National Mental Health Benchmarking Project Adult Forum

Special Project

28 Day Readmission Project
Gender Comparison

national **mental health** strategy

A joint Australian, State and
Territory Government Initiative

AMHOCN

October 2007

28 DAY READMISSION DATA ANALYSIS

Comparison of readmitted and non-readmitted consumers by gender

September 2007

1 PRELIMINARIES

1.1 PREAMBLE

This is the third report on 28 day readmission. The first (November 2006) profiled readmitted consumers. The second (March 2007) compared readmitted and non-readmitted consumers. This third report responds to a request to repeat the March 2007 analyses separately for men and women. It should be read in conjunction with the March 2007 report, whose specific analyses are not reproduced here.

To repeat the previous analyses broken down by gender, i.e. comparing admitted and readmitted in each organization separately for men and women would produce many analyses, many of which would be based on small numbers. Following clarification of this point, the reporting presented here is of associations and predictors of readmission separately for men and women, not broken down by organization, using the existing data.

1.2 BASIC DATA

The following table shows the numbers of collections of readmitted and non-readmitted consumers broken down by gender.

	Readmitted	Not readmitted	All
Men	119	159	278
Women	103	94	197
All	222	253	475

The 222 readmitted consumers were detailed in the original data file delivered in November 2006 and the 253 non-readmitted consumers in the data file of March 2007.

1.3 REPORT PLAN

We shall conduct similar analyses on the 278 men and the 197 women. In each analysis we shall look at the association of each of the available data items with readmission status. After this we shall summarize the individual results, and attempt multivariate analyses to assess their joint contribution. To avoid clutter, statistical details of non-significant results will not be presented.

2 MEN

2.1 Age

The mean age of readmitted and non-readmitted men was 34.4 years and 35.2 years respectively; this is a small and non-significant difference.

2.2 Employment status

	Readmitted		Not readmitted		All	
Unemployed	82	68.9%	115	72.3%	197	70.9%
Not unemployed	37	31.1%	44	22.2%	81	29.1%
All	119	100.0%	159	100.0%	278	100.0%

There is no material difference in unemployment status between readmitted and non-readmitted men.

2.3 Accommodation status

	Readmitted		Not readmitted		All	
Private accommodation	91	76.5%	135	84.9%	226	81.3%
Other	28	23.5%	44	18.7%	52	18.7%
All	119	100.0%	159	100.0%	278	100.0%

There is a slight but non-significant trend for more of the non-readmitted men to be in private accommodation.

2.4   Government income support

	Readmitted		Not readmitted		All	
On DSP	55	46.6%	52	32.9%	107	38.8%
Not on DSP	63	53.4%	106	67.1%	169	61.2%
All	118	100.0%	158	100.0%	276	100.0%

About 14% more of readmitted men are on a Disability Support Pension than non-readmitted men. This difference is statistically significant ($\chi^2_{(1)}$ = 5.3, p = .02).

2.5   Social support network

	Readmitted		Not readmitted		All	
None	22	19.1%	22	13.8%	44	16.1%
Some	93	80.9%	137	86.2%	230	83.9%
All	115	100.0%	159	100.0%	274	100.0%

Social networks were classified as none, limited, extensive, or unknown. There were a few consumers who were classified as unknown; these have been omitted from the analyses. Similar proportions of readmitted and non-readmitted men had no social support network.

2.6   Age at time consumer started receiving psychiatric care

No consumers started receiving psychiatric care in the 0 – 6 years age range, and only one (not readmitted) started in the over 65 years age range. For 37 male consumers this information was not known.

	Readmitted		Not readmitted		All	
7 to 15 years	11	11.8%	13	8.8%	24	10.0%
16 to 25 years	48	51.6%	77	52.4%	125	52.1%
26 to 65 years	34	36.6%	57	38.2%	91	37.9%
All	93	100.0%	147	100.0%	240	100.0%

For both the readmitted and non-readmitted groups of men just over half started receiving care in the 16 to 25 year range.

Was the fact of this data item being unknown associated with readmission status?

	Readmitted		Not readmitted		All	
Age of illness known	93	78.1%	148	93.1%	241	86.7%
Age of illness unknown	26	21.8%	11	6.9%	37	13.3%
All	119	100.0%	159	100.0%	278	100.0%

It can be seen that for 22% of the readmitted men the age of first receipt of care for psychiatric illness was unknown, compared to 7% for non-readmitted men. This association is significant ($\chi^2_{(1)} = 13.1$, p < .001). This result is very similar to that of the women.

2.7 New/existing consumer

	Readmitted		Not readmitted		All	
New	25	21.0%	77	48.4%	102	36.7%
Existing	94	79.0%	82	51.6%	176	63.3%
All	119	100.0%	159	100.0%	278	100.0%

A much larger proportion of readmitted men are existing consumers than of non-readmitted men. This association is significant ($\chi^2_{(1)} = 22.0$, p < .001).

2.8 Prior admissions to the service in previous 12 months

	Readmitted		Not readmitted		All	
No prior admissions	43	36.4%	97	61.0%	140	50.5%
Prior admissions	75	63.6%	62	39.0%	137	49.5%
All	118	100.0%	159	100.0%	277	100.0%

A much larger proportion of readmitted men have prior admissions than of non-readmitted men. This association is significant ($\chi^2_{(1)} = 16.3$, p < .001).

2.9 Duration of index admission

The mean duration of the index admission of readmitted men was 14.7 days, compared to 13.3 days for non-readmitted men, a non-significant difference.

2.10 Legal status

2.10.1 Legal status on admission

	Readmitted		Not readmitted		All	
Voluntary	48	40.3%	62	39.0%	110	39.6%
Involuntary	71	59.7%	97	61.0%	168	60.4%
All	119	100.0%	159	100.0%	278	100.0%

It is apparent that the rates of involuntary status on admission are very similar between readmitted and non-readmitted men. These results are very similar to those of the women.

2.10.2 Legal status on discharge

	Readmitted		Not readmitted		All	
Voluntary	78	65.5%	115	72.3%	193	69.4%
Involuntary	41	34.5%	44	27.7%	85	30.6%
All	119	100.0%	159	100.0%	278	100.0%

It is apparent that the rates of involuntary status on discharge are very similar between readmitted and non-readmitted men. These results are quite similar to those of the women.

2.11 Principal diagnosis

The next table shows the principal psychiatric diagnoses. As in the first report, some of the displayed categories represent groups. *Substance abuse* includes alcohol, opioids, cannabis, stimulants and multiple drugs; *Depressive disorder* includes depressive episode and recurrent depressive disorder; *Other psychosis* includes persistent delusional disorder, acute and transient psychotic disorder, and other and unspecified psychotic disorder; *Other* includes a wide variety of conditions, many occurring only once, as well as several instances of "non-psychiatric diagnosis" and "no diagnosis recorded".

	Readmitted		Not readmitted	
Schizophrenia	37	31.1%	49	30.8%
Depressive disorder	16	13.4%	22	13.8%
Schizoaffective	15	12.6%	12	7.6%
Substance abuse	14	11.8%	24	15.1%
Bipolar affective disorder	9	7.6%	11	6.9%
Stress/adjustment	10	8.4%	17	10.7%
Personality disorder	3	2.5%	5	3.1%
Other psychosis	7	5.9%	12	7.5%
Other	8	6.9%	7	4.4%
All	119	100.0%	159	100.0%

The distributions of the main diagnostic categories between the readmitted and non-readmitted male consumers are quite similar, with no major differences.

2.12   Personality disorder

	Readmitted		Not readmitted	
No personality disorder	98	82.3%	137	86.2%
Emotionally unstable pd	4	3.4%	1	0.6%
Other personality disorder	17	14.3%	21	13.2%
All	119	100.0%	159	100.0%

The "emotionally unstable personality disorder" category comprised the ICD codes F60.3X, which include an impulsive type and a borderline type. The association between personality disorder as classified in the above table and readmission status is not significant; nevertheless, of the five male consumers with emotionally unstable personality disorder, four were readmitted.

2.13   Suicidality in prior 30 days

	Readmitted		Not readmitted	
Extreme	5	4.3%	6	4.0%
High	30	25.6%	33	22.6%
Moderate	25	21.4%	47	29.6%
Low	57	48.7%	73	45.9%
All	117	100.0%	159	100.0%

The association between suicidality in prior 30 days and readmission status for male consumers is not significant.

2.14   Drug and alcohol use in prior 30 days

	Readmitted		Not readmitted	
No/mild	61	51.3%	67	42.1%
Moderate/heavy	58	48.7%	92	57.9%
All	119	100.0%	159	100.0%

The association between drug and alcohol use in the prior 30 days as classified in the above table and readmission status, whilst not significant shows a trend to lower levels of moderate and heavy use in readmitted men.

2.15   Poly drug use in prior 30 days

	Readmitted		Not readmitted	
No	57	47.9%	88	55.3%
Other substances	4	3.4%	7	4.4%
Yes	58	48.7%	64	40.2%
All	119	100.0%	159	100.0%

Overall, the percentages of consumers who had no polydrug use in the prior 30 days, some polydrug use, and "other substances", were quite similar between readmitted and non-readmitted men.

2.16   Criminal Justice involvement in prior 6 months

	Readmitted		Not readmitted	
No	68	57.1%	110	69.2%
Unknown	19	16.0%	12	7.5%
Yes	32	26.9%	37	23.3%
All	119	100.0%	159	100.0%

The association between criminal justice involvement in the prior 6 months and readmission status in male consumers is just significant ($\chi^2_{(2)} = 6.2$, p = .04). The rate at which this is unknown in the readmitted (16%) is about double that in the non-readmitted (7.5%).

2.17   HoNOS in index admission

2.17.1   Admission HoNOS

	Admission HoNOS mean score		
	Readmitted	Not readmitted	
Aggression etc.	1.64	1.68	
Self-harm	1.19	1.02	
Alcohol / drug	1.65	1.79	
Cognitive impairment	.98	.97	
Physical impairment	.67	.70	
Hallucinations / delusions	1.84	1.97	
Depressed mood	1.30	1.55	
Other problems	1.64	1.71	
Relationship problems	1.80	1.84	
Activities of daily living	1.24	1.35	
Accommodation problems	.90	.92	
Occupation problems	1.11	.90	
Total score	15.67	17.00	

The there were no significant differences between readmitted and non-readmitted men on any of the HoNOS items nor in the total score.

2.17.2　Discharge HoNOS

	Discharge HoNOS total score		
	Readmitted	Not readmitted	
Aggression etc.	.63	.41	
Self-harm	.13	.29	
Alcohol / drug	.95	.99	
Cognitive impairment	.50	.45	
Physical impairment	.31	.55	$t_{(173)} = 2.01, p = .05$
Hallucinations / delusions	.78	.79	
Depressed mood	.59	.74	
Other problems	.73	.60	
Relationship problems	1.27	1.10	
Activities of daily living	.56	.46	
Accommodation problems	.72	.55	
Occupation problems	.81	.53	
Total score	7.93	7.60	

For eleven of the twelve HoNOS items and the total score there were no significant differences between the readmitted and non-readmitted men. Only on item 5 (Physical impairment) was there a barely significant difference, with the non-readmitted scoring higher than the readmitted.

2.17.3　Change in HoNOS scores

For 73 of the readmitted male consumers and 88 of the non-readmitted consumers there were matching admission and discharge HoNOS total scores. The mean improvement of the former (7.9) was not significantly different from the mean improvement of the latter (8.7).

2.18　Family meeting

	Readmitted		Not readmitted	
No	67	56.3%	99	62.3%
Unknown	14	11.8%	9	5.7%
Yes	38	31.9%	51	32.1%
All	119	100.0%	159	100.0%

For male consumers, the association between family meeting and readmission status is not significant.

2.19   NGO support services

	Readmitted		Not readmitted	
No	79	66.4%	111	69.8%
Unknown	15	12.6%	11	6.9%
Yes	25	21.0%	37	23.3%
All	119	100.0%	159	100.0%

For male consumers, the association between NGO support services and readmission status is not significant.

2.20   Clinical care post discharge

	Readmitted		Not readmitted	
Public MHS	98	82.4%	114	71.7%
Private psychiatrist	4	3.4%	7	4.4%
GP	10	8.4%	21	13.2%
Other	6	5.0%	14	8.8%
Unknown	1	0.8%	3	1.9%
All	119	100.0%	159	100.0%

For male consumers, the association between clinical care post discharge and readmission status is not significant.

2.21   Discharge plan

	Readmitted		Not readmitted	
No	20	16.8%	22	13.8%
Unknown	5	4.2%	1	0.6%
Yes	94	79.0%	136	85.5%
All	119	100.0%	159	100.0%

The association between a discharge plan and readmission status for men is not significant.

2.22   Discharge plan to GP

	Readmitted		Not readmitted	
No	50	42.4%	60	37.7%
Unknown or "N/A"	12	10.2%	3	1.9%
Yes	56	47.5%	96	60.4%
All	118	100.0%	159	100.0%

The association between a discharge plan being sent to the GP and readmission status for men is significant ($\chi^2_{(2)}$ = 11.0, p = .004). As with the women, and although the numbers are small, for more

of the readmitted men the discharge plan being sent to a GP is unknown, compared to the non-readmitted men.

2.23 Days to first community contact post discharge

Although this data item was collected for the non-readmitted consumers, we decided in the March 2007 report not to analyze it because comparison would be vitiated by the fact that days to first community contact post discharge is artificially capped for the group that was readmitted within 28 days.

2.24 Contact on day of discharge

	Readmitted		Not readmitted	
Yes	80	67.2%	127	79.9%
No or unknown	39	32.8%	32	20.1%
All	119	100.0%	159	100.0%

Among men, the association between contact on day of discharge and readmission status is significant ($\chi^2_{(1)} = 5.7$, p = .02). Contact on day of discharge is more associated with non-readmission.

3 WOMEN

3.1   Age

The mean age of readmitted and non-readmitted women was 34.6 years and 37.6 years respectively; this difference is not statistically significant.

3.2   Employment status

	Readmitted		Not readmitted		All	
Unemployed	49	47.6%	38	40.4%	87	44.2%
Not unemployed	54	52.4%	56	59.6%	110	55.8%
All	103	100.0%	94	100.0%	197	100.0%

There is no material difference in unemployment status between readmitted and non-readmitted women.

3.3   Accommodation status

	Readmitted		Not readmitted		All	
Private accommodation	92	89.3%	88	93.6%	180	91.4%
Other	11	10.7%	6	6.4%	17	8.6%
All	103	100.0%	94	100.0%	197	100.0%

There is no material difference in accommodation status between readmitted and non-readmitted women.

3.4   Government income support

	Readmitted		Not readmitted		All	
On DSP	32	31.4%	20	21.3%	52	26.5%
Not on DSP	70	68.6%	74	78.7%	144	73.5%
All	102	100.0%	94	100.0%	196	100.0%

About 10% more of readmitted women are on a Disability Support Pension than non-readmitted women. This difference is not statistically significant.

3.5   Social support network

	Readmitted		Not readmitted		All	
None	8	8.2%	5	5.3%	13	6.8%
Some	89	91.8%	89	94.7%	178	93.2%
All	97	100.0%	94	100.0%	191	100.0%

Social networks were classified as none, limited, extensive, or unknown. There were a few consumers who were classified as unknown; these have been omitted from the analyses. Overall, very few women were classified as having no social support network. Similar proportions of readmitted and non-readmitted women had no social support network.

3.6   Age at time consumer started receiving psychiatric care

No consumers started receiving psychiatric care in the 0 – 6 years age range. For 27 female consumers this information was not known.

	Readmitted		Not readmitted		All	
7 to 15 years	8	9.9%	8	9.0%	16	9.4%
16 to 25 years	46	56.8%	46	51.7%	92	54.1%
26 to 65 years	27	33.3%	35	39.3%	62	36.5%
All	81	100.0%	89	100.0%	170	100.0%

For both the readmitted and non-readmitted groups of women just over half started receiving care in the 16 to 25 age range.

Was the fact of this data item being unknown associated with readmission status?

	Readmitted		Not readmitted		All	
Age of illness known	81	78.6%	89	94.7%	170	86.3%
Age of illness unknown	22	21.4%	5	5.3%	27	13.7%
All	103	100.0%	94	100.0%	197	100.0%

It can be seen that for 21% of the readmitted women the age of first receipt of care for psychiatric illness was unknown, compared to 5% for non-readmitted women. This association is significant ($\chi^2_{(1)}$ = 10.7, p = .001). This result is very similar to that of the men.

3.7   New/existing consumer

	Readmitted		Not readmitted		All	
New	21	20.4%	46	48.9%	67	36.7%
Existing	82	79.6%	48	51.1%	130	63.3%
All	103	100.0%	94	100.0%	197	100.0%

A much larger proportion of readmitted women are existing consumers than of non-readmitted women. This association is significant ($\chi^2_{(1)}$ = 17.8, p < .001). The percentages are almost identical to those of the men.

3.8   Prior admissions to the service in previous 12 months

	Readmitted		Not readmitted		All	
No prior admissions	33	33.0%	63	67.0%	96	49.5%
Prior admissions	67	67.0%	31	33.0%	98	50.5%
All	100	100.0%	94	100.0%	194	100.0%

Twice as many readmitted women have prior admissions than non-readmitted women. This association is significant ($\chi^2_{(1)}$ = 22.4, p = .001).

3.9   Duration of index admission

The mean duration of the index admission of readmitted women was 14.8 days, compared to 17.4 days for non-readmitted women, a non-significant difference.

3.10 Legal status

3.10.1 Legal status on admission

	Readmitted		Not readmitted		All	
Voluntary	42	40.8%	39	41.5%	81	41.1%
Involuntary	61	59.2%	55	58.5%	116	58.9%
All	103	100.0%	94	100.0%	197	100.0%

It is apparent that the rates of involuntary status on admission are very similar between readmitted and non-readmitted women. These results are very similar to those of the men.

3.10.2 Legal status on discharge

	Readmitted		Not readmitted		All	
Voluntary	75	72.8%	74	78.7%	149	75.6%
Involuntary	28	27.2%	20	21.3%	48	24.4%
All	103	100.0%	94	100.0%	197	100.0%

It is apparent that the rates of involuntary status on discharge are very similar between readmitted and non-readmitted women. These results are quite similar to those of the men.

3.11 Principal diagnosis

The next table shows the principal psychiatric diagnoses. As in the first report, some of the displayed categories represent groups. *Substance abuse* includes alcohol, opioids, cannabis, stimulants and multiple drugs; *Depressive disorder* includes depressive episode and recurrent depressive disorder; *Other psychosis* includes persistent delusional disorder, acute and transient psychotic disorder, and other and unspecified psychotic disorder; *Other* includes a wide variety of conditions, many occurring only once, as well as several instances of "non-psychiatric diagnosis" and "no diagnosis recorded".

	Readmitted		Not readmitted	
Schizophrenia	22	21.4%	10	10.6%
Depressive disorder	15	14.6%	13	13.8%
Schizoaffective	10	9.7%	7	7.4%
Substance abuse	11	10.7%	14	14.9%
Bipolar affective disorder	15	14.6%	21	22.3%
Stress/adjustment	5	4.8%	9	9.6%
Personality disorder	10	9.7%	5	5.3%
Other psychosis	5	4.8%	4	4.3%
Other	10	9.7%	11	11.7%
All	103	100.0%	94	100.0%

The distributions of the main diagnostic categories between the readmitted and non-readmitted female consumers are quite similar. There are relatively fewer consumers with bipolar affective disorder and stress/adjustment disorder among the readmitted, and relatively more with schizophrenia and personality disorder, but overall the association between principal diagnosis and readmission status is not significant.

3.12   Personality disorder

	Readmitted		Not readmitted	
No personality disorder	69	67.0%	79	84.0%
Emotionally unstable pd	28	27.2%	10	10.6%
Other personality disorder	6	5.8%	5	5.3%
All	103	100.0%	94	100.0%

The "emotionally unstable personality disorder" category comprised the ICD codes F60.3X, which include an impulsive type and a borderline type. The association between personality disorder as classified in the above table and readmission status is significant ($\chi^2_{(2)} = 8.9$. p = .012). It may be seen that 27% of the readmitted female consumers had a diagnosis of emotionally unstable personality disorder. The rate of consumers with this diagnosis among the readmitted is about 2½ times that of the non-readmitted.

3.13   Suicidality in prior 30 days

	Readmitted		Not readmitted	
Extreme	8	7.8%	3	3.2%
High	22	21.6%	18	19.1%
Moderate	33	32.3%	34	36.2%
Low	39	38.2%	39	41.5%
All	102	100.0%	94	100.0%

The association between suicidality in the prior 30 days and readmission status for female consumers is not significant.

3.14   Drug and alcohol use in prior 30 days

	Readmitted		Not readmitted	
No/mild	69	67.6%	62	66.0%
Moderate/heavy	33	32.3%	32	34.0%
All	102	100.0%	94	100.0%

The association between drug and alcohol use in the prior 30 days as classified in the above table and readmission status in women is not significant.

3.15   Poly drug use in prior 30 days

	Readmitted		Not readmitted	
No	70	68.6%	64	68.1%
Other substances	2	2.0%	6	6.4%
Yes	30	29.4%	24	25.5%
All	102	100.0%	94	100.0%

Overall, the percentages of consumers who had no polydrug use in the prior 30 days, some polydrug use, and "other substances", were very similar between readmitted and non-readmitted women.

3.16   Criminal Justice involvement in prior 6 months

	Readmitted		Not readmitted	
No	85	83.3%	84	90.3%
Unknown	11	10.8%	5	5.4%
Yes	6	5.9%	4	4.3%
All	102	100.0%	93	100.0%

The association between criminal justice involvement in the prior 6 months and readmission status in female consumers is not significant. However, as with the men, the rate at which this is unknown in the readmitted (10.8%) is double that in the non-readmitted (5.4%).

3.17 HoNOS in index admission

3.17.1 Admission HoNOS

	Admission HoNOS mean score		
	Readmitted	Not readmitted	
Aggression etc.	1.19	1.38	
Self-harm	1.42	1.33	
Alcohol / drug	.95	1.24	
Cognitive impairment	.93	1.00	
Physical impairment	.71	.64	
Hallucinations / delusions	1.38	1.34	
Depressed mood	1.56	1.97	
Other problems	1.87	2.21	
Relationship problems	1.45	1.71	
Activities of daily living	1.03	1.23	
Accommodation problems	.81	.79	
Occupation problems	.71	1.01	
Total score	13.97	16.00	$t_{(173)} = 2.04$, p = .04

The there were no significant differences between readmitted and non-readmitted women on any of the HoNOS items. The difference in the total score is just significant, with the non-readmitted scoring two points higher than the readmitted.

3.17.2 Discharge HoNOS

	Discharge HoNOS total score		
	Readmitted	Not readmitted	
Aggression etc.	.63	.41	
Self-harm	.13	.29	
Alcohol / drug	.95	.99	
Cognitive impairment	.50	.45	
Physical impairment	.31	.55	$t_{(173)} = 2.01$, p = .05
Hallucinations / delusions	.78	.79	
Depressed mood	.59	.74	
Other problems	.73	.60	
Relationship problems	1.27	1.10	
Activities of daily living	.56	.46	
Accommodation problems	.72	.55	
Occupation problems	.81	.53	
Total score	7.93	7.60	

For eleven of the twelve HoNOS items and the total score there were no significant differences between the readmitted and non-readmitted men. Only on item 5 (Physical impairment) was there a barely significant difference, with the non-readmitted scoring higher than the readmitted.

3.17.3   Change in HoNOS total score

For 72 of the readmitted female consumers and 61 of the non-readmitted consumers there were matching admission and discharge HoNOS total scores. The mean improvement of the former (6.6) was not significantly different from the mean improvement of the latter 8.7).

3.18   Family meeting

	Readmitted		Not readmitted	
No	59	58.4%	50	53.2%
Unknown	9	8.9%	2	2.1%
Yes	32	32.7%	42	44.7%
All	101	100.0%	94	100.0%

For female consumers, the association between family meeting and readmission status is just significant ($\chi^2_{(2)} = 6.0$, p = .05). 12% more of the non-readmitted than the readmitted had a family meeting.

3.19   NGO support services

	Readmitted		Not readmitted	
No	64	62.8%	78	83.0%
Unknown	13	12.7%	2	2.1%
Yes	25	24.5%	14	14.9%
All	102	100.0%	94	100.0%

For female consumers, the association between NGO support services and readmission status is significant ($\chi^2_{(2)} = 12.2$, p = .002). About 10% fewer of the non-readmitted than the readmitted had NGO support services.

3.20 Clinical care post discharge

	Readmitted		Not readmitted	
Public MHS	81	80.2%	60	63.8%
Private psychiatrist	12	11.9%	14	14.9%
GP	4	4.0%	10	10.6%
Other	4	4.0%	9	9.6%
Unknown	0	0.0%	1	1.1%
All	101	100.0%	159	100.0%

For female consumers, the association between clinical care post discharge and readmission status is nearly significant ($\chi^2_{(4)}$ = 8.5, p = .07. More of the readmitted consumers have clinical care post discharge with the public mental health service, and fewer with a GP.

3.21 Discharge plan

	Readmitted		Not readmitted	
No	14	13.7%	14	14.9%
Unknown	4	3.9%	1	1.1%
Yes	84	82.4%	79	84.0%
All	102	100.0%	94	100.0%

The association between a discharge plan and readmission status for women is not significant.

3.22 Discharge plan to GP

	Readmitted		Not readmitted	
No	41	40.2%	31	33.0%
Unknown or "N/A"	5	4.9%	0	0.0%
Yes	56	54.9%	63	67.0%
All	102	100.0%	94	100.0%

The association between a discharge plan being sent to the GP and readmission status for women is significant ($\chi^2_{(2)}$ = 6.5, p = .04). As with the men, and although the numbers are small, for more of the readmitted women the discharge plan being sent to a GP is unknown, compared to the non-readmitted women.

3.23 Days to first community contact post discharge

Although this data item was collected for the non-readmitted consumers, we decided not to analyze it in the March 2007 report because comparison would be vitiated by the fact that days to first community contact post discharge is artificially capped for the group that was readmitted within 28 days.

3.24   Contact on day of discharge

	Readmitted		Not readmitted	
Yes	79	76.7%	78	83.0%
No or unknown	24	23.3%	16	17.0%
All	103	100.0%	94	100.0%

Among women, the association between contact on day of discharge and readmission status is significant ($\chi^2_{(1)} = 5.7$, p = .02). Contact on day of discharge is more associated with non-readmission.

4 SUMMARY

In the following table are listed all the data items considered above. Separately for men and women, those for which a significant association with readmission status are marked with an asterisk (✴).

Men		Women
	Age	
	Employment status	
	Accommodation status	
✴	Government income support	
	Social support network	
	Age at time consumer started receiving psychiatric care	
✴	Age at time consumer started receiving psychiatric care unknown	✴
✴	New/existing consumer	✴
✴	Prior admissions to the service in previous 12 months	✴
	Duration of index admission	
	Legal status on admission	
	Legal status on discharge	
	Principal diagnosis	
	Personality disorder	✴
	Suicidality in prior 30 days	
	Drug and alcohol use in prior 30 days	
	Poly drug use in prior 30 days	
✴	Criminal Justice involvement in prior 6 months unknown	
	HoNOS total score on admission	
	HoNOS total score on discharge	
	Change in HoNOS total score	
	Family meeting	✴
	NGO support services	✴
	Clinical care post discharge	
	Discharge plan	
✴	Discharge plan to GP unknown	✴
✴	Contact on day of discharge	✴

5 Multivariate analyses

Logistic regression analysis was used to assess the joint effect of the variables that independently had been shown to be associated with readmission status. This method evaluates the joint effect of several independent variables on a single binary outcome variable, here readmission status.

5.1   Men

The table on the previous page shows that there were seven variables that were individually associated with readmission status for men. These were each coded in a binary fashion as shown:

Government income support   DSP versus other
Age at time consumer started receiving psychiatric care   Known versus unknown
New/existing consumer   New versus existing
Prior admissions to the service in previous 12 months   None versus any
Criminal Justice involvement in prior 6 months   Known versus unknown
Discharge plan to GP   Known versus unknown
Contact on day of discharge   Yes versus No or unknown

A forward stepwise approach was used. This means that one successively enters variables from the list so long as they meet a minimum level of significance, which we set at $p < 0.10$, a more lenient limit than the conventional 0.05. 276 of the 278 male consumers had data on all the relevant variables and were thus included in the analysis, in which five of the seven variables achieved the 0.10 threshold. These five variables were able to account for 14.2% of the variability in readmission status. Readmission was associated with:

Being an existing consumer
Age at time consumer started receiving psychiatric care being unknown
Discharge plan to GP being unknown
Prior admissions to the service in the previous 12 month, and
No contact on day of discharge, or this being unknown.

Another way to understand this result is to think of these five variables as items in a five-item "test" which tries to predict readmission status. This "test" classified these consumers thus:

	Actually readmitted	Actually not readmitted	All
Predicted readmitted	56	22	78
Predicted not readmitted	62	136	198
All	118	158	276

From this we see that:
56 of 118 (47%) readmitted male consumers were correctly identified (sensitivity .47),
136 of 158 (87%) non-readmitted male consumers were correctly identified (specificity .87),
56 of 78 (72%) consumers predicted to be readmitted were readmitted (positive predictive value .72),
136 of 198 (69%) consumers predicted to not readmitted were not readmitted (negative predictive value (.69).

5.2   *Women*

The earlier table shows that there were eight variables that were individually associated with readmission status for women. These were each coded in a binary fashion as shown:

Age at time consumer started receiving psychiatric care	Known versus unknown
New/existing consumer	New versus existing
Emotionally unstable personality disorder	Yes versus no
Prior admissions to the service in previous 12 months	None versus any
Family meeting	Known versus unknown
NGO support services	Known versus unknown
Discharge plan to GP	Known versus unknown
Contact on day of discharge	Yes versus No or unknown

As with the men, a forward stepwise approach was used. This means that one successively enters variables from the list so long as they meet a minimum level of significance, which we set at $p < 0.10$, a more lenient limit than the conventional 0.05. 192 of the 197 female consumers had data on all the relevant variables and were thus included in the analysis, in which four of the eight variables achieved the .01 threshold. These four variables were able to account for 13.8% of the variability in readmission status. Readmission was associated with:

Being an existing consumer
Age at time consumer started receiving psychiatric care being unknown
Prior admissions to the service in the previous 12 month, and
Having an emotionally unstable personality disorder.

Another way to understand this result is to think of these four variables as items in a four-item "test" which tries to predict readmission status. This "test" classified these consumers thus:

	Actually readmitted	Actually not readmitted	All
Predicted readmitted	72	31	103
Predicted not readmitted	26	63	89
All	98	94	192

From this we see that:
72 of 98 (73%) readmitted female consumers were correctly identified (sensitivity .73),
63 of 94 (67%) non-readmitted male consumers were correctly identified (specificity .67),
72 of 103 (70%) consumers predicted to be readmitted were readmitted (positive predictive value .70),
63 of 89 (71%) consumers predicted to not readmitted were not readmitted (negative predictive value (.71).

6 Comment

Firstly, many of the comments made in the previous (March 2007) report continue to apply, and will not be repeated here. In fact, the comments below should be read in conjunction with those earlier comments.

It is not unexpected that several of the variables with the strongest association with readmission status in the combined results work equally well for men and women consumers. In particular, prior admissions in the previous twelve months and being an existing consumer figure strongly for both sexes, as well as certain data items being unknown. One might have greatest confidence in those data items that were significantly and independently associated with readmission in each of the two sexes; these were: prior admissions in the previous twelve months, being an existing consumer, and age at time the consumer started receiving psychiatric care being unknown.

Outside the effect of these three data items, there were some differences between men and women. For men, whether a discharge plan was sent to the GP being unknown, and there being no or unknown contact on day of discharge were also independently associated with readmission status. For women, having an emotionally unstable personality disorder, most of which were of the borderline type, also contributed to the prediction of readmission status.

Sets of four or five data items did a fair job of predicting readmission status. For both men and women the status predicted by the respective sets of items tended to be about 70% accurate (the positive and negative predictive values). However the sensitivities and specificities were different. For men, sensitivity was low (.47) and specificity was high (.87). This means that the set of items was better in identifying those who were not readmitted than in identifying those who were. For women it was the other way around; sensitivity was higher (.73) but specificity was lower (.67). Thus the set of items for women was about equally effective in identifying readmitted and non-readmitted.

As with the combined results in the March 2007 report, the predictive efficiency of the identified data items needs to be treated with caution. Any analysis of retrospective data will capitalize on chance. A more robust test of predictive power will use the results from one data set on another data set. This can be done in two ways. If only one data set is available (as here) it can be randomly divided in half, and predictors derived from one half can be applied to the other half. The current data set is probably not large enough for this approach, and definitely not large enough for separate analyses by sex. The second way prediction can be tested is to apply the results prospectively, which amounts to collecting a new data set in the future.

Finally, certain comments in the March 2007 report continue to apply. The pervasive effect of prior admissions, which was present in most organizations, is present in both sexes. Certain data items being not known were associated with readmission; we conjectured then that "not known" is associated with incomplete discharge preparation, or defective documentation, or both. We did not look at organization differences this time, but it is likely that some of the gender-specific effects described are present in some organizations and not others. As before, the results need to be interpreted with regard to local factors.

24 September 2007