Mental health service utilisation post-discharge from New Zealand early intervention for psychosis services across the past 5 years

Rebecca E. Grattan[1], Sandra Baxendine[2], and Mark Smith[2]

[1]School of Psychological Sciences, Te Herenga Waka Victoria University of Wellington
[2]Te Pou o Te Whakaaro Nui

Mental health service utilisation post discharge is a key measure for understanding outcomes for those using mental health services, particularly in the early intervention for psychosis space. Service utilisation following discharge from New Zealand early intervention for psychosis providers is unknown. Programme for the Integration of Mental Health Data (PRIMHD) data from Te Whatu Ora was used to calculate mental health service utilisation in the year post discharge for those discharged from early psychosis services in 2016 to 2020. 38.2% of the sample did not utilise any secondary or tertiary mental health services in the year post discharge, and only 17.1% of the sample utilised inpatient hospital care during the year post discharge. Length of treatment, number of face-to-face contacts, symptoms, age, and ethnicity predicted who was more likely to utilise mental health services post discharge. Mental health service utilisation post early intervention for psychosis services in New Zealand is similar to rates seen internationally, and services have been consistently meeting these outcomes over the past 5 years.

Key words: *Early psychosis, Mental health, Health service*

INTRODUCTION

Psychotic disorders can be debilitating, not only for those who experience them, but also their family, whānau (extended family) and community. Psychosis impacts cognitive functioning (Carrión et al., 2011), psychological wellbeing (Patterson et al., 1996) and social functioning (Hogg et al., 2022) for the individual. It can also result in impaired family and whānau wellbeing and relationships (Koutra et al., 2014) and have a drastic financial impact on the community (Lin et al., 2023). The annual societal cost of schizophrenia varies by country, but can be as large as $94,587 USD in countries with similar health care systems to New Zealand such as Norway (Lin et al., 2023).

Early intervention for psychosis (EIP) was developed to embrace preventative care strategies common in general medicine practice, but less common in mental health (McGorry et al., 2008). The idea being that by intervening early, symptoms and risk factors could be targeted before permanent brain changes occur, and thereby improve outcomes (Cornblatt and Auther, 2005; McGorry et al., 2008). This theory is supported by a recent meta-analysis showing that the duration of untreated psychosis is a strong predictor of poor outcomes (Howes et al., 2021). Randomised -controlled trials have identified that those treated in EIP services have reduced symptoms, less hospital stays, and less treatment discontinuation than those in standard care (Correll et al., 2018). In addition, systematic reviews find consistent evidence that EIP programs are cost effective compared with alternatives (Aceituno et al., 2019). However, it is worth noting these improved effects are not always sustained at long-term follow-up (Puntis et al., 2018).

Measuring mental health outcomes can be challenging in a real-world environment, and in the absence of randomised-controlled clinical trials it is difficult to determine whether mental health services are improving outcomes. We lack an appropriate comparison group who require services but are not provided with them. To aid in this, treatment discontinuation and hospital stays are frequently used as proxies of treatment failure as they indicate respectively, lack of efficacy or tolerability and symptom exacerbation, indicating an unsuccessful or incomplete treatment (Correll et al., 2018). Past research has also used measures such as mental health service utilisation post discharge as an estimate of mental health service success (Henderson et al., 2020; Puntis et al., 2018).

A common goal of early psychosis providers is safe discharge to primary care setting, with no ongoing need for speciality mental health services. There is some evidence to suggest early psychosis providers are meeting this goal - for example, in national UK data between 2006 and 2017 83.5% of people discharged from EIP services were discharged to primary care (Puntis et al., 2018). Of those referred back to GP services after discharge only 31.9% were referred back to secondary mental health services within the following 2 year period (Puntis et al., 2018). However, little is known about whether early psychosis providers in New Zealand are performing similarly to international examples such as that described of the UK. Given New Zealand has unique cultural, socioeconomic factors that impact health-care usage (for

example, New Zealand Māori often experience disparities in health outcomes), this is an important consideration to see if the services are meeting our population needs.

This study aimed to explore mental health care utilisation in the year post discharge from early psychosis services in New Zealand, using nationally collected data. Based on data from the UK we hypothesised that a minority of the sample would require inpatient care in the year post discharge, and a majority would not have any mental health service utilisation, indicating early psychosis services are functioning well and reducing ongoing service needs. We also hypothesised that those with more face-to-face contact, or higher discharge symptom scores would be more likely to utilise inpatient or other mental health services, due to likely experiencing more severe psychosis presentations.

METHOD

Participants

Data for this project related to 3660 people who had their last discharge from an EIP service between 1 January 2016 and 31 December 2020. Participants were 36.0% NZ European (*n* = 822), 37.0% Māori (*n* = 842), 14.5% Pacific (*n* = 331), 12.4% Other Ethnicity (*n* = 282). Participants were 33.2% (*n* = 756) female, 66.6% (*n* = 1516) male and 0.2% (*n* = 5) gender diverse. In terms of age at start of episode, 0.4% of participants were aged 12 or under (*n* = 11), 26.8% were aged 13-17 years (*n* = 610), 62.1% were aged 18-24 years (*n* = 1416), 10.5% were aged 25 years and over (*n* = 240).

Data Collection Strategy

Data was collected from the Programme for the Integration of Mental Health Data (PRIMHD) from Te Whatu Ora/ Health New Zealand and extracted 26 November 2022. PRIMHD data includes information about mental health service usage that is sourced from Te Whatu Ora/ Health New Zealand district providers (public tertiary mental health providers in New Zealand) and non-government organisations (NGO) that provide secondary or tertiary mental health services in New Zealand. Data collection for PRIMHD is mandatory at Te Whatu Ora, and includes information on service usage (e.g., type of appointment, service used), appointments, and outcome data. Data from those discharged from EIP services in 2016 to 2020 was included in the analysis, including data from their EIP service utilisation, and other service utilisation in the year post discharge from the EIP service.

EIP episodes were calculated as first to last face-to-face contact with an EIP service. Those with multiple referrals to EIP services were compiled, and considered as one episode. Only those with at least 8 face-to-face contacts were included in the final analysis, as this was considered a best estimate of those who fully engaged with the treatment portion of early psychosis services, and were less likely to have only been seen for screening or assessment.

Data on face-to-face contacts with early psychosis providers was included (the number of contacts with mental health care services recorded, not including contacts recorded as phone, text, social media, written, activity type of care/liaison coordination, contact with family/whanau consumer not present, did not attend, support for family/whanau, and support for children of parents with mental illness and addictions). Additional data collected included age at episode start and ethnicity, other mental health service contact during the episode and for the year post discharge, and symptom data at discharge measured by the Health of the Nation Outcome Scales (HoNOS). The HoNOS is a clinician rated tool developed by the United Kingdom Royal College of Psychiatrist's Research Unit to measure change in the health and social functioning of people experiencing severe mental illness, and is mandated for collection by all Te Whatu Ora tertiary mental health services in New Zealand. Mental health service contact in the year post discharge was grouped into four categories, no service contact, service contact with community services only, service contact with residential level services (can also include community), service contact with inpatient services (can also include residential and community). Ethnicity was recorded as NZ European only, Pacific and other but not including Māori, Māori and other, and then Other (those who did not identify as NZ European, Pacific or Māori).

Ethics Approval: Ethics Committee approval from Victoria University of Wellington and the Health and Disability Ethics Committee was not required for secondary analysis of de-identified administrative data.

Data analysis

We examined mental health service utilisation within the EIP episode, and in the year post EIP discharge, for inpatient, residential and community level services at government and non-government mental health care services. We examined these factors for people with EIP episodes across a 5 year time period. Using chi-square tests we also examined whether length of early psychosis service, quantity of face-to-face contact, HoNOS scores at discharge, age or ethnicity was associated with differences in service use in the year post discharge. Type of service was categorised as inpatient, residential, community and no service contact. If people experienced multiple types they were included in the group with the most "severe" service type which was inpatient, and no service was considered "least severe".

To complement these analyses, we also examined whether the Type of Service groups differed by these factors using ANOVA. ANOVA were followed up with Post-hoc Games-Howell tests to examine for differences between groups. Using robust Welch's ANOVA we compared 1) EIP episode duration (measured dimensionally in number of days) across groups of different care utilised during episode (Inpatient, Residential, Community, EIP only), 2) EIP episode duration across groups of different care utilised post-episode (Inpatient, Residential, Community, None), 3) Face to face contacts across groups of different care utilised post-episode (Inpatient, Residential, Community, None).

RESULTS

Sample demographics

The whole data set included data from 3660 people, who had their last discharge from an EIP service between 1 January 2016 and 31 December 2020. Of this sample, 62.2% attended at least 8 face-to-face appointments (*n* =

Table 1: Additional care received outside of EIP during episode

Length of EIP Treatment	Inpatient	Residential	Other Services	EIP only
3 months or under (*n* = 106)	31%	10%	24%	35%
4 months to 1 year (*n* = 812)	25%	5%	33%	37%
1 year or 2 years (*n* = 1160)	53%	6%	27%	13%
3 years or more (*n* = 199)	74%	4%	15%	23%
Mean number of days (SD)	708.84 (435.44) [a]	534.82 (339.82) [b]	486.11 (355.33) [b]	332.28 (276.07) [c]

NOTES: Different superscript indicate significant group differences in mean number of days, as indicated by Games-Howell post-hoc comparisons following ANOVA test with significance p < .05.

2277), which became the final sample used for data analyses. The majority of the sample had less than 100 face-to-face appointments across their care with the early psychosis services (*n* = 1863), and 18.1% had more than 100 face-to-face appointments across their care (*n* = 414). During this time period, 70.5% of the sample received 1 referral to EIP (*n* = 1605), 22.2% received 2 referrals (*n* = 505), 5.1% received 3 referrals (*n* = 115), and 2.3% received more than 3 referrals (*n* = 52).

Service usage during EIP care

Of the final sample, 22.2% received only EIP services, and the other 77.8% received services from other mental health service providers as well. This includes 44.0% who also utilized inpatient treatment, 5.8% who also utilised residential services, and 28% who also utilised other services. As shown in Table 1, type of additional services utilised significantly differed depending on length of EIP treatment (χ = 322.6, *df* = 9, $p < .001$). Of those who utilised inpatient treatment, 74% had received at least 3 years of EIP care. A robust Welch's ANOVA examined service usage differences in terms of EIP episode duration (measured dimensionally in number of days). Consistent with analyses of categorical data, results indicated the mean number of days of EIP treatment differed significantly by service utilisation, F(3, 563.67) = 139.5, $p < .001$. Post-hoc Games-Howell tests revealed that average duration of EIP for those utilising inpatient services was significantly greater than those utilizing any other service. Average duration of EIP care for those utilizing residential or other services was significantly greater than those utilising EIP only; but duration of EIP care did not significantly differ between those utilizing residential and other services.

Service usage post EIP discharge

In the year following discharge from EIP services, 38.2% did not utilise any secondary or tertiary mental health services. Services were utilised by 32.5% of the sample through access to both NGO (non government organisation) and DHB (district health board), 23% through access to DHBs only, and 5.8% through access to NGOs only. As shown in Table 2, type of mental health service utilisation within a year post EIP discharge differed significantly by duration of EIP care, both when examined as categories (χ = 133.3, *df* = 3, $p < .001$), and when measured in days, F(3, 542.09) = 56.35, $p < .001$. Games-Howell post hoc contrasts indicated that those who later accessed DHB services only or both DHB and NGO services had on average longer duration of EIP care than those who accessed only NGO services or no secondary or primary services. As shown in Table 3, there

Table 2: Service contact in first year following EIP discharge by length of treatment

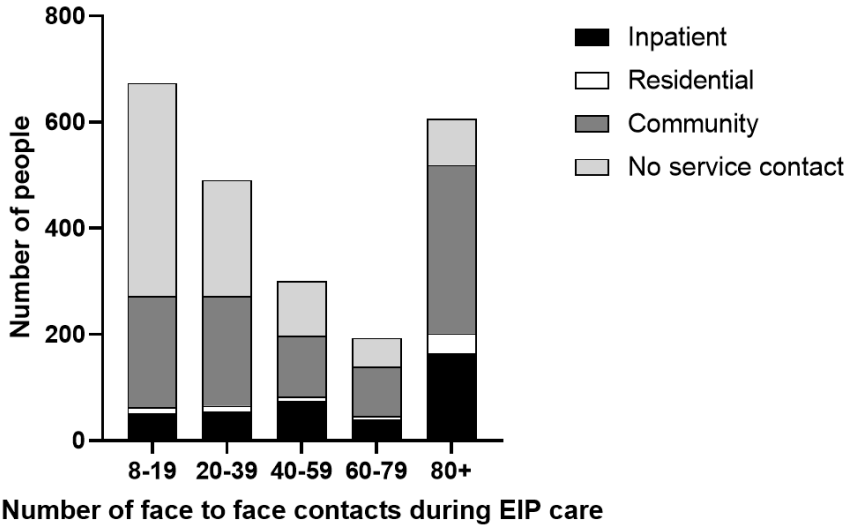
	Service contact in year post discharge			
Length of EIP Treatment	DHB	NGO	Both	No contact
3 months or under (N = 106)	25%	6%	26%	43%
4 months to 1 years (N = 812)	17%	7%	23%	53%
1 to 2 years (N = 1160)	26%	5%	39%	30%
3 years or more (N = 199)	34%	5%	40%	21%
Mean number of days (SD)	633.18 (387.72) [a]	516.18 (450.07) [b]	649.29 (430.4) [a]	426.54 (351.69) [b]

NOTES: Different superscript indicate significant group differences in mean number of days, as indicated by Games-Howell post-hoc comparisons following ANOVA test with significance p < .05.

Table 3: Service contact in first year following EIP discharge across 2016-2020

	Service contact in year post discharge			
Year of discharge	DHB	NGO	Both	No contact
2016 (N = 398)	25%	5%	33%	37%
2017 (N = 417)	24%	6%	29%	40%
2018 (N = 466)	22%	6%	31%	41%
2019 (N = 430)	21%	5%	41%	33%
2020 (N = 566)	25%	6%	30%	39%

Figure 1: Service contact in first year following EIP discharge by face-to-face contacts during EIP Care



was no significant difference in post discharge service utilisation across time (χ = 8.4 *df* = 4, *p* = 0.078).

The type of mental health service utilised in the first-year post discharge, as Figure 1 shows, also differs depending on face-to-face contacts during EIP care (χ = 293.9, *df* = 4, *p* < 0.001), with those requiring smaller quantities of EIP care being the most likely to not utilise any mental health services post discharge. The majority of those with 8 to 19 face-to-face contacts (standard cognitive-behavioural therapy length) did not utilise any mental health services in the year post discharge. Supporting this, when measured using robust Welch's ANOVA (allowing for face-to-face contacts to be treated as a continuous variable), the number of face-to-face contacts differed significantly between post discharge service groups, F(3, 304.76) = 95.22, p < .001. Post-hoc Games-Howell post-hoc tests indicated that, at p < .001 level, average face-to-face contacts for those with no future service utilisation (M = 36.38, SD = 41.87) was significantly less than those utilising future community (M = 68.55, SD = 63.95), inpatient (79.57, SD = 62.17), and residential (M = 97.56, SD = 75.49) services. Average face-to-face contacts for those utilising community services was also significantly less than those utilising inpatient services (p = .019) or residential services (p = .011); however, there was no significant difference between inpatient and residential service use (p = .233).

Hospital stays in the year post discharge

Only 17.1% (*n* = 390) of the final sample utilised inpatient hospital care during the first-year post discharge (compared to 44.0% during their early psychosis treatment). For those receiving between 8 and 39 face-to-face contacts, only 9.2% (*n* = 107) utilised inpatient care in the year post follow-up. As shown in Figure 1, those who had more face-to-face contact with EIP services (and thus likely more severe symptomology) were more likely to require an inpatient stay during the first-year post follow-up.

Demographic differences

In terms of whether these outcomes differed by demographic data, there was a significant association between ethnicity and whether someone received services in the year post discharge (χ = 13.57, *df* = 3, *p* = .004). A lower percentage of those identified as Pacific or Other ethnicity groups had contact with services in the year post discharge compared to those identified as Māori or NZ European. There was also a significant association between age during EIP and contact post discharge (χ = 22.38, *df* = 2, *p* < .001), with those aged 18-24 more likely to receive contact with services in the year following EIP care than those aged 0-17 or 25+.

Table 4: Percentage of clinically significant scores at discharge comparing those who utilised mental health services across the 1 year post-discharge and those who did not

HoNOS Item	Contact	No contact	P value
Overactive, aggressive, disruptive or agitated	9.1%	1.9%	< 0.0001
Non-accidental self-injury	5.7%	0.6%	0.0002
Problem drinking or drug-taking	26.4%	10.7%	< 0.0001
Cognitive problems	11.7%	8.1%	0.0948
Physical illness or disability problems	6.1%	3.9%	0.1647
Problems with hallucinations and delusions	25.4%	5.8%	< 0.0001
Problems with depressed mood	13.0%	8.1%	0.028
Other mental and behavioural problems	39.3%	28.9%	0.0021
Problems with relationships	35.2%	12.3%	< 0.0001
Problems with activity of daily living	21.2%	5.8%	< 0.0001
Problems with living conditions	9.8%	3.0%	0.0002
Problems with occupation and activities	16.4%	6.5%	< 0.0001
Total number of people	576	310	

Discharge symptoms

A subgroup of participants had data on discharge symptoms (n = 886). Of this group, 67.1% received a score of no problems with hallucinations or delusions at discharge (n = 594). Only 10.4% received clinically significant scores of 2 or above (n = 92). This has remained consistent over time ($p < 0.05$). Participants who received contact in the year post discharge were significantly more likely to have clinically significant symptom scores for most items on the HoNOS than those without contact in the year post discharge, as shown in Table 4.

DISCUSSION

This is the first study to examine mental health service utilisation following EIP service use in New Zealand. Findings highlight clear strengths of New Zealand EIP services, and some possible areas to investigate further. The majority of those seen by EIP services had no clinically significant symptoms at discharge, and mental health service utilisation was low in the year post discharge, indicating services are both meeting the community need, and reducing future resource burden.

Overall, nearly 40% of those who were seen by EIP services did not utilise any mental health services in the year post discharge. This fits with international systematic analysis findings from 1966-2003 that report rates of "good" recovery outcomes in about 42.2% of people with first-episode psychosis (Menezes et al., 2006), and in more recent reported rates of full remission around 39.60% for those with early stage psychosis (Li et al., 2022). However, this rate is lower than the UK study found, which was of the 83.5% of people discharged from EIP services to primary care, only 31.9% were referred back to secondary mental health services within the following 2 year period (Puntis et al., 2018). However, our study focuses on all discharges (not just those who went to primary care), and also includes contact with NGO mental health services that tend to offer a broader range of services such as employment assistance, that may not necessarily indicate symptom recurrence. Further, when focusing on those requiring the standard cognitive behaviour therapy length treatment (8 to 19 face-to-face contacts), the majority of this group did not utilise mental health services in the year post discharge, supporting our hypothesis and UK data (Puntis et al., 2018). This discrepancy may also reflect that many New Zealand EIP services lack resourcing to serve clinical high risk (CHR) populations (New Zealand Early Intervention for Psychosis Society, 2023). As a result, New Zealand services may be serving people with longer durations of untreated psychosis than is seen in the UK, which would be a key point to consider in future mental health funding allocation.

Only 17.1% of the sample utilised inpatient services in the year post discharge, which is down from 44.0% who utilised inpatient services during their referral. This indicates a significant reduction in resourcing as a result of the EIP care, supporting international findings that EIP use decreases usage of inpatient services (Randall et al., 2015). Of note, those who attended high numbers of face-to-face appointments during their EIP care required the highest rates of inpatient stays and mental health service utilisation, likely indicating higher needs during the EIP service are reflected with higher needs at discharge as well, supporting our hypotheses.

This study found that these mental health service utilisation rates have remained consistent over the past 5 years despite increasing referrals, and likely increasing severity of cases seen in EIP and the mental health needs as has been seen internationally during the COVID-19 pandemic (O'Donoghue et al., 2022; Whyte and Reid, 2021). This is a really important finding, and likely indicates EIP services in New Zealand continue to produce favourable outcomes, despite increased pressure on services. This may be resulting in increased burnout for clinicians, which is worth monitoring.

Those who did utilise mental health services in the year post discharge tended to have a history of more face-to-face appointments during EIP visit, were more likely to have higher symptom scores at discharge, and were more likely to identify as NZ European or Māori ethnicity groups. This indicates discharge scores and needs during EIP care are a helpful predictor of who will need ongoing services. Further, it may indicate some groups may not be getting their cultural needs met. Another point of interest was that only 62.2% of referrals seemed to fully engage with services, common in the nature of this work, and many may have been referred to other services. However, could be worth examining if there are any particular groups falling through the cracks, or where services are not meeting their needs.

It is worth noting some of this study's limitations. Firstly, we are only able to present findings on the data collected, and this data is not being collected consistently across New Zealand mental health services. As such, there may be service utilisation not being accounted for. Future work could look at how to better support services to enable data collection. Secondly, we assume that lack of service utilisation is reflecting lack of a need for services, but it is possible there are people who require services but are unable to access them due to services not meeting their needs, or long waitlists. Future research could address this by actively following those discharged from services, and collecting additional data on symptoms and need for services. It would be helpful if future research could examine mental health utilisation for those meeting criteria for clinical high risk, in order to understand how those people are being served by New Zealand's mental health system. Further, following longer term outcomes for EIP services such as over 5 years will be helpful, including those who might be discharged to primary care settings but return to secondary care later. Future research should also aim to understand how services are coping with increased need following the Covid-19 pandemic, and whether this is having an impact on clinicians. Finally, the HoNOS is a very simplistic tool for measuring psychosis symptoms, and in future we could extend on these findings by adding more clinically detailed measures of symptoms at discharge across New Zealand EIP services.

In conclusion, service usage post EIP services in New Zealand is similar to rates seen internationally, and 40% of people discharged from EIP services do not utilise any mental health services in the first year. Additionally, a minority of our sample required inpatient care in the year

post discharge. However, rates of service use may be slightly higher than in the UK, possibly reflecting New Zealand's lack of services for those at clinically high risk, and seeing people later in their psychosis trajectory. Supporting our hypotheses, those with more face-to-face contact, or higher discharge symptom scores would be more likely to utilise inpatient or other mental health services. EIP services have been consistently meeting these outcomes over the past 5 years despite an increase in service user needs, complexity of symptoms and referral rates which may suggest an increased burden placed on services and clinicians that should be monitored.

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Corresponding Author:
Rebecca E. Grattan
Email: rebecca.grattan@vuw.ac.nz