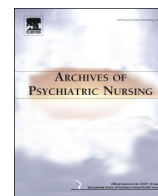




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Early intervention in psychosis: Health of the Nation Outcome Scales (HoNOS) outcomes from a five-year prospective study☆

Steve J. Penno^a, Bridget Hamilton^{a,b}, Melissa Petrakis^{a,c,*}

^a St. Vincent's Hospital (Melbourne), Mental Health Service, Melbourne, Australia

^b University of Melbourne, Faculty of Medicine, Dentistry and Health Sciences, Melbourne School of Health Sciences, Melbourne, Australia

^c Monash University, Faculty of Medicine, Nursing and Health Sciences, Melbourne, Australia

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ABSTRACT

Introduction: Over the last two decades, mental health services internationally have shifted towards intervening early in psychosis. The critical period for intervention is estimated to be five-years and many specialised programs target early psychosis.

Aim/question: This prospective cohort study aimed to evaluate five-year outcomes from an early psychosis program (EPP) that adopted an integrated model, providing nursing and multidisciplinary community mental healthcare to clients aged 16–65 years, beyond the typical age range of 16–25 years.

Method: We examined one routine outcome measure, the Health of the Nation Outcome Scales (HoNOS) across episodes of care for clients receiving EPP over a 5 year period ($n = 239$), comparing these results with HoNOS outcomes in an Australian national dataset for all public mental health clients.

Results: HoNOS improvements were highly significant from intake to discharge and from review to discharge for EPP clients, and these compared well with national outcome performance.

Conclusion: There is potential for mental health nurses and other clinicians to significantly improve client symptoms and functioning, in a model of early psychosis treatment beyond a youth focus.

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INTRODUCTION

Effective treatment of psychosis, a group of disorders characterised by misinterpretation and misapprehension of the nature of reality, has been increasingly a matter of priority for governments around the world (Mueser et al., 2015). Since the early 1990s, the evidence supporting early detection and a comprehensive range of interventions for a person experiencing first episode of psychosis has grown rapidly and been formalised in best practice guidelines (Petrakis et al., 2011). Concerns about the cost of psychosis, at the individual and community levels, has given rise to systematised modes of intervention and corresponding efforts to demonstrate effectiveness by measuring outcomes (Li, Liu, & Huang, 2016). In Australia, a campaign was led by early psychosis (EP) advocates, aiming for earlier detection, optimal early treatment of psychosis, and routine measurement of outcomes nationwide.

MEASURING OUTCOMES

Diverse outcome measures are used to evaluate clinical symptoms, social and occupational functioning, and quality of life (Isaac, Chand, & Murthy, 2007), however the variety of instruments used makes it difficult to compare effectiveness between services (Addington et al., 2009). Other performance measures can be more readily available and reliable (Addington et al., 2005). For example, the rate of hospital admission is a common indicator, as this is a significant factor in the community burden of illness (Burns, 2007; Weiden & Olfson, 1995).

Since the 1990s, Australian governments have consistently supported the use of client outcome measures (Australian Health Ministers, 1992). Several instruments were identified as feasible for routine application, also being reliable, valid and sensitive to change. A suite of routine outcome measures (ROMs) were mandated for use across Australian public mental health services (Department of Health and Ageing, 2003). In the state of Victoria, Australia, these mandated measures are: the Health of the Nation Outcome Scales (HoNOS); the Life Skills Profile (LSP); Focus of care (FOC); and the Behavior and Symptom Identification Scale (BASIS). As noted by Trauer (2010), Australia and New Zealand have been at the forefront in systematic implementation of ROMs. A national collection protocol was linked to key points in episodes of care: intake, review, discharge.

☆ Work carried out at: Hawthorn Community Mental Health Service, 642 Burwood Road, Hawthorn East 3123, Australia.

* Corresponding author at: St. Vincent's Hospital (Melbourne), Mental Health Service, Hawthorn Community Mental Health Centre, Australia.

E-mail address: Melissa.Petrakis@svha.org.au (M. Petrakis).

A barrier to effective use of ROMS for monitoring and research is the low rate of completion in clinical settings, with a number of studies highlighting that ROM completion rates rarely exceed 60%, though rates can be as high as 85% in a community setting (Kisely, Campbell, Crossman, Gleich, & Campbell, 2007; Kisely et al., 2008). Despite concerns raised about poor completion of HoNOS (Eagar, Trauer, & Mellsop, 2005), and clinicians' sometimes inaccurate ratings (Lambert, Caputi, & Deane, 2002), it has been shown to be a reliable mental health outcome measure (Eagar et al., 2005). Since 2001, HoNOS has been mandated for routine use Australia-wide in all public mental health settings and aggregated HoNOS data is held by a government agency (Trauer, 2010).

The HoNOS has proven to be satisfactory for routine assessment with first episode psychosis clients (Preti et al., 2012). Improvements in HoNOS ratings were reported for 94 first episode clients, after 12 months of treatment in an EP service in Northern Sydney (Nash et al., 2004). Turner, Boden, Smith-Hamel, and Mulder (2009) found significant improvements to HoNOS scores over 24 months, in a cohort of 236 first episode clients in New Zealand. The Australian national data shows that HoNOS scores for clients involved with mental health services also generally improve (Burgess, Pirkis, & Coombs, 2006). Despite widespread ROM use internationally, few studies identify and report on ROM findings for EP client populations (Cocchi, Mapelli, Meneghelli, & Preti, 2011; Nash et al., 2004; Parabiaghi et al., 2011; Turner et al., 2009).

THE EARLY PSYCHOSIS PROGRAM (EPP)

In 2007 the service that is the focus of the current study was a recipient of state government funding to provide a specialised EP service. An approach was developed that established an EPP within an existing adult mental health service (Petrakis, Penno, Oxley, Bloom, & Castle, 2012). The approach incorporated key nursing roles and a broad age criteria (16–64 years), in contrast with most EP services nationally and internationally that operate separate specialist EP teams, targeting younger populations (typically 16–25 years).

This integrated EPP approach ensured that people of any age presenting with a first episode of psychosis received evidence-based EP care, and benefitted from a care-pathway concordant with the Australian Clinical Guidelines (Petrakis et al., 2011). The wider age criterion is important because psychosis is known to emerge across the lifespan (Commonwealth Department of Health and Ageing, 2009). This approach reduced internal service distinctions which would otherwise be made based on age, requiring clients to transfer from youth or EP services to adult case management, commonly after 2 years. In this EP approach, once time-limited intensive EP intervention is complete, a client receiving ongoing treatment may not have to change case manager, psychiatrist or team.

At the EP service during the financial year 2010/2011, the average rate of HoNOS completion was 65.0%, compared with the 60.8% state-wide average. The EPP completed a baseline intake assessment of illness severity using HoNOS for 78.26% of the EP cohort ($n = 239$).

AIM & OBJECTIVES

The aim of the study was to explore EP client outcomes compared with national outcomes.

The objectives of the EP evaluation were:

- To describe the EP client population;
- To investigate whether clients receiving an EP program integrated within a public mental health service showed improved HoNOS scores;
- To examine outcome variances, to identify domains for further attention and potential service improvement;

- To compare EP outcomes against the available Australian national routine outcome measurement data.

METHODS

RESEARCH DESIGN

The design was a prospective cohort study of five years of EP client outcomes. Demographic data and ROMs across three separate points were collected from internal organisational and statewide reporting datasets. Since the national dataset included all clients treated for psychosis in public sector services, this provided a large group against which to compare ROMs for the cohort of EP clients. In this data set, the three ROM collection points were at intake, review and discharge, as specified by the Australian Mental Health Outcomes and Classification Network (AMHOCN, 2016).

PARTICIPANTS AND SAMPLING METHOD

The study population was all the clients receiving EPP within the five years since the EPP commenced, from July 2006 to July 2011, as recorded in the state government level 'Redevelopment of Acute and Psychiatric Information Directions' (RAPID) patient registration system. The specific EPP service protocol for this group accorded with the EP clinical guidelines (McGorry, 2005). It included these service elements: engagement, physical assessment and investigations, biopsychosocial approach, low dose antipsychotic medication, psychoeducation to client and family, active referral and linkage with general practitioner (family physician) and with community supports (Petrakis et al., 2011).

Clients eligible to receive care with EPP were: individuals living within the service catchment area; aged between 16 and 64 years; and with either no prior history of psychosis or a history of treated psychosis <18 months. Eligible individuals had either active psychotic symptoms or were suspected to be experiencing an 'at risk mental state' (Yung et al., 2005) for psychosis.

These people were excluded from EPP service: individuals living outside geographical catchment area for the service; those aged under 16 years or over 65 years; and those with a history of psychosis >18 months. Using these criteria, the authors identified two hundred and seventy one clients ($N = 271$) who were registered within EPP in the given timeframe.

Two additional study exclusion criteria were then applied to the group: clients registered on the database for less than one week; or clients who did not have meaningful registered contact occasions (defined as less than two contact occasions and overall contact duration of <10 min). These criteria reflected inadequate contact with the service. Also clients were excluded if there were less than two separate HoNOS outcome measures reported, as a single occasion of ROM could not be included in the analysis. These exclusion criteria resulted in omission of 32 cases from analysis.

The study cohort was then two hundred and thirty nine ($N = 239$) clients, as shown in Fig. 1.

For this study group, HoNOS outcome measures were collected on 1098 occasions from a possible 1200 occasions (91.50%), a strongly representative sample. Within this sample, ROMs were located for 270 intake occasions, 716 review occasions and 112 occasions of discharge from EPP.

MEASURES

HoNOS (Table 1) is a 12-item clinician-rated measure of severity of a client's mental health problems over a two-week period. Ratings are made on a five-point Likert scale. The points of 0–1 for each item indicate normality or a non-clinical range of problems, while scores of 2–4 for each item indicate clinically significant problems (Wing, Curtis, &

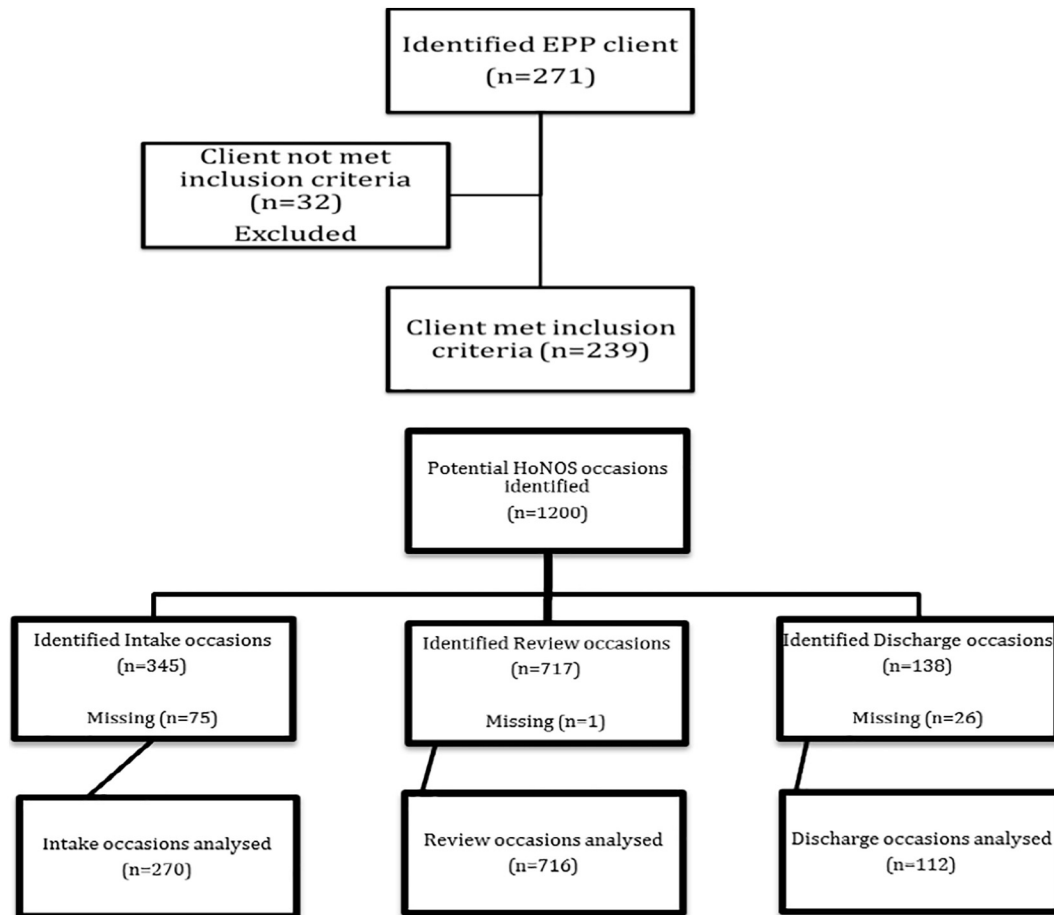


Fig. 1. EPP clients and repeat HoNOS measures.

Beevor, 1999; Wing et al., 1998). The difference between HoNOS scores over an episode of care can be considered a measure of the extent to which a service has been effective in producing change with the individual client. The items scores can be individually interpreted or examined as a single score with a theoretical maximum total of 48. Four subscales (behavior, impairment, symptoms and social) are used to group the 12 items.

DATA COLLECTION

Data extraction was conducted by the local data administrator, drawn from the RAPID database. Data included basic demographic information (age, gender, living situation, marital status, education, cultural/language background), medical and clinical information

Table 1
HoNOS items.

Item number	Item	Subscale
1	Overactive, aggressive, disruptive or agitated behavior	Behavior
2	Non-accidental self-injury	
3	Problem drinking or drug taking	
4	Cognitive problems	Impairment
5	Physical illness or disability problems	
6	Problems associated with hallucinations and delusions	Symptoms
7	Problems with depressed mood	
8	Other mental and behavioral problems	Social
9	Problems with relationships	
10	Problems with activities of daily living	
11	Problems with living conditions	
12	Problems with occupation and activities	

(primary diagnosis, duration of early psychosis case management), followed by HoNOS measures routinely collected within the EPP across the 5-year period. Dataset variables (aside from HoNOS scores) that were not available/missing from RAPID database were collected by hand, through retrospective file audit (Joanna Briggs Institute, 2002).

ROM data available from the Australian national HoNOS dataset, hosted at AMHOCN, was matched (by age group, setting and diagnoses) to the EPP data and extracted into an additional Microsoft® Excel file. This AMHOCN HoNOS data is available in an aggregated format.

VALIDITY AND RELIABILITY

Pirkis, Burgess, Kirk, Dodson, and Coombs (2005) described HoNOS as satisfactorily demonstrating content, construct, concurrent and predictive validity, and fair to moderate test-retest and inter-rater reliability. More recently, HoNOS has been found valid and reliable for use in EP programs (Preti et al., 2012), as a measure of outcome for clients. Preti et al. reported that reliability of HoNOS, as measured by Guttman's lambda-2, was good for all scales (lambda-2 > 0.70). Test-retest reliability was sound also; intra class coefficient was 0.76 (95%CI = 0.67 to 0.82) in FEP patients. Sound concurrent validity was shown, measured by correlating HoNOS with BPRS for FEP patients (Spearman's rho correlation coefficient = 0.78, p < 0.01). Preti et al. concluded that the HoNOS total scores and subscales demonstrated a helpful adjunctive measure of health status.

DATA ANALYSIS

In preparation for analysis, dichotomous variables (eg. gender) were assigned a value of one or two and polychotomous variables (e.g., diagnosis) were nominally grouped according to a list of categories, and the

ordinal variable of age group was created from the continuous variable age (Johnson, 2006).

All data was imported into the Statistical Package for Social Science for Windows (SPSS) (IBM, 2011), version 20. SPSS was used for analyses of all sociodemographic and clinical data (Minichiello, Sullivan, Greenwood, & Axford, 2004). The EP ROM data and the aggregated National ROM data were explored, to summarise and describe outcome measures for the two groups. Plots of normality with tests were derived, including histograms and Normal Q-Q plots. Descriptive analysis including skewness, kurtosis, mean, median, standard deviation, variation, and range were examined across occasions and subscales. As the cohort size was >50, the Kolmogorov-Smirnov test of normality (with Lilliefors significance correction, $p < 0.05$) was used instead of Shapiro-Wilk. Data were not normally distributed so non-parametric tests were used. The Mann-Whitney U test was used to compare median differences across occasions and between groups.

ETHICAL CONSIDERATIONS

The study received ethics approval from the Human Research Ethics Committee (HREC) of the health service and was conducted according to international ethical research guidelines. Study participants were not required to provide written or oral informed consent. Authorities allow the use of outcome data for a purpose other than a clinical purpose, where the use or disclosure is necessary for research and analysis of statistics in the public interest. It is in the public interest to clarify whether state funded services, such as this EP program, deliver interventions to the client group anticipated, and deliver a quality program in terms of the outcomes achieved for these vulnerable clients. All EP client data were de-identified prior to analysis.

RESULTS

CLIENT DEMOGRAPHICS

The sociodemographic characteristics of the EPP cohort ($N = 239$) are summarised in Table 2.

Table 2
Socio-demographic profile of early psychosis clients on entry ($n = 239$).

	Mean (SD)	Median (range)
Age on intake to early psychosis case management	30.99 (11.9)	27 (16–63)
Age by gender		
Male ($n = 145$)	29.13 (10.8)	26 (16–62)
Female ($n = 94$)	33.81 (12.9)	30 (17–63)
Duration of early psychosis case management (days)	450.44 (363.8)	343 (11–1689)
Marital status	(%)	
Single/never married	67.78	
Married	18.41	
Separated/divorced	12.97	
Widow	0.84	
Living situation	(%)	
Living with partner	14.23	
Living with parents	31.58	
Living with children	4.60	
Living alone	21.34	
Other	28.25	
Education	(%)	
Commenced/completed tertiary study	38.91	
Commenced/completed high school	36.82	
Vocational	1.26	
Unclear	23.01	
Culturally & Linguistically Diverse (CALD) background	(%)	
Born overseas	34.31	
English-speaking country	69.90	
Non-English speaking	30.10	
Preferred language English	91.21	

The EP clients ranged in age from 16 to 63 years, with an average age of 31 years at entry to the program. Consistent with other EP studies (Bertelsen et al., 2008; Norman et al., 2011) there were more male clients than female. Many EP services internationally operate programs for youth, aged from 16 to 25 years (Marshall & Rathbone, 2011). In the study cohort, only 43.90% of clients were aged in this range.

EPP ROUTINE OUTCOME MEASURES

HONOS total score

HoNOS scores improved across all the three occasions. The scores improved significantly between intake and review and continued to improve, with highly significant improvement between intake to discharge, and review to discharge. EP clients made significant improvements across all four subscales, from intake to discharge.

For the Behavioral subscale, improvements were highly significant between intake to review and intake to discharge. Although showing a significant improvement in mean from intake to review there was little improvement across the remaining occasions. For the Impairment subscale, problems reduced between intake and discharge and reductions were highly significantly from review to discharge. The Symptomatic subscale showed significant improvements between all occasions and highly significant improvement between intake and review and intake to discharge. Social subscale scores significantly improved from intake to discharge. Between review and discharge the improvements were highly significant.

NATIONAL COMPARISON WITH SERVICE HONOS ITEMS

Table 4 displays the mean scores comparing national and EPP HoNOS items.

There were significant differences between the groups across the occasions of intake, review and discharge. For the Behavioral subscale the lower mean ratings for EPP clients at intake were highly significantly, and by review the difference remained significant. By discharge, there were no longer significant differences. When the Behavioral subscale was separated into its individual items, there were no significant difference at intake but highly significant differences at review and significant differences at discharge on Item 1, showing a favourable lower mean for the EPP. Alcohol and/or drug use problems for EP clients were comparable with the national average.

For the Impairment subscale, there were no significant differences overall regarding impairment across occasions between the EP and national data. When the subscale was separated into individual items, physical illness and disability problems were significantly lower at intake, in the EPP cohort. There were no other significant differences in this subscale.

For the Symptomatic subscale, EP client mean scores were significantly lower on intake; however there were no significant differences at review or discharge. When the subscale was separated into individual items, highly significant differences were seen at intake to EPP across all 3 individual items. The mean for the EPP was significantly higher on Item 6, indicating that generally EP clients rated higher on hallucination and delusion problems than the national data. By review, there were no significant differences in hallucinations and delusions or depressed mood. However, the EP cohort had a significantly higher mean on Item 8 and the review mean for this item was higher than on intake. This may have indicated that other problems were picked up later on assessment or that the client's mental state had deteriorated either secondary to non-compliance with treatment or the development of comorbid conditions. By discharge, the mean for the EPP was significantly lower on Item 6.

For the Social subscale, social problems were significantly lower for the EPP; however once under treatment the EPP mean was significantly higher, perhaps indicating these problems are assessed longitudinally. When the subscale was separated into individual items, Items 9 and

10 had significantly lower means for the EPP. By review the differences were no longer significant and Item 12 had become significantly higher for the EPP, perhaps indicating that with subsequent assessment and treatment, issues pertaining to occupation and activity become more relevant.

DISCUSSION

There has been much focus placed on EP interventions for youth and early adulthood; however, as many studies including Kohler et al. (2007) highlight, the onset of psychosis occurs across the lifespan. This paper examined the outcomes of an EP population within an integrated EPP, with key nursing roles in place across inpatient and community settings, as described in a previous publication (Pettrakis et al., 2012).

EP CLIENT POPULATION

The majority of EP programs assist clients up to the age of 25 years (Department of Human Services, 2007). If this criterion held, only 43.93% of the study cohort would have met inclusion for care. This would mean that less than half of the people presenting in the early stages of untreated psychosis would have such access to evidence-based EP interventions in the public service system.

Verma, Subramaniam, Abdin, Poon, and Chong (2012) reported that the majority (77.80%) of EP clients between ages 15–40 had never been married. According to the Australian Bureau of Statistics (2011a, 2011b) 43.52% of people in the EPP catchment area are married; this is significantly higher than the EPP cohort (18.41%), and this finding matches at least one other study (Verma et al., 2012). The divorce rate for the EPP cohort is twice as high as the catchment area (Australian Bureau of Statistics, 2011a, 2011b), and three and a half times higher than that of the comparison study (Verma et al., 2012). This finding reflects the EPP criteria extending to 64 years of age. In Australia, the median age for divorce in men and women is 44.4 and 41.5 years of age respectively (Australian Bureau of Statistics, 2010).

In the early stages of psychosis the confirmation of a diagnosis is notoriously difficult and there is a significant amount of diagnostic instability (Farmer, 2010; McGorry, 1994) however, once a diagnosis was confirmed (Table 3), the range of diagnoses for the EPP cohort closely resembled diagnostic rates in other, international EP studies (Norman et al., 2011).

ROUTINE OUTCOME MEASURES: HONOS

HoNOS, as a measure of mental health and social functioning, has been shown to be valid for use in first episode psychosis (Prete et al., 2012) serving as an indicator of symptomatic and functional recovery in psychosis. Improvements in HoNOS can support a claim of effective

care provision. The HoNOS measures showed significant improvements over time for EP client. Worsening item and subscale scores may indicate areas where EP interventions could be honed and targeted.

BEHAVIORAL PROBLEMS

A well-known co-morbid condition in first episode psychosis (Lambert et al., 2005), problem drinking or drug taking has been shown to be associated with mania and anxiety (Bech et al., 2003). The types of problems considered at Item 3 include hangovers, cravings, tolerance or dependence for alcohol or drugs, priority over other activities given to their acquisition and use, capacity to control the quantity taken, frequency of intoxication, and drunk driving or other risk-taking. After initial significant improvements in EP mean scores from intake to review, these improvements did not continue over the course of EP treatment. Although comparable with the national mean scores, EPP nursing staff and clinicians should consider further focus on integrating substance use interventions to enhance early improvements. This is especially important due to the impact substance use has on housing, employment, education, remission rates, non-compliance with treatment and it is a major predictor of service disengagement (Conus et al., 2010; Lambert et al., 2005).

IMPAIRMENT PROBLEMS

Problems on this subscale improved gradually for EP clients. Memory, orientation and understanding are rated on Item 4. The item rates such problems as naming or recognising familiar things or common dangers (i.e., gas taps, ovens, crossing busy roads); orientation to the day, date or time; difficulties in understanding or using speech; failure to remember important matters; clouding of consciousness and stupor.

In schizophrenia, cognitive impairment is seen as an inherent feature of the illness and a major determinant of functional outcome (Harvey, Rabinowitz, Eerdeken, & Davidson, 2005), and therefore treatment of cognitive impairments have the potential to change the functional outcomes for clients. The duration of untreated psychosis has also been associated with cognitive impairment (Amminger, 2002). Cognitive and physical health functioning significantly improved on this scale from intake to discharge and from review to discharge. Problems on these items did not show improvements from intake to review; this could possibly suggest that these problems required sustained care over the episode of care, or perhaps that these impairments are not immediately obvious, being overshadowed by more acute aspects of the initial presentation. Worryingly, they could also reflect the secondary effects from the commencement of pharmacological treatment (medication side effects); regular monitoring for medication side effects can contribute to early recognition and changes to the treatment regime.

Item 5 rates such problems as unwanted and metabolic effects from medication; physical disabilities resulting from accidents or self-harm associated with cognitive problems or drunk driving. The EPP has a significantly lower intake mean on this item as compared to the national mean. However, once the cohort was engaged in treatment the mean significantly dropped; then there was a significant improvement from review to discharge. Curtis et al. (2011) have reported that once EP clients are engaged in treatment their risk of significant physical health morbidity increases and an established body of evidence shows that Schizophrenia carries a shorter life expectancy and premature death from various medical causes than the general population (Crabb, McAllister, & Blair, 2009; Hayes et al., 2012; McGorry, 2005).

For EPP nursing staff it is vital that physical health and illness remains a priority area. A metabolic monitoring program guideline commenced in the study site in 2005; this initiative included monitoring of indices over regular time intervals (Organ, Nicholson, & Castle, 2010). Mitchell, Delaffon, Vancampfort, Correll, and De Hert (2012) cautioned that, while guidelines can increase monitoring, most clients do

Table 3
Diagnosis.

Primary diagnosis (ICD-10)	(n)	(%)
Schizophrenia, schizotypal, delusional, & other non-mood psychotic disorders	113	47.28
Schizophreniform Psychosis	69	28.87
Mood (affective) disorders	36	15.06
Mental & behavioral disorders due to psychoactive substance use	4	1.67
At risk mental state (ARMS-P)	4	1.67
Assessment	3	1.26
Anxiety, stress-related, somatoform & other nonpsychotic mental disorders	3	1.26
Disorders of adult personality & behavior	3	1.26
Behavioral syndromes associated with physiological disturbances & physical factors	2	0.84
Mental disorders due to known physiological conditions	2	0.84
<i>n</i>	239	100

Table 4
HoNOS mean scores.

	Collection occasion					
	Intake ^a		Review ^b		Discharge ^c	
	Australia	SVHM	Australia	SVHM	Australia	SVHM
HoNOS total score	11.86 (6.12)	10.63* (6.31)	9.00 (5.98)	9.31 (6.12)	7.81 (6.58)	6.94 (5.13)
HoNOS subscale score						
Behavioral problems ^d (Items 1–3)	2.45 (2.32)	1.90** (1.97)	1.31 (1.70)	1.16* (1.61)	1.52 (2.04)	1.20 (1.87)
Impairment problems ^e (Items 4–5)	1.32 (1.56)	1.23 (1.50)	1.44 (1.52)	1.41 (1.50)	1.04 (1.44)	0.84 (1.11)
Symptomatic problems ^f (Items 6–8)	3.96 (2.26)	3.69* (2.54)	2.93 (2.17)	2.99 (2.16)	2.53 (2.23)	2.23 (1.93)
Social problems ^g (Items 9–12)	4.27 (3.58)	3.79* (3.30)	3.44* (2.95)	3.75 (3.09)	2.82 (3.09)	2.67 (2.65)

* Statistically significant differences; Mann-Whitney test $p < 0.05$.

** Statistically significant differences; Mann-Whitney test $p < 0.001$.

^a $n = 270$.

^b $n = 716$.

^c $n = 112$.

^d Behavioral problems = overactive, aggressive, disruptive or agitated behavior; non-accidental self-injury; problem drinking or drug-taking.

^e Impairment problems = cognitive problems; physical illness or disability problems.

^f Symptomatic problems = problems associated with hallucinations and delusions; problems with depressed mood; other mental and behavioral problems.

^g Social problems = problems with relationships; problems with activities of daily living; problems with living conditions; problems with occupation and activities.

not receive adequate interventions. Further thought is required to strengthen interventions in this area for an EP program with an expanded age range, given the even greater susceptibility for metabolic morbidity in older patients (Selvendra, Baetens, Trauer, Petrakis, & Castle, 2014). This highlights an opportunity for the development of a nurse practitioner role to ensure physical health data is collected and effective treatment options are implemented.

PROBLEMS WITH SYMPTOMS

This subscale correlates highly with a diagnosis of psychosis and schizophrenia as it encompasses problems with hallucinations, delusions, depression and other mental and behavioral problems (Bech et al., 2003). Symptoms of depression including low self-esteem, guilt, self-blame and changes in mood were rated on Item 7. Post-psychotic depression occurs in up to 30% of clients following an acute episode of psychosis (Siris & Bench, 2003) and the EPP cohort included approximately 10% with a diagnosis incorporating depression. A diagnosis of depression is associated with a higher mean on this item, so this may provide some explanation for lack of improvement on this item (Bech et al., 2003). A significant improvement did occur across intake to discharge on problems with depressed mood. Item 8 allowed the rating of symptoms such as phobia, anxiety, obsessive-compulsive, stress, dissociative, somatoform, eating, sleep and sexual problems. The EPP clients made significant improvement from review to discharge on this item; however the mean was significantly higher from intake to review. This may highlight that once a person is engaged in treatment, other symptoms can be assessed that may not be in focus at intake.

SOCIAL PROBLEMS

For this subscale, problems with relationships concern not just the quality but the quantity of a client's social relationships and communication with others. For Item 9 this could range from problems in making or sustaining relationships to severe social isolation.

EPP clients made significant improvement on the mean HoNOS from intake to discharge and from review to discharge. This is a crucial item, as the quality of social relationships impacts on illness outcome, and the disruption to social development in first episode psychosis can have a

negative impact on long-term social opportunities (MacDonald, Sauer, Howie, & Albiston, 2005). Therefore, a recovery focus should look to minimize this disruption by supporting clients' re-engagement in meaningful psychosocial activities and maintenance of friendships and relationships. Occupational life is also affected as symptoms and impairments of psychosis make life difficult, but this narrowing gradually 'widens out' again after treatment (Brown, 2011, p.162).

Overall functioning in activities of daily living can be related to the level of mental illness impairment (Item 10), though it is also clearly associated with increased age and physical illness (Hayes et al., 2012). EP clients significantly improved from intake to discharge and highly significantly improved from review to discharge. The item looks at a range of problems from basic activities of self-care such as washing, to more complex skills such as occupation and recreation, mobility and use of transport, shopping or self-development.

Items 11 and 12 measure the suitability of a client's environment, rather than characteristics of the client, per se. They encompass choice and opportunities to use skills and develop new ones. There were significant improvements with living conditions for the EPP cohort, across intake to review and intake to discharge.

There was significant improvement in the occupation and activity item from review to discharge for the EPP cohort, but a lack of change overall from intake to discharge. Given the importance of occupation for recovery, this may indicate that interventions provided were not as effective desirable for improving such problems.

COMPARING EP HONOS OUTCOMES WITH NATIONAL HONOS OUTCOMES

Routine outcome measures can represent aspects of client symptoms, individual functioning and needs for support relevant to clinical care (McKay & Coombs, 2012). Change in clients' ROMs can indicate clinical service performance. It is important to ensure that a new program is benchmarking against the established performance.

Comparing aggregated HoNOS ratings, measured at the three occasions – baseline (admission to EPP), review (91 day) and end of episode (discharge from EPP) – enabled a number of useful comparisons between the National and EPP service provision.

Early referral for care is key to intervening effectively and early, with people experiencing psychosis. The EPP has a significantly lower intake

mean HoNOS than the national, and lower than two other EP studies at baseline: Preti et al. (2012) had a mean total score of 15.3 at intake and a comparable EP program from New South Wales had a mean baseline of 13.9 (Nash et al., 2004), the EPP mean at intake was 10.63. In order to deal well with people presenting for the first time with psychosis, adult mental health services would need to lower the threshold for intake to the service.

Once clients were under the care of the EPP, the overall HoNOS mean at review was higher compared to the national data, but not significantly so. A study by Nash et al. (2004) with a smaller sample reported a 3 month HoNOS mean of 6.0 and 12 months at 6.1; this compares to a higher EPP mean of 9.31. When examined from intake to review, the EPP showed significant improvements on the overall mean HoNOS. Reflecting on the subscale means, the EPP is benchmarking well against the national HoNOS dataset: the threshold for intake is lower and from intake to discharge there is an overall greater improvement.

Differences were highly significant on Item 2 at intake in the Behavioral subscale, indicating that self-harm and self-injury were not significant problems on intake or review, in the EPP cohort. This is consistent with reported incidences of these problems in a first episode population (Verdoux et al., 1999), as the risk for these problems is greatest during the early course of the illness and this may be seen in this cohort with a non-significant difference by discharge.

LIMITATIONS

The naturalistic design meant that this five-year cohort study did not allow identification of the specific components of treatment that led to improvements in functioning. Generalizability of these results is limited to services with similar intake criteria and service specifications. HoNOS inter-rater reliability was not assessed, and even small levels of unreliability may represent an important source of bias in the evaluation of clinical outcome.

The current study has focused on the routine outcome measure of HoNOS; other collected outcome measures were not utilised. Specialist EP services could similarly audit five-year outcome data from the other ROMs: The Life Skills Profile and the BASIS-32®. Qualitative research could enable the EPP to clarify the specific components leading to noted increases in functioning and recovery. The importance of involving clients in evaluation of health care effectiveness and their own health and recovery is increasingly being recognised.

CONCLUSIONS

The study highlights that a youth only model (16–25 years) of EPP would exclude over half of the clients who presented to the service system in the five year period, when first experiencing psychotic illness and who received this intensive, evidence-based interventions provided by nurses and other clinicians. The integrated EP model benchmarked well against the national HoNOS dataset. From intake to discharge there was an overall global improvement. The integrated model achieved comparatively superior reductions in problems with depressed mood and overactive, aggressive, disruptive or agitated behavior, compared with the national dataset.

Considerable international interest in EP offers opportunities to make creative changes in the way that mental health care is delivered (Marshall & Rathbone, 2011). Given the literature on later onset psychosis (Castle & Murray, 1993), it is important for services to implement the best standard of EP care, using models that are inclusive of all people who will benefit from early intervention.

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