Australian Mental Health Outcomes & Classification Network

'Sharing Information to Improve Outcomes'

An Australian Government funded initiative

Key Performance Indicators for Australian Public Mental Health Services - Potential Contributions of MH-NOCC Data

Developing indicators of effectiveness

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1.0	27 July 2006	Forwarded to NMHPSC for 11 August 2006 meeting
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What is Australian Mental Health Outcomes and Classification Network?

The Australian Mental Health Outcomes and Classification Network (AMHOCN) was established by the Australian Government in December 2003 to provide leadership to the mental health sector to support the sustainable implementation of the outcomes and casemix collection as part of routine clinical practice. It aims to support states and territories and to work collaboratively with the mental health sector to achieve the vision of the introduction of outcomes and casemix measures. AMHOCN consists of three components: a data bureau responsible for receiving and processing information; an analysis and reporting component providing analysis and reports of submitted data; and a training and service development component supporting training in the measures and their use for clinical practice, service management and development purposes. Currently, the Australian Government has contracted the following organisations to undertake these roles: Strategic Data Pty Ltd, (data bureau); The University of Queensland (analysis and reporting); The NSW Institute of Psychiatry (training and service development). In February 2005, an AMHOCN State Liaison Manager role was established to coordinate activities between the state and territory health authorities and the AMHOCN components. The Australian Government has contracted Allen Morris-Yates to undertake that role. Further information regarding AMHOCN can be found at http://www.mhnocc.org.

Acknowledgments

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This report is based on the extensive work undertaken by many people working in Australia's public mental health services, including consumers, carers, clinicians, service managers, who are implementing an outcomes focus within their local services. Our acknowledgment is extended to all these individuals. Acknowledgement is also made of the efforts by staff within the various mental health branches in each state and territory health department who have coordinated the data collections and reporting arrangements.

Feedback

Comments on the document are welcomed. Readers are encouraged to submit comments via the on-line NOCC forum at http://www.mhnocc.org/ Alternatively, comments can be forwarded to:

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Table of contents

Section 1: Background and context

The development of key performance indicators for Australian public sector mental health services

In 2004, the National Mental Health Working Group (NMHWG) Information Strategy Committee's Performance Indicator Drafting Group published *Key Performance Indicators for Australian Public Mental Health Services*.[1] The report proposed a set of key performance indicators for use in Australia's public sector mental health services.

Key Performance Indicators for Australian Public Mental Health Services[1] was linked to the strategic directions of the National Mental Health Strategy, and drew on the National Health Performance Framework which identified three 'tiers' (health status and outcomes, determinants of health, and health system performance). The report focused on the third of these tiers, and based its proposed key performance indicators for the mental health sector on nine domains advocated within this tier, namely: effectiveness; appropriateness; efficiency; responsiveness; accessibility; safety; continuity; capability; and sustainability.

Key Performance Indicators for Australian Public Mental Health Services[1] further specified each of these domains into sub-domains covering the most salient matters of concern, again drawing on the National Health Performance Framework. It then developed key performance indicators for these sub-domains, concentrating on 13 Phase 1 indicators for initial trial, on the grounds that these were suitable for immediate introduction based on available data collected by all States and Territories. It also proposed areas for Phase 2 indicator development, which covered sub-domains identified as important for monitoring overall mental health service performance but for which lack of available data precluded immediate development of relevant indicators. The report indicated that both Phase 1 and Phase 2 indicators would require ongoing review, modification and refinement over time. Figure 1 shows the domains, sub-domains and performance indicators proposed in the key Performance Indicators report.

In July 2005, we published *Key Performance Indicators for Australian Public Mental Health Services - Potential Contributions of MH-NOCC Data (Version 1.0)*,[2] which proposed additional or modified key performance indicators in the domains of effectiveness, efficiency, accessibility and safety using MH-NOCC data.

The current report (Version 2.0 of *Key Performance Indicators for Australian Public Mental Health Services - Potential Contributions of MH-NOCC Data*) focuses on effectiveness only, and expands on the conceptual and technical issues identified in Version 1.0.

A focus on effectiveness – clinically significant change

Key Performance Indicators for Australian Public Mental Health Services[1] defined effectiveness in terms of care, intervention or action achieving the desired outcome.

Three sub-domains of effectiveness were proposed in *Key Performance Indicators for Australian Public Mental Health Services,*[1] namely: consumer outcomes; carer outcomes; and community tenure. The only Phase 1 indicator developed for initial trial was 28 day admission rates, designed to assess the sub-domain of community tenure.

A single Phase 2 indicator was proposed, namely: clinically significant HoNOS (or HoNOSCA or HoNOS65+) change. This indicator addresses the sub-domain of consumer outcomes, and assesses severity of symptoms from the clinician's perspective. It was proposes that, consistent with the other indicators presented in the *Key Performance Indicators for Australian Public Mental Health Services*[1], clinically significant change on the HoNOS and related measures would be assessed from admission to discharge in acute inpatient episodes, and over 91 day periods in community residential and ambulatory episodes.

The current report

The remainder of this report focuses on the above Phase 2 indicator – i.e., clinically significant HoNOS (or HoNOSCA or HoNOS65+) change. Our Version 1 report[2] flagged a number of conceptual and technical issues related to using the HoNOS and related measures to assess change, and the current report expands upon these in more detail.

This report should be read in conjunction with *Overview of NOCC Data 20080302.doc*. In that report, technical and conceptual issues, as they relate specifically to the 2006-2007 National Outcomes and Casemix Collection datasets, are discussed and several critical decisions are documented by way of preparing these datasets for subsequent analyses.

Section 2: Conceptual issues relating to clinically significant change

The key conceptual issue to be taken into consideration in operationalising clinically significant change according to the HoNOS family of measures is how much improvement (or, for that matter, deterioration) constitutes 'clinically significant' change. This issue was raised in *Key Performance Indicators for Australian Public Mental Health Services - Potential Contributions of MH-NOCC Data (Version 1)*,[2] but is discussed in more detail below in terms of the candidate methods which might assist in defining such change and enabling it to be measured.

Candidate methods for measuring clinically significant change

Eisen, Ranganathan, Seal and Spiro[3] recently observed that over the last 30 years a number of methods have been developed to assess clinically significant change, but that there is no consensus about how this should be done. We have identified four candidate methods for assessing clinically significant change, the latter three of which have been discussed in some detail by Eisen et al.[3]:

- Classify and count
- Effect size
- Reliable change index
- Standard error of measurement

Classify and count

Authors such as Kendall and Grove[4] have advanced quite strict definitions of 'clinically significant change', which amount to counting the number of individuals who move from being classified as members of an 'ill' population to being classified as members of a 'well' population. There are problems with applying these definitions in the current context, partly because of the issue of what degree of change is reasonable to expect, but also because of the lack of normative data on 'well' populations. Trauer, Duckmanton and Chiu[5] addressed the issue (using the LSP rather than the HoNOS), by considering hospitalised individuals and comparing them with those in the community (as opposed to 'ill' and 'well' individuals).

An alternative approach to the 'classify and count' involves considering the number of individuals for whom there has been positive (or negative) change of a defined number of points for a defined number of HoNOS items. In relation to the latter idea, Lelliott[6] defined severity as a score of 4 on at least one HoNOS item, or a score of 3 on at least two. Parabiaghi, Barbato, D'Avanzo, Erlicher and Lora[7] adopted and modified Lelliott's classification of severity for use with consumers seen in community mental health services, classifying 'very severe' as a score of ≥3 on at least two HoNOS items,

'severe' as a score of ≥3 on one item, 'mild' as a score of 2 on at least one item, and 'subclinical' as a score of <2 on all items. They could then examine movement between these different classifications over time.

Effect size

Effect size (ES) was developed by Cohen[8] to assess the magnitude of a treatment effect. It is based on the ratio of the difference between pre- and post- scores to the standard deviation of the pre- score. Cohen's 'rule of thumb' tends to be used to interpret effect sizes, with effect sizes of 0.2 considered small, 0.5 considered medium and 0.8 considered large. Eisen et al[3] has noted that effect sizes can be taken as indicators of clinically significant change, on the basis of research that suggests that a medium effect size corresponds to change that is of sufficient magnitude to be evident to a careful observer.

Reliable change index

The reliable change index (RCI), developed by Jacobson and Traux,[9] calculates whether the magnitude of change is statistically reliable. Specifically, it subtracts the post- score from the pre- score and divides the result by the standard error of the difference. If the final figure is greater than 1.96, change is regarded as statistically reliable. Once statistical reliability is established, clinical significance is assessed by determining whether post-scores fall within the 'normal' range. This then raises the same issue identified above regarding the lack of normative data on 'well' populations. Eisen[3] has discussed this as a limitation of the reliable change index.

Standard error of measurement

The standard error of measurement (SEM) has been advocated by McHorney and Tarlow[10] as a means of examining individual change on health-related quality of life instruments. The standard error of measurement is the standard deviation of an individual score, calculated by multiplying the standard deviation for a given sample by the square root of one minus its reliability coefficient. Eisen[3] reports that one standard error of measurement is the lowest accepted value that would indicate minimal clinically significant change for an individual.

Which method to use to assess clinically significant change on the HoNOS family of measures?

Several issues should be taken into account when considering which of the above candidate methods for measuring clinically significant change on the HoNOS family of measures. The first is whether the method actually measures clinically significant change. Three of the methods pass on this criterion, but the reliable change index is really a measure of reliable change rather than clinical change. Although ensuring that any observed change is reliable is important, the reliable change index, by itself, cannot assess clinically significant change.

The second issue is simplicity. The method(s) of choice should yield results which are readily understood by mental health service planners, managers and clinicians. The classify and count method is conceptually the simplest method, in the sense that it involves examining movement from one classification into another. We would also argue that effect sizes can be readily understood, and when we have presented clinical change data to various forums around the country using this metric, it has resonated with a range of audiences. The reliable change index and the standard error of measurement are arguably more difficult to grasp.

The third issue relates to the utility of the methods. The classify and count method can be used with data that are not normally distributed, whereas, strictly speaking, the other three methods rely on the assumption that HoNOS data follow a classic bell-shaped curve. To put this in technical terms, the classify and count method can be regarded as a non-parametric method, whereas the other three methods are parametric statistical tests.

The fourth issue concerns the unit of counting. The classify and count method has typically been used to assess clinically significant change for groups, rather than for individuals. Traditionally, this was also the case for the other three methods but techniques have now been developed for using methods like the effect size and the standard error of measurement to explore change for individuals.

The fifth and final issue relates to the comprehensiveness of the method. Ideally, the method should be applicable across more than just the HoNOS suite of measures, and should yield a common metric which is applicable across measures. The classify and count method does not meet this criterion, because the classifications are unique to a given instrument. By contrast, methods like the effect size method do meet this criterion because comparable effect sizes can be calculated for different measures, irrespective of their constituent items or sub-scales. This has implications for taking the notion of clinically significant change beyond the HoNOS suite of measures.

Recommended approach

Given the above benefits and disadvantages of the given methods of assessing clinically significant change, we recommend trialling the following two methods:

- Classify and count
- Effect size

The classify and count approach should adopt the Lelliott/Parabiaghi et al[6 7] approach to defining levels of severity on the HoNOS, and should consider movement across severity classifications over time at a group level. This classificatory approach is preferable to one which requires any sort of comparison with a 'well' population. The method could be extended such that unweighted and weighted change scores were calculated. The unweighted approach would treat each HoNOS item as equal, whereas the weighted

approach might give greater or lesser emphasis to particular items. Having said this, a clinical significance survey we recently conducted with 94 relevant experts found that these experts viewed all HoNOS (and HoNOSCA and HoNOS65+) as important, raising the question of how the relative weights might be derived.

The effect size approach should use the simple formula which takes the difference between pre- and post- scores and divides this by the standard deviation of the pre- score. Effect sizes should be calculated at both the individual level and the group level, and should be reported in terms of small, medium and large effects.

The advantage of using the two methods together is that they provide a simple overview of clinically significant changes on the HoNOS family of measures at the individual level and at the group level, offer parametric and non-parametric approaches to analysis, and pave the way for extending comparable analyses to other measures in the MH-NOCC suite.

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