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Utilization of Medically Obtained Evidence in Cases of Sexual Assault: Results of a Survey

Recent studies of the problem of sexual assault [1-3] have reached a consensus that physical evidence is valuable in investigations of such incidents. While physical evidence such as fingerprints, footprints, and tire tracks may be obtained in many cases of sexual assault, the physical evidence most frequently encountered in such cases is the biological material transferred during sexual activity: hair, semen, blood, and other fluids or tissues. The collecting of such evidence is the province of the emergency room physician (or medical examiner, if the victim is deceased). The victim of a sexual attack who suffers trauma, or fears pregnancy or venereal disease, will probably seek medical treatment. If the victim reports the assault to the police she will also almost certainly receive a medical examination. This medical examination not only provides a basis for further medical treatment but also serves as the primary opportunity for the recovery and preservation of potentially valuable physical evidence.

In an attempt to determine the degree of utilization of medically obtained specimens as evidence, a survey of urban police agencies and state and local forensic science laboratories was undertaken. Two questionnaires were developed: one for police agencies and one for forensic science laboratories. Both were aimed at obtaining data concerning the type of physical evidence recovered during the medical examination and the examinations to which such evidence is subjected. Both stressed routine investigations and procedures rather than those used in extraordinary incidents. It was hoped that the responses to these questionnaires would provide a basis for the development of model protocols for the collecting of evidence by health professionals and for the processing of such evidence by forensic science laboratories.

Survey Method

This survey was designed to obtain responses from municipal police agencies servicing urban areas in the eastern half of the United States² and forensic science laboratories located within that same area. The sample for the law enforcement survey consisted of municipal police departments that were identified by the 1975 *Uniform Crime Reports* [4] as being standard metropolitan statistical areas (SMSA): urban areas of 100 000 population or more. For those states without a city identified as being within an SMSA, the

Received for publication 7 Feb. 1978; accepted for publication 13 March 1978.

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²"Eastern United States" was defined as the 26 states lying east of the Mississippi River plus the District of Columbia and the entire state of Louisiana, which was included because it is divided by that river.

most populous cities were chosen. At least one municipal agency was contacted in each state. County agencies were not contacted unless it was known that the urban area was serviced exclusively by a county agency.³ A total of 122 law enforcement agencies were contacted.

The forensic science laboratories were selected from the National Directory of Criminalistic Laboratories [5] and listings of the American Society of Crime Laboratory Directors [6]. Ninety-eight laboratories were ultimately contacted.

The Law Enforcement Questionnaire

The law enforcement questionnaire was designed to obtain information about the types of medical facilities that examine the victim, the procedures used by police in obtaining evidence from sexual assault victims, the types of evidence collected, problem areas, and suggestions for improvement. Most of the questions called for objective responses to minimize interpretation of subjective answers. Several questions, however, called for observations and opinions.

The Laboratory Questionnaire

The forensic science laboratory questionnaire was designed to obtain data about the types of evidence routinely submitted for analysis in sexual assault cases, the laboratory's policy on analysis of the evidence, the types of analyses routinely conducted on evidence received, and any areas where the laboratories felt improvement was needed. Because it was realized that the variability in the type and amount of evidence available would affect the responses, respondents were requested to provide information about the tests routinely employed.

Results and Discussion

Law Enforcement Questionnaire

Of the 122 police agencies contacted, 67 (55%) responded with a completed or partially completed questionnaire. The respondent agencies showed wide diversity in their case load. The average number of rapes and other sexual assaults investigated per month by the respondent agencies are shown in Table 1.

Two studies of the problems of investigating sexual assaults [1,7] have recommended the establishment of specialized units to handle investigations of rape and other sexual assaults. A recent survey [2] found that a majority of the police departments surveyed were using such specialized units. The formation of such special units was strongly correlated with the population of the city: departments in larger cities were more likely to have established a special sex offense unit than departments in smaller cities. In the present study, approximately 43% of the respondent agencies had formed separate sex offense units to handle such crimes. The agencies responding seemed to follow the national trend previously reported: the larger metropolitan areas almost invariably had formed specialized units for investigating sexual assaults, while smaller cities had done so less frequently.

Medical Facilities Examining Victims of Sexual Assault—The facility that conducts the medical examination of the sexual assault victim is usually the first link in the chain of collecting and preserving evidence. The examining physician, in addition to having to

³The rationale for contacting only municipal agencies in urban areas was based on the assumption that since more sexual assaults occur in urban areas [4], the police in these areas would have greater experience in dealing with such cases.

TABLE 1—Average number of rapes and sexual assaults investigated per month.

Number of Cases	Agencies Reporting Rapes		Agencies Reporting Other Sexual Assaults	
	<i>n</i>	%	<i>n</i>	%
1 or less	6	8.9	5	7.4
2-4	27	40.2	15	22.3
5-8	11	16.4	11	16.4
9-12	5	7.4	9	13.4
13-25	7	10.4	7	10.4
26-50	6	8.9	8	11.9
51-100	0	0.0	0	0.0
100-199	2	2.9	1	1.5
200+	1	1.4	2	2.9
No response	1	1.4	7	10.4
No figures available	1	1.4	2	3.0

treat any injuries the victim may have sustained, must also usually determine whether there is evidence that any sexual activity took place and be responsible for securing physical evidence from the victim that will ultimately be submitted to a forensic science laboratory for analysis. According to an earlier study [1] the medical facility involved is most often a public hospital without any formal arrangements with the police department as to the treatment of the victim and the collection of evidence.

In the present study the respondents were asked several questions concerning the medical facilities they routinely used for the examination of victims of sexual assault. The results (Table 2) indicated that the public hospital was the type of facility most often used in examination of victims and hence would most often be responsible for securing physical evidence from the victim. While Brodyaga et al [1] reported that many private hospitals refuse to treat victims or only do so reluctantly, the data in Table 2 indicate that private facilities are routinely used for the examination in areas serviced by approximately 30% of the reporting agencies.

The law enforcement agencies were asked whether they use a sexual assault evidence collection kit for the collection of evidence and whether the medical facility with which they dealt uses a protocol for evidence collection. Sexual assault evidence collection kits vary in complexity and cost: simple kits may contain nothing more than a few plastic bags or envelopes for depositing evidence; more complex kits are completely self-contained units and include all items necessary for the physician to examine and collect samples from the victim. Approximately 46% of the respondent agencies reported that they use such a kit. Many authorities [8-13] have stressed the importance of thorough collection and documentation of evidence in sexual assault cases. An unpublished survey⁴ has revealed that many hospitals have developed protocols for handling sexual assault victims either on their own initiative or with the cooperation of local law enforcement authorities. Such protocols range from one-page mimeographed sheets to extensive booklets covering every aspect of the medical examination. In the present survey approximately 71% of the agencies responding indicated that some form of protocol was used. However, fully one fourth of all police agencies surveyed operated without any written guidelines for the examining physician, apparently leaving the decision on what types of specimens should be obtained up to the physician or police officer. If one or both of these individuals are inexperienced in the area of forensic examinations of sexual assault victims there is a strong possibility that valuable evidence could be overlooked or inadvertently destroyed.

⁴N. T. Lappas and W. F. Rowe, Department of Forensic Science, The George Washington University, Washington, D.C., 1976.

TABLE 2—Facilities routinely used in conducting examinations of sexual assault victims and the basis for that examination.^a

Type of Facility and Basis	Agencies Reporting	
	<i>n</i>	%
Facility		
Medical examiner's office	6	8.9
Coroner's office	1	1.5
Public hospital or clinic	50	74.6
Police surgeon	1	1.5
Private doctor	16	23.8
Private clinic	1	1.5
Rape crisis center	2	2.9
Private hospital	20	29.9
Other facility	1	1.5
Basis		
State or local law	13	19.5
Mutual working agreement	45	67.1
Contract	8	11.9
Other ^b	5	7.4
No response	2	3.0

^a More than one response per agency possible.

^b Includes patient's choice (3) and unspecified (2).

While over half of the agencies responding did not use a sexual assault evidence collection kit and one fourth did not use a protocol, approximately 80% felt that the use of such a kit along with a protocol would improve the collection of evidence. Respondents were also asked their opinions on the use of kits and protocols. Those agencies offering favorable comments felt that these investigative aids provide a set of guidelines that insure uniformity in evidence collection where different hospitals examine victims and help the inexperienced doctor, medical technician, or police officer to collect the right evidence, as well as serve the experienced physician and law enforcement officer as a checklist to insure that evidence is not inadvertently overlooked. Sexual assault evidence collection kits were also felt to provide a better chain of custody. However, agencies offering negative comments felt that emergency room personnel were reluctant to use evidence kits and protocols because their use is regarded as too time-consuming. Another negative comment was that the commercially available kits are inadequate and too expensive. A more fundamental objection was that because of the volume of cases submitted for laboratory analysis not all evidence collected with the kit could be analyzed.

Types of Evidence Collected—Each police department was asked whether certain types of evidence were routinely taken by the medical facility on its own initiative (presumably following some sort of protocol); whether they were secured only upon a specific request by the police; or whether such evidence was collected routinely at all. The results (Table 3) indicate that, of the population tested, many items of possible evidence were ignored by the medical facility and were taken only upon police request. Furthermore, some items of possible value were overlooked completely in a small, but significant, number of instances.

The items collected by most hospitals on their own initiative were, not surprisingly, vaginal swabs and prepared microscope slides. The collection of these specimens is common to every recommended protocol. Failure to properly prepare and examine slides for the presence of sperm and for sperm motility not only denies a degree of corroboration of the victim's allegations but could also be devastating to the prosecution's case at a subsequent trial. Similarly, failure to obtain vaginal swabs, used in acid phosphatase determinations and blood grouping tests, could also hinder further investigation and subse-

TABLE 3—Collection of evidence from victims of sexual assaults.^a

Type of Evidence	Medical Facility		By Request		Not Obtained		Other ^b		No Response	
	n	%	n	%	n	%	n	%	n	%
Clothing	15	22.4	44	65.7	2	3	5	7.5	1	1.5
Anal swabs	23	34.3	36	53.7	5	7.4	...	...	3	4.5
Vaginal swabs	49	73.1	15	22.3	1	1.5	...	...	2	3.0
Oral swabs	24	35.8	37	55.2	3	4.5	...	...	3	4.5
Prepared microscope slides	46	68.7	15	22.4	3	4.5	...	...	3	4.5
Fluid blood samples	23	34.3	36	53.7	6	9.0	...	...	2	3.0
Dried blood samples	13	19.4	42	62.7	6	9.0	1	1.5	5	7.4
Fluid saliva sample	14	20.9	38	56.7	10	14.9	...	...	4	6.0
Dried saliva sample	10	14.9	40	59.7	12	17.9	1	1.5	3	4.5
Pubic hair combings	25	37.3	37	55.2	2	3.0	1	1.5	2	3.0
Head hair combings	13	19.4	43	71.6	3	4.5	1	1.5	2	3.0
Fingernail scrapings	9	13.4	47	10.1	7	10.4	1	1.5	3	4.5

^a"Medical facility" indicates specimens are obtained by the examining medical facility on its own initiative; "by request" indicates the medical facility secures the specimen only on police request; and "not obtained" indicates such items are not routinely obtained.

^bIn all cases of "other," these specimens were obtained independently by police department or crime lab personnel.

quent prosecution. The fact that both of these items are obtained by medical facilities only at police request in approximately 22% of the instances does not allow for the investigator who may inadvertently fail to request that such specimens be obtained.

The failure to obtain the victim's clothing (only about 22% of the agencies reported that clothing is obtained by medical facilities routinely on their own initiative) was another significant shortcoming. The value of trace evidence such as fibers, hair, blood, dirt, grease, and plant materials is well known. If the victim's clothing is not recovered at this point, valuable trace evidence will be lost.

Other types of possible evidence not routinely recovered by medical facilities on their own initiative included dried bloodstains, pubic hair combings, head hair combings, and fingernail scrapings. Of course, the presence of such evidence may depend on the amount of force used by the assailant and the type of act or acts in which the victim was forced to engage. A similar explanation also could be made for the low rate of obtaining anal swabs and oral swabs. It should be pointed out, however, that two authorities [10,12] note that victims may often be unwilling to state they were made to engage in oral or anal acts in addition to vaginal intercourse. A study by the Battelle Institute [2] indicates that victims are frequently forced to submit to other acts, with oral sex acts occurring in one fourth of all reported rapes. Oral sex acts may occur very frequently in sexual assaults because of the high incidence of temporary impotence among rapists [14].

The routine collection by the hospital of a fluid blood sample from the victim for subsequent laboratory grouping tests was reported by approximately 34% of the agencies responding and such samples were not collected by hospitals servicing 9% of the police agencies. Lack of a sample of the victim's blood makes it impossible for the forensic serologist to identify the source of a bloodstain on either the victim's or a suspect's clothing. Furthermore, saliva samples were not obtained at all by at least 15% of the agencies responding. Without saliva samples to determine the secretor status of the victim, the forensic science laboratories' ability to draw conclusions from blood grouping tests conducted on mixed physiological fluid stains may be limited. Blood and saliva samples could be obtained from a living victim at a later date. However, this would require the victim to undergo needless additional inconvenience and further mental anguish.

While hospitals and physicians may argue that their only duty is to provide medical care and that evidence collection is a matter for the police, a physician's training and status better qualify him to obtain evidence in cases of sexual assault. One can imagine the uproar that would ensue if a police officer attempted to obtain vaginal or rectal swabs from a victim.

Areas of Possible Improvement in Evidence Collection—Police agencies were asked to comment on possible improvements in the collection of evidence in sexual assault cases. A majority of respondents indicated general satisfaction with existing evidence collection procedures; nevertheless, many of these respondents suggested possible improvements, as did those respondents who indicated dissatisfaction with existing procedures. One suggested improvement was better communication between the police and the hospital: several police agencies felt that the importance of proper collection of evidence and of the maintenance of a chain of custody should be impressed upon hospital personnel. Many agencies felt that there was need for more realistic and complete evidence collection protocols. One specific suggestion for improving existing protocols was to include photographs of any trauma suffered by the victim. Another was that prepared microscope slides should be examined for sperm by the examining physician immediately, rather than having this done at a later time.

Since evidence collection procedures are predicated in part on the capabilities of the forensic science laboratories, the law enforcement agencies participating in the survey were asked to indicate problem areas in their interaction with the forensic science laboratories to which they submitted evidence. The respondent police agencies felt that these

laboratories should carry out more analyses on the evidence submitted. Also, several agencies indicated that laboratory reports were rarely received soon enough for them to be used as an investigative tool. To help improve police-laboratory communication, several police agencies recommended periodic seminars to acquaint police officers with laboratory capabilities.

An area of evidence collection in which deficiencies were not recognized by law enforcement agencies was the collection of comparison samples from suspects. Over one fourth of all agencies did not require that any comparison samples be obtained from suspects and only one half to two thirds required one or more comparison items for examination. Failure to take comparison evidence from suspects may significantly reduce the value of specimens taken from the victim.

Laboratory Questionnaire

Of the 98 forensic science laboratories contacted, 35 responded with a completed or partially completed questionnaire.

Evidence Received by Laboratories—As shown in Table 4, approximately 94% of the laboratories reported that they routinely received the victim's clothing for analysis and about 85% routinely received pubic hair combings. Most of the laboratories received either a fluid or dried blood sample from the victim, but only about two thirds received

TABLE 4—*Items either routinely received or desired but not routinely received for examination in sexual assault cases.*

Item	Laboratories Reporting	
	<i>n</i>	%
Received		
Victim's clothing	33	94.3
Vaginal swabs	30	85.7
Oral swabs	14	40.0
Anal swabs	14	40.0
Prepared microscope slides	20	57.1
Fluid blood sample	23	65.1
Dried blood sample	8	22.9
Fluid saliva sample	7	20.0
Dried saliva sample	16	45.7
Pubic hair combings	31	88.6
Head hair combings	19	54.2
Fingernail scrapings	13	37.1
Vaginal aspirate	4	11.4
Desired but not received		
Victim's clothing	1	2.9
Vaginal, oral, or anal swabs	5	14.3
Victim's fluid blood sample	10	28.6
Victim's dried blood sample	4	11.4
Victim's fluid saliva sample	8	22.9
Victim's dried saliva sample	4	11.4
Victim's pubic hair combings	3	8.6
Victim's head hair combings	3	8.6
Victim's fingernail scrapings	6	17.1
Comparison samples from possible suspects	17	48.6
Other ^a	2	5.7

^aIncludes vaginal aspirate (1) and prepared slides (1).

some sort of saliva sample from the victim. This would obviously handicap analyses where it would be helpful to know if the victim was a secretor or not.

Slightly less than one fourth of the laboratories stated that they always received comparison samples from suspects while others received them on a more sporadic basis. The lack of comparison samples from suspects prevents interpretation of some types of evidence and denies the police the opportunity to corroborate or disprove their suspicions concerning a possible suspect.

Each laboratory was asked whether it was generally satisfied with the condition, quantity, and transmission of evidence received from the police in cases of sexual assault. Negative responses were received from 13 laboratories, while 22 laboratories indicated satisfaction. By far the most frequent reasons cited for dissatisfaction were improper collection of samples and submission of insufficient quantities of samples for analysis. Both of these problems could be eliminated if a proper protocol were followed during medical examination. The data in Table 4 indicate that laboratories would like to receive several items which they do not now receive routinely.

Even though most laboratories were satisfied with the condition, quantity, and transmission of evidence received in sexual assault cases, they were emphatic in the belief that police underused their resources; only eight felt that the police made full utilization.

There may be several reasons for the underutilization of laboratory services by the police. The police may not be particularly interested in physical evidence in sexual assault cases or place little value in laboratory findings. However, the comments of the 67 police agencies responding to the law enforcement questionnaire tend to refute this contention. A more likely reason is that there is a lack of communication between forensic science laboratories and police agencies over the capabilities of the laboratories and the value of the results of analyses.

Laboratory Policy on Examinations—Information was solicited from each laboratory concerning its policy on conducting examinations in sexual assault cases. Most laboratories indicated they had some sort of specific laboratory protocol that they used on all evidence received in such cases. Two laboratories had a policy of examining items subject to degradation but performed no further analyses unless comparison samples were submitted.

Identification of Semen—Despite the prevalence of ejaculatory dysfunction among rapists [14], the microscopic identification of sperm is the best indication that sexual activity has taken place [15]. Not surprisingly, all of the respondents stated that they always attempted to identify microscopically sperm in a sample. In the absence of sperm, the presence of acid phosphatase is considered to be an indication of the presence of seminal fluid [15,16]. As shown in Table 5, almost all of the respondents stated that they always conducted a qualitative test for this substance. However, two laboratories indicated they never conducted such a test. The determination of choline and spermine, two of the classic tests for semen, appear to be falling into disuse among the respondents. Approximately 31% always perform a choline determination, while about 3% perform a spermine determination.

Typing of Bloodstains—Sexual assault frequently causes some form of injury to the victim. The Battelle Institute study [2] found that approximately one half of all victims receive some sort of injury and this figure increases if the victim offers physical resistance. Such injuries may cause bleeding which could lead to bloodstains being deposited on the attacker or his clothing, and resistance may cause the blood of the assailant to be found on or near the victim. Consequently, when such bloodstains are available they may serve as valuable corroborative evidence to link a suspect with a victim or to exonerate an innocent party.

As indicated in Table 6, the typing of bloodstains differed widely between laboratories, as did their policies. All laboratories claimed the capability to do species determination and ABH grouping. One laboratory did not routinely conduct presumptive tests and two reported performing species or ABH determinations only upon request. After these deter-

TABLE 5—*Identification of sperm.*

Technique	Always		Upon Request ^a		Never		No Response		Capability ^b	
	n	%	n	%	n	%	n	%	n	%
Microscopic identification of sperm	35	100	...	...	...	...	...	...	35	100
Determination of choline	11	31.4	2	5.7	17	48.6	5	14.3	24	68.6
Determination of spermine	1	2.9	...	...	28	80.0	6	17.1	21	10.0
Qualitative acid phosphatase	33	94.3	...	...	2	5.7	...	...	34	97.1
Quantitative acid phosphatase	3	8.6	2	5.7	27	77.1	3	8.6	18	51.4

^a"Upon request" indicates that the submitting agency must request information beyond that routinely supplied by the laboratory for the indicated tests to be performed.

^b"Capability" indicates that the laboratory possesses the necessary expertise and equipment to perform the indicated tests.

TABLE 6—Identification of bloodstains.

Technique	Always		Upon Request ^a		Never		No Response		Other		Capability ^b	
	n	%	n	%	n	%	n	%	n	%	n	%
Microscopic	18	51.0	2	5.7	8	22.9	7	20.0	...	...	25	71.4
Presumptive tests (benzidine, crystal, and so on)	34	97.1	1	2.9	...	...	...	...	...	...	35	100
Species determination	33	94.2	1	2.9	...	...	1	2.9	...	...	35	100
ABH grouping	33	94.2	1	2.9	...	...	1	2.9	...	...	35	100
MN grouping	8	22.9	8	22.9	11	31.4	4	11.4	3	8.6	26	74.3
Ss grouping	1	2.9	2	5.7	22	62.9	9	25.7	1	2.9	7	20.0
Rh grouping	9	25.7	13	37.1	6	17.1	4	11.4	3	8.6	29	82.9
Hemoglobin typing	2	5.7	9	25.7	11	31.4	10	28.6	3	8.6	22	62.9
PGM typing	10	28.6	8	22.9	6	17.1	8	22.9	3	8.6	28	80
EAP typing	8	22.9	7	20	8	22.9	8	22.9	3	8.6	25	71.4
AK typing ^c	3	8.6	3	8.6	11	31.4	14	40	3	8.6	21	60
6-PGD typing ^c	1	2.9	1	2.9	18	51.4	14	40	1	2.9	12	34.8
Other responses ^d	...	...	1	2.9	...	...	...	...	...	...	1	2.9
Haptoglobin	2	5.7	1	2.9	...	...	...	...	...	...	3	8.6
Esterase D	...	...	1	2.9	...	...	...	...	...	...	1	2.9
Lactic dehydrogenase	...	...	1	2.9	...	...	...	...	...	...	1	2.9

^a“Upon request” indicates that the submitting agency must request information beyond that routinely supplied by the laboratory for the indicated tests to be prepared.

^b“Capability” indicates that the laboratory possesses the necessary expertise and equipment to perform the indicated tests.

^cOne laboratory always does this test but does not report results.

^dIndependent responses received from laboratories.

minations were made, most laboratories routinely went no further. Only about 29% reported doing phosphoglucomutase (PGM) typing routinely; approximately 26% claimed to do Rh groupings; and about 23% did MN grouping or erythrocyte acid phosphatase (EAP) typing.

Each laboratory was also asked which method it routinely employed to carry out ABH typing. Absorption-elution was the method most commonly employed.

Typing of Fluid Blood—Most protocols for evidence collection in cases of sexual assault call for the taking of a fluid blood sample from the victim and from any developed suspects, if possible. As previously noted in Table 4, only 65% of the laboratories stated that they receive a sample of the victim's blood routinely. As indicated in Table 7, when such samples are received, virtually all the laboratories determine the ABH grouping, while only about half usually check for Rh and MN types. Only about one fourth routinely typed the enzymes PGM and EAP in blood. Other factors were considered only infrequently.

All the laboratories reported the capability of performing ABH typing on fluid blood. Of the twelve other analyses of fluid blood reported only five were within the present capabilities of the majority of laboratories. More laboratories reported the capability to make determinations of hemoglobin variants and typing of PGM, EAP, adenylate kinase (AK), and 6-phosphogluconate dehydrogenase (6-PGD) from bloodstains than from fluid samples. These discrepancies may be due to the greater number of respondents who gave no responses to these particular items in the fluid blood category.

Other Tests—Table 8 summarizes the procedures employed for the typing of semen stains. As shown in Table 9, the comparison of hair is a claimed capability of all of the respondents, although only 54% claimed to always make such comparison and 43% claimed to make such comparisons only upon request. Obviously, standards from the victim and suspect must be available for comparison.

Improving the Collection, Handling, and Analysis of Evidence—Each laboratory was asked for specific comments on ways that the collection, handling, and analysis of evidence in sexual assault cases could be improved. The most frequent response received was the recommendation that all evidence be collected by using sexual assault evidence collection kits and by following a specific protocol. The second most frequent response recommended better training for police officers who investigate sexual assaults and for the medical personnel who are involved in the actual collection of the samples. Several laboratories recommended that this additional training be broad enough to include introducing law enforcement and medical personnel to the types of tests carried out so that these persons would have a better idea of the need for thoroughness and caution in obtaining samples. Specifically, adequate quantities of specimens should be collected so that more thorough analyses are possible; also, the importance of standard samples must be emphasized to law enforcement officers and medical personnel. Along with these recommendations for better training, several laboratories also mentioned the need for better communication between the hospital, the law enforcement agency, the laboratory, and the prosecutor's office. Several laboratories recommended that hospital laboratories not be allowed to conduct any tests, except for health reasons; several also suggested that emphasis should be placed on searching for items of trace evidence in addition to biological materials. Laboratories also felt that greater effort should be made to obtain evidence to link a specific suspect with the crime rather than concentrating on items that merely prove sexual activity took place.

Summary

This study has indicated a general awareness on the part of urban police departments in the eastern portion of the United States of the potential value of biological materials

TABLE 7—Fluid blood typing.

Analysis	Always		Upon Request ^a		Never		No Response		Other		Capability ^b	
	n	%	n	%	n	%	n	%	n	%	n	%
ABH grouping	32	91.4	3	8.6	...	...	...	...	...	...	35	100
MN grouping	16	45.7	7	20	10	28.6	2	5.7	...	...	26	74.3
Ss grouping	2	5.7	3	2.9	23	65.7	7	20	...	...	10	28.6
Rh grouping	18	51.4	10	28.6	5	14.3	2	5.7	...	...	31	88.6
Hemoglobin typing	2	5.7	10	28.6	13	37.1	9	25.7	1	2.9	17	48.6
PGM typing	9	25.7	9	25.7	8	22.9	8	22.9	1	2.9	26	74.3
EAP typing	8	22.9	8	22.9	9	25.7	8	22.9	1	2.9	24	68.6
AK typing	3	8.6	5	14.3	12	34.3	13	37.1	1	2.9	9	25.7
6-PGD typing	...	...	1	2.9	21	60	12	34.3	1	2.9	9	25.7
Other												
Peptidase A	1	...	2	...	...	...	...	...	...	...	3	8.6
Haptoglobin	1	...	2	...	...	...	...	...	...	...	4	17.1
Esterase D	2	...	3	...	...	...	...	...	...	...	6	2.9
Lewis	...	...	1	...	...	...	...	...	...	...	1	2.9

^a“Upon request” indicates that the submitting agency must request information beyond that routinely supplied by the laboratory for the indicated tests to be performed.

^b“Capability” indicates that the laboratory possesses the necessary equipment to perform the indicated tests.

TABLE 8—Typing of semen stains.

Analysis	Always		Upon Request ^a		Never		No Response		Capability ^b	
	n	%	n	%	n	%	n	%	n	%
ABH grouping	20	60	13	37.1	...	...	1	2.9	25	100
MN grouping	...	...	...	...	26	74.3	9	25.7	...	...
PGM typing	4	11.4	7	20	12	34.3	12	34.3	21	60
Other	...	...	...	...	...	...	...	...	...	...
Peptidase A	...	...	1	2.9	...	...	...	...	2	5.7
Gm and Inv	...	...	1	2.9	...	...	...	...	2	5.7
Esterase D	...	...	...	...	...	...	...	...	1	2.9

^a“Upon request” indicates that the submitting agency must request information beyond that routinely supplied by the laboratory for the indicated tests to be performed.

^b“Capability” indicates that the laboratory possesses the necessary expertise to perform the indicated tests.

TABLE 9—Other tests routinely conducted in sex offense cases.

Test	Always		Upon Request ^a		Never		No Response		Capability ^b	
	n	%	n	%	n	%	n	%	n	%
Determination of secretor status of victim	18	51.4	15	42.9	1	2.9	1	2.9	33	94.3
Identification of other biological fluids (when present)	9	25.7	19	54.3	4	11.4	3	8.6	30	65.7
ABH typing of other biological fluids	8	22.9	21	60	2	5.7	4	11.4	31	88.6
Hair comparison	19	54.3	15	42.9	...	...	1	2.9	35	100

^a“Upon request” indicates that the submitting agency must request information beyond that routinely supplied by the laboratory for the indicated tests to be performed.

^b“Capability” indicates that the laboratory possesses the necessary expertise to perform the indicated tests.

as evidence in sexual assault cases. However, a significant number of police agencies reported problems in coordination and cooperation either with examining medical facilities or with forensic science laboratories as to specific procedures for obtaining, handling, and testing physical evidence in sexual assault cases.

The use of standardized sexual assault evidence collection protocols may be one solution to problems in the collection of such evidence. Most law enforcement agencies and many forensic science laboratories responding to this survey favor the use of such investigative aids, despite shortcomings of existing kits and protocols.

Obtaining comparison samples from suspects or obtaining larger samples for more complete analyses represented areas where improvement was perceived to be necessary. The proper collection of evidence by the medical facility coupled with adequate comparison samples obtained from suspects would provide forensic science laboratories with a better basis on which to conduct meaningful examinations.

Forensic science laboratories reported a wide variability in capabilities for analyzing specimens received as evidence in sexual assault cases. Some laboratories routinely conduct a large number of sophisticated procedures that could have great evidentiary value. Others apparently limit themselves to procedures that merely provide substantiation of sexual activity.

The examining medical facility, the police, and the forensic science laboratory form an interlocking chain in the collection, preservation, and analysis of evidence, with each link dependent on the rest. The police can only preserve and transmit what the medical facility collects, while the laboratory can only examine what is submitted to it. Therefore, all three facilities must be closely integrated with a common purpose if meaningful results are to be obtained.

The hospital or medical facility is probably the weakest link in the chain. Since the physician's primary duty is to care for the health and well-being of the victim, he will usually be less concerned with the forensic aspects of his examination. Because the police are in the pivotal position and have overall control of the investigation of the entire case, they have the burden of insuring that the physician is aware of the forensic aspect of his examination. In the absence of any statutory authority to insure cooperation, the police must seek voluntary adoption of evidence collection protocols by medical facilities where victims of sexual assault are examined.

Since law enforcement officers may not be aware of the recent advances in the analysis of blood, semen, secretions, hair, and other trace evidence, the forensic science laboratory has a responsibility to inform the police of the capabilities that it possesses and to provide the police and medical personnel with guidelines to insure that proper evidence handling procedures are followed. The laboratory should conduct as complete an analysis as possible for each piece of submitted evidence. The variance between laboratory capabilities and their routine performance suggests that this is not always the case.

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