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## The Descriptive Epidemiology of Unnatural Deaths in Oregon's State Institutions: A 25-Year (1963–1987) Study. IV. The Reduction of Unnatural Death Rates During 1988–1992 in Three Facilities As a Result of Planned Changes

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**ABSTRACT:** This paper documents the most recent five-year (1988–1992) analysis of unnatural deaths in Oregon's state mental and correctional institutions. The current findings are compared with those of the preceding five years (1983–1987) within the context of the long term trend in unnatural death rates for the previous 25 years. The unnatural death rates for the institutional clients are also compared with those for the noninstitutionalized citizens of Marion County, Oregon.

There are two major findings in these 1988–1992 data: (a) There have been highly significant reductions in unnatural death rates in Oregon State Hospital and in the Forensic Psychiatric Program, which the authors believe are largely due to the implementation of planned changes to reduce the previously very high suicide rates in these two facilities; and (b) There was a dramatic reduction (to zero) of unnatural deaths at the Fairview Training Center. The authors also believe that this was attainable mostly because of large-scale improvements made at that facility, by the Department of Human Resources and the Oregon Legislature, just before and during the present study time frame.

Changes in these three facilities which led to the improvement in unnatural death rates of clients are discussed.

**KEYWORDS:** pathology and biology, suicide, homicide, accident, undetermined, planned charges, state institutions, unnatural death rates

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In a series of earlier publications [1–4], the high unnatural death rates in Oregon's state institutions (mental health, developmentally disabled, and correctional facilities) were analyzed and reported. Three facilities among those institutions have been further studied during 1988–1992 to determine if there were reductions in unnatural death rates as a result of planned changes and system improvements.

### **The State Institutions**

The state institutions studied, all located in Marion County, Oregon, are: Oregon State Hospital (OSH), the Forensic Psychiatric Program (FPP), Fairview Training Center (FTC), and the Correctional Institutions (COR).

OSH was opened in 1883 for the residential treatment of mentally ill persons throughout Oregon. For many years, it was the only psychiatric facility in Oregon for this purpose. During the last 25 years, there has been a significant reduction in its population, with an increasing use of the facility as a specialty psychiatric hospital.

FPP was first organized in 1966 as one of the special units at OSH. It has been under the judicial authority of the Psychiatric Security Review Board (PSRB) since 1978. The patient population consists of individuals who are committed there through the following different types of court action:

1. Criminal court commitment with diminished responsibility because of mental illness for a serious crime for which the individual was found guilty. (The 1983 Oregon Legislature changed the language of the Oregon Revised Statutes (ORS) 161.295 from "When the defendant is found not responsible due to mental disease or defect" to "guilty except for insanity").
2. Criminal court commitment under charges of serious crime, where the individual was judged unfit to proceed with trial because of severe mental illness (and inability to aid and assist in the defense).
3. Court-ordered transfer of an individual from other state institutions because of violent and unmanageable behavior posing a serious threat to others such that no other state facility can effectively deal with them.
4. Court order for the purpose of psychiatric examination and evaluation.

FTC is a facility for mentally retarded and developmentally disabled persons who require residential care, usually because of disruptive behavior due to their neurological conditions. The average patient population was about 1258 during 1983–1987. During 1988–1992, this reduced to 771 as a result of down-sizing.

COR includes six institutions for adult offenders. These are Oregon State Penitentiary, Oregon State Correctional Institute, Oregon Women's Correctional Center, Mill Creek Correctional Facility, and the Men's and Women's Release Centers of the Department of Corrections. Together these institutions had an average population of 3449 during 1983 to 1987, which increased to 3961 during 1988 to 1992.

### **Previous Research**

Previous studies of unnatural death rates in Oregon's state residential institutions located in Marion County (MC) for criminals and the mentally ill [1–4] documented diverse death rates when compared with one another and with the non-institutionalized citizens of the county. The first study [1] reviewed the incidence rate of suicide in Oregon's mental and

correctional facilities for the period 1983 to 1987 (Table 1). The most significant findings included an unusually high suicide rate of 820/100,000 in the FPP. This rate, one of the highest ever reported, was 51 times higher than the rate for the local county (MC) population. The suicide rate for OSH patients as a whole, 289/100,000, 17 times higher than the MC rate, was similar to the suicide rates reported for other hospitalized mentally ill populations. For inmates of Oregon's correctional facilities (COR), the suicide rate was 29/100,000, 1.8 times the MC rate. FTC, the facility for the care of the mentally retarded and developmentally disabled, had a zero suicide rate.

The high suicide rate in the FPP program required special attention and treatment. The second analysis [2] assessed the merits of those high rates by reviewing the various ways that are found in the literature for expressing suicide and indeed mortality rates for institutional clients. Basically, this study concluded that all rates are ultimately based upon either (a) the average daily population computed from the occupancy rates of institutional beds, or (b) a measure of the total number of individuals at risk. The study further assessed the risk of suicide by (a) primary diagnosis and (b) type of legal commitment. It was discovered that virtually the entire risk of suicide in the FPP program was confined to patients whose primary diagnosis was chronic schizophrenia, and who were committed there because of criminal responsibility for a crime of which they were found guilty in a court of law [2,4].

A further analysis [3] reviewed the long-term pattern of unnatural deaths in Oregon's mental and correctional facilities for the 25 years preceding 1988 (that is, 1963 to 1987). This long term pattern reflected, among other things, the high unnatural death rates in those facilities (especially the FPP program), in comparison with Western Europe, Canada, and similar situations in the United States.

The final study of the series [4] focused on suicide and mortality in FPP and OSH for the period 1976 through 1988. This study reviewed the influence of institutional conditions and demographic characteristics of clients on the commission of suicide, and derived risk categories for particular patient types. Recommendations from this study formed part of a suicide prevention program designed initially for FPP patients, with planned changes expanded into a more comprehensive program for the prevention of unnatural deaths in OSH, FPP, and FTC.

### **Planned Changes: The Suicide Prevention Program**

The development of a suicide-prevention program (which was initially designed for FPP patients but later applied to other patients) during 1989 and the implementation of other precautions (such as surgical procedures for the developmentally disabled residents at FTC) to prevent unnatural deaths included three specific components:

1. *Procedures for Identifying and Tracking Clients.* This included the identification of high-risk patients in residence and new patients immediately after admission; improved physical "tracking" of these high-risk patients according to a graded assessment of suicide-risk; more frequent and more specific counseling for these particular persons, including the use of seclusion and isolation procedures; and a greater use of psychotropic medicines (often by injection) in high-risk patients. A major breakthrough was SGK's identification of the high-risk subgroup out of the other subgroups and the many patients who comprise the FPP [2,4].

2. *Structural Changes.* These included the elimination of overhead sprinkler pipes from all wards; reduction of the mesh size of metal window screens; and the elimination of metal bars and protuberances from the interior of all rooms, lavatories and hallways.

3. *Comprehensive Improvement Plan for FTC.* This plan had been developed during 1987, and improved upon and implemented there-after, for FTC by state and federal authorities. Two main components of this plan are noteworthy:

TABLE 1—Unnatural death data for four Oregon state institutions and Marion County (exclusive of state institutions), Oregon: 1983–1987.

State Institution/County	Average population	Total deaths and annual death rate per 100,000	Manners of unnatural deaths during 5 years					Total
			Accident	Suicide	Homicide	Undet.	Total	
Oregon State Hospital (non-forensic programs) (OSH)	277	Total deaths annual rate/100,000	4 288.8	4 288.8	2 144.4	0 0	10 722.0	
Forensic psychiatric program (FPP)	244	Total deaths annual rate/100,000	0 0	10 819.7	1 82.0	0 0	11 901.7	
Fairview Training Center (FTC)	1,258	Total deaths annual rate/100,000	6 95.4	0 0	0 0	0 0	6 95.4	
Correctional institutions (COR)	3,449	Total deaths annual rate/100,000	1 5.8	5 29.0	2 11.6	3 17.4	11 63.8	
Marion County (exclusive of all state institutions) (MC)	204,820	Total deaths annual rate/100,000	312 30.5	162 15.8	56 5.5	12 1.2	542 52.9	

- a. *Increase of Direct-Care Staff.* During 1988–1992 there was a three-to-four times increase in the ratio of direct-care staff members for each FTC resident, as compared to all earlier years (Table 2). This increase meant that FTC “at-risk” residents (those with respiratory impairment, seizure disorder or risk-taking behavior) were never without some staff member(s) in their immediate presence, in order to protect residents from situations that could be harmful to health or life.
- b. *Increased Use of Surgical Procedures.* Surgical procedures were increasingly used to reduce/eliminate gastric reflux or to permanently bypass the normal pathway of feeding (mouth-hypopharynx-esophagus-stomach). The surgical procedures included Nissen fundoplication (“major” surgery), gastrostomy (“major” surgery) and percutaneous endogastrostomy (PEG, “minor” surgery). None of these procedures was much used for FTC residents prior to 1980, although the first two operations were in routine (but infrequent) use in the Salem community. Their use was much increased at FTC since mid-1986, as a new surgeon focused on the severely neurologically impaired residents who were still living in this institution.

### Unnatural Death Rates for the Period 1988–1992

Unnatural death data are herein presented for an additional time frame of five years (1988 to 1992) for residents of OSH, FPP, FTC, the six institutions of the Corrections Department (COR) and the noninstitutionalized citizens of Marion County, Oregon. The purpose in so doing is to document remarkable reductions of unnatural deaths (and corresponding rates) in OSH, FPP and FTC as a result of planned changes in these facilities.

One early result of the authors’ discovery of the escalating suicide trend in the FPP population was subsequent implementation of a suicide-prevention plan by the clinicians and administrators of the FPP [2,4,5]. Program planning (to improve residents’ quality of life) was developed at FTC during the mid 1980s. This process involved several State of Oregon agencies and the Region XII Office of the Department of Health, Education and Welfare and was under the overall direction and supervision of the Director of the Oregon Department of Human Resources.

### Methods

Death data from the residential state institutions of the study and Marion County were obtained from case files in the Office of the Marion County Medical Examiner. Population data for the state institutions were obtained from statistical records maintained by each facility and/or its supervising agency. Population data for Marion County were provided by the Population Research Center of Portland State University and the Office of Health Statistics of the Oregon Health Division [6].

TABLE 2—*Direct-care staff-to-resident ratios for Fairview training center, Marion County, Oregon: 1967–1991.*

Year	Average number of direct care staff	Average daily population of residents	Direct-care staff-to-resident ratio
1967–1969	688	2101	0.3275
1973–1975	697	1427	0.4884
1987–1989	2864	2882	0.9938
1991	853	568	1.5018

NOTE: Staff include the total number of direct care employees over all three shifts in the institution.

All death rates presented in this study are incidence rates. Calculations of such rates were done by standard epidemiological techniques [7]. The data were analyzed using chi-square technique to determine whether, and to what extent, there were differences between the death rates observed.

Two accidental and two suicidal deaths that occurred in OSH residents were retained in this study, even though the precipitating events, that is, physical injuries, which led to their deaths at OSH, had occurred in their home communities prior to hospitalization. The authors have chosen to include these deaths for the analyses in Tables 1 and 3 and Figs. 1 and 2 for this study, as in the earlier studies [1-3]; but these four deaths have been excluded in the analyses (in Table 4) of the effectiveness of suicide prevention at OSH and FPP.

Data for FTC direct-care staff members shown in Table 4 were obtained from the FTC Director for Fiscal Services.

## Results

Table 1 depicts, for each of the four state facilities and for MC, the following data: five-year (1983 to 1987) mean populations for each group; total numbers of unnatural deaths for the five years; five-year average annual unnatural death rates for each specific manner of death—accident, suicide, homicide, and undetermined—and for total unnatural deaths.

During 1983 to 1987 there were ten unnatural deaths in OSH, eleven in FPP, six in FTC, eleven in COR and 542 in MC (exclusive of all state institutions). The total unnatural death rates were very high for OSH and FPP as compared to those of FTC, COR and MC (Fig. 1).

The data for 1988-1992 are presented in Table 3, organized in a similar format to the 1983-1987 data presented in Table 1. During 1988-1992 there were eight unnatural deaths in OSH, two in FPP, zero in FTC, eight in COR and 507 in MC (exclusive of all state institutions). The COR population increased from 3449 (1983 to 1987) to 3961 (1988 to 1992) and that of FPP from 244 (1983 to 1987) to 326 (1988 to 1992). OSH population (exclusive of FPP) was 277 (1983 to 1987) and 272 (1988 to 1992). FTC population showed a substantial reduction from 1258 (1983 to 1987) to 771 (1988 to 1992). The MC population steadily increased from 204,820 (1983 to 1987) to 216,706 (1988 to 1992).

There was a reduction in the OSH total unnatural death rate from 772/100,000 during 1983-1987 to 588/100,000 during 1988 to 1992. Using Chi-square tests, this overall reduction was statistically significant at  $P_{0.001}$  with a  $X^2$  value of 294. With respect to changes in the death rates by the specific manner of death, there was an increase in the accidental death rate ( $X^2 = 96$ , significant at  $P_{0.001}$ ), and decreases in the suicide rate ( $X^2 = 63$ , significant at  $P_{0.001}$ ) and homicide rates ( $X^2 = 30$ , significant at  $P_{0.001}$ ) (Table 3). If only those cases where the death precipitating events occurred at OSH are used, there was a substantial reduction in the OSH total unnatural death rate from 722/100,000 (1983-1987) to 294/100,000 (1988 to 1992), including significant decreases in the accidental and homicidal death rates and the elimination of all suicidal death. These changes were also highly significant at  $P_{0.001}$  ( $X^2 = 83$ ) (Table 4).

There was a sharp reduction in FPP of unnatural death rate from 902/100,000 to 123/100,000 during these two time periods ( $X^2 = 100$ ,  $P = 0.001$ ). During the same periods, the suicide rate also reduced significantly from 820/100,000 to 123/100,000 ( $X^2 = 100$ ,  $P = 0.001$ ). The corresponding reduction in the homicide rate, from 82/100,000 during 1983 to 1987 to 0/100,000 during 1988 to 1992 was not statistically significant.

In our review of all 19 suicidal deaths in FPP from its inception in 1966 through 1992, we believe that three were unpreventable, even by current standards of care. All the remaining 16 deaths were caused by ligature hanging with resultant cerebral ischemia and anoxia, loss of consciousness and final respiratory and cardiac arrest. The ligature was the subject's belt in five deaths, a bed-sheet in seven deaths and miscellaneous items in four

TABLE 3—Unnatural death data for four Oregon state institutions and Marion County (exclusive of state institutions), Oregon: 1988–1992.

State institution/county	Average population	Total deaths and annual death rate per 100,000	Manners of unnatural deaths during 5 years					Total
			Accident	Suicide	Homicide	Undet.		
Oregon state hospital (Non-forensic programs) (OSH)	272	Total deaths annual rate/100,000 X <sup>2</sup> & sig. level	5 367.7 96 <sup>a</sup>	2 147.1 63 <sup>a</sup>	1 73.5 30 <sup>a</sup>	0 0 -ns	8 588.2 294 <sup>a</sup>	
Forensic psychiatric program (FPP)	326	Total deaths annual rate/100,000 X <sup>2</sup> & sig. level	0 0 -ns	2 122.7 100 <sup>a</sup>	0 0 36 <sup>a</sup>	0 0 -ns	2 122.7 260 <sup>a</sup>	
Fairview training center (FTC)	771	Total deaths annual rate/100,000 X <sup>2</sup> & sig. level	0 0 42 <sup>a</sup>	0 0 -ns	0 0 -ns	0 0 -ns	0 0 42 <sup>a</sup>	
Correctional institutions (COR)	3,961	Total deaths annual rate/100,000 X <sup>2</sup> & sig. level	1 5.1 -ns	6 30.3 -ns	1 5.1 2.4ns	0 0 9 <sup>b</sup>	8 40.4 3.9 <sup>c</sup>	
Marion County (exclusive of all state institutions) (MC)	216,706	Total deaths annual rate/100,000 X <sup>2</sup> & sig. level	322 29.7 -ns	141 13.0 -ns	36 3.2 -ns	8 0.7 -ns	507 46.8 -ns	

NOTE: Significance levels of X<sup>2</sup> values for differences between 1983–1987 (Table 1) and 1988–1992 (Table 2).  
<sup>a</sup> = P<sub>0.001</sub>; <sup>b</sup> = P<sub>0.01</sub>; <sup>c</sup> = P<sub>0.05</sub>; ns = not significant

## Death Rate Per 100,000

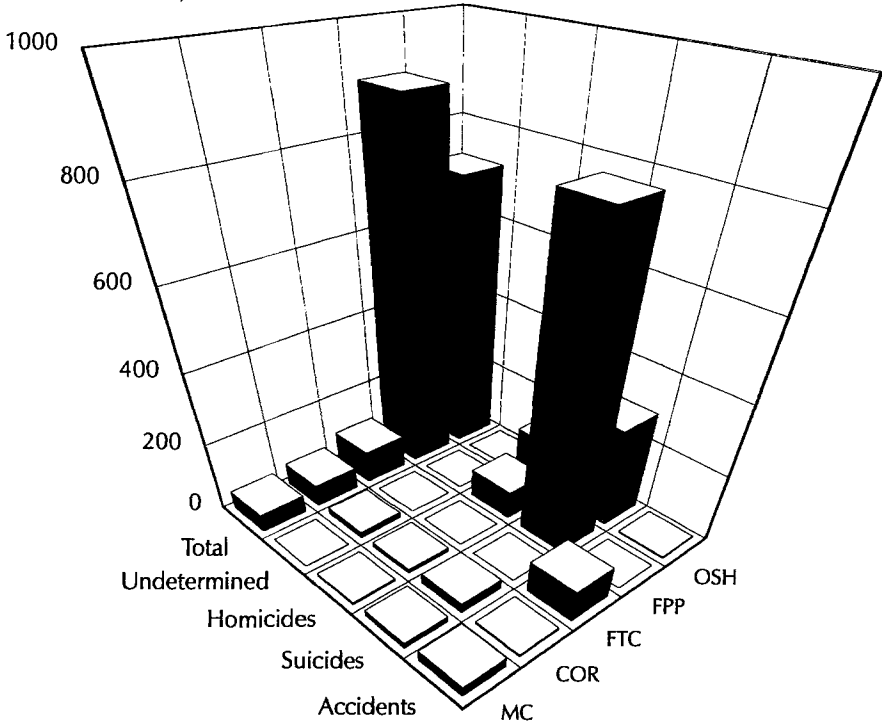


FIG. 1—Unnatural death data in four Oregon institutions and Marion County (Marion County exclusive of all state institutions) 1983–1987.

deaths. The ligature was attached to overhead sprinkler pipes in five deaths, to shower room curtain rods in three deaths and to metal window screens or bars in eight deaths.

There was a dramatic reduction (from six accidental to zero) of all unnatural deaths at FTC during 1988–1992. During the 25-year (1963–1987) study period there have been only four years (1978, 1980, 1981 and 1986) when there were no unnatural deaths at FTC (unpublished data from case files), so that the attainment of five consecutive years with zero unnatural deaths represents a unique experience for the last 30 years existence of this state institution.

Table 2 documents the remarkable change in staff-to-resident ratios that occurred at FTC between 1967 to 1969 and 1991. The staff-to-resident ratios in this analysis and in Table 2 refer to the total number of direct-care employees over all three shifts in the entire institution. During 1967 to 1969 there was about one direct-care staff member to three residents. This ratio increased during 1973 to 1975 to slightly less than one direct-care staff member to two residents. During 1987 to 1989 this ratio had changed to approximately one direct-care staff member to one resident and by 1991 this ratio had further increased to one and one-half direct-care staff members for each resident. Reasons for the increase in staff-to-resident ratio included both an increase in the number of direct care staff as well as a reduction in the resident population due to significant institutional down-sizing.

The COR prisons experienced a moderate reduction in the total unnatural death rate from 64/100,000 (1983–1987) to 40/100,000 (1988–1992). This difference, with a  $X^2$  value of 3.9, was significant at  $P_{0.05}$ . Most of this change was due to the three drug-caused deaths during the earlier time frame (shown as undetermined manner of death) and none such deaths occurred during the most recent five-year time frame.



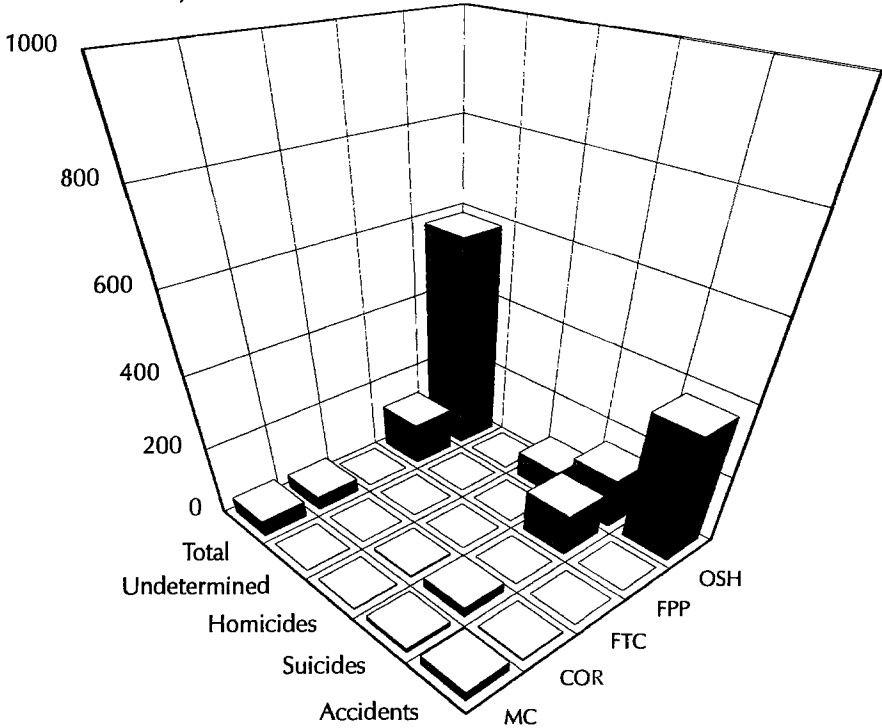
*Death Rate Per 100,000*

FIG. 2—Unnatural death data in four Oregon institutions and Marion County (Marion County exclusive of all state institutions) 1988–1992.

The slight reduction in the MC total unnatural death rate from 53/100,000 (1983 to 1987) to 47/100,000 (1988 to 1992), mostly due to small reductions in each of the specific manners of death (compare Tables 1 and 3), was not statistically significant. Similarities and major differences of data shown in Tables 1, 3, and 4 are enhanced by means of Figs. 1 and 2 particularly for demonstration of program effectiveness at OSH, FPP and FTC.

### Discussion

Researchers share the concern that reducing the rate of unnatural deaths in institutions is an immensely difficult task, both to plan for and to accomplish [8]. Because of the (usually) small numbers of such deaths in any one institution, it is also difficult to statistically attribute any reductions of unnatural deaths to specific factors uncovered in the studies. Notwithstanding these problems, in Oregon this challenge was collectively faced by the clinical, administrative and research efforts of several state and county agencies.

This process was begun through the completion of research studies by the Marion County Medical Examiner [1] and a researcher from the Mental Health Division of the Oregon Department of Human Resources [2,4]. Their studies resulted in the recommendation and adoption of specific suicide-prevention measures for all residents and programs of OSH (including FPP) [5].

#### *Oregon State Hospital (Exclusive of FPP)*

The previous trends of unnatural deaths (relatively small numbers of all types of unnatural deaths), which were observed during the first 25 years (1963 to 1987) of this research

TABLE 4—Unnatural death data for four Oregon state institutions and Marion County (exclusive of state institutions), Oregon (using only the accidents and suicides at Oregon state hospital where death precipitating events occurred): 1988–1992.

State institution/county	Average population	Total deaths and annual death rate per 100,000	Manners of unnatural deaths during 5 years					Total
			Accident	Suicide	Homicide	Undet.		
Oregon state hospital (non-forensic programs) (OSH)	272	Total deaths annual rate/100,000 X <sup>2</sup> & sig. level	3 220.6 56 <sup>a</sup>	0 0 137 <sup>a</sup>	1 73.5 30 <sup>a</sup>	0 0 -ns	4 294.1 83 <sup>a</sup>	
Forensic psychiatric program (FPP)	326	Total deaths annual rate/100,000 X <sup>2</sup> & sig. level	0 0 -ns	2 122.7 100 <sup>a</sup>	0 0 36 <sup>a</sup>	0 0 -ns	2 122.7 260 <sup>a</sup>	
Fairview training center (FTC)	771	total deaths annual rate/100,000 X <sup>2</sup> & sig. level	0 0 42	0 0 -ns	0 0 -ns	0 0 -ns	0 0 42	
Correctional institutions (COR)	3,961	Total deaths annual rate/100,000 X <sup>2</sup> & sig. level	1 5.1 -ns	6 30.3 -ns	1 5.1 2.4ns	0 0 9 <sup>b</sup>	8 40.4 3.9 <sup>c</sup>	
Marion County (exclusive of all state institutions) (MC)	216,706	Total deaths annual rate/100,000 X <sup>2</sup> & sig. level	322 29.7 -ns	141 13.0 -ns	36 3.2 -ns	8 0.7 -ns	507 46.8 -ns	

NOTE: Significance levels of X<sup>2</sup> values for differences between 1983–1987 (Table 1) and 1988–1992 adjusted for OSH (Table 3).  
<sup>a</sup> = P<sub>0.001</sub>; <sup>b</sup> = P<sub>0.01</sub>; <sup>c</sup> = P<sub>0.05</sub>; ns = not significant.

project, have continued to the present. During 1988 to 1992 there was a total of eight unnatural (five accidental, two suicidal and one homicidal) deaths as depicted in Table 3 and Fig. 2. As noted above, however, in only four (three accidental and one homicidal) of these deaths did the death-precipitating event also occur at OSH. Table 3 deals with these four unnatural deaths and the corresponding total unnatural death rate of 294/100,000. This is the first five-year period of time thus far studied during 1963–1992 in which there were no suicidal deaths at OSH. The previous minimum number of suicides per five-year time frame was four during 1983–1987 [3]. We believe that the OSH suicide-prevention program, which was started in October, 1989, was the most significant factor in this accomplishment.

Two out of the three accidental deaths were caused by asphyxiation due to food and one was due to the acute complications (rupture of intestine with resulting peritonitis) of ingestion of a plastic butter cup. These three deaths occurred in elderly patients of the Gero-Psychiatric Program.

There was one homicidal death and it also occurred on a geriatric ward. A 51-year-old demented male severely assaulted another demented male patient. The 62-year-old victim sustained such severe brain damage that it resulted in his death 10 and one-half months after the injury.<sup>5</sup>

The total unnatural death rate, as well as the accidental and homicidal death rates, remained high for the 1988–1992 time frame, whether the full data (Table 3 and Fig. 2) or the refined data (Table 4) are considered. It is interesting that all four of these unnatural deaths at OSH occurred in patients of the Gero-Psychiatric Program. This is a unit of OSH with an average daily population during this five-year period of time of 137 and a resulting average annual total unnatural death rate of 584/100,000.

#### *Forensic Psychiatric Program*

The escalating trend of suicides, found in FPP from 1968 to 1972 through 1983 to 1987 [3], was very much reduced during 1988 to 1992. There were (only) two suicidal deaths, one each in 1988 and in 1989. Both of these deaths occurred in the same moderate security ward and both were caused by ligature hanging from the same overhead sprinkler pipe in the same bathroom.

The suicide-prevention program developed during 1989 was the most important, and perhaps the only significant, factor for this major reduction of the suicidal death rate in FPP during 1988 to 1992. The two specific components, procedures for identifying and tracking clients and structural changes, accounted for this improvement.

In addition, the authors believe that motivation of FPP staff members for program improvement was enhanced by awareness that the escalating and extremely high suicide rate of FPP patients was under study by both the Marion County Medical Examiner and the Oregon Department of Human Resources.

#### *Fairview Training Center*

The elimination of all unnatural deaths from residents of FTC during 1988–1992 was not anticipated by the Marion County Medical Examiner. In reviewing the unnatural death trend at the FTC during the previous 25 years (1963 to 1987), he found reasons to believe that there would always be accidental deaths occurring in this population. The authors now believe that this reduction (*to zero*) of all unnatural death rates was a result of the comprehensive improvement plan that had been developed during 1987, and improved upon and implemented thereafter, for FTC by state and federal authorities.

<sup>5</sup>Dingle, S. E., Pecyna, K. P., Wilson, E. F., and Batten, P. J., "Problems in the Detection and Prosecution of Homicide in Patients of the Oregon State Hospital," (in preparation for publication).

The authors believe that the two components of the plan that were particularly important in producing the dramatic reduction of unnatural deaths at FTC were the increase in direct-care staff (Table 4) during 1988–1992 and the increased use of surgical procedures. The data confirm the general belief of staff members and visitors that nowadays FTC “at-risk” residents (those with respiratory impairment, seizure disorder or risk-taking behavior) are never without some staff member(s) in their immediate presence. This, in turn, has protected these residents from situations that always exist in their environment that could be harmful to health or life.

There can be no reasonable doubt about the value of the group of surgical procedures in the prevention of asphyxiation deaths (as well as non-fatal respiratory problems) which accompany the frequent episodes of aspiration common to neurologically impaired persons, such as FTC residents. During the 25-year (1963 to 1987) time frame of a previous study [3], 25 of the 49 accidental deaths in FTC residents were due to asphyxiation due to food, and another eight deaths were due to asphyxiation due to other materials. The last such fatal incident occurred in 1985.

The elimination of unnatural deaths at FTC occurred during an active phase of the deinstitutionalization (“downsizing”) process. It would be interesting to compare the 1988–1992 FTC resident unnatural death experience with that of ex-FTC residents who were transferred to various group homes throughout the state during this same time frame.

#### *Corrections Department Institutions*

Unnatural death rates for inmates of these prisons continued at similar levels as during the previous 25 years. The vast majority (40 out of 52) of these deaths for the entire 30-year (1963–1992) period were due to suicide. There was no change in this trend during the 1988–1992 time frame.

It is recognized that there are some chronically mentally ill inmates in the various prisons of Oregon. Such individuals may not request, and often evade any effort to be provided, treatment for their mental illness. The only legal way to force such inmates to take psychotropic medicines against their wishes has been to transfer them to FPP (located in OSH) on a temporary basis. Some, though not all, of the inmates who have committed suicide during these past 30 years were known to have been chronically mentally ill. A study is currently underway to identify those inmates who may have a high risk of suicide. If a suicide-prone sub-group of inmates can be identified, there would be the possibility that a suicide-prevention program, similar to the one already successful at the FPP, could be implemented in the COR facilities.

#### *Marion County (Exclusive of All State Institutions)*

Unnatural death rates in this large population during 1988 to 1992, considering each type of unnatural death and for their total numbers and rates, have continued at about the same levels as during the previous 25 (1963 to 1987) years. Accidents (primarily those due to motor vehicle traffic accidents) account for approximately two-thirds of all unnatural deaths in this large subgroup of Marion County residents.

#### **Comment**

The difficulty in preventing suicide is that preventive measures are necessarily specific to an institution, often times even to an individual resident. However, with modifications, some general approaches that work in one situation may well be modifiable and adaptable to other situations. Unique as the Oregon experience has been, it provides lessons that may be useful for similar institutions in other states and countries.

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**References**

- [1] Batten, P. J., "The Descriptive Epidemiology of Unnatural Deaths in Oregon's State Institutions: A 25-Year (1963-1987) Study. I. A Preliminary Analysis of Recent Incidence Rates of Suicide in Mental and Correctional Facilities," *American Journal of Forensic Medicine and Pathology*, Vol. 10, 1989, pp. 310-314.
- [2] Batten, P. J. and Kamara, S. G., "The Descriptive Epidemiology of Unnatural Deaths in Oregon's State Institutions: A 25-Year (1963-1987) Study. II. An Analysis of the Incidence Rate and Its Many Variations," *American Journal of Forensic Medicine and Pathology*, Vol. 13, 1992, pp. 154-158.
- [3] Batten, P. J., "The Descriptive Epidemiology of Unnatural Deaths in Oregon's State Institutions: A 25-Year (1963-1987) Study. III. A 25-Year Overview of Unnatural Deaths in the Mental and Correctional Facilities," *American Journal of Forensic Medicine and Pathology*, Vol. 13, 1992, pp. 159-168.
- [4] Kamara, S. G., "A Study of Suicide and Mortality Among Forensic and Other Psychiatric Patients at Oregon State Hospital," Mental Health Division, State of Oregon, Salem, Oregon, August 1989.
- [5] Administrative Memorandum No. 3.019, "Suicide Precautions," Oregon State Hospital, Salem, Oregon, October 13, 1989.
- [6] "Oregon Vital Statistics for 1992," Health Status Monitoring Center, Health Division, State of Oregon, Portland, Oregon, 1993.
- [7] Hill, A. B., *Principles of Medical Statistics*, 9th Edition, New York, Oxford University Press, 1971.
- [8] Eastwood, M. R., Stiasny, S., Meier, H. M. R., and Woogh, C. M., "Mental Illness and Mortality," *Comprehensive Psychiatry*, Vol. 23, 1982, pp. 377-385.
- [9] Dingle, S. E., Pecyna, K. P., Wilson, E. F., and Batten, P. J., "Problems in the Detection and Prosecution of Homicide in Patients of the Oregon State Hospital," (in preparation for publication).

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