

Staffing of Forensic Inpatient Services in the United States

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Data on patient census, bed capacity, and staffing levels in state-operated forensic psychiatric inpatient programs in 1986 were collected from forensic mental health directors of the 50 states and the District of Columbia. Of the 75 programs identified, 54 were based in units within larger psychiatric hospitals and 21 in freestanding hospitals. For all programs, direct-care staff-patient ratios ranged from .35 to 4, with a mean of 1.3. The ratio of filled beds to bed capacity ranged from .5 to 1.54, with a mean of .95. Nearly a fourth of the programs were over capacity. A negative relationship between filled-bed ratios and direct-care staff-patient ratios was found.

Public forensic mental health programs must compete for scarce resources with programs that serve populations, such as children or geriatric patients, who garner more sympathetic public support. Administrators of state forensic programs could use information about forensic programs in other states in planning services and justifying budget requests.

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Recent trends have increased the importance of forensic staffing data. A rise in the U.S. state prison population of more than 50 percent between 1980 and 1985 (1), coupled with a continuing decrease in the number of beds in state psychiatric facilities (2,3), may increase demands on forensic programs. Also, although federal regulations (4) and accreditation standards (5) have not yet set minimally acceptable staff-patient ratio standards for inpatient beds, state courts are becoming active in this area (6). Furthermore, violent crimes by released forensic patients have focused public attention on the adequacy of forensic services (7).

Although the nationwide inpatient forensic population and level of forensic services have been studied (8-12), direct-care staffing levels have not been adequately compared with patient census data. Previous studies were quite different from each other in the types of programs analyzed, making comparison of the results difficult. This difficulty is due to mentally disordered offenders' being treated in a wide variety of inpatient settings including correctional institutions, civil psychiatric settings where forensic patients are not distinguished from other civil patients, and psychiatric centers specifically designated for forensic patients.

This paper reports information

about staff-to-patient ratios, bed capacities, and filled-bed ratios in inpatient forensic services in the United States. The data were collected from state mental health agencies as part of a study conducted under the auspices of the State Mental Health Forensic Directors, a division of the National Association of State Mental Health Program Directors.

Methods

A questionnaire was sent to state forensic directors in the 50 states and the District of Columbia. Respondents were asked to report information on all programs operated by the state mental health agency specifically designated to provide inpatient services to forensic patients. All beds in these programs were included in the analysis, even beds that were filled by civil-status patients. (Many states allow the transfer of especially violent civil psychiatric patients to secure forensic programs. In New York, for example, section 14, part 57 of the Codes, Rules, and Regulations of the State of New York permits this type of transfer.) Information was collected from all 51 respondents.

Forensic services were defined as programs that treat the following categories of patients: not guilty by reason of insanity, guilty but mentally ill, incompetent to stand trial, undergoing inpatient forensic examinations, and transferred from state or local corrections facilities. The survey collected data about each program's forensic inpatient bed capacity, census by legal status, and number of three types of staff: clinical or direct-care staff, perimeter or non-patient-contact security staff, and administrative staff.

Table 1
Direct-care staff-patient ratios of state forensic inpatient programs in the United States

Staff-patient ratio	Freestanding hospitals (N = 21)	Forensic units (N = 53) ¹	Total (N = 74) ¹
Less than .75 (%)	14.3	7.5	9.5
.75 to .99 (%)	9.5	22.7	18.9
1 to 1.24 (%)	47.6	26.4	32.4
1.25 to 1.49 (%)	9.5	20.8	17.6
1.5 to 1.74 (%)	4.8	9.4	8.1
Greater than 1.75 (%)	14.3	13.2	13.5
Mean	1.2	1.3	1.3
Median	1.2	1.2	1.2
SD	.42	.58	.54
Range	.66 to 2.2	.35 to 4	.35 to 4

¹Data were not available for one of the 54 forensic units included in the study.

Respondents were asked to base their report on a single day, most of which were in the spring of 1986. The staffing levels reflect the total complement of staff for all three shifts and relief. Except for the forensic program at St. Elizabeths Hospital in Washington, D.C., which was a federal facility at the time of the survey, all programs included in the analysis were operated by state mental health agencies.

Partial correlation and regression techniques were used to explore the relationships between bed capacities, filled-bed ratios, and staff-patient ratios.

Results

Respondents reported information about 75 state-operated programs with forensic inpatient beds, most likely the entire universe of inpatient forensic programs operated by state mental health agencies in the United States. Fifty-four programs (72 percent) were based in units within larger institutions, and 21 (28 percent) were based in freestanding hospitals. The overall number of programs is consistent with results of a study by Scheidemandel and Kanno (8) in which state mental health agencies identified 77 programs that were specifically designated to treat mentally disordered offenders. Scheidemandel and Kanno's study was published in 1969; apparently the number of state-operated forensic programs has changed little in the past 20 years.

As shown in Table 1, direct-care

staff-patient ratios of 74 of the 75 programs (one program had missing data) ranged from .35 to 4 staff per patient. The overall mean ratio of 1.3 was similar to the mean ratios in both freestanding institutions and programs that were part of a larger hospital.

Direct-care staff-patient ratios declined as patient census in programs increased. One rationale for this finding may be that a nonlinear relationship exists between the level of direct-care staffing and patient census, with larger increases in census producing smaller increases in the number of direct-care staff. Deviations from linearity in the relationship between direct-care staff and patient census were tested using a polynomial regression model with a quadratic term. The results of this analysis were nonsignificant.

Rather, the regression analysis suggested a linear model in which

the predicted number of direct-care staff is approximately 15 plus the patient census. In this model staff-patient ratios decline as census increases. For example, a unit with 30 patients would have 45 (30 + 15) direct-care staff for a staff-patient ratio of 1.5, whereas a program with 100 patients and 115 staff members would have a lower staff-patient ratio of 1.15.

The bed capacities of the programs are presented in Table 2. Freestanding hospitals on the average had much larger capacities than units within hospitals ($p < .01$).

As shown in Table 3, the mean filled-bed ratios for both freestanding institutions and units within larger institutions were just under 1 at .94 and .95, respectively. Overall, 22.7 percent of the programs were filled to more than 100 percent of their capacity. Although the difference was not significant, 28.5 percent of freestanding institutions were filled over capacity, compared with 20.4 percent of forensic units.

Partial correlation analysis suggested that a negative relationship exists between the filled-bed ratio and the direct-care staff-patient ratio ($p < .05$). Higher filled-bed ratios were associated with lower direct-care staff-patient ratios. In this analysis, the variables of staff-patient ratio and filled-bed ratio required simplification because patient census appears as the denominator in one ratio and as the numerator in the other. The reciprocal of the filled-bed ratio was used, and the partial correlations between staff and capac-

Table 2
Bed capacities of state forensic inpatient programs in the United States

Bed capacity	Freestanding hospitals (N = 21)	Forensic units (N = 54)	Total (N = 75)
Less than 25 (%)	0.0	20.4	14.7
26 to 49 (%)	4.8	25.9	20.0
50 to 100 (%)	14.3	27.8	24.0
101 to 250 (%)	52.4	13.0	24.0
251 to 500 (%)	19.0	13.0	14.7
More than 500 (%)	9.5	0.0	2.7
Mean	285	97.9	150.3
Median	225	57.5	83
SD	300.6	104.7	198.6
Range	29 to 1,316	15 to 430	15 to 1,316

Table 3

Ratio of filled beds to bed capacity in state forensic inpatient programs in the U.S.

Ratio	Freestanding hospitals (N = 21)	Forensic units (N = 54)	Total (N = 75)
Less than .8 (%)	19.1	9.2	12.0
.8 to .89 (%)	14.3	20.4	18.7
.9 to 1 (%)	38.1	50.0	46.6
1.01 to 1.09 (%)	19.0	7.4	10.7
Greater than 1.09 (%)	9.5	13.0	12.0
Mean	.94	.95	.95
Median	.97	.95	.96
SD	.12	.15	.14
Range	.7 to 1.13	.5 to 1.54	.5 to 1.54

ity were calculated controlling for patient census.

The resulting correlations between the variables were $r = .23$, $p = .03$ for all the programs; $r = .32$, $p = .08$ for the freestanding hospitals; and $r = .38$, $p = .003$ for the units. These correlations are positive, but because the reciprocal of the filled-bed ratio was used in the calculations, the relationship between filled-bed ratio and direct-care staff-patient ratio would be negative. In addition, programs that were filled over capacity tended to have lower staff-patient ratios.

The ratio of security staff to patient census in freestanding hospitals ranged from 0 to 1.16 (mean = .185, SD = .25, median = .11). The administrative staff-patient ratio in these hospitals varied from .04 to .81 (mean = .38, SD = .25, median = .40). The relationship between patient census and the level of security and administrative staffing in programs that were part of larger hospitals was not analyzed because these types of staff often serve the whole institution and allocation to specific units would be misleading.

Discussion and conclusions

The negative relationship between filled-bed ratio and direct-care staff-patient ratio, while disturbing, is hardly surprising. In some states bed capacity of forensic programs is determined by the number of staff assigned. Such a unit or facility may have a higher- or lower-rated capacity, depending on staffing levels. However, even where capacity is not determined in this way, it is unlikely

that facilities deliberately admit more patients than they can accommodate. Patient census in excess of capacity suggests that the physical and personnel resources of the program or facility are not matched with the demand for services.

The data presented here provide practical comparative information that would allow state officials, as well as their critics, to more knowledgeably assess state forensic systems. Administrators could use the data to lobby for increased resources by showing that their state has a low staff-to-patient ratio, compared with the national average. Comparative information about staffing of forensic programs could also be used to enhance risk management and reduce liability in the event of an adverse incident (13). Programs with a staff-patient ratio within the nation's mainstream may be less vulnerable to litigation alleging negligence. Staff are by far the most expensive program resource, and the data presented here can be used in fiscal analyses of planned changes in staff-patient ratios.

State legislative changes, such as those concerning the insanity defense following the Hinckley verdict (14), should be informed by data about the fiscal and programmatic consequences of similar changes elsewhere. Thus expanded use of the insanity defense might be discouraged by demonstrating a state's inability to adequately staff existing units that treat patients found not guilty by reason of insanity.

Future research on staffing patterns in forensic facilities should in-

clude comparisons between staff-patient ratios in forensic and other mental health programs as well as analyses of specialty forensic wards such as those serving only chronic patients found not guilty by reason of insanity.

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