Commentary

Performance Measures for Mental Healthcare in Singapore

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Abstract

Mental disorders are both common and costly. The mental health system in Singapore lacks co-ordination as well as being underdeveloped in certain areas. To address these gaps as well to face emerging challenges like an ageing population, and other socioeconomic changes, the Ministry of Health of Singapore has commissioned a Committee to formulate a 5-year Mental Health Policy and Blueprint. A task group has been formed to implement this blueprint and evaluation of these various initiatives with performance measures are inevitable. The choice of these measures, however, can be a daunting task with the various and diverse interests of multiple stakeholders. This paper describes the process of choosing the relevant measures with the appropriate attributes, and suggests a framework, which can serve as a guide for selecting mental health performance measures.

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Introduction

Mental disorders are prevalent worldwide and while they are disabling and costly, they have not received that amount of attention and resources needed. A recent survey of low-income and middle-income countries (as per World Bank classification) revealed that government spending on mental health is much lower than what is needed when compared to the burden of mental illness and the availability of cost-effective interventions.[1] These low and middle income countries spend about 2.26% and 2.62% of their total health budget to mental health to about 6.88% in high-income countries increased.[1] The present mental health system of Singapore is fragmented and community psychiatry is relatively underdeveloped.[2] The changing demographics of the Singapore population and the economic pressures impose further challenges to the country. Recognising the need to develop a comprehensive plan to combat mental health disorders for the nation, the Ministry of Health appointed a National Mental Health Committee to draft a National Mental Health Policy and Blueprint for Singapore which aimed at promoting mental health in the community, preventing mental disorders, allowing early detection, treatment and rehabilitation of persons with mental illness, rectifying the shortfall in mental health workers, engaging family physicians and building up a network of support in the community, and encouraging research.[2]

With the adoption and subsequent implementation of the 5-year National Mental Health Policy and Blueprint in Singapore in 2007, it is a given that evaluation of the impact of the various programmes that constitute this policy would be an integral component. The advent of evidence-based medicine and the escalating healthcare costs have undoubtedly altered the culture of healthcare delivery with more emphasis on accountability and for better quality of care. One method used by policy makers, administrators, payers, providers and consumers to understand organisational performance and effect positive change to improve quality of care is performance measurement.[3] It is also a means of establishing accountability between payers and providers and informing oversight activities.[4]

Conceptualisation of the multidimensional aspects of quality of care has usually been in terms of some variation of the Donabedian's triad of structure/capacity, process, and outcome.[5] The "structure/capacity" component refers to the infrastructure and resources which are put into the

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mental healthcare system and the ability to provide specific services, "process" refers to the interaction (such as detection, access, assessment and continuity of care) which occurs between patients and the mental health service system, and outcomes are the changes in functioning, in morbidity, or in mortality.[6]

Performance measurements are used to identify and change the structure and process of a health system in order to improve outcomes. Performance measurement may also be applied at different levels for each of these 3 components: client or clinical, service or programme, system, and population.[7]

The various stakeholders of a healthcare system are likely to have differing perceptions of what aspects of quality of care matters most to them. These varying and occasionally conflicting perceptions would inevitably lead to some tensions and a wide array of what to measure. This is evident in the United States, where more than 50 stakeholder groups have proposed more than 300 process measures for quality assessment.[4] There has been some recent development to identify consensus-based quality indicators for international benchmarking for mental health. However, the challenges are still great with lack of consensus for indicators of prevention, access, safety of care, and measures for emergent care and services at intermediate levels of care, like residential programmes.[8] The challenge would, therefore, be the selection of a set of performance measures that would be acceptable to these various stakeholders of this 5-year plan, while ensuring comprehensiveness of coverage and feasibility of data collection. The major stakeholders in the local context would be the patients, families, other providers of mental healthcare which include the primary healthcare sector, other non-medical bodies on which this Policy would have an impact – from the population at large to special groups such as the school population and working adults; as well as payers of healthcare such as the Ministry of Health and employers.

This paper seeks to provide a framework for selecting these performance measures by addressing the key questions like the desired attributes of these measures, what to measure, how to select the measures, for what purpose, and what are the necessary infrastructure for data collection and availability of comparative data.

Desired Attributes of Performance Measures

Hermann and Palmer[4] have described 3 desired attributes of measures for mental health: meaningful, feasible and "actionable".

Measures should be Meaningful

Performance measures must be seen as important to the major stake-holders and must address important problem areas and be clinically relevant at the same time. Measures should, as much as possible, capture the essence of what they purport to measure (i.e. be unbiased and valid for their intended purpose). The "meaningfulness" of a measure also incorporates the concepts of subjective and more objective information[4] – for example, the face validity of a measure is subjective. Ideally, the performance measures should be based on evidence – focusing on conditions that have clearly effective treatments. The evidence can be based on research findings, from evidence-based guidelines, and literature reviews of the evidence supporting specific measures.[9] Even in instances where there is a lack of evidence, it is still possible to develop appropriate measures through "clinical reasoning, with its reliance on experience, analogy, and extrapolation…[and] eliciting and respecting patients preference".[10]

Measures should be Feasible

Measures must clearly specify a desired public health result, including identifying the population affected and the time frame involved in achieving the desired outcome. They must be reproducible (i.e. reliable), and be able to detect movement toward a desired objective (i.e. be responsive) and collection of data should be affordable and not impose too heavy a burden on data collection – the collective burden of gathering data for the set of measures must be balanced against the resources available for measurement.

Measures should be "Actionable"

While a measure may reflect a serious problem but the solution might not be under the users' control; users of the measure must be able to act on it to improve care. Measures should be stated in non technical terms and understood by all stakeholders.

What and How to Measure

Hermann and Provost[11] have recommended that some point of reference is needed to better interpret and compare these measures. These comparative data include:

i. Standards which are numerical performance expectations established by individuals or groups, and may be based on statistically derived thresholds, expert consensus, or be set arbitrarily.

ii. Means that are obtained from published results from research studies or quality-assessment initiatives. However, comparison with these can be fraught with difficulties because of differences in study populations.

iii. Norms which are average results for large, representative population-based samples, and

iv. Benchmarking which reflects the results of the highest performing organisations in that particular field. For benchmarks to be relevant, stakeholders should have to

ensure that the results are applicable to their patient population or that the necessary statistical analyses like case-mix adjustment or multivariate modelling are performed to adjust for differences. However, at present there are very few of these benchmarks for mental health.[8]

To have a more comprehensive perspective of what should be measured, it is useful to have a framework, which incorporates the multiple components of a healthcare system. A useful model for this is the "matrix model" developed by Thornicroft and Tansella.[12] We have adopted and adapted this model as illustrated in Tables 1. We advocate that performance measures should evaluate the quality of care along the temporal axis of structure, process and outcome, as well as along the different levels of patient, programme and population. Table 2 gives some examples of the measures for the different dimensions of a mental health system.

The 3 components do not function in silos but rather they are inter-connected. Outcome measures in mental health services are often concerned with reduction of symptoms, disability, and almost entirely concerned with secondary prevention i.e. reducing symptom relapse and service satisfaction or impact on care-givers. While outcome may

be the most important aspect of a health system to be measured, it is often dependent on the structure and process.

An intermediate outcome measure is risk status which is the change (or lack of) in the risk demonstrated or assumed to be associated with health status.

How to Decide on the Set of Measures

The challenge to all the stakeholders is to select a set of measures that reflects each of their priorities, covers enough common ground, and are feasible to collect. Prioritising and consensus building is key to this process.

One method is the Delphi method developed by researchers at RAND and the University of California, Los Angeles (UCLA) to measure the quality of healthcare.[13] The procedure consists of a panel of expert medical research practitioners who are first given a comprehensive summary of the relevant scientific literature as part of the rating task, and then is asked to rate the extent to which a particular health intervention for a defined group of patients will lead to benefits. Only when a high degree of consensus among these experts is found for appropriate ratings are they used to define measures of quality of care or healthcare performance.

A variation of this method was used by Addington and colleagues[9] in selecting performance measures for early psychosis treatment services. The panel was not given summaries – largely because of the relative paucity of the clinical efficacy and effectiveness of the various interventions, and the panelists were not just medical experts but also representatives of the various stakeholders including payer, administrative providers, patients and family members.

Infrastructure for the Collection of Data

First, the drivers of the programmes must make the commitment and build in the discipline of focusing on the essential data and collecting them: of making it one of the core competencies, including training their staff, and

Table 1. Ideal Attribute of Performance Measures

Attributes of measures		
Meaningful	**Feasible**	**Actionable**
Problem area	Precisely specified	Comprehensible
Clinically important	Data available	Under user's control
Meets stakeholder needs	Affordable	Interpretable
Evidence based	Accurate	Norms
Valid	Reliable	Benchmarks
Level of quality		Standards

Adapted from Hermann and Palmer, 2001; Thornicroft and Tansella, 1999

Table 2. Examples of the Different Dimensions of a Mental Health System

Dimensions of the mental health system (examples)		
Capacity/Structure	**Process**	**Outcome**
• Expenditure on mental health Budget allocation • Government directives and policies • Treatment protocols and guidelines • Training of manpower • Content of clinical treatments	• Performance/activity indicators (e.g. admission rates, bed occupancy rates, compulsory treatment rates) • Monitoring, service contacts and patterns of service use • Audit procedures • Continuity of clinicians • Frequency of appointments • Wait time	• Symptom reduction • Impact on care-givers • Satisfaction with services • Quality of life • Disability • Needs

Adapted from Hermann and Palmer, 2001; Thornicroft and Tansella, 1999

structuring it into standard operations. There must be adequate data on the populations of interest and it should meet reasonable statistical standards for accuracy and completeness. The data must be gathered in a timely fashion, and at the appropriate periodicity through data collection protocols and standardised abstraction forms. Validated structured instruments should be used for the measurement of symptom severity, functioning, patient's satisfaction with services, and quality of life.

We present here, the Early Psychosis Intervention Program (EPIP) as a case illustration. This programme was initiated in 2001 to detect the first episode of psychosis sooner and encourage earlier effective help-seeking, and the provision of a holistic and comprehensive and intensive treatment of the first psychotic episode. The aims of this programme were to optimise recovery, improve functioning, reduce re-hospitalisation, and to reduce suicide. The details of this programme has been described elsewhere.[14] As this programme was supported by the Ministry of Health of Singapore, a set of predetermined indicators was agreed upon. From the onset, dedicated resources were allocated to the collection of these data. This included building the discipline to make regular assessment of clinical symptoms reduction, side effects of medications, and functioning with structured instruments, and the establishment of an information technology (IT) system to collate and analyse the data. The indicators of the structure of the programme were the establishment of evidence-based treatment guidelines and clinical pathways, the establishment of case management, and the number of primary healthcare providers trained to detect and manage early psychosis. The process and outcome indicators chosen were the number of individuals screened and accepted into the programme as well as the change in the referral patterns, and a reduction in the duration of untreated psychosis i.e. the length of time from the first psychotic symptoms to the time of diagnosis and appropriate treatment, as a reflection of the accessibility of care. Others included the average length of stay (ALOS), the rate of unplanned readmission, and the default rate following the first contact. The data which we collected showed that the number of patients accepted increased on a yearly basis, with a positive shift in the referral pattern towards self, family, and primary care referrals including a reduction of 15% in police referrals; a reduction of the median duration of untreated psychosis from 12 to 4 months[15]; and a reduction in the ALOS and default rate. The outcome indicators were chosen to reflect better quality of care and these included the appropriate use of medications,[16] sustained reduction in the severity of the psychosis as assessed with the use of structured psychiatric rating instruments, improved functioning as indicated by the employment rates, and the levels of satisfaction as reported by the patients. The suicide rate was kept below 1% within the first 2 years after diagnosis, which is within the standard as recommended by a consensus statement issued by the World Health Organization and the International Early Psychosis Association.[17]

Based on this initial 5-year performance report, EPIP was able to secure further funding under the National Mental Health Blueprint. Moving ahead, the plan is to further enhance the components of indicated prevention and early detection within the programme. For schizophrenia, this can be done by accurate identification of people who display pre-psychotic or prodromal symptoms of the illness and appropriate treatment so as to prevent or delay the onset of psychotic symptoms. In order to achieve this, EPIP is working closely with the Health Promotion Board and the Ministry of Education in coming up with a comprehensive psychoeducation programme for students, parents, teachers and counsellors of all the secondary schools and institutions of higher learning in Singapore that raises awareness of the early prodromal symptoms of schizophrenia and where and how to seek help. EPIP also plans to set up a clinic that is easily accessible and non-stigmatising that provides treatment for young people displaying prodromal symptoms of psychosis. The success of these initiatives would be measured by the following indicators: the total number of counsellors trained, the improvement in the mental health literacy after such a training as well as satisfaction rate with the training; developing effective screening tools and resources for the use of the counsellors in schools and colleges and the sensitivity of these screening tools; and lastly by developing treatment guidelines for at-risk mental states and planning and implementation of a service to treat young people who may be at a risk of developing psychosis. The full set of indicators developed is found in Table 3.

Comments

In the face of the political reality of limited resources, concerns about the escalating healthcare costs, rising public expectations, and variation in clinical practices, accountability is inevitable.[18] Given the multiple stakeholders with different agenda, and the complexity of assessing the multifaceted aspects of quality of care, it would be not possible to please all parties. Compromises and trade-offs are inevitable, and this may lead to the perception or misperception of partiality by giving disproportionate attention to certain areas over others. A proposed solution is the adoption of core measures which are "standardised performance measures that are selectively identified and limited in number…[and that] can be applied across programmes…[with] precisely defined specifications … [and] standardised data collection protocols".[4] These "core measures" make a number of assumptions such as, measures meeting a broad range of criteria are available,

Table 3. Performance Indicators for the Early Psychosis Intervention Program (EPIP)

Early Detection	• Development of training programme • Development of screening tools • Proportion staff/institution trained • Satisfaction with training • No. of clients screened by counsellors • No. of clients picked up by counsellors and referred to EPIP • Increase networking partners • Joint case presentations	• Increase in the mean number of primary healthcare providers trained by 50% • Increase in the number of joint presentations by 50% • Increase in the mean number of referrals from primary healthcare providers by 30% • Attain 75% satisfaction rate of good and above on training provided • Increase in mental health literacy
Early Intervention	• Set up of an "at-risk" clinic • Development of guidelines for treatment of at-risk mental states • Waiting time from referral to being seen by EPIP team • Percentage seen within 2 weeks of referral • Percentage of caregivers of eligible patient provided with psychoeducation and support • Percentage of patients with structured assessment of medication side effects done at least twice in 1 year • Percentage of patients with discharge plan at 1-year follow-up. • Percentage of patients adhered to discharge plan • Hospitalisation episodes and average length of stay (LOS) • Assessment of functioning • Caregiver burden	• Increase in total number of cases accepted to EPIP by 30% at the end of 5 years • Increase in the mean no. of referrals to General Practitioners by 20%· • Increase in mean Global Assessment of Functioning Scale (GAF) • Increase in patients engaged in rehabilitation or age-appropriate roles • ALOS in hospital • Percentage of patients engaged in EPIP services • Suicide rate • Client satisfaction survey • Reduction in Positive and Negative Syndrome Scale (PANSS) score • Improvement in quality of life • Reduction in care giver burden

that they can be used for multiple purposes, and there is consensus among the multiple stakeholders.[4] However, there is still no consensus for such a "core menu", and given the different patient populations (in diagnostic groups, and demographic characteristics), and different settings (from inpatient facilities to communities) covered in this 5-year plan, it would be more pertinent at this stage to have a set of measures that are specific to the individual programmes and a very limited number of core measures that transcend all the programmes.

The assessment of each of the programme should strike some balance in the number of performance measures in each of the areas of structure, process and outcome. Outcomes that are linked to the structure and process variables of the programme, should be used in conjunction with process and structure measures to derive appropriately conservative inferences about the performance of the programme. This approach will provide an opportunity to examine steps taken by programmes to achieve specific health outcomes and to better understand whether changes in the magnitude or direction of particular strategies should be considered. A combination of health outcome, process, and capacity/structure measures should be used to identify what additional research is needed to establish more precisely the relations among programme interventions and outcomes. It is important that programmes that engage in performance monitoring specify the assumed relationship between any process or structure measure proposed and the particular health outcome to which it is believed to be related and document, with empirical evidence and professional judgment, the assumed relationship.

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