Canadian Institute for Health Information
Institut canadien d'information sur la santé

Analysis in Brief
Taking health information further

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Exploring Hospital Mental Health Service Use in Ontario, 2007–2008

Summary

This Analysis in Brief contains information relating to the characteristics, care needs and outcomes of people age 15 and older who were admitted to a designated mental health bed in Ontario between April 1, 2007, and March 31, 2008. Data included in the report were submitted to the Canadian Institute for Health Information (CIHI) by hospitals participating in the Ontario Mental Health Reporting System (OMHRS).

On average, those admitted to a mental health bed demonstrated lower rates of labour force participation, lower rates of being married or living with a partner and lower levels of education when compared to the overall Ontario population 15 and older. Most were admitted for mental health services because they were deemed to be a threat or danger to themselves, were deemed to be unable to care for themselves or had addictions or dependency problems. Together, people admitted with mood disorders, schizophrenia and other psychotic disorders, or substance-related disorders accounted for 85% of all admissions.

How long someone stayed in a mental health bed varied by hospital type, as expected. People admitted to specialty psychiatric hospitals stayed 62 days on average, while those admitted to mental health beds in general hospitals stayed 13 days. It is generally the case that specialty psychiatric hospitals tend to treat people with more severe mental health needs.

Most people admitted for inpatient mental health services (80.5%) were living in a private residence prior to their stay in hospital, and most of those (88.9%) returned to this same setting after discharge. Of those people who demonstrated aggressive or depressive behaviours on admission, most demonstrated an improvement during the period of hospitalization as demonstrated by a decline in these behaviours between admission and discharge.

Introduction

This first Analysis in Brief from OMHRS provides a high-level description of the demographic and clinical characteristics of people admitted to designated mental health beds in the province of Ontario between April 1, 2007, and March 31, 2008, along with some information about their hospital stays. The results summarized here include reason for admission, length of stay in hospital, pre-admission and post-discharge living settings, as well as various clinical outcomes. The report is intended to summarize the types of data and information available in OMHRS that can be used to facilitate decisions related to resource allocation, program planning and policy-making for inpatient mental health services.

The data used in the analyses are based on 52,109 unique admissions to designated inpatient mental health beds in Ontario. Further information about the methods used for this report is provided in the appendix. Because some people were admitted more than once to a designated mental health bed in 2007–2008, the 52,109 unique admissions were for a total of 39,418 different people. According to the Mental Health supplement of the Ontario Health Survey, conducted in 1990 and 1991, almost one in five (18.6%) Ontarians between the ages of 15 and 64 had at least one psychiatric disorder.[1] Therefore, the 39,418 people admitted to a designated mental health bed in Ontario in 2007–2008 represent less than one percent (0.02%) of the Ontario population[2] with mental illness.

About the Ontario Mental Health Reporting System

OMHRS was established by the Canadian Institute for Health Information (CIHI) in 2005 through a partnership with the Ontario Ministry of Health and Long-Term Care to enable standardized data collection and reporting for adult inpatient mental health services in Ontario. During 2007–2008, 70 hospitals in Ontario participated in OMHRS, representing activity for 4,981 designated beds. Of the 70 hospitals, 15 are specialty psychiatric hospitals, which predominantly provide mental health services, and 55 are general hospitals with adult mental health beds, which provide services for a wide variety of health conditions in addition to mental health.

The data submitted to CIHI for the purposes of OMHRS are collected by hospital staff using a standardized clinical assessment instrument known as the Resident Assessment Instrument for Mental Health (RAI-MH©). The RAI-MH includes care planning, outcome measurement, quality improvement and case mix applications.

The information collected through the RAI-MH is designed to inform decision-making by health care professionals and hospital administrators, as well as system planners and policy-makers at regional and provincial levels.

For more information about the Ontario Mental Health Reporting System visit www.cihi.ca/omhrs or send an email to omhrs@cihi.ca.

What Are the Characteristics of People Hospitalized for Mental Health Services?

Selected demographic characteristics of people hospitalized for mental health issues in Ontario are presented in Table 1. On average, people admitted to hospital for mental health services are younger than the general population.[2] Sex distribution appears to be similar to the general population, with men representing 50.6% of those admitted. Less than one-third of people (29.0%) admitted for mental health services were married or living with a partner, compared to 59.5% of the general population,[3] which is an additional factor when considering post-hospitalization outcomes.

People hospitalized for mental illness have a different profile in terms of their participation in daily activities. For instance, people admitted to a mental health bed were much less likely to be part of the labour force (classified as either "employed" or "unemployed, seeking employment") than the general population. Of admissions to mental health beds during 2007–2008, OMHRS data show that 32.0% were considered part of the labour force. By way of comparison, the labour force participation rate for the Ontario population in 2007 was 68.0%.[4]

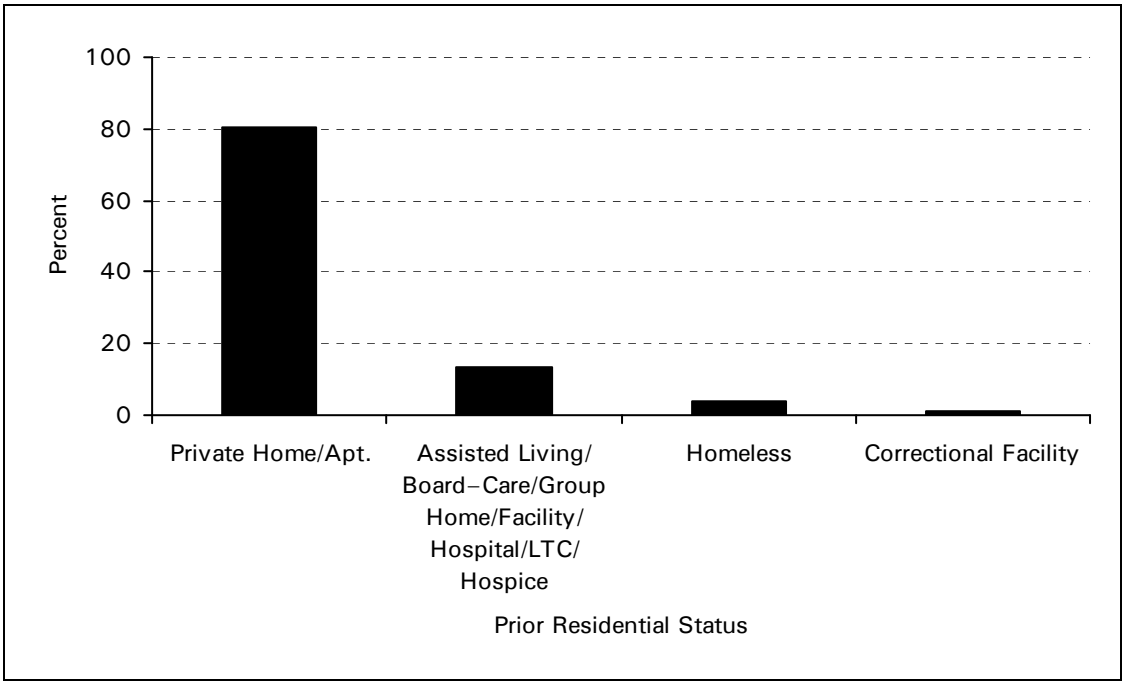
The employment rate was also lower for people admitted to mental health beds than for the general population. Of the admissions to Ontario inpatient mental health beds in 2007–2008, 23.6% represented people who were employed. The employment rate in the Ontario general population in 2007 was 63.6%.[4] In addition, fewer people admitted to mental health beds had completed high school (67.2%) or had a postsecondary education (39.1%) when compared to Ontario general population rates of 79.4% and 58.7%, respectively.[5]

Table 1 Age, Labour Force Participation, Employment Rate and Other Demographic Information of People Admitted to Ontario's Designated Adult Inpatient Mental Health Beds, 2007–2008

Age Categories	People Admitted to an Ontario Inpatient Mental Health Bed (%), 2007–2008	Ontario General Population 15 and Older (%), 2007[2]
15–19	6.0	8.1
20–24	10.4	8.3
25–44	43.2	35.6
45–59	27.7	26.0
60+	13.8	21.9
Employment	**People Admitted to an Ontario Inpatient Mental Health Bed, 2007–2008**	**Ontario General Population 15 and Older, 2007[4]**
Labour Force Participation Rate (%)	32.0	68.0
Employment Rate (%)	23.6	63.6
Other Information	**People Admitted to an Ontario Inpatient Mental Health Bed, 2007–2008**	**Ontario General Population 15 and Older, 2007**
% Male	50.6	49.0[2]
% Married/Partner	29.0	59.5[3]
% Completed High School	67.2	79.4[5]
% With Postsecondary Education	39.1	58.7[5]

Figure 1 examines the pre-admission living arrangements of people admitted to mental health beds in Ontario. More than four out of five people (80.5%) were living in private residences before admission. Other living settings prior to admission included assisted living, group homes and other facilities, which represented 13.4% of admissions, and correctional facilities, at less than one percent (0.9%). Some 4.0% of people were reported to be homeless prior to admission to a mental health bed.

Figure 1 Prior Residential Status of People Admitted to Ontario's Designated Adult Inpatient Mental Health Beds, 2007–2008



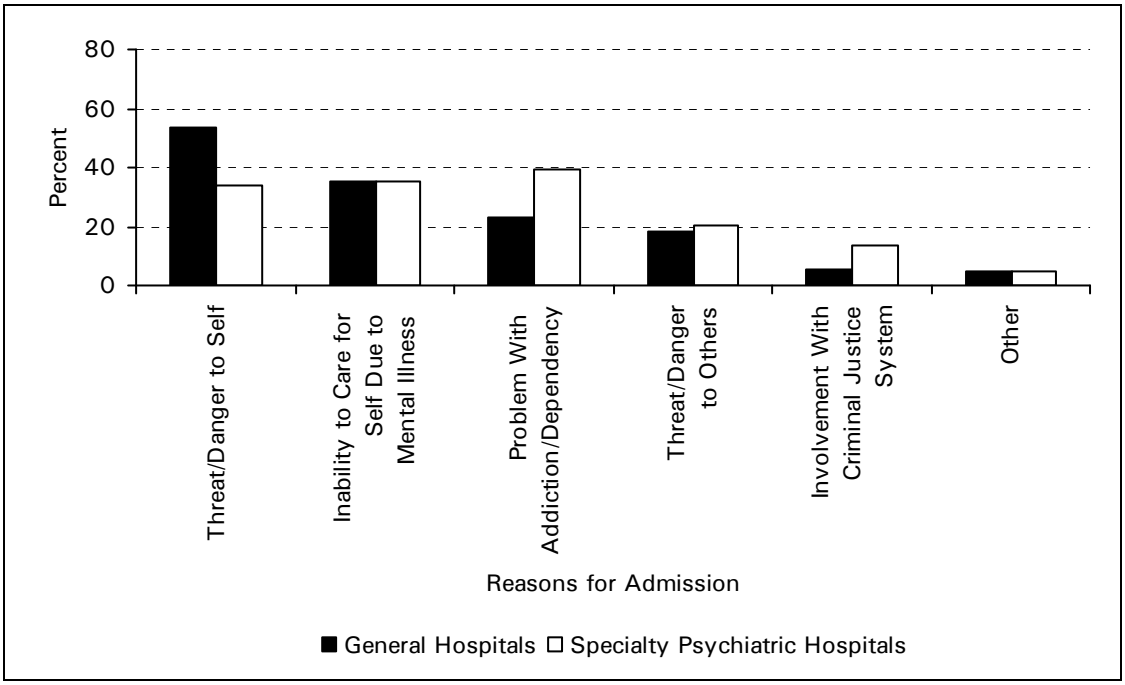
Note
Includes admissions in 2007–2008 where prior residential status was known (N = 44,075). Figure excludes 8,034 short-stay assessments where prior residential status was not coded. Coding prior residential status is optional on short-stay assessments.

What Are the Main Reasons for Admission to a Mental Health Unit or Hospital?

During 2007–2008, people were admitted to a hospital for mental health services for a variety of reasons. The three most commonly reported reasons for admission to mental health beds were being a threat or danger to oneself (48.7% of admissions); an inability to care for oneself as a result of mental illness (35.1%); and a problem with addiction or dependency (26.8%). The fact that more than two-thirds (68.5%) of people had more than one reason for admission relates to the complexity of mental illness and the use of hospitalization at various points in one's recovery.

The reported reasons for admission varied depending on the type of hospital to which the person was admitted (Figure 2). For example, mental health beds in general hospitals had a higher proportion of people admitted as a threat or danger to themselves than did specialty psychiatric hospitals: 53.5% and 34.0%, respectively. The proportion of people admitted due to a problem with addiction or dependency was higher in specialty psychiatric hospitals (39.6%) than among those admitted to mental health beds at general hospitals (22.8%), suggesting variation in the programs provided at these two hospital types.

Figure 2 Reasons for Admission to Ontario's Designated Adult Inpatient Mental Health Beds, by Hospital Type, 2007–2008

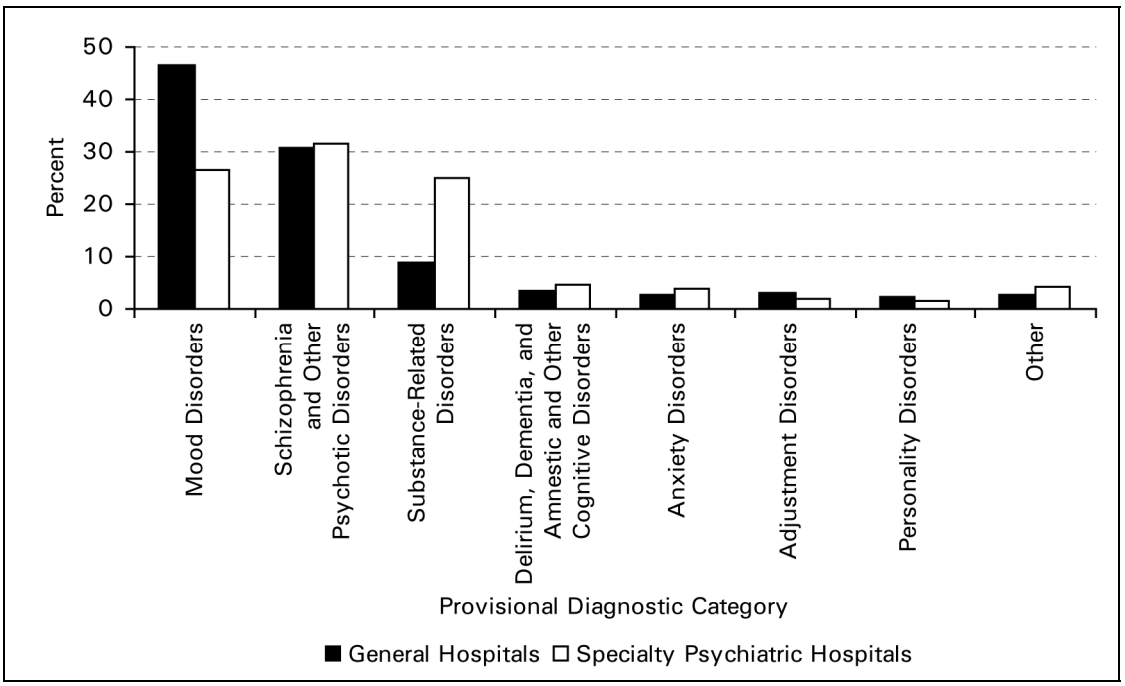


Note
Includes admission to Ontario's designated adult inpatient mental health beds in 2007–2008 (N = 52,109). Multiple reasons for admission can be coded for the same episode of care.

In addition to the reasons for admission, information is available about the provisional diagnostic category assigned by a psychiatrist or attending physician upon admission. The three most commonly reported diagnostic categories at the time of admission to an inpatient mental health bed were mood disorders, including diagnoses of depression and bipolar disorder (41.2%); schizophrenia and other psychotic disorders (30.1%); and substance-related disorders (13.1%).

As shown in Figure 3, the primary provisional diagnostic category for which people were admitted for inpatient mental health services varied by hospital type. The mood disorders category accounted for 46.5% of all admissions to mental health beds in general hospitals, compared to 25.7% in specialty psychiatric facilities. Related somewhat to differences seen in reasons for admission for the two facility types, 1 in 4 people admitted to a specialty psychiatric hospital had a primary diagnosis in the substance-related disorders category (25.1%), compared to 1 in 10 (8.7%) admitted to a mental health bed in a general hospital.

Figure 3 Provisional Diagnostic Category for People Admitted to Ontario's Designated Adult Mental Health Beds, by Hospital Type, 2007–2008



Note
Includes admissions to Ontario's designated adult inpatient mental health beds in 2007–2008 where DSM-IV provisional diagnostic category was coded (N = 42,140). Figure excludes 9,969 short-stay assessments where DSM-IV provisional diagnostic category was not coded. Coding DSM-IV provisional diagnostic category was optional on short-stay assessments during 2007–2008.

What Happens During and After an Inpatient Mental Health Stay?

The preceding sections, which include a description of the people who are admitted to a designated mental health bed in Ontario and what they are admitted for, provide context for an exploration of the characteristics of an inpatient hospitalization episode. Information included in this next section is intended to provide a snapshot of what people, on average, experience during and after hospitalization for mental illness in Ontario

For all hospitals combined, people discharged from a mental health bed in Ontario in 2007–2008 stayed for just more than 25 days on average, with half of all episodes lasting 10 days or less. However, people discharged from specialty psychiatric hospitals stayed longer, on average, than people discharged from mental health beds in general hospitals. As seen in Table 2, the average length of stay for mental health beds in general hospitals was just more than 13 days, compared to a considerably longer 62 days for specialty psychiatric hospitals.

Table 2 Length of Stay (LOS) of People Discharged From Ontario's Designated Adult Inpatient Mental Health Beds, by Hospital Type, 2007–2008

Hospital Type	Median LOS (Days)	LOS 25th Percentile (Days)	Mean LOS (Days)	LOS 75th Percentile (Days)	Number of Episodes	Number of Beds
Specialty Psychiatric Hospital (N = 15)	24	7	62.0	53	12,573	2,895
General Hospital (N = 55)	8	3	13.2	17	39,082	2,087
All Hospitals (N = 70)	10	3	25.1	22	51,655	4,981

Note
Includes discharges from Ontario's designated adult inpatient mental health beds in 2007–2008 (N = 51,655).

As expected, the longest of the long stays were typically seen in specialty psychiatric hospitals, while the shortest stays were more frequent in general hospitals. For example, 3.1% of people discharged from a specialty psychiatric hospital were there longer than one year, compared to 0.03% for those discharged from a general hospital. More than a quarter (29.6%) of those discharged from a mental health bed in a general hospital stayed for three days or less, compared to 16.1% of people discharged from a specialty psychiatric hospital.

Of particular interest, regardless of how long people stayed in a mental health bed, is whether or not they returned to the living settings which they were in prior to being admitted. As presented in Table 3, people who were admitted from a private residence or a long-term care facility were most likely to return to the same type of setting. Almost 9 out of 10 (88.9%) people admitted from a private residence to a mental health bed were expected to return to a private residence upon discharge. Of those admitted from long-term care, more than three-quarters (76.0%) were expected to return to that same setting. Also of interest, some 17% of those previously living in an assisted-living setting were able to return to a private residence following their inpatient mental health stay.

Table 3 Expected Living Setting at Discharge by Prior Residential Status for People Discharged From Ontario's Designated Adult Inpatient Mental Health Beds, 2007–2008

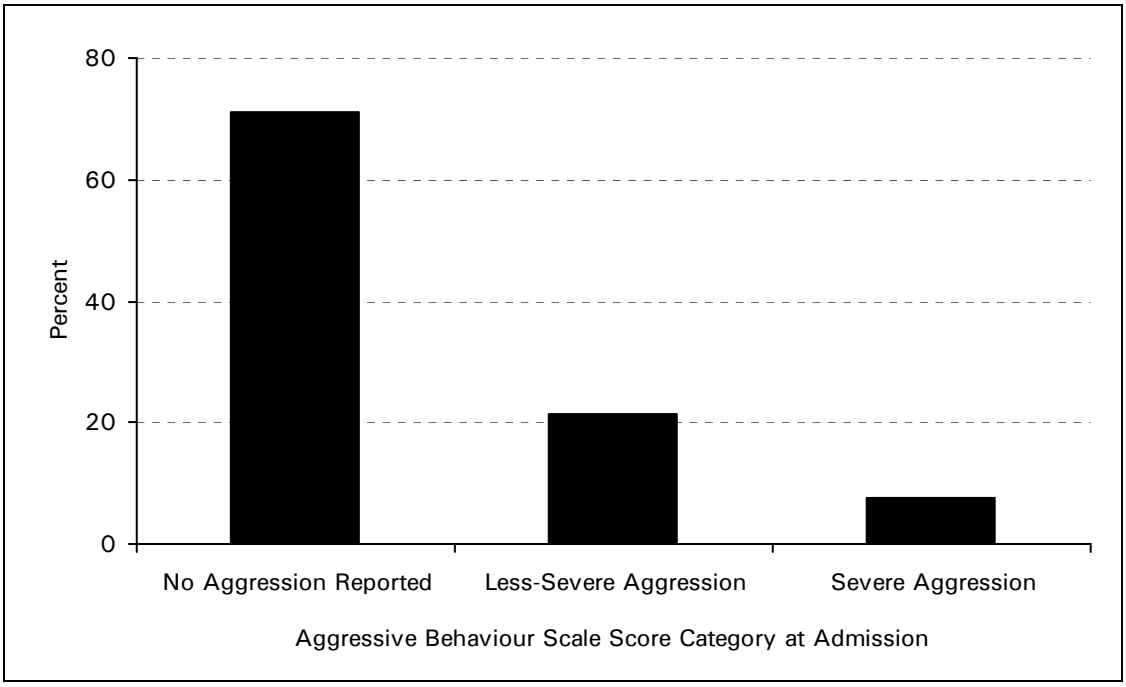
		Expected Living Setting at Discharge			
Prior Residential Status		**Private Residence**	**Assisted Living**	**Long-Term Care**	**Other**
Private Residence (N = 29,466)	**Row %**	88.9	3.1	1.2	6.8
Assisted Living (N = 1,938)	**Row %**	17.2	64.1	3.1	15.5
Long-Term Care (N = 683)	**Row %**	3.5	4.7	76.0	15.8
Other (N = 4,465)	**Row %**	52.7	13.2	3.9	30.3

Note
Includes discharges from Ontario's designated adult inpatient mental health beds in 2007–2008 where expected living setting at discharge and prior residential status were coded (N = 36,552). Table excludes 15,103 episodes where expected living setting was missing or coded as either "unknown" or "deceased." "Assisted living" category includes assisted living, board and care, group home and mental health residence.

For the purposes of RAI-MH data collection, assessments are conducted upon admission and at discharge, as well as at quarterly intervals for those people who stay longer than three months. Therefore, changes in functional status can be analyzed to provide a picture of various outcomes related to hospitalization for mental illness. Two of the outcome scales embedded in the RAI-MH (the Aggressive Behaviour Scale and the Depression Rating Scale) are presented in this report to demonstrate their value for a range of clinical, management and policy objectives.

The Aggressive Behaviour Scale (ABS) quantifies the level of aggressive behaviour exhibited during a stay in a designated mental health bed. The ABS score summarizes the frequency and severity of verbal abuse, physical abuse, socially inappropriate or disruptive behaviour, and resistance to care. Figure 4 shows that during the first three days following admission to a mental health bed, most people (71.2%) had no reported aggressive behaviour. Analysis of ABS scores shows that an additional fifth of people (21.3%) demonstrated less-severe aggression, and less than 8% demonstrated severe aggressive behaviour during the first three days after admission.

Figure 4 Severity of Aggressive Behaviour Scale Score at Admission for People Admitted to Ontario's Designated Adult Inpatient Mental Health Beds, 2007–2008

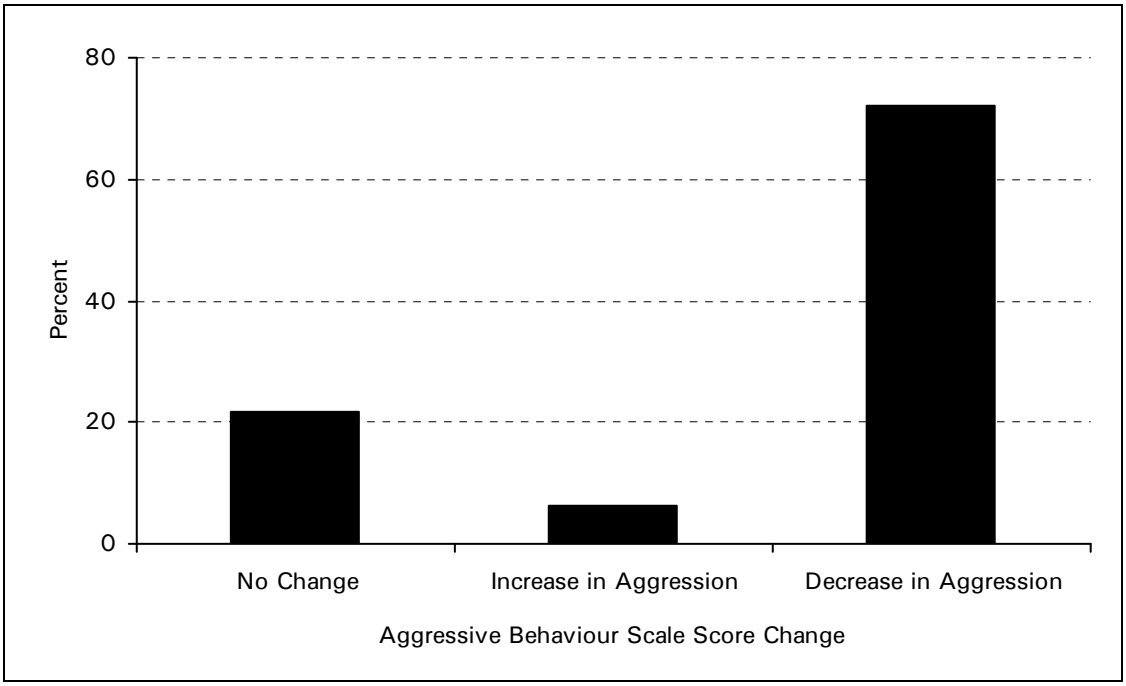


Note
Includes admissions to Ontario's designated adult inpatient mental health beds in 2007–2008 where all ABS elements were coded (N = 40,192). Figure excludes 11,917 short-stay assessments where ABS score could not be calculated due to elements that were not coded. Elements of ABS are optional on short-stay assessments.

Since the ABS score is also calculated at discharge for people whose stay lasts more than three days, changes in the level of aggressive behaviour between admission and discharge can be assessed as one outcome of inpatient hospitalization. As shown in Figure 5, of people discharged from mental health beds in 2007–2008 who demonstrated aggressive behaviour on admission, 72.0% showed a decrease in aggressive behaviour at discharge, while only 6.2% showed an increase in aggressive behaviour. For the remaining 21.7%, there was no change in aggressive behaviour between admission and discharge as measured with the ABS.

For people who were admitted with an ABS score of 0 (indicating an absence of aggressive behaviours), 94.3% were discharged with an ABS score of 0, indicating an absence of aggressive behaviours during the three days prior to discharge; 5.2% were discharged with an ABS score indicating less-severe aggression in the three days prior to discharge, and 0.5% were discharged with an ABS score indicating severe aggression in the three days prior to discharge.

Figure 5 Change in Aggressive Behaviour Scale Score Between Admission and Discharge for People With Aggression Reported at Admission to Ontario's Designated Adult Inpatient Mental Health Beds, 2007–2008

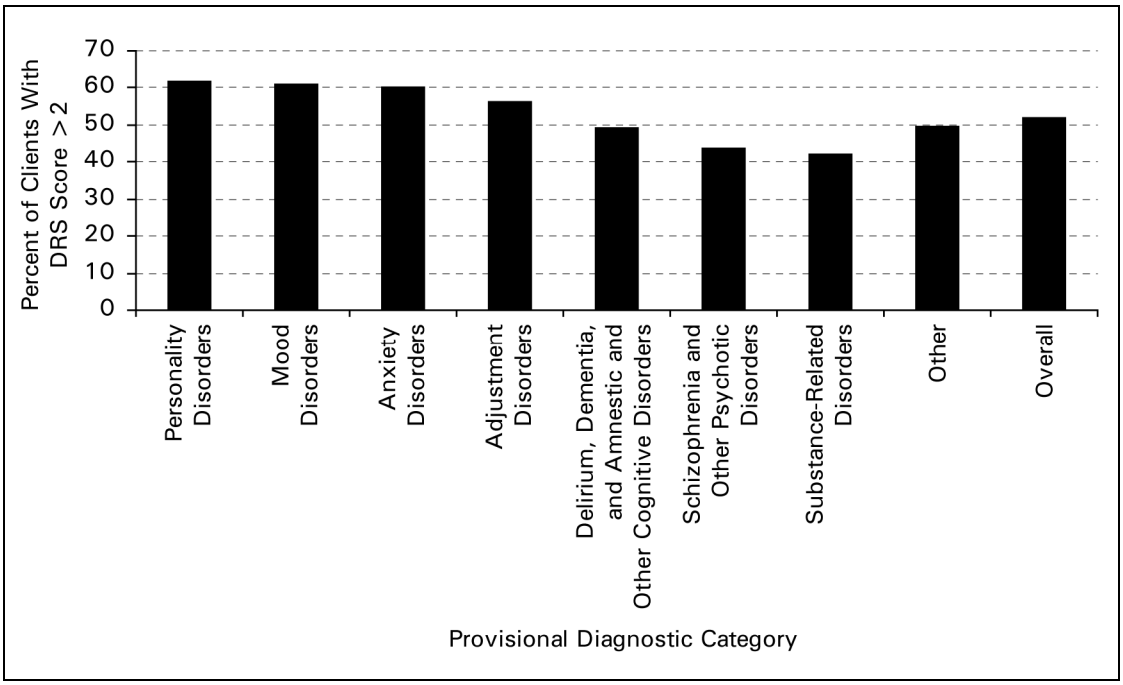


Note
Includes discharges from Ontario's designated adult inpatient mental health beds in 2007–2008 that had an ABS score greater than 0 on the admission assessment (N = 9,937). Records where ABS score could not be calculated on admission or on discharge were excluded.

The Depression Rating Scale (DRS) is another component of the RAI-MH; it can be used during inpatient hospitalization to screen for the probability of a major depressive episode. A DRS score is derived from clinical coding of the frequency of several mood and behaviour symptoms: facial expression; tearfulness; making negative statements; anxious complaints; fears/phobias; anger; and health complaints. A DRS score greater than 2 indicates the need for further evaluation of potential depression. All people whose stay lasts more than 72 hours and whose discharge is planned will have an admission and a discharge DRS score.

The proportion of people with a DRS score greater than 2 on admission to a designated mental health bed is presented in Figure 6. Signs of depression are common in the inpatient mental health population, with some 52.1% overall having a DRS score greater than 2. The figure also shows that the potential signs of depression were not limited to mood disorders, but were present across a range of provisional diagnostic categories.

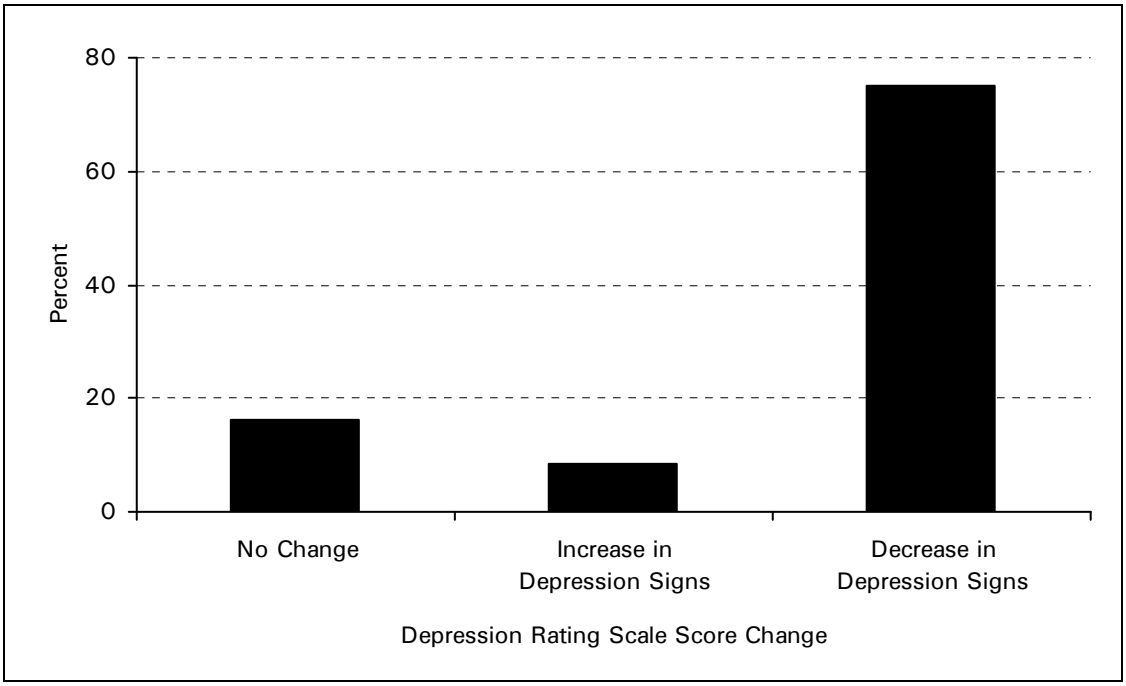
Figure 6 Proportion of People Admitted to Ontario's Designated Adult Mental Health Beds With Admission Depression Rating Scale Score Greater Than 2, by Provisional Diagnostic Category, 2007–2008



Note
Includes admissions to Ontario's designated adult inpatient mental health beds in 2007–2008 where all DRS elements were coded and where provisional diagnostic category was known (N = 39,746). Figure excludes 12,363 short-stay assessments where DRS score could not be calculated and/or provisional diagnostic category was not coded. Provisional diagnostic category and elements of DRS are optional on short-stay assessments.

Change in DRS score between admission and discharge is another measure of the benefit and outcome of treatment during an inpatient hospitalization. Of people discharged from an inpatient mental health bed in 2007–2008, 82.9% had signs of depression present on admission. Of those, more than three-quarters (75.2%) demonstrated a decrease in signs of depression as measured with the DRS by the time of discharge. Less than 8.5% of people demonstrated an increase in signs of depression (Figure 7).

Figure 7 Change in Depression Rating Scale Score Between Admission and Discharge for People With Depression Reported on Admission to Ontario's Designated Adult Inpatient Mental Health Beds, 2007–2008



Note
Includes discharges from Ontario's designated adult inpatient mental health beds in 2007–2008 who had a DRS score greater than 0 on the admission assessment (N = 28,203). Records where DRS score could not be calculated on admission or on discharge were excluded.

Conclusion

This report provides a summary of some of the characteristics and care needs of people admitted to mental health beds in Ontario between April 1, 2007, and March 31, 2008, as well as selected outcome indicators. The RAI-MH data were collected by 70 hospitals and were submitted to CIHI under a mandate of the Ontario Ministry of Health and Long-Term Care.

OMHRS has a wealth of information that may be used by researchers, policy-makers and system planners to help inform decisions about mental health services. Future CIHI reports will seek to further describe inpatient mental health services and the people receiving them.

About CIHI

The Canadian Institute for Health Information (CIHI) collects and analyzes information on health and health care in Canada and makes it publicly available. Canada's federal, provincial and territorial governments created CIHI as a not-for-profit, independent organization dedicated to forging a common approach to Canadian health information. CIHI's goal: to provide timely, accurate and comparable information. CIHI's data and reports inform health policies, support the effective delivery of health services and raise awareness among Canadians of the factors that contribute to good health.

Production of this analysis is made possible by financial contributions from Health Canada and provincial and territorial governments. The views expressed herein do not necessarily represent the views of Health Canada or any provincial or territorial government.

Appendix

Methods

Data Source and Inclusion Criteria

Information relating to people admitted to or discharged from designated adult inpatient mental health beds in Ontario between April 1, 2007, and March 31, 2008 (2007–2008), was extracted from CIHI's OMHRS database.

For the purposes of OMHRS, people are assessed using the RAI-MH instrument at admission, on a quarterly basis, in the event of a significant change in their clinical status and at discharge. For people whose stay is less than 72 hours, only one assessment, referred to as a short-stay assessment, is completed.

For this report, only admission, discharge and short-stay assessments were considered. Quarterly and change-in-status assessments were not included. Assessments for people younger than 15 at the time of admission were excluded from all analyses.

A total of 38,681 admission assessments, 38,260 discharge assessments and 13,463 short-stay assessments were considered for this analysis.

This report does not reflect all discharges from Ontario hospitals for people with mental illness, since data are submitted to CIHI for OMHRS only for stays in designated mental health beds. For stays in designated acute care beds, separation data are submitted to CIHI's Discharge Abstract Database (DAD). For 2007–2008, DAD contains 15,242 separation records with a primary diagnosis of mental illness.

Admission Assessments

All data elements that comprise the admission record are mandatory to record on admission assessments. Therefore, for analyses utilizing admission assessments, no admission assessments were excluded due to missing data.

Short-Stay Assessments

Many data elements are optional on short-stay assessments, which are completed when the length of stay is three days or less. Short-stay assessments were included in analyses when the information was present. Assessments in which the information in question was not present were excluded. Therefore, the number of included assessments varies depending on the data element(s) used for the particular analysis. The exact number of included assessments in each figure is presented in the notes.

Discharge Assessments

On discharge assessments, a large number of data elements are optional when the discharge is unplanned or when the length of stay is less than seven days. Therefore, for analyses using discharge assessments, a certain subset of assessments did not include the data elements being analyzed; these assessments were excluded from individual analyses, and the exact number of included assessments is specified in the notes.

Length of Stay

Length of stay (LOS) was calculated for each discharge and short-stay assessment that occurred in 2007–2008. LOS was calculated as the difference between the discharge date and the admission date. For assessments in which the admission occurred prior to April 1, 2006, the true admission date is not available in the OMHRS database. In these cases, an artificial admission date of April 1, 2006, was coded on the OMHRS assessment. For these episodes, the true admission date was extracted from DAD, when possible, by using personal identifiers to link information from OMHRS and DAD. When it was not possible to link information from OMHRS to DAD, the artificial admission date of April 1, 2006, was used in the calculation of LOS. This imputation may artificially shorten LOS relating to some longer-term psychiatric inpatient episodes.

Outcome Scales

Aggressive Behaviour Scale

The ABS is a short, comprehensive screening and outcome scale that measures key characteristics of aggressive behaviours. The ABS is derived from four data elements on the OMHRS assessment:

- Verbal abuse
- Physical abuse
- Socially inappropriate/disruptive behaviour
- Resisting care

Each of the four clinical data elements that contributes to the calculation of the ABS has a possible coding value from 0 (behaviour not exhibited) to 3 (behaviour exhibited daily). Assessments in which any of the four elements are not coded were excluded from analyses using the ABS.

Total scores on the ABS can range from 0 to 12, with higher scores indicating reporting of a greater number or greater frequency of aggressive behaviours. A score of 0 indicates that none of the four behaviours was exhibited during the assessment period. A score between 1 and 5 indicates less-severe aggressive behaviour was present during the assessment period, and a score of 6 or higher indicates the presence of severe aggressive behaviour.[6]

Depression Rating Scale

The DRS is derived from mood and behaviour elements on the OMHRS assessment. The resulting DRS score can be used to screen for depression. The DRS has been validated against two common measures of depression: the Hamilton Depression Rating Scale and the Cornell Scale for Depression. While the Hamilton and Cornell scales are based on interviews, the DRS is observation-based and can be derived from a complete OMHRS assessment. The DRS score is derived from the following seven data elements:

- Facial expression
- Tearfulness
- Made negative statements
- Anxious complaints
- Fears/phobias
- Anger
- Health complaints

Each of the seven indicators that contributes to the calculation of the DRS has a possible coding value from 0 (indicator not exhibited) to 3 (indicator exhibited daily). Assessments in which any of the seven elements are not coded were excluded from analyses using the DRS.

The DRS score ranges from 0 to 14. A score of 0 indicates no signs of depression. A score greater than or equal to 3 indicates the patient should be evaluated further.[6]

Statistical Analyses

To present the characteristics of people utilizing inpatient mental health services in Ontario, descriptive statistics were used. Assessments in which information was missing or unavailable were excluded from individual analyses. The number of included assessments is presented in notes throughout the report.

References

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2. Statistics Canada, *Table 051-0001—Estimates of Population, by Age Group and Sex for July 1, Canada, Provinces and Territories, Annual (Persons Unless Otherwise Noted)* (CANSIM database) (Ottawa, Ont.: Statistics Canada), [online], cited January 13, 2009, from <http://cansim2.statcan.gc.ca/cgi-win/cnsmcgi.exe?Lang=E&CANSIMFile=CII\CII_1_E.htm&RootDir=CII/>.

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6. Canadian Institute for Health Information, *Interpretation Resource for the Ontario Mental Health Reporting System Quarterly Comparative Reports, 2008* (Ottawa, Ont.: CIHI, 2008).