
[56]There are eight professional groups that are protected by law.
[57]In Dutch: '*Wet Beroepen in de Individuele Gezondheidszorg (BIG)'.*

be questioned by this board about their conduct. The objective of the board is to guarantee the quality of the given care. This disciplinary board, unlike the traditional justice system, is based on peer review. The HCI for example can present a case to the board. Professional will be questioned about their actions. The disciplinary board judges if the professional has taken the right steps, with the information at hand. For example, family complained about the death of a family member to the HCI. In this case,[58] the patient had used a medicine, which is not good for the stomach. According to the newspaper article, the family accused the GP for not having prescribed a protection medicine for the stomach too. The family also complained about the pharmacy, because they thought the pharmacist also could have known this. The disciplinary board has to decide, if the professionals worked according to protocol, and if not, if they have arguments that can convince the peers, they would have chosen a different treatment, with the knowledge at hand. A disciplinary board can reprimand the professionals, or at worst, deny the professional's right to execute one's profession. Although on one hand, it is clear that professionals need to be reprimanded when they do not perform the job, on the other hand the disciplinary board can be a 'threat' hanging over (near-) incidents. Personal blame is at stake, making communication about (near-) incidents difficult and therefore health care system less tolerant towards (near-) incidents.

Working according to protocol, for physicians is not always 'black or white'. Especially when talking about assessments, what is wrong or right is less clear-cut then for example the wrong medication or wrong dosage. Like GPs, and residents, specialists experience there is more than one-way to skin a cat. As one surgeon put into words:

> *There are hundred ways that lead to Rome [59](R60:44).*

Professionals, as well as hospitals, and even countries, differ in policies. When physicians visit congresses, there is maybe one overall policy, an overall protocol, but on details, there are differences:

> *A patient with an ankle fracture, some say, has to stay three weeks in plaster, others say six weeks. That has to do with personal flavour (R59:387).*

[58]Dagblad van het Noorden, 27 June 2012, page 3.
[59]In Dutch: *'Er leiden meer wegen naar Rome'.*

Although this specialist acknowledges the differences, he also finds it is important to have one policy within one organisation; otherwise, it is difficult to work with. He explains the use of protocols in hospital:

> *Every hospital has their rules, their own protocols. We have discussions. We cannot assume that we know everything or that we are definitely more knowledgeable than others are. However, for the residents, I have also put it in intranet; they have to know what to do. Especially, when different locations have different protocols. If in one location they say three weeks plaster and in another one six weeks. A resident on the ER said to the patient 'you have the plaster for three weeks'. The patient visited the outdoor policlinic; the surgeon there was annoyed because it was six weeks. For our residents this is extremely awkward (R59:391).*

When trying to define an incident, one specialist hesitates between incidents and wrong assessments:

> *If you, eh... choose an implant that is not ideal. For example, if you choose a plate that should have been a pen. That is not an incident, but a wrong assessment. That is not an incident. If you choose the plate, because the pen is not in stock, you are forced to choose the plate, and then it is an incident, because that has to do with the bad organisation. However, these kinds of things I never see back in the reporting system (R59:186)*

For this surgeon, an incident has to do with bad organisation. He later on gives another example of a wrong implant that is ordered. He remembered this as an example that was reported on the OK. Other reports he is aware of, are medication incidents and communication disturbances, for example a patient who is informed to late about an operation that was cancelled. In his eyes, the reporting system is developed to structure an organisation to prevent things from happening again. He does not report anything, and blames that first on his own laziness. Secondly, he hesitates to report, because he does not want to blame anybody:

> *Ehm... eh... you do not have to blame someone of course. That is not the goal of reporting, to accuse someone. Yet, when you give a comment, this usually is interpreted that there is a guilty one. Someone has to be crucified; I have a big*

aversion to that. So... eh… that is why… you get worked up for a moment, and next I think, well, let it go. I forget it as quickly. An hour later, I have forgotten that I was angry. That should be reason enough to report immediately, but eh... (R59:215)

For this surgeon, incident reporting is not neutral. Although he never has reported, he thinks this should happen when it harms the patient, although this is not always clear:

It is not desirable to report everything; you will not see through the mountain what is important. You have to give criteria I think. Things that harm the patient anyhow, you can report that. How far do we have to report things that can cause harm? Should you have to report it all? That is the question of course. When things are structurally wrong, they will happen again…. you can report that, otherwise, it will happen again (R59:210).

In this case, both likelihood of repetition and severity are things that have to be considered. Especially (near-) incidents that cause harm and appear regular, in his eyes are reasons to report. This surgeon does not communicate with other professionals of other links in the chain. He sees no reason to communicate, mostly because he feels the damage is already repaired:

It has not much use of course; if you have repaired it then it has no additive value I think. I think if it has consequences for the after-treatment then someone has to know. (R59:375).

In chapter six I will address the topic of solved (near-) incidents as a reason not to communicate. The above surgeon can imagine that future harm can be a reason to communicate, although he has no examples. He does have an example of an incident in the chain, where the harm for the patient was clear, as well as the consequences for the after-treatment. A patient transferred from another hospital, was operated there on the knee. Because a screw was a little bit too deep in the joint of the leg, the patient was not allowed to walk. The resident of the second hospital stated it was not operated nicely. The patient discussed this with her husband and they were restless about it:

I had to spend hours of my time to talk it straight again. Although it was not operated very nicely, it was not wise to say so. If we had said: 'it is an ugly fracture,

and that is why you cannot walk' she would have taken it, no problem. If you do not change the policy, why bother (R59:375).

The surgeon did not see any use in talking to the other hospital:

Look, it was not operated nicely, but they know that themselves. That was really... Look the screw was too deep in the joint, I do not have to explain that to the surgeon over there. He saw that himself and probably thought… and that is why… no that is something… the patient was transferred with the advice not to burden. Normally, we would have thought you could stand on the leg. However, you had better not tell the patient, that gives unnecessary commotion (R59:379).

This surgeon presumes that they know themselves what had happened because they adapted the treatment, and therefore sees no reason to communicate about it with the other hospital.

Thus, for specialists in hospital, like residents and GPs, it is difficult to give one straightforward definition of an incident. There is a grey area, in their eyes. Severity and likelihood of repetition for some are reasons to communicate. Mostly, specialists do not see advantages of communication about (near-) incidents. When the problem is solved, the incident vanishes. In chapter six, the problem-solving attitude will be discussed some more.

In hospital overall, nurses on the ER and the ward share beliefs on what is a (near-) incident and on what to report. Residents and surgeons have more trouble with defining a (near-) incidents. For these professional groups it is not all black and white, there is no one solution. Residents do not recognise many (near-) incidents; they see communication about the right thing to do as part of their traineeship.

Specialists in hospital declare that when (near-) incidents happen, and the problem is – in their eyes – solved, they do not see reasons to communicate about them. For these professionals too, there is not one single solution, and they do not share the ideas about (near-) incidents that nurses have. Protocols are guidelines, and with the right motivation, specialist can deviate. For some specialists, severity and likelihood of repetition are reasons to report, especially when it concerns things that are more practical, like materials that should be on the OR.

Overall, professionals from different groups in hospital take both severity and likelihood of repetition into account. During interviews, these professionals stress the importance of communication about (near-) incidents with severe outcomes. Although most of these incidents may nearly always be reported, this does not mean that other incidents are not reported. In fact, most incidents that are reported did not result in any inconvenience or injury and are nevertheless seen as important enough to report (see Table 5.3[60]). Of course, it may be the case that many more incidents without any inconveniences or injuries did occur but were not reported.

Table 5.3: Frequencies Consequences Risk Assessment in Hospital

	Frequency	Percent
No inconvenience or injury	1,374	71.6%
Small injury and little special treatment	491	25.6%
Serious but temporary injury	44	2.3%
Serious permanent injury	7	0.4%
Deceased	2	0.1%
Total	2,277	100.0%

The 53 (near-) incidents reported with serious temporary or permanent injury or death, are all reported by nurses only, and not by other professionals, like physicians, $\chi^2(1, N = 1852) = 4.017^a$, $p = .045$ (see Appendix 5; Table 5.16A). This seems to contradict the overall observation from the interviews that physicians seem to communicate about severe (near-) incidents.

The second incident characteristic professionals' mention during interviews as being important, is likelihood of repetition. This corresponds with the incident-reporting system of the hospital, for 76.6% of the reported (near-) incidents will happen again within hours, days, weeks, or months (see Table 5.4 on the next page).

[60] 359 incidents are not included in the table as they could not be classified with regard to its consequences.

Table 5.4: Frequencies Likelihood Risk Assessment in Out-of-hours Service

	Frequency	Percent
Repetition unlikely	269	11,8
Less than 1x / 1-5 years	263	11,6
Within months	864	38.0
Within weeks	579	25,4
Within hours or days	301	13,2
Total	2277	100.0

5.4.5 Defining (near-) incidents in nursing homes

Like other professionals, nurses in nursing homes see (near-) incidents as something extraordinary:

> *An incident is something that happens that does not fit into the normal pattern (R87:077).*

Other nursing home nurses see incidents as unusual, as something out of place (R81:048; R84:090). Some nurses see a (near-) incident as something they have to report:

> *An incident is something you write about a RIC (report incident client[61]) for the patients or a RIE (report incident employee[62]) for us. When something has happened that was not in the care plan. Like a dangerous situation, a medication error, a fall, these kinds of things. This is reported and that is an incident (R88:163).*

Other nurses make similar statements. They refer to the reporting system and mention mainly incidents about medication and falling. Some nurses also associate incidents with something that happens to them, as aggression towards them (r84:091; R85:152; R87:077)

(Near-) incidents that nurse communicate about in the chain are comparable with incidents from pharmacists and have to do with (discharge) medical information.

> *Prescriptions, you cannot trust them. The specialist only writes down what he prescribes and not what they used at home. Our physicians have much work with*

[61]In Dutch '*melding incident cliënt (MIC'*.
[62]In Dutch'*melding incident medewerker (MIM)'*.

that. That should be better. … If they just prescribed it right, that is not so difficult, I would think. Maybe that is simple-minded, no; sometimes it is just that simple. Be more careful, than it gives us little work too (R89:149).

Nurses in nursing homes communicate also about (near-) incidents regarding medication with pharmacies:

On a regular basis, we have errors from the pharmacist. You have to discover that,

because you distribute the medication. You have to check if it is all right. When it does not fit, you have to change this and make an incident report (RIC). This is sort of a near incident (R88:262).

Other (near-) incidents also have to do with lack of information from hospital to nursing homes:

They just do not call when the patient arrives a little bit later. We also have a timetable. When a patient is planned to arrive at ten, and they aren't still there at eleven, they call to tell us we just put him in the cab, or the patient is still in the hospital, I find that annoying (R89:180).

One nurse remembers that sometimes information from the nursing home to hospital is also not flawless. For example, if a patient has a catheter or the medication he is using:

I have not experienced it yet, that we gave very wrong information, but that does not mean our transfer information is perfect (R082:228).

Most nursing home nurses see (near-) incidents as something to report, mostly about medication or falls, without considering severity or likelihood.

Like nursing home nurses, one nursing home physician too, in the first instance, sees incidents as something very clear, mentioning patients that fall out of bed, and incidents regarding the prescription of medication. Later on, he doubts:

It has to do with interpretation, if one physician knows more than others ... You can do blood tests all the time, but I do not like that, looking back, based on blood test one can conclude something else, but is that an error? I do not know (R79:193-197).

This nursing home physician stresses hindsight bias in the chain:

> *The last physician is always the best; he can take into account the whole series of activities... You make the best decision, in honour and decency, you cannot always see what the future will bring (R79:185).*

His colleague thinks of (near-) incidents as:

> *Yes, it is an unintended event. Something was not supposed to happen. From someone who got a lunch, who was not allowed to someone who did not get the medication he should have had (R76:045).*

Another nursing home physician remembers:

> *I sometimes write out wrong prescriptions, or the wrong medicine. Pharmacists call ... Thank you for reporting (R78:204-208)*

This physician once reported this in the incident-reporting system. Most of the times, though, he did not report it:

> *Mostly you keep it to yourself, if you made a little error. You think it is solved, now everything is finished ... I do not report this, there is no profound reason for (R77:183).*

His colleague sees it the other way round. In his eyes, professionals especially need to report small things, things with no severe consequences, in order to learn. He feels it most people find it easier to report small things. This nursing home physician is part of the incident-reporting committee of the nursing home, and stresses he has to give the right example (R76:163).

In nursing homes too, protocols are discussed. Like in hospital, different nursing home physicians feel they can deviate, make different choices (R77:327; R78: 236; R79:165).

Within the chain, nursing home physicians seem to indicate more easily, what a (near) incident is. Some talk about (near-) incidents between nursing homes and GP offices. When a patient arrives in the nursing home, sometimes there is no medical information at hand (R77:032). Other physicians also talk about (near-) incidents that happen during transfer from hospital. These (near-) incidents are mainly about discharge letters (R76:133; R77:067;

R78:038; R79:061; R80:025). One nursing home physician gives an example:

> *The physicians report said two times 75, the medicine list of the hospital nurses said two times 25. I had copied blindly what the nurse had written down. The nurse of the nursing home discovered the discrepancy; it should have been three times 50. Real detective work. I called hospital about it, to let them know (R80:033).*

Another nursing home physician gives an example, where ambulance professionals were involved too:

> *Once I had a patient, who came from hospital with ambulance, and arrived with a blood sugar of 2.3 (R78:148)*

Another nursing home physician makes a distinction between a near incident and an incident. For him, things with discharge letters are near incidents. He has an example of an incident of an elderly person that should go for a colonoscopy. According to the physician, the discharge letter was not clear; the digital dossier of the hospital also had the request. Afterwards, the nursing home physician found out the patient had undergone the same examination a few weeks before:

> *I reported this; the patient could have been harmed by undergoing the same procedure twice. If a prescription is unreadable, the pharmacy calls and I help them out. Clear. That is the difference (R78:068).*

Nursing home physicians feel many times information is missing, about medication, or about complications that had happened after surgery, like infections or patients that were confused. One nursing home physician explains that communicating about this with the hospital is like carry coals to Newcastle:

> *You explain what you need to the resident, but a few weeks later he disappears, it is lost labour (R78:040)*

The incident about the mixed up dosages (R80:033) is not reported, because the nursing home physician felt it was too much work, using the reporting system. This nursing home physician explains he can look in the hospitals' digital version of the medical dossier of the patient, but the discharge information was absent. Other nursing home physicians, discussed if they should confront hospital with these repeating incidents, but they decided

not to:

> *We do not always do everything right. There always are mistakes. To point out each other's errors is painful (R80: 041).*

Later on in the interview, this same nursing home physician talks about a meeting once, with neurologists. They discussed omissions in discharge information; the neurologists quickly went into defence:

> *They said we knew how hard their life was, in hospital. I buy that immediately, it is a fact that they are overburdened (R80:073).*

The nursing home physician understands why it happens, although he hopes that one day the transfer of medical information will improve, for the sake of the patients, to give better treatments.

Most nursing home nurses, and some nursing home physicians, when thinking about (near-) incidents mention medication events or falls. For some nursing home nurses, the definition is not always clear, and associated with things that can harm themselves too. They mostly see (near-) incidents as something to report, without considering severity or likelihood of repetition.

For nursing home physicians, like GPs, residents and specialists in hospital, incidents are seen as events attached to persons. They experience in nursing homes too, the difficulty of hindsight bias, to decide what goes wrong. Like GPs, pharmacists and ambulance professionals, nursing home physicians communicate in the chain mainly with hospitals about (near-) incidents, mainly about discharge information. Overall, severity and likelihood do not play a big role. One nursing home physician stresses the importance of reporting incidents that are less severe, in order to learn.

5.5 Conclusions

Different professional groups in the chain are not acquainted with the term (near-) incident, as defined in health care literature. The word *incident* evokes different associations with different professional groups; they associate the word with different events. Obviously, pharmacists mention things that go wrong with the distribution of medication. Besides using incidents for things that go unintentionally wrong, some pharmacists also associate the term

with angry reactions, and ambulance professionals quickly associate the term incident with large-scale accidents. Nurses in hospital and nursing homes see incidents as something they need to report, as something that potentially can harm patients. Their definition of (near-) incidents strongly agrees with the formal definition, used in health care literature. Nurses in nursing homes, like pharmacists and ambulance personnel, also associate the word with something that could happen to them, instead of the patient.

The ease of recognising something that goes wrong differs across professional groups. Whereas nurses and pharmacists give straightforward examples (wrong medication, missed information), for physicians (GPs, residents, specialists in hospital as well as nursing home physicians) there is no 'one truth'. In the definition of a (near-) incident the word *unintentional* suggests that in the daily performance of a task there is intent, that actions are planned, that there is one logical 'road' to take. Whereas pharmacists easily can say: 'this is the wrong prescription, the wrong dosage', for physicians, there is a large grey area in judgment. These findings are in line with Zwart, who states: "*Our findings indicate it is contra-intuitive for GPs to report their diagnostic errors because they are perceived as an inextricable part of the uncertainty surrounding health problems they deal with*" (Zwart, 2011, p.107). Not only GPs, but also all professionals who make diagnostic assessments, have to deal with this uncertainty as part of their job.

The word *unintentional* also makes the distinction between a (near-) incident and a violation, as the latter is an *intentional* act. Different professionals in health care intentionally deviate from the rules, from protocol. Protocols are working agreements, not rigid rules that professionals, at all times, need to follow. Brummelhuis, for example, states that ambulance professionals need room to decide if they follow protocol; need discretionary space to perform the job well (Brummelhuis, 2006). One cannot simply state that if professionals do not follow protocol, they are in violation of the rules. There is a fine line between seeing breaching protocol as normal professional practice or violation. When things go wrong, in the end, it is up to the disciplinary board to decide if a professional broke the rules for all the right reasons, or if it was a violation that needs to be punished. For professionals in health care, because of the blurred line between what is right conduct or not, it is difficult to recognise (near-) incidents, to see that things went different from planned, as what is planned ahead is not always clear-cut.

Differences in definitions lead to confusion. Although the term incident is introduced, to avoid blame and shame, physicians, pharmacist professionals, and ambulance professionals still do not see incidents as neutral events. They easily use the term error as in *doing the*

wrongthing (commission) or by failing to do the right thing (Runciman, 2006, p. S42), as in something attached to actions of persons, of themselves. In chapter six, the attribution causes will be examined further. For here, I conclude that for professionals in health care, incidents have to do with themselves, with individuals failing to do their task successfully. One of the reasons to use the term *incident*, to come up with a neutral term, was to prevent pointing fingers. Although the term incident in literature does not exclude persons, talking about (near-) incidents is supposed to be less threatening, as it does not necessarily put blame on a person. However, professionals do not see incidents as something 'neutral', they still feel responsible.

Not only in this particular health care chain, there is ambiguity about definitions. In the academic world, scientists are not consistent either: Across and even inside research domains, *similar concepts have different terms (e.g. near miss, close call) and terms are used to embrace several concepts ('medical error' for errors, violations, and system failures)* (Runciman, et al., 2009, p. 18). Several authors have therefore pleaded for an international classification for patient safety. However, not only theorists should agree on terminology; to stimulate communication about (near-) incidents in the health care chain, professionals too should adopt the same language.

This 'speaking the same language' is also applicable to the distinction between an incident and a near incident. The distinction between events that reach the patient (incident), or not (near- incident), is not always clear. Some professionals report and communicate about both; others only see importance in communicating about incidents. When health care systems want to follow aviation in learning from near incidents too, professionals in the chain should agree about these definitions, and should have shared beliefs about what a (near-) incident is.

Different professional groups in the health care chain use severity as an indication to communicate about (near-) incidents. During interviews, professionals give examples of severe incidents. Severity plays a role in communication processes, especially according to physicians (GPs, residents, specialists, nursing home physicians). However, few examples are given of severe incidents that were communicated in the health care chain. In addition, the reasoning that severity stimulates communication, and thereby learning, is not supported by the incident-reporting systems either. In hospital, hardly any moderate to severe incidents were reported, and the few that were reported, were reported by nurses only. In the out-of-hours service, a slightly different picture is presented, but as concluded before, because of the small number of incidents reported, no strong conclusions can be drawn in that particular

case. In addition, although in the out-of-hours service most reported incidents were of high risk, the total amount of reported incidents were rare.

During interviews, many professionals associate (near-) incidents, especially incidents with high risks, as an extraordinary event. At one hand, it is a good thing that severe incidents happen rarely. On the other hand, if communication depends on severity, but severity is rare, we cannot expect much communication and learning. In 2009, in the Netherlands some physicians publicly opened up about 'their' incident (Leistikow, Molendijk, Tijink&Vloed, 2009). The title is significant: *This never again: physicians talk about their incident*[63]*.* Here too, incidents are seen as rare that it is to be hoped that never happen again. Nevertheless, to stimulate communication and learning about (near-) incidents, professionals should not focus on incidents as severe and rare, but also focus on communication about less rare and severe (near-) incidents, like nurses do. If professionals want to learn form (near-) incidents, they could adopt the attitude of pharmacists some more, who see (near-) incidents in the discharge information as 'normal', as something to expect.

The results confront health care organizations with a serious dilemma. When severity and likelihood of repetition are important factors for professionals in the health care chain to communicate about (near-) incidents and these professionals judge these severe (near-) incidents to be rare, inter-contextual knowledge sharing is almost impossible to attain. This is highly undesirable, since especially such rare incidents with serious negative outcomes have a positive influence on learning. To create organisational learning in the chain, (near-) incidents should be seen as something normal, as happening on a regular basis, and professionals should talk more easily about them.

The incident characteristic 'likelihood of repetition' has different meanings for different professionals. On the one hand, GPs and pharmacists mention incidents as things that rarely happen. On the other hand, in hospital, likelihood of repetition is a reason to communicate and report. Likelihood of repetition and severity are estimates professionals make on the basis of their own experience. If some professionals hardly report the events that – in their eyes – are unlikely to reoccur, we cannot be sure that they rarely happen infrequently. Therefore, in order to acquire adequate knowledge about (near-) incidents in the chain, one has to communicate about both the events that are unlikely to reoccur and the incidents that are more likely to reoccur, about incidents with severe – and incidents with little consequences.

[63]In Dutch'*Dit nooit meer: artsen vertellen over hun incident'.*

Professionals of different groups also indicate that reporting (near-) incidents is time-consuming. They balance the importance of reporting with the time it takes, especially when they have already communicated it face-to-face, with the parties involved. They seem to underestimate the usefulness and importance for others to learn from their (near-) incident too. Their perspective does not seem to reach further than their own direct professional environment, and does not seem to encompass the organization as a whole they are working in, let alone the health care chain. It is therefore highly unlikely that the knowledge that is gathered from the incident and the measures taken to avoid reoccurrence of the incident, will reach other units or the health care chain. As a consequence, such incidents may occur elsewhere in the health care chain, with potentially more severe consequences and – most likely – lead to other measures to avoid the incident, which is at least inefficient, but which may also lead to all kinds of idiosyncratic ways to deal with very comparable incidents.

Communication in the health care chain does happen, not only about what professionals define as a (near-) incident, but also about assessments that professionals want to elaborate about. Pharmacists do communicate with other links in the chain about (near-) incidents they discover; they see them as complaints they have towards the professionals in other links in the chain. GPs, ambulance professionals, and nursing home physicians communicate in the chain to discuss assessments they, or other professionals make. In these cases, at least individual learning takes place.

Lingard et al. (2004) state that what people discuss (content of message) depends on the recipients (audience), the goal, and the context. In the process of inter-contextual knowledge sharing, of learning between different links in the chain, the exchange of information about (near-) incidents, the content of the message differs. Therefore, in order to learn one has to agree on the content of the message, on what to talk about. When different professional groups have different associations with the term incident, it hinders communication between these groups, it hinders inter-contextual knowledge sharing, and it hinders (organisational) learning in the chain.

In the definition of a (near-) incident, there is no room for blame. As concluded before, many professionals feel responsible for (near-) incidents. Responsibility also plays a role, when pharmacists 'complain' about actions of other professionals. When using the term incident, it is not clear if one talks about (near-) incidents that are due to actions of professionals or something else. Throughout the whole chain, we see professionals working with equipment, for example in hospital with iv-pumps, in ambulances with navigation systems. These

equipments differ in design and can impede working processes, can cause (near-) incidents. Personal or mechanical, factors that are internal as well as external can cause (near-) incidents. The way professionals assign causes to (near-) incidents can influence communication and learning. In the next chapter, I describe what communication about (near-) incidents has to do with the way people make attributions about the way people explain why (near-) incidents happen.

6 How professionals make attributions

6.1 Introduction

In chapter four, we saw that even when professionals experience intolerance or indecisiveness, some groups (pharmacists, nurses) keep on communicating about (near-) incidents. In the previous chapter (5), I examined the way professionals defined (near-) incidents. In health care, the more neutral term (near-) incident describes a *situation* where some*thing* went wrong. The word error, in social sciences, refers to a personal action; some*one* did something wrong. However, in the present research several health care professionals use these terms interchangeably when describing that something went wrong (see also chapter 5). In addition, when talking about (near-) incidents professionals easily switch from examples of personal error, examples of their own, to others' actions that went wrong. In this chapter we take a closer look at the way professionals attribute causes after a (near-) incident occurred, how they interpret these causes, and what effects these attributions have on communication and learning in the health care chain.

6.2 Attribution theory

Why do people have success? Why do people fail? To explain why things happen as they do, people interpret events and identify causes. Attribution theory explains how we do that, how humans attribute causes to success or failure. People attribute success or failure in three ways, on three dimensions. The first dimension is *locus of control*. When something happens, people may see the event as something caused by *internal* factors (personal) or by *external* factors (environment). The second dimension is *stability*. People judge whether the cause of the event is something *stable* (constant) or *unstable* (*fluctuating*). The third dimension is *controllability*. People experience that what happened is something they can control (*controllable*), or something beyond their control (*uncontrollable*) (Weiner, 1985).

After (near-) incidents occur, professionals make attributions about the causes. With an example[64], I will explain how this may be done, using the abovementioned three dimensions. In 2010, a toddler died of a large overdose of heparin, which led to cerebral bleeding and subsequent brain death. The wrong dosage was infused over a period of 5 hours, before the incident was discovered. Different causes can be ascribed to this case. When professionals attribute the action: *I have programmed the infusion pump incorrectly* (e.g., 4.2 instead of

[64]Newsletter from Institute for Safe Medication Practices, www.ismp.org/newsletters/acutecare/articles/20100408.asp.

1.2), caused by not paying attention, they make an *internal attribution*. The cause is *unstable (fluctuating)*; when professionals indicate it happened because they had a bad night and were tired. Professionals can feel they have *control*, when they think next time; they will pay more attention and will sleep better, when they are less tired. When professionals state they have dyscalculia[65], they attribute the cause as *internal,stable,* and *uncontrollable*. It is *controllable* when professionals feel they can overcome dyscalculia with the right education.

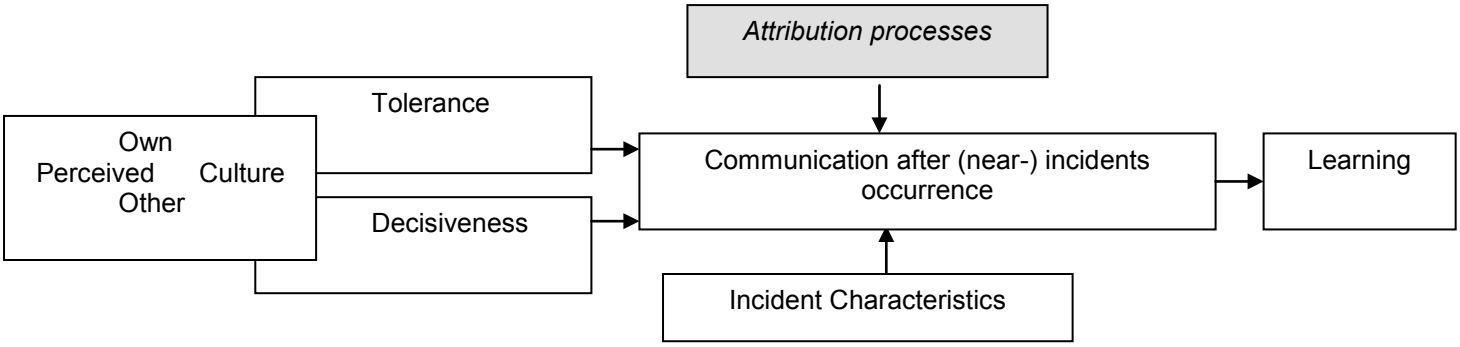
To avoid incidents in incorrect programming, in most health care organisations, a double check is protocol. In the case of the toddler, there was a verbal check. It is unknown why it did not uncover the wrong dosage. One of the reasons why double checks fail can be attributed to an *external* cause: look-alike packages. In the example, they used a 'smart' pump, designed with a drug library and dose checking capabilities, but this checking utility was disabled. When nobody on the ward uses this utility, it is a *stable* condition. When different pumps with different dosages and different utilities are used, professionals can feel it is beyond their control (*uncontrollable*); there is a high risk an incident will happen.

Homsma and others investigated the way professionals make attributions after error occurrence and the influence of attribution on error handling and learning behaviour (e.g. Homsma, 2007). According to Homsma and others, people experience more *control*, when they attribute causes as *internal* and *fluctuating*. When professionals attribute events to lack of effort, they feel they can change that for the better, instead of the more *stable* lack of ability. The latter attribution leads to destructive behaviour, like 'helplessness' (e.g., Homsma 2007). When people interpret causes as something they have control over, feel responsible for, they can anticipate the event the next time, to avoid the same (near-) incident to occur.

In the present research, I have explored the dimensions of the attribution process (locus of control, stability, controllability) to assess differences between links and/or professionals within the chain. Do professionals communicate (content, receiver, goal, and context) differently when they talk about incidents they ascribe as *internal* or *external*; as *stable* or *unstable*; as *controllable* or *uncontrollable*? The central theme of this dissertation is the communication between different links in the health care chain, in order to learn from (near-) incidents. The question is therefore whether attribution processes have consequences for communication about (near-) incidents. Can we detect differences in the exchange of information about (near-) incidents due to the way people ascribe and interpret causes (Fig. 6.3, see next page).

[65]Math learning disability.

Fig. 6.3: Attribution Processes in the Health Care Chain



Attributing causes after (near-) incidents is part of what Tucker and Edmondson define as second-order problem solving behaviour. They discuss the broad field of problem solving strategies and its relationship with (organisational) learning and developed a model of first-order and second-order problem solving behaviour (Tucker & Edmondson, 2002).

First-order problem solving behaviour happens when professionals correct and solve the problem. This can create individual learning. When individuals identify and correct (near-) incidents and intend to change the actions the next time, they learn at an individual level (Argyris, 1977). When they also communicate about (near-) incidents, there can be organisational, first loop learning. Other professionals can learn too, but no underlying conditions are changed.

Second-order problem solving behaviour happens when professionals address the underlying causes of the error. When the underlying causes are defined, double loop learning can be created: identifying and correcting (near-) incidents and making organisational changes, by altering underlying conditions (Argyris, 1977).

In health care, according to Tucker and Edmondson, one of the barriers of second-order problem solving is the emphasis on individual vigilance: *"an industry norm that encourages nurses and other health care professionals to take personal responsibility to solve problems as they arise"* (Tucker & Edmondson, 2002, p. 63). This norm, taking personal responsibility to solve all problems they come across, is explicitly developed in health care organisations. Following the norm, it can be seen as weak to help other professionals or to bother them with your questions, especially when they are busy. Individual caregivers are encouraged to solve their problems, without thinking about the consequences for the system. This first-order problem solving behaviour hinders double loop learning; it "*keeps communication of problems isolated so that they do not surface as learning opportunities*" (Tucker & Edmondson, 2002, p. 60). In the present research I examine if patterns of first-order problem

solving behaviour exist in the health care chain that hinder communication about (near-) incidents.

6.3 Methods

By using the terms ascriptions and interpretations, I want to make clear that attributions are not 'objective' and do not necessarily refer to the real causes of events. In my research, I investigate what professionals themselves ascribe, what professionals themselves attribute as causes. Qualitative data collection is used to explore how professionals make attributions. Specifically, in the 88 interviews that were held for the study reported across different chapters, professionals were also asked about the causes for the incidents they were involved. While deliberating about (near-) incidents, professionals talked about what, in their eyes, caused the (near-) incident. We interpreted these answers on the dimensions of locus of control, stability, and controllability. Professionals sometimes, in the same interview, assigned causes due to their own actions as well as to causes due to actions of others. When possible, I have made a distinction between what professionals see as a (near-) incident mainly due to their own actions (own (near-) incident), and a (near-) incident mainly due to actions of other professionals (others' (near-) incident). In both cases, professionals can define the locus of control as internal (personal) or external (environment).

6.4 Results

6.4.1 GPs' and attributions

Some GPs see (near-) incidents as the sum of different things that went wrong, instead of something that is caused by one single action:

> *It is the sum of things that go wrong; it is never due to one person. Although, when we report, we confront one person with it. It should be practical if something or someone stands in-between to map the situation. Who does not look at personal errors, because those mostly end better than expected (R20:358).*

This GP sometimes communicates with patients when something went wrong. He stresses that when communicating with patients, one should not take the blame, one should attribute

causes as *external*:

> *I never say (to the patient) that I have made an error. You should not do that. I think ...eh... That damages the trust they have in you. I just explain to him how it should have gone (R20:306).*

On the other hand, he attributes the same incident as *internal*, as something he missed, something he should have noticed. In this case, a patient with a migraine was examined in England. They did a Computed Tomography (CT) scan over there, with no abnormalities. Back in The Netherlands, he visited the GP, who waited two weeks before doing a second CT scan. The incident, at the same time, is attributed as *internal* as well as *external*. He attributes *internally*: (something he missed)

> *The example of the migraine, really, I hold that against myself, as an error (R20:318).*

He underlines this as an example of a missed diagnosis, partly due to 'travelling in the chain', due to *external* causes (trusting the results of a scan in England):

> *It could have been less traumatic if I had not trusted former results (scan in England) (R20:298).*

After an incident of a deceased patient with chest pain, another GP attributes *internally*, and experienced feelings of personal failure:

> *Then something happens to you, inside yourself. Like, I cannot face those people again. However, you try to be there for these people. That went well. However, that is one of the things I will never forget (R22:178).*

In his eyes, making the right diagnosis is a quality of a good GP (*internal*). This quality is *controllable* (one can learn) and it fluctuates, is *unstable*:

> *Over the years you learn, you will get better in judging what is going on (R22:240).*

Another GP explains that beside *internal* factors, *external* factors like diagnostic facilities, also play a role:

> *Of course you do things wrong, you are aware of that yourself. You can send in patients too late, or for nothing. That is the insecurity we have to deal with, along with the deficient diagnostic facilities we have as GPs (R21:162-166).*

Another GP too sees missing diagnoses as an event that may be due to *external* factors, like an incident where a patient first was diagnosed with an infection, but later on was diagnosed with colon cancer. The GP attributes this missed diagnose *externally*, due to the fact that the patient visited Indonesia:

> *These kinds of things, you say 'I went this way, it was the other way'. While on the other hand, when someone (who did not visit Indonesia) comes in with blood in the faeces, you would have looked immediately (R19:135).*

As stated in the chapters before, GPs have difficulty recognizing (near) incidents, seeing diagnostics as a grey area. Within the GP office, they have first order problem solving behaviour; as (near-) incidents vanish, when they are solved, and many times are not communicated with others.

GPs attribute *own* (near-) incidents, especially those involved with diagnoses, mostly as *internal*, as something that happens due to personal actions of the GP. GPs attribute *others'* (near-) incidents also *internally*. An example of an *others'* (near-) incident happened with the out-of-hours service, where a substitute, in the eyes of the GP, had given an unacceptable advice to a patient who dislocated his hip:

> *I still maintain that you (the substitute) did not do that right (R19:075).*

This GP communicated with the substitute about the incident. This is unknown he did so because he wants to avoid this incident for happening again (*controllable*), or if he did so just to let him know he was displeased.

Another GP communicates with specialists about (near-) incidents, he attributes as *internal*, caused by actions of these specialists. This GP explicitly indicates he does so, because he wants to change things. Although it is an incident caused by *others*, he still feels some *control*:

> *I call because I think they have to learn, that is my mission (R20:383)*

This GP sees lack of education also as a cause of (near-) incidents. He explains a near incident, as he calls it, caused by a nurse practitioner who 'acted like a real doctor':

> *Eh... we noticed many ... yes, not real errors, things did not really go wrong, but diagnostically, a lot of commotion, because there was no experience to deal with it (R20:250).*

He attributes the above example as *external*, as something that has to do with the education of the nurse practitioner. Overall, he is not very positive about nurse practitioners, working in GP offices, unless they have done their education in America:

> *There is one example (nurse practitioner) in Utrecht that works, but this person was educated in America, a training for four years, that is something else (R20:250).*

GPs see (near-) incidents as *internal*, as something personal, they have done. They ascribe causes as *unstable,* as *fluctuating* over time; and *controllable*, assuming that more experience will 'solve the problem'. GPs also consider (near-) incidents due to *external* factors, such as not having the right diagnostic tools. GPs' behaviour can be characterised as first order problem solving that hinders double loop learning in the chain, as they hardly communicate about (near-) incidents to others in the link.

6.4.2 Pharmacy professionals and attributions

As explained in chapter five, pharmacists make a distinction between what happens inside the pharmacy and what happens outside. (Near-) incidents that happen inside the pharmacy are often ascribed to missed checks. One pharmacist explains:

> *The assistant that made a typing error, of course that is annoying...he did not do it on purpose, the next time he will pay more attention. However, missing the check, I blame that (myself) the most, for not doing the check (R1:120).*

In both cases, the typing error and the missing check, he makes *internal* attributions. He sees the typing error as causes by the assistant who did not pay attention, and the missed check as something he forgot to do. On the one hand, he sees the above example as an exception, as something *unstable.*It is something he interprets as *controllable*; both parties (the pharmacist and the assistant) should pay more attention the next time. This same pharmacist, during the interview, states that making errors is a regular thing, happening on a daily basis, something *stable.* We see here, that professionals can make conflicting attributions, professionals are not always consistent in the way they attribute causes to (near-) incidents.

Other pharmacists and assistants are inconsistent too. They attribute (near-) incidents that happen in the pharmacy as caused by personal actions, by not paying attention, as *internal* (R3:285; R4:281; R6:302; R7:332; R10:98; R11:162; R12:153; R13:162). However, some of

these professionals label the same causes as *external,* for example due to lack of time (R4:136; R6:302; R11:164; R13:104).

Some feel *internal* causes, such as not paying attention, are something *uncontrollable*:

> *It is a matter of... for example, there is written A and you read B, and this is just a matter of not seeing (R4:281).*

Others see how communication can play a role in making *internal* causes *controllable*:

> *In meetings to be more alert, to pay more attention (R5:214).*

A pharmacist assistant sees (near-) incidents, whether *internal* (being stressed) or *external* (busyness), both as *controllable*, something that can be prevented:

> *You cannot prevent busyness, but you can make sure there are enough professionals to cope with the busyness. When there are many patients at the front desk, professionals with other duties should help out. You have to do this in time, and not wait till there are so many prescriptions that everybody is stressed and errors are made (R13:106).*

This pharmacist thinks it is important to talk about these (near-) incidents, to try to avoid them. Another pharmacist assistant balances the *stability* of the cause, before communicating about (near-) incidents:

> *In principle, you discuss everything, except if it is a stupid error, where you do not want to change working procedures. If you can change things, you select them to discuss (R15:231).*

For this professional, double loop learning (changing working processes) is the goal for communication about (near-) incidents, and *stability* is the deciding factor.

When professionals in pharmacies talk about (near-) incidents that happen between links in the chain, they repeatedly mention problems with prescriptions from GPs as well as specialists in hospital. Pharmacists see these more as complaints about actions of *others* outside their organisation. When asked about causes for these (near-) incidents that happen between different links, the pharmacist makes both *internal* and *external* attributions:

> *Hospital is a large organisation, many people see the patient, and they do not feel the connection I have with the patient. Because of the great number of professionals*

> *that work with the patient, the communication lines, professionals do not know anything about home medication, that is why the discharge prescription is a sourceof error (R1:073).*

The personal connections with the patient, as well as the missing knowledge about home-medication are personal (*internal)*. The size of the organisation and the communication lines are environmental (*external)*.

One pharmacist is very explicit that reasons for (near-) incidents made by *others* with discharge prescriptions are *internal*:

> *the physician who writes the prescription should pay more attention... it is weird that they use a medicine in hospital and the next moment make a prescription for something else, I do not get that (R2:103).*

Different pharmacists see (near-) incidents of others in the chain as *stable*:

> *I stopped wondering why. I just know, a discharge prescription, you just cannot trust this. That is my attitude and that is good, you stay critical (R1:073).*

Or:

> *At the end the patient gets a prescription, but 9 out of 10 times it contains mistakes (R4:095).*

This pharmacist too, sees these incidents as *stable*:

> *Every time I keep inquiring what is not right, and then I hope it will ring a bell when you call many times that something is off, that they will adjust their procedure (R2:105).*

This pharmacist has some hope that it is *controllable*, that his communication about (near-) incidents between different links in the health care chain creates double loop learning (changing procedures in hospital).

Most pharmacists feel it is *uncontrollable* to them (R1:073; R4:095; R6:244), as one pharmacist answers:

> *No... it will happen again... we discussed this many times... it does not change (R3:013).*

Pharmacists not only feel (near-) incidents from hospital are *uncontrollable*, but from GP offices too:

> *It is something that goes wrong in the GP office, we cannot solve that (R3:258).*

This pharmacist sees a solution. Different links (pharmacies, hospital, GP offices) can look in each other's electronically systems but, according to him, many professionals do not use the system well.

When (near-) incidents happen that are due to actions of *others* in the chain, all pharmacists in our study, at one time or the other, communicated with these others, with different physicians (GPs and specialists). They indicate they need to communicate about these (near-) incidents, in order to give the patient the right medicine. They have no authorisation to change medication prescribed by physicians.

Communication here, does not take place in order to learn. Communicating in the chain about (near-) incidents of *others* seems to be mainly to perform the job right. Incidentally, pharmacists communicate in the chain too about (near-) incidents due to actions of their *own*. They seem to do so, to avoid potential damage in another link of the chain. For example, one pharmacist contacted a specialist after an incident:

> *We typed the wrong usage on the label. Instead of 2 times a day 1, someone had typed 2 times a day 2... Every week, we checked the buffers... we discovered it a few days later... First, I contacted the patient and we adjusted the right dosage. Secondly, I contacted the GP, so he was informed too... It was a medicine to reduce blood pressure, thus if the GP would see a very low measurement, he would know why (R1:108-118).*

This pharmacist was aware of the fact that he is part of a chain, that his actions have consequences for the next link. Another pharmacist too, remembers a (near-) incident with dosages, he communicated about with the next link:

> *We called the physician, so he would not wonder 'what is going on with the patient' (R5:190).*

In both cases, the mail goal to communicate with the next link seemed to avoid further damage. Not all pharmacists feel that communication about (near-) incidents is necessary:

> *You solve it yourself, it is a one-time event (R4:275).*

In this case, first-order problem solving behaviour hinders communication to learn. However, overall, pharmacists communicate with other links in the chain. This communication seems not to be aimed on learning, but to get the job done, or to do damage control. We will see this same pattern of communication to get the job done, to diminish damage to the patient, with (ambulance) nurses.

6.4.3 Ambulance service professionals and attributions

A large amount of the (near-) incidents reported in the reporting system of the ambulance service concerns time delays. Ambulance professionals attribute these (near) incidents as *external*, to causes like roadblocks, residential districts, and malfunction of the timer system.

Time delay is also attributed *internally*, when ambulance nurses and drivers mention examples of *others'* (near-) incidents. When they feel the delay is due to the centralists, for not asking the right questions:

> *I do grumble in case of a wrong address, which is annoying. This week, we needed to go to an address in village X, but instead of questioning properly, it was in village Y, yes that gives quite a delay (R28:051).*

Other ambulance professionals also attribute asking the right questions as internal:

> *There is a difference between centralists. One is better than the other, I think. Even if they follow the same protocol, the same steps, there is a risk of interpretation (R26:027).*

This ambulance professional attributes differences between centralists also *external*, due to education and experience:

> *Some, have origins in nursing, others not. This should not make a difference, but I do think if you have some experience, it would help (R26:027).*

Ambulance professionals report (near-) incidents of *others'*, of centralists as *external*, due to the fact that they assess through the telephone:

> *It is an error of assessment, when sometimes, we are at the scene, and I think, a taxi could have done this ride. You do not know this beforehand. On the other hand, it can be more threatening than it looks. The centralist is not always to blame, they have to*

do everything by telephone, do everything by protocol. I do not grumble then (R28:051).

Own (near-) incidents are also attributed as *internal*, for example an eighty-year-old woman, who was not planked during transport:

When fetching the newspaper she falls over, has pain in neck and wrist. I brought her to hospital, later on; it turned out to be a vertebral fracture. That was an error, I should have put her on the board, with a collar (R24:192).

This ambulance nurse attributes the (near-) incident as *unstable* and *controllable*, as something he would do differently the next time. Others are aware of hindsight bias, wondering if they really would have done it differently. For example in the case of a patient who, between home and ambulance, was not transported on the stretcher. The patient fell on the steps and had a bleeding. The ambulance nurse attributes this (near-) incident as *uncontrollable*:

Would I have done things differently next time, no, I do not think so. I discussed it with the ambulance driver too, no (R25:259).

Ambulance professionals, like GPs, experience a grey area in (near-) incidents about assessments they make. Like the example of a patient, who almost died in the ambulance. The ambulance professional attributed the incident as *internal*:

For a long time I thought: 'could I have done something for this man?' (R24:192).

For ambulance professionals, as described in chapter 5, it is not always clear if something is a (near-) incident:

A patient is stuck in a car, his condition is bad, you pull him out quickly, and then you go to hospital. You could have taken the time to get him out as well as possible, but you lose time. These are choices you make; it depends on the situation (R27:218).

In this case, the ambulance professional attributes the cause of what happens as *external*, due to 'the situation', due to the condition of the patient.

They attribute these assessments also as *unstable*, and *controllable*. As GPs, they think that over the years they will get better, they will get more experience in making the right assessments.

Ambulance professionals communicate with other links in the chain, about (near-) incidents due to missing, contradictory, or wrong information. Although they attribute *others'* (near-) incidents (of GPs and specialists in hospital) as *internal* and *stable*, they do feel some *control*, seeing communication as a tool to change it:

> *We report this to the manager, who gives feedback. It needs attention, because every time, we are on the scene, and the transfer information, repeatedly, is missing, that is annoying (R30:053).*

Other *others'* (near-) incidents are attributed *external*. For example in the case of assessments of patients with symptoms of heart failure. Ambulance professionals attribute these to *external*, also recognising the lack of diagnostic means for GPs:

> *Cardiology, for example is difficult for GPs. We can make anECG, we can see quickly what is happening (R24:065).*

Compared to pharmacists, similar patterns occur between links as ambulance nurses communicate with specialists or GPs to get the job done:

> *The patient was in pain, I needed help. Pain medication was not sufficient. Can I give more? Then you call the specialist (R25:369).*

An example, where a resident was not aware of the right procedure, and the patient did not go to the right ward immediately, was communicated with hospital, to change future situations. The ambulance nurse is not allowed to overrule the resident. He did feel *control*, wanted to solve the situation, so the next time he could do his job right, and bring the patient to the right ward straight away (R27:244).

Ambulance professionals, in their job performance, like pharmacists and nurses, partly depend on others, on decisions of GPs and specialists in hospital. The physicians at first decide where to bring a patient, and what to do. On the other hand, within the ambulance, professionals feel they have *control*; they can make their own decisions. Little communication is witnessed between ambulance professionals about *own* (near-) incidents they attribute as *internal*. Some indicate they communicate to get things of one's chest:

> *If I have talked about it with the driver, the colleagues and at home, I am finished with it. Unless it is technical, for example, a stretcher collapsed just like that. These are some of the things we report in the system (R24:206).*

This ambulance professional thinks, one has to report what is *controllable*, what happens due to causes that can be changed.

Overall, ambulance professionals attribute *own* (near-) incidents as *internal*, *unstable*, and *controllable*. They attribute *other* (near-) incidents as both *internal* and *external*, as *stable*, but at the same time *controllable*. They sometimes communicate with other links in the chain to get the job done.

6.4.4 Hospital professionals and attributions

ER nurses attribute some (near-) incidents as *internal,* forexample in the case of an ER nurse who sees 'forgetting' as one of the causes for (near-) incidents:

> *I mean, I forget things too, you think 'shoot, I have forgotten to pass it on'. Then, at home I call the hospital. That can happen to everyone (R41:149).*

This ER nurse attributes (near-) incidents as due to his*own* and *others'* actions as *internal*,for example she attributes(near-) incidents where residents are involved as something of the residents themselves, as something *internal*:

> *Some are so insecure of themselves. They have to learn it. That should improve. I wrote a 'vim' (incident reporting system) about it (R41:159).*

This professional refers to cases where some residents work very slowly and because of that, some patients stay on the plank too long, and get pressure stains. This example was reported in the incident reporting system too, because the ER nurse wants to change working processes, wants to create double loop learning.

Like pharmacists, this ER nurse attributes both *internal* (insecurity) and *external* (busyness) as causes for (near-) incidents. According to the ER nurse, the *external* cause, the busyness can be avoided; it is *controllable*, if residents would ask for more help:

> *Once, there were two residents, it was busy and a big accident happened, then you have to call your supervisor (R41:161).*

For one ER nurse (near-) incidents will keep on happening, she regards them as *stable,*

despite communication afterwards:

> *There are people, you think, they never learn, they say' yes', but the next time it will happen again (R41:143).*

Nurses make their own judgments about the necessity to report, based on the damage for the patient. When a painkiller is forgotten, they see no harm, and they do not report it to the physician (e.g. R50:220; R55:154). However, when there is potential damage, they need to communicate. Like pharmacists, they have to communicate about (near-) incidents that happen due to their own actions. The main reason for doing so is lack of autonomy: nurses need the attended physicians to repair the potential damage after a (near-) incident.

> *If something goes wrong, something that really damages the patient, then you report it to the attending physician, to tell him the patient got the wrong medicine, and to ask what can be done (R50:218)*

Other nurses give examples of communication between nurses and physicians about (near-) incidents that are attributed *internally*; that are communicated to prevent more damage (e.g. R53:046).

When nurses attribute (near-) incidents *internally*, and they do not need to communicate to control the damage, communication sometimes seems more to get it 'off one's chest':

> *It is more to show understanding and to tell your story, than to learn from it. No, you already know what to do: keep your head together and check again. Since then, I go to the patients and say the name aloud. That for me is the confirmation (R51:219)*

For this professional (near-) incidents are often *stable*:

> *You know it can happen and it does. It happens that you make an error. Everybody knows, it is not wilful, really not (R51:221).*

Other nurses too see some (near-) incidents as both *internal* and *stable:*

> *Everybody works ... and I forget things too. You must not carp at everything. If there is something, I think, my colleague has forgotten this, ok, so it is. Only when something really went wrong, you have to speak to one another (R56:094).*

These nurses see these *internal*, *stable* (near-) incidents, due to one's own actions as something *controllable*: you learn from it yourself and change your own working process

(individual learning). They do not discuss these (near-) incidents, their behaviour is comparable with Edmondson's' first order solving behaviour, hindering double loop learning.

Again, like other professionals, nurses see the cause for (near-) incidents, such as the mixing up of patients as *internal* (keep your head together and check again), as well as *external.* Workload is attributed both *internally* (you are busy) and *externally* (it is the workload):

> *It is the workload, you know. You are busy, this and that and then, you know? You do not keep your head together, you know, the workload on this ward... you are distracted. You had resuscitation, or something else, you know? Then you have to make a switch (R51:225).*

The *external* factor is a reason to report, to communicate:

> *That is a reason to report...maybe you get more staff, or something like that, that is a reason to report certainly (R51:231)*

Not all nurses see busyness as a factor that causes (near-) incidents; on the contrary, one nurse sees more danger in a quiet day:

> *You notice, on a quiet day, more errors occur, then on a busy day. That is because... you get in a relaxed flow, you often forget things (R54:340).*

Nurses communicate about (near-) incidents attributed as *external*.When reporting (near-) incidents they attribute to busyness, they hope to get more staff. In another example, a patient had not eaten for over four days. The nurse indicated this was due to the fact that it was weekend: on the weekend, nothing happens. This nurse was very upset, had cried about it and talked with the management. The manager indicated it was positive this nurse still cared. However, there was no possibility to get more staff. The nurse got the advice to keep on indicating when something went wrong. Within weeks, a new manager arrived, and when the nurse indicated again having some frustrations about work processes, the manager wanted to plan a meeting. The nurse feels the situation is *uncontrollable*:

> *You have to learn to deal with it, and when this does not work, it only brings frustrations, you have to leave it (R52:096).*

This nurse has attended workgroups, to improve working processes, but feels nothing really happens, that there are many good intentions, but mostly there is no time. Like other nurses, this nurse thinks the solution should be more staff.

Although this nurse feels nothing changes, regarding the situation as *stable* and *uncontrollable*; this professional also gives an example of something that has changed after (near-) incidents. Lately, the ward increasingly received patients with a special pipe for the trachea[66]. According to the nurse, many colleagues did not know what to do and did not do the care right. The nurse then told colleagues what to do. This attracted attention from the management, and a nurse from the intensive care came to give a clinical lesson to all the nurses on the ward. Thus, although the nurse feels many situations are *stable* and *uncontrollable*, in some situations single loop learning can be created (R50:199). In this case, the cause is attributed *internally,* professionals were lacking knowledge, and additional teaching changed this.

(Near-) incidents with *external* causes too can be *controllable*. The nurse gives an example of giving medication-using iv-drips or using epidural infusion. Both plastic tubes look alike, and are therefore mixed up easily. A (near-) incident happened, where the patient received fluid that should have been connected to the iv-drip through the epidural. They changed the working process by using tubes that have different appearances (R52:149).

Other nurses see some (near-) incidents as *uncontrollable*. For example, patients who fall out of bed. You cannot avoid it, they say (e.g. R53:99; R56:072). However, colleagues feel these (near-) incidents can be avoided, for example by putting up fences on the bed (R58:122).

Some nurses report others' (near-) incidents that they perceived as *stable,* in order to change working processes, for example in the case of a patient who had a reaction after receiving blood. The resident, who did the order, did not report this to the lab, or anywhere else. A few days later, the patient again received the same type of blood and had a reaction. The nurse reported the incident in the incident reporting system, hoping that all residents would now know what to do (R55:154).

Sometimes it seems clear that the cause is *external,* circumstantial, like an incident with a pump that runs too fast because a bigger syringe was used:

> *With the introduction of the pump, there was no attention. We did not know that a*

[66]trachea cannula.

smaller syringe could be used too (R50:158).

This nurse expects that when new equipment is introduced, someone should explain how it works.

As stated before, nurses too, have first order problem solving behaviour that hinders communication about (near-) incidents. For example, a physician changed medication policy and one nurse forgot to carry this out. After a few days, another nurse discovers this, and changes the medication to the right dosage. After it was solved, it was not communicated to other parties. The first nurse who does the rounds with the physician does not know he has forgotten something:

One (nurse) has solved the matter and another one (nurse), the next day, does the rounds with the physician. Because that person does not know what had happened, he cannot communicate about it with the physician (R50:228)

For residents, it is difficult to recognise a (near-) incident, as they feel they are still learning, and thus have to deliberate about everything.

Residents are confronted by, for example GPs or pharmacists, about wrong, contradictory, or missing information in discharge letters. Some residents attribute this *externally*:

In general, somewhere along the road something went wrong. In general, I try to send the letters. I print them and fax them, I do it right away, otherwise, again there is no time (R70: 177)

Although this resident suggests 'somewhere along the road' something happens, at the same time, he indicates busyness as a reason not to send them in.

Residents are ambivalent about *others'* (near-) incidents, like missed diagnoses from GPs. On the one hand, they attribute these incidents as external, due to the lack of diagnostic means:

We have the means to examine that GPs do not have. Based on what the GP could observe, I probably would have made the same decision (R68:064).

Specialists, like all physicians and ambulance nurses, experience a grey area concerning making assessments. For one specialist, the questions whether the cause is *internal* or

external determines if it is considered as a (near-) incident or not:

> *If you choose an implant that is not ideal, if you choose to use a plate instead of a pin, that is a wrong assessment, it is not an incident. When you are forced to use a plate because a pin is not available, that is an incident that has to do with bad organisation (R59:186).*

Specialists see (near-) incidents in the chain related to the transfer of medical information as *stable* and *uncontrollable*:

> *We still get comments from GPs about the discharge letters from residents that medication is not written down properly. Five years ago that was the case too, apparently we are not succeeded in reporting this back to our residents. Look, now and then I send an email to all surgery residents to pay attention. One year later, they are all replaced with new residents and they do not know anything about it (R59:058).*

This specialist attributes these (near-) incidents about the transfer of information as *internal*, due to the not paying attention of the residents. He also attributes them as *external*, due to the changing of the residents. This specialist attributes other type of (near-) incidents, due to actions of residents also as *internal*:

> *I sometimes notice residents making the wrong diagnose, I email the patient number and say pay attention, it is not right, next time, pay more attention (R59:170).*

This specialist attributes this also to his *own* actions:

> *I notice that my communication back to the GPs is also bad because I think it is already in the file. I have to make a new letter about things I already have on paper, that takes time, we tend to work around it (R59:086).*

This specialist does not think that talking about things that go wrong leads to much change:

> *It has not much use of course; if you have repaired it then it has no additive value I think. I think if it has consequences for the after-treatment then someone has to know (R59:375).*

Here, first order problem solving hinders communication and thus learning. This specialist does communicate when he feels he cannot solve the problem. He feels the need to communicate about (near-) incidents that are attributed to *internal* and *uncontrollable* factors:

> *How can we fix this, I have done this but it stinks, do you have ideas how to make things better (R59:349)*

When he has 'fixed' it, communication is not necessary:

> *If you have repaired it, there is no added value, I think (R59: 375).*

Other specialist too indicates communication is not necessary about (near-) incidents that are *controllable* (e.g. R65:80)

In hospital, professional groups make different attributions. All groups attribute *own* (near-) incidents as *internal*, and many times *unstable*. There is a difference in perceived control between groups. Specialists, like GPs, attribute (near-) incidents as *controllable*. They do not always communicate about their *own* (near-) incidents: when they are solved, they vanish. For physicians, first order problem solving thus hinders communication and learning. Nurses, on the other hand, communicate about *own* (near-) incidents they attribute as *internal*, and many times *unstable* and *uncontrollable*. They communicate to diminish harm. Nurses, like pharmacists, and - to a lesser degree - ambulance professionals, depend on others 'to solve the problem'. Although they too share beliefs with other health care professionals about problem solving, although nurses too are encouraged to solve problems as they arise, they are limited in their possibilities to do so. Nurses, like pharmacists, have less professional autonomy.

6.4.5 Nursing home professionals and attributions

Nurses in nursing homes, like nurses in hospital, attribute causes of (near-) incidents as *internal* (R81:109; 82:125; 84:104; 88:256):

> *Not paying attention, quick, quick, and I grab the insulin pen and inject. Thus, not paying attention (R80:177).*

Sometimes, they attribute causes as *external* also, as being busy due to *external* factors:

> *It happened at a time that all patients needed to get out of bed, then you do not think about it (R86:101).*

Another nurse questions the indication to admit someone in the nursing home:

> *It could be that the indication was not right, that someone would have been better off at home (R87:224).*

Nurses in nursing homes too, like their colleagues in hospital, have to communicate with physicians to solve the (near-) incidents that happened due to their *own* actions:

> *When I found out, I called the chief-nurse, like 'I have injected insulin, and it was not the right kind', who instructed me to call the physician, to deliberate about follow up actions (R81:60).*

This nurse communicated with her direct colleagues too, so they would understand if the patient suddenly acted strange because of 'low sugar' values in the blood.

Especially (near-) incidents that have to do with the falling of patients are seen as *stable* and *uncontrollable*:

> *To avoid something is not always easy. You can take measurements, but when someone tries to walk again, you cannot stop that all the time. Whatever you do, you have to set out to think that one time, it will happen again (R83:092).*

Nursing home physicians see causes of (near-) incidents for example due to sloppiness or due to lack of time. Both, sloppiness and lack of time are attributed as *internal* factors*:* 'I was hasty'. (R73:499), or for example (near-) incidents regarding prescriptions:

> *I am always hasty and sloppy; I sometimes make mistakes with prescriptions. However, pharmacist assistants discover these (R74:327).*

This nursing home physician is not the only one who leans on the professionalism of the pharmacists and assistants (e.g. R73:242). We saw the same pattern with GPs and specialists; they also lean on the checks and feedback of pharmacists.

In nursing homes, pharmacists inform physicians about interactions between two medications. They were sending interaction forms by *internal* post to the physician who prescribes the medication. Sometimes, these forms were sent to the wrong physician, or the physician had a few days off. After an incident had happened, this procedure was changed; they stopped sending these forms by *internal* post, because they can disappear. In this case,

the nursing home physician still feels responsible, attributes the causes as *internal:*

> *I should have known this beforehand (R73:286).*

This nursing home physician sees (near-) incidents in general as something *stable,* but at the same time *controllable*:

> *Preventing incidents should be fine, but it will always happen, I guess, I think this organisation is open, and tries to figure out how to improve (R73:290).*

Like in hospital, physicians find that when they have solved the problem, they have no reason to communicate:

> *Mostly you keep it to yourself, if you made a little error. You think it is solved, now everything is finished ... I do not report this, there is no profound reason for it (R77:183).*

Here again, first order problem solving hinders communication and learning.

Between nursing homes and GPs, (near-) incidents regarding the transfer of medical information can happen. When patients arrive at the nursing home from their home, nursing homes receive medical information from the GPs. This differs per GP office, sometimes the information is at hand the same day, and sometimes nursing homes have to wait for a week. Nursing home physicians attribute this as *external,stable,* and beyond their *control*:

> *In practice, the information is at hand within a week, but seldom on the first day. Some GP offices have a good administration, and then you are informed very quickly. Others are tardy, you have to call, I think it has to do with that (good administration) (R77:032).*

Nursing home physicians see value in the medical information:

> *It (medical dossier) is filled with useful information... otherwise; you have to sort out things yourself, whereas the information is at hand. The GP did not write things down for nothing. It would be nice to have the information available (R77:036).*

Nursing home physicians also communicate with hospital specialists about wrong, contradictory, or missing information. Nursing home physicians, like GPs, depend on the information provided by the hospital to continue treatment. For some nursing home

physicians, it depends on the specialism if they are informed well:

> *It differs per specialism, for example specialists from internalmedicine write two A4-sides, a very neat letter, they write during the process. On the other hand, there is some arrogance with some specialists, like in the stroke chain (*neurologists*), who think it is rubbish that you should see the results of the scan, because they think you are not capable of judging them (R73:131).*

Other nursing home physicians have the same experiences with neurologists, getting a sloppy letter, handwritten, difficult to decode, with little information (R74:084). This difference in specialism also comes to the surface when nursing home physicians try to communicate with the hospital about (near-) incidents regarding wrong, contradictory, or missing information. They feel they have no *control* to change this:

> *There is no one contact, only specialists from internalmedicine have a resident who takes calls (R74:84).*

Nursing home physicians attribute (near-) incidents due to actions of *others*, of specialists and residents in hospital as *external*, due to lack of time:

> *They promise to behave better, but it is always busy, there is a new resident, that kind of stuff (R73:218).*

That (near-) incidents happen due to the transfer of medical information from hospital to nursing homes is attributed as *stable* , due to the fact that residents, over time, change specialism and even hospitals:

> *The expiry date on residents is the shortest (R74:84).*

This changing of residents seems to make agreements about transfer information difficult, and specialists, except those from *internal* medicine, do not seem to see it as their responsibility to learn new residents the procedure (R74:092).

One nursing home physician communicated about a (near-) incident he discovered in the nursing home after a patient was treated in hospital. The patient had kidney problems and was treated by the specialist in internalmedicine. At the same time, a surgeon operated on the patient. The surgeon also prescribed medication. When the patient returned to the nursing home, his condition quickly deteriorated. The nursing home physician send in the patient to hospital again and communicated with the surgeon, to let him know the patient got

worse, due to the wrong combination of medications. Although he felt respected for making the call, the nursing home physician does not feel things will change, feels such (near-) incidents of *others* can occur again, are *stable*:

> *I have to say, they reacted nicely, but nothing will change (R73:093).*

Overall, nursing home physicians, like pharmacists, see the transfer of medical information from hospital as a *stable* source of (near-) incidents (e.g. R74:084; R75:048; R76:294; R78:040):

> *It is more a rule than an exception, there are two medication lists, they are never right. A patient has a transfer form from the nurses, but not a medical transfer from (R73:094).*

This nursing home physician explains in the beginning he called about this with hospital, because this was a time consuming act without any result, after a while he stopped communicating. These (near-) incidents of *others* are *uncontrollable*, something beyond the nursing home physicians' control.

Nursing home physicians in general experience an ambiguous level of professional autonomy within the nursing homes. When a (near-) incident occurs, they feel they can solve the problem themselves. At the same time, nursing home physicians take a special position, in between both the GPs and the specialists from hospital. They depend on GPs for the overall care, as patients of nursing homes have their own GP. In addition, they depend on specialists for specific medical treatment. Thus, they depend on information of others for the treatment. (Near-) incidents happen, regarding the transfer of medical information, especially from hospital to the nursing home. These (near-) incidents of *others* are seen as *stable,uncontrollable*. Over time, professionals from nursing homes stop communicating about these *stable,uncontrollable* (near-) incidents.

6.5 Conclusion

This research shows that, despite the fear of negative reactions, professionals are willing to share information about (near-) incidents (see for example chapter four). When taking a closer look at the attribution process, it seems that communication about (near-) incidents is also influenced by the way professionals make attributions about the causes.

Professional groups attribute causes of (near-) incidents differently. Pharmacists and (ambulance) nurses often see causes as *external,stable,* sometimes *controllable*, other times as *uncontrollable*. They seem to communicate more easily about (near-) incidents they have attributed to *external* and *stable* causes(irrespective of controllability). They do so by reporting these (near-) incidents in the incident reporting systems, with the hope of changing work processes (getting instructions, getting more staff). They also do so, when they attribute causes of *others'* (near-) incidents as being *internal,* when professionals feel that others can learn from it, like nurses who communicate with residents who seem to be insecure. On the other hand, especially physicians often find that (near-) incidents they attribute to *internal* causes, due to their own actions, like forgetting or not paying attention, are not worthwhile to communicate about, and are not worthwhile to report.

There is a dilemma in all of this. The incident reporting system is developed to discover patterns of behaviour, no matter how professionals attribute causes. To discover patterns of behaviour, one has to look with helicopter view. Nevertheless, when professionals have their own considerations, when they decide what to report or not, based on what they have attributed as causes, they may actually hinder learning. They, being part of the reporting process, may not have an overview over the entire process, and may overlook the correct cause or set of causes. By making a wrong attribution, which – as a consequence – leads to the decision not to report, an incident may not be discovered. This decreases the possibility for other professionals in the health care chain to learn from the incident. At the same time, professionals who do not communicate about (near-) incidents that are attributed *internally,* hinder double loop learning.

Although it seems that (near-) incidents due to one's own actions, and attributed to *internal* factors seem to be not worthwhile to communicate about, some groups do communicate about them. This applies especially to professionals who experience interdependence in order to perform their ‘part of the care’. The interdependence seems to be correlated to professional autonomy and legal responsibility.

Firstly, for example pharmacists, who communicate about (near-) incidents with physicians in a hospital regarding the discharge medication, experience a *legal responsibility* to distribute the right medicines. Secondly, pharmacists and (ambulance) nurses have less *professional autonomy* than physicians and therefore cannot always solve the problem themselves. Such relative differences in professional autonomy in general are of particular importance for communication among different professionals (Dupuis, 2000). One of the main aspects of professional autonomy is that the professional is “*given the right to control its own work*” (Freidson, 1988:71). Some professionals, for example GPs or specialists, are

highly autonomous in the delivery of (part of the) care. They determine, in dialogue with the patient, a specific treatment and have decision-making authority. When (near-) incidents happen, they can solve the problems themselves, they conduct first order problem solving behaviour. They see no need in communicating about (near-) incidents.

Although nurses professionalise increasingly over time, their work still partly depends on decisions made by physicians (Apesoa-Varan, 2007). They partly depend on information from other professionals to execute assignments. A similar interdependency applies to pharmacists. Although pharmacists are responsible for the distribution of the right medication, they depend on general practitioners, specialists in hospitals and nursing home physicians for patient drug prescriptions. Likewise, ambulance nurses are partly independent; they are responsible for the patient care during transport, but physicians set boundaries to the transport. General practitioners diagnose a patient, start therapies, decide which medicine is used during transportation, and decide where to send the patient. The work of ambulance nurses therefore partly depends on these decisions.

It is proposed here that communication in the health care chain will vary as a function of this professional autonomy. I found that professionals whose actions (partly) depend on decisions made by others would communicate more often with these decision makers about (near-) incidents in order to do damage control, for example in the case of the pharmacist who communicated with the specialist about the wrong medication; or in the case of the nurse, in the allergy example, who communicated with the physician to decide which antitoxin should be used.

Professionals with relatively little professional autonomy communicate more about near (incidents) than professionals with high levels of professional autonomy. This pattern occurs within and between organisations in the health care chain. In different links of the chain, throughout different organisations, (ambulance) nurses and pharmacists have less professional autonomy than physicians do.

The other side of the same coin (professional autonomy) is responsibility. When professionals are autonomous, they feel solely responsible for their actions. They can perform first order problem solving behaviour, especially when they ascribe causes as being *internal*, *unstable,* and *controllable*. Professionals who are highly autonomous can solve the problem at hand without any help. Again, double loop learning is hindered when these professionals do not report (near-) incidents that damaged the patients but got solved (*controllable*), as many physicians do. Physicians seem to make *internal* and *controllable* attributions (irrespective of stability); often they experience (near-) incidents as something they have personal control over. It would be worthwhile to make professionals aware of the

fact that, although they have solved the problem, others still can learn from the (near-) incident.

This first order problem solving seems to hinder communication and learning, or at least for groups with first-order problem solving behaviour with much autonomy, such as physicians. In addition, (near-) incidents do not have 'objective' *internal* or *external* causes, are not just *stable* or *unstable*, and are not *controllable* or *uncontrollable*. Professionals ascribe causes for a number of reasons. Professionals balance different dimensions of causes, decide for themselves if causes are *internal* or *external,* and often causes can be both. Causes professionals describe as *internal,unstable,* and *controllable*, with other arguments, from other perspectives, can be described as *external,stable,* or *uncontrollable*. One professional can attribute a cause like 'forgetting to give the medicine' both *internally* (I did not pay much attention) and *externally* (it was too busy) at the same time.

For different professionals, the cause of a (near-) incident can be *unstable,* changing in time, for a resident, who writes one wrong discharge prescription. At the same time, for pharmacists this is the umpteenth time, and they can attribute (near-) incidents with discharge prescriptions to *stable* causes. To avoid hindering learning, professionals could be educated about the value of reporting everything, in order to learn from *internal,controllable* (near-) incidents too. Professionals may be made aware that no matter how they attribute causes of (near-) incidents, others can attribute them differently, and therefore it is useful to communicate about all (near-) incidents, regardless of the casual attribution they make.

Communication about (near-) incidents within and between links in the health care chain often does not seem to happen with the intent of learning. There are also practical reasons to communicate, such getting the job done, or diminishing harm. In the end, although the reasons seem practical, one can – in principal - learn from all (near-) incidents that happen within the chain, between links, even if professionals attribute them to *internal*, *unstable*, and *controllable* causes and the problem is solved.

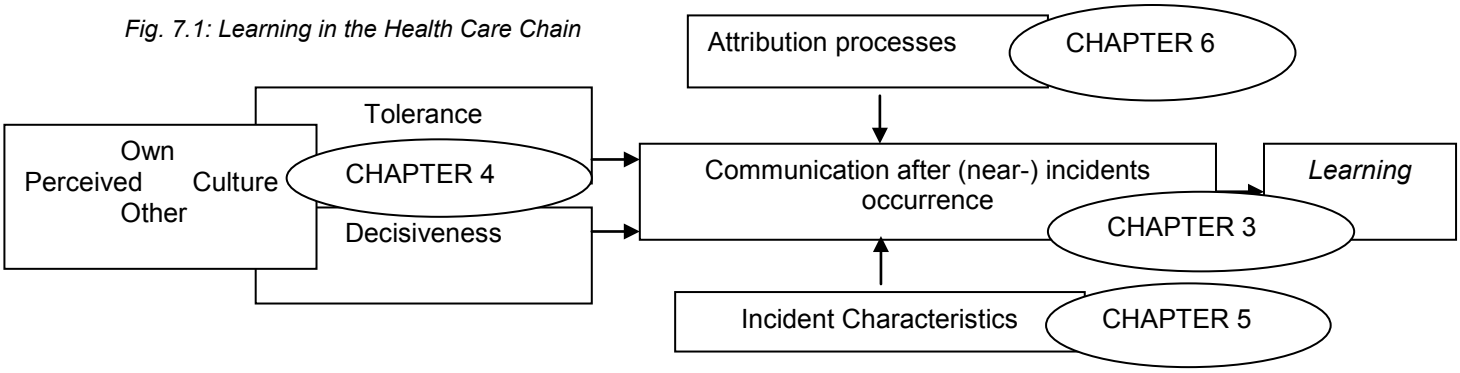
7 Conclusions and discussion

7.1 Introduction

In this thesis, I explored the way professionals communicate and learn from (near-) incidents in the health care chain. (Near-) incidents do not stop at the door of an organisation butresurface in other links in the chain. In order to learn from (near-) incidents, one has to communicate about them with professionals in other links of the chain. Within the chain, between organisations, learning depends on inter-organisational communication(e.g. Edmondson, 1996; Rochlin, 1999; Sexton 2000; Edmondson, 2003; Van Dyck et al, 2005; Homsma, 2007).Therefore, I explored communication between professionals of different links in the health care chain.

Homsma (2007) described in a model what makes it difficult to learn from error within organisations. I have adjusted this model to suit communication after (near-) incident occurrence. The model consists of a set of factorsthat are interlinked with the process of communication after (near-) incidents occur to uncover learning between organisations (Fig. 7.1).

Fig. 7.1: Learning in the Health Care Chain



The research model used in this thesis exploredprocesses of individual as well as organisational level between links in the chain. My aim was to get a better understanding of the occurrence of communication after (near-) incidents within the health care chain, between different links.

Triangulation of methods was used, both quantitative data (incident-reporting systems) as well as qualitative data (eighty-eight in depth-interviews). The health care chain that was explored consisted of GP offices, pharmacies, an ambulance service, a hospital, and nursing homes (Chapter 2). Firstly, I explored (near-) incidents that happen during the transfer of care, focusing on (near-) incidents about medical information that was missed, wrong, or contradictory (Chapter 3). Secondly, I examined the applicability of aspects of organisational culture, like tolerance and decisiveness, in the chain as conditions under which professionals

experience may communicate about (near-) incidents with different links (Chapter 4). Thirdly, I explored the role of incident characteristics *likelihood* and *severity* on communication processes. In addition, I examined what effect the use of a more neutral term incident instead of error has on communication (Chapter 5). Finally, I looked at the way professionals make attributions after (near-) incident occurrence on the individual level (Chapter 6). In this final chapter, I will provide an overview of the research presented in the former chapters, and discuss their implications for research and practice.

7.2 Conclusions

(Near-) incidents happen between links in the chain, during the transfer of care (Chapter 3). In the three explored incident-reporting systems, more than half of the reports had to do with missing, wrong, or contradictory information. These (near-) incidents about the transfer of medical information happened within and between departments (intra-organisational), and between organisations (inter-organisational). The incident-reporting systems thus contain reports of (near-) incidents in the chain (37.5% out-of-hours service, 16.4% ambulance service, 7.2% in hospital). The hospital, i.e., the largest organisation, reports the least chain-wide (near-) incidents. Moreover, the hospitals' incident reporting system does not actually allow the possibility to indicate that communication with parties outside the organisation took place. This is not necessarily strange, as reporting systems were designed originally for single or double loop learning within the organisation, i.e., for intra-organisational learning. In paragraph 7.4, some implications are made on how to design incident-reporting systems to create inter-organisational learning.

Not surprisingly, incident-reporting systems seem to be more used by nurses, as they proportionally report the majority of the (near-) incidents. Historically, nurses were the first group that shaped the incident-reporting system. Nevertheless, to uncover not only patterns of behaviour of one group, all professional groups should use the system, instead of highly specific subcategories. In paragraph 7.4, I will elaborate moreon what organisations can do to convince other professional groups for using the system.

Between organisations, formally, only the ambulance service has a feedback system (a form) for intra-organisational, double loop learning.None of the ambulance professionals had much experience with receiving this kind of feedback and no examples were given of double loop learning as a result of these feedback forms. Thus, although there is a formal feedback system, this does not guarantee communication and learning.

Between different organisations, structured, as well as unstructured forms of deliberation take place, for example between hospital and GPs. These meetings can have a learning effect, as the meetings of the medical coordination centre sometimes have. This exchanging of knowledge between GPs and physicians of hospital appears to create one-way, single loop learning: physicians teach GPs. During other forms of meetings, incidentally communication about (near-) incidents takes place that accidently may have some double loop learning effects. Some professionals are aware of different deliberation forms between the different links, for example between GPs and the ambulance service. For a while, these meetings can have effect, will sharpen agreements. After a while, agreements tones down, for example the transfer forms, GPs formally should use, but after a while, they seem to forget to do so, according to ambulance professionals. Overall, some communication and learning may thus take place on an incidental level, but between links in the chain, there is no structured means of communication about (near-) incidentsin place.

There is no one 'health care chain culture' (Chapter 4). The health care chain is a patchwork of different organisational cultures. Aspects of organisational culture that stimulate learning and communication about (near-) incidents *within* organisations are tolerance and decisiveness (e.g. Homsma, 2007). To examine if communication about (near-) incidents take place *between*the organisationswith different organisational cultures, we have asked professionals about perceptions they have of their own organisation as well as other links on tolerance and decisiveness. Findings show that professionals see their own organisation as tolerant towards (near-) incidents. Some professionals witness hostile reactions too, from for instance colleagues who become angry when confronted with (near-) incidents. In addition, different professionals are ambiguous about the decisiveness of the own organisation and this appears related to their position within the organisation. GPs see their own organisation as decisive. If they want to change working processes they can, being free entrepreneurs. In multi-practices, GPs only have to deliberate with their colleague GPs. In contrast, most other professional groups depend on management to change procedures; these groups see their own organisation as less decisive. Individual freedom to change working processes thus appears to be positively related to perceived decisiveness.

Different professional groups see other links in the chain generally as being tolerant. Some professional groups, especially pharmacists and ambulance professionals, experience negative reactions from specialists within hospital. Despite these negative reactions, these professional groups keep on communicating about (near-) incidents.

Although links in the chain seem to have a ‘tolerant’ culture, most professionals do not experience much decisiveness. Although pharmacists for example, repeatedly confront

physicians with (near-) incidents about prescriptions, double loop learning does not take place. Some physicians may learn individually, but overall the communication pattern about these (near-) incidentsbetween pharmacists and physicians stays in place.

Indecisiveness can be a reason for professionals to stop communicating about (near-) incidents. However, again, some professional groups keep on communicating about (near-) incidents, despite the indecisiveness. Pharmacists, but nurses also, keep communicating, although they do not witness much change.

The two aspects of organisational culture, tolerance and decisiveness, have a positive influence on communication in the chain. Nevertheless, this does not explain why some professional groups keep on communicating, despite some intolerance or despite the indecisiveness. Therefore, I have explored the way professionals experience (near-) incidents and if risk assessments effect communication about (near-) incidents (Chapter 5). When making risk assessments, professionals considering incident characteristics such as severity and likelihood of repetition. Although physicians rarely communicate about (near-) incidents with others in the chain, they do so, when they assess the (near-) incident as severe, having a seriously damaging outcome for the patient. On the other hand, other professional groups, like pharmacists and nurses, more frequently communicate about (near-) incidents, but these, most times, have less serious outcomes. These groups consider likelihood more often.

In medical literature, the more neutral term 'incident' is used, but most professional groups, especially physicians, associate deviations from the original plan quickly with personal error. A word like ‘incident’ can be used to try to avoid blame and shame, to stimulate communication, but professionals themselves experience feel responsible for what had happened, they do not see (near-) incidents as 'neutral' events.

Professionals do communicate about (near-) incidents between different links in the chain. Pharmacists especially stand out in this respect; they communicate on a regular basis about (near-) incidents. They communicate mostly with physicians from different links in the health care chain, about prescriptions, about information on medication that is missing, wrong, or contradictory. They communicate mostly about (near-) incidents because of the actions of others, e.g., about (discharge) information they have received. In exceptional occasions, they communicate about their own actions. In these cases, they are highly aware of interdependency; they see that the next link will make assumptions based on their actions.

For pharmacists, the question what is right or wrong appears rather straightforward and objective, it is clear that a dosage can be right or wrong, a medicine should have been

prescribed or not. When looking at the reported incidents in hospital, one can conclude that for nurses too, the distinction between right and wrong also appears clear, as they seem to uncover (near-) incidents. During interviews too, the (near-) incidents nurses talked about, seemed clear-cut. Both pharmacists and nurses make distinctions about what they communicate about, view (near-) incidents as apparently objective right or wrong issues. For example, wrong medicine, the wrong iv-drip, the wrong side operation, and the missing, contradictory, or wrong information.

For ambulance professionals, communicating about (near-) incidents appears more ambiguous. One the one hand, they report (near-) incidents in the incident-reporting system. To do so, they have to know what a (near-) incident is, what to report. However, most of these reports have to do with delay, with not arriving at the scene within the planned time. Delays are automatically registered. This registration seems to evoke incident reports, as most reports are explanations about reasons for the delay. It is unknown if ambulance professionals would have reported incidents about delay, when these are not registered automatically. On the other hand, ambulance nurses, when talking about (near-) incidents during interviews, more often question the choices they make, more often talk about assessments they make.

Physicians do not seem to witness many (near-) incidents. The rare moments they communicate with others about (near-) incidents in the chain mostly concern missed diagnoses, which is a somewhat grey area. When discussing missed diagnoses, the proverb 'there are many ways to skin a cat' pups up frequently. Physicians throughout the chain, in different organisations, like ambulance nurses, question the choices they make; question if making a wrong assessment is a (near-) incident or not. For both professional groups, there is a thinner line between right and wrong, the question what constitutes a (near-) incident is not solely defined by objective standards, but requires more personal interpretation. In addition, when activities are protocol led, this does not mean that when professionals deviate, they violate. Even the disciplinary board takes into account that professionals, for the right reasons, sometimes do not follow protocol. Moreover, although for many activities are written in protocols that does not mean that everyone involved knows the right protocol: "...*guidelines are often not applied in practise"* (Leistikow, 2010:125). Professionals seem to be unaware of specific protocols, or they lose sight in the overkill of protocols. Or, like different health care professionals in interviews stated, there are different ways to skin a cat.

Thus, whereas physicians and ambulance nurses experience a grey area when talking about (near-) incidents, nurses from hospital and nursing homes and pharmacistsseem to defineclear-cut(near-) incidents.This difference in what to call a (near-) incident can bedevil

communication between different groups in the health care chain, who may have different opinions on what to talk about.

To examine why different professional groups define (near-) incidents differently, I have also explored the way professionals make attributions (Chapter 6). Beyond organisations, across the chain, professional groups make different causal attributions. The differences are most pronounced regarding locus of control and controllability, and they affect communication processes. All health care professionals attribute (near-) incidents due to both *internalunstable* and *controllable* causes and *external*, *stable* and *controllable* causes. If an attribution is made to *external*, *stable,* and *controllable causes*, communication takes place, for example in formal incident reporting systems. If an attribution is made to *internal*, *unstable,* and *controllable* causes, there is a difference in communication between professional groups. This difference seems to relate to the capability to solve the problem.

As stated by Tucker & Edmondson (2002), when health care professionals come across problems, they take personal responsibility to solve them. However, between different professional groups, between nurses and pharmacists on the one hand, and physicians' onthe other hand, the capability of solving the problem differs. This difference in problem solving relates to professional autonomy.

In rare cases, nurses and pharmacy professionals communicate about (near-) incidents due to their *own* actions, which they have attributed to *internal*, *unstable* and *controllable* causes, with other professionals in the chain. They seem to do so because they depend on other professionals for further actions. They depend on physicians to solve the problem. Nurses and pharmacists depend on decisions from physicians; they cannot always solve the problem at hand. When nurses have given the wrong medicine, they have to consult a physician to decide if another medicine should be prescribed. Pharmacists also, cannot decide which medication is right, the one in the letter, or the one in the medication sheet. Physicians are autonomous, can decide for themselves and for others what to do after a (near-) incident had happened.

In both professional groups, first order problem solving occurs. Although first order problem solving can benefit the patient, it also hinders double loop learning, for the problem is solved, and there isno reason to communicate. This 'silence' after *own* (near-) incidents that are attributed to *internal* causes, applies to physicians, who are highly autonomous. In contrast, nurses and pharmacists do communicate. They are 'forced' to communicate about *own* (near) incidents they attribute to *internal* causes, because they need others for the problem solving. Although communication takes place, this does not mean communication leads to (second order) learning. Before I will elaborate onthe different reasons to communicate

about (near-) incidents, I want to make some marginal notes about the somewhat exceptional position on autonomy for three groups, for nursing home physicians and GPs, and for pharmacists.

Not all physicians are completely autonomous in their decisions. Nursing home physicians have a particular position, between GPs and specialists form hospital. Nursing home physicians are autonomous in the nursing home, but patients in nursing home have their own GPs too. Thus, nursing home physicians have to deliberate with them too.When patients see specialists in hospital, nursing home physicians follow specialists' instructions. GPs also are autonomous in their own practice, but depend on decisions made by specialists for specific health care problems. We see this dependence, when GPs and nursing home physicians communicate with the hospital about (near-) incidents regarding discharge information.

When looking at autonomy, for ambulance professionals the situation is also somewhat complex. Physicians diagnose and decide where to send patients and what ambulance professionals should do, during transfer.During transfer, within the ambulance, at the end it is their call, ambulance nurses are responsible for the given care. We see this complex position when ambulance professionals discuss assessments they make. As for physicians, for ambulance professionals too, first order problem solving hinders communication.

As stated before, the presence or absence of communication seems to depend on the level of autonomy. Nurses and pharmacists seem to communicate about (near-) incidents more often because they have less autonomy. Physicians seem to communicate less because they have more autonomy. However, does this communication lead to learning?

In a situation where professionals communicate with each other about (near-) incidents, they can do so with different goals: (1) They can give feedback to other persons involved in the (near-) incident, (2) they can also communicate about the (near-) incident in order to change the system. In both cases, professional communicate with others in order to create some kind of learning. When professionals communicate about (near-) incidents, because the incident itself needs to be solved, i.e., because they depend on other professionals for the next action, this communication is not intended to create learning. The goal is to solve the problem, to diminish the harm for the patient. On the other hand, communication to get the job done can implicitly evoke 'making bells ring' and thus unintentionally create double loop learning. Learning then depends on the sensitivity of the next link for these implicit signals. Nevertheless, in order to learn in the chain from (near-) incidents that happen, explicit communication between links remains essential.

Central to this thesis were the (near-) incidents that professionals communicate about with *other links* in the chain. Professional groups in the links experience different kinds of (near) incidents. They communicate with other links about different things, for different reasons. Although tolerance and decisiveness are stimulating factors, intolerance does not necessarily hinder communication. Indecisiveness, on the other hand, does hinder communication, as professionals do not witness anything changes. Communication about (near-) incidents also depends on definition, and on severity and likelihood of the incident. Especially stability and controllability are attributions professionals make, before communicating about (near-) incidents in reporting systems. When professionals feel they cannot change (near-) incidents and have no control on the individual level, they report more easily. The way professionals attribute causes to (near-) incidents both stimulates and hinders communication, depending on the professional group. Some professional groups, like nurses and pharmacists, feel independent of other professional groups (physicians). This independence relates to professional autonomy. Other professional groups, like GPs, ambulance professionals, pharmacist and nursing home physicians, see themselves as parts of a system. They are more or less aware that they share responsibility. Different professional groups, in different organisations, together have to take care for the patient. The different links within the chain, each in their own way, are struggling with (near-) incidents and how to create organisational learning. It is difficult to be aware of the bigger system too, to see that within the chain, learning from (near-) incidents is also necessary.

7.3 Theoretical implications and limitations

When communicating about (near-) incidents, professionals can uncover patterns of behaviour, share knowledge, and improve organisational performance (Edmondson, 1996; Rochlin, 1999; Sexton 2000; Edmondson, 2003; Cannon and Edmondson, 2005; Van Dyck et al., 2005; Homsma et al., 2009; Van Dyck et al., 2010). Incident-reporting system facilitate the uncovering of patterns of behaviour necessaryto share knowledge, to create 'organisational memory', and to improve organisational performance (Molendijk et al., 2003; Legemaate, et al., 2006; Snijders et al., 2009; Zwart, 2011). Incident-reporting systems are designed to create single or double loop learning. However, at the same time incident-reporting systems are changing the way professionals learn. In their action of reporting (near-) incidents, professionals structure the incident-reporting system. Conversely, incident-reporting behaviour is shaped by structures. Thus: "*We actively make and remake social structure during the course of our everyday activities*" (Giddens, 1991:705). Finally, incident-reporting systems create triple loop learning; create another way of looking at (near-)

incidents, as something to learn from, not only on the individual level, but also on a more general level, in- and outside the organisation.

A downside of incident-reporting systems is the hindsight bias that occurs when professionals analyse reported incidents (Fischhoff, 1975, Reason 1997). With hindsight, individualsmay exaggerate what others could have known and done in foresight. Hindsight bias is a handicap in analysing incidents that are communicated. Hindsight bias is also in another way a handicap, as professionals use it, to judge if they see what has happened as a (near-) incident. Physicians, for example, are aware of this hindsight bias. They take this into account, when they weigh whether what has happened is important enough to discuss. Physicians sometimes decide not to call a situation an incident, although there was harm for the patient. The argument they use is that, with hindsight, they would have made other choices. Because the result, in their eyes, only could have been avoided if one knew what one knows afterwards, they do not see it as a (near-) incident. Physicians seem to take hindsight bias itself as a reason not to communicate about (near-) incidents.

One of the dangers of incident-reporting systems, and of quantitative data in general, is seeing the reports as 'objective' data. However, it is still the professionals that make the reports. They individually balance cons and pros, deciding on what to report or not, what is useful or not. To distinguish useful patterns in the reporting data, one has to have a helicopter view; one has to 'rise above' the specific situation to see overlapping processes. Nevertheless, professionals, being part of their own incident-reporting system, at the very moment they make the report, do not 'rise above' the material. Making assessments what to report or not creates subjective incident-reporting systems and in the end, can hinder learning.

There is a fine line between error and incident, between personal and situational, between blaming and blame free. Especially in health care, the understanding of the causes is complex. Patients die in hospital, and many times, it is difficult to ascertain whether this death is due to the incident or to the illness (Leistikow, 2010). One must not forget that there are blameful incidents too. The reporting of many near incidents is no straightforward positive matter. On the one hand, it is good news that in the past decade, professionals have started reporting (near-) incidents. On the other hand, sometimes professionals are to blame. Professionals, against common sense, against professional knowledge, making wrong decisions, act wrongly. "*The focus on the system alone is limited and can lead to the situation that nobody feels responsible for his own actions. It can create a sanctuary for tinkers"* (Leistikow, 2010, p. 40). If someone commits a violation, punishment should be possible. In the Netherlands, the disciplinary board can evict registered professionals. When

evicted, they are not allowed to use their title any longer and are restricted in the performance of their work. Since this year, the names of evicted professionals are made public[67]. It is open for debate whether that process of violation also has to be so transparent, especially because there is a thin line between a violation and a (near-) incident. When professionals are 'hang out to dry' in public, the health care system as a whole seems less tolerant. This can hinder communication about (near-) incidents. At the same time, the public wants to know if professionals are fit for the job.

Both quantitative and qualitative data are used, to shed some light on the complex process of (double loop) learning in the chain through communication about (near-) incidents. This combination substantiated some conclusions that were made. Additionally, thesensitiveness of the subject dictated the use qualitative data. It is difficult to capture the complexity of recognizing (near-) incidents by doing a survey. Instead of using structured forms of data gathering, directing professionals with possible answers.To understand what professionals think, what considerations they make, us researches have to let them do the talking, let them speak. The goal was to reveal how different processes work, instead of giving proof how many professionals think.

In this thesis, only one health care chain in the Netherlands is examined. This health care chain already has a patient safety centre, aligned with hospital. In the different organisations, there is already some attention towards learning. In the chain, for some professional groups there is some awareness towards the interdependence of links in the chain. Nevertheless, this research has shown that learning, within as well as between organisations, is difficult, especially when looking at double loop learning. It is to be assumed that, in other chains where there are no patient safety centres, where there is less attention towards learning, we fewer examples of less double loop learning. Additionally, although for example the role of GPs in the Netherlands as gate-keepers is unique, in other countries too, patients go to different organisations to receive health care and professionals of different links can learn from (near-) incidents by communication in the chain. It is recommended to extent further research towards other chains and other countries to increase our knowledge about learning processes.

In this thesis there is no attention for the patient, as an actor in the process of learning from near-) incidents. Although patients are an important source for signals, like in the introduction, the crack B heard, central to this thesis is the way *professionals* learn through communication with *each other* from (near-) incidents in the chain. Future research should

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[67] www.bigregister.nl button *'bevoegdheidsbeperking'.*

focus on the role of the patient too, being the stable participant during the journey through the chain.

Many researchers focused on barriers that hinder communication. In contrast, this study intended to uncover communication patterns that do occur. The fact, that there is no structured mean of communication in the chain about (near-) incidents, does not mean that professionals do not talk about (near-) incidents with other links. I have looked at what happens if professionals do talk, if professionals do discover (near-) incidents that involve another links of the health care chain.

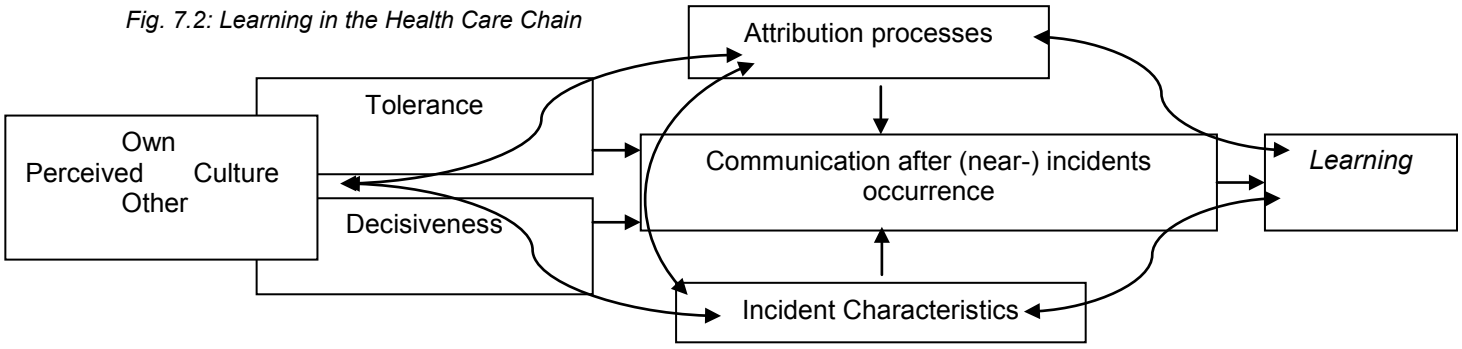
The strength of this research, focusing on communication that does occur, at the same time has a weakness. One of the limits of the research model used is that because communication about (near-) incidents is central, (near-) incidents have to occur to be explored. Because not all professionals experienced (near-) incidents between links in the chain, tolerance and decisiveness were difficult to explore. In that case, I have explored these aspects more generally, about communication with other links in general.

Organisational literature about (near-) incidents focuses on intra-organisational learning, on processes within the organisation. This dissertation stands out, examining processes in the health care chain, in inter-organisational context, between different professional groups and links. It is a pity if learning from (near-) incidents stays within an organisation, as (near-) incidents occur between links, within the chain as a whole.

The research model used in this thesis explores processes of individual as well as organisational level between links in the chain. The model suggests that these processes are connected with communication alone, that these processes are not with each other. This research shows that the processes are interlinked. Whether professionals experience tolerance and decisiveness about (near-) incidents also depends on the way they perceive (near-) incidents, on the incident characteristics as well as the definition of the incident itself. In addition, what professionals perceive as being a (near-) incident worthwhile to communicate about is also linked to the way professionals attribute, i.e., to internal or external, stable or unstable, controllable or not controllable causes. Finally, what professionals experience as being controllable or not, also depends on professional autonomy. I have tried to unwind these complex interlinking set of factors, to create some insight. To reveal that, although the model suggests some causality, processes go back and forth, are intertwined, and thus interdependent. To create double loop learning in the health

care chain, all processes need attention (Fig 7.2).

Fig. 7.2: Learning in the Health Care Chain



7.4 Implications for Practice and Discussion

Incident-reporting systems are part of a safety management system that also creates third loop learning, i.e., the way professionals learn. To make systems work for the goals intended, to create organisational learning, a majority of the professionals should support and use the incident-reporting system. Thus, professionals have to be involved with the general good, with the importance of reporting. They need to see that an argument like '*I don't have time to report*' prevents others from learning. This is a two-way street. Both 'organisations' should explain professionals about what to report, about the usefulness of reporting small *near* incidents. The other way around, professionals should be involved in enhancing the usefulness of the incident-reporting system, as professionals are shaped by the very system they have created.

Hindsight bias can jeopardize learning when we think we understand what had happened and think that knowing is enough to prevent future (near-) incidents (Fischhoff, 1975). This suggests that professionals who analyse the reported incidents should not only understand the causes, but also puzzleout less obvious solutions.This can happen more easily when different parties look at the problem from different angles. Like the example of the 'spinny' drip stand[68], that was developed together with an industrial designing company. Professionals in hospital claimed they wanted a drip stand that was heavy instead of demanding it should not fall down. "*People have the tendency to attune the demands on the products they know, instead of letting imagination take over*" (Dassen, 2006). Another example of less obvious solutions is where professionals take best practices between

[68] www.indes.eu: spinny infuusstandaard

organisations (e.g. ABC protocol from ambulance professionals) and translate this protocol to the transfer between ward and intensive care. In this example, sharing best practices between units of different organisations creates double loop learning (inter-contextual knowledge sharing, type III, Boer, 2005).

Professionals in all links of the chain can learn from (near-) incidents, also from those of others. One means to do so is the incident-reporting system. To make this system work, to let it grow to its fullest potential, professionals need to report everything that goes different from planned. The downside of all of this is that, when all professionals report everything that did not go as planned, despite the way they attribute causes, without making considerations about usefulness, incident-reporting systems will grow exponentially. In addition, as we saw in chapter four, decisiveness is an element that plays a role in communication about (near-) incidents too. Managers in organisations have to be aware of the fact that, when they ask professionals to take the time to report everything that deviated from the plan, managers also have the responsibility to act on it. Moreover, most importantly, managers have to make decisive actions visible. Professionals need to be informed about the measurements taken in the chain after communication about (near-) incidents.

The incident-reporting systems analysed here are organisation centred. Using this mean to create learning in the chain, to create a 'health care chain memory', one could think of a chain-wide reporting system. To do so, important choices have to be made, such as the kind of organisation that coordinates these activities of gathering, and analysing the reports in the chain. Incident-reporting systems are part of a greater patient safety management program. Other tools that are being used increasingly in hospital settings are SIRE[69] and SAFER[70]. Leistikow argues that all three tools need leadership: "*boards can effectively lead patient safety improvements through process management*" (Leistikow, 2010, p.387).Leistikow, like other organisational researchers, focuses on processes within the organisation. In his eyes, a stimulating factor to improve patient safety, to create an organisation that learns form (near-) incidents, is leadership (e.g. Leistikow, 2010). Here, leadership is a quality of managers in health care organisations. However, within a chain, there is no management, no coordinated leadership. How can these insights within organisations help create a safer health care chain? Does one need to create a new organisation, like a coordinating ‘patient safety centre’?

[69]In Dutch *'Systematische Incident Reconstructie en Evaluatie'*.
[70]In Dutch *'Scenario Analyse van Faalwijzen, Effecten en Risico'*.

The different organisations in the chain are autonomous; will they tolerate decisions made in this centre? One way to facilitate acceptance of such a centre would be to include representatives from each link in this centre. The organisations are professional bureaucracies, with skills and knowledge of professionals at the heart of it (Mintzberg, 1979). These professional groups have professional autonomy; have discipline centred expertise beyond the organisation. These professional groups, have own professional regulations and protocols, regulated by professional organisations[71]. Thus, learning in the chain about (near-) incidents involves not only different links, different organisations, but also different professional organisations. Ideally, in the centre not only organisations should be representative, but professional groups too. Here lies the danger of creating a juggernaut, the danger of creating a bureaucracy, with rules and regulations, with procedures and protocols, without the guarantee of learning.

Formalizing learning in the chain by using an incident-reporting system does not automatically induce single or double loop learning. Foremost, different professional groups need to have the intention to share knowledge about (near-) incidents, within the organisation (intra-) as well as between different organisations (inter-organisational knowledge sharing).

Creating an incident-reporting system for the whole chain, where everything is reported, without assessments of individual professionals will be time-consuming and probably be 'killing' for communication and learning from (near-) incidents. For decisiveness is an important aspect, but with an overload of reports, is there personnel and time to analyse everything? In addition, one should not forget to communicate about measurements taken. The patient safety centre in our chain started 'reporting weeks'.They evoked different links to report (near-) incidents that happened within the chain for over a period of a week. Afterwards, these (near-) incidents were analysed and discussed. An initiative also recommended by Zwart for GPs (2011). Others have indicated that reporting within themes should be promoted (Legemaate, et al., 2006). Within the chain, reporting weeks can have themes, for example *'reporting (near-) incidents about diagnostic'.* First, all professionals in the chain have to be informed about the week, the usefulness, what to report and what will happen with the reports. Secondly, organisations in the chain should declare to take necessary measurements that arise from the incident-analysis. Thirdly, there should be some communication to round up the whole incident reporting process; feedback should be

[71]Like for example the Dutch federation of medical practitioners 'Royal Dutch Medical Association' in Dutch*'Koninklijke Nederlandsche Maatschappij tot bevordering der Geneeskunst'* KNMG.

provided about the reports, analysis, and measurements taken and everyone should be thanked for making the effort to report.

To carry out the above, to carry out learning in the chain from incident reports, an organisation should be in place. Someone has to register 'learning in the chain'. But can we avoid a bureaucracy, avoid large-scale organisations with offices and staff, with rules and regulations?

A solution can be found in a more flexible type of organisation, like the collaboration between GPs and specialists that focus on specific medical health care problems. These incidental meetings can also be used to discuss (near-) incidents. A warning is at place, as the existing meetings focus on one-way learning, on the learning of GPs from physicians. This 'hospital' centred view can hinder learning. Although professionals in the chain seem to depend on decisions made by specialists in hospital, this does not imply that hospitals can decide what to learn. Learning in the health care chain depends on intra- as well as inter-organisational knowledge sharing, on learning from *each other* between similar as well as unrelated activities (Boer,2005). To do so, professionals need to feel the openness to come forward, to communicate about (near-) incidents.

Tolerance and decisiveness are aspects that organisations should radiate not only inside the organisation (intra-organisational) but also outside the organisation (inter-organisational). Tolerance in the general sense, like feeling welcome on the ER. Tolerance towards (near-) incidents that happen between links. Besides tolerance, different organisations should be decisive too, make changes within the chain. Organisations should demonstrate they want to act on the information; they want to change systems, to improve patient safety within the chain. Professionals need to see what happens after communication takes place about (near-) incidents between links. Organisations should show to each other what they do with the information from the communicated (near-) incidents. Different links can show each other their best practices, for processes in different organisations can be the same, like the distribution of medication. Learning from (near-) incidents in one link can help other links.

The last decade, within links of the chain, different solutions are developed after learning from (near-) incidents that could also be imported in other links, such as the example of the ABC-protocol. Another example I witnessed in the hospital where my partner was operated (see introduction). Nurses wear special waistcoats, with the sentence: *'please do not disturb, I am distributing medication as safe as possible'*.Other links where medication is distributed, like nursing homes, could take over this solution.

In a sense, this is a plea for a stronger organisational integration of the different links in the health care chain. Although there is logic in the strong differentiation of the links, given the complexity of the tasks that have to be performed, the expertise that is needed to do them, and the different locations where the tasks are performed, the current way of working is far from ideal with regard to learning from incidents. Of course, this plea refers to the classical distinction in organization theory between differentiation and integration (Lawrence &Lorsch, 1967), which is usually difficult to establish at the same time. In successful organisations, differentiation and integration are usually equally strong. Therefore, it would not make sense – and is not feasible either – to reduce the strength of differentiation, but we argue that a stronger integration is likely to be useful to increase the quality of overall health care.

An example of this integration is visible when out-of-hours services are located in the hospital, near the ER. This location can make it easier to communicate. The architecture of organisations is directly involved with the system of authority (e.g. Foucault 1979). Thus, where out-of-hours services are located, tucked away in a corner, or as a vital part of the care as a whole, can influence integration. Pharmacists in our research also indicated that working within the same building as GPs did made communication easier.

Changing location alone is not a guarantee for better communication. Professionals from both hospital and out-of-hours service should also integrate in meetings to discuss and learn from (near-) incidents. To relocate all links around hospital is up for discussion. It makes hospital the centre of the chain, which may increase an unequal relationship with other links. As we saw in data of the reporting system, hospital already is strongly internally focused. To learn in hospital too from other links in the chain, professionals should also look 'behind the fence', outside their own organisation. Hospitals depend on other links too, e.g. for sending in patients, for the transfer the right medical information, for learning from solutions other links.

A solution could be integrating the information sharing, for instance at conferences. Many times, conferences are shaped around professions, such as the national conference for first level care[72] for GPs, and the initiative to award the best innovation in the distribution of medication for pharmacies[73]. Globally, the international forum on quality and safety in health care[74] is successful, but reaches only a small part of bedside-professionals. Within a chain, at a local level, one can integrate learning by stimulating different links to exchange best

[72] In Dutch *'Landelijk congres eerste lijn'.*
[73] www.knmp.nl/nieuws/knmp-nieuws/knmp-nieuwsberichten-2012/knmp-zorginnovatieprijs-najaar-2012.
[74] www.internationalforum.bmj.com.

practices. Alternatively, as the patient safety centre did, examining one process with all links involved, like theprocess of anticoagulants, may also stimulate learning (Kuperus, 2009).

Overall, professionals in the health care chain seem to be hardly aware of the importance of inter-contextual knowledge sharing, of learning in the health care chain. Although different professionals, in different ways, try to communicate about (near-) incidents, nobody is responsible for (second order) learning in the chain. Thus, in the end, every organisation in the health care chain can be the weakest link.

English summary

Background

Where people work, things may go wrong, mistakes happen, and systems fail. The health care system is an example of a complex environment, where mistakes happen. Worst-case scenario, patients die because of things that go wrong, because of (near-) incidents. As many researchers have argued, learning from (near-) incidents depends mainly on insufficient intra-organisational communication. Professionals need to be informed of what had happened. Professionals need to communicate to each other about (near-) incidents to avoid at least the negative outcomes.

Within the health care chain, professionals from different organisations and disciplines contribute within a linking system to the care of patients. Incidents in one link, e.g., the ambulance service, can have consequences for the delivery of care in another link, e.g., the hospital. Alternatively, incidents can be discovered later on in the chain. To learn from (near-) incidents that happen in other links, professionals need to share information between organisations. Professionals need to communicate between organisations to create inter-organisational learning.

Theoretical framework

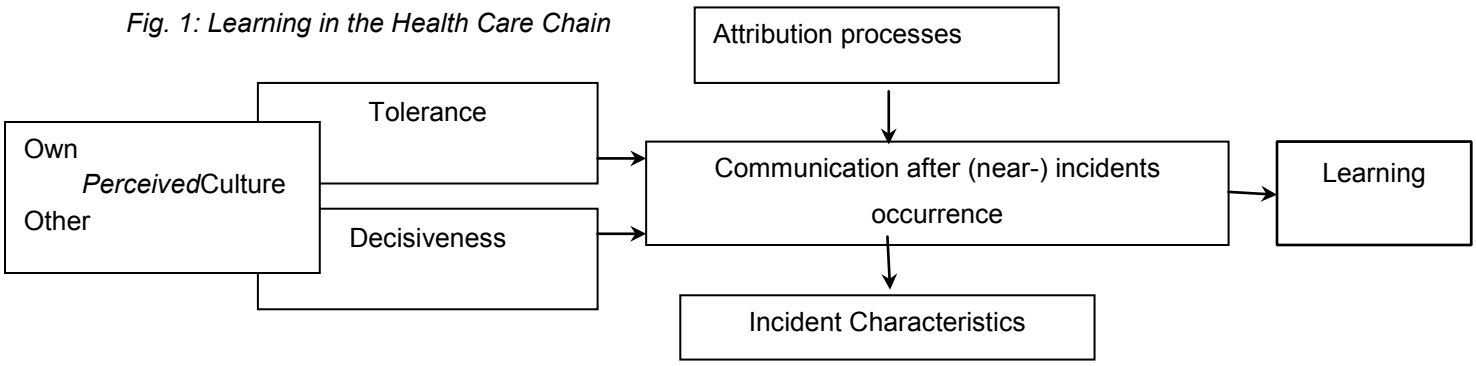
The communication event central to this study, is the 'exchange of information about (near-) incidents'. First, I have explored who communicates with whom about (near-) incidents within the chain, and with what goal this communication takes place (Chapter 3).
Within organisations, learning of (near-) incidents is promoted when professionals experience tolerance and decisiveness. Professionals need not to be blamed, after an incident occurs (tolerance). In addition, professionals need to experience that actions are taken to change the situation, to change the conditions under which (near-) incidents occur (decisiveness). In this case, these aspects where examined within organisations. The second topic of this research was to explore to what extent tolerance and decisiveness promote learning between organisations, i.e., if tolerance and decisiveness stimulate inter-organisational learning (Chapter 4).

The third topic of this research was the (near-) incident itself. To communicate with each other, professionals need to share assumptions about what a (near-) incident is. Former research shows that learning from (near-) incidents depends on incident characteristics, in particular on severity and likelihood of occurrence. I have examined if these characteristics

of (near-) incidents play a role in communication between different professionals in the health care chain (Chapter 5).

After (near-) incidents occur, professionals make attributions about – in their eyes – probable causes of the incidents. They experience these causes as factors within the person (internal locus) or as factors of the environment (external locus). In addition, they describe these causes as something stable or unstable (fluctuating), and as something they can control (controllable) or not (uncontrollable). The attribution processes are linked to the way professionals have learned to solve problems. In health care, employees are encouraged to take personal responsibility to solve problems as they occur, i.e., to have control over the situation, to see causes of (near-) incidents as controllable. Therefore, the fourth topic of this research concerned the way professionals attribute causes and how this process relates to first-order problem solving and inter-organisational communication (Chapter 6). The following research model was used (Fig. 1)

Fig. 1: Learning in the Health Care Chain



Methods

To answer the above research questions, triangulation of methods was used. Two methods of data collection were combined: quantitative and qualitative data collection. Firstly, quantitative data collection was used to examine with whom professionals communicated about reported (near-) incidents in the formal incident reporting systems. Secondly, qualitative data collection was also used to examine with whom professionals communicated and therefore qualitative data was used support insights that were derived from quantitative data. In addition, qualitative data collection was used to deepen these insights, to explore opinions, and to gather new unexpected information.

Within the health care chain, I have used quantitative data from incident-reporting systems of three organisations: the out-of-hours office, the ambulance service, and the hospital (data from June 2006 to December 2007). In the second phase, in-depth interviews were used,

interviewing professionals from five different links in the chain, GP offices, pharmacies, ambulance service, hospital, and nursing homes (interviews held from April to August 2009).

These eighty-eight in-depth interviews were obtained by drawing a sample from different links in the chain, using snowball sampling. The first respondents were contacted through the centre of patient safety. These respondents helped the researchers contacting new respondents. Saturation of answers was used to determine how many respondents needed to be interviewed. The in-depth interviews were transcribed and coded by two researchers, using the computer software program Atlas.ti. Qualitative data were analysed with regard to assumptions about the different concepts in the research model (see Fig. 1).

Results

Evidence was found within the incident-reporting systems for an unequal use of this formal means to communicate about (near-) incidents: 'who' communicates in these systems differs. In the out-of-hour service, GPs are responsible for the majority of the reports. In the ambulance service, as well as the hospital, nurses are responsible for the majority of the reports. With respect to the question with whom they communicated about these reported (near-) incidents, it stands out that especially physicians communicate with colleagues more frequently, compared to other groups.

The system in hospital largely contains low-to-medium level risk reports, as compared to the system in the out-of-hours office, where more high-extreme risk incidents were reported. Within all three reporting systems, (near-) incidents were reported that surpassed the doors of the organisation, incidents that happened between different links in the chain. Within the out-of-hours service and the ambulance service, some evidence was found for the occurrence of communication between links. The incident-reporting system of the hospital was internally focused, thus no information was available in this system about communication between different links.During interviews, the image, that hospitals are internally focused, was confirmed. Professionals in hospital hardly focus on (near-) incidents between links of the chain. However, especially pharmacists and GPs communicate with hospital about (near-) incidents mostly of others.

Overall, in different links, communication about own (near-) incidents seems to stay within the organisation. In general, most professionals experience their own organisation as being tolerant towards (near-) incidents, but they do not experience much decisiveness. It was difficult to explore the concepts tolerance and decisiveness between different links, as

professionals had difficulty recalling communication about (near-) incidents between links. After broadening the concepts towards communication in general between links, professionals experienced other links in general as being tolerant. Even if they did experience negative reactions when transferring information, this did not stop them communicating about (near-) incidents. For some professionals, like pharmacists, it only changed the way they communicated, e.g., they changed communication channel from telephone to e-mail. Overall, none of the links regarded others as decisive. Thus, although tolerance and decisiveness within an organisation stimulate learning, intolerance and indecisiveness between organisations do not necessarily hinder inter-organisational communication.

There was no overall agreement among professionals about the definition of an incident. In health care literature, the concept is defined as "*an event or circumstance that could have resulted, or did result, in unintended or unnecessary harm to a person and/or a complaint loss or damage*" (Runicman, 2006, p S42). However, different health care professionals have different associations with the term 'incident'. Pharmacists associate the term logically with things that go wrong in the distribution of medicine. In addition, they also associate the term with angry reactions of others. Nurses in ambulance service, hospital, and nursing homes too associate the term with harm towards the patient, and with harm inflicted on themselves, e.g., when patients are aggressive towards nurses, or when nurses accidently hurts themselves with a syringe. Ambulance professionals also think of large-scale accidents. Nurses in hospital and nursing homes see incidents mainly as something to report. Physicians throughout the chain give less straightforward examples, seeing there is no 'one truth', no 'one right or wrong', as they are manoeuvring in a more grey area of making diagnostic assessments. All professionals feel incidents as something attached to themselves, instead of a more neutral 'event or circumstance'.

The distinction between an incident as something that reaches the patient, and a near incident, as something that has not reached the patient, is also not always clear. In addition, incident characteristics, like severity and likelihood of repetition, are not 'objective' characteristics of (near-) incidents. Professionals make assumptions about what they think is severe or not. Professionals estimate if, based on their experience, the incident is something that occurs rarely, or will happen again real soon (likelihood of repetition). For some professionals, especially physicians, (near-) incidents they are involved in are rare and unlikely to happen again soon. In contrast, pharmacists regard (near-) incidents they are involved in while distributing medicine as something to expect, and therefore have created a system of check and recheck. In the process of learning from (near) incidents between

different links in the chain, the content of the message, i.e., what to talk about, differs and hinders inter-organisational knowledge sharing.

Finally, I have examined how professionals attribute causes after incident occurrence. Professional groups differentiate in the way they attribute causes. Pharmacists and nurses seem to attribute causes as external and stable. They attribute causes for (near-) incidents as controllable (pay some more attention) as well as uncontrollable (high work load). Physicians seem to attribute causes as internal and controllable. These attribution processes affect communication about (near-) incidents. (Near-) incidents that are attributed to internal, unstable, controllable causes are not communicated with other parties involved and therefore hinder double loop learning. Especially the combination of a high level of autonomy combined with first order problem solving seems to hinder communication and therefore learning from (near-) incidents.

Conclusions and discussion

During the transfer of care, (near-) incidents happen between links in the chain. For example medical information gets lost, is wrong or contradictory which has an effect on the care in other links. Only the ambulance service has a formal feedback system that allows professionals from other links to communicate with the ambulance service. However, none of the interviewed professionals had examples of this type of feedback. There are structured as well as unstructured forms of deliberation. After deliberation, representatives from different links made working agreements, for example to improve communication between ambulance service and GPs. In the beginning, this seems to have some effect. Over time, agreements seem to be forgotten. Thus, although some incidental communication and learning between links takes place, there is no formal communication between links about (near-) incidents.

Tolerance and decisiveness stimulate communication and learning. On the other hand, some groups, like pharmacists and nurses, may experience hinder from intolerant and indecisive behaviour by others, but this does not make them stop communicating, even though they do not witness much effect from their efforts. These groups communicate about (near-) incidents with hardly any injuries, while physicians, in the rare occasions they do, communicate about (near-) incidents with serious injuries. All professional groups take into account likelihood of repetition. (Near-) incidents that are estimated as being likely to occur within days, weeks or months, seem to be discussed more frequently than (near-) incidents that happen rarely.

Overall, communication about (near-) incidents using a formal system, like the incident-reporting system, is internally focused. There is no formal, overall, chain wide incident-reporting system in place. Professionals can learn when they communicate about (near-) incidents with different professionals between different links of the chain. A chain-wide incident-reporting system can create double loop learning; can create a 'health care chain memory'. The downside of such an overall, chain-wide incident-reporting system is that it can turn into a bureaucratic, time-consuming ‘Juggernaut’ that professionals are obliged to use.

Within the chain, double loop learning can be stimulated by pleading for stronger organisational integration of the different links in the chain. Professionals differ in the tasks they perform, the autonomy and the expertise to solve problems they have. A strong chain balances differentiation and integration. Links in that chain acknowledge that inter-organisational knowledge sharing between different links is inevitable for second order learning. In order to create a shared 'health care chain culture', to create a chain that learns from (near-) incidents, professionals have to communicate beyond the walls of their own organisation, as the chain is as strong as its weakest link.

Nederlandse samenvatting

Achtergrond

Wanneer mensen werken, kunnen dingen verkeerd gaan, kunnen fouten en vergissingen gemaakt worden en kunnen systemen falen. Het gezondheidszorgsysteem is een voorbeeld van een complexe omgeving, waar fouten voorkomen. In het ergste geval, gaan patiënten dood als gevolg van dingen die fout gaan, als gevolg van (bijna)incidenten. Veel onderzoekers hebben betoogd dat het al dan niet leren van (bijna)incidenten vooral afhankelijk is van inter-organisationele communicatie van onvoldoende kwaliteit. Om te kunnen leren van incidenten is het belangrijk professionals te informeren over wat er is gebeurd. Om tenminste de negatieve effecten van (bijna)incidenten te voorkomen dienen professionals hierover met elkaar te communiceren.

Binnen de gezondheidszorgketen leveren professionals van verschillende organisaties en disciplines een bijdrage aan een aaneengeschakeld systeem van zorg voor patiënten. Incidenten in een schakel, bijvoorbeeld een ambulance dienst, kunnen consequenties hebben voor het leveren van zorg in een andere schakel, zoals een ziekenhuis. Daarnaast kunnen incidenten pas verderop in de keten worden ontdekt. Om te kunnen leren van (bijna)incidenten die in andere schakels gebeuren, dienen professionals van verschillende organisaties onderling informatie te delen. Voor het creëren van inter-organisationeel leren is het goed als er tussen organisaties, door diverse professionals, met elkaar wordt gecommuniceerd.

Theoretisch kader

De communicatiegebeurtenis die centraal staat in deze studie, is de 'uitwisseling van informatie over (bijna)incidenten. Allereerst heb ik onderzocht wie met wie communiceert over (bijna)incidenten in de keten, en met welk doel deze communicatie plaats heeft gevonden (Hoofdstuk 3).

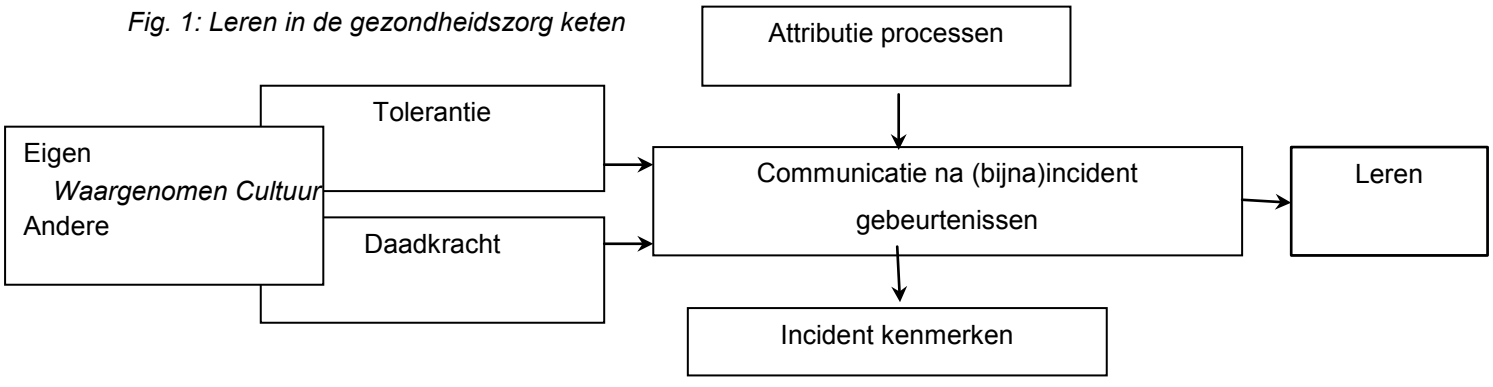
Binnen organisaties wordt leren van (bijna)incidenten bevorderd als professionals tolerantie en daadkracht ervaren. Professionals moeten niet het gevoel krijgen de schuld te krijgen, te worden veroordeeld, nadat een incident is gebeurd (tolerantie). Bovendien is het belangrijk dat professionals ervaren dat er acties worden ondernomen om de situatie te veranderen, om de condities te veranderen waaronder (bijna)incidenten gebeuren (daadkracht). Deze aspecten zijn onderzocht binnen organisaties. Het tweede onderwerp van mijn onderzoek

was te ontdekken of tolerantie en daadkracht ook leren tussen organisaties bevordert, of tolerantie en daadkracht inter-organisationeel leren stimuleren (Hoofdstuk 4).

Het derde onderwerp van dit onderzoek was het (bijna)incident zelf. Om met elkaar te communiceren is het belangrijk dat professionals veronderstellingen delen, over wat een (bijna)incident is. Eerder onderzoek liet zien dat leren van (bijna)incidenten afhangt van incidentkenmerken, in het bijzonder van de kenmerken ernst en kans op herhaling. Ik heb onderzocht of deze kenmerken van (bijna)incidenten een rol spelen in het proces van communicatie tussen verschillende professionals in de gezondheidszorgketen (Hoofdstuk 5).

Achteraf, nadat (bijna)incidenten zijn gebeurd, maken professionals attributies over – in hun ogen – mogelijke oorzaken van de (bijna)incidenten. Ze ervaren deze oorzaken als factoren van henzelf (intern) of als factoren van de omgeving (extern). Verder worden deze oorzaken beschreven als variërend over tijd of niet (stabiel of instabiel) en als iets waar ze persoonlijk controle over hebben (beheersbaar) of niet (onbeheersbaar). Het attributie proces blijkt te zijn gekoppeld aan de manier waarop professionals geleerd hebben problemen aan te pakken. In de gezondheidszorg worden medewerkers gestimuleerd persoonlijke verantwoordelijkheid te nemen voor het oplossen van problemen als ze voorkomen. Dit betekent dat ze, om controle te krijgen over de situatie, de oorzaken van (bijna)incidenten zien als iets wat ze zelf kunnen beheersen. Daarom is het vierde onderwerp van dit onderzoek gericht op de manier waarop professionals attributies maken over oorzaken en laten we zien hoe dit proces gerelateerd is aan de manier waarop professionals problemen oplossen (‘first-order’ problem solving) en inter-organisationele communicatie (Hoofdstuk 6). Het volgende onderzoeksmodel is gebruikt (Fig. 1).

Fig. 1: Leren in de gezondheidszorg keten



Methode

Om bovenstaande onderzoeksvragen te beantwoorden is een triangulatie van methoden gebruikt. Twee methoden van dataverzameling werden gecombineerd: kwantitatieve en kwalitatieve dataverzameling. Allereerst werd kwantitatieve dataverzameling gebruikt om te onderzoeken met wie professionals gecommuniceerd hadden over de gemelde (bijna)incidenten in het formele meldsysteem. Ten tweede werd kwalitatieve dataverzameling gebruikt om te onderzoeken met wie professionals gecommuniceerd hadden om daarmee de resultaten uit de kwantitatieve data te ondersteunen. Aanvullend is kwalitatieve dataverzameling gebruikt ter verdieping, om bijvoorbeeld te horen waarom er met wie was gecommuniceerd, en om nieuwe, onverwachte informatie te verzamelen.

Binnen de gezondheidszorgketen heb ik kwantitatieve data van incident meldsystemen gebruikt van drie organisaties: de huisartsenpost, de ambulancedienst en het ziekenhuis (gegevens van juni 2006 t/m december 2007). In de tweede fase, werden diepte-interviews gehouden met professionals uit vijf schakels in de keten: huisartspraktijken, apotheken, de ambulancedienst, het ziekenhuis en verpleeghuizen (interviews gehouden tussen april en augustus 2009).

De achtentachtig diepte-interviews werden verzameld door met behulp van de sneeuwbal methode een steekproef te trekken uit verschillende schakels in de keten. We werden met de eerste geïnterviewden in contact gebracht via het centrum patiëntveiligheid. Deze geïnterviewden op hun beurt hebben ons in contact gebracht met andere professionals om deze te interviewen. Verzadiging van de antwoorden is gebruikt om te bepalen hoe groot de steekproef moest zijn. De diepte-interviews zijn uitgeschreven en gecodeerd door twee onderzoekers, met behulp van het computer software programma Atlas.ti. De kwalitatieve data werden geanalyseerd op veronderstellingen betreffende verschillende concepten uit het onderzoeksmodel (zie fig. 1).

Resultaten

In incident meldsystemen is bewijs gevonden dat er tussen professionals ongelijk gebruik gemaakt wordt van dit formele middel om te communiceren over (bijna)incidenten. De ‘wie’ in dit communicatiesysteem, verschilt. Bij de huisartsenpost zijn het vooral huisartsen die melden. Bij zowel de ambulancedienst als bij het ziekenhuis is het, verhoudingsgewijs,

vooral verpleegkundigen, die verantwoordelijk zijn voor het overgrote deel van de meldingen.

Als we kijken naar ‘met wie’ de melder heeft gecommuniceerd over het gemelde (bijna) incident, dan het valt op dat vooral artsen, vergeleken met andere groepen, alleen communiceren met de eigen beroepsgroep, met de directe collega’s. Verder is het opvallend dat in het ziekenhuis vooral meldingen worden gedaan van (bijna)incidenten met een laag-matig risico terwijl in de huisartsenpost vooral meldingen gedaan worden van (bijna)incidenten met een hoog-extreem risico. In alle drie systemen (huisartsenpost, ambulancedienst en ziekenhuis) werden meldingen gedaan van (bijna)incidenten die voorbij de muren van de organisatie gingen, incidenten die gebeurden tussen diverse schakels in de keten. Alleen in de meldsystemen van de huisartsenpost en ambulancedienst is enig bewijs gevonden voor communicatie over (bijna)incidenten tussen schakels onderling. Het incident meldsysteem van het ziekenhuis is intern gefocust, er was geen informatie beschikbaar uit dit systeem waaruit bleek dat er met andere schakels over het (bijna)incident gecommuniceerd werd.

Tijdens de interviews werd dit beeld, van een intern gefocust ziekenhuis, bevestigd. Professionals in het ziekenhuis kijken bijna niet naar (bijna)incidenten tussen schakels in de keten. Echter, apothekers en huisartsen communiceren met het ziekenhuis vooral over (bijna)incidenten van anderen. In diverse schakels blijft de communicatie over de eigen (bijna)incidenten binnen de organisatie.

Over het algemeen ervaren professionals hun eigen organisatie wel als tolerant ten aanzien van (bijna)incidenten. Ze ervaren echter weinig daadkracht. Tussen schakels onderling was het moeilijk de concepten tolerantie en daadkracht ten aanzien van (bijna)incidenten te onderzoeken omdat professionals het moeilijk vonden te herinneren of er communicatie over (bijna)incidenten had plaats gevonden tussen schakels. Nadat we de concepten iets meer hebben verbreed naar tolerantie en daadkracht met betrekking tot communicatie in het algemeen tussen schakels, bleek dat professionals andere schakels over het algemeen als tolerant bestempelden. Zelfs als ze, tijdens de overdracht in de keten, negatieve reacties kregen, stopten ze niet met communiceren over (bijna)incidenten. Wel veranderden sommige professionals, zoals apothekers, de manier waarop ze communiceerden. In plaats van telefonisch contact werd gecommuniceerd met een meer afstandelijke middel, n.l. email. Over het algemeen vond geen van de schakels de andere schakel daadkrachtig. Concluderend kan worden gesteld dat tolerantie en daadkracht binnen een organisatie leren bevordert, maar dat intolerantie en het ontbreken van daadkracht tussen organisaties inter-organisationele communicatie niet bij voorbaat belemmeren.

Tussen professionals in de diverse schakels van de keten was geen overeenstemming over de definitie van een incident. In gezondheidszorg literatuur, is het concept gedefinieerd als: "*een gebeurtenis of omstandigheid welke zou kunnen hebben geresulteerd, of heeft geresulteerd, in onbedoelde of onnodige schade aan een persoon en of een klacht, verlies of schade"* (Runicman, 2006, p S42). Verschillende professionals hebben echter verschillende associaties met de term incident. Apothekers associëren de term logischerwijs met iets dat mis gaat tijdens de distributie van medicijnen. Aanvullend associëren zij de term ook met boze reacties van anderen. Verpleegkundigen van de ambulance dienst, het ziekenhuis en verpleeghuizen associëren de term naast schade aan de patiënt, ook met schade aan zichzelf, bijvoorbeeld wanneer patiënten agressief zijn, of als verpleegkundigen zichzelf prikken met een naald. Ambulance professionals denken bij het woord incident al snel aan verkeersongelukken op grote schaal. Verpleegkundigen in ziekenhuizen en verpleeghuizen denken bij incidenten aan iets wat ze moeten melden. Artsen in de gehele keten bevinden zich in een grijs gebied van het maken van diagnostische beoordelingen en geven minder ongecompliceerde voorbeelden, vinden dat er niet 'één waarheid' is, niet 'één goed of fout'. Alle professionals zien incidenten als iets wat verbonden is met henzelf, in plaats van de meer neutrale 'gebeurtenis of omstandigheid'.

Het onderscheid tussen een incident als iets welke de patiënt bereikt, en een bijna incident, als iets welke de patiënt nog niet heeft bereikt, is niet altijd helder. Bovendien zijn incident kenmerken, zoals ernst en kans op herhaling, geen 'objectieve' kenmerken van (bijna)incidenten. Professionals maken zelf de aannames over wat ernstig is of niet. Professionals schatten in of, gebaseerd op hun eigen ervaring, een incident iets is wat zeldzaam is, of juist op korte termijn opnieuw gebeurt (kans op herhaling). Voor sommige professionals, vooral bij artsen, zijn (bijna)incidenten waarbij ze betrokken zijn zeldzaam en wordt de kans op herhaling door henzelf gezien als klein. Dit in tegenstelling tot bijvoorbeeld apothekers, die (bijna)incidenten waarbij ze betrokken zijn terwijl ze medicijnen verstrekken, iets is wat ze verwachten. Hierdoor hebben ze een systeem gecreëerd van check en dubbel check. In het proces van leren van (bijna)incidenten tussen diverse schakels in de keten, verschilt de inhoud van de boodschap, het 'waarover wordt gesproken' is divers en daarom een belemmering voor de inter-organisationele kennisdeling.

Tot slot heb ik onderzocht de manier waarop professionals oorzaken na (bijna)incidenten toeschrijven (attributieproces). Apothekers en verpleegkundigen schrijven (bijna)incidenten toe aan oorzaken die extern zijn en stabiel over tijd. Zij schrijven oorzaken van (bijna)incidenten zowel toe aan iets wat ze kunnen veranderen (beter opletten) als aan iets wat ze niet kunnen beheersen (drukte). Artsen echter zien oorzaken vooral als iets waar ze zelf wat aan kunnen doen. De manier waarop mensen oorzaken waarnemen, heeft effect op

de communicatie over (bijna)incidenten. (Bijna)incidenten die worden gezien als intern, instabiel, en beheersbaar, worden niet gecommuniceerd met andere betrokkenen en belemmeren in elk geval ‘double loop’ leren. In het bijzonder de combinatie van een hoge mate van autonomie en een specifieke vorm van oplossingsgerichtheid (‘first order problem solving’) lijkt communicatie en leren van (bijna)incidenten te belemmeren.

Conclusies en discussie

Tijdens de overdracht van zorg tussen schakels in de keten gebeuren (bijna)incidenten. Wanneer medische informatie zoek raakt, verkeerd is of tegenstrijdig is kan dit een effect hebben op te verlenen zorg in de andere schakel. Alleen de ambulance service heeft een formeel feedbacksysteem om professionals in de andere schakels de gelegenheid te geven zo te communiceren met de ambulance service. Geen van de geïnterviewde professionals kon voorbeelden geven waarbij ze deze formele feedback gebruikt hadden. Tussen schakels bestaan gestructureerde en ongestructureerde vormen van overleg. Wanneer een dergelijk overleg uitmondt in werkafspraken, bijvoorbeeld om de communicatie tussen ambulance service en huisartsen te verbeteren, dan lijkt dit in het begin een effect te hebben. In de loop der tijd worden deze werkafspraken echter weer vergeten. Er is dus wel incidenteel communicatie en er wordt wel geleerd tussen schakels. Er is echter geen formeel communicatie middel tussen schakels over (bijna)incidenten.

Tolerantie en daadkracht stimuleren communicatie en leren. Aan de andere kant ervaren sommige groepen, zoals apothekers en verpleegkundigen intolerant en niet-daadkrachtig gedrag, maar dit belemmert hen niet te blijven communiceren, ook al zien ze weinig veranderingen. Deze groepen communiceren over (bijna)incidenten met weinig letsel, terwijl artsen, op de uitzonderlijke momenten dat ze communiceren over (bijna)incidenten, dit vooral doen bij ernstig letsel. Alle groepen nemen de kans op herhaling in ogenschouw. (Bijna)incidenten waarvan wordt aangemerkt dat ze binnen enkele dagen, weken of maanden opnieuw zouden kunnen gebeuren, worden vaker bediscussieerd dan (bijna)incidenten die als zeldzaam worden betiteld.

De meldsystemen voor incidenten zijn intern gefocust. Er is geen formeel, ketenbreed systeem om incidenten te melden. Professionals kunnen leren wanneer ze communiceren over (bijna)incidenten tussen diverse schakels in de keten. Een ketenbreed systeem kan ‘double loop’ leren bevorderen, kan een ‘geheugen voor de gezondheidszorgketen’ creëren. Nadeel van een dergelijk overstijgend, ketenbreed meldsysteem is dat het kan omslaan in een – door professionals verplicht te gebruiken - bureaucratische, tijdverslinde papiermolen.

In de keten kan inter-organisationeel leren gestimuleerd worden door te pleiten voor een grotere organisationele integratie tussen de diverse schakels. Professionals verschillen in de taken die ze uitvoeren, de autonomie en ervaring om problemen op te lossen. Een sterke keten balanceert tussen differentiatie en integratie. Om ‘double loop’ leren te bereiken dienen schakels in de keten zich er van bewust zijn dat inter-organisationele kennisdeling tussen diverse schakels onvermijdelijk is. Om een gedeelde ‘gezondheidszorg cultuur’ te creëren waarin wordt geleerd van (bijna) incidenten dienen professionals te communiceren voorbij de muren van de eigen organisatie, aangezien een keten zo sterk is als de zwakste schakel.

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Abbreviations

A1-run	Run for emergency life threatening situations, with sound and light effects Ambulance must be at the scene within 15 minutes.
A2-run	Run for emergency, less life threatening situations, without sound and light effects Ambulance must be at the scene within 30 minutes.
ABCDE	Airway, Breathing, Circulation Disability, Expose/Environment
AIRS	Ambulance Incident Reporting System
ATLS	Advanced Trauma Life Support (training)
B-run	Planned run, no emergency.
COPD	Chronic Obstructive Pulmonary Diseases
CPS	Centre Patient Safety
DAM	Decentrale Analyse Methode (decentralised analysis method)
ECG	Electro Cardio Gram
ER	Emergency Room
FONA	Fouten, Ongevallen en Near Accidents (errors, accidents, and near accidents)
GP	General Practitioner
GPS	Global Positioning System
HAP	HuisArtsen Post (out-of-hours service)
HCI	Health Care Inspectorate (Inspectie GezondheidsZorg IGZ)
ICT	Information and Communication Technology

ICU	Intensive Care Unit
IGZ	Inspectie GezondheidsZorg (Health Care Inspectorate HCI)
HIRS	Hospital Incident Reporting System
HIS	Huisartsen Informatie Systeem (GP information system)
KNMG	Koninklijke Nederlandsche Maatschappij tot bevordering der Geneeskunst (Royal Dutch Medical Association)
M	Mean
MIST	Mechanism injury, Indentified injuries, Signs, Therapy
MIP	Meldingscommissie Incidenten Patiëntenzorg (reporting committee for incidents in patient care)
MIC	Meldingscommissie Incidenten Cliëntenzorg (reporting committee for incidents in client care)
MRSA	Methicilline Resistente Staphylococcus Aureus
OIRS	Out-of-hours Incident Reporting System
OR	Operating Room
POH	Praktijk Ondersteuner Huisarts ((advanced) practice nurse)
RVZ	Raad voor Volksgezondheid en Zorg (counsil for public health and care)
RAV	Regionale Ambulance Voorziening (ambulance service)
RIAGG	Regionale Instelling Ambulante Geestelijke Gezondheidszorg (regional institution form ambulant mental health care)

ROAZ	Regionaal Overleg Acute Zorg (regional consultative body for acute care)
SAFER	Scenario Analyse van Faalwijzen, Effecten en Risico
SD	Standard Deviation (of the mean)
SIRE	Systematische Incident Reconstructie en Evaluatie
SOEP	Subjective, Objective, Evaluation, Plan
SPSS	Statistical Package for Social Sciences
VIM	Veilig Incident Meldsysteem (Safe (blame free) incident reporting system)
VMS	Veiligheids Management Systeem (safety management system)

Appendix 1: References

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Appendix 2: Semi-structured interview protocol

1. Introduction

1.1 Interviewer proposals, anonymity, include permission/audit; structure Introduction/General background questions, patient safety, and communication. We finish the interview with possible ideas and additions that you may have with respect to the subject matter.

1.2 Introduction respondent

1.3 Function /section

1.4 Work experience

1.5 Work experience current function

1.6 Direct work environment (professionals and colleagues and managerial)

2. Communication with groups about the transfer

2.1 Who do you see you as your colleague/supervisor/professional?

2.3 With whom do you communicate in the chain during the transfer of information?

2.4 How does this transfer work? (Orally, in writing, by telephone, etc.)

2.5 During this transfer is there ever anything gone wrong/differently than planned (with one of these groups, each group)? If yes, what is going wrong, with whom?

2.6 Why do you think it went wrong? (Where did it go wrong, root cause/multiple causes?)

2.7 Does this happen often? Why is that, do you think?

2.8 What do you do in such a case (if something goes wrong)?

2.9 When the cause lies with someone other than you do you discuss this with the other party? How do you discuss this? Why do you discuss this?

2.10 Why is it gone wrong?

2.11 Could you have prevented it (the (near-) incident)? How could you have done that? What do you do to ensure that it does not occur again?

2.12 Who is responsible for the correct communication of information during the transfer?

3. Communication about incidents

3.1 Has communication sometimes led to an incident? Sometimes there are ambiguities or contradictions about the information provided by one of the professionals? Give no examples, let them talk for themselves

3.2 What have you done after the facts were discovered? (Orally, in writing etc).

3.3 How did the professional react to this? Why did he/she react like this, according to you?

3.4 Have you discussed this incident with someone? With whom/where/why? How did this go?

3.5 Why did you choose these people? And not other people?

3.6 How did the people with whom you discussed it, react?

3.7 (a) Should you have discussed the incident with other people? Why did you not discuss it with them?

3.7 (b) Did you discuss the incident with your manager? Where? How did you do this? Why (not) did you discuss the incident with the management?

3.8 Did your supervisor encourage you to tell about incidents? How does he/she do this?

3.9 Does your manager try to determine the cause? How?

3.10 How does your management react when you tell them (or finds out)? What do you think of this reaction? Would you have reacted differently?

3.11 Are there incidents discussed in the team? When, directly after it happened or at specific times, why, importance of the discussion, what is being discussed?

3.12 Do the incidents get discussed in the meetings?

3.13 Are the incidents spoken about with colleagues?

3.14 Has anyone spoken to you about the incident? If so , with whom, how did this go?

3.15 (a) What did you think about the way you were approached about this?

3.15 (b) Have you spoken with someone from another organization/Department about the incident? If so whom, how did this go?

3.16 Have you spoken with the professional from the other organisation about the incident? If so whom, how did this go? Why did you (not) do that? If not: how did these person/persons react to your non-communication?

3.17 How is this in general (within the organization/department) communicated about incidents? What do you think about this? What do you think about the way it is communicated with the other professionals in the care chain?

3.18 Are there standard rules about how you should communicate about an incident? (Told to management or standard protocols?)

3.19 Do you tell if you find/see that errors are made by other people? To whom? Why/why not?

4. Incidents

4.1. What do you think is the meaning of the concept of an incident?

4.2. Have you yourself ever been involved in an incident/ an almost incident/ observed and not involved in the chain? (Only if they have no examples in the chain than examples of their own organisation)

4.3 What happened?

4.4 In what way did you play a role in this incident (involved in the making of / discovery / heard of it)?

4.5 What was according to you the (main) cause of the incident?

4.6 Could the incident, in your opinion, have been prevented?

4.7 Who was, in your opinion, responsible for this incident?

4.8 Is there anyone responsible for the prevention of incidents?

4.9 Are there rules / protocols how it should handled after an incident? If yes, what are they?

4.10 Have you the idea that incidents are more likely to occur in routine operations (autopilot) or at new things?

5. Attribution incidents

5.1 Did you try to figure out the cause of an incident? Why did you do that / why not?

5.2 Did the management try to figure out the cause of an incident? Why / why not, how did you notice that?

5.3 Did the cause of the incident have an effect on your action (communication)?

5.4 Did the effects of the incident (severity) affect your action (communication)?

5.5 Could the incident have been prevented? If yes/no, did this have an effect if you discussed it with others or not?

5.6 Was the cause stable or not stable (does it happen often?)

5.7 Do you have the idea that you had control over the cause? That you could prevent it?

6. Learning

6.2 Can you find information about incidents somewhere? What info, only your own department/ organization/ superior organizations, Is this information applicable to the situation?

6.3 Are incidents recorded somewhere? Have you yourself ever reported an incident? If yes, please give examples.

6.4 Is it discussed in meetings how one can learn from incidents in the chain?

6.5 Do you learn from errors of others in the chain? Can you give an example?

6.6 If you do not know how to do something, what do you do? (From whom do you get advice?)

6.7 Do you have ideas about practices that can be improved on the work in relation to communications in the chain?

6.8 With whom do you discuss these ideas? With management? How do they react?

6.9 Does anything happen with these ideas?

6.10 Do you see / does your organization see incidents as an opportunity to learn? How does this happen? Can you give an example?

6.11 Do you learn (communicate, analyze, how to avoid) from incidents with serious consequences? How? Can you give an example?

6.12 Do you learn from incidents with less serious consequences? How do you do this? Can you give an example?

6.13 Do you share your knowledge with others in the chain? Do you learn from the knowledge of others, and others of you? Do you tell your experiences to colleagues?

6.14 Do you try to develop new knowledge? If yes how?

6.15 Does the organization learn from your knowledge? How?

6.16 Do you ever notice that new protocols and changes come after certain incidents happened? Can you give a concrete example?

6.17 Do you ever look at other people and how they do their work? What do you do if they do certain work differently than you?

6.18 Do you have a personal development plan? (A plan in which you decide what you can improve about yourself with ways and appointments, how you can make these improvements?)

6.19 Do you ever think about incidents that could occur that have not already occurred in the chain? What do you do with these thoughts? Do you discuss these with anyone? Can you give an example?

6.20 Do you speak with others in the chain on how you can learn better (from incidents)?

6.21 Do you speak with other professionals about incidents and what you / they have learnt? Can you give an example? With whom do you do that?

6.22 Do you discuss with colleagues (in the chain), what you learned from a certain incident? Can you give an example? Do you do this even if you think that they already know? Can you give an example?

6.23 If you see a colleague doing something what you have never done, what do you do?

6.24 Do you share knowledge with your own team members/departmental members or with other members of the organization/chain?

6.25 Do you observe colleagues (and professionals in the care chain) in order to learn or to simplify what could be improved in the organization?

6.26 Do you say if you find/see errors are made or that improvements can take place? In the chain?

Note: keep in mind that the communication in the chain is about things that would go differently than planned, and that we want to know with who / or with who not, why / why not etc.

Appendix 3: Snowball sample qualitative data

Organisation	*Professional*	*Sample*	*Non-response*	*Final Sample*
GP offices (4)	General practitioners (GPs)	6	1	5
Pharmacies (9)	Pharmacists	11	2	9
	Pharmacist assistants	7	0	7
Ambulance service	Ambulance nurses	10	2	8
(1)	Ambulance drivers	3	1	3
	House call team assistants	3	0	3
	Centralists	3	0	3
Hospital (1) -	Emergency Room (ER) nurses	10	1	9
surgical cluster	Residents	9	2	7
	Nurses ward	12	3	9
	Specialists	9	2	7
	Pharmacist	1	0	1
Nursing homes (4)	Nurses	10	1	9
	Nursing home physicians	8	0	8
	Total	102	15	88

Gender	*Male*	*Female*	*Final Sample*
General practitioners (GPs)	4	1	5
Pharmacists	6	3	9
Pharmacist assistants	0	7	7
Ambulance nurses	5	3	8
Ambulance drivers	3	0	3
House call team assistants	2	1	3
Centralists	1	2	3
Emergency Room (ER) nurses	1	8	9
Residents	5	2	7
Nurses ward	2	7	9
Specialists	7	0	7
Pharmacist	1	0	1
Nurses	2	7	9
Nursing home physicians	2	6	8
Total	41	47	88

Appendix 4: Tables

Table 4.1: (Near-) Incident reports per professional in Hospital

Reports per Professional (A)	Frequency (B)	Percent per professional	Valid Percent	Cumulative Percent	Total Reports (A x B)	Percent per Report	Percent per Valid Report
Once	363	52.9	53.0	53.0	363	15.9%	17.8%
Twice	101	14.7	14.7	67.7	202	8.9%	9.9%
3 times	60	8.7	8.8	76.5	180	7.9%	8.8%
4 times	39	5.7	5.7	82.2	156	6.9%	7.6%
5times	33	4.8	4.8	87.0	165	7.2%	8.1%
6 times	20	2.9	2.9	89.9	120	5.3%	5.9%
7 times	8	1.2	1.2	91.1	56	2.5%	2.7%
8 times	14	2.0	2.0	93.1	112	4.9%	5.5%
9 times	8	1.2	1.2	94.3	72	3.2%	3.5%
10 times	6	.9	.9	95.2	60	2.6%	2.9%
11 times	3	.4	.4	95.6	33	1.4%	1.6%
12 times	4	.6	.6	96.2	48	2.1%	2.4%
13 times	3	.4	.4	96.6	39	1.7%	1.9%
14 times	4	.6	.6	97.2	56	2.5%	2.7%
15 times	3	.4	.4	97.7	45	2.0%	2.2%
16 times	1	.1	.1	97.8	16	0.7%	0.8%
17 times	2	.3	.3	98.1	34	1.5%	1.7%
18 times	3	.4	.4	98.5	54	2.4%	2.6%
20 times	1	.1	.1	98.7	20	0.9%	1.0%
21 times	2	.3	.3	99.0	42	1.8%	2.1%
22 times	2	.3	.3	99.3	44	1.9%	2.2%
23 times	3	.4	.4	99.7	69	3.0%	3.4%
27 times	1	.1	.1	99.9	27	1.2%	1.3%
28 times	1	.1	.1	100.0	28	1.2%	1.4%
Total	685	99.9	100.0		2,041	89.6%	100.0%
Missing	1	.1			236	10.4%	
Total	686	100.0			2,277	100.0%	

Table 4.2: Frequencies Job Description Reporters in all Three Organisations

	Out-of-hours Service (n=16)	Ambulance Service (n=224)	Hospital (n=2,277)
nurse	-	118 (51.1%)	1,999 (87.8%)
physician	11 (68.8%)	-	46 (2.0%)
assistant / Centralist	3 (18.8%)	74 (32.0%)	-
ambulance driver	-	20 (8.7%)	-
other	2 (12.5%)	18 (8.2%)	232 (10.2%)

Table 4.3A: Frequencies Communication with Whom in Out-of-hours Service

		N	Percent	Percent of Cases
Communication with Whom[a]	With patient (intra)	4	21.1%	44.4%
	With family (intra)	4	21.1%	44.4%
	With substitute GP (intra)	3	15.8%	33.3%
	With safety committee (intra)	1	5.3%	11.1%
	With patients' own GP (inter)	3	15.8%	33.3%
	With hospital (inter)	2	10.5%	22.2%
	With RIAGG (inter)	1	5.3%	11.1%
	With ambulance service (inter)	1	5.3%	11.1%
	Total	19	100.0%	

a. Dichotomy group tabulated at value 1.

Table 4.3B: Frequencies Communication with Whom in Ambulance Service

		N	Percent	Percent of Cases
Communication with Whom[a]	With centralist (intra)	14	34.1%	43.8%
	With ICT personnel (intra)	10	24.4%	31.3%
	With manager (intra)	6	14.6%	18.8%
	With ambulance nurse (intra)	3	7.3%	9.4%
	With ambulance driver (intra)	3	7.3%	9.4%
	With technician (intra)	2	4.9%	6.3%
	With hospital (inter)	3	7.3%	9.4%
	Total	41	100.0%	

a. Dichotomy group tabulated at value 1.

Table 4.3C: Frequencies Communication with Whom in Hospital

		N	Percent	Percent of Cases
Communication with Whom[a]	With nurse (intra)	1,084	39.5%	65.4%
	With physician (intra)	707	25.8%	42.7%
	With management (intra)	298	10.9%	18.0%
	With patient (intra)	297	10.8%	17.9%
	With safety committee (intra)	206	7.5%	12.5%
	With family (intra)	73	2.7%	4.4%
	With pharmacy (intra)	31	1.1%	1.9%
	With resident (intra)	26	.9%	1.6%
	With lab professional (intra)	12	.4%	.7%
	With technician (intra)	11	.4%	.7%
	Total	2,889	100.0%	

a. Dichotomy group tabulated at value 1.

Table 4.4A: Risk Assessment Matrix Out-of-hours Service

Consequences → likelihood↓	Severe	Major	Moderate	Minor	Negligible	Total
Almost certain	0	0	0	1	0	1
Likely	1	0	1	1	0	3
Possible	0	1	3	3	0	7
Unlikely	0	0	0	0	0	0
Rare	0	0	0	0	0	0
Total	1	1	4	5	0	11

Table 4.4B: Rating Risk Level Out-of-hours Service

Rating Risk Level				
	4	extreme risk – managed by MIP committee	1	9.0 %
	3	high risk - managed by MIP committee	5	45.5%
	2	moderate risk - managed by department / ward	5	45.5%
	1	low risk - managed by department / ward	0	.0 %
		Total	1,926	100%

Table 4.4C: Risk Assessment Matrix Hospital

Consequences → likelihood↓	Severe	Major	Moderate	Minor	Negligible	Total
Almost certain	0	0	1	66	185	252
Likely	1	1	14	134	370	520
Possible	0	4	17	190	504	715
Unlikely	1	1	6	60	149	217
Rare	0	1	6	40	166	213
Total	2	7	44	490	1,374	1,917

Table 4.4D: Rating Risk Level Hospital

Rating Risk Level	4	extreme risk – managed by MIP committee	3	0.2%
	3	high risk - managed by MIP committee	37	1.9%
	2	moderate risk - managed by department / ward	965	50.1%
	1	low risk - managed by department / ward	921	47.8%
		Total	1,926	100%