
Health Problems in a City-County Workhouse

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STANDARDS FOR HEALTH CARE in correctional institutions have been formulated by the American Public Health Association and the National Institute of Law Enforcement and Criminal Justice (1, 2). The American Medical Association is preparing similar standards (3). These efforts have been a response to legal directives and heightened professional concern regarding the rights of incarcerated persons to adequate health care.

Goldsmith (4) has emphasized the importance of acquiring basic clinical data in planning prison health services. Such data should include a compilation of common medical problems that are present on admission or that occur during incarceration, or both. Although reports of several recent studies (5-8) provide such information for specific settings, many other reports of this kind reveal methodological limitations that are inherent in the study of transient inmate populations. These limitations restrict the comparability and applicability of the data in the widely diverse penal institutions of this country.

In a previous study (9), I determined the health

status of 491 inmates admitted to a city-county workhouse between August 1974 and August 1975. All the medical problems encountered in this population after admission and during their sentences were recorded. This report is based on the data on types and frequencies of these medical problems.

The St. Paul-Ramsey County Workhouse is a minimum-security correctional center for male offenders. It was constructed in 1959 and has facilities for 175 inmates. The average daily census in 1974 was 121 (range 93-155). The inmate population is urban and predominantly white. Blacks, Mexican-Americans, and Native Americans are the most common minority groups, in that order; they constitute 10 to 20 percent of the total population.

Inmates serve sentences from a few days up to 1 year for mostly nonviolent offenses. Misdemeanors and gross misdemeanors accounted for 94.5 percent of these offenses, and felonies accounted for 4.5 percent in 1974. Driving while intoxicated, driving after suspension or revocation of license, simple assault, theft, disorderly conduct, and contempt of court are the most common individual offenses; these accounted for 65.2 percent of all offenses in 1974.

Regular jobs are held by 15 to 20 percent of the inmates, under a work-release program while serving their sentences. The other inmates work approximately 6 hours a day in assigned work areas. These areas and assignments include laundry, kitchen, farm, garage, building and grounds maintenance,

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and clerical work. Several educational and rehabilitative programs are available to inmates. Two full-time teachers conduct a program leading to the general equivalency diploma. Other programs include vocational and university-level instruction, chemical dependency treatment groups, and self-help group therapy. In addition, a recreational officer coordinates a variety of athletic activities and other forms of entertainment.

The onsite clinic facility consists of two examining rooms and a nurse's office. The nurse divides her time between the workhouse and a nearby juvenile detention facility, but is available for health care needs throughout the working day. A third-year family practice resident physician and I see 15-25 patients on Monday and Thursday afternoons. Onsite professional services are not available in the evenings or on weekends. At these times, correctional officers transport inmates who require immediate medical care to the city-county hospital.

Study Methods

We recorded problem encounters on a diagnosis checkoff form which incorporated code numbers from the H-ICDA (Hospital Adaptation, International Classification of Diseases, Adapted for Use in the United States) (10). This form also contained blank spaces for "write-in diagnoses." I reviewed all progress notes and recorded all problems on the date of the encounter, including problems identified and dealt with in the hospital emergency room and hospital admissions. My full-time staff appointment at the hospital facilitated communication of information between the two institutions. Problem encounter forms were batch processed and submitted for computer analysis at the end of the study period.

We designated problems at the level with which they were being dealt. For example, we designated an initial visit for sore throat and pharyngeal infection "pharyngitis, not otherwise specified, new encounter." If the throat culture revealed group A beta hemolytic streptococci, we recalled the inmate for appropriate antibiotic therapy. For this encounter, we designated the problem "streptococcal pharyngitis, new encounter." We designated any subsequent visit for this problem "old encounter." This approach prevents computation of comparative disease incidence rates. However, it provides, in my view, a more representative profile of problems as they are encountered and dealt with on a daily basis.

Results

Of the 491 inmates examined on admission, 312 (63.5 percent) sought medical care at least once during their incarceration; 112 were seen at the workhouse and the hospital, and 14 were seen at the hospital only. We recorded 1,257 patient visits between August 1974 and July 1976. The mean number of visits per inmate per sentence was 2.6. The mean length of sentence for all the study subjects was 113.5 days, and the mean number of visits per inmate per year was 8.2. The rates of clinic utilization, excluding visits solely for dental reasons (N=86), were 2.4 visits per inmate per sentence and 7.7 visits per inmate per year.

The mean age of inmates seen at least once was 26.8 years, and that of all the inmates studied was 27.4 years. The age range was 15-58 years. As shown in the following table, there was no persistent increase or decrease in the mean age of inmates seen more frequently, and the mean age of inmates with no visits did not differ notably from that of those seen at least once.

<i>Number of visits</i>	<i>Inmates (N=491)</i>	<i>Mean age</i>
0	179	28.6
1	99	26.8
2	53	27.2
3-5	90	26.2
6-9	38	29.4
10 or more	32	24.1

There were 1,549 problem encounters; an average of 1.23 problems were identified and dealt with per visit. Table 1 shows the 60 most common problems in decreasing order of frequency. These 60 designations comprised 75 percent of all problem encounters.

During the study period, 13 inmates had 14 hospitalizations. The reasons for hospital admission were as follows:

<i>Reasons</i>	<i>Number of admissions</i>
Sociopathic personality	3
Head injury	2
Alcohol withdrawal syndrome	1
Depressive neurosis and suicidal gesture	1
Paranoid schizophrenia	1
Tympanoplasty for chronic perforation of tympanic membrane	1
Chest pain, noncardiac	1
Surgery for unilateral gynecomastia	1
Carcinoma of esophagus	1
Third-degree burn, hand	1
Orthopedic surgical procedure for remote fracture of fibula	1

Table 2 shows all problem encounters by major H-ICDA diagnostic categories. The data in tables 1 and 2 demonstrate the dominance of recent and remote traumatic incidents, complaints referable to the skin and musculoskeletal system, dental diseases, and disorders of the eyes, ears, nose, and throat. Abdominal pain, a history of blood in the stool, and diarrhea accounted for the high rank order of digestive disorders. Upper and lower respiratory tract infection and sleep disturbance were the most common respiratory and mental disorders respectively. We often saw inmates who had only symptoms or physical signs, and, where possible, we included these with an appropriate organ system. This procedure

accounts for the relatively low rank order of signs, symptoms, and ill-defined conditions. The low rank orders of cardiovascular, endocrine, and hematologic diseases reflect the young ages of most inmates.

There were 275 referrals to the city-county hospital; 53 were for dental problems. An additional 108 referrals were elective and at the direction of a physician or the nurse. There were 19 emergency referrals that included initial evaluation by a physician or the nurse. Ninety-nine referrals occurred before or after the normal workday or on weekends, and these did not include prior consultation with a physician or the nurse.

Table 1. Sixty most commonly encountered problems among workhouse inmates, listed in order of decreasing frequency

Problem description	Frequency			Problem description	Frequency		
	of new encounter	Total encounters	Cumulative percent		of new encounter	Total encounters	Cumulative percent
1. Injury or wound, ¹ lower extremity	50	91	5.9	32. Peptic ulcer	1	12	59.8
2. Injury or wound ¹ upper extremity	53	83	11.2	33. Hemorrhoids	5	12	60.6
3. Dental caries	33	71	15.8	34. Foot ulcer	1	12	61.4
4. Dermatitis, NOS	44	57	19.5	35. Weight loss	6	12	62.2
5. Dental, other, and gingival	30	48	22.6	36. Nasal congestion	9	11	62.9
6. Abdominal pain	25	46	25.6	37. Otitis externa	5	11	63.6
7. Pain, flank or back	29	43	28.3	38. Subcutaneous nodule	7	11	64.3
8. Pain, lower extremity	24	40	30.9	39. Psychophysiological reaction, NOS	6	11	65.0
9. Sleep disturbance	27	39	33.4	40. Diabetes mellitus	2	10	65.7
10. Injury or wound, ¹ head or neck	19	28	35.2	41. Viral syndrome	9	10	66.3
11. Common cold	27	27	37.0	42. Conjunctivitis	5	9	66.9
12. Acne	27	27	38.7	43. Chronic otitis media	4	9	67.5
13. Cellulitis or abscess	21	26	40.4	44. Epilepsy	5	9	68.0
14. Hypertension	5	21	41.8	45. Acute lumbosacral strain	4	9	68.6
15. Chronic bronchitis	5	21	43.1	46. Skin, other	8	9	69.2
16. Blood in stool, history of	8	20	44.4	47. Elevated blood pressure, NOS	6	8	69.7
17. Pharyngitis or tonsillitis, NOS	19	19	45.6	48. Pain, facial or neck	5	8	70.2
18. Depression	10	19	46.9	49. Pharyngitis or tonsillitis, streptococcal	7	8	70.8
19. Scabies	6	17	48.0	50. Nervousness	7	8	71.3
20. Headache, NOS	16	16	49.0	51. Sickle cell trait	8	8	71.8
21. Diarrhea	4	16	50.0	52. Syncope	3	8	72.3
22. Venereal warts	6	16	51.1	53. Cough	3	7	72.8
23. Eye, other	11	15	52.0	54. Corns and callosities	4	7	73.2
24. Impacted cerumen	13	15	53.0	55. Plantar wart	4	7	73.7
25. Acute bronchitis	9	15	54.0	56. Nasal fracture	2	7	74.1
26. Pain, upper extremity	12	14	54.9	57. Psychophysiological reaction, gastrointestinal	6	7	74.6
27. Chest pain, NOS	6	14	55.8	58. Serous otitis media	2	6	75.0
28. Status post-tracheal burns	1	13	56.6	59. Vomiting	6	6	75.3
29. Chest wall pain	8	13	57.5	60. Explosive personality	3	6	75.7
30. Injury or wound, ¹ back	9	13	58.3	All other		376	24.3
31. Tension headache	8	12	59.1	Total		1,549	100.0

¹ Excluding fracture.

NOTES: NOS = not otherwise specified. Problem descriptions are from the H-ICDA, reference 10.

Table 2. Frequency of problem encounters among workhouse inmates, by disease category

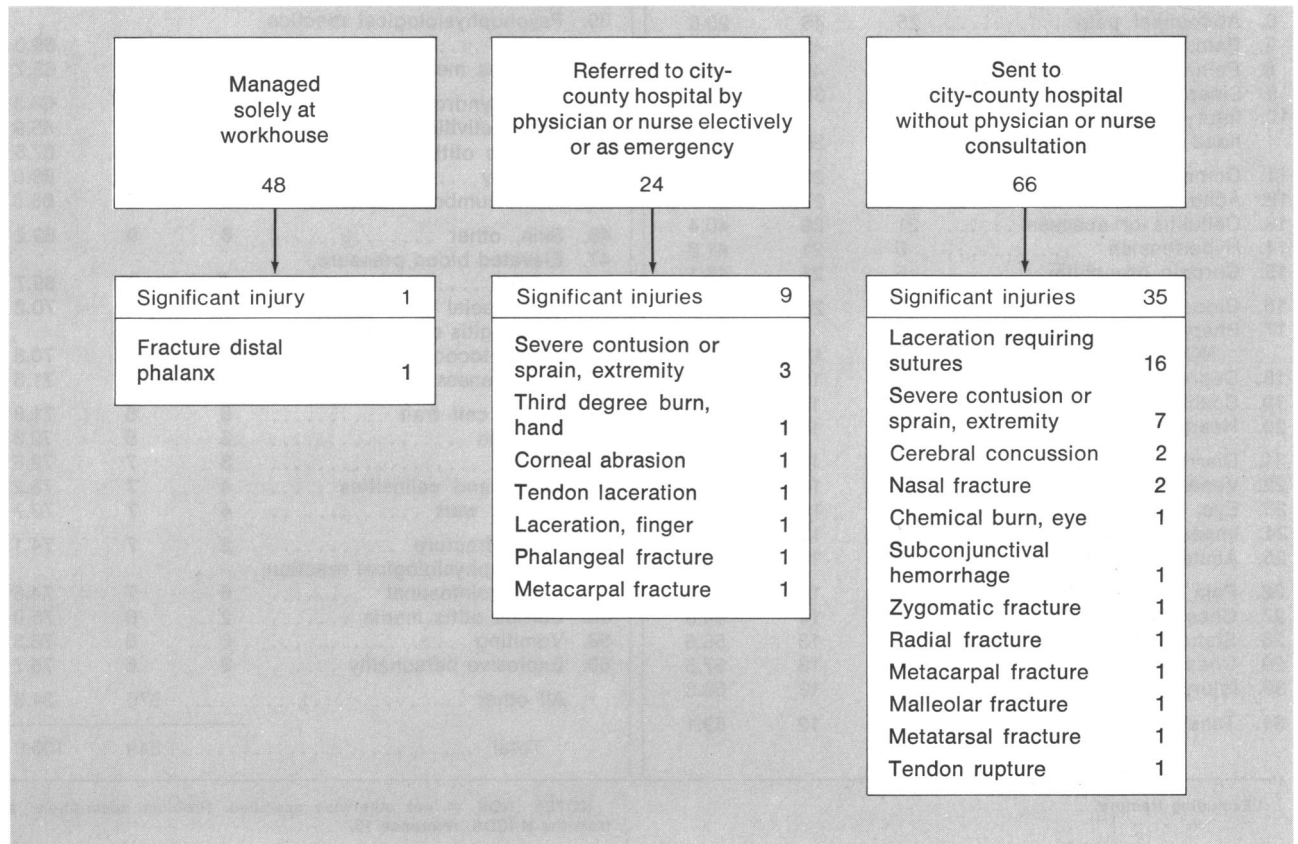
<i>Disease category</i>	<i>Total encounters</i>	<i>Cumulative percent</i>
Injuries and adverse effects	239	15.4
Diseases of skin and subcutaneous tissue	228	30.1
Diseases of musculoskeletal system and connective tissue	177	41.6
Diseases of nervous system and sense organs	166	52.3
Diseases of digestive system	149	61.9
Diseases of respiratory system	142	71.1
Mental disorders	127	79.3
Dental and periodontal	119	87.0
Diseases of genitourinary system	67	91.3
Diseases of circulatory system	52	94.6
Signs, symptoms, and ill-defined conditions	39	97.2
Endocrine, nutritional, and metabolic diseases	12	98.0
Diseases of blood and blood-forming organs	12	98.7
Supplementary classifications	12	99.5
Procedures	8	100.0
Total	1,549

Table 3 lists the most common reasons for referral to the city-county hospital, exclusive of hospitalization. Dental complaints and the effects of recent or past trauma (N=156) accounted for 70.2 percent of these problem encounters.

The course of 138 acute traumatic events for 98 inmates is shown in the chart. Inmates sustained these injuries either while on their work details or while participating in athletic activities. Four inmates managed solely at the workhouse underwent X-ray examination to confirm or exclude a fracture. In 58 additional instances, the primary reason for hospital referral was also the radiological diagnosis or exclusion of fracture, and in 9 of these instances the X-ray was positive. Of 66 traumatic episodes judged by correctional officers to merit hospital referral, 35 (53 percent) were found to be significant injuries.

Table 4 shows the relation of selected results of health screening on admission (9) and certain frequently encountered problems. A history of trauma in the year before sentencing was not associated with subsequent episodes of acute trauma. Inmates with

Course of 138 episodes of acute trauma in 98 inmates



abnormal musculoskeletal findings on admission were more likely to be seen subsequently for musculoskeletal problems. Slightly less than half of these subsequent visits were for problems unrelated to the admission findings. Inmates with skin problems detected

during initial screening were more likely to have at least one subsequent visit for skin problems.

The health screening procedure on admission included a self-rating depression scale questionnaire (11). The responses revealed that 216 inmates had a positive depression index and 268 a negative index. Inmates with a positive depression index had more visits (3.2 per inmate) than did those with a negative index (2.0, $P < 0.001$, based on a 2-tailed Student's *t* test). Index-positive inmates also had significantly more problem encounters (4.1 per inmate) than did index-negative inmates (2.4, $P < 0.001$).

Index-positive persons were more likely to be seen for musculoskeletal problems exclusive of acute trauma ($N = 41$) than inmates with a negative index ($N = 29$, $P < 0.01$, based on the *Z* value of the difference between two sample proportions). They also were more likely to complain of pain of apparent musculoskeletal origin, but without associated physical findings ($N = 38$, compared with $N = 21$ for their index-negative counterparts, $P < 0.005$). Of the inmates with a positive index, 8.3 percent subsequently sought care for sleep disturbance, compared with 3.4 percent of the index-negative inmates. Because of the bias introduced by the inclusion of a question on sleep disturbance in the depression scale questionnaire, this difference could not be tested for statistical significance. The difference in percentages of index-positive and index-negative inmates who were seen for dermatosis, abdominal pain without associated findings, and acute trauma were not statistically significant.

Table 3. Reasons for hospital referral of workhouse inmates, listed in order of decreasing frequency of problem encounters

Problem description	Frequency of encounter	Cumulative percent
1. Dental and periodontal	61	19.7
2. Injury or wound ¹ lower extremity	40	32.7
3. Injury or wound, ¹ upper extremity	39	45.3
4. Other musculoskeletal ¹	23	52.8
5. Injury or wound, ¹ head or neck	21	59.5
6. Disorders of the eye	18	65.4
7. Diseases of respiratory system	12	69.3
8. Other diseases of skin and subcutaneous tissue	12	73.1
9. Signs, symptoms, and ill-defined conditions	11	76.7
10. Mental disorders	10	79.9
11. Fracture and fracture followup, extremity	9	82.8
12. Diseases of digestive system	9	85.8
13. Fracture and fracture followup, facial	7	88.0
14. Injury or wound, ¹ other	5	89.6
15. Diabetes mellitus	5	91.3
16. Scabies	5	92.9
17. Diseases of genitourinary system	5	94.5
All other	17	100.0
Total	309

¹ Excluding fracture.

Table 4. Relation of selected results of health screening of inmates on admission and problems encountered at their subsequent visits to workhouse clinic

Admission results	Number	Problems encountered at subsequent visits								
		Acute trauma			Musculoskeletal			Skin		
		Number	Percent	<i>P</i>	Number	Percent	<i>P</i>	Number	Percent	<i>P</i>
History of trauma:										
Positive	124	23	18.6	>0.05						
Negative	367	75	20.4							
Musculoskeletal examination:										
Positive	41				113	31.7	<0.001			
Negative	447				157	12.8				
Positive	41				220	48.8	<0.005			
Negative	447				2123	27.5				
Skin examination:										
Positive	56							29	51.8	<0.01
Negative	432							80	18.5

¹ Excluding acute trauma.

² Including acute trauma.

NOTE: *P* values are based on the *Z* value of the difference between two sample proportions.

Discussion

It is difficult to compare data on rates of clinic use and disease prevalence with those of published relevant studies (5,8,12,13). This difficulty stems from differences in study design and the variable time periods during which subjects are under observation. The use of different diagnosis classification systems also limits comparability of data. In this study, the continual observation of subjects by a single investigator avoided many of the limitations of previous studies. It also enhanced uniformity of data within the study.

Other authors have alluded to overuse of health care services in prisons (13,14). In this study, 63.5 percent of the original study group sought medical care at least once; 48.7 percent sought care within the first month. White (15) estimated that 75 percent of the civilian adult population will experience an episode of illness in an average month, and 25 percent will consult a physician. Although the two studies are dissimilar in design, the rate of clinic use is greater for inmates than for White's study population.

The 7.7 rate of physician visits per inmate per year also indicates overuse of health services when compared with figures for the general population. The inmate rate is three times the 2.6 rate reported for males of comparable ages in the National Ambulatory Medical Care Survey (16) and twice the 3.9 rate noted in the 1974 Health Interview Survey (17). Twaddle (13) likewise concluded that the number of physician visits in a State prison in 1971 was three times the national average in 1969. Ready accessibility to health care services in the correctional setting (or elsewhere) undoubtedly encourages the use of such services.

The 75.7 percent of total encounters contained in the 60 most common problem designations is comparable to the 67.5 percent reported in the National Ambulatory Medical Care Survey (16a). The number of problems per visit (1.23) compares favorably with the number (1.29) from a large study of family practice in Virginia (18).

Based on my earlier study, I anticipated high frequencies of visits for musculoskeletal and traumatic problems. The prevalence of these kinds of problems conforms with the views and observations of other investigators (7,8,12); it suggests a proneness to violence that persists during incarceration.

We often dealt with musculoskeletal and skin complaints without significant physical findings. This

situation indicates the frequently minor nature of such complaints, and it is consistent with the view that prison inmates exhibit exaggerated concern about their physical attributes (19). The prevalence of depression demonstrated in this study undoubtedly contributes to this phenomenon. In the earlier study, a statistically significant association was seen between a positive depression index and symptoms on admission (9). This finding and the results of the present study demonstrate the somatization that often accompanies depression.

Several factors affect the pattern of referral to the city-county hospital. These factors include the part-time work of the nurse and physicians and the lack of X-ray and dental services. The lack of facilities to deal with major trauma is also important in this regard. Thus, dental referrals and requests for X-rays to diagnose or exclude fracture were the most common reasons for elective hospital consultation. Trauma and other musculoskeletal complaints accounted wholly or in part for 75 of 99 hospital referrals made outside the normal workday.

The data in this report further define the health profile of the inmate population. These data and the high frequency of clinic use have led to the development of algorithms or standing orders, or both, for common problems. The nurse and physicians use them in managing musculoskeletal symptoms with and without apparent injury, common skin complaints, sleep disturbance, and various forms of upper respiratory infection. These algorithms supplement those developed during the earlier study for elevated blood pressure and positive tuberculin reactions. In addition, we have presented the results of both studies to correctional officers and counselors. We have thereby increased their awareness of depression as a common cause of somatic complaints. The demonstrated frequency of athletic injuries has led to closer supervision of athletic activities.

The preceding measures enable us to deal promptly and appropriately with common medical problems. More efficient use of the nurse and physicians' time has followed. The measures also represent an effort to deal with overuse of medical care services. We hope, with this procedural and preventive approach, to achieve a balance between health care needs and onsite medical services.

I have initiated discussions with the department of dentistry at the city-county hospital. My objective is the provision of part-time, onsite dental services with equipment designed for four-handed sit-down

dentistry. Immediate priorities would be the relief of pain and treatment of infection. This could include dental extractions, root canal treatments, removal of gross caries, indirect pulp cap treatments, periodontal scaling, and the treatment of fractured teeth. Preventive measures would include instructions in diet and oral hygiene and assistance in arranging for dental care after release. The provision of more comprehensive dental services will depend on the length of stay of inmates and available resources.

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SYNOPSIS

DERRO, ROBERT A. (St. Paul-Ramsey Hospital and Medical Center, St. Paul, Minn.): *Health problems in a city-county workhouse. Public Health Reports, Vol. 93, July-August 1978, pp. 379-385.*

This study was part of a continuing effort to define the health profile of a city-county workhouse inmate population. To supplement data previously obtained on the health status of inmates on admission, all subsequent encounters for medical problems were recorded and analyzed.

Of 491 inmates examined on admission, 312 subsequently made 1,257 visits for medical care. The rate of clinic use was two to three

times higher than rates reported in national surveys. Of 1,549 problem encounters, trauma, musculoskeletal complaints, skin disorders, and diseases of the eyes, ears, nose, and throat accounted for 52.3 percent. Dental disease, trauma, and other musculoskeletal disorders comprised 66.3 percent of problems that required referral of patients to the city-county hospital. A significant relationship was seen between depression as determined by a self-rating questionnaire and numbers of visits and problem encounters, as well as several frequently encountered problems.

The results of this study have implications for health services in cor-

rectional institutions with similar inmate populations. The provision of limited but onsite dental services is advisable. Athletic activities and work details should be closely supervised. Physicians and nurses should be skilled in the evaluation and management of minor trauma and other musculoskeletal disorders. Algorithms are appropriate aids in the management of common but minor medical problems. These measures and proposals are designed also to deal with the problem of overuse of clinic services. However, the measures do not diminish and, in some instances, they increase access to care for medical and dental health needs.