Needs-Based Planning: Evaluation of a Level-of-Care Planning Model

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Abstract

With the closure of a number of provincial psychiatric hospitals planned, the Ministry of Health of Ontario has commissioned a series of planning projects to identify alternative placements for current hospital patients. The goal is to match need to care in the least restrictive setting. A systematic, clinically driven planning process was implemented that involved three steps: development of a continuum of levels of care representing increasingly intensive and more restrictive supports, development of criteria and decision rules for placement, and comprehensive needs assessment of current patients using the Colorado Client Assessment Record. Results showed that only 10% of current inpatients need to remain in the hospital, and over 60% could live independently in the community with appropriate supports. Evidence supports concurrent validity of the planning model, but further work is needed to assess whether recommended levels of care effectively meet consumer needs in the least restrictive setting.

Introduction

Developing systematic strategies for linking health care delivery to consumer need is a relatively recent area of activity and reflects goals of better managing resource allocation and more appropriately meeting consumer need. Prospective payment, based on diagnosis-related groups (DRGs), was one of the earliest attempts to link resource use to patient need. In psychiatry, however, groups defined according to diagnosis and age were found to be poor predictors of need, and DRG-based funding was not implemented.[1–3] Recognizing that diagnostic categories can include a heterogeneous group of individuals with varying illness profiles, subsequent efforts to define need sought to incorporate measures of illness severity and impact that were independent of diagnosis.[4–6] Recognizing that consumer need for mental health care can be prolonged and cross a wide variety of settings, recent efforts have shifted from defining care categories within a single provider setting (eg, inpatient

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psychiatric unit) to estimating need for the full range of services over an extended period of time.[7–9] There also has been a shift in strategies for defining appropriate care, with increasing reliance on stakeholder panels rather than past or current service use to define a gold standard.[10–13]

This article describes a planning model that incorporates these approaches (ie, multidimensional assessment of consumer need; planning for use of the system, not a single program; and use of stakeholder panels to define service standards). Developed to assist the Ontario Ministry of Health in preparing for pending closure of a provincial psychiatric hospital, the model has become a key planning tool for reorganizing psychiatric services in jurisdictions across the province.

Psychiatric hospitals in Ontario are tertiary/long-term care facilities for individuals with severe mental illness that provide inpatient care and various outpatient services (eg, specialty clinics, case management programs, day programs, supervised residences). Length of stay varies from short admissions to extremely long stays (eg, 5 years or more). Individuals also vary in their stage of illness and recovery, with some receiving minimal assistance and others using intensive, ongoing supports. While current inpatient capacity of the provincial psychiatric hospitals (PPHs) is approximately 23 beds per 100,000 population, the province has set a bed target for longer-term care of approximately 18 beds by 2003.[14] As a result, a number of facilities have been scheduled for closure or downsizing. To ensure that alternative services are in place prior to restructuring and to introduce a more rational approach to system planning, the Ministry of Health has commissioned a series of Comprehensive Assessment Projects (CAPs) to be conducted in almost every facility. The purpose of each CAP is to identify the additional community capacity and resources required to meet the needs of current hospital patients subsequent to any restructuring. The CAPs afford an opportunity to incorporate best practices and values of mental health reform into future planning[15–20] and to develop a systematic approach for linking service recommendations to patient needs. By using a similar methodology in PPHs across Ontario, the ministry is striving to build a consistent and comprehensive mental health system in the province.

Researchers in a major psychiatric research and teaching center (ie, the authors) have assumed a lead role in conducting the CAPs. To date, CAPs have been completed in six facilities. Each project has provided an opportunity to further refine and evaluate the planning model. This article uses data collected during the second CAP to describe development of the model and to test a series of hypotheses related to its validation.

Model Development

The purpose of the planning model is to define levels of care that are perceived to be appropriate to achieve desired outcomes over time for clinically meaningful groups of consumers. The levels were defined considering longer-term service needs (eg, case management) rather than services for resolving acute problems (eg, crisis intervention). Development of the model followed a process similar to that outlined by Smukler and colleagues[12] and included three steps: definition of a continuum of levels of care, selection of need indicators, and development of an algorithm to link need indicators to level of care. A multistakeholder panel of clinicians (inpatient and community), planners, consumers, and family members was assembled to work with the research team on these tasks. The team emphasized that the model was intended to support group planning, not to replace individual-level decision making (ie, for admission or discharge planning), which requires more intimate knowledge of a client's history, current circumstances, goals, and preferences. Planning principles adopted by the panel were consistent with provincial mental health reform policy, emphasizing delivery of care in the least restrictive setting, intensive case management and high-support residential treatment as alternatives to inpatient care, and more focused role for provincial hospitals as tertiary care providers.

Levels of care

Drawing on these principles and other level-of-care typologies,[11–13,21–23] the research team developed a preliminary typology based on three dimensions: locus of care (hospital, supervised residence, community), need for security, and intensity of support. The stakeholder panel reviewed and revised the typology, clarifying definitions and distinctions. The resulting five-level continuum (Table 1) ranged from self-management to inpatient care (the most intensive/restrictive). The panel emphasized that all consumers need ongoing access to a broad range of additional treatment and rehabilitation services and supports (eg, crisis, acute inpatient, vocational, family support), regardless of the level of care they are receiving.

Need indicators and placement algorithm

Characteristics of patient groups requiring supports at each level of care were developed using a consensus panel rather than an empirical approach such as cluster analysis. A limitation of cluster analysis is that resulting groups may lack clinical meaning or relevance to the intended purpose. Instead, project researchers and stakeholders collaborated to define groups using criteria that were felt to be predictive of care needs and to identify service responses based on progressive practices. As such, the resulting model incorporated panel members' views about appropriate response to need, and it was independent of past utilization patterns, current service limitations, and financial concerns.[10–12]

There is an extensive literature on the domains of functioning perceived to influence need for care. These include psychological function (eg, mood, psychotic symptoms, substance abuse), social and community function (eg, community living, family and other interpersonal, work, school), cognitive

Table 1
Level-of-care continuum

Level 1: Individual is capable of self-management, resides in the community, accesses family physician or psychiatric services periodically, and may intermittently use community services and supports (*self-management*).

Level 2: Individual resides in the community, needs assistance approximately weekly to identify needs and access community services and supports, and can obtain psychiatric care from an outpatient clinic or private office (*case management*).

Level 3: Individual lives in the community, needs intensive assistance (up to daily visits and 24-hour, 7-day/week availability of support) to obtain mental health treatment and rehabilitation services, and accesses community services (*intensive case management or ACT*).

Level 4: Individual needs 24-hour support and access to treatment and rehabilitation services in a secure setting; may access services and supports in the community (*residential treatment* [residential care with on-site staffing for treatment and rehabilitation]).

Level 5: Individual needs 24-hour care provided by multidisciplinary team of highly trained experts in a secure setting where there is capacity to do comprehensive assessment and treatment (*inpatient tertiary care*).

Services and supports available to all levels: Acute inpatient care, crisis services, psychiatric services, consumer and family initiatives, primary medical care, housing support, income support, vocational and educational support, leisure and recreational activities, and family support.

function (eg, memory, judgment, orientation), physical function and self-care, and risk behaviors (eg, suicidal behaviors, aggression, dangerousness).[7–13] Drawing on their own experiences as clinicians, consumers, and family members, as well as considering placement criteria used in other level-of-care and decision-support models,[7,10,12,13,21–26] the panel identified six domains as key determinants of need for care. They included security and management risk, severity of illness, risk for suicide or violence, capacity for self-care, and current strengths/resources. An algorithm (series of decision rules) was developed that used these domains to define patient subgroups associated with each level of care (Figure 1). A hierarchical approach grouped patients first by level of risk (low, moderate, high) and then by overall severity. The decision rules then incorporated stakeholder judgment about the protective effects of patient strengths or exacerbating effects of poor self-care skills within these different patient subgroups to make final placements. For example, the presence of strong resources/strengths resulted in a less intensive level-of-care placement for individuals with low security/management risk and low problem severity (level 1 rather than level 2) but was not a placement criterion for those in the high-risk/high-severity subgroup. Consistent with key principles of mental health reform, severity thresholds for assignment to inpatient care (level 5) were very high and narrow, as were criteria for assignment to supervised residential care. A number of paths led to placement in intensive case management, increasing its use over more restrictive settings.

Needs assessment measures

Patient functioning was assessed using the 1997 version of the Colorado Client Assessment Record (CCAR). Compared with other instruments, the CCAR is one of the more mature measures of functioning in the mental health field.[27–30] Versions of the CCAR are being used to define case mix and monitor outcome, as well as for other applications in Colorado, other states, and in Ontario.[31–33] The CCAR assesses patient functioning compared with what is typical for the person's age, sex, and subculture. Because severity is defined in terms of functioning rather than an inferred mental or emotional state, ratings can be linked to care requirements. Impairment is assessed across 21 domains pertaining to symptoms (eight ratings); behaviors (five ratings); health and self-care (two ratings); family, social, and community functioning (four ratings); substance abuse (one rating); and security/management needs (one rating). After evaluating these areas, the rater produces a global rating of overall problem severity. In response to feedback from consumers and families, a global rating of strengths and resources was added, based on the consumer's education, skills, economic resources, personal strengths (eg, appearance, responsibility, adaptability), and informal supports. Domain ratings used in the placement algorithm include the two global ratings, security issues, risk for suicide or violence, and self-care needs.

- *Security/management*—rating of level of management needed to manage a range of potential problems including elopement, medication noncompliance, suicide risk, and uncontrolled behaviors
- *Overall problem severity*—global rating of need for therapeutic interventions and other forms of external control (eg, hospitalization)
- *Suicide/danger to self*—presence and extent of self-destructiveness
- *Violent/danger to others*—extent to which conduct poses a threat to family or others
- *Self-care/basic needs*—rating of need for supportive care to manage personal hygiene, manage money, obtain food and housing, access other resources
- *Overall strengths/resources*—rating of economic and skill base, and availability of help and assistance from other persons (not professionals)

A clinician who knows the patient complete the CCAR assessment, which does not usually require a patient interview. The time period for the rating is "of current clinical concern" and usually relates

Figure 1

Placement algorithm: Colorado Client Assessment Record ratings → level of care. CM, case management.
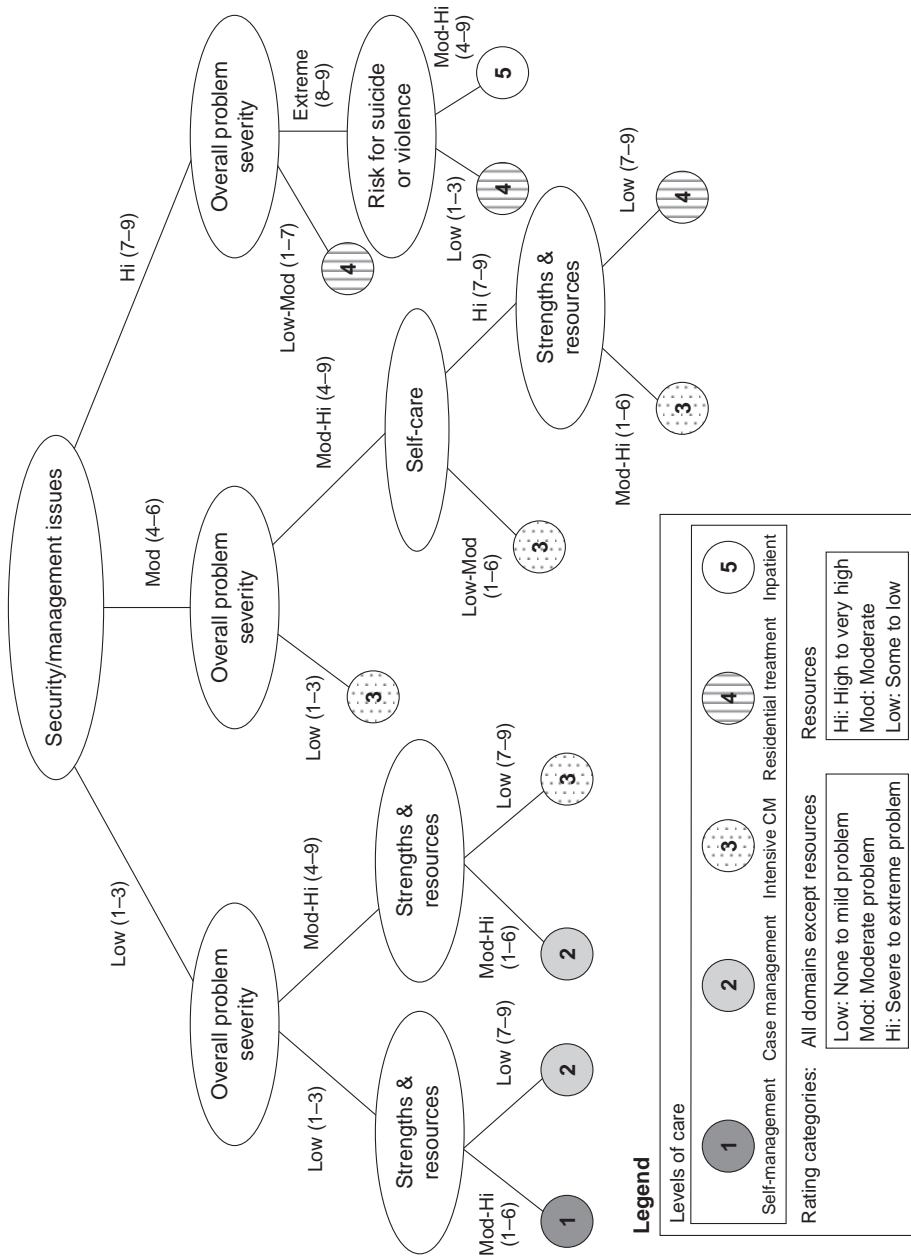
to the last 3 to 4 weeks. Ratings are scored on an ordinal scale from 1 to 9 (none/slight to severe/extreme); hence, they are sensitive to a broad range of function.

Because the CCAR is intended to capture clinical judgment, the most likely source of measurement variability is the clinician. A number of strategies are used to maximize inter-rater reliability. Prior to making each rating, the clinician answers a series of questions about the presence or absence of selected relevant symptoms and behaviors. A manual provides individualized documentation for each rating domain, outlining its scope and defining five anchor points along the 9-point response continuum. In the CAP projects, clinician raters participated in a full-day training session to maximize consistent interpretation of items and calibrate ratings. In addition, two different raters independently assessed each patient; results were combined into a single, consensual assessment. When the authors assessed inter-rater reliability in another CAP project[34] (where two CCAR assessments were submitted for each of 219 patients), intra-class correlations exceeded 0.70 for all CCAR domains. In a Florida evaluation, Ward et al[32] reported moderate to high intra-class correlations that exceeded 0.50 for 17 out of 18 ratings (they used a version of the CCAR called the Functional Assessment Rating Scale). Other patient data collected in the CCAR include sociodemographic information, special problems, diagnoses, previous hospitalizations, and length of current admission.

The research team developed a second measure of patient support and service needs, the Service Needs Profile, based on a similar tool currently used in Colorado.[31] For each patient, clinicians first estimated overall need for residential support and for case management. These estimates were compared with algorithm placements to better understand how clinician decisions compared with the practices promoted in the model. Clinicians also estimated need for each of a number of specific treatment and rehabilitation services that all consumers are expected to require in varying amounts, regardless of level of care. For outpatients, raters compared their estimates of need with current service use (more than needed, less than needed, appropriate). Data from the profile were used as independent indicators of need for service in validating the placement algorithm.

The assessment package included the CCAR and Service Needs Profile, but not the mapping algorithm. None of the raters were members of the stakeholder panel. These strategies ensured that raters were blinded to the impact of their CCAR ratings.

Model Application

Sample selection

The project sample was drawn from patients of a provincial psychiatric hospital responsible for providing tertiary mental health services to a defined catchment area of urban, semi-urban, and rural communities. The facility operates about 450 inpatient beds and serves about 2,500 registered outpatients in various specialty clinics and programs. Patient case book numbers were drawn randomly, stratifying by program and setting (eg, inpatient or outpatient). Where possible, a minimum of 30 outpatients per stratum was drawn. Any selected patient who was discharged before an assessment could be completed was replaced with another patient from the same stratum. Clinician raters participated in a training day and were expected to complete assessments within the following month. Where possible, two clinicians rated the patient and submitted one, mutually agreed-on assessment. A hospital staff member served as on-site project coordinator to solve problems and remind raters of timelines.

Sample description

The final sample included 307 inpatients (75% of current census) and 284 outpatients (about 11% of registered outpatients); all strata were adequately represented. As would be expected for tertiary

care facilities, rates of disorder were high, with over half of the patients having a schizophrenia-spectrum diagnosis and one third having a major mood disorder. Other reported disorders included developmental handicaps (10% of patients), personality disorders (14%), substance abuse (15%), and organic disorders (6%). Comorbidity was substantial, with 58% of patients having two or more diagnoses. Rates of disorder were generally higher among inpatients than outpatients, with the exception of schizophrenia. This finding is explained, in part, by the presence in the outpatient population of a small number of severely ill individuals who live in supervised residences operated by the hospital. Length of stay provides further insight into hospital practice patterns. Almost two thirds of inpatients (65%) had been hospitalized for over 90 days, and 37% had been in hospital more than 1 year. Thirty-six percent were involuntary hospitalizations.

Impairment also was evident in the sociodemographic profiles (Table 2), with only 15% of the sample married, 19% having any post-secondary education, and 7% employed. As would be expected, outpatients were higher functioning on most of these indicators and many were living in independent situations. Almost all patients (88%) were taking psychotropic medications.

Level-of-care placements

Table 3 describes the distribution of inpatients and outpatients across levels of care after applying the placement algorithm to CCAR ratings. The goal of moving inpatients into less restrictive care settings was achieved, with only 10% of inpatients recommended to remain in hospital and another 30% placed in a supervised treatment residence. Over 60% were determined to be able to live in the community, with 42% requiring intensive community support and 19% general case management or self-management. Even within different patient subgroups (eg, adult long stay, psychogeriatric, concurrent substance abuse subgroups), the proportion of individuals recommended for inpatient care never exceeded 16%.

The placement algorithm distributed outpatients across the continuum of service levels. Fifteen percent of these current users of tertiary care were recommended for self-management and almost

Table 2
Sample demographic profile

Characteristics	Inpatient (n = 307) %	Outpatient (n = 284) %	Total sample (n = 591) %
Female	37.7	50.7	44.0
< 65 years	83.9	83.8	83.8
Married	10.6	20.4	15.3
Completed post-secondary education	19.3	18.8	18.9
Employed (full time/part time)	4.3	12.0	7.1
Residence			
Independent		72.7	
Nursing home or long-term care		6.1	
Other supervised		20.1	
Living arrangement			
With spouse or partner		26.9	
With parents or other relative		12.4	
Alone		32.6	
Unrelated person(s)		26.9	

Table 3
Level-of-care assignment

	Patient sample			
	Inpatient (*n* = 300)		Outpatient (*n* = 277)	
Level of care	***n***	**%**	***n***	**%**
Level 1: Self-management	6*	2.0	42	15.2
Level 2: Case management	51	17.0	94	33.9
Level 3: Intensive case management	126	42.0	85	30.7
Level 4: Residential	88	29.3	49	17.7
Level 5: Inpatient	29	9.7	7*	2.5

*Unstable estimate due to small cell size.

two thirds were perceived to need case management, almost equally divided between more and less intensive forms. Among the 18% of outpatients assigned to residential settings were many older patients who require nursing care. The seven outpatients recommended for inpatient care were unexpected and of concern, but with this small cell size the estimate is unstable.

Model Validation

Validation of this planning model requires an accumulation of evidence that placements provide individuals with an appropriate level of support. While there is no gold standard for comparison, concurrent validity was assessed by comparing model placements to placements made by other methods, to independent indicators of service need and severity, and among subgroups with differing care needs. A description of validation hypotheses and results follows. As this model is intended for service planning, not individual placement, the strength of the evidence supporting validity can be more liberal.

Comparison with other placement indicators

The CAP project included rater training in best practice approaches under mental health reform. As a result, clinician placement recommendations (as reported in the Service Needs Profile) were expected to be more progressive than current practice but still conservative with respect to desired practice, especially for inpatients. This hypothesis reflects evidence that clinicians tend to be protective of inpatients and may be unaware of the success of community services in supporting former long-stay patients.[35,36] As expected (Table 4), agreement between clinicians and the planning model regarding placement in independent versus residential settings was significant but low ($\kappa = 0.30$, $p < .001$), and was higher for outpatients ($\kappa = 0.34$, $p < .001$) than for inpatients ($\kappa = 0.18$, $p < .001$).[37] Among inpatients the bulk of disagreement centered on 96 patients (38%) for whom clinicians recommended residential care while the model assigned less restrictive alternatives (ie, intensive case management [$n = 73$], brokerage case management [$n = 22$] or self-management [$n = 1$]). This same pattern, to a lesser degree, was present in the outpatient sample. The model placed consumers in a more restrictive level of care than clinicians in 8% of cases, a finding that needs further exploration.

Table 4
Agreement on need for supervised care

Algorithm placement	Clinician ratings											
	Inpatient (*n* = 253*)				Outpatient (*n* = 246†)				All patient (*n* = 499‡)			
	Independent		Supervised		Independent		Supervised		Independent		Supervised	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Levels 1–3:												
Independent	60	23.7	96	37.9	152	61.8	40	16.3	212	42.5	136	27.3
Levels 4–5:												
Supervised	17	6.7	80	31.6	22	8.9	32	13.0	39	7.8	112	22.4

Supervised care includes care in residential and inpatient settings; sample excludes inpatients in forensic program.
*$\kappa = 0.18, p < .001$
†$\kappa = 0.34, p < .001$
‡$\kappa = 0.30, p < .001$

Independent indicators of service need

On the Service Needs Profile clinicians estimated patient need for service across a number of treatment and rehabilitation areas. A positive linear relationship between proportion of individuals requiring at least weekly assistance and level of care was expected. As Table 5 indicates, in almost every area the association was significant, with proportion of individuals requiring at least weekly service increasing linearly at higher levels of care. Furthermore, the association was strong in three service areas particularly indicative of capacity for independent living: medication monitoring, activities of daily living (ADL) support, and housing support.

A goal of needs-based planning is to provide patients with appropriate care in the least restrictive setting. While over-met need is a concern among inpatients, outpatients are at greater risk of having under-met need, in part because required services may not be available. In this hospital catchment area, where demand for intensive community support exceeds availability, higher rates of under-met need were expected among outpatients assigned to higher levels of care by the planning model. Again, the data source was the Service Needs Profile where raters estimated current service use of outpatients as more than needed, less than needed, or appropriate. As Table 6 indicates, the percentage of outpatients with under-met need ranged from 6% to 35% across service areas. There was a consistent trend of increasing rates of under-met need at higher levels of care (level 5 was excluded from this analysis due to very few placements), with significant associations between level of care and unmet need for medication monitoring ($\chi^2 = 9.0$, $df = 3$, $p = .03$), ADL support ($\chi^2 = 15.2$, $df = 3$, $p = .002$), social recreation ($\chi^2 = 14.7$, $df = 3$, $p = .002$) and family support ($\chi^2 = 11.0$, $df = 3$, $p = .012$). In contrast, rates of over-met need were low, affecting only 1% to 4% of outpatients, and unrelated to placement.

Independent severity indicators

The expected relationship held between model placement and independent severity indicators— previous hospitalizations (dichotomized as none versus one or more) and involuntary admission (Table 7). The percentage of patients having one or more hospitalizations in the last 2 years increased

Table 5
Service need* by level of care

Service area	Total sample	Level 1	Level 2	Level 3	Level 4	Level 5	χ^2
Medication monitoring (n = 567)	62.6	8.5	30.1	73.4	92.5	88.6	195.7[†]
Assessment (n = 566)	46.3	6.4	21.1	49.3	74.8	74.3	122.2[†]
Psychotherapy (n = 565)	30.4	2.1	28.2	35.3	32.8	40.0	22.3[†]
Crisis services (n = 555)	11.0	0.0	1.4	13.4	14.2	37.1	45.7[†]
SA services (n = 557)	15.4	12.8	12.9	18.4	11.9	25.7	6.4
ADL support (n = 565)	56.6	4.3	31.0	65.0	85.9	68.6	145.7[†]
Vocational (n = 556)	29.9	17.4	17.9	35.3	38.1	31.4	20.2[†]
Educational (n = 557)	14.2	2.2	10.1	13.3	19.3	31.4	18.8[†]
Social/recreational (n = 562)	62.3	17.8	46.8	66.5	84.4	71.4	83.3[†]
Housing support (n = 564)	46.1	10.6	21.3	47.3	75.4	74.3	116.3[†]
Family support (n = 562)	28.1	17.0	22.5	29.4	34.3	34.3	8.4

SA, substance abuse; ADL, activities of daily living
*Percentage of patients requiring service at least weekly
[†]$df = 4, p < .001$

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significantly from 29.5% in level 1 to 78.9% in level 5 ($\chi^2 = 37.3$, $df = 4$, $p < .001$). Among inpatients, the percentage of involuntary admissions increased significantly from 0% in level 1 to 69.0% in level 5 ($\chi^2 = 23.8$, $df = 4$, $p < .001$).

Subgroup discrimination

As expected, inpatients were more likely than outpatients to be placed in a supervised setting (residential treatment or hospital; $\chi^2 = 24.2$, $df = 1$, $p < .001$). Another hypothesis was that older patients (dichotomized as > 65 years) were more likely to be assigned to a supervised than an independent setting. Older patients are often disabled by medical illnesses that impair self-care ability, and they are at greater risk of experiencing cognitive disorders with related behavior/management problems. Analyses demonstrated a significant relationship between age group and level of care for inpatients ($\chi^2 = 4.5$, $df = 1$, $p = .035$) but, among outpatients, the relationship was not significant. This lack of association may be explained, in part, by a subgroup of younger outpatients with substance abuse problems who were assigned to supervised settings.

Discussion

The Ontario Ministry of Health is committed to needs-based planning for mental health services and supports prior to closure of provincial psychiatric hospitals. The project reported here forms one in a series to develop and refine a needs-based planning model in collaboration with stakeholder panels. The resulting model performed as desired by recommending less restrictive care settings for most inpatients and assigning outpatients with greater rates of unmet need to more intensive levels of care. Comparisons between the distribution of patients across levels and other indicators demonstrated increasing severity as intensity of care increased.

While evidence supporting the validity of the model is favorable, the question of whether the recommended level of care is most appropriate for meeting patient need can only be answered

Table 6

Unmet service need* by level of care

Service area	Total sample	Level 1	Level 2	Level 3	Level 4	χ^2
Medication monitoring						
(n = 260)	11.5	0.0	9.8	17.7	14.6	9.0[†]
Assessment (n = 261)	9.6	2.4	6.5	12.7	16.7	7.1
Psychotherapy (n = 253)	15.4	10.0	12.1	18.2	22.2	3.7
Crisis services (n = 241)	5.8	5.6	3.5	9.6	4.3	2.9
SA services (n = 238)	13.9	5.3	9.5	19.7	20.0	7.1
ADL support (n = 252)	13.5	2.6	6.6	21.1	23.4	15.2[‡]
Vocational (n = 242)	20.2	7.5	19.8	25.4	24.4	5.7
Educational (n = 235)	15.3	10.0	14.6	17.4	18.2	1.4
Social/recreational (n = 248)	34.7	14.6	29.5	43.1	48.9	14.7[‡]
Housing support (n = 256)	9.0	2.5	6.5	10.4	17.0	6.6
Family support (n = 250)	22.8	12.8	15.2	30.7	34.1	11.0[†]

*Percentage of outpatients receiving less than needed service
[†]$df = 3, p < .05$
[‡]$df = 3, p < .01$
ADL, activities of daily living; SA, substance abuse

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through prospective studies comparing outcomes between individuals receiving and not receiving recommended services and supports. As Semke[38] noted, appropriate treatment is difficult to determine, and it is possible that less restrictive care may not meet the needs of people who are very ill. Follow-up monitoring of hospital closures at the individual and system level is planned by the Ontario Ministry of Health and may provide opportunities to address this question. Prospective studies also would provide service-use data for more fully describing the range and intensity of services required in each level.

The findings of these CAP studies are being used to guide local service planning. Each CAP has recommended restructuring targets for inpatient tertiary beds, case management (intensive and other), and residential treatment. Subgroup analyses have been conducted to specify service needs for distinct patient groups such as long-stay patients, forensic patients, and older consumers. Through the Service Needs Profile, high levels of need have been identified for specific services such as medication monitoring, ADL support, social recreation, and housing support. These projects have

Table 7

Severity indicators by level of care*

Indicator	Level 1	Level 2	Level 3	Level 4	Level 5	χ^2
1+ admissions in past 2 years						
(n = 373)[†]	29.5	47.0	70.6	71.6	78.9	37.3[§]
Involuntary admission (n = 284)[‡]	0.0	16.7	36.4	39.0	69.0	23.8[§]

*Percentage of patients experiencing indicator
[†]Excludes inpatients in hospital for 90 days or more.
[‡]Inpatients only
[§]$df = 4, p < .001$

stimulated thinking about alternative options for providing the functions of inpatient tertiary care, and planners in one of the hospital regions have commissioned a report to more fully articulate progressive approaches to residential treatment and non-facility-based inpatient care. Discrepancies between clinician and model recommendations for residential versus community support are of concern. It may be difficult for clinicians to recommend services that do not exist but it also is possible that clinicians need more exposure to community-based care options before individualized discharge planning is initiated.

Conducting additional CAP projects will provide more opportunities to refine the planning model and the assessment tools on which it is based. In particular, the domains of the assessment need to be reviewed and possibly expanded to include other potential determinants of level of care. For example, patient and family preferences are extremely important in individualized planning, and their relevance to level-of-care placement needs to be evaluated.[35,36] A strong desire to live independently may persuade a clinician to refer a patient to an intensive community support program rather than residential care, especially if additional supports are available. In a current CAP project, patient and family preference data are being collected, and discussions with the local stakeholder panel are exploring how to integrate these data into planning recommendations.

A related issue pertains to use of the client strengths rating in the placement algorithm where more resources are considered to offset care needs and result in a less intensive placement. Family members raised concerns about interpreting their support as a replacement for professional care. In a current CAP, the strengths rating has been unbundled so that family support is rated separately from other patient resources (eg, economic resources, personal strengths, education, and skills). The placement algorithm will need to be refined to appropriately use these differentiated ratings.

Consumer motivation and past response to treatment may be salient determinants of level of care. The American Association of Community Psychiatrists[23] proposed a level-of-care system that includes recovery history and attitude and engagement in its placement algorithm. In a level-of-care typology developed by Leff and colleagues,[10] willingness to cooperate was a defining variable.

Several potential limitations of the assessment approach need to be explored. In patients with improved functioning due to current program involvement, CCAR ratings may underestimate current need; the consumer may be inappropriately placed in a lower level of care. While CCAR ratings are based on issues "of clinical concern," debriefing sessions with raters are planned to better understand the relationship between ratings and current treatment effects. Srebnik and colleagues[13] suggest that the placement algorithm consider a client's impairment history or point at which symptoms reappear. Colorado is using "residential needs while in crisis or at point of admission" to determine need for inpatient care.[31] This is an important issue that needs further examination.

Planning based on cross-sectional data may overestimate level-of-care needs due to individuals being assessed during acute phases of illness. However, the portion of acute care patients served by psychiatric hospitals is very small and, in most cases, clinicians have known patients for a long time and are familiar with ongoing needs. The CCAR, by broadening the assessment time frame to "of clinical concern," may have minimized this potential problem. These analyses found no difference between short stay (less than 90 days) and other inpatients in the percentage placed in level 5 (inpatient). Nevertheless, during debriefing sessions with clinicians the extent to which ratings are perceived to reflect acute versus longer-term mental health needs will be discussed.

Continued testing of the placement algorithm is needed in other mental health service settings (eg, in community services) to strengthen confidence in the planning model and establish generalizability. This is particularly important if the model is to be used to monitor appropriateness of care at the program level across the system. Refinements will be needed if the model is to be applied to specific subpopulations (eg, psychogeriatrics) or settings (eg, residential treatment).

Implications for Behavioral Health Services

The planning model described here has become a key tool for reorganizing psychiatric services in jurisdictions in the province of Ontario. Evidence to date suggests that the tool is reliable and valid, and it promotes best practices in a context of more reliance on community care. If used, model recommendations can promote greater equity in resource allocation and more consistent adherence to a number of key principles for service delivery under mental health reform. Consistent with goals of many US jurisdictions, the planning model also can serve as a tool for monitoring the extent to which the mental health system provides appropriate support to individuals with mental illness. While under-service is a major concern in managed care environments, in Ontario where universal access prevails, both over- and under-service need to be monitored.

A number of steps need to be implemented if this planning model is to be more widely used. Continued refinement and validation of the patient assessment package are needed, including attention to the issue of feasibility if ongoing assessments are planned. In parallel, an empirical evaluation of the appropriateness of the level-of-care placements is needed, with results used by stakeholders to further refine the model. As confidence in the model grows, a process of establishing performance benchmarks can begin. Throughout this process, ongoing communication with key stakeholders must continue so that the model is viewed as a valid tool for system planning and monitoring, and to ensure that their input continues to influence model refinement.

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