MENTAL HEALTH CLINICAL CARE AND PREVENTION MODEL: a population mental health model

MH-CCP Version 1.11

REVISION HISTORY

Note: This revision history applies to the document and associated spreadsheets. Revised spreadsheets must be held in the relevant folder along with the document version to allow parallel editing as required.

Version 0.0	Internal development in CMH Oct 1999-April 2000.
Version 1.0 07 Apr 2000	Released to Area Directors of Mental Health, DDG Policy, CMH Managers. Error in Total predicted FTE/100k corrected and sent 10 April - 2 x Colour copies K Meleady, DG 11 April - 40 x Colour Copies Area CEOS, Area Planners
Version 1.01 07 Apr 2000	Current version – revision history added, Appendix E corrected, minor typos and omitted headings fixed.
Version 1.02 19 Apr 2000	Converted to standard MS Word styles and standardised, minor typos fixed – no significant changes. CMH Internal review only.
Version 1.03 3 May 2000	Substantial revision: Prevention and partnership FTE added as Appendix F. Spreadsheets revised to new format. Staff profiling introduced to identify time allocation of general ambulatory care staff, using Excel Solver to optimise. EDIS and DOHRS data on ED usage analysed to identify CL demand in ED. “Percentage reached” (Appendix E) added between “in need” population and service population – when set at 100% the model is as before, but allows prediction for variable uptake or priority setting in meeting need. Care packages from Appendix E incorporated for MILD and MODERATE groups, but not SEVERE. Assessment components of care packages upgraded in response to clinical commentary. Adult care packages for Moderate and Mild groups imported from Appendix E. OOS calculation added for ambulatory care, and clients per FTE staff as index of service intensity. Mild group in 0-17 age range is now Early Intervention (EI) group. EPPIC group is now Early intervention in Psychosis (EIP) group to avoid confusion with specific EPPIC program, EPPIC care package retained. EIP age range moved from 15-34 to 15-24 without change of estimated numbers based on data in delay of diagnosis – incidence to be re-modelled. CMH Review
Version 1.04 7Jun 2000	Substantial revision to address commentary. Appendix F revised with extended account of prevention and promotion. Appendix G added to provide approximations for use with SSDB acute bed planning model. Appendix H added to record investigations of the prediction of 10 MH acute beds/100K over 65 versus clinical opinion that 50+ per 100K are required. Review of nursing home data, prevalence of illness, review literature on prevalence of dementia and overlap with MH, other prevalence data in 65+ population, US Medicare clients and utilisation, Qld, Vic and WA planning documents, NSW utilisation and ALOS in PG acute units, existing levels in other states, sources of recommendations for higher numbers. Dementia prevalence modelled. Text revised for 65+ people. Inclusion of 50% “percentage reached” for prevention and partnership FTE. CMH review.
Version 1.05 30 Jun 2000	EIP re-modelled for early symptom onset (Hafner) and age 18-24. Finalised version incorporating revised care plans. Analysis of US Medicare inpatient data added. 2 Copies 16 August for NMHWG view are last and only of this version, thereafter changes bevome Ver 1.06
Version 1.06 17 Aug 2000	Correction to EIP bed-days calculation . Appendix G updated for SSDB planning model. Incorporation of response to WSAHS commentary. General C-L FTE added.
Version 1.07 01 Sep 2000	CMH clinical review. C-L inadequate in support of volume of MH care by GP’s, Gen Comm Health, etc – raised to 1hr per prevalent case, 50% designated staff, 50% general C/L by all. Additional follow-up for most seriously affected C&A.
Version 1.08 12 Sep 2000	Appendix J added. Non-final draft to SWSAHS for planning
Version 1.09 13 Sep 2000	PND assessment raised to 90 minutes. Final review and edits for version 1.1.
Version 1.1 14 Sep 2000	Revision for endorsement as planning tool.
Version 1.11 01 Nov 2000 10 Apr 2001	Revision after gap analysis with SSDB and predictions for 2005/06. Corrections to overall summary totals for adult 18-64 and older people 65+ , note on NSW Health Older People’s Survey estimate of dementia in household (non-institutionalised) population. Reference to National MH Strategy publication on population health model added. (10 Apr - Embargo notice on Table H-4 removed on publication of National MH Report 2000.

INTRODUCTION

Aim and Goals

To plan the provision of mental health services in NSW it is essential to identify a framework that will achieve the aim of NSW mental health policy[1], namely:

- to improve the mental health of the people of NSW.

Such a framework must also assist the achievement of the specific goals of mental health service provision:

- Improve the mental health and wellbeing of people across the lifespan;
- Prevent, where possible, the development of mental health problems and disorders;
- Lessen the development, impact and recurrence of illness through early intervention;
- Effectively treat and, where this is not possible, rehabilitate, support and maintain people experiencing mental health problems and disorders to ensure optimal quality of life; and
- Achieve fairness and equity in service provision for mental health care in NSW.

To achieve these aims it has been agreed nationally (National Mental Health Working Group) and internationally (US Surgeon General's Report and WHO communication) that a population based mental health approach is required. This encompasses a spectrum of interventions and levels of care, delivered on a basis of available evidence as to what is effective, and coordinated across the lifespan.

This Mental Health Clinical Care and Prevention model (MH-CCP) therefore is consistent with requirements of the NSW Mental Health Policy*: Caring for Mental Health* and the whole of lifespan population approach outlined in the Population Mental Health Based Service Model[2] and the directions stipulated in the NSW Health Council Report :

> We recommend …
>
> That NSW Health introduce more consistent classifications about the types of services funded under activities such as population health, community health, mental health, research, and public health.
>
> That there be clear performance agreements for these services, specifying the standard of service to be provided, clearly stipulating the priorities for service provision and clearly identifying required service outputs.
>
> **Report of the NSW Health Council, March 2000, p. xxii**

MH-CCP is also consistent with the three additional priorities for reform identified by Australian Health Ministers in the *Second National Mental Health Plan*[3] for the period 1998-99 to 2002-03.

- *promotion of mental health, prevention of, and early intervention in illness* have been addressed directly in the care framework used in the model.

- *quality and effectiveness of service delivery* are addressed in the model by defining individual care packages that reflect clinical evidence, as available, and the requirement of the National Standards for Mental Health Services; and also by modelling a comprehensive system of services,

- *the development of partnerships in service reform* is fundamental in this model, which specifies the care provided by specialist mental health services, and the care expected to be provided to, and by, partnerships with other health and human service providers.

Finally, MH-CCP is consistent with a key direction identified in the external evaluation of the National Mental Health Strategy[4] in relation to the “appropriateness of national mental health policy settings from an international perspective”. The reviewer concluded that “based on my direct experience with eastern and western Europe, North America, and South America, I would conclude that Australia is very advanced in several key areas, compared with other countries” (p. 3) but also noted:

“A population focus is needed in the future to improve the mental health of Australians and to invest service funds wisely. [Australia] …needs to develop a framework or map that disaggregates the Australian population into subgroups (perhaps by age, diagnosis and disability, e.g., adults with severe mental illness, adults with serious mental illness, adults with other mental illnesses, adults with risk factors, remaining adults) to examine current and needed insurance coverage, current and needed services, major gaps, and strategic actions that could be planned to remedy deficits. Such a strategy could also have the benefit of developing a common vision of mental health for the entire population of Australia. This work could provide an excellent transition toward a population focus.”

The same review of September 1997 also noted earlier stages of the work that is now presented in the MH-CCP model:

“New South Wales has begun to plan for population management through an epidemiological program, with the potential to reduce subsequent service costs” (p.3)

“In New South Wales, epidemiological work is underway to link problems with interventions at an earlier point in the course of illness. The field seems to be poised for adoption of the public health model.” (p.6).

The current MH-CCP model is the result of work done by the Centre for Mental Health since 1996 in collaboration with other branches of the Department and with Area Health Services to develop the epidemiological, clinical, and financial evidence base on mental health needs and mental health services in NSW.

Background

Epidemiological data consistently show that about 20 per cent of the population have a level of symptoms and disruption of functioning that warrants a formal diagnosis of mental illness. By contrast, both epidemiological and service data consistently show that less than 1 per cent of the population receive interventions from specialist public sector mental health services. More than 60% of people with mental health problems do not access any health services for their health problems, and of those who do, General Practitioners provide services to the greatest proportion of them[5].

The formal clinical definitions of mental illness have been greatly developed since the release by the American Psychiatric Association in 1980 of the third edition of their Diagnostic and Statistical Manual for Mental Disorders (DSM-III), which for the first time specified the symptoms, and the severity levels and impairment of functioning, needed to assign a formal diagnosis. Since that time, epidemiology, research, and clinical services have had a consistent set of definitions that allow evidence from one field to be related to that from another. Nevertheless, the huge gap between the prevalence reported in population studies, and the treated prevalence, has raised the obvious question of whether epidemiologist and service providers were talking about the same illnesses and disorders. It is impossible to believe that we would need to increase the mental health budget 20 times to meet the need, since that would make it 40 per cent larger than the whole of NSW Health expenditure at present. Equally, it is impossible to believe that all the untreated portion of the people with illness can be as ill as those receiving services. Apart from anything else, 45 per cent of those receiving inpatient services are receiving that care under the involuntary treatment provisions of the NSW Mental Health Act 1990, and in order to do so, the stringent criteria of a medico-legal assessment process must be satisfied. It is thus unlikely that a large number of equivalently ill people exist untreated in the population.

The key challenge faced in developing the MH-CCP model was thus to come to grips with the gap between population and service data, and construct a framework for dealing with the whole spectrum of mental illnesses. MH-CCP is not the only model that has attempted this, and precedents may be found in Appendix C, and Appendix J. However, the traditional route has been to try to define “serious” mental illness as the focus for services, or the “priority population”. The unfortunate consequence of this approach is that other levels of illness, perhaps the early and more preventable stages, or those where intervention might reduce disability and consequent service demand, are not attended to. Most models of this type deal only with the “CC” in the MH-CCP model, the clinical care. MH-CCP addresses prevention directly, but it also deals with it by considering clinical care for levels of illness and disability that may be classified as “moderate” in terms of severity and disability, or even “mild” or “at risk”. The difficulty in so doing is the historical legacy of having services focussed at only one end of the spectrum - there is little evidence on what service provision ought to be for the other groups.

Most information about mental health services in Australia[6] is intended to answer the question “Who receives what services from whom, at what cost, and with what effect?”[7] That is important information, but incomplete. The difference between prevalence and utilisation makes it clear that we also need to know who needs services, and what services are appropriate for each defined need group. The MH-CCP model is a first attempt to bridge that gap. It is built from a set of explicit and quantified statements of “who needs what services from whom”, based on prevalence of illness in a standard NSW population and an assumed standard of care over a 12 month period.

The MH-CCP model conforms to the recommendations stated in the above quotation from the *NSW Health Council Report*. It suggests an appropriate average standard of clinical service for all people with diagnosable illness, and a standard of promotion and prevention services for those at general or specific risk. This model also tries to identify which services are most appropriately provided using directly the expertise of specialist mental health services, and which are more appropriately provided by other defined services in partnership with specialist mental health services – typically as an input of expertise in collaborative partnerships and consultation/liaison. Clinical judgements and determinants of aims of the service framework inform these decisions.

MH-CCP Model, Version 1

The epidemiology and clinical staff of the Centre for Mental Health in the NSW Health Department have mainly developed this first version of the mental health clinical care and prevention model. It is evidence-based in principle and practice where the evidence could be found or assembled in the present time frame. Citations for the references used for each section of the model are given at the appropriate places as endnotes, along with notes on the approximations needed to fill some of the gaps. Some of the issues that need to be considered in developing the model are given below, and a more detailed list of assumptions and issues is included as Appendix D.

In general, the model draws on previous NSW work in modelling mental health service needs, the epidemiological and treatment literature, existing NSW Health and other service data, planning documents from interstate and overseas, and advice from a limited number of external experts. Version 1 is far from complete, but even as it stands it has incorporated more information than known models for mental health care and prevention. It is also more specific than most current models of general health care in NSW and has the advantage that it makes explicit assumptions about appropriate care in mental health.

Although a great many of the considerations in MH-CCP are unique to mental health, the general principles are not. It is not only in mental health that there is a gap between the prevalence found in population epidemiology and in service data, or where simple calculations suggest that the whole health budget might easily be spent on a services for a single illness if all the undifferentiated ”need” were to be met by “more of the same”.

The Report of the NSW Health Council has pointed out that health service planning for the 21st century has to address similar issues. An important direction is to consider the planning of acute hospital care *within* its context of primary and community services, sub-acute and non-acute services, services provided by General Practitioners, and the scope for prevention of illness and promotion of health.

Thus the MH-CCP model may also provide a useful approach to the three Priority Health programs identified in the NSW Health Council Report, namely cancer, cardiovascular disease and its risk factors, and chronic respiratory disease. In many ways these might be easier to model, because the epidemiology is better established, the inpatient treatments are often discrete and well-defined and costed, and in particular the benefits of treatment and specific preventive interventions have been the subject of much more research than in mental health. On the other hand, there is much less of a tradition of jointly planning to combine acute inpatient and community-based care for these conditions. They also lack the identifiable program structures and other features that have been used to define an integrated mental health service since the agreement by all Australian Health Ministers on the National Mental Health Policy in 1992. Finally, there is no comprehensive strategy for each comparable to the National Mental Health Strategy that is now in its ninth year of implementation. It would hardly have been possible to build MH-CCP without the resources and information base provided by the need to monitor a specific identified program, and the comparable developments in other Australian jurisdictions.

Limitations of Version 1

The development of more specific care packages is essential to the improvement of the model. The MH-CCP model is released in its current form to stimulate further improvement, and contributions from a wider group. Those are particularly needed in the following areas:

- The care packages in the MH-CCP model require further refinement. This will be done over time by a process of critical literature review of available evidence, and analysis of available data on primary and specialist private mental health care and data on outcomes, population projections and clinical consultation.
- Most of the care packages are not diagnosis-specific because most of the available population data specify service need according to "severity", independent of diagnosis. The care packages thus reflect average standard care for a group with a defined level of severity of "mental illness". Even though these care packages have no immediate clinical transferability, they are useful for many planning purposes because of the links to population and service use data. There is a need to obtain population estimates that stratify a specific diagnostic group (for example, depression) by severity/acuity, functional disability, and service need. There is also a need to have validated standard treatment prescriptions in which the relative probabilities of different durations and intensities can be used to generate a meaningful average.[8] These care packages will be further informed by some Australian Clinical Practice Guidelines now in the process of development.
- The exceptions are the care packages for early intervention in psychosis and for post-natal depression. These are included to indicate the direction of future development, the type of evidence needed, and the value of having such evidence.
- It is envisaged that a limited number of specific care packages will need to be developed to account for about 80 per cent of services provided. One practical future approach is to quantify the proportion of clients in each clinical group who require "management by exception", and the resources needed for those exceptional groups, as in the Western Australian purchasing framework for 1999-2002[9].
- The care packages are defined for the "average" client in a group. While adequate for estimating total resource need, this should be developed in a way that recognises the distinction between general clients and exceptional ones. The existing approach works reasonably well in Version 1 only because the groups are mainly defined by service need.
- Only early intervention in psychosis has been formally modelled using incidence/ prevalence/ remission/ relapse/ mortality. The evidence on remission with treatment has not been adequately researched, and the mortality estimates are crude. A great deal of future work is needed in this area.
- The resource predictions are calculated for a 12 month period, based on existing prevalence data. Those data reflect the levels of illness and disability found in populations where specialised mental health services reach only a small fraction of those with estimated need. If in fact the predicted levels of care were provided, this would be expected to reduce the period prevalence of many illnesses, and/or modify the service requirements. For example, a net remission rate as low as 5 per cent per annum halves the overall prevalence of schizophrenia in the long run. Multi-year modelling and specific effectiveness data are needed to represent effects of that kind.
- No attempt has been made to model sophisticated care packages in Version 1, but they already exist in some areas of mental health care and clearly, developments of this kind will need to be represented in any serious model for mental health care in future[10.]

What the MH-CCP model aims to do

It is important that those wishing to contribute to the review and/or further development of the MH-CCP model should be aware of what it is intended to be, and even more important to know what it is ***not*** intended to be. It is not a resource distribution model or a casemix classification (see Appendix A), but a quantified version of the population based service model developed by the Centre for Mental Health. The MH-CCP model most closely resembles a "capitation", "insured risk", or "actuarial" model (see Appendix C) because it identifies a standard of care, or a benefits package, for the proportion of the population estimated to be at risk of needing it in a 12 month period. It is primarily a clinical care model, providing a basis for the requirements of care to achieve the goals as identified above, placing "clinical governance"[11] in the foreground, and identifying resource frameworks for translating aims into effective service delivery.

The model is intended as a tool to assist systematic consideration of the requirements of comprehensive integrated mental health care and prevention across the lifespan in a population mental health framework. It focuses on the clinical and scientific tasks of prescribing appropriate "care packages", or "interventions" for individuals, and relevant population groups. Unfortunately, general guidelines such as those developed by the NH&MRC are of limited use in prescribing specific quantities of care, and most of the care packages in this model have been determined by the best evidence available at the time, supplemented by informed clinical opinion. Much more work is needed to refine them.

Published epidemiological data are used to estimate the numbers in each care grouping. Largely unpublished service data are used to translate the prescriptions of care into realistic resource requirements that reflect achievable occupancy rates and proportions of clinical time spent in direct care and other activities such as prevention and consultation liaison. The prescription of each type of care package for a 12 month period, multiplied by the estimated number of people in need of each, determines the resource predictions. The potential costs of this model can be estimated quite easily by applying known costs to the resources specified. Average state-wide costs for staff, bed-day costs, and typical overhead costs are available from the National Survey of Mental Health Services, so costing is not difficult. However, the differential cost factors for rural Areas (eg, travel) are not well documented at present, and average costs are not necessarily efficient costs, nor are they necessarily the cost of effective services.

From Version 1.03 of the model onwards, a variable for "treatment percentage" has been added because it allows flexibility in setting priorities within different resource opportunities. This provides a simple process to make predictions in situations where the full resources to meet the estimated treatment need are not available, or need to be phased in progressively. It also recognises that the extent of the demand for some services is difficult to estimate, especially if they are services that either do not exist or are in limited supply at present. The "treatment percentage" allows the supply for each stream of care to be set to a level that is considered appropriate in a local service setting at a particular time. The epidemiological components of the model are based on integrating an extensive body of evidence, and should not be changed without formal review. The care plans are also intended to reflect expert consensus (at least) on adequate care, and should not be changed without good cause and evidence. However, the translation from estimated need into service resources can easily be set to any appropriate level by varying the treatment percentage from 100%. It also provides an explicit record of the assumptions under which the MH-CCP model has made resource predictions in any particular case.

METHODOLOGY

The “Clinical Care” components of the MH-CCP model require the specification of an “average” care plan for each group where acceptable population prevalence estimates are available. In general, the population prevalence estimates are based on survey data. In older people the population survey data were supplemented by estimates of prevalence in institutional populations.

Primary Diagnoses: When combining estimates of prevalence for individual illnesses, we followed the principle adopted in the WHO/ World Bank Global Burden of Disease study[12], namely that the sum of individual estimates could not exceed the total level of estimated illness. This may tend to discount psychiatric comorbidity effects, in the sense that people with two mental illnesses generally have more than the average care requirement. The approach may also tend to discount comorbidity between psychiatric illness and other illnesses (for example developmental disability, substance abuse, dementia), since again these clients will typically have more than the average care requirement.

Comorbidity: There are various ways in which the MH-CCP model can address comorbidity issues without abandoning the principle of estimating the total number of people with illness, rather than the number of illnesses.

One is to devise “average” care plans based on the “average” client population, which thus includes the additional treatment load of the proportion who have more than a single illness. In inpatient care, for example, this would entail setting the length of stay according to an average rather than to an ideal figure based on treating uncomplicated patients with a single illness. That has generally been the approach taken in MH-CCP. Thus the readmission rates assumed for acute inpatient services reflect in part the strong influence of concurrent substance abuse on readmission rates, though they are lower than current readmission rates.

The other is to follow a commonly used clinical casemix approach and distinguish groups with and without comorbidity. It would then be necessary to devise separate streams of care for those with and without specific comorbid conditions. For example, it is feasible to separate the 20% of adult mental health clients with concurrent substance use disorders from the remainder, and have different care plans for each group. The care plans for the group with comorbid substance abuse would then include services provided by specialist Drug And Alcohol services in partnership with mental health services, and probably a different mix of specialist mental health services. Only the latter is addressed if the “average care plan” approach is taken.

Prevention: Prevention initiatives occur before the initial onset of a disorder. Prevention initiatives can be universal (for whole population groups), selective (for high-risk groups) or indicated (for people with signs and symptoms) – see Appendix F. Indicated prevention may also be used for people with mental disorders at mild levels of severity. The prevalence of psychosocial risk factors has been used to estimate resources for prevention initiatives.

It is difficult to estimate the population percentages, as risks for mental disorders are often co-occurring and/or cumulative. Little survey data is available for cumulative risks. Where available, WHO estimates have been used[13]. Calculations determining the number of FTE staff for prevention initiatives were based mainly on current prevention initiatives in operation in NSW. For further information see Appendix F.

Promotion: Mental health promotion is defined in Appendix F, and generally addresses whole populations. Resources for mental health promotion are estimated on the basis of ensuring at least 1 FTE staff per Area Health Service, with the larger Areas having 2 FTE staff. These have a focus on all age groups, but have been divided across the age groups in the model in proportion to the population in each. This relatively small allocation recognises that most mental health promotion initiatives are provided by general health promotion staff, with support and consultation provided by specialist mental health staff.

Table 1 summarises the prevalence data for mental disorders that is most relevant to the clinical care components of the MH-CCP model, and the estimates of psychosocial risk factors relevant to the calculations for prevention components. More detail is provided in Appendix B.

Table 1 NSW population group and mental health prevalence

Age group		Age Group as percentage of NSW population	Percentage of age group with psychosocial risk factors	Percentage of age group suffering mental disorders	Age Group as percentage of all suffering mental disorders
Infants	0-1	2.8%	10%	5.8%*	1.0%
Pre-schoolers	2-4	4.3%	20%	10.0%	2.6%
Primary school children	5-11	9.9%	20%	16.0%	9.5%
Adolescents	12-17	8.3%	30%	20.6%	10.3%
Adults	18-64	62.1%	20%	17.8%	66.6%
Older people	65+	12.6%	10%	13.3%	10.1%
TOTAL	All ages	100%	19%	16.6%	100%

*Prevalence figures for mental health problems are the prevalence figures for neglect or abuse and babies whose mother may suffer from severe postnatal depression

Age-specific prevalence estimates for each level of severity were applied to the population to determine the need groups. Standard care packages were then prescribed for each need group. Table 2 provides an example of the application of various prevalence figures and parameters to the population to determine the different need groups (See appendix B for more detail). It is not suggested that the groupings are fixed, or that services are provided only in the ways identified. Nevertheless, these are seen to be the most common pathways and are used as a basis for the first stage of this model.

The calculation of resource requirements to provide the required level of care is based on Australian data on clinical time use by mental health staff (see appendix C). In the case of inpatient care it is based on model unit designs that include staff grades and rosters[14], though only represented in Version 1 as total direct care FTE for different types of unit. The result is a complex but transparent model that may be considered and criticised in detail.

The Centre for Mental Health maintains the MH-CCP model as a controlled Excel workbook. For the main parameters used to develop this model refer to appendix A. A more detailed account of the methodology and estimation procedures can be found in the endnotes and Appendix B. As the process of consultation proceeds and changes are agreed, the model and this documentation will be revised by the Centre for Mental Health.

Table 2: NSW population parameters (per 100,000 population)

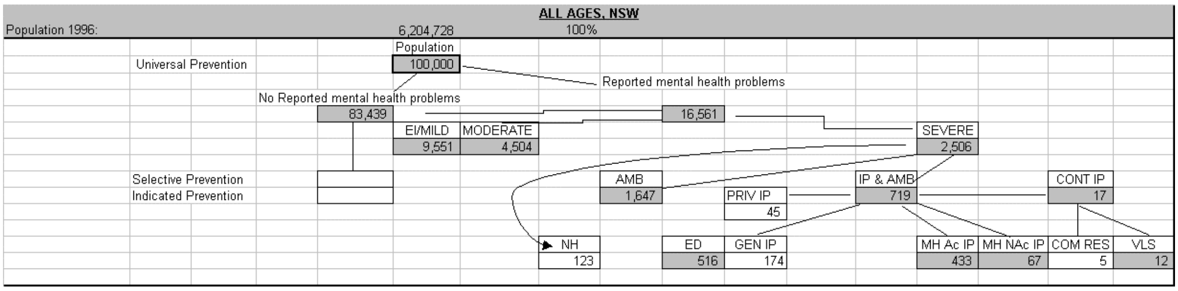


Table 2 shows the broad outline of the model, in which all age groups have been combined in their proportions in the most recent census (1996) and some minor service streams have been merged. It indicates that 16.6% of a standard NSW population would meet diagnostic criteria for mental illness in a year (about one in six). Only about 0.52% of the population (one in 200) will attend an Emergency Department for a primary mental health problem.

The MH-CCP model addresses the bulk of services to the 2.5% of the population with the most severe problems. Within that, a small proportion (0.12%) will already be in Nursing Homes, and an even smaller proportion (0.05%) will be treated in authorised psychiatric inpatient beds in private hospitals. A very small proportion (0.02%) will require continuous 365-day-per-year residential care. The remainder will require acute inpatient care in psychiatric units (0.43%) or in general medical units (0.17%), and a small proportion (0.07%) will require non-acute inpatient care in psychiatric units. The vast majority of this severely ill group will receive ambulatory care (1.65% of the population) and ambulatory care services will also provide follow-up for those receiving inpatient services, as well as consultation-liaison services to Emergency Departments, Nursing Homes, general health inpatient and community services, GP's, and others.

Ambulatory care services will also provide all services to the 4.5% of the population with moderately severe problems that impair functioning and can be persistent, and assessment, referral, and early intervention in the largest group, 9.55% of the population, with significant but milder problems. In addition, the promotion of mental health and the prevention of mental illness, both directly and in partnership with other agencies, is indicated.

There are many relevant services not shown on the diagram, and in particular there is no reference to Non Government Organisations. This does not imply that services and agencies not specified are not involved. The general approach taken in the MH-CCP model has been to identify the volume of services, divided by type of service, rather than provider. It would be expected that NGOs would play a significant role in providing ambulatory care services in particular, within the overall volume predicted, just as it is expected that the NSW Department of Housing will provide accommodation services under the Joint Guarantee of Service. The focus of MH-CCP is mainly on the clinical services requiring specialist health staff and facilities, especially mental health staff and facilities.

In the rest of this document, brief descriptions of service components and care packages are given for each age group with tables that outline the resource predictions for the health service necessary to serve the population over a 12 month period. Resource predictions are expressed as service inputs required per 100,000 age specific population. The predicted output levels are also given, for the most commonly used measures. They are predictions, not prescriptions or guidelines.

YOUNG PEOPLE 0-17 YEARS

Infants	0-1 year
Pre-schoolers	2-4 years
Primary schoolers	5-11 years
Adolescents	12-17 years

Introduction

This age group is divided into four sub groups. For each sub group there is a page specifying the care model, and another specifying the care packages per 100,000 age-specific population. Each care package has been clinically determined and then applied to the age-specific population. Specific end-notes refer to sources for figures used and calculations. The following elaborates on key decisions, several of which are open to debate.

Common principles and assumptions (0 to 17 years)

Services consistent with key principles being developed at a National level can be described within a 3-level framework: primary level mental health care, secondary level specialist child and adolescent mental health services and more specialised tertiary level child and adolescent mental health care, including Statewide and specialist child and adolescent mental health inpatient services. Some estimates in this current version of the model have been informed by a 4-tier system described by Kurtz[15], which is more appropriate for the UK context. As this NSW model is further developed, it will increasingly align with the 3-level National matrix.

Kurtz has noted that some mental health problems in children and adolescents may be mild or self-limiting and that these may be appropriately managed by primary mental health care[16]. In NSW, examples of primary mental health care providers include general practitioners, early childhood and child and family health services, paediatricians and school counsellors.

Of the children in the Western Australian Child Health Survey with mental health problems, 52% were identified as having “serious” problems on the basis of distress, impairment or the need for professional help.[17]. On this basis, the other 50% of toddlers/pre-schoolers, primary school children and adolescents with mental health problems are estimated to have “mild” (that is, not “serious”) problems in the current care model. To provide appropriate support and supplementation to non-specialist child and adolescent mental health care, the equivalent of 90 minutes of face-to-face specialist child and adolescent mental health professional time has been allocated for early intervention in the mild group.

The UK model[18] classifies 1.85% of all children and adolescents as having “severe and complex” problems (p.30) and approximately 0.075% as having “the most serious persistent and complex” problems (p.32). These estimates were rounded to inform the estimates for the “severe” category and “severe and persistent or complex” sub-category in this model. The estimate for the “moderate” category is the balance of children and adolescents with mental health problems between those allocated to the “Early Intervention” for mild problems and those whose problems are “Severe”. In the case of infants 0-1, a different approach had to be taken, and is described in that section.

If waiting times for assessment are a barrier to access, then a balance needs to be struck between comprehensiveness and utility. The adoption of a 90-minute assessment as an average for infants, children and adolescents is based on a South Australian initial consultation study [19] which enabled services to reduce waiting times and streamline triage. Some past protocols have included more prolonged assessment, for example a Victorian training model of four sessions[20] however published data are not available to determine whether length of assessment is related to outcomes for children and families.

Dulcan (2000) has observed that many child and adolescent mental health problems may be profoundly impacted upon by broad social interventions other than clinic-based treatment[21].

The efficacy of specified treatment packages has been evaluated in research on discrete disorders in children and adolescents however the effectiveness of services for children and adolescents, many of whom have comorbid problems, who receive treatment in the “real-world” is more doubtful[22]. In the current version of the care model, no attempt has been made to break down packages by specific disorders. A set of generic “average” packages has been used, based on severity.

Attempts to relate outcome to “dose” of treatment in specialist community-based services have recently been published, with disparate conclusions. For example, the Great Smoky Mountains Study group found that “dose” of treatment was associated with improvement in symptoms (but not level of functioning) for those who received at least 8 sessions[23]. In contrast, data from the Fort Bragg Evaluation Project suggested that the symptomatic and functional outcome for those who received minimal treatment was not statistically different from those who received more[24].

In the absence of definitive guiding evidence, the decision was made to follow published Western Australian 1996/97 outpatient delivery, with a mean of 6.4 attendances per episode[25]. Standard community-based care packages of 90-minute assessment and 6 follow-up sessions have been allocated. The length of the follow-up sessions varies according to the severity of problems. An “intensive extended” community-based package of 13 sessions was also devised for those with severe and persistent or complex problems, allowing tapered treatment over the course of a year (for example, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow up).

Evidence to guide optimum length of stay for day patient programs or inpatient programs is not available. The US Surgeon-General’s report on mental health notes that although it is the most restrictive, inpatient care “is the clinical intervention with the weakest research support” in the mental health care of children and adolescents[26].

Again, evidence to inform allocation of consultation-liaison time for those admitted to general/paediatric wards with mental health problems could not be found, so this has been estimated according to length of stay.

Prevention

Mental health promotion and prevention interventions are key components of an evidence-based child and adolescent mental health framework. Promotion and prevention initiatives incorporate broad social interventions, such as policy and environment as well as skills and knowledge enhancement fo children and adolescents and their parents.

More prevention opportunities exist in the 0-17 age group, particularly for younger ages, before the onset of mental disorders. Prevalence for the first onset of most mental disorders increases during adolescence, peaking in the 18-24 year old age group.

The level of mental health staff involvement in prevention programs will vary, with the highest level of involvement in indicated programs and least for universal prevention programs. More general health promotion staff will be involved in delivering universal and some selective prevention programs, supported by mental health staff.

To ensure appropriate coverage and implementation of prevention programs for the 0-17 age group, it is estimated (see Appendix F) that 16 FTE per 100,000 young people 0-17 would be required to deliver prevention programs typically comprising 8 x 60 minute sessions delivered in a group of 8-10 people, or the equivalent of about 1 hour per person of one-to-one clinician time. Additional components are also required to set up and deliver the programs. This overall target would require about 240 mental health staff state-wide for the 0-17 age group, and is unlikely to be achievable in the short term. In addition, the resource requirements and need would be better estimated once programs had been implemented and run for a period of time. For both reasons, the "percentage treated" for prevention has been set to 50% in the MH-CCP model. The universal, selective and indicated prevention categories have also been combined in the current version of the MH-CCP model.

Mental health promotion

Resources for mental health promotion are estimated on the basis of ensuring at least 1 FTE staff per Area Health Service, with the larger Areas having 2 FTE staff. These have a focus on all age groups, but have been divided across the age groups in the model in proportion to the population in each. This relatively small allocation recognises that most mental health promotion initiatives are provided by general health promotion staff, with support and consultation provided by specialist mental health staff.

Collaborative Partnerships

Collaborative partnerships are required for effective delivery of the proposed model. Some other service providers, such as general practitioners, paediatricians, Department of Community Services, adult mental health services, will be involved across all age-groups for children and adolescents. Other partnerships, such as those with maternal and early childhood health services, child and family health services, youth health services, drug and alcohol services, Department of Education and Training, Department of Juvenile Justice, may be more specific to particular age groups.

Collaborative partnerships between specialist mental health services and other service providers have been recognised as essential requirements for coordinated and comprehensive service provision[27] however this important component has not routinely been quantified in previous service plans.

In deriving community-based full-time equivalent staff requirements for treatment programs, it has been assumed that a small proportion of staff time comprises consultation-liaison. This allocation would be inadequate to provide continuing partnership programs, such as school-link, child-link and youth-link programs, and is mainly intended to reflect routine consultation-liaison to Emergency Departments and general hospitals. Four FTE staff/100,000 age-specific population for children and adolescents have been allocated for partnership programs, to link with local agencies such as early childhood, child and family and youth health services; child protection programs; Department of Community Service centres; pre-schools, schools and TAFE; and the Department of Juvenile Justice.

Emergency Departments

The current volume of attendances at Emergency Departments by 0-17 year olds for identified mental health problems is low, though overall attendances in this age group are high. It is probable that identification and recording of mental health problems as a primary diagnosis in ED's underestimates the need. This would be expected to improve as specialised mental health staff are placed in major Emergency Departments to meet the identified adult mental health service need of about 2 per cent of all attendances. For children and adolescents the need is met by consultation-liaison as required. Emergency response protocols for children and adolescents are required so that pathways for emergency assessment are clear.

Consultation-Liaison (General)

The general requirement for provision of mental health expertise via consultation-liaison to other service providers in relation to their clients is represented by an allocation of 0.5 hours of specialist mental health expertise per infant at high risk, or child/ adolescent with reported mental health problems, at any level of severity. This is in addition to the specific allocations for children and adolescents presenting to EDs, for children and adolescents with primary mental health diagnoses admitted to general medical beds, and for prevention, early intervention, support of partnerships with other agencies, and specific mental health treatment. It includes expertise provided to GPs, to general community health staff, and to general inpatient services.

Infants aged 0-1 year

Infant mental health is one of the newer subspecialty areas and there is still a paucity of data to guide care principles. The identification of specific disorders in infants is problematic however infants may be presented to health services with specific problems, such as attachment, feeding or sleeping difficulties or injuries[28].

Indications are that the bulk of prevention and early intervention strategies for this age-group are most appropriately delivered via general practitioners, obstetric and early childhood health services, daycare, family care or family support services, informed by evolving mental health evidence about risk and protective factors[29]. It is thus expected that prevention programs for infants and their parents or carers will be mostly delivered by early childhood staff. The focus of mental health staff involvement will be on support and training for these staff.

Consultation-liaison will be a component of all infant mental health staff programs. It is currently apportioned at less than two hours per week for every clinical staff member. A specific consultation-liaison allocation has been made for infants admitted to general health services for mental health presentations. The figure of 0.02% requiring inpatient admission was taken from the UK model[30] across all child and adolescent age-groups and may need revision for this age-group.

The care package approach has been to target infants at highest risk. Infants exposed to severe maternal depression or to abuse/neglect are likely high risk groups for adverse mental health outcomes[31]. All families of these infants are allocated one 90-minute specialist assessment and indicated prevention/early intervention.

Low birth-weight for gestational age babies and other infants at high risk may also require selective or indicated intervention. This requirement is currently incorporated in the general allowance for specialised consultation-liaison to other services.

Infants requiring admission for mental health presentations will be admitted to a non-mental health service (eg. medical/paediatric unit or residential family care centre) with consultation-liaison from the infant mental health program. This requirement is currently incorporated in the general allowance for specialised consultation-liaison to other services.

Care model for infants aged 0-1 year

Target group	Infants aged up to 2 years and their families, where there are parental mental health problems or major threats to healthy attachment and development (eg child abuse and neglect)
Scope	Care required during 12-months by specialist public sector mental health services and the provision of mental health expertise to non specialist mental health services, including support for prevention programs
Rationale and Estimates	Services for parents with infants need to take into account infants' dependence and protection issues and the context of the family Up to 5.8% of infants may be at high risk of mental health problems related to their experience of child abuse and/or neglect or mother's severe postnatal depression[32] Other risk factors exist but have not been quantified in this model. Up to 20% of women may experience an episode of depression in the year following childbirth. Of these, approximately half may have an episode of such severity that it results in major interference with daily functioning[33]. The first year of life is the most vulnerable period for child abuse and neglect with 0.92% of children subjected to substantiated neglect and/or physical, emotional or sexual abuse and 0.67% of children aged 1 to 2 confirmed as neglected or abused[34]. 0.02% of infants may be admitted in a general unit for mental health related problems[35]
Objectives	Prevention programs targeting high risk families Immediate specialist mental health assessment for affected families Consultation-liaison support for services for infants and parents
Outcomes	Client centred outcomes – Improved parent-infant relationships and infant development – measures to be determined by the Mental Health- Outcomes and Assessment Training (MH-OAT) Project.
Linkages with other services	Infant psychiatry is a growing sub-specialty area and there is great potential for liaison with other health services and other service providers. GPs Maternal and obstetric health services Early childhood health services and paediatricians Early child care services Department of Community Services

Service components	Services for women with post-natal depression require the capacity to assess and respond to the needs of families, including the specific developmental requirements of infants – see adult section. Family-oriented services for infants are included here. Services for parents with a mental health problem will be provided by adult mental health services in consultation with child and adolescent mental health services – see adult section. All infants at high risk as a result of abuse or neglect will receive a specialist assessment and mental health community care; those with persistent risk will also have intensive extended community care from specialist mental health servivces. Infants at high risk as a result of severe maternal postnatal depression will receive a family-oriented assessment and family-oriented contacts. Liaison with other health services and other family service providers. Additional risk groups (eg. low birth-weight infants) may require additional indicated and selective prevention programs. Specialist mental health input beyond that currently allocated may be required Assistance and support for the range of service providers involved in evidence-based universal and selective prevention programs Prevention interventions may be provided on a group basis Evaluation and monitoring Education and training Research and development

Refinement of model

Allocations for essential components of universal, selective and additional indicated prevention programs are still in development. For example, specialist child and adolescent mental health expertise will be required to inform and support evidence-based perinatal screening and home visiting programs. Overall estimates are in Appendix F.

Further definition of needs, service requirements and roles is anticipated as the infant psychiatry field develops.

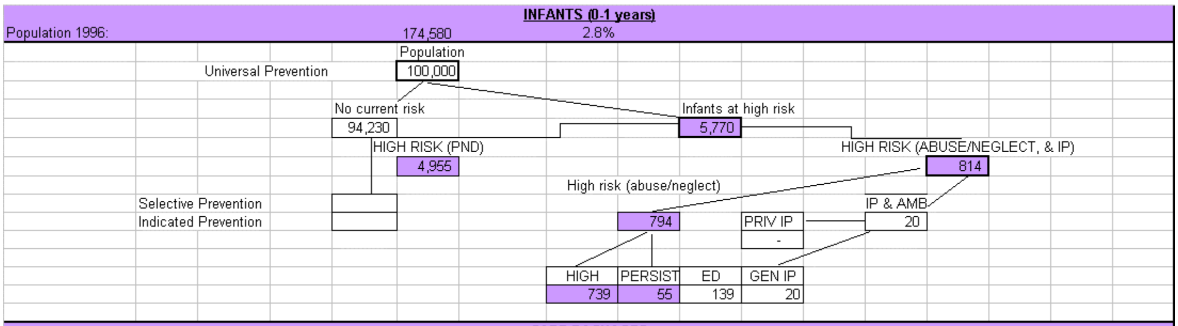
Care packages per infant aged 0-1 year

NEED GROUP	**CARE PACKAGE**	**SPECIFICATION** - *Service in italics not provided by specialist mental health services*
PND	PND Services for women with post-natal depression	See adult section; family-oriented services are described below.
Adult mental health problems	Adult mental health services for parents with other mental illnesses	See adult section
Infants at high risk admitted to general health services	Management by general health services with consultation-liaison from specialist mental health services, and intensive extended community mental health follow-up	*7 days admission to general health* Consultation-liaison: 1x90 minute mental health family-oriented assessment 3x30 minute family-oriented continuing contacts Community Follow-up 13x60 minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up)
Infants at high and persistent risk **(abuse or neglect)**	Mental health assessment and intensive extended community mental health care	1x90 minute mental health family-oriented assessment 13x60 minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up)
Infants at high risk **(abuse or neglect)**	Mental health assessment and community mental health care	1x90 minute mental health family-oriented assessment 6x45 minute family-oriented community contacts
Early Intervention **(family aspects of maternal PND – adult treatment is provided for in adult mental health services)**	Mental health assessment and early intervention sessions and general health services	1x90 minute family-oriented mental health assessment 6x30minute indicated prevention/early intervention session *6x30 minute consultations by non-specialist mental health services eg. GP, early childhood health services*
Other groups of infants at risk	Selective and indicated prevention programs supported by child mental health expertise	1 x 120 minute group session (with 20 child health staff) per week per Area Health Service (x 2 in larger Areas)
All infants	Universal prevention programs supported by child mental health expertise	

Resource and output predictions per 100,000 infants aged 0-1 year

INFANTS (0-1 years)

Population 1996: 174,580 2.8%



CARE PACKAGES

AMBULATORY							HIGH RISK			
				PREV	AT RISK		HIGH	PERSIST	CL ED	CL GEN
Assessment	OOS	1			1		1	1	1	1
(Prolonged)	mins	90			90		90	90	90	90
Assessment	OOS	1								
(Standard)	mins	60								
Reviews	OOS	1								
	mins	45								
Day care	OOS	1								
(group & individual)	mins	120								
Consultation	OOS	1						13		13
(Prolonged)	mins	60						780		780
Consultation	OOS	1					6			
(Long)	mins	45					270			
Consultation	OOS	1			6					3
(Standard)	mins	30			180					90
Non-mental health	OOS	1			6					
	mins	30			180					
MH OOS					7		7	14	1	17
Non MH OOS					6					
MH Staff Hours					4.5		6.0	14.5	1.5	16.0
Non MH Staff Hours					3.0					
BED-BASED										
ALOS										7
Readmission										0%
Occupancy										100%

RESOURCE AND OUTPUT PREDICTIONS

			MISC	PREV	AT RISK		HIGH	PERSIST	CL ED	CL GEN
Target Population				100,000	4,955		739	55	139	20
Percentage Reached				50%	100%		100%	100%	100%	100%
Service Population		5,909		50,000	4,955		739	55	139	20
AMBULATORY	Other	MH								
Non-MH OOS	29,731				29,731					-
MH OOS		41,111			34,686		5,176	770	139	340
Non-MH hrs	14,865				14,865					
ASSESS hrs		8,863			7,433		1,109	83	209	30
CONT hrs		22,082	2,885		14,865		3,327	715	-	290
PREV hrs		9,369		9,369						
CONTACT hrs		40,315	2,885	9,369	22,298		4,436	798	209	320
PROM hrs		468								
P'SHIP hrs		4,685								
TOTAL AMB hrs	14,865	45,468	2,885	9,369	22,298		4,436	798	209	320
	Profiled	Calculated								
100% AMB FTE	-	23.8			19.0		3.8	0.7		0.3
100% CL FTE	1.4	2.9	2.5						0.2	0.3
100% PREV FTE	4.0	8.0		8.0						
100% PROM FTE	0.4	0.4	0.4							
100% P'SHIP FTE	4.0	4.0	4.0							
AMB FTE	29.3									
TOTAL AMB FTE	39.1	39.1	6.9	8.0	19.0		3.8	0.7	0.2	0.5
BED-BASED	Other	MH	MISC	PREV	EI		HIGH	PERSIST	CD ED	CL GEN
SEPS		-								
Other Seps	20									20
BEDDAYS		-								
Other Beddays	140									140
BEDS		-								
Other beds	0.4									0.4
TOTAL IP FTE		-								
TOTAL MH FTE		39.1	6.9	8.0	19.0		3.8	0.7	0.2	0.5
Clients/MH FTE/Year		151.1			260.3		195.2	80.8	780.8	36.6

Toddlers/pre-schoolers aged 2-4 years

Mrazek and Haggerty observe that preventive and early intervention initiatives for this age group can have enduring effects on disruptive behaviour problems and "positive long-term effects on academic performance and social adjustment"[36]. Prevention and early intervention initiatives, such as parenting programs, will form a core component of care for this age group and the spectrum of interventions will require collaborative partnerships.

Instruments are available to assess pre-schooler mental health problems. However prevalence estimates have varied depending on instruments and cut-off points used. The 10% estimate in this model is conservative.

Prior et al. identified 17.8% of children in their Victorian study of pre-schoolers in a low socioeconomic area had high externalising factor scores (at least one standard deviation above the mean) according to parental report[37]. Internationally, Thomson et al. estimated the prevalence of behaviour problems in a mixed urban/rural sample of 3 year olds at 13.2%[38] and Richman et al. estimated mild problems in 15% of an urban sample and moderate/marked problems in 7%[39].

The estimate of 0.02% of the population in this age-group requiring inpatient treatment is in accordance with the UK model[40]. It should be noted that model was not specific for this age group.

Care model for toddlers and pre-schoolers aged 2-4 years

Target group	Age 2 to 4 at risk of developing mental health problems or suffering from at least one mental health problem of sufficient severity/complexity to warrant specialist mental health treatment
Scope	Care required during 12-months by specialist public sector mental health services and the provision of mental health expertise to non specialist mental health services, including support for prevention programs
Rationale and estimates	Developmentally appropriate services need to take into account young children's dependence and protection issues and the context of the family Approximately 10% of young children suffer from at least one mental health problem or disorder[41]. Of these, up to half may suffer from a mental problem or disorder severe enough to require specialist mental health services[42]. 1.85% may experience severe and complex problems[43] and a further 0.075% may have the most severe and persistent or complex problems[44] including 0.02% who may require a period of inpatient treatment [45] (2.1% as rounded total)
Objectives	Universal, selective and indicated interventions in collaboration with other non-mental health services Early intervention to complement primary care for those with mild problems Support for services for young children, including support for evidence-based universal, selective and additional indicated prevention Immediate family-centred specialist mental health assessment for those with moderate or severe mental health problems, with intensity and duration of treatment packages based on available evidence. Inpatient treatment will be provided on a consultation liaison basis to general/paediatric beds
Outcomes:	Client centred outcomes – Preschool BCL – to be determined by the Mental Health- Outcomes and Assessment Training (MH-OAT) Project.
Linkages with other services	GPs Early childhood health services and paediatricians Preschools and child care services Department of Education and Training Department of Community Services
Service components	Community-based specialist services for the majority of young children receiving treatment, to minimise disruption to family and community life and attachments Family-oriented sessions are used for the purposes of calculation however evidence-based prevention or community treatment packages may be delivered in groups Consultation liaison services to children with complex mental health problems admitted to general/paediatric beds Liaison with other health services and other service providers Assistance and support for the range of service providers involved in evidence-based universal, selective and indicated prevention Evaluation and monitoring Education and training Research and development

Refinement of model

Allocations for essential components of universal, selective and additional indicated prevention programs are still in development. For example, specialist child and adolescent mental health expertise will be required to inform and support evidence-based parenting programs, which may be delivered at a whole community level. Overall estimates are in Appendix F.

Information from National Mental Health and Wellbeing Survey – Child and Adolescent component and NSW Child Health Phone Survey, when available.

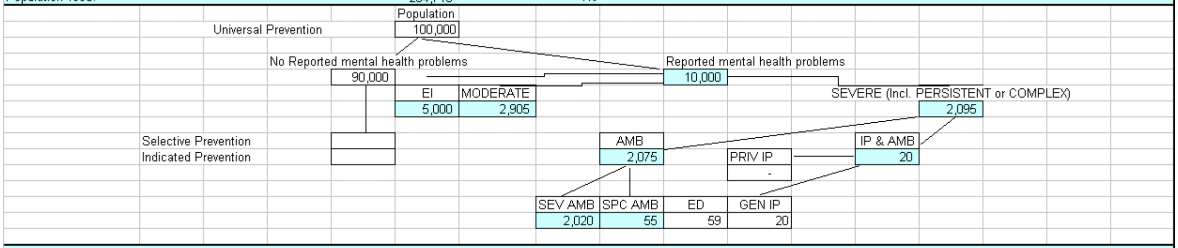
Care packages per toddler or pre-schooler aged 2-4 years

NEED GROUP	CARE PACKAGE	SPECIFICATION • *Service in italics not provided by specialist mental health services*
Severe and Persistent or Complex with general inpatient care	General inpatient admission with consultation-liaison, assessment and intensive extended community treatment	*7 days admission to general health* Consultation-liaison: 1x90minute family-oriented assessment 3x30 minute family-oriented continuing contacts Community Follow-up 13x60minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up)
Severe and Persistent or Complex	Assessment and intensive extended community treatment	1x90 minute assessment 13x60minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up)
Severe	Mental health assessment and community treatment	1x90 minute mental health assessment 6x45minute family-oriented community contacts
Moderate	Mental health assessment and community treatment	1x90 minute mental health assessment 6x30minute family-oriented community contacts
Early Intervention (EI)	Assessment/ early intervention session to complement primary care	1x90 minute assessment/ early intervention session *6X30 minute consultations by non-specialist mental health services eg. GP, early childhood health services*
Toddlers and pre-schoolers at increased risk	Selective and additional indicated prevention programs supported by child mental health expertise	8 x 60 minute group sessions (8-10 people) x initial 50% coverage of target population
All toddlers/pre-schoolers	Universal prevention programs supported by child mental health expertise	

Resource and output predictions per 100,000 pre-school children aged 2-4 years

TODDLERS & PRE-SCHOOLERS (2-4 years)

Population 1996: 264,710 4%



CARE PACKAGES

AMBULATORY							AMB			
				PREV	EI	MOD	SEV AMB	SPC AMB	CL ED	CL GEN
Assessment	OOS	1			1	1	1	1	1	1
(Prolonged)	mins	90			90	90	90	90	90	90
Assessment	OOS	1								
(Standard)	mins	60								
Reviews	OOS	1								
	mins	45								
Day care	OOS	1								
(group & individual)	mins	120								
Consultation	OOS	1						13		13
(Prolonged)	mins	60						780		780
Consultation	OOS	1					6			
(Long)	mins	45					270			
Consultation	OOS	1				6				3
(Standard)	mins	30				180				90
Non-mental health	OOS	1			6					
	mins	30			180					
MH OOS					1	7	7	14	1	17
Non MH OOS					6					0
MH Staff Hours					1.5	4.5	6.0	14.5	1.5	16.0
Non MH Staff Hours					3.0					0.0
BED-BASED										
ALOS										7
Readmission										0%
Occupancy										100%

RESOURCE AND OUTPUT PREDICTIONS

			MISC	PREV	EI	MOD	SEV AMB	SPC AMB	CL ED	CL GEN
Target Population				100,000	5,000	2,905	2,020	55	59	20
Percentage Reached				50%	100%	100%	100%	100%	100%	100%
Service Population		10,059		50,000	5,000	2,905	2,020	55	59	20
AMBULATORY	Other	MH								
Non-MH OOS	30,000				30,000	-	-	-		-
MH OOS		40,644			5,000	20,335	14,140	770	59	340
Non-MH hrs	15,000				15,000	-		-		
ASSESS hrs		15,088			7,500	4,358	3,030	83	88	30
CONT hrs		23,810	5,000		-	8,715	9,090	715	-	290
PREV hrs		9,369		9,369	-					
CONTACT hrs		48,267	5,000	9,369	7,500	13,073	12,120	798	88	320
PROM hrs		468								
P'SHIP hrs		4,685								
TOTAL AMB hrs	15,000	53,421	5,000	9,369	7,500	13,073	12,120	798	88	320
	Profiled	Calculated								
100% AMB FTE	-	28.6			6.4	11.2	10.3	0.7		
100% CL FTE	2.2	4.6	4.3						0.1	0.3
100% PREV FTE	4.0	8.0		8.0						
100% PROM FTE	0.4	0.4	0.4							
100% P'SHIP FTE	4.0	4.0	4.0							
AMB FTE	35.0									
TOTAL AMB FTE	45.6	45.6	8.7	8.0	6.4	11.2	10.3	0.7	0.1	0.3
BED-BASED	Other	MH	MISC	PREV	EI	MOD	SEV AMB	SPC AMB	CL ED	CL GEN
SEPS		-								
Other Seps	20									20
BEDDAYS		-								
Other Beddays	140									140
BEDS		-								
Other beds	0.4									0.4
TOTAL IP FTE		-								
TOTAL MH FTE		45.6	8.7	8.0	6.4	11.2	10.3	0.7	0.1	0.3
Clients/MH FTE/Year		220.5			780.8	260.3	195.2	80.8	780.8	73.2

Primary school children aged 5-11 years

Prevalence figures for this age-group are more robust, with the Western Australian Child Health Survey estimates consistent with international studies[46].

The UK model figure of 0.02%[47] of the child and adolescent population requiring inpatient admission is less than current NSW utilisation in this age-group and was rejected.

The inpatient admission estimate (0.04% of population) is the current utilisation rate for children in this age-group from 1997/98 NSW ISC data, for all mental health diagnoses excluding drug and alcohol, and excluding same day admissions. The proportion of primary school children with mental health problems admitted to general hospital/paediatric beds remains at the current level. Currently, some children in this age-group are admitted to general (adult) psychiatry units. However in this model, provision has been made for the full balance of these rare admissions of primary school children to be accommodated in specialist mental health child and adolescent inpatient units.

The average length of stay in this age-group was set at 7 days, with the expectation that many of these admissions would be for complex assessment/diagnostic purposes which could not be accomplished on an outpatient basis. This approximates current average length of inpatient stay in this age-group.

Day patient programs offer the potential for children to stay in their usual care and perhaps avoid or shorten the need for more restrictive inpatient treatment, which may be more disruptive to relationships and more costly[48].

Day patient care will not be clinically indicated for all children who have been admitted to a mental health child and adolescent inpatient unit. The allocation in this version is intended to reflect an average to provide for pre- or post-inpatient day programs for some (i.e. a transition alternative).

Day programs also allow appropriate care for some children with severe, complex and persistent problems who require a more intensive program than usual community care but who may never require an overnight admission. The allocation in this version is intended to reflect an average.

Care model for primary school children aged 5-11 years

Target group	Age 5 to 11 years at risk of mental health problems and/or suffering from at least one mental health problem of sufficient severity/complexity to warrant specialist mental health treatment i.e. half of those with mental health problems
Scope	Care required during 12-months by specialist public sector mental health services and the provision of mental health expertise to non specialist mental health services, including support for prevention programs
Rationale and estimates	Developmentally appropriate services need to take into account children's dependency and protection issues and complement educational needs. 16% of children aged 4 – 11 suffer from at least one mental health problem or disorder in a 6 month period[49]. Of these at least half may suffer from a mental problem or disorder severe enough to require specialist mental health services[50]. 1.85% may experience severe and complex problems[51] and a further 0.075% may have the most severe and persistent or complex problems [52] including 0.04% who may require a period of inpatient treatment [53] (2.1% as rounded total)
Objectives	Support for services for primary school aged children, including support for universal, selective and indicated prevention interventions Early intervention to complement primary care for those with mild problems Family-oriented specialist mental health assessment for those with moderate or severe mental health problems, with a treatment package based on available evidence, wherever possible, averaging 6 family-oriented community-based sessions with a specialist mental health team, supplemented by day patient and/or inpatient programs for children with the most severe or complex problems
Outcomes	Client centred outcomes – CBCL, HoNOSCA – to be determined by the Mental Health- Outcomes and Assessment Training (MH-OAT) Project.
Linkages with other services	GPs Child health services and paediatricians Department of Education and Training Department of Community Services Department of Juvenile justice
Service components	Community-based specialist services for the majority of children receiving treatment, to minimise disruption to family, community and school life (8% of population) Family-oriented sessions are used for the purposes of calculation however evidence-based prevention or community treatment packages may be delivered in groups Day-only programs for children who require a more intensive focussed treatment program Inpatient services for children with the most severe or complex symptoms requiring focussed 24-hour treatment. (0.04% of population, with 0.02% in specialised mental health care). Average length of stay 7days. 56% of admissions to specialist mental health units and the balance to general/paediatric wards with specialist child and adolescent mental health consultation-liaison Liaison with other health services and other service providers Early intervention for those with mild problems to complement primary care Assistance and support for the range of service providers involved in evidence-based universal, selective and indicated prevention programs Evaluation and monitoring Education and training Research and development

Refinement of model

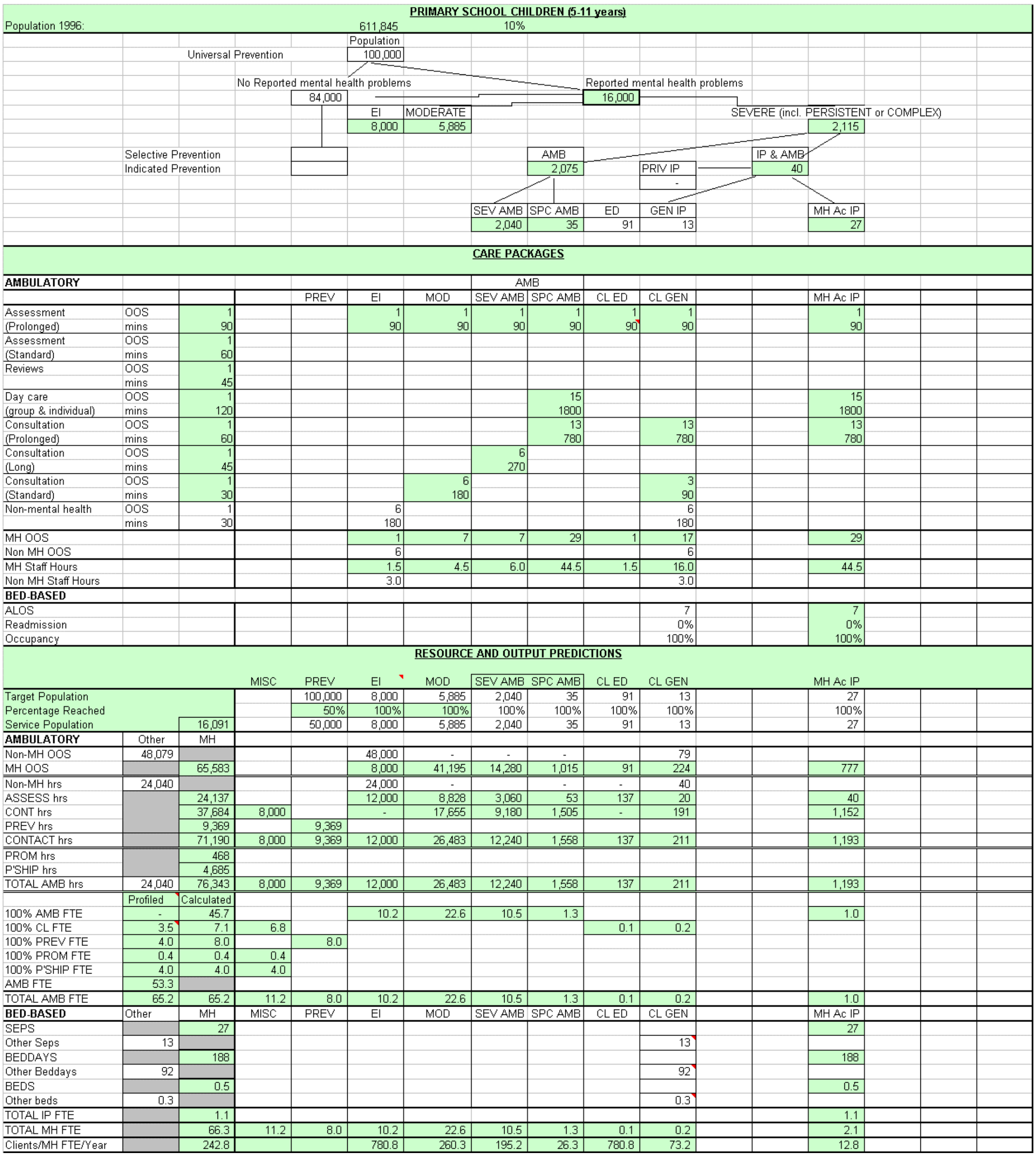
Allocations for essential components of universal, selective and additional indicated prevention programs are still in development. For example, specialist child and adolescent mental health expertise will be required to inform and support evidence-based programs to enhance resilience, social problem solving and self-efficacy skills in this age-group. Overall estimates are in Appendix F.

Information from National Child Health Survey and NSW child phone survey when available

Care packages per primary schooler aged 5-11 years

NEED GROUP	CARE PACKAGE	SPECIFICATION • *Service in italics not provided by specialist mental health services*
Severe and Persistent or Complex in mental health inpatient care	Mental Health unit inpatient admission, assessment and intensive extended community treatment	7 days admission to mental health child and adolescent unit 15 days daycare (equivalent individual care120 minutes/day) Community Follow-up 1x90minute family-oriented assessment 13x60minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up)
Severe and Persistent or Complex in general health inpatient care	*Management by general health services for 14 days admission to general hospital* with consultation-liaison from specialist mental health services and intensive extended community treatment	*7 days admission to general/paediatric health* Consultation-liaison : 1x90 minute family-oriented mental health assessment 3x30 minute family-oriented continuing contacts Community Follow-up 13x60minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up) *6x30 minute consultations by non-specialist mental health services eg. GP, child and family health services*
Severe and Persistent or Complex in Ambulatory Care	Assessment and intensive extended community treatment	15 days daycare (equivalent individual care 120 minutes/day) 1x90 minute family-oriented mental health assessment 13x60minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up)
Severe, Ambulatory Care	Mental health assessment and community treatment	1x90 minute family-oriented mental health assessment 6x45minute family-oriented community contacts
Moderate	Mental health assessment and community treatment	1x90 minute family-oriented mental health assessment 6x30minute family-oriented community contacts
Early Intervention (EI)	Assessment/ early intervention session to complement primary care	1x90 minute assessment/ early intervention session *6x30 minute consultations by non-specialist mental health services eg. GP*
Primary schoolers at increased risk	Selective and indicated prevention programs supported by child and adolescent mental health expertise	8 x 60 minute group sessions (8-10 people) x initial 50% coverage of target population
All primary schoolers	Universal prevention programs supported by child and adolescent mental health expertise	

Resource and output predictions per 100,000 primary school children aged 5-11 years



PRIMARY SCHOOL CHILDREN (5-11 years)

Population 1996: 611,845 10%

Universal Prevention
Population 100,000

No Reported mental health problems 84,000
Reported mental health problems 16,000

EI 8,000
MODERATE 5,885
SEVERE (incl. PERSISTENT or COMPLEX) 2,115

Selective Prevention
Indicated Prevention

AMB 2,075
PRIV IP -
IP & AMB 40

SEV AMB 2,040
SPC AMB 35
ED 91
GEN IP 13
MH Ac IP 27

CARE PACKAGES

AMBULATORY							AMB						
				PREV	EI	MOD	SEV AMB	SPC AMB	CL ED	CL GEN			MH Ac IP
Assessment	OOS	1			1	1	1	1	1	1			1
(Prolonged)	mins	90			90	90	90	90	90	90			90
Assessment	OOS	1											
(Standard)	mins	60											
Reviews	OOS	1											
	mins	45											
Day care	OOS	1						15					15
(group & individual)	mins	120						1800					1800
Consultation	OOS	1						13		13			13
(Prolonged)	mins	60						780		780			780
Consultation	OOS	1					6						
(Long)	mins	45					270						
Consultation	OOS	1				6				3			
(Standard)	mins	30				180				90			
Non-mental health	OOS	1			6					6			
	mins	30			180					180			
MH OOS					1	7	7	29	1	17			29
Non MH OOS					6					6			
MH Staff Hours					1.5	4.5	6.0	44.5	1.5	16.0			44.5
Non MH Staff Hours					3.0					3.0			
BED-BASED													
ALOS										7			7
Readmission										0%			0%
Occupancy										100%			100%

RESOURCE AND OUTPUT PREDICTIONS

			MISC	PREV	EI	MOD	SEV AMB	SPC AMB	CL ED	CL GEN			MH Ac IP
Target Population				100,000	8,000	5,885	2,040	35	91	13			27
Percentage Reached				50%	100%	100%	100%	100%	100%	100%			100%
Service Population		16,091		50,000	8,000	5,885	2,040	35	91	13			27
AMBULATORY	Other	MH											
Non-MH OOS	48,079				48,000	-	-	-		79			
MH OOS		65,583			8,000	41,195	14,280	1,015	91	224			777
Non-MH hrs	24,040				24,000	-		-	-	40			
ASSESS hrs		24,137			12,000	8,828	3,060	53	137	20			40
CONT hrs		37,684	8,000		-	17,655	9,180	1,505	-	191			1,152
PREV hrs		9,369		9,369									
CONTACT hrs		71,190	8,000	9,369	12,000	26,483	12,240	1,558	137	211			1,193
PROM hrs		468											
P'SHIP hrs		4,685											
TOTAL AMB hrs	24,040	76,343	8,000	9,369	12,000	26,483	12,240	1,558	137	211			1,193
	Profiled	Calculated											
100% AMB FTE	-	45.7			10.2	22.6	10.5	1.3					1.0
100% CL FTE	3.5	7.1	6.8						0.1	0.2			
100% PREV FTE	4.0	8.0		8.0									
100% PROM FTE	0.4	0.4	0.4										
100% P'SHIP FTE	4.0	4.0	4.0										
AMB FTE	53.3												
TOTAL AMB FTE	65.2	65.2	11.2	8.0	10.2	22.6	10.5	1.3	0.1	0.2			1.0
BED-BASED	Other	MH	MISC	PREV	EI	MOD	SEV AMB	SPC AMB	CL ED	CL GEN			MH Ac IP
SEPS		27											27
Other Seps	13									13			
BEDDAYS		188											188
Other Beddays	92									92			
BEDS		0.5											0.5
Other beds	0.3									0.3			
TOTAL IP FTE		1.1											1.1
TOTAL MH FTE		66.3	11.2	8.0	10.2	22.6	10.5	1.3	0.1	0.2			2.1
Clients/MH FTE/Year		242.8			780.8	260.3	195.2	26.3	780.8	73.2			12.8

Adolescents aged 12-17 years

The Western Australian Child Health Survey estimate of prevalence (20.6%) is very consistent with other community-based samples.[54]

The average length of stay of 14 days inpatient admission is greater than the recent average length of stay for mental health problems in this age-group. It is set at the adult level.

The UK model figure of 0.02% of the child and adolescent population requiring inpatient admission is less than current NSW utilisation in this age-group and was rejected[55].

The inpatient admission estimate of 0.4% of all adolescents was calculated by summing two components. For 12-15 year olds, the same figures for 5-11 year olds current 1997/98 NSW ISC data, for all mental health diagnoses excluding drug and alcohol, overnight only (0.04%) were used. For 16 and 17 year olds, current adult utilisation patterns (1% of population) were used.

Of adolescents who are admitted for mental health problems, the proportions being admitted to general hospital beds (including general medical, paediatric and adolescent medical beds) and to private psychiatric units are based on current proportions. Mental health child and adolescent units are allocated the balance of adolescent admissions in this model. Conversion disorders and severe eating disorders are among those problems for which some adolescents may require admission to paediatric, adolescent or general medical settings with consultation-liaison expertise in support.

It is anticipated that for some adolescents, their developmental stage and/or level of disturbance will signal that treatment is most appropriate in a public adult psychiatric unit. The current version of the care model has not made an estimate of this minority.

Day patient care will not be clinically indicated for all adolescents who have been admitted to a mental health child and adolescent inpatient unit. The allocation in this version is intended to reflect an average to provide for pre- or post-inpatient day programs for some (i.e. a transition alternative).

Day programs also allow appropriate care for some children with severe and persistent or complex problems who require a more intensive program than usual community care but who may never require an overnight admission. The number of adolescents with severe and persistent or complex problems who can be adequately managed in ambulatory care is not well established. It has been held at the same small proportion of all ambulatory care as in primary school children, which is likely to be conservative.

The allocation of day care is smaller than that for primary school students, using the assumption that separation from their usual carers may not be as disruptive for adolescents as for primary school children and that the trade-off for inpatient care may not be as adverse. It has been set at a level mid-way between the allocation for primary schoolers and adults.

Care model for adolescents aged 12-17 years

Target group	Age 12 to 17 years at risk of mental health problems and/or suffering from at least one mental health problem of sufficient severity/complexity to warrant specialist mental health treatment i.e. half of those with mental health problems
Scope	Care required during 12-months by specialist public sector mental health services and the provision of mental health expertise to non specialist mental health services, including support for prevention programs
Rationale	Developmentally appropriate services need to take into account adolescents' evolving independence and protection issues and complement educational/vocational needs. 20.6% of adolescents (12-16year olds) suffer from at least one mental health problem or disorder in a 6 month period[56]. Of these, up to half of them may suffer from a mental problem or disorder severe enough to require specialist mental health services[57]. 1.85% (2%) may experience severe and complex problems[58] and 0.4% may require a period of inpatient treatment [59] (2.4%)
Objectives	Support for services for adolescents, including support for universal, selective and indicated prevention interventions Early intervention initiatives for those with mild problems to complement primary care Family-oriented specialist mental health assessment for those with moderate and severe mental health problems A community-based treatment package based on available evidence, with a specialist mental health team, supplemented by intensive extended community-based care, day patient and/or inpatient programs for adolescents with the most severe and persistent or complex problems
Outcomes	Client centred outcomes – CBCL, YSR, HoNOSCA – to be determined by the Mental Health- Outcomes and Assessment Training (MH-OAT) Project.
Linkages with other services	GPs Youth and community health services and paediatricians Drug and alcohol services Department of Education and Training Department of Community Services Department of Juvenile justice
Service components	Community-based specialist services for the majority of adolescents receiving treatment, to minimise disruption to family and community life and disruption to education/training Family-oriented sessions are used for the purposes of calculation however evidence-based prevention or community treatment packages may be delivered in groups Intensive extended community-based treatment Day-only programs for adolescents who require a more intensive focussed treatment program Inpatient services for adolescents with the most severe or complex symptoms requiring focussed 24-hour specialist treatment. Average length of stay 14 days. Liaison with other health services and other service providers Early intervention for those with mild problems to complement primary care Assistance and support for the range of service providers involved in evidence-based universal, selective and indicated prevention programs Evaluation and monitoring Education and training Research and development

Refinement of model

Allocations for essential components of universal, selective and additional indicated prevention programs are still in development. For example, specialist child and adolescent mental health expertise will be required to inform and support evidence-based programs, such as schools-based programs targeting depression/ anxiety/ antisocial behaviours. Programs for adolescents who are not in school and who may be at high-risk are also required. Overall estimates are in Appendix F.

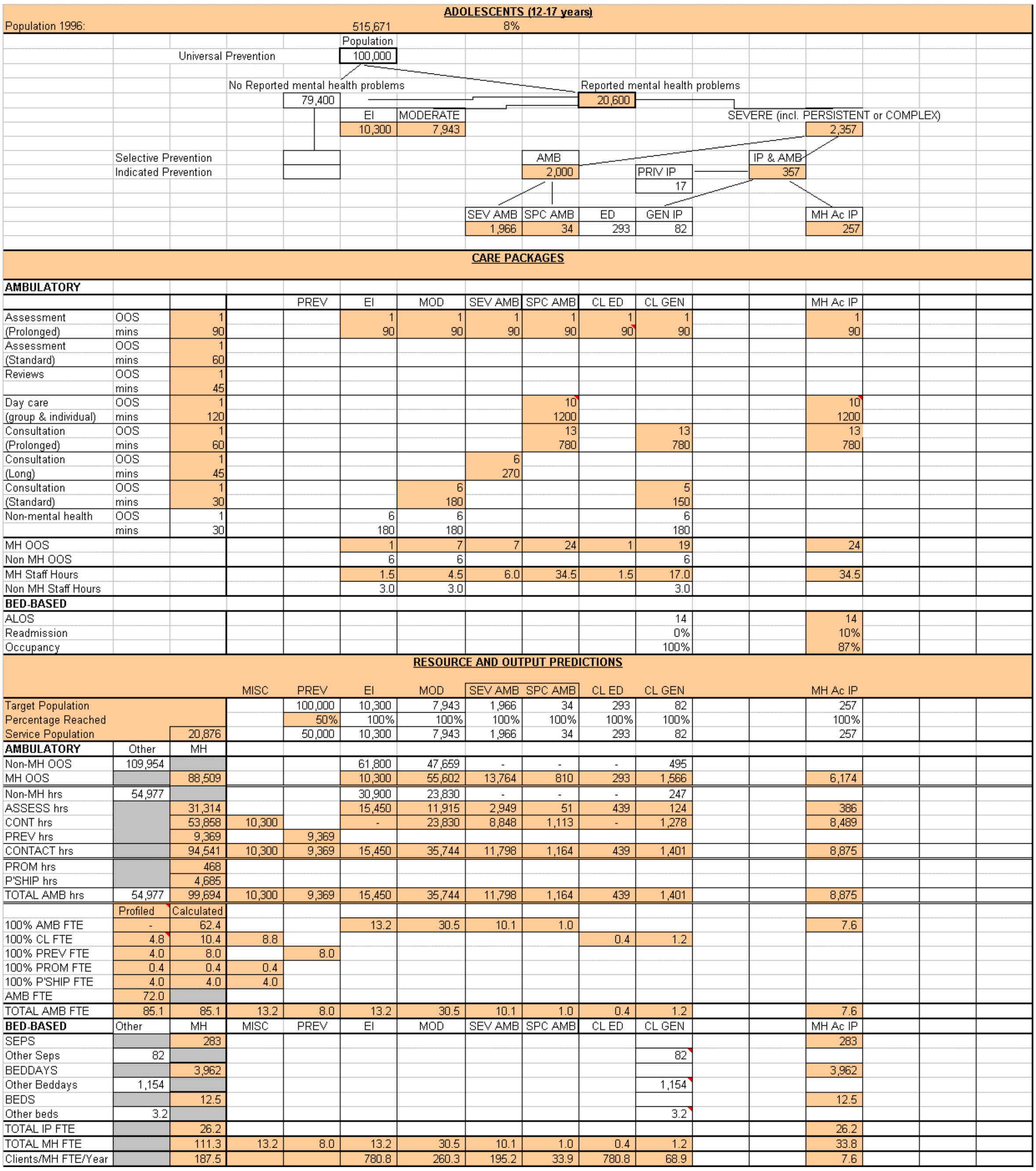
Information from National Mental Health and Wellbeing Survey – Child and Adolescent component, when available

Care packages per adolescent aged 12-17 years

NEED GROUP	CARE PACKAGE	SPECIFICATION • *Service in italics not provided by specialist mental health services*
Severe, and Persistent or Complex in mental health inpatient care	Mental Health unit inpatient admission with consultation-liaison, assessment and intensive extended community treatment	14 days admission to mental health child and adolescent unit 10 days daycare (equivalent individual care120 minutes/day) – average of transition between 15 days for primary school children and 5 days in adults Community Follow-up 1x90minute family-oriented assessment 13x60minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up)
Severe and Persistent or Complex in general health inpatient care	*Management by general health services for 14 days admission to general hospital* with consultation-liaison from specialist mental health services and intensive extended community treatment	*14 days admission to general health* Consultation-liaison : 1x90 minute family-oriented mental health assessment 5x30 minute family-oriented continuing contacts Community Follow-up 13x60minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up) *6x30 minute consultations by non-specialist mental health services eg. GP, community child and family/youth health*
Severe and Persistent or Complex in Ambulatory Care	*Management by general health services for 14 days admission to general hospital* with consultation-liaison from specialist mental health services and intensive extended community treatment	Consultation-liaison : 1x90 minute family-oriented mental health assessment 5x30 minute family-oriented continuing contacts Community Follow-up 13x60minute family-oriented community contacts (eg, weekly x 3, fortnightly x 3, monthly x 6, 3-month follow-up) *6x30 minute consultations by non-specialist mental health services eg. GP, community child and family/youth health*
Severe, Ambulatory Care	Mental health assessment and community treatment	1x90 minute family-oriented mental health assessment 6x45 minute family-oriented community contacts
Moderate	Mental health assessment and community treatment	1x90 minute family-oriented mental health assessment 6x30 minute family-oriented community contacts
Early Intervention (EI)	Assessment/ early intervention session to complement primary care	1x90 minute assessment/ early intervention session *6x30 minute consultations by non-specialist mental health services eg. GP, community child and family/youth health*

Adolescents at increased risk	Selective and indicated prevention programs supported by child and adolescent mental health expertise	8 x 60 minute group sessions (8-10 people) x initial 50% coverage of target population
All adolescents	Universal prevention programs supported by child and adolescent mental health expertise	

Resource and output predictions per 100,000 adolescents aged 12-17 years



ADOLESCENTS (12-17 years)

Population 1996: 515,671 8%

Population
Universal Prevention 100,000
No Reported mental health problems 79,400
Reported mental health problems 20,600
EI 10,300
MODERATE 7,943
SEVERE (incl. PERSISTENT or COMPLEX) 2,357
Selective Prevention
Indicated Prevention
AMB 2,000
PRIV IP 17
IP & AMB 357
SEV AMB 1,966
SPC AMB 34
ED 293
GEN IP 82
MH Ac IP 257

CARE PACKAGES

AMBULATORY				PREV	EI	MOD	SEV AMB	SPC AMB	CL ED	CL GEN			MH Ac IP
Assessment	OOS	1			1	1	1	1	1	1			1
(Prolonged)	mins	90			90	90	90	90	90	90			90
Assessment	OOS	1											
(Standard)	mins	60											
Reviews	OOS	1											
	mins	45											
Day care	OOS	1						10					10
(group & individual)	mins	120						1200					1200
Consultation	OOS	1						13		13			13
(Prolonged)	mins	60						780		780			780
Consultation	OOS	1					6						
(Long)	mins	45					270						
Consultation	OOS	1				6				5			
(Standard)	mins	30				180				150			
Non-mental health	OOS	1			6	6				6			
	mins	30			180	180				180			
MH OOS					1	7	7	24	1	19			24
Non MH OOS					6	6				6			
MH Staff Hours					1.5	4.5	6.0	34.5	1.5	17.0			34.5
Non MH Staff Hours					3.0	3.0				3.0			
BED-BASED													
ALOS										14			14
Readmission										0%			10%
Occupancy										100%			87%

RESOURCE AND OUTPUT PREDICTIONS

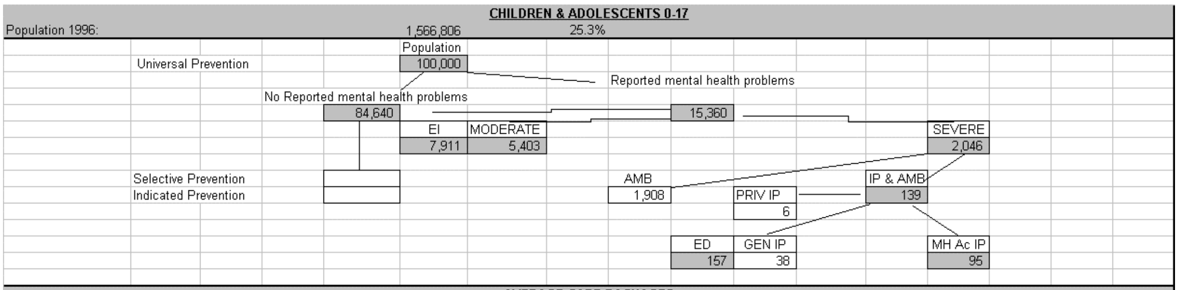
			MISC	PREV	EI	MOD	SEV AMB	SPC AMB	CL ED	CL GEN			MH Ac IP
Target Population				100,000	10,300	7,943	1,966	34	293	82			257
Percentage Reached				50%	100%	100%	100%	100%	100%	100%			100%
Service Population		20,876		50,000	10,300	7,943	1,966	34	293	82			257
AMBULATORY	Other	MH											
Non-MH OOS	109,954				61,800	47,659	-	-	-	495			
MH OOS		88,509			10,300	55,602	13,764	810	293	1,566			6,174
Non-MH hrs	54,977				30,900	23,830	-	-	-	247			
ASSESS hrs		31,314			15,450	11,915	2,949	51	439	124			386
CONT hrs		53,858	10,300		-	23,830	8,848	1,113	-	1,278			8,489
PREV hrs		9,369		9,369									
CONTACT hrs		94,541	10,300	9,369	15,450	35,744	11,798	1,164	439	1,401			8,875
PROM hrs		468											
P'SHIP hrs		4,685											
TOTAL AMB hrs	54,977	99,694	10,300	9,369	15,450	35,744	11,798	1,164	439	1,401			8,875
	Profiled	Calculated											
100% AMB FTE	-	62.4			13.2	30.5	10.1	1.0					7.6
100% CL FTE	4.8	10.4	8.8						0.4	1.2			
100% PREV FTE	4.0	8.0		8.0									
100% PROM FTE	0.4	0.4	0.4										
100% P'SHIP FTE	4.0	4.0	4.0										
AMB FTE	72.0												
TOTAL AMB FTE	85.1	85.1	13.2	8.0	13.2	30.5	10.1	1.0	0.4	1.2			7.6
BED-BASED	Other	MH	MISC	PREV	EI	MOD	SEV AMB	SPC AMB	CL ED	CL GEN			MH Ac IP
SEPS		283											283
Other Seps	82									82			
BEDDAYS		3,962											3,962
Other Beddays	1,154									1,154			
BEDS		12.5											12.5
Other beds	3.2									3.2			
TOTAL IP FTE		26.2											26.2
TOTAL MH FTE		111.3	13.2	8.0	13.2	30.5	10.1	1.0	0.4	1.2			33.8
Clients/MH FTE/Year		187.5			780.8	260.3	195.2	33.9	780.8	68.9			7.6

Summary: Resource and output predictions per 100,000 children and young people aged 0-17 years

Note: This summary is not intended to be used in calculation, and is for illustration only. Not all groups have the same label or meaning in the four age groups combined in this overview of the 0-17 year age range. In particular the two categories of ambulatory care, for severe problems and severe, persistent and complex problems, have been merged together here to simplify aggregation with the other age groups (18-64, 65+) in a final overall summary. The average care plans shown are based on the number needing treatment, while the resource calculations are based on the numbers treated. Thus, unless "percentage reached" is 100%, multiplying care plans by the number needing them will not arrive at the results shown as resource predictions.

CHILDREN & ADOLESCENTS 0-17

Population 1996: 1,566,806 25.3%



AVERAGE CARE PACKAGES

AMBULATORY				PREV	EI	MOD		AMB	CL ED	CL GEN			MH Ac IP			
Assessment	OOS	1	-	-	1.0	1.0	-	1.0	1.0	1.0	-	-	1.0	-	-	-
(Prolonged)	mins	90	-	-	90.0	90.0	-	90.0	90.0	90.0	-	-	90.0	-	-	-
Assessment	OOS	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Standard)	mins	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reviews	OOS	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	mins	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Day care	OOS	1	-	-	-	-	-	0.2	-	-	-	-	10.6	-	-	-
(group & individual)	mins	120	-	-	-	-	-	19.9	-	-	-	-	1,266.0	-	-	-
Consultation	OOS	1	-	-	-	-	-	0.3	-	13.0	-	-	13.0	-	-	-
(Prolonged)	mins	60	-	-	-	-	-	16.4	-	780.0	-	-	780.0	-	-	-
Consultation	OOS	1	-	-	-	-	-	5.9	-	-	-	-	-	-	-	-
(Long)	mins	45	-	-	-	-	-	264.3	-	-	-	-	-	-	-	-
Consultation	OOS	1	-	-	0.4	6.0	-	-	-	4.4	-	-	-	-	-	-
(Standard)	mins	30	-	-	12.6	180.0	-	-	-	133.0	-	-	-	-	-	-
Non-mental health	OOS	1	-	-	6.0	2.9	-	-	-	5.1	-	-	-	-	-	-
	mins	30	-	-	180.0	87.1	-	-	-	153.4	-	-	-	-	-	-
MH OOS			-	-	1.4	7.0	-	7.3	1.0	18.4	-	-	24.6	-	-	-
Non MH OOS			-	-	6.0	2.9	-	-	-	5.1	-	-	-	-	-	-
MH Staff Hours			-	-	1.7	4.5	-	6.5	1.5	16.7	-	-	35.6	-	-	-
Non MH Staff Hours			-	-	3.0	1.5	-	-	-	2.6	-	-	-	-	-	-
BED-BASED																
ALOS			-	-	-	-	-	-	-	12.0	-	-	13.2	-	-	-
Readmission			-	-	-	-	-	-	-	0%	-	-	9%	-	-	-
Occupancy			-	-	-	-	-	-	-	100%	-	-	88%	-	-	-

RESOURCE AND OUTPUT PREDICTIONS

			MISC	PREV	EI	MOD		AMB	CL ED	CL GEN			MH Ac IP			
Target Population			-	100,000	7,911	5,403	-	1,908	157	38	-	-	95	-	-	-
Percentage Reached			-	50%	100%	100%	-	100%	100%	100%	-	-	100%	-	-	-
Service Population		15,512	-	50,000	7,911	5,403	-	1,908	157	38	-	-	95	-	-	-
AMBULATORY	Other	MH														
Non-MH OOS	63,345		-	-	47,465	15,686	-	-	-	194	-	-	-	-	-	-
MH OOS		66,188	-	-	11,224	37,822	-	13,951	157	698	-	-	2,336	-	-	-
Non-MH hrs	31,672		-	-	23,733	7,843	-	-	-	97	-	-	-	-	-	-
ASSESS hrs		23,268	-	-	11,866	8,105	-	2,861	236	57	-	-	143	-	-	-
CONT hrs		38,925	7,680	-	1,656	16,210	-	9,558	-	577	-	-	3,244	-	-	-
PREV hrs		9,369	-	9,369	-	-	-	-	-	-	-	-	-	-	-	-
CONTACT hrs		71,562	7,680	9,369	13,523	24,314	-	12,419	236	633	-	-	3,387	-	-	-
PROM hrs		468	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P'SHIP hrs		4,685	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL AMB hrs	31,672	76,715	7,680	9,369	13,523	24,314	-	12,419	236	633	-	-	3,387	-	-	-
	Profiled	Calculated	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100% AMB FTE	-	45.8	-	-	11.5	20.8	-	10.6	-	-	-	-	2.9	-	-	-
100% CL FTE	3.5	7.3	6.6	-	-	-	-	-	0.2	0.5	-	-	-	-	-	-
100% PREV FTE	4.0	8.0	-	8.0	-	-	-	-	-	-	-	-	-	-	-	-
100% PROM FTE	0.4	0.4	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
100% P'SHIP FTE	4.0	4.0	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-
AMB FTE	53.6		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL AMB FTE	65.5	65.5	11.0	8.0	11.5	20.8	-	10.6	0.2	0.5	-	-	2.9	-	-	-
BED-BASED	Other	MH	MISC	PREV	EI	MOD	-	AMB	CL ED	CL GEN	-	-	MH Ac IP	-	-	-
SEPS		104	-	-	-	-	-	-	-	-	-	-	104	-	-	-
Other Seps	38	-	-	-	-	-	-	-	-	38	-	-	-	-	-	-
BEDDAYS		1,371	-	-	-	-	-	-	-	-	-	-	1,371	-	-	-
Other Beddays	455	-	-	-	-	-	-	-	-	455	-	-	-	-	-	-
BEDS		4.2	-	-	-	-	-	-	-	-	-	-	4.2	-	-	-
Other beds	1.2	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
TOTAL IP FTE		8.9	-	-	-	-	-	-	-	-	-	-	8.9	-	-	-
TOTAL MH FTE		74.4	11.0	8.0	11.5	20.8	-	10.6	0.2	0.5	-	-	11.8	-	-	-
Clients/MH FTE/Year		208.4	-	-	685.1	260.3	-	179.9	780.8	70.1	-	-	8.1	-	-	-

Adults

Adults	18-64 years
Older People	65+ years

Introduction

It is expected that this age group will be divided into more specific sub age groups in future. The only age specific group included in this age group at present is the Early Intervention in Psychosis group (18-24 years). For the overall age group there is a page specifying the care model and the care packages per 100,000 age-specific population. A set of generic "average" care packages has been determined as a framework for developing more specific packages. The generic packages are based on existing average service use (by those in receipt of services) and modified to represent current good practice (for example, all care packages involving acute admission also require ongoing community-based care). These packages are then prescribed for **all** those who are estimated to be in need of receiving them.

The make up of generic care packages will vary markedly, depending on assumptions made about a range of variables (Appendix D). Evidence exists in some cases, and in others it will need to be based on expert consensus. The essential point is that even a crude approximation is a significant advance on current alternatives in which individual care is planned clinically, but the resources allocated to providing it are planned on a totally different basis.

An alternative set of generic care packages illustrating a slightly different set of assumptions has been attached as Appendix E for discussion.

Prevalence Estimates for Adults and Older People

We have used all the main population survey sources of prevalence data for mental illness to arrive at a "best estimate" for adult and older age groups. Although there has been an Australian National Survey of Mental Health and Wellbeing in adults[60,61], it is not adequate as a source of prevalence data on mental illnesses in general, because it did not cover all illnesses, but only the more common ones. It was limited to the non-institutionalised general population, and was a "one shot" cross-sectional study without clinical or other followup. The supplementary Australian survey of psychotic illness[62] also does not yield population prevalence data, but provides a more detailed survey of those already in contact with mental health services in the ACT, Queensland, Victoria and Western Australia. We have therefore been obliged to draw on other studies, using the Australian data for reference and alignment wherever possible.

The most comprehensive source of population epidemiology in mental health remains the US series of five community surveys sponsored by the National Institute of Mental Health, and collectively known as the Epidemiologic Catchment Area (ECA) program[63,64,65,66.] The ECA program was conducted in 1980-85, interviewed more than 20,000 people and included institutionalised respondents and clinical reappraisals. It also incorporated a 1-year follow-up, which is critical for estimating the duration of the disorders identified in the first survey. A specific structured interview, the Diagnostic Interview Schedule[67] (DIS) was developed for the ECA studies, and has since been developed further and adopted by WHO as the Composite International Diagnostic Interview[68,69,70] (CIDI).

Similar versions of the CIDI were used in both the first nationally representative US National Comorbidity Survey[71] (NCS: N=8,098, 15-54 years, Sep 1990- Feb 1992, 83% response rate, all persons in household); and in the Australian National Survey of Mental Health and Wellbeing[72] (NSMHW: N=10,600, 18 and above, May-Aug 1997, 78% response rate, one person per household). The sample population in both these studies was non-institutionalised, which was estimated to reduce prevalence by at most 0.3% in the NCS[73]. The NCS was a more sophisticated survey, including a supplementary sample survey of non-respondents, who were offered financial incentives to complete a shorter interview, and were found to have a higher rate of illness than in the main sample. Because the CIDI does not adequately address psychotic illness, the NCS involved clinical reinterviewing of all participants who reported evidence of psychotic symptoms, using a more specific instrument, the Structured Clinical Interview for DSM-III-R[74,75]. In parallel with the NCS, the same CIDI interview was applied in the Mental Health Supplement to the Ontario Health Survey[76,77,78,79,80] (OHS-MHS: N=9,953, 15 and above, Dec 1990- May 1991, 67.4% response rate, 1 person per household).

Rather than attempt to merge three individual surveys, we followed previous Australian practice[81], also adopted by the US Surgeon-General, to combine the ECA and NCS evidence into a "best estimate. We then extracted the (relatively few) comparable estimates from the Australian NSMHW. These are:

DIAGNOSTIC GROUP	NSMHW	Best US
Social phobia	2.7	2.0
Generalised anxiety disorder (GAD)	3.1	3.4
Panic disorder	1.3	1.6
Post-traumatic stress disorder (PTSD)	3.3	3.6
Affective disorders	5.8	7.1
Depression	5.1	6.5
Dysthymia	1.1	1.6

Because of the high levels of comorbidity between different types of mental illness, the prevalence data for individual diagnoses cannot be added up, and even the prevalence for a group such as "any anxiety disorder" can only be comparable if each study has assessed the same group of anxiety disorders. Since so many specific diagnoses were missing from the Australian NSMHW, our best estimate from the data above was that the Australian prevalences were generally lower, and we used a "best estimate" of 90 per cent of the "best US estimate" reported by the US Surgeon General. It should be noted that the inclusion of substance abuse in the NSMHW definition of "mental illness" accounts for the apparent similarity between its overall "prevalence of mental illness" (18 per cent) with the usual result of about 20 per cent. Without substance abuse, the disorders for which prevalence was established apply to only 13 per cent of the population. In other words, the NSMHW provides no information on many mental disorders, and the value of it being Australian is outweighed by its limited coverage.

The definition of "Severe", "Moderate" and "Mild"

The term "severe", as used in this model is not an arbitrary label, but has an explicit definition which has been followed in most of the epidemiological literature in mental health since the ECA studies. It was originally devised by the US National Advisory Mental Health Council in response to a request by the US Senate Committee on Appropriations for a report on "the cost of insurance coverage of medical treatment for severe mental illness commensurate with the coverage of other illnesses". The outcome of that analysis of the ECA and NCS data, based on an operational definition of "severe", was that 22 per cent of the US population experience "any mental disorder" in a year, that 2.8 per cent (3.2 per cent in the younger NCS group) experienced "severe mental disorder", and that 1.7 per cent experienced severe disorder and used mental health services. The definitions below are quoted in full from the source document[82], and can be applied in both epidemiological and service settings, given quite basic information on an individual.

Definition of Severe

> “Severity criteria were defined in the domains of recent treatment, symptoms, and social/ occupational/ school functioning. Diagnostic information and criteria for severity were applied to five [ECA] data sets in the following way.
>
> - For individuals who were diagnosed as having schizophrenia, schizoaffective disorder, bipolar disorder type 1 [characterized by occurrence of a manic episode], or autism in the year before the study’s data collection, no additional indicator of severity was required to designate them as severely mentally ill [because] the DSM-III-R criteria for schizophrenia, bipolar disorder, type 1, autistic disorder, and, by inference, schizoaffective disorder, require marked disturbance in functioning during an active episode of illness.
>
> - For individuals who had received a diagnosis of schizophrenia, bipolar disorder [including type 2 – characterised by occurrence of a hypomanic episode], schizoaffective disorder, or autistic disorder at some point during their lives but who did not meet the diagnostic criteria during the past year, further evidence was required to ensure their appropriate inclusion in the group with severe mental disorders. For this group, evidence of severity included at least one of the following within the past year: any inpatient psychiatric hospitalization or nursing home placement; any outpatient mental health treatment in a specialty mental health or general medical setting; psychotic symptoms (criterion A for DSM-III-R schizophrenia); use of antipsychotic medication; or a Global Assessment of Functioning (GAF) scale rating of 50 or less (i.e, functioning at or below the level of ‘serious symptoms … or any serious impairment in social, occupational or school functioning’ (DSM-III-R).
>
> Individuals diagnosed as having major depression, bipolar disorder, type 2, panic disorder, or obsessive-compulsive disorder during the previous year (or at any point in their life for bipolar disorder, type 2) were considered severely mentally ill if there was evidence of severity in the past year. Evidence of severity for this group included inpatient psychiatric hospitalization, psychotic symptoms, use of antipsychotic medication, or a GAF scale rating of 50 or less.”

National Advisory Mental Health Council. Health Care Reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry* 1993;150:1447-1465

This definition resulted in a highly comorbid group equal to 2.8 per cent of the population 18 and over, with 54% meeting criteria for schizophrenia (1.5% of population); 39% for major depression (1.1% of population); 36% bipolar disorder (1.0% of population); 21% obsessive-compulsive disorder (0.6% of population); and 14% panic disorder (0.4% of population). In other words, the separate diagnoses add up to 4.6% of the population, but were concentrated in this group of 2.8 per cent – an average of almost two diagnoses per person. The Texas Department of Mental Health and Mental Retardation provides a good example of how this definition can be used for planning in a public sector service for 20 Million people with 100,000 registered clients each with comprehensive longitudinal data. [83]

Definition of Moderate

The definition of moderate used here is based on the ECA data indicating that 7% of people have mental disorders that persist at full diagnostic levels for a year or more. Subtracting the 2.8 per cent who qualify as “severe”, yields an estimate of 4.2% who meet diagnostic criteria for a year, but without falling within the “severe” category.

Definition of Mild

The definition of mild used here is simply the overall prevalence estimate for mental illness, less the severe and moderate groups. Thus these illnesses do not persist at diagnostic levels for a year, and do not meet the diagnosis x treatment x disruption of functioning criteria for 'severe".

The U.S. definitions of "Serious Mental Illness" (SMI).

The United States Centre for Mental Health has recently published the final results of a process of operationally defining a concept of "Serious Mental Illness" in adults, and estimating its prevalence as 5.4%. This definition of SMI incorporates and extends the definition of Severe Mental Illness that we have used in MH-CCP, and spans part of the group described as "Moderate" above.

Appendix J has been added to capture the whole of the extensive formal debate in the US around this definitional process, and also to address some concerns expressed in commentary in relation to the use of estimates derived from US epidemiological studies.

In practical terms, the US definition of SMI in adults, and the similar definition of "Serious Emotional Disturbance" (SED) in children is likely to have a substantial impact on the literature. However the SMI definition has one substantial defect for use in MH-CCP. Alzheimer's Disease is included in SMI. This has little effect on the 18-64 group, but constitutes a large proportion of the prevalence estimates for people 65 and over. Thus the US SMI estimates are misleading if applied to Australian mental health services.

Supplementary Estimates for older people

For older people, the evidence is much more limited than for adults in general. Some information was available on non-institutionalised people 65 and over in the Australian NSMHW, but it covers a limited range of illness. The NCS sample in the US was limited to 18-54 and thus provides no information. However, the US Surgeon-General's report commissioned a special analysis of ECA data which allows estimates for all conditions for those 55 and over. There are only two points where this can be compared with the Australian data, and even the "any anxiety disorder" group is not well-matched between the two studies. The shaded part of the table below shows the key comparisons of prevalence (per cent).

DIAGNOSTIC GROUP	NSMHW 55-64	NSMHW 65+	ECA 55+	ECA 18-54
Any Anxiety Disorder	7.8	4.5	11.4	13.1
Any Mood Disorder	5.0	1.7	4.4	7.1

As with the 18-64 year old adults, the Australian prevalence data is lower than the US, and both sets of data show a lower level of these diagnosed illnesses in older people. The inclusion of the Australian 55-64 group to match the age group in the ECA 55+ group would improve agreement, but the main point is that there is no specific Australian prevalence data for other mental illnesses in older people. Our decision was to use the specific ECA data from the Surgeon-General's report, and scale down the Australian prevalence data. Rather than rely on a single comparison point (mood disorder) we used the same factor as in adults, 90 per cent.

When these estimates were subdivided by severity (see below) we found that the prevalence of severe mental illness was very low in older people. This was not consistent with the results of formal disease modelling for a large part of that group, namely people with schizophrenia. We then reviewed the data on nursing home residents in Australia, to try to estimate the proportion of people in the nursing home population who had psychiatric illness. An extensive survey (N=10,000) of nursing home residents showed that 16 per cent of the resident population of 134,223 people in nursing homes and hostels had a primary psychiatric diagnosis, as distinct from dementia (46 per cent), neurological problems (4.2 per cent), acquired brain damage (0.4 per cent). Intellectual disability (0.5 per cent), other diagnosis (4.6 per cent) or no diagnosis (28 per cent). Most of the "psychiatric" group had a prior psychiatric services history, many in inpatient care. This group adds 1.4 per cent to the overall prevalence for older people, and all would be classed as "severe" because of the combination of diagnosis and residential care placement.

Emergency Departments

The current volume of attendances at NSW Emergency Departments by adults and older people for identified mental health issues as a primary diagnosis is about 2 per cent. It is probable that identification and recording of mental health problems as a primary diagnosis in ED's underestimates the need, since studies in SESAHS ED's to develop ED triage guidelines for mental health have indicated that the true figure is at least 3 per cent, and the literature indicates 1-10 per cent[84].

Only primary diagnosis and a single secondary diagnosis can be recorded in the ED information systems in NSW, and in fact secondary diagnoses are recorded in only a minute percentage of cases. Thus it is unlikely that mental health comorbidity would be captured at all in existing data.

This would be expected to improve as specialised mental health staff are placed in major Emergency Departments. On the other hand, improved care for people with mental illnesses may reduce the volume of ED attendances. Need has been calculated here as equal to the estimated volume of current attendances for primary mental health reasons, and translated into consultation-liaison hours and equivalent FTE.

Prevention

There are fewer opportunities for prevention in this age group as most onset of mental health problems generally occurs in young people. Most opportunities focus on providing prevention initiatives for adverse life events such as bereavement and loss, loss of employment, retirement, traumatic events, life threatening or chronic physical illness.

Resources required for prevention are based on the need for coverage by at least 1 FTE staff per Area Health Service with additional coverage in the larger Areas, or 30 state-wide. This has been represented as 0.8 FTE per 100,000 adults 18-64 for convenience in calculation. The same allocation made for older people has been represented as 3.5 FTE per 100,000 adults 65 and above.

Prevention programs for adults and older people will mostly be delivered by general health staff. The focus of mental health staff involvement is on support and training of those staff, as well as some direct service delivery to groups of adults and older people at risk.

Mental Health Promotion

Resources for mental health promotion are calculated on the basis of ensuring at least 1 FTE staff in all Area Health Services, with the larger Areas having 2 FTE staff, across all age groups. This reflects the fact that most mental health promotion initiatives are provided by general health promotion staff, with support and consultation provided by mental health promotion staff. It has been represented as a uniform allocation of 0.4 FTE per 100,000 in all age groups.

Consultation-Liaison (General)

The general requirement for provision of mental health expertise via consultation-liaison to other service providers in relation to their clients is represented by an allocation of 0.5 hours of specialist mental health expertise per person with illness at any level of severity. This is in addition to the specific allocations for people presenting to EDs, for people with primary mental health diagnoses admitted to general medical beds, and in Nursing Homes and hostels. It includes expertise provided to GPs, to general community health staff, and to general inpatient services for people with psychiatric comorbidity.

Care model for adults aged 18-64 years

Target group	Age 18-64 years, meeting criteria for a mental disorder or problem.
Scope	Care required during 12 months by specialist public sector mental health services Provision of mental health expertise to non specialist mental health services
Rationale and Estimates	17.8%[85]of the population meet criteria for a mental disorder per annum. These are divided by severity/acuity/chronicity and service need as follows[86]: MILD NEED GROUP: 10.8% may experience mild disorders[87]. This group is at risk of recurring or continuing mental health disorders. Treatment is provided through GP, private health care and general adult health services such as post natal depression services. Specialist mental health services provide some assessment, referral or indicated prevention services MODERATE NEED GROUP: 4.2% may experience moderate mental disorders that are associated with disability[88]. They require specialist mental health assessment and referral to general practitioners, private hospitals and private mental health professionals. SEVERE NEED GROUP: 2.8% experience active disorders with severe role impairment (including mania, depression, schizophrenia and other non-affective psychosis and require specialist mental health services for both the acute phase and the prevention of relapse[89]. Al involuntary care falls into this group. Examples include early intervention in psychosis (0.09% of 18 – 64 year olds[90]), and Special care for mothers with acute disorders following childbirth[91] and inpatient services (1% of population[92], 0.85% provided in public mental health care of which 45% is involuntary inpatient care[93])
Objectives	Immediate comprehensive mental health assessment Evidence based treatment of acute disorders or episodes Early intervention and indicated prevention Stabilisation of acute mental health disorder or psychological distress Reduction of the risk of people harming themselves or others as a result of mental illness. Extended care Community maintenance and treatment Suicide prevention Provision of mental health expertise to non specialist mental health services and contribute to prevention by other health services Evaluation, research, policy contribution, quality control, regulatory functions.
Outcomes	Client centred outcomes – HoNOS, LSP, K10 etc – to be determined by the Mental Health- Outcomes and Assessment Training (MH-OAT) Project.
Linkages with other services	GPs Adult public health services Private psychiatrists and psychologists NGOs Department of Community Services Departments of Housing, Police, Veterans Affairs, Social Services Department of Corrections

Service components and care packages	Clinical assessment of all moderate and severe patients Community-based specialist services for adults requiring treatment, including: outpatient appointments; extended hours; crisis services; groups; active rehabilitation; and day programs (ie acute and ongoing) Acute inpatient services for adults with the most severe or complex symptoms requiring 24-hour specialist treatment including general acute beds; observation beds; and PICU beds. Non-acute inpatient services for adults. Very long stay for people unable to function in community and formally assessed as in need of 24 hour support. Currently 70% are Mental Health inpatient beds (MHB) and 30% are accommodated in 24 hour staffed supported community residential accommodation (CRB) in NSW, but the figures in Victoria are the reverse. In the MH-CCP model the Community Residential Beds are not funded by mental health, though mental health is providing specialist mental health expertise. Liaison with other health services and other service providers, including Consultation liaison to ED and general health services Provision of mental health expertise to non specialist mental health services in the planning of mental health prevention and promotion (universal and selected) Regional or Tertiary services such as: Post natal depression services EPPIC – early intervention services for early psychosis Forensic services Eating Disorder NPI Mood disorders Personality disorders Dual diagnosis Indicated prevention Evaluation Research Education and training

Care packages per adult aged 18-64 years

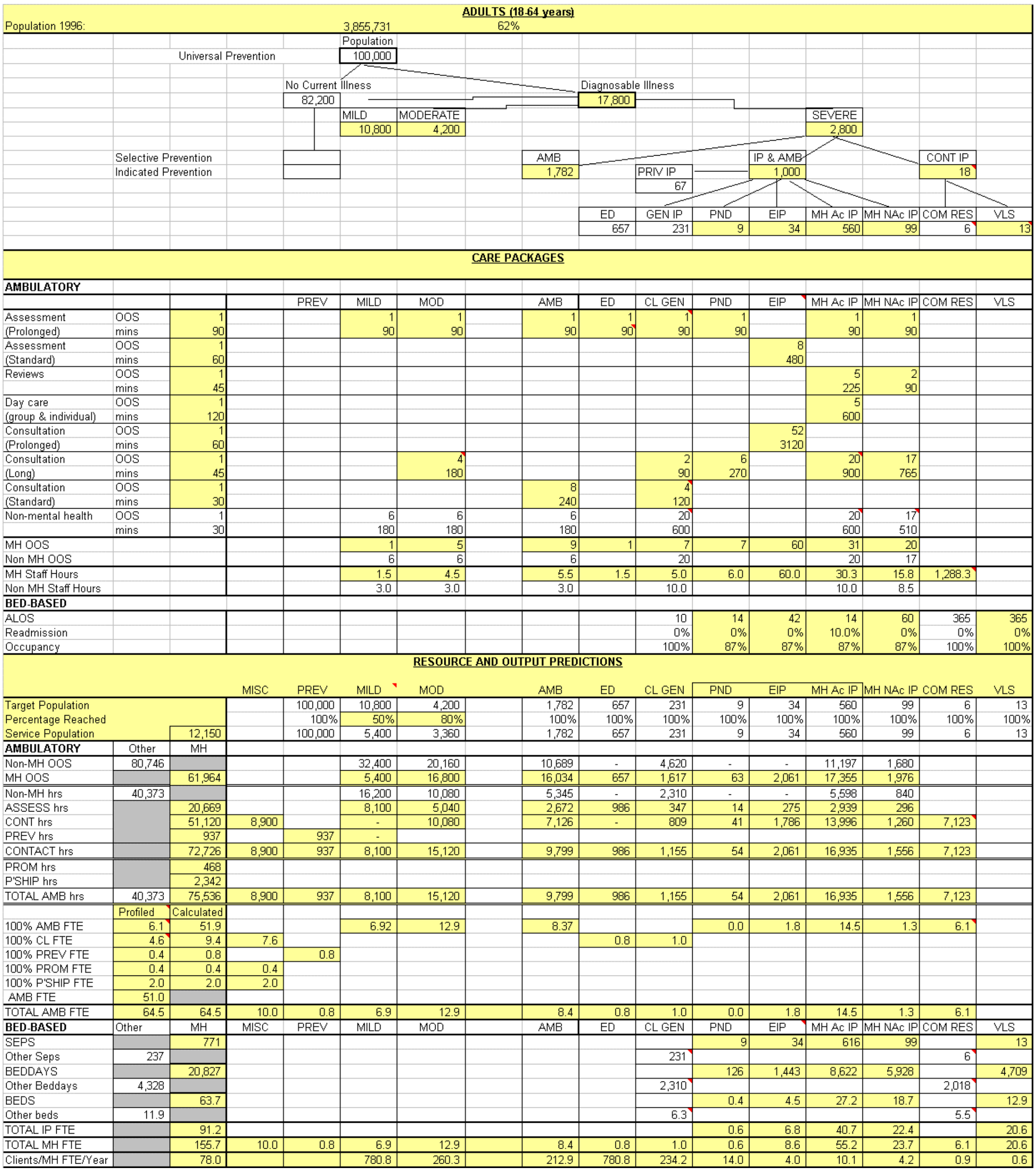
NEED GROUP	**CARE PACKAGE**	**SPECIFICATION** • *Service in italics not provided by specialist mental health services*
Mild	Assessment services and referral to GP, private or general health services	(50 % mild population reached [94]) 1x 90 minute assessment by specialist mental health professional *6X30 minute consultation by non-mental health eg. GP* **Note: This has been incorporated from Appendix E**
Moderate	Community assessment	(80 % moderate population reached) 1x 90 minute assessment by specialist mental health professional and then
	referral to GP, Private or general health services	(40 % of moderate population) *6X30 minute consultation by non-mental health eg. GP*
	acute community treatment	(40% of moderate population) 8 x 45 minute continuing contacts *and 6X30 minute consultation by non-mental health eg. GP* **Note: This has been incorporated from Appendix E, with the two care packages averaged to yield 4 x 45 minute continuing contacts (average of 0 and 8)**
Severe	Community treatment	1x 90 minute assessment by specialist mental health professional 8 x 30 minute continuing contacts *6X30 minute consultation by non-mental health eg. GP*
	Acute inpatient treatment in general health services Consultation liaison or provision of mental health expertise	*10 day inpatient care in general ward* 1x 90 minute assessment by specialist mental health professional 2x45 minute assessment reviews 4 x 45 minute continuing contacts (estimated as average of 50% with 0, 50% with 8) *20X30 minute consultation by non-mental health eg. GP*
	Acute inpatient treatment and acute community treatment	14 days inpatient care (acute) 10 days of day only care (2.4 hours/day) 1x 90 minute assessment by specialist mental health professional 5x45 minute assessment reviews 20 x 45 minute continuing contacts *20X30 minute consultation by non-mental health eg. GP*
	Non-acute inpatient treatment and community maintenance and treatment	60 days inpatient care (non-acute) 1x 90 minute assessment by specialist mental health professional 2x45 minute assessment reviews 17 x 45 minute continuing contacts *17X30 minute consultation by non-mental health eg. GP*

NEED GROUP	CARE PACKAGE	SPECIFICATION • *Service in italics not provided by specialist mental health services*
	Non-acute very long stay or continuing care	365 days inpatient care (extended care) in hospital or fully supported community based equivalent
	First episode psychosis[95] EIP services for people with first episode psychosis (target group 15-24 years)	1x 8 hour assessment (total) 42 days inpatient care (total) 52 x 60 minute specialised EIP continuing contacts
	PND services for mother with acute psychotic symptoms following childbirth[96]	14 days inpatient care in specialist mother and child baby units 1x90 minute assessment 6x 45 minute continuing contacts in the community

Refinement of model

Availability of client related data from the MHIDP, see Appendix D, Appendix E

Resource and output predictions per 100,000 adults aged 18-64 years



ADULTS (18-64 years)

Population 1996: 3,855,731 62%

Population 100,000
Universal Prevention
No Current Illness 82,200
Diagnosable Illness 17,800
MILD 10,800
MODERATE 4,200
SEVERE 2,800
Selective Prevention
Indicated Prevention
AMB 1,782
PRIV IP 67
IP & AMB 1,000
CONT IP 18

ED	GEN IP	PND	EIP	MH Ac IP	MH NAc IP	COM RES	VLS
657	231	9	34	560	99	6	13

CARE PACKAGES

AMBULATORY				PREV	MILD	MOD		AMB	ED	CL GEN	PND	EIP	MH Ac IP	MH NAc IP	COM RES	VLS
Assessment	OOS	1			1	1		1	1	1	1		1	1		
(Prolonged)	mins	90			90	90		90	90	90	90		90	90		
Assessment	OOS	1										8				
(Standard)	mins	60										480				
Reviews	OOS	1											5	2		
	mins	45											225	90		
Day care	OOS	1											5			
(group & individual)	mins	120											600			
Consultation	OOS	1										52				
(Prolonged)	mins	60										3120				
Consultation	OOS	1				4				2	6		20	17		
(Long)	mins	45				180				90	270		900	765		
Consultation	OOS	1						8		4						
(Standard)	mins	30						240		120						
Non-mental health	OOS	1			6	6		6		20			20	17		
	mins	30			180	180		180		600			600	510		
MH OOS					1	5		9	1	7	7	60	31	20		
Non MH OOS					6	6		6		20			20	17		
MH Staff Hours					1.5	4.5		5.5	1.5	5.0	6.0	60.0	30.3	15.8	1,288.3	
Non MH Staff Hours					3.0	3.0		3.0		10.0			10.0	8.5		
BED-BASED																
ALOS										10	14	42	14	60	365	365
Readmission										0%	0%	0%	10.0%	0%	0%	0%
Occupancy										100%	87%	87%	87%	87%	100%	100%

RESOURCE AND OUTPUT PREDICTIONS

			MISC	PREV	MILD	MOD		AMB	ED	CL GEN	PND	EIP	MH Ac IP	MH NAc IP	COM RES	VLS
Target Population				100,000	10,800	4,200		1,782	657	231	9	34	560	99	6	13
Percentage Reached				100%	50%	80%		100%	100%	100%	100%	100%	100%	100%	100%	100%
Service Population		12,150		100,000	5,400	3,360		1,782	657	231	9	34	560	99	6	13
AMBULATORY	Other	MH														
Non-MH OOS	80,746				32,400	20,160		10,689	-	4,620	-	-	11,197	1,680		
MH OOS		61,964			5,400	16,800		16,034	657	1,617	63	2,061	17,355	1,976		
Non-MH hrs	40,373				16,200	10,080		5,345	-	2,310	-	-	5,598	840		
ASSESS hrs		20,669			8,100	5,040		2,672	986	347	14	275	2,939	296		
CONT hrs		51,120	8,900		-	10,080		7,126	-	809	41	1,786	13,996	1,260	7,123	
PREV hrs		937		937	-											
CONTACT hrs		72,726	8,900	937	8,100	15,120		9,799	986	1,155	54	2,061	16,935	1,556	7,123	
PROM hrs		468														
P'SHIP hrs		2,342														
TOTAL AMB hrs	40,373	75,536	8,900	937	8,100	15,120		9,799	986	1,155	54	2,061	16,935	1,556	7,123	
	Profiled	Calculated														
100% AMB FTE	6.1	51.9			6.92	12.9		8.37			0.0	1.8	14.5	1.3	6.1	
100% CL FTE	4.6	9.4	7.6						0.8	1.0						
100% PREV FTE	0.4	0.8		0.8												
100% PROM FTE	0.4	0.4	0.4													
100% P'SHIP FTE	2.0	2.0	2.0													
AMB FTE	51.0															
TOTAL AMB FTE	64.5	64.5	10.0	0.8	6.9	12.9		8.4	0.8	1.0	0.0	1.8	14.5	1.3	6.1	
BED-BASED	Other	MH	MISC	PREV	MILD	MOD		AMB	ED	CL GEN	PND	EIP	MH Ac IP	MH NAc IP	COM RES	VLS
SEPS		771									9	34	616	99		13
Other Seps	237									231					6	
BEDDAYS		20,827									126	1,443	8,622	5,928		4,709
Other Beddays	4,328									2,310					2,018	
BEDS		63.7									0.4	4.5	27.2	18.7		12.9
Other beds	11.9									6.3					5.5	
TOTAL IP FTE		91.2									0.6	6.8	40.7	22.4		20.6
TOTAL MH FTE		155.7	10.0	0.8	6.9	12.9		8.4	0.8	1.0	0.6	8.6	55.2	23.7	6.1	20.6
Clients/MH FTE/Year		78.0			780.8	260.3		212.9	780.8	234.2	14.0	4.0	10.1	4.2	0.9	0.6

Care model for older people aged 65 years and over

Target group:	Age 65 years and older, meeting criteria for a mental disorder or problem.
Scope	Care required during 12 months by specialist public sector mental health services Provision of mental health expertise to non specialist mental health services
Rationale and Estimates	13.3%[97] of the population meet criteria for a mental disorder per annum. These are divided by severity/acuity and service need as follows[98]: 2.4% experience mania and non-affective psychosis (including schizophrenia) or active disorders of other types with severe role impairment and require specialist mental health services[99]. These also include the nursing home residents with a primary psychiatric disability[100] 4.2% may experience moderate mental disorders that are associated with disability[101]. They require specialist mental health assessment and referral to general practitioners, private hospitals and private mental health professionals. 6.7% may experience mild disorders[102]. This group is at risk of recurring or continuing mental health disorders. Treatment is provided through GP, private health care and general adult health services such as aged care services. Specialist mental health services provide some assessment, referral or indicated prevention services
Objectives	Immediate comprehensive mental health assessment Early intervention and indicated prevention Stabilisation of acute mental health disorder or psychological distress Involuntary confinement of people at risk of harming themselves or others Extended care Community maintenance and treatment Assessment of nursing home residents Provision of mental health expertise to non specialist mental health services and contribute to prevention by other health services
Outcomes	Client centred outcomes – HoNOS, LSP, RUG/ADL, K10 etc – to be determined by the Mental Health- Outcomes and Assessment Training (MH-OAT) Project.
Linkages with other services	GPs Nursing Homes and Hostels Aged Care Services Adult health services Private psychiatrists and psychologists Department of Community Services Department of Corrections

Service components and care packages	Community-based specialist services for the all adults receiving treatment, to minimise disruption to family and work life. Clinically assessment of all moderate and severe patients Day-only programs for adults who require a more intensive focussed treatment program than community care normally following inpatient care Acute inpatient services for adults with the most severe or complex symptoms requiring focussed 24-hour specialist treatment. Non-acute inpatient services for adults. Very long stay for people unable to function in community and formally assessed as in need of 24 hour support Liaison with other health services and other service provider Provision of mental health expertise to non specialist mental health services in the planning of mental health prevention and promotion (universal and selected) Consultation liaison to ED and general health services Assessment services to nursing home residents Forensic services Indicated prevention

Care packages per older person aged 65 years and over

NEED GROUP	CARE PACKAGE	SPECIFICATION • *Service in italics not provided by specialist mental health services*
Mild	Indicated prevention services and referral to GP, private or general health services	1x 90 minute assessment by specialist mental health professional and referral as required *6X30 minute consultation by non-mental health eg. GP*
Moderate	Community assessment and treatment, referral to GP, Private or general health services	1x 90 minute assessment by specialist mental health professional and referral as required 6 x 30 minute continuing contacts *6X30 minute consultation by non-mental health eg. GP*
Severe	Community treatment	1x 90 minute assessment by specialist mental health professional 6 x 45 minute continuing contacts *6X30 minute consultation by non-mental health eg. GP*
	Acute inpatient treatment in aged care/ general acute inpatient services	17 day inpatient care (in general ward) 1x 90 minute assessment by specialist mental health professional 3x45 minute assessment reviews 6 x 45 minute continuing contacts *20X30 minute consultation by non-mental health eg. GP*
	Nursing Home residents with mental illness - Consultation-liaison for periodic review	1x 90 minute assessment 3x 45 minute reviews
	Acute inpatient treatment and acute community treatment	28 days inpatient care (acute) 5 days of day only care (2.4 hours/day) 1x 90 minute assessment by specialist mental health professional 5x45 minute assessment reviews 20 x 45 minute continuing contacts *20X30 minute consultation by non-mental health eg. GP*
	Non-acute inpatient treatment and community maintenance and treatment	60 days inpatient care (non-acute) 1x 90 minute assessment by specialist mental health professional 2x45 minute assessment reviews 17 x 45 minute continuing contacts *17X30 minute consultation by non-mental health eg. GP*
	Non-acute very long stay or continuing care	365 days inpatient care (extended care) in hospital or fully supported community based equivalent

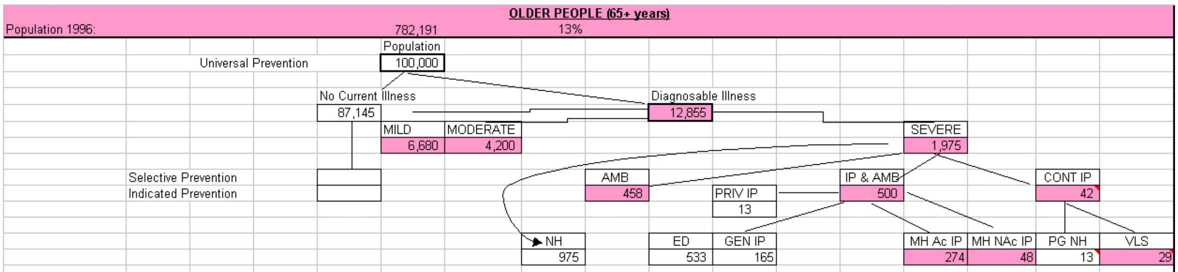
Refinement of model

Availability of client related data from the MHIDP, See Appendix D, Appendix E

Resource and output predictions per 100,000 older people aged 65 years and over

OLDER PEOPLE (65+ years)

Population 1996: 782,191 13%



CARE PACKAGES

				PREV	MILD	MOD	CL NH	AMB	CL ED	CL GEN			MH Ac IP	MH NAc IP	PG NH	VLS
AMBULATORY																
Assessment	OOS	1			1	1	1	1	1	1			1	1		
(Prolonged)	mins	90			90	90	90	90	90	90			90	90		
Assessment	OOS	1														
(Standard)	mins	60														
Reviews	OOS	1					3			3			5	2		
	mins	45					135			135			225	90		
Day care	OOS	1											5			
(group & individual)	mins	120											600			
Consultation	OOS	1														
(Prolonged)	mins	60														
Consultation	OOS	1						6		6			20	17		
(Long)	mins	45						270		270			900	765		
Consultation	OOS	1				6										
(Standard)	mins	30				180										
Non-mental health	OOS	1			6	6		6		20			20	17		
	mins	30			180	180		180		600			600	510		
MH OOS					1	7	4	7	1	10			31	20		
Non MH OOS					6	6		6		20			20	17		
MH Staff Hours					1.5	4.5	3.8	6.0	1.5	8.3			30.3	15.8	351.3	
Non MH Staff Hours					3.0	3.0		3.0		10.0			10.0	8.5		
BED-BASED																
ALOS										17			28	60	365	365
Readmission										0%			10.0%	0%	0%	0%
Occupancy										100%			87%	87%	100%	100%

RESOURCE AND OUTPUT PREDICTIONS

			MISC	PREV	MILD	MOD	CL NH	AMB	CL ED	CL GEN			MH Ac IP	MH NAc IP	PG NH	VLS
Target Population				100,000	6,680	4,200	975	458	533	165			274	48	13	29
Percentage Reached				100%	100%	100%	100%	100%	100%	100%			100%	100%	100%	100%
Service Population		13,375		100,000	6,680	4,200	975	458	533	165			274	48	13	29
AMBULATORY	Other	MH														
Non-MH OOS	77,623				40,080	25,200		2,748		3,300			5,474	821		
MH OOS		54,820			6,680	29,400	3,900	3,206	533	1,650			8,485	966		
Non-MH hrs	38,812				20,040	12,600		1,374		1,650			2,737	411		
ASSESS hrs		23,664			10,020	6,300	3,656	687	800	619			1,437	145		
CONT hrs		33,717	6,428		-	12,600	-	2,061	-	743			6,843	616	4,428	
PREV hrs		937		937	-											
CONTACT hrs		58,318	6,428	937	10,020	18,900	3,656	2,748	800	1,361			8,279	761	4,428	
PROM hrs		468														
P'SHIP hrs		2,342														
TOTAL AMB hrs	38,812	61,129	6,428	937	10,020	18,900	3,656	2,748	800	1,361			8,279	761	4,428	
	Profiled	Calculated														
100% AMB FTE	3.8	38.5			8.6	16.1		2.3					7.1	0.6	3.8	
100% CL FTE	3.4	10.5	5.5				3.1		0.7	1.2						
100% PREV FTE	0.4	0.8		0.8												
100% PROM FTE	0.4	0.4	0.4													
100% P'SHIP FTE	2.0	2.0	2.0													
AMB FTE	42.2															
TOTAL AMB FTE	52.2	52.2	7.9	0.8	8.6	16.1	3.1	2.3	0.7	1.2			7.1	0.6	3.8	
BED-BASED	Other	MH	MISC	PREV	MILD	MOD	CL NH	AMB	CL ED	CL GEN			MH Ac IP	MH NAc IP	PG NH	VLS
SEPS		379											301	48		29
Other Seps	178									165					13	
BEDDAYS		22,062											8,430	2,898		10,734
Other Beddays	7,405									2,805					4,600	
BEDS		65.1											26.5	9.1		29.4
Other beds	20.3									7.7					12.6	
TOTAL IP FTE		86.1											39.8	11.0		35.3
TOTAL MH FTE		138.3	7.9	0.8	8.6	16.1	3.1	2.3	0.7	1.2			46.9	11.6	3.8	35.3
Clients/MH FTE/Year		96.7			780.8	260.3	312.3	195.2	780.8	142.0			5.8	4.2	3.3	0.8

NSW all ages : Summary

Resource predictions per 100,000 NSW 1996 population

Introduction

This summary is not intended to be used in calculation, and is for illustration only. Not all treatment groups have the same label or meaning in the six age groups combined in this overview.

In particular the two categories of ambulatory care in children and adolescents aged 0-17, for severe problems and severe, persistent and complex problems, have been merged together here to simplify aggregation with the other age groups. For the same reason, the separate groups in adults 18-64 for Post Natal Depression and Early Intervention in Psychosis, both involving acute inpatient care, have been merged into the specialist mental health acute inpatient group. Finally, the consultation-liaison services to residents of Nursing Homes have been merged in with general Ambulatory Care.

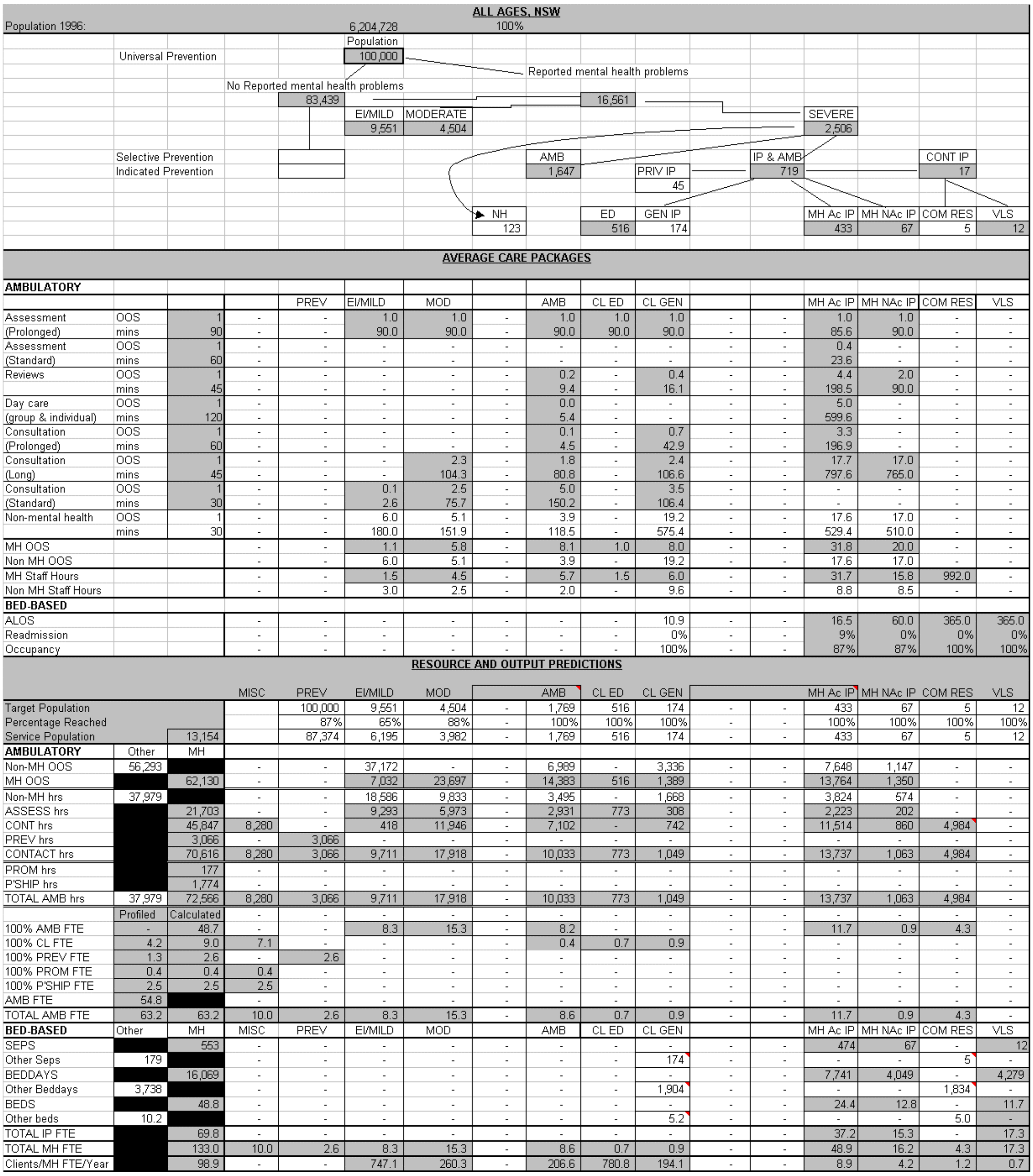
The average care plans shown are thus not intended to reflect clinical reality, though in fact they do indicate the “average” use of each component, based on the number needing treatment. However, the resource calculations are based on the numbers treated. Thus, unless “percentage reached” is 100%, multiplying care plans by the number needing them will not arrive at the results shown as resource predictions. This is because the individual care plans in the six separate age groups need to be averaged for the treated population, not the “at need” population, if the former is less than 100% of the latter. The resource predictions are accurate for the treatment proportions indicated as “percentage reached”.

The numbers in the summary are of necessity based on weighting each age group by the proportion in which that age group occurs in a “standard NSW population”. The population chosen is the NSW 1996 census population, since all others are either projections or inter-censal estimates that depend on assumptions. The intent is to focus on the main issues rather than the details, but some guidance may be helpful for those wishing to use this overview as a quick guide for a specific population.

The simplest way to consider the effect of having a larger proportion of young people or older people in a geographic region is to look at the MH-CCP predictions for the number of FTE staff, for ambulatory care services, and for inpatient services. The care plans for children and adolescents require a large number of ambulatory care staff (including those for promotion and prevention), but very few beds or inpatient staff. The care plans for adults 18-64 require both. The care plans for older people are similar to those for adults, but the effect of a large proportion of the most seriously affected people being in Nursing Homes is to reduce the overall per capita demand.

Thus a good guide to the overall effect of a different population structure is to take the two FTE predictions for each of the six age groups, apply them to the age groups in the local population, and consider the actual numbers of staff in each category.

Resource and output predictions per NSW 100,000 population



ALL AGES, NSW

Population 1996: 6,204,728 100%

AVERAGE CARE PACKAGES

AMBULATORY				PREV	EI/MILD	MOD		AMB	CL ED	CL GEN			MH Ac IP	MH NAc IP	COM RES	VLS
Assessment	OOS	1	-	-	1.0	1.0	-	1.0	1.0	1.0	-	-	1.0	1.0	-	-
(Prolonged)	mins	90	-	-	90.0	90.0	-	90.0	90.0	90.0	-	-	85.6	90.0	-	-
Assessment	OOS	1	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-
(Standard)	mins	60	-	-	-	-	-	-	-	-	-	-	23.6	-	-	-
Reviews	OOS	1	-	-	-	-	-	0.2	-	0.4	-	-	4.4	2.0	-	-
	mins	45	-	-	-	-	-	9.4	-	16.1	-	-	198.5	90.0	-	-
Day care	OOS	1	-	-	-	-	-	0.0	-	-	-	-	5.0	-	-	-
(group & individual)	mins	120	-	-	-	-	-	5.4	-	-	-	-	599.6	-	-	-
Consultation	OOS	1	-	-	-	-	-	0.1	-	0.7	-	-	3.3	-	-	-
(Prolonged)	mins	60	-	-	-	-	-	4.5	-	42.9	-	-	196.9	-	-	-
Consultation	OOS	1	-	-	-	2.3	-	1.8	-	2.4	-	-	17.7	17.0	-	-
(Long)	mins	45	-	-	-	104.3	-	80.8	-	106.6	-	-	797.6	765.0	-	-
Consultation	OOS	1	-	-	0.1	2.5	-	5.0	-	3.5	-	-	-	-	-	-
(Standard)	mins	30	-	-	2.6	75.7	-	150.2	-	106.4	-	-	-	-	-	-
Non-mental health	OOS	1	-	-	6.0	5.1	-	3.9	-	19.2	-	-	17.6	17.0	-	-
	mins	30	-	-	180.0	151.9	-	118.5	-	575.4	-	-	529.4	510.0	-	-
MH OOS			-	-	1.1	5.8	-	8.1	1.0	8.0	-	-	31.8	20.0	-	-
Non MH OOS			-	-	6.0	5.1	-	3.9	-	19.2	-	-	17.6	17.0	-	-
MH Staff Hours			-	-	1.5	4.5	-	5.7	1.5	6.0	-	-	31.7	15.8	992.0	-
Non MH Staff Hours			-	-	3.0	2.5	-	2.0	-	9.6	-	-	8.8	8.5	-	-
BED-BASED																
ALOS			-	-	-	-	-	-	-	10.9	-	-	16.5	60.0	365.0	365.0
Readmission			-	-	-	-	-	-	-	0%	-	-	9%	0%	0%	0%
Occupancy			-	-	-	-	-	-	-	100%	-	-	87%	87%	100%	100%

RESOURCE AND OUTPUT PREDICTIONS

			MISC	PREV	EI/MILD	MOD		AMB	CL ED	CL GEN			MH Ac IP	MH NAc IP	COM RES	VLS
Target Population				100,000	9,551	4,504	-	1,769	516	174	-	-	433	67	5	12
Percentage Reached				87%	65%	88%	-	100%	100%	100%	-	-	100%	100%	100%	100%
Service Population		13,154		87,374	6,195	3,982	-	1,769	516	174	-	-	433	67	5	12
AMBULATORY	Other	MH														
Non-MH OOS	56,293		-	-	37,172	-	-	6,989	-	3,336	-	-	7,648	1,147	-	-
MH OOS		62,130	-	-	7,032	23,697	-	14,383	516	1,389	-	-	13,764	1,350	-	-
Non-MH hrs	37,979		-	-	18,586	9,833	-	3,495	-	1,668	-	-	3,824	574	-	-
ASSESS hrs		21,703	-	-	9,293	5,973	-	2,931	773	308	-	-	2,223	202	-	-
CONT hrs		45,847	8,280	-	418	11,946	-	7,102	-	742	-	-	11,514	860	4,984	-
PREV hrs		3,066	-	3,066	-	-	-	-	-	-	-	-	-	-	-	-
CONTACT hrs		70,616	8,280	3,066	9,711	17,918	-	10,033	773	1,049	-	-	13,737	1,063	4,984	-
PROM hrs		177	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P'SHIP hrs		1,774	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL AMB hrs	37,979	72,566	8,280	3,066	9,711	17,918	-	10,033	773	1,049	-	-	13,737	1,063	4,984	-
	Profiled	Calculated	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100% AMB FTE	-	48.7	-	-	8.3	15.3	-	8.2	-	-	-	-	11.7	0.9	4.3	-
100% CL FTE	4.2	9.0	7.1	-	-	-	-	0.4	0.7	0.9	-	-	-	-	-	-
100% PREV FTE	1.3	2.6	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-
100% PROM FTE	0.4	0.4	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
100% P'SHIP FTE	2.5	2.5	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-
AMB FTE	54.8		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL AMB FTE	63.2	63.2	10.0	2.6	8.3	15.3	-	8.6	0.7	0.9	-	-	11.7	0.9	4.3	-
BED-BASED	Other	MH	MISC	PREV	EI/MILD	MOD		AMB	CL ED	CL GEN			MH Ac IP	MH NAc IP	COM RES	VLS
SEPS		553	-	-	-	-	-	-	-	-	-	-	474	67	-	12
Other Seps	179		-	-	-	-	-	-	-	174	-	-	-	-	5	-
BEDDAYS		16,069	-	-	-	-	-	-	-	-	-	-	7,741	4,049	-	4,279
Other Beddays	3,738		-	-	-	-	-	-	-	1,904	-	-	-	-	1,834	-
BEDS		48.8	-	-	-	-	-	-	-	-	-	-	24.4	12.8	-	11.7
Other beds	10.2		-	-	-	-	-	-	-	5.2	-	-	-	-	5.0	-
TOTAL IP FTE		69.8	-	-	-	-	-	-	-	-	-	-	37.2	15.3	-	17.3
TOTAL MH FTE		133.0	10.0	2.6	8.3	15.3	-	8.6	0.7	0.9	-	-	48.9	16.2	4.3	17.3
Clients/MH FTE/Year		98.9	-	-	747.1	260.3	-	206.6	780.8	194.1	-	-	8.9	4.2	1.2	0.7

CONCLUSIONS

It is beyond the scope of a model to state what priorities should be, what needs should be met in whole or part, or which needs are "serious" and which not. However, a model can assemble and integrate or link available evidence to provide a formal and consistent way of estimating the impact of setting priorities one way or another. It can specify the interaction between service standards, illness levels, service outputs, and treatment resources. If the agreed standard of care and the illness levels predict a level of treatment outputs and resources different from those actually available, that is the starting point for a debate about priorities.

The feedback since the release of MH-CCP Version 1.0 on 7 April 2000 has indicated that clinicians and planners have found it a useful vehicle for conducting debates about population-based mental health service planning. Constructive criticism has been the result, and it has been reflected as far as possible in the revision. Comparison of the resources required by different care plans, or by different groups, has generated considerable debate, and a search for evidence to assist resolution.

Throughout this, MH-CCP has operated in its intended way, by bringing the clinical decisions about care planning in direct contact with the consequences for staff numbers and other resources, and by emphasising the need to know two key things:

- How many people in the population need a particular care plan?
- How many people *currently* receiving care come from the groups whose needs that care plan is intended to meet?

One aim of MH-CCP was to allow clinicians to state what adequate care *should* be, and that seems to have been achieved. Another aim, however, has been to indicate to all involved how the lack of documentation of our services, and who they serve, makes life difficult for everyone. MH-CCP has shown some key gaps in the evidence.

Over the next few years, mental health services in NSW will be documenting the services they provide, and the clinical characteristics of the clients they serve, in much more useful detail than ever before, via the clinical aspects of the mental health information development program especially the Mental Health Outcomes and Assessment and Training (MH-OAT) project. In addition, alongside MH-OAT must go developments in costing, and in creating information infrastructure and electronic communications within Area Mental Health services.

MH-CCP provides a vehicle for bringing together the key ideas in clinical care, resources, and dollars. Vehicles need fuel. There is one very clear priority that MH-CCP can establish. It is essential that NSW Mental Health Services rapidly provide better evidence on which to base planning and practice.

Appendix A: Additional notes

What the model does not aim to do

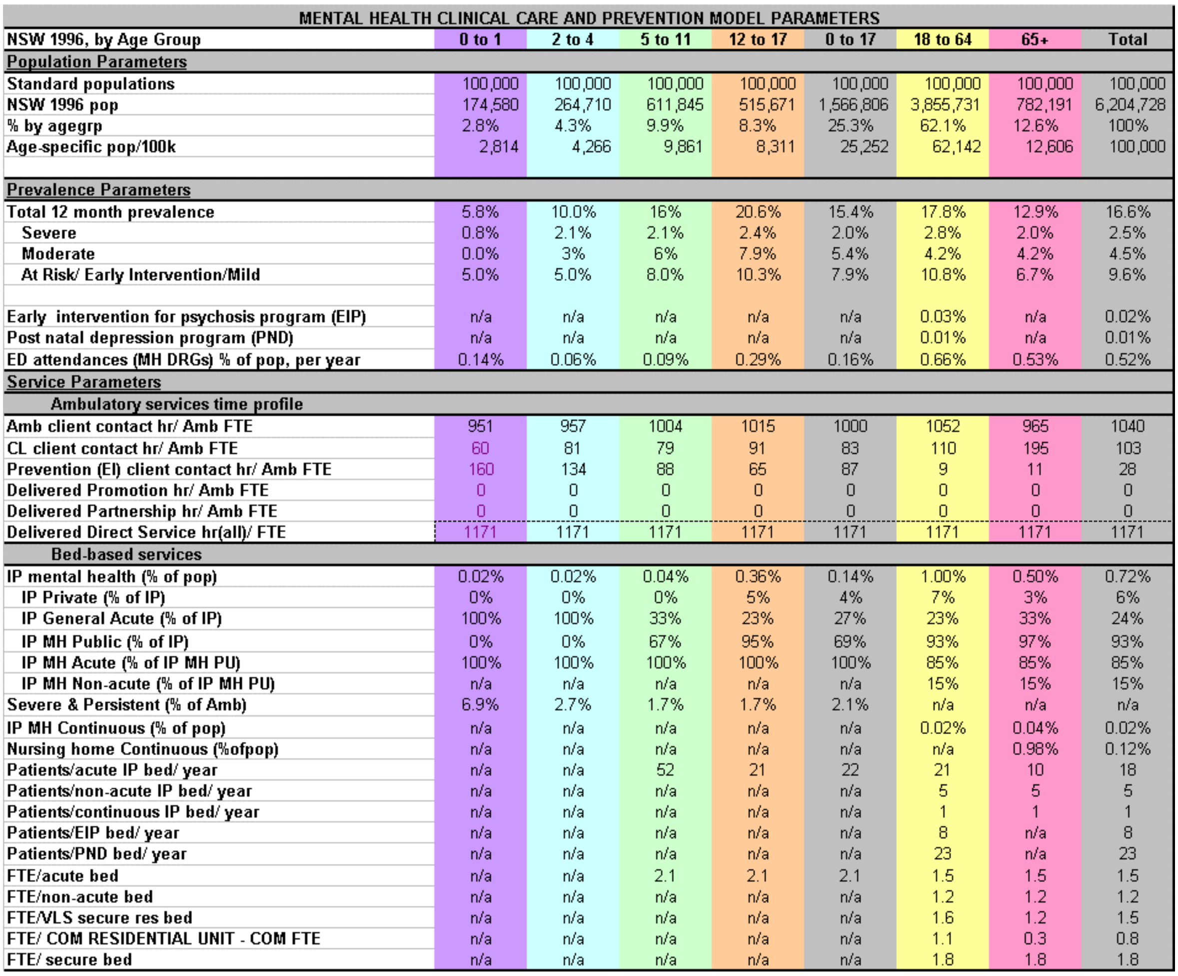
Resource Distribution: The model is not a resource distribution formula, as defined in NSW Health planning, though some aspects of it are based on work done in the Mental Health Economic Task Force and with Structural and Funding Policy Branch since 1996 to develop the draft mental health RDF. The MH-CCP model aims only to identify the absolute level of mental health services needed for a population, given definitions of appropriate clinical care for each population group. That is quite different from establishing relative funding need, by local area, for a service stream whose overall funding is mainly determined by historical levels, for the near future. Conclusions from the MH-CCP model may contribute to improving RDF models, but there are few direct links between the two. One usage thus far has been to estimate the cost relativities between age groups.

Venue- specific service planning. General acute overnight inpatient services currently consume 50 per cent of the NSW Health budget and their planning tends to be a free-standing process that is not linked in any strong fashion to the levels of community based care, non-acute care, or other services in general. By contrast, the MH-CCP specifies packages of care that typically involve multiple service components. Appendix G contains an account of how the MH-CCP model may be applied to acute bed planning, and some of the issues that arise in that context.

Casemix and episode funding. The MH-CCP model has a strong resemblance to the most clinical versions of “clinical casemix” in general health, and the AN-DRG 3 and AN-DRG4 inpatient classifications in mental health, both of which preserve diagnosis as a primary distinction, and aim to subdivide by severity/ acuity, complications, and procedures (care packages) provided. The MH-CCP model has no affinity at all with casemix classifications based primarily on empirical cost prediction, such as the Mental Health Classification and Service Costs (MH-CASC) classification, though in version 1 this is masked by the limited number of illness-based care packages developed.

Appendix B: Mental Health Clinical Care and Prevention Model Parameters – Version 1.1

The following is a table summarising the main parameters used to calculate the various tables in the documents.



MENTAL HEALTH CLINICAL CARE AND PREVENTION MODEL PARAMETERS

NSW 1996, by Age Group	0 to 1	2 to 4	5 to 11	12 to 17	0 to 17	18 to 64	65+	Total
Population Parameters								
Standard populations	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
NSW 1996 pop	174,580	264,710	611,845	515,671	1,566,806	3,855,731	782,191	6,204,728
% by agegrp	2.8%	4.3%	9.9%	8.3%	25.3%	62.1%	12.6%	100%
Age-specific pop/100k	2,814	4,266	9,861	8,311	25,252	62,142	12,606	100,000
Prevalence Parameters								
Total 12 month prevalence	5.8%	10.0%	16%	20.6%	15.4%	17.8%	12.9%	16.6%
Severe	0.8%	2.1%	2.1%	2.4%	2.0%	2.8%	2.0%	2.5%
Moderate	0.0%	3%	6%	7.9%	5.4%	4.2%	4.2%	4.5%
At Risk/ Early Intervention/Mild	5.0%	5.0%	8.0%	10.3%	7.9%	10.8%	6.7%	9.6%
Early intervention for psychosis program (EIP)	n/a	n/a	n/a	n/a	n/a	0.03%	n/a	0.02%
Post natal depression program (PND)	n/a	n/a	n/a	n/a	n/a	0.01%	n/a	0.01%
ED attendances (MH DRGs) % of pop, per year	0.14%	0.06%	0.09%	0.29%	0.16%	0.66%	0.53%	0.52%
Service Parameters								
Ambulatory services time profile								
Amb client contact hr/ Amb FTE	951	957	1004	1015	1000	1052	965	1040
CL client contact hr/ Amb FTE	60	81	79	91	83	110	195	103
Prevention (EI) client contact hr/ Amb FTE	160	134	88	65	87	9	11	28
Delivered Promotion hr/ Amb FTE	0	0	0	0	0	0	0	0
Delivered Partnership hr/ Amb FTE	0	0	0	0	0	0	0	0
Delivered Direct Service hr(all)/ FTE	1171	1171	1171	1171	1171	1171	1171	1171
Bed-based services								
IP mental health (% of pop)	0.02%	0.02%	0.04%	0.36%	0.14%	1.00%	0.50%	0.72%
IP Private (% of IP)	0%	0%	0%	5%	4%	7%	3%	6%
IP General Acute (% of IP)	100%	100%	33%	23%	27%	23%	33%	24%
IP MH Public (% of IP)	0%	0%	67%	95%	69%	93%	97%	93%
IP MH Acute (% of IP MH PU)	100%	100%	100%	100%	100%	85%	85%	85%
IP MH Non-acute (% of IP MH PU)	n/a	n/a	n/a	n/a	n/a	15%	15%	15%
Severe & Persistent (% of Amb)	6.9%	2.7%	1.7%	1.7%	2.1%	n/a	n/a	n/a
IP MH Continuous (% of pop)	n/a	n/a	n/a	n/a	n/a	0.02%	0.04%	0.02%
Nursing home Continuous (%ofpop)	n/a	n/a	n/a	n/a	n/a	n/a	0.98%	0.12%
Patients/acute IP bed/ year	n/a	n/a	52	21	22	21	10	18
Patients/non-acute IP bed/ year	n/a	n/a	n/a	n/a	n/a	5	5	5
Patients/continuous IP bed/ year	n/a	n/a	n/a	n/a	n/a	1	1	1
Patients/EIP bed/ year	n/a	n/a	n/a	n/a	n/a	8	n/a	8
Patients/PND bed/ year	n/a	n/a	n/a	n/a	n/a	23	n/a	23
FTE/acute bed	n/a	n/a	2.1	2.1	2.1	1.5	1.5	1.5
FTE/non-acute bed	n/a	n/a	n/a	n/a	n/a	1.2	1.2	1.2
FTE/VLS secure res bed	n/a	n/a	n/a	n/a	n/a	1.6	1.2	1.5
FTE/ COM RESIDENTIAL UNIT - COM FTE	n/a	n/a	n/a	n/a	n/a	1.1	0.3	0.8
FTE/ secure bed	n/a	n/a	n/a	n/a	n/a	1.8	1.8	1.8

In the Excel version of MH-CCP, the worksheet corresponding to the table above is the source of all the key parameters for the calculations on each of the six age-specific worksheets. Note that the 0-17 and all-age columns are included only for illustration, since they are not used in calculation. In addition, not all all of the calculation details can be included above.

Explanation of terms:

Age groups. Since only some of the age groups in the MH-CCP model correspond to the 5-year age groups for which population projections are available, they have been estimated by dividing a five year age group in the relevant proportion where necessary.

- The Age 0 to 1 population is 40% of the 0-4 total
- The Age 2 to 4 population is 60% of the 0-4 total.
- The Age 5 to 11 population is the 5-9 total plus 40% of the 10-14 total.

- The Age 12 to 17 population is 60% of the 10-14 age group and 60% of the 15-19 age group.
- The Age 18 to 64 population is 40% of the 15-19 age group plus the remaining 5-year age groups up to age 60-64.
- The Age 65+ population is the total of standard age groups from 65-69 to 85+.

The similarity in numbers within each year of a five-year cohort means that taking 20% of that group as the number for each year of age is quite accurate. In any case, the age group populations are always approximations in non-census years, and 2% variation in population projections of total populations by different methods are not uncommon.

The value of using clinically relevant age groupings greatly outweighs the minor convenience of using the age groupings usually available, and the relevant population calculations indicated above are easily made.

Statistics in the Total population column.

The prevalence and service parameters given have been calculated for each individual age group defined in the MH-CCP model, and are constants for that age group. However, the figures given in the “Total” column are a population-weighted average of those for each age group, in the proportions in which they occurred in the 1996 NSW population.

They can be used as a fair guide when calculating service figures for a total population, because variations in the age distribution between (say) Area Health Services in NSW are relatively small. That is why they are presented. However, the only way to apply the table to a specific population is to use the figures given for each age group, and add them up to arrive at the total for the specific population.

Standard Populations

The standard population is set at 100,000 for each age group. Immediately below it appears the actual number of people in that age group in the 1996 census in NSW, so it easy to work out the NSW total for each age-specific work sheet. For example, there were 515,671 adolescents 12 to 17 in NSW in 1996. This is near enough to five “lots” of 100,000. The total NSW requirement (1996) for services for adolescents can quickly be estimated from the worksheet showing predictions per 100,000 adolescents 12 to 17. It is just a matter of multiplying by about 5. The exact 1996 prediction entails multiplying the “per 100,000” figures by 5.15671.

1996 NSW pop

This is the number of people in each age group present in the NSW population in the 1996 Australian census. It is obtained from the various data files supplied by the Australian Bureau of Statistics and held in the statistical data warehouse maintained by Epidemiology and Surveillance Branch of the NSW Health Department (HOIST = Health Outcomes Information Statistical Toolkit). It will vary in minor irrelevant ways from other published census data, just as the ABS data generally varies, depending on the other variables being tabulated.

% by agegrp

This is the population for each age group, expressed as a percentage of the total NSW population in the 1996 census.

Age-specific pop/100k

This is the number of people in each age group who would be found in a population of 100,000 with the NSW age distribution of 1996. When making calculations for the NSW average per 100,000 people, these numbers are used to weight the projections per 100,000 in each age-specific group.

Total 12 month prevalence, and Severity Categories

These percentages are documented extensively in the MH-CCP text. They refer to the percentage of each age-specific population who experience mental illness at diagnostic or high risk levels in a year (Total), and the subdivision of that overall percentage into grades of severity/ functional impairment labelled Severe, Moderate, and Mild or Early Intervention. The terms "Severe", "Moderate" and "Mild/ Early Intervention" have specific meanings and are defined for each age group in the text.

Early Intervention for psychosis program (EIP)

These figures are expressed as a percentage of the Age 18 to 64 population. EIP clients are a subgroup within the "Severe" group. The estimate is based on formally modelling the incidence of schizophrenia in 18-24 year olds. The modelling used published incidence estimated from NSW first admission data, and adjusted in age for the delay between onset of first signs and first admission as found in detailed German and US studies. Schizophrenia-specific and age-sex specific mortality from the Western Australian psychiatric case register linkage to mortality data 1980-95 was used to adjust for mortality of the cohort and alignment with incidence/prevalence modelling using the DISMOD software from the Global Burden of Disease Unit at Harvard University. Estimates were then weighted to allow for other psychoses, and conditions that will present in a similar enough fashion to warrant referral to EIP Programs. Strictly speaking the specific age 18-24 population should be used rather than the whole age 18 to 64 population, but the calculation as given is exactly right for NSW in 1996, and would be very nearly right at other times and places unless the proportion of 18-24 year olds to 18-64 year olds was very different.

Post natal Depression Program (PND)

These figures are expressed as a percentage of the Age 18 to 64 population. PND clients are a subgroup within the "Severe" group. Strictly speaking the specific female population who had (or are projected to have) a child during the year should be used, multiplied by the estimated prevalence of PND requiring specialised interventions, rather than the whole age 18 to 64 population. The calculation as given is exactly right for NSW in 1996, and would be very nearly right at other times and places unless the proportion of females having children to the 18-64 year old total population was very different from the NSW proportion in 1996.

ED Attendances (MH DRG's), % of pop, per year.

Mental health diagnoses are given for about 2 percent of Emergency Department attendances in NSW. These have been calculated on an age-specific basis and converted to a percentage of the age-specific population. This is thus a current utilisation figure.

Ambulatory services time profile

This profile is based on calculations described in Appendix C.

Bed-based Services

These calculations are generally described in Appendix C.

Appendix C: Methodological principles

Precedents for the MH-CCP model

The MH-CCP model aims to specify and quantify services within the general framework in the discussion document : “The development of a population health model for the provision of mental health care” (Centre for Mental Health, NSW Health Department, November 1999).

There are few precedents for developing quantitative mental health care models that start with estimates of the level of illness in the population and derive specific predictions of service requirements and their predicted outputs by defining the care required for each identified need group. The usual approach is for epidemiology, care, and utilisation to be discussed separately.

For example, the 1999 United States Surgeon General’s *Report on Mental Health*[103] contains a detailed account of the epidemiology of mental illness and of treatments and their effectiveness. It is an excellent account of the situation, but not an integrated quantitative model. It does not attempt to put the pieces of the jigsaw puzzle together, and does not identify the level of resources needed to treat a given population. In part that is because an earlier (1993) epidemiologically-based prediction model commissioned by the US Congress had already estimated “the cost of insurance coverage of medical treatment for severe mental illness commensurate with the coverage of other illnesses”[104]. That model used epidemiological data to estimate the number of people with illness severity equivalent to that in the existing treated population of people with “Severe and Persistent Mental Illness”, so that existing costs could be scaled up for 100 per cent coverage. It did not address the whole range of mental illness.

A previous epidemiology-based model was developed in NSW in 1991[105] built on an unpublished review of costs and cost-effectiveness of NSW Mental Health Services in 1989[106]. This model was revised in the light of the 1993 US model in 1994[107]. These models considered the services required by people with illnesses in the main diagnostic categories groups at three different severity levels, and translated the prescriptions of care directly into estimates of staff numbers and beds for a standard population. In general the intervening calculations are not described, and the model made no specific distinctions by age. Some of the methods described in those NSW reports have since been adopted in NZ mental health planning documents[108] and in the US Surgeon-General’s report.

We have followed the same general approach in the MH-CCP model, but have added considerable demographic and other detail at all parts of the model. Previous models made quite global assumptions about service requirements of different groups, mainly because there is such a gap between the epidemiology that shows prevalence of mental illness to be nearly 20 per cent, as against the service utilisation that shows only a few per cent of the population receiving mental health treatment. In previous models the gap was usually bridged by very global assumptions, and adding precision elsewhere probably seemed unnecessary. For example, the 1998 New Zealand planning model generally prescribed care guidelines in the form of “beds or ‘care packages' ” without attempting to describe what a bed-equivalent “care package” might be.

The MH-CCP model has followed these precedents, but is based on the view that wherever there is specific information it should be documented and used. This is true even if it covers only a small part of the demand, as in the case of Early Intervention in Psychosis and Post-Natal Depression. For those problems the volume is small, but the epidemiological data are strong and specific care plans exist. Elsewhere, there are important gaps in the evidence base that have been filled by drawing conclusions from stated sources of evidence. Again, these are documented in the text or appendices so that they can be reviewed and improved as more or better information is identified. Where necessary, current utilisation levels or patterns have been referred to. Though utilisation does not necessarily indicate true need, it does at least represent the current status, in a particular jurisdiction and health system, of the whole history of debate about service needs. In general, a variety of sources of utilisation data have been consulted to ensure that local factors affecting utilisation can be separated from more general ones. In this respect, the data available from other Australian jurisdictions since the commencement of the National Mental Health Strategy in 1992/93 has been particularly useful. International utilisation data has been consulted at various points, but mainly as an additional check. It is very difficult to be sure how levels of utilisation of mental health services in an overseas jurisdiction are influenced by the design of the overall health and human services systems of the jurisdiction.

The overall aim was to build a model that would incorporate the best features of other models, would lend itself to iterative improvement, and could summarise a great deal of information – much of it difficult to obtain and/or interpret – in a consistent manner. Within that, a key aim was to achieve a modular structure in which the epidemiology, the interventions (care plans), the service utilisation and resources, and the costing were separate but connected modules. This allowed each be developed further by those with the relevant expertise. In that sense, the MH-CCP model has no specific precedent we could find in mental health. However, it draws on a more general "insurance" approach which is common in many areas of planning.

Actuarial/ capitation/ risk models. The MH-CCP model is an "insurance" model because it identifies a standard of care, or a benefits package, for the proportion of the population estimated to be at *risk* of needing it, for a *current* 12 month period. To provide that package requires certain resources, and they have a cost. Thus there is a risk to the individual of being ill and needing treatment services, a risk to providers of being called upon to provide services, and a risk to insurers of being called upon to pay for them. Although the focus on a current 12-month period makes it unnecessary to consider MH-CCP as an "insurance" model, most users of it will be considering the relationship between current resource levels and patterns and those predicted by the model, and seeing the latter as a notional target for the future. The issues that arise in that context are best discussed in the "insurance" framework.

MH-CCP is a only a very simple insurance model since it does not address the accruing liability that arises from failure to prevent future illness, or from failure to treat current illness in a way that will reduce future disability and/or service demand. Nor does it address any change in that liability resulting from changing service resources.

In effect it only predicts the volume of care services that are needed *now* to deal with the *realised* liability from all *past* failures to prevent or treat effectively. That obviously includes the past failure to prevent or treat at all – the current consequences of past "unmet need[109]". But it also includes the current treatment burden arising out of the lack of *effective* treatments in the past[110]. It must be remembered that many effective medications for psychiatric illness have been available only for a relatively short time compared with the duration of illness. Finally, the current burden of treatment includes the effect of inadequate system planning. The new medications may have reduced the need for long-term *inpatient* care, but there was still a need for community-based care, and it is only in the 1990's that the gap has been systematically addressed in Australia, under the National Mental Health Strategy. Thus the resident population of institutions for the mentally ill in NSW was about 350 per 100,000 population as late as 1960[111], requiring ten times as many beds per 100,000 as we have at present, and it is only in quite recent times that substantial levels of community-based care have been provided to replace that other form of care. The rapid reduction in psychiatric beds in NSW from 1960-1980 was similar to that in other English-speaking countries, but it is not an automatic result of new medications. It is a separate service planning decision. There are major OECD countries that have retained large numbers of psychiatric inpatient beds, for example Japan (290 per 100,000), the Netherlands (160 per 100,000), France (130 per 100,000), or Germany (120 per 100,000). In fact Australia has only about one-third the OECD average of 94 beds per 100,000[112].

The overall effect of the delay in replacing one form of care with another is the creation of a substantial group of people who were exposed to the limited mental health services of relatively recent times, especially in those Australian jurisdictions (NSW, Queensland, and the Territories) that were well below the average level of per capita services by 1992. It can be expected that some of the current service demand will be prevented in future by recent mental health service developments. On the other hand, those people need to be cared for now, and the reduction in demand lies in the future. In addition, the key issues of prevention and promotion, and the emphasis on services for children and adolescents, have only been major priorities under the renewed National Mental Health Strategy since 1998. That investment also needs to be made now, and any reduction of future liability to service providers and insurers lies even further ahead.

The prediction of future demand is very complex when starting from a situation in which current service capability is lower than current need, especially since increases in capability cannot be made instantaneously. Those who remain untreated or are treated less than adequately will tend to maintain future demand at levels similar to those at present. Others who receive effective care will need less care in future, but quantified effectiveness data are still hard to find. Therefore, it is not unreasonable to project future need as remaining much as it is at present for planning periods of several years at least. There is in fact a slow feedback loop in operation that will allow services to be tuned to need over time. The slower services build up capability to meet current need, the longer that need will persist. The faster they build up, the sooner the need will be reduced, but in both cases there is a lag of years. Finally, since the emphasis on new services is in community-based care, inpatient services located in general hospitals, and partnerships with general health services and other agencies, rather than specialist separate facilities, there is also little chance of creating excess capacity that cannot be readily re-deployed.

The use of an insurance model also helps to address the complexities of the “partnership” model of mental health service delivery that has been agreed under the Second National Mental Health Plan. In a population-based planning model, the “risk pool” is spread over the whole population, but within that there is usually some degree of segregation of risk. The risk pool for illness is usually segregated by age, diagnosis, severity and other relevant factors. The risk pool for providers is segregated by the work they do (inpatient, community, primary, secondary, tertiary, professions) and often the sector they work in (public, private). The risk pool for insurers is segregated by funding arrangements, usually amongst state government and federal government agencies, and private insurers.

Often these interact in complex ways. In Australia, some aspects of care for mental illnesses are mainly a risk for the Commonwealth Government to insure via taxation payments from the population into Medicare. These include illnesses managed in General Practice and private psychiatry, and medications provided under the Pharmaceutical Benefits Scheme. By contrast, mental illnesses managed in hospitals and community-based services are mainly a risk for State Governments, but interact with Commonwealth Government services and private insurance levels in ways that have been formalised under the Australian Health Care Agreements. Other aspects such as accommodation, including Nursing Homes, may fall into one category or another depending on how the accommodation is provided, with States being primarily responsible for hospital and public housing accommodation. Disability and income support are primarily Commonwealth issues. Secondary consequences of mental illnesses generate many risks for individuals that in turn generate service and expenditure risks for other agencies, such as Corrections, Substance Abuse Services, Education, or Community Services.

As much as it would be simpler to consider mental health care as a clinical issue without being concerned about the structures of health service provision and its funding, the cost of that apparent simplicity is too high. Irrespective of which service component or sector is the main focus of planning, other components and sectors will be involved in providing some aspects of care, and they usually have their own planning processes and intentions. A narrowly focused model, or one that ignores the structures, will invariably generate planning that tends to shift “risks” from one “insurer” to another in ways that may clash with other plans and processes. This is as true of public sector agencies and levels of government as it is for private sector agencies in competition. A simple example in the MH-CCP model is the issue of determining the proportion of dementia care that falls to State-funded mental health services to manage (see Appendix H).

The risk was clearly recognised by Australian Health Ministers in 1992:

> It is argued that the financial arrangements for mental health should be incorporated into the general health financing arrangements, but that mental health resources should remain identifiable and be allocated through a mental health program regardless of where services are located. …
>
> With the change to a community oriented pattern of care, people with mental disorders often require access to, and support from, a complex array of other health and community services such as housing, accommodation support, social support, community and domiciliary care and employment and training opportunities. The policy focuses on the need for better linkages between these services and the mental health system and the elimination of discrimination in access to these services. …
>
> The separatist model of mental health care has often led to discrimination whereby the various needs of those with severe mental health problems and mental health disorders are seen as the total responsibility of mental health services. In some cases, those who have used mental health services have been excluded from eligibility for mainstream services. Often, the discrimination is more subtle, with them being given low priority in the allocation of resources or their specific needs not being recognised. …
>
> **Objectives**
>
> …
>
> To develop formalised policy and planning arrangements at Commonwealth, State, Territory and area/regional levels to ensure that all programs relevant to those with severe mental health problems and mental disorders adequately address their needs.
>
> *Source: Australian Health Ministers. National Mental Health Policy, April 1992.*

In accordance with that policy, the MH-CCP model has identified the overall "health-related" care needs, and then specified some as falling within the scope of specialised mental health services, and some as being provided by other parties, such as general practitioners. It has also identified resources within the specialised mental health service to provide mental health expertise, as necessary, via consultation-liaison services, as support for partnerships with other agencies, or as direct services into venues of care such as Nursing Homes or Emergency Departments or general hospital beds. The overall aim has been to specify the interface between specialist mental health services and others, so that each knows what risks are to be undertaken for service provision and expenditure, and can plan accordingly.

A consequence of this sharing of risk for different aspects of comprehensive mental health care is that the costing model will need to include the other issues mentioned in the above quotation from the national mental health policy. Many factors are involved. For example, unemployment is a risk factor for mental illness, but mental illness is also a risk factor for unemployment. Changes in arrangements for Disability Support Pensions have an impact on the ability of people with mental illness to fund their accommodation, and insecurity of accommodation is a risk for relapse and increased demand on specialised mental health services. Funding for public housing makes State Housing Departments more or less able to provide accommodation for people with mental illness, amongst others, and can impact on the demand for specialised mental health beds. Provision of nursing home accommodation, and its conditions of funding, can have a dramatic effect on the demand for psychogeriatric mental health care (see Appendix H). Unless these risks are identified and quantified, and the trade-offs are reflected in planning processes, the intent of the National Mental Health Policy may be compromised by actions that, at first glance, have nothing directly to do with mental health care. That is one of the most important reasons for developing the MH-CCP model in a framework of "insured risk".

Unfortunately, health planning models of this type have come to be associated with the worse aspects of “managed care” as practiced in the United States. It is therefore important to stress the difference between the Australian “community rated” insurance pool and one in which there is a commercial incentive for exclusion and/or applying restrictions on benefits. “Community rating” means that the whole population is eligible for defined levels of care under private insurance, and also eligible for specified levels of care from Government as “insurer of last resort”. Where there is an unclear specification of the latter, then the lack of management of care can easily have effects that are essentially the same as those criticised as a result of US-style “managed care” – people do not receive the care they need, when they need it.

The Health Department of Western Australia has given a good account of the public sector “insurance” approach[113] in its discussion of how it deals with the exceptions to the basic funding model:

> *Exceptional Episodes*: A significant observation from admitted patient data has been the identification of groups of episodes that account for about 24% of provider inputs but only about 5% of separations. These are termed ‘exceptional episodes’ and are distinguished from the norm by one or more of their high cost, unusual length of stay or rare occurrence. As the insurer of last resort, the government is required to deal with all community needs, especially those that involve the greatest risk. Exceptions are not separately purchased but emerge when activity, expected to be predictable, becomes exceptional by length of stay. The time, frequency and place of exceptional occurrences are difficult to forecast leaving providers and system resources, in a fixed funding model, vulnerable. Since 1997/98, the process for managing exceptional activity, in consultation with providers, has been through an Exceptional Episodes Insurance Pool (EEIP). The Pool comprises some of the money that would otherwise have been paid to providers for exceptions. It is managed collaboratively by the Exceptions Pool Advisory Group (EPAG) comprising Departmental and provider representatives with clinical advice provided by the Exceptional Episodes Clinical Group (EECG). These Groups review claims for payment from the Pool and consider submissions from providers for additional resources. The process of competing for limited exception funds in a climate of peer review promotes greater management of risk among providers and a shared understanding of the basis of necessary exceptional activity. In 1997/98 the EEIP comprised 35% of the estimated budget for exceptional episodes. In 1998/99 this increased to 75%. In 1999/00, 100% of the anticipated budget for exceptions will be paid into the pool.”

In effect, the MH-CCP model has much the same aim as the EPAG/EECG committees in Western Australia, but applied to all aspects of care, not only exceptional episodes: a “process of competing for limited … funds in a climate of peer review [to] promote greater management of risk amongst providers and a shared understanding of the basis of necessary … activity.”

Assembling the Information

The most useful way of structuring the information needed to build a quantitative model is to follow the processes of epidemiologically based needs assessment specified in the manual sponsored by the NHS Management Executive in the UK[114]. The result of applying that approach to the building of a quantitative model was to indicate where evidence exists, and where evidence is needed

- Although it is easy to agree on a comprehensive needs-based planning model in principle, there are many factors to deal with in creating a practical tool that can be used for planning real health services.
- Typically, the relevant evidence and data on incidence, prevalence, efficacy, efficiency, remission and relapse after treatment, and costs, is missing or limited in scope and detail.

- In all health systems there is a degree of misalignment of need, demand, and supply, and often there is much better evidence on supply (utilisation) than on either of the other factors. Supply is driven by many factors other than need and demand, and there may be a degree of inappropriate supply included in it, sometimes called "met un-need".

- Unmet demand may sometimes be directly visible in terms of waiting lists and waiting times for specific services. It may also be visible indirectly, in terms of pressure on relevant services, or even in the form of inappropriate use of other services (as, for example, the use of acute beds for Nursing Home type patients, or demand on Emergency Department services, as noted in the recent Sinclair Report[115]). However, levels of demand may also be invisible until a new service becomes available (as illustrated by the unexpected demand on the New Children's Hospital when relocated.) Demand is also driven by factors other than need.

- The most critical measure for estimating need, namely level of illness in the population to be served, may be inferred from epidemiological studies, but there is no simple translation between levels of illness and the need for specific types of services. Moreover, detailed local population data on illness are rarely available, may be too expensive to obtain, and are rarely obtainable frequently enough to serve as a guide to how well need is being met.

- The most critical data for estimating the impact of treatment are rarely available at all, let alone in a form useable for modelling. Papers that compare treatments and specify detailed care over a time period are rare enough. Those that identify the target population in a way that can be linked to population epidemiology are also rare, partly because the populations in clinical trials are often highly selected on characteristics rarely measured in population studies. Those that follow up patients for any length of time to assess recurrence/relapse rates or report the duration of illness at diagnostic levels (illness density) , either with or without treatment interventions, are extremely rare. To assemble clinical data from different sources into a coherent picture typically requires an apparatus to bridge across different measuring instruments, diagnostic systems and groupings, resources expressed in different units, and care systems in which the scope of "mental health" is unclear, so that global resource estimates are meaningless. It can be done, but it is very time consuming.

The problem of epidemiology-based prediction in mental health

A quantitative clinical care model for one patient can be represented schematically in the following way:

- Period cost = 1 patient x Cost of treatments received by that patient over the period

- Treatment received = (proportion of) staff time, facilities, consumables

- Resources used = Treatment received + overheads + availability factors

- Cost = Sum of resources used x specific unit costs (in appropriate units)

A great deal of effort is invested by NSW Health each year in collecting aggregate data from service facilities, but at present it is not possible to assemble those data across all the services received by an individual. Instead, individual episodes of care are usually the units that are documented and costed. Even so, it is relatively straightforward in principle to ascertain and cost the services received by an individual over 12 months, because there is at least data on those people who actually receive care. All the relevant information is available in detail somewhere, and can be assembled.

An epidemiological model must expand this in various ways, and unfortunately the relevant information is less available.

- The focus must be on the whole population, and the number of people who need a particular level and type of care through the period, whether they receive it or not. Remarkably little is known about the differences between people who do and do not seek care for mental health problems, let alone the consequences of doing one or the other.

- The focus must be on the care that is appropriate for the illness, and, since appropriate care must be effective to some degree, on the reduction in subsequent need that results from providing the care. This may or may not be the care that is actually delivered, and on which information exists.

- Epidemiology-based models have to draw on the scientific literature for evidence of effectiveness of interventions. In so doing, consideration must be given to the factors that make the effectiveness of care (in routine practice) lower than the efficacy observed in clinical trials. This is not a minor issue. For example, NIMH in the US has recently funded a $47 Million trial to establish effectiveness of new antipsychotic medications in routine use[116]. Effectiveness must also take into account whether program level interventions have faithfully followed the critical aspects of (usually) a model program for which good results have been reported, particularly in terms of the resources allocated to them[117]. It also includes, for example, the evidence that patients receiving antipsychotic medication take an average of 58 per cent of the recommended amount (range 24-90 per cent), those receiving antidepressants take 65 per cent (range 40-90 per cent), and those receiving a variety of medications for physical illness take 76 per cent (range 60-92 per cent)[118].

- Every individual's illness is unique, but epidemiology can only estimate the numbers in groups. That is not a difficulty in analysing service data to obtain a total volume of care that has actually been provided, but it is a major difficulty for a model which must rely on a notional "average" individual within an illness group. This is particularly the case when estimating the needs of the groups identified in the population who meet criteria for illness, but do not seek care. Even in service data it can be a problem, when clients are grouped and variations in care provision or outcomes must be explained.

The epidemiological data and clinical research data needed by an epidemiology-based model can be extremely costly to collect, and for that reason alone are unlikely to be obtainable very often, or at a high level of geographical or demographic detail. Nevertheless, they have a strong influence on the predicted level of resources because they define the estimated numbers of people needing each "care package", and what a "care package" should include to be effective. Little can be done about that, but at least there is usually a broad consistency in the results from Australia and overseas, and the diagnostic criteria are the same as those used in services. On that basis, it is possible to connect the epidemiological data, via the care packages, to predictions about resources and service outputs

Since planning mental health services is almost entirely a public sector activity, the usual approach to modelling service needs is to invoke the US notion of "Serious and Persistent Mental Illness" to discount the prevalence down to the estimated level of about 2.8 per cent of the population. A "more of the same" model can then be applied to plan specialist public sector services, assuming a similar client group to the one already in care. In models of that type it is simply assumed that others receive care elsewhere, or have "mild and self-limiting" conditions. That accounts for the gap, but it would not generally be regarded as a meaningful account for (say) cardiovascular disease, or other physical health conditions.

Since even the discounted level of "Serious and Persistent Mental Illness" is four times the treatment level in public sector specialist mental health services, it has been recognised in each *National Mental Health Report* that the Australian health care system as a whole sets implicit priorities for service provision that are reflected in the form of unmet need[119]. Within services, priorities are also being set, every day, by individual clinicians, in planning the care they provide to the individual clients who come to their attention, and managing the resources they have available. An epidemiology-based clinical care and prevention model must address those issues, not simply ignore them. Nor can it treat the average care that is actually provided as defining a norm against which all variation can be described as "provider variation" or "practice variation", as in casemix costing studies.

Resource predictions

Resource predictions have been developed for each service component based on estimates of need on international epidemiological studies and care packages assigned according to relevant age groups. Resources were calculated using the following tables to calculate staff time in providing direct care and inpatient resources required.

Table C-1: General Ambulatory Care FTE profile (NSW, 1993)

Type of Direct Care Staff Time usage	Percentage	Actual Contact Hours per FTE Staff per Year
Direct clinical, client related, incl. Travel	62.5%	1093
Service administration	23.0%	402
Education & training (delivery & receipt)	10.0%	175
Consultation liaison	2.5%	44
MH expertise time provided to other groups	2.0%	35

- Assuming a 46 week, 38 hour week year.

- The direct care output of ambulatory care staff was initially estimated by taking the patient-related time (46%) reported in the 1996 Mental Health Classification and Service Costing (MH-CASC) study. However, community mental health staff regarded the figure as too low to be accurate. Analysis of the 1993 staff activity census in NSW community mental health services yielded the data in Table C-1. This shows that 67% of time is spent in clinical activity, and 62.5% is directly related to clients. That was consistent with clinical opinion.

- The discrepancy was traced to a methodological issue in the MH-CASC study. Because it was a casemix costing study, the main aim in MH-CASC was to assign costs to specific clients, so that differences in costs might be predictable from client characteristics. Since staff time is the main cost component, staff were required to record the time spent in each specific encounter with each client over a period of three months. To reduce the burden of recording, time spent on more general clinical work did not need to be documented in detail. The MH-CASC protocol states: "Any unrecorded time will be classified as 'General Clinical Time' and apportioned across all patients." Thus clinical staff completing the activity forms would have assumed that clinical time not directly attributed to individual registered clients would still be reported as "clinical". In the MH-CASC reports, however, the label "General Time" was used, as distinct from "Patient attributable activities" and "Non-patient attributable activities". This tends to imply that "General Time" (47% for hospital staff, 43% for community staff) is unrelated to patients, but that is clearly not the case. Even in "non-patient attributable activities", 50% of time spent was for consultation-liaison and unregistered patients.

- The MH-CCP model requires an estimate linking the number of hours of service received by clients to the number of hours of staff time required to provide it. Table C-1 suggests that the average "service overhead" of ambulatory care staff was 23% for service administration and 10% for education and training in NSW in 1993. The issue was whether to regard these proportions as appropriate for the future.

- Another attempt to estimate the direct service delivery time used the Victorian Key Performance Indicators for ambulatory mental health care. These data showed an average of 3.1 hours per client per month and a caseload of 13 per EFT staff, or 40.1 hours per EFT staff per month[120,121]. This suggests that only about 25% of total staff hours are converted to client contact hours, since "an average clinical FTE translates to approximately 165 hours per month". The contact hours in the Victorian KPI's are "derived from the median point of the service duration field on the contact record". This refers to the mid-point of the range stated against a check box: for example, a contact of 30 to 60 minutes duration would be counted as 45 minutes[122]. Taking a 30-60 minute contact as representative, then even if all actual contacts were at the upper end of the range, using the mid-point would mean that the average would be 33% too low (45 versus 60 minutes). This would suggest that at most 36% (25% x 60/45) of total staff hours were spent in direct service delivery to registered clients. The Victorian definition includes only face-to face time. It excludes "non-direct client activity (case conferences, training, supervision, management) and activities required to deliver services (for example travelling time, documentation)". Even allowing for that, the gap still seems large relative to Table C-1.

- In these circumstances, we have made the assumption that 67 per cent of direct care staff time is spent in direct service delivery, and that this is more likely to be a maximum achievable figure than anything else. The MH-CCP model divides this across the categories of assessments, continuing contacts, consultation-liaison, prevention, promotion, and partnerships.

- These have been translated into FTE requirements by first specifying any specialist staff, indicated as "100% ambulatory", "100% consultation-liaison", "100% prevention", "100% promotion", "100% partnership". This is necessary because some of the work is not directly related to client activity, and/or may require designated roles. Such staff are assumed to spend 67% of their time in the specific role, and their contribution to the overall client activity is removed (where relevant). The remaining staff required to deliver the total service are described as "Ambulatory FTE". Their "activity profile" is calculated as the average amount of time they would need to spend in each type of activity to match the remaining work to be done.

- No attempt has been made to prescribe FTE requirements in terms of professional groups. The same methodology could be used to achieve that, provided there is a specification of which elements of care packages are to be provided by particular mental health professionals, and which may be provided by any suitably qualified and experienced mental health staff.

Table C-2: Parameters to calculate bed requirements

CHILDREN				
	ALOS	Readmission	Occupancy	Venue of Care
Acute IP	10	0%	100%	General Unit
Acute MH IP	7	0%	100%	Psych Unit

ADOLESCENTS				
	ALOS	Readmission	Occupancy	Venue of Care
Acute IP	14	0%	100%	General Unit
Acute MH IP	14	10%	87%	Psych Unit

ADULTS				
	ALOS	Readmission	Occupancy	Venue of Care
Acute IP	10	0%	100%	General Unit
Acute MH IP	14	10%	87%	Psych Unit
Non-acute MH IP	60	0%	87%	Psych Unit
VLS	365	0%	100%	Psych Unit
EIP	42 (annual)	0%	87%	Psych Unit
PND	14	110%	87%	Psych Unit

OLDER PEOPLE				
	ALOS	Readmission	Occupancy	Venue of Care
Acute IP	17	0%	100%	General Unit
Acute MH IP	28	10%	87%	Psych Unit
Non-acute MH IP	60	0%	87%	Psych Unit
VLS	365	0%	100%	Psych Unit

Acute inpatient care:

- 1% of the adult non-institutionalised population reported inpatient admission in a given year (National Survey of Mental Health and Wellbeing). Existing inpatient admissions are 85% are within the public mental health services and of these 85% are acute (MH-CASC). See Appendix H for specific analyses that yield 0.5% for Older people.

- a readmission rate of 10%. This is based on the RANZCP provisional threshold[123] for *unplanned* readmissions within 28 days of separation, the assumption that no further admissions occur in 12 months, and that planned readmissions are rare. This is a low threshold, considered achievable at the MH-CCP resource levels. By contrast, the current NSW and Victorian 28-day readmission rates are 15%, which means that the annual readmission rate would be considerably higher.

- an occupancy of 87% (DOHRS, Queensland Mental Health Inpatient Unit Planning Model).

Day only programs:

- Staff will spend on average 2 hours in direct individual contact (or longer group equivalent) with patients in DO care.

Non-acute inpatient care:

- 1% of the adult non-institutionalised population reported inpatient admission in a given year (National Survey of Mental Health and Wellbeing). Existing inpatient admissions are 85% within the public mental health services (15% private) and of the public hospital admissions, 85% are Acute (MH-CASC). See Appendix H for specific modifications for Older people.

- an occupancy of 87% (DOHRS, Queensland Mental Health Inpatient Unit Planning Model[124])

Very long stay care:

- Based on current figures for very long stay patients requiring full time hospitalisation and the boarding house residents identified as having a mental disorder and in high need ;

- an occupancy of 100% (DOHRS)

Mental Health Consultation Liaison:

- Clients will receive the equivalent of 3.75 hours of CL over a 14 day period in a general hospital bed.

- The CL requirement for Emergency Department attendances is estimated as a 1.5 hours per client.

- The general CL requirement (provision of mental health expertise to specific clients of other services) is estimated as 90 minutes for all persons with identified problems.

Mental health prevention and promotion

- See Appendix F.

Appendix D: Variables and their assumptions

1) **Epidemiological: what is pathological and how much of what type is there?**

2) **Systems: who should treat which pathologies where?**

   Who does the assessment / intervention: qualification, skill, training

   What percentage of time is clinical (?60%)

   What is best combination of inpatient and community services: is there a minimum baseline of inpatient ?

   Where does it take place? - screen, primary care, secondary etc

   How should the disparate and competing systems be coordinated?

   Which treatments should be rationed?

   What percentage of pathological population can be reached / identified?

   What percentage of identified population will drop out of treatment?

   What are the boundaries of mental health services: drug and alcohol, intellectual disability, acquired brain injury, hotel services, vocational services.

3) **Clinical: what pathologies should get what intervention for how long**

   What sort of illness patterns are there?

   What type of assessments are there, who should do them, how long should they take?

   What sort of interventions are there?

   How standard are interventions (fidelity)?

   How effective are interventions?

   What effect does an intervention have on the course of an illness?

   Who should perform the interventions?

   How long are interventions?

   How many resources do they take?

   Should illness be treated only at exacerbation? (treatment vs maintenance)

   What sort of treatment / management should people with pathologies get?

   What is the place of early intervention and prevention?

   What percentage of identified population will be cured: acute versus chronic?

   What is the potential for iatrogenic damage from unneeded / ineffective interventions?

4) Temporal: how will future developments affect services?

Significant changes are likely in medications, physical treatments, prevention strategies, gene therapy, psychological therapies, vocational boundaries (generic mental health worker vs counsellor vs psychologist vs social worker vs neurologist vs psychiatrist), policy, funding, social movements, service paradigms computers, legislative frameworks etc.

5) Measurement: how can these variables be reliably identified and measured?

Appendix E: Alternative Care Packages for Adults

Care model for adults (18 to 64 years old)

Target group:	Age 18-64 years experiencing significant mental health problems
Scope	Care required during 12 months by specialist public sector mental health services Provision of mental health expertise to non specialist mental health services
Rationale/ Estimates:	17.8%[125] of the population meet criteria for a mental disorder per annum; SEVERE: 2.8% experience active disorders with severe role impairment (including mania, depression, schizophrenia and other non-affective psychosis) MODERATE: 4.2% experience moderate or chronic mental disorders that are associated with disability MILD: 10.8% may experience mild and transient disorders[126].
Objectives:	Comprehensive mental health assessments, with early recognition of disorders Evidence based treatment of mental health disorders where treatment includes cure, symptom reduction, distress reduction, reduction in self harm, reduction in risk of violence, and restoration of functioning Evidence based management of mental health disorders where management includes, over a considerable time, symptom reduction, distress reduction, reduction in self harm, reduction in risk of violence, and restoration of functioning Clear referral and discharge links / paths with primary health care Coordination of mental health services with, and consultation liaison to, other health care providers (eg GPs, emergency departments, drug and alcohol services) Coordination of mental health services with, and consultation liaison to, other related services (eg housing, corrective services, DOCS) Early intervention and indicated prevention Mental health research Evaluation Policy and planning contribution, quality improvement, administration, governance and review, continuing improvement of therapeutic skills in mental health staff Meeting legal requirements (eg for assessment and treatment under the Mental Health Act (1990) NSW).
Outcomes:	Patient centred outcomes – dimensions to include symptom reduction, distress relief, reduction in risk of self harm and harm to others, level of functioning, consumer satisfaction – as measured by valid rating scales such as HoNOS, LSP, BASIS, MHI etc Service centred outcomes – dimensions to include efficiency, effectiveness, cost effectiveness, staff satisfaction.
Linkages with other services	Other Mental Health services : public, private, child and adolescent , older people, specialised General health services Other providers of mental health or related services : NGOs, DOCS Other relevant bodies such as: Departments of Housing, Police, Veterans Affairs, Social Services , and Corrections

Service components and care packages

Services:
- Assessment (including physical exam and investigations)
- Second opinion assessments
- Tertiary service assessment (eg early psychosis, , forensic, eating disorders, neuropsychiatric, affective disorders, post natal depression, personality disorders, dual diagnosis)
- Review: acute
- Review: stable / maintenance
- Therapy individual: medication
- Therapy individual: psychotherapies (CBT, IPT, supportive, other)
- Therapy individual: living skills, social skills, rehabilitation
- Therapy group
- Tertiary service treatment
- Specific population services (eg ATSI, NESB)
- Consultation / liaison
- Supported accommodation
- Mental health prevention / promotion
- Evaluation
- Research
- Education and Training
- Governance
- Policy
- Administration

Locations:
- Community-based outpatient services
- Extended hours / crisis services
- Acute inpatient services including :
  - general acute beds
  - observation beds
  - PICU beds;
- Tertiary service acute beds eg:
  - eating disorder
  - forensic
  - dual diagnosis
  - affective disorder
  - neuropsychiatric
- Non-acute inpatient services (up to 90 days)
- Very long inpatient services (365 days)
- Forensic beds (long term)
- Supported community accommodation (“step down”)
- other locations requiring consultation liaison (eg emergency department, GPs, drug and alcohol services)

Care packages per person per annum

NEED GROUP	CARE PACKAGE	SPECIFICATION • *Service in italics not provided by specialist mental health services*
MILD	Assessment services and referral to GP, private or general health services	(50 % mild population reached [127]) 1x 60 minute individual contact or group equivalent *6X30 minute consultation by non-mental health eg. GP* **Note: This has been incorporated from Version 1.03+**
MODERATE	Community assessment	(80 % moderate population reached) 1x 90 minute assessment by specialist mental health professional and then
	referral to GP, Private or general health services	(40 % of moderate population) *6X30 minute consultation by non-mental health eg. GP*
	acute community treatment	(40% of moderate population) 8 x 45 minute continuing contacts *and 6X30 minute consultation by non-mental health eg. GP* **Note: This has been incorporated from Version 1.03+, with the two care packages averaged to yield 4 x 45 minute continuing contacts (average of 0 and 8)**
SEVERE	Community treatment	(90 % severe population reached)
	Acute community treatment	1x 90 minute assessment by psychiatrist 8 x 45 minute continuing contacts
	Tertiary service community	(10 % of severe population) 1x 90 minute assessment by psychiatrist 1x 60 minute assessment by allied health 2x 45 minute continuing contacts
	Non acute community	1x 60 minute assessment by specialist mental health professional 30 x 30 minute continuing contact
	Acute inpatient treatment	16 days inpatient care (acute) 1x 90 minute assessment by psychiatrist 6x30 minute medical assessment reviews 6x30 minute nursing assessment reviews 100 x 5 minute "en passant" nursing contacts 2x 60 minuted allied health

	Non-acute inpatient treatment	90 days inpatient care (non-acute) 1x 90 minute assessment by psychiatrist 12 x 30 minute medical assessment reviews 24 x 30 minute a nursing assessment reviews 270 x 5 minute "en passant" 12 x 60 minute allied health
	Non-acute very long stay or continuing care	365 days inpatient care (extended care) 4x 60 minute assessment by psychiatrist 12 x 30 minute medical assessment reviews 48 x 30 minute a nursing assessment reviews 1000 x 5 minute "en passant" 24 x 60 minute allied health
	Tertiary service inpatient (acute)	(1% of severe population) 30 day inpatient care 1x 90 minute assessment by psychiatrist 12x30 minute medical assessment reviews 12x30 minute nursing assessment reviews 200 x 5 minute "en passant" nursing contacts 12x 60 minute allied health
	Forensic beds (long term)	(0.05% of severe population) 365 days inpatient care (extended care) 4x 60 minute assessment by psychiatrist 12 x 30 minute medical assessment reviews 48 x 30 minute a nursing assessment reviews 1000 x 5 minute "en passant" 24 x 60 minute allied health
Consultation liaison or provision of mental health expertise	To outpatient services, GPs,	1x 60 minute assessment by psychiatrist 1x 60 minute allied health review 4 x 45 minute continuing contacts
	To emergency department	1x 60 minute assessment by psychiatrist **Note: This has been incorporated from Version 1.03+ and raised to 90 minutes after consultation**
	Acute inpatient treatment in general health services	10 day inpatient care (in general ward) 1x 60 minute assessment by psychiatrist 2 x 45 minute continuing contacts **Note: This has been incorporated from Version 1.03+**

Refinement of model

First episode psychosis[128]	EIP services for people with first episode psychosis (target group 15-24 years)	1x 8 hour assessment 42 days inpatient care (3 episodes) 52 x 60 minute specialised EPPIC continuing contacts **Note: This has been incorporated from Version 1.0+**
PND	PND services for mother with acute psychotic symptoms following childbirth[129]	14 days inpatient care in specialist mother and child baby units 6x 45 minute continuing contacts in the community **Note: This has been incorporated from Version 1.0+**

Availability of client related data from the NMHSP

Appendix F: Prevention and Promotion Estimates (Version 1.03+)

Definitions of prevention terms

Several terms are used throughout this document. The following definitions relate to promotion, prevention and early intervention. It should be noted that promotion is distinctly different to prevention, in that promotion aims to enhance mental health among population groups through to individuals, whereas the aim of prevention is to prevent mental illness developing. There is, however, overlap in the approaches undertaken to achieve these aims.

Mental health promotion: action to maximise mental health and well-being among populations and individuals.

Prevention: interventions that occur before the initial onset of a disorder.

Universal prevention interventions: are targeted to the general population or a whole population group that has not been identified on the basis of individual risk. Examples include prenatal care for all new mothers and their babies and immunisation for all children of specific ages.

Selective prevention interventions: are targeted to a sub-group of the population or individuals whose risk of developing mental disorders is significantly higher than average. The risk may be imminent or lifetime in nature. Further risk groups can be identified on the basis of biological, psychological or social risk factors known to be associated with the disorder. Examples include home visiting and infant day care for low birth weight children or pre-school based programs for children from disadvantaged neighbourhoods.

Indicated prevention interventions: are targeted to high risk individuals who are identified as having minimal but detectable signs and symptoms foreshadowing mental disorder or biological markers indicating predisposition for mental disorder, but who do not meet DSM IV diagnostic levels at that time. Examples include parent–child interaction training programs for children with behavioural problems and their parents.

Early intervention: interventions targeting people displaying the prodromal signs and symptoms of an illness that also encompasses the early identification of people suffering from a disorder.

General principles for prevention programs

Proportions

Indicated prevention programs are assumed to target the 10% of the population experiencing mild mental health problems/ disorders. People with mental health problems or mild mental health disorders may be identified and/or assessed by mental health or other services. They may also be detected through the screening process for an indicated prevention program.

It is difficult to estimate the exact proportion of the population in the selective and universal categories. This is due to the nature of risk for mental disorder in that it is often cumulative in nature, involving a clustering of risk factors. Little survey data is available on the prevalence of risk factors in a manner that can represent the prevalence of cumulative risk. Information is available from World Health Organisation for Health Promoting Schools that provides proportions of school populations at various stages of risk that could be used to estimate population proportions for universal, selective and indicated.

Components

Prevention initiatives vary in comprehensiveness in terms of who is targeted in the program (including children, parents and/ or teachers), as well as the length of time over which the program is conducted.

Components of prevention programs include set up time, administration throughout the program, screening (for indicated and some selective programs), delivery and follow-up. NOTE: the proportion of mental health workers' time spent on these components may differ from that of mental health workers in clinical programs (note: for clinical workers the following proportions are allocated: 67% face to face and 33% administration and other duties).

The resources required in the set up phase of prevention programs may be more substantial than in clinical programs due to the fact that prevention programs often occur in settings outside of mental health services. This requires resources for liaison/ consultation with staff from the setting involved, organisation and training of relevant staff in the other settings to establish and deliver the prevention program. Over time it is proposed that less mental health resources would be required mainly including the provision of ongoing support for generalist health workers providing these programs.

Mental health resources

The level of mental health staff involvement in the delivery of prevention programs would be expected to be greatest for indicated and least for universal prevention programs. The amount of mental health staff involvement may decrease as more non mental health staff are trained to run prevention programs including group work.

The amount of mental health resources involved will vary depending on whether the program is indicated, selective or universal. Generally:

for indicated prevention programs - mental health workers are more fully involved in the set up and delivery. This may change over time with more generalist health staff providing these programs as they become more skilled in mental health issues supported by mental health workers;

for selective prevention programs - a combination of generalist and mental health staff are involved; and

for universal prevention programs - generalist workers are largely involved in setting up and delivery of these programs, with mental health workers providing consultation and support.

Proportions in the population with psychosocial risk factors that potentially can be targeted by prevention programs

Note: at this stage universal, selective and indicated are combined, rather than dealt with separately.

15% - infants

20% - toddlers

20% - primary school age (WHO 1994)

30% - adolescents (WHO 1994)

20% - adults

10% - older people

FTEs required for prevention

Note: that there is greater potential for prevention to occur in the younger age groups, even though proportions with psychosocial risk factors are smaller than for adolescents, therefore more work with younger age group focuses on prevention rather than treatment.

Children and adolescents 0-17 - 16 per 100,000 (= 240 workers)

Adults - 0.8 FTE per 100,000 (= 30 workers)

Older people - 3.5 FTE per 100,000 (= 30 workers)

Promotion

1.5 FTE per Area Health Service (= 25 workers) apportioned equally across age groups

Appendix G: MH-CCP Ver 1.06+ approximations for use with the Statewide Services Development Branch Acute Bed Planning Model

Background

As noted in Appendix A, the MH-CCP model is not directly designed to provide specific predictions for individual Area Health Services, mainly because of the lack of Area-specific prevalence/ severity data. In addition, the MH-CCP model is not intended to predict the number of acute beds without reference to other factors. The MH-CCP model's prediction of the number of acute beds is based on the concurrent availability of predicted levels of ambulatory care staff and non-acute beds, as well as appropriate access to other general health facilities, such as general acute beds. If those other services are not adequate, more specialist acute beds would be needed.

An additional issue in predicting acute inpatient need in individual Areas is that clients in the "severe" category vary a great deal in their demand for inpatient care. For example, those who are non-compliant with medication and concurrently abuse substances may average six acute admissions per year, or 18 times the rate of those who have an equivalent level of mental health problems, but use medication appropriately [130]. Two clients of this type can consume one bed per year, so it does not take many high-utilisation clients to generate a higher than average need for acute inpatient beds.

The level of severity currently being dealt with by mental health inpatient units throughout NSW is high, as indicated by the fact that 45 per cent of all admissions are involuntary. However, in the absence of uniform client registration, it is not possible to identify high-utilisation clients in a systematic way across Areas. In addition, there are no direct measures of acuity/ severity in use at present that would allow need and utilisation to be distinguished. For example, Areas experiencing most pressure on acute beds tend to have shorter lengths of stay than others, but this cannot be taken to mean that clients have lower need.

The solution to these problems is documentation of the longitudinal course of illness and service use by clients of mental health services in each Area. This is the key aim of the NSW Mental Health Information Development Program that commenced in 1998/99. Once uniform client registration is introduced in all Areas through 2000/01 and 2001/02, and uniform assessment follows, we will have the basis for evaluating the current patterns of usage, by Area, in relation to assessed client need. Until those direct measures are available State-wide, which will not be before the 2001/02 financial year, approximations must be used.

An approximation process is being developed for the numbers of adults and older people experiencing "mild" and "moderate" levels of illness, as defined in the MH-CCP model, in each Area. This is based on a mental health morbidity measure included in the NSW Health Survey conducted by Epidemiology Branch. That measure is now available for a random sample of 1000 people in each Area in 1997 and 1998, and the Centre for Mental Health has commissioned research that shows that the measure predicts the prevalence of anxiety and depression at diagnostic levels. However, this mainly supports Area-specific prediction of the ambulatory care services prescribed for these levels of illness in the relevant MH-CCP care packages. Although it is recognised that people with "mild" and "moderate" levels of illness may move, from time to time, to more severe levels requiring inpatient care, there is no straightforward relationship between the numbers at one level and another in local Area populations.

The Resource Distribution Formula

Other approximations for overall "need" have been used in the draft Resource Distribution Formula of May 1998 and February 2000. The purpose of the RDF is "to guide the allocation of new funding" and "there is no intention to use the model to redistribute existing resources" [131]. For these reasons the RDF did not attempt to specify the specific need for acute inpatient care by Area, but instead used a weighted population-based formula for overall funding, with exclusions and additions that to some extent captured local variations.

For example, in 1997/98 there were 20,383 bed-days (about 70 beds at 85% occupancy) delivered to patients with "no fixed address". In the RDF model, these are excluded from the population-based formula, and regarded as an additional "need" funded directly to the services that provide care. Those services are largely confined to Central Sydney, Western Sydney, Hunter, and South Eastern Sydney. In the same way, activity associated with DVA patients, interstate patients, Intensive Psychiatric Care Unit patients, Medium Secure unit patients, and specialised Child/ Adolescent unit patients, and some others, was removed from the population-based component.

For RDF purposes it was then assumed that relative funding *need within the existing level and type of servic*e could be described by the use of "proxy" indexes applied to the population (see below). Within that overall funding the application to specific service streams was targeted only by age group: 15% for children and adolescents 0-17, 65% for adults 18-64, and 20% for people 65 and older. Nevertheless this implies roughly equivalent "ordinary" acute inpatient need per 100,000 adult population. That assumption is supported to some extent by the substantial reduction in inpatient service flows between Areas once the "special" services had been separated out.

Thus in 1997/98 (Draft RDF, Table 14) the largest net inflows of "ordinary" acute inpatient activity were 4,454 bed-days (15 beds at 85% occupancy) to Central Sydney; 3,133 bed-days (10 beds) to Hunter, and 2,068 bed-days (7 beds) to Mid-Western. The largest net outflows of "ordinary" acute inpatient activity were 3,532 bed days (12 beds at 85% occupancy) from Mid North Coast, 2,399 bed-days (8 beds) from South Western Sydney, and 1,622 bed-days (5.5 beds) from Macquarie.

Even though Intensive Psychiatric Care Units and Medium Secure Units have been excluded, it is debatable that these flows are as "ordinary" as they might seem, since the large inflows are to psychiatric hospitals. Reports from psychiatric hospitals with acute units suggest that they tend to receive referrals of patients who are difficult to manage in an ordinary acute psychiatric ward of a general hospital. Without better data it is not possible to confirm this.

RDF Need Factors

The following need factors from Table 12 of the draft RDF may reasonably be applied to Area populations as indexes of relative need for acute inpatient beds.

- *Population weighting for Aboriginal and Torres Strait Islander people.* This factor is intended to reflect both higher need and additional cost of care. As used in the RDF the weighting is 4 (additional weighting of 3.0), and the effect is mainly to increase the relative need of rural Areas, with the greatest impact on the Far West.

- *All cause Standardised Premature Mortality*. This factor was included in the mental health RDF for two reasons. One is that it is consistent with evidence that people with mental illness have about twice the average all cause mortality. The other is that it is consistent with the general RDF use of premature mortality as a global index of morbidity. The use of the index would tend to mean that areas considered to have a higher relative need for general health services would also be judged to have a higher need for mental health services. As used in the mental health RDF this factor was scaled to limit its impact on funding to about 2.5% of budget.

- *Socio-economic status measured using the ABS index of Education and Occupational Disadvantage (EDOCC).* This index was included in the mental health RDF because of the general consensus that lower socio-economic status (SES) is associated with higher morbidity, and consistency with its use for general health program RDF's. In addition, it is consistent with the use of SES as a need index in the Victorian mental health RDF. Socio-economic status as measured by the ABS Index of Relative Socio-Economic Disadvantage (IRSED) was found to be the strongest single predictor of the number of public sector mental health service clients, by region, in Victoria, and accordingly receives considerable weight in the Victorian RDF, leading to the redistribution of about 8 per cent of funding. In the absence of strong data of that kind in NSW, the impact of the SES factor was limited to redistribute about 2.5% of funding.

Other factors used in the mental health RDF should not be used to weight populations for estimating acute bed needs, for the following reasons:

- *Age Structure.* The MH-CCP model makes specific predictions for each population age group, and this takes precedence over the general age structure factor in the RDF. The latter is intended to reflect total service funding needs, which are primarily required for ambulatory care services in children and adolescents.

- *Non-English speaking background.* This is a relative cost factor associated with the provision of culturally appropriate services, not a relative need factor.

- *Rurality.* This is a relative cost factor, particularly relevant to ambulatory care and travel time. It uses the Gibberd-Eckstein index that was originally validated on the prediction of higher standardised separation rates for acute general health care in rural areas, but as used in mental health it is the "distance to care" aspect of the index that is relevant as a proxy measure for relative costs.

- *Substitutable private services.* The MH-CCP model has already identified the NSW average proportion of substitutable inpatient demand met by private sector inpatient services. In the RDF this is based on 10 per cent of the cost of private sector inpatient activity being relevant to services that would otherwise be provided by the public sector. This mainly reflects the fact that private sector inpatient care is available to insured patients who would not meet the severity/ acuity/urgency criteria for inpatient care in the public sector. Appendix Tables 4 and 5 in the draft RDF show adjustments for an estimated value of $3.742 million worth of private bed-days (both acute and non-acute). The inter-Area variation from the State average is quite small and may well be ignored in modelling.

- *Specialised Services.* The MH-CCP model makes global predictions that do not attempt to separate out intensive psychiatric care or other specialised acute services. Thus the demand for these more specialised beds is included within the totals.

- *Flows.* The MH-CCP model assumes that Areas would be self-sufficient for acute services, and no allowance for flows would be required. Some level of residual flow for specialised acute services might remain, but cannot readily be modelled at this stage.

Data Sources

At present the 1998/99 ISC data have not been checked by the CMH, and the 1997/98 ISC is the main data source.

In general the 1997/98 ISC aligns reasonably well with DOHRS activity, but there is a specific and large discrepancy in SESAHS, probably associated with the closure of acute beds at Prince Henry Hospital. The ISC for 1997/98 is missing the equivalent of about 13 beds' worth of activity relative to DOHRS activity reported for PHH/POW. Since it seems that this cannot be corrected, the best solution is to apply a "sampling factor" to weight ISC activity up to the DOHRS totals. The CMH will supply the DOHRS/ISC reconciliation data for the calculation of a sampling factor, and/or a data set in which a sampling factor has been added.

Specialised Mental Health Activity

Mental health acute units are identified by unit designation, and for some purposes (for example, DOHRS) acute inpatient activity is defined by the unit rather than by patient data. However, the MH-CCP model only predicts the number of beds for patients who require acute inpatient care, with a separate prediction for non-acute care need. Thus it is appropriate to exclude patient activity, even in acute units, where LOS exceeds 35 days. That is, usage of acute beds by non-acute patients is not modelled in MH-CCP, even though it occurs in practice at present.

Specialised mental health bed-days in the ISC are identified by the presence of "psychiatric care days", which can only occur in designated units. The 1997/98 ISC data has already been audited by the CMH to ensure that units reporting such activity have specialised mental health units. This includes private hospital activity for public contract patients in WAHS and MNCAHS.

Same day separations and bed-days are excluded, since same day activity is regarded as ambulatory care in mental health, except for a very small volume of procedural same day admissions, mainly for ECT. At present same day ECT is not recorded as psychiatric days, but the error is small and may be disregarded.

In those psychiatric hospitals with Drug & Alcohol facilities that cannot be separately identified by service unit type in the 1997/98 ISC, the specific D&A patients should be excluded by excluding separations with AN-DRG3 codes 860 through 863.

Admissions to general hospital beds after suicide attempts for the management of physical injury and trauma do not generate psychiatric care days. The costs of physical health care for these patients is adequately addressed by existing casemix processes in general acute care. The mental health component of ED care and mental health consultation-liaison for these patients is identified in the MH-CCP model but generates ambulatory care FTE for consultation-liaison. At this stage no allowance has been made for the general acute bed-days, since they are part of the activity already included in the general acute SSDB model.

General Hospital Acute Activity for Mental Health DRG's

Mental health patients in general acute care should be identified as separations with AN-DRG3 codes 841 through 848. A small proportion of this activity, for women who suffer post natal depression with psychotic features, are modelled in MH-CCP as specialised mental health acute bed need, but this has little overall impact, and most of the demand would be for general acute beds (see below).

For older patients, especially in rural areas, it is probable that current utilisation of general acute beds may be higher than MH-CCP would predict. The generally lower availability of alternative care such as nursing homes, non-acute facilities and ambulatory care staff in rural areas is the probable cause. This issue is best dealt with when comparing the results of models.

Bed-day predictions by age group

The current versions (1.06+) of the MH-CCP model predicts the following bed-day requirements per 100,000 ***age-specific*** (not total) population.

Separate predictions are included for the four MH-CCP age groups in the 0-17 age range, because it is only for adolescents that there is any substantial predicted requirement for specialised mental health beds. These may be combined for global bed modelling purposes if required, with appropriate notation.

Age 0-1 (per 100,000 population 0-1)

No specialist MH acute bed-days

140 general acute bed-days with MH C-L

Age 2-4 (per 100,000 population 2-4)

No specialist MH acute bed-days

140 general acute bed-days with MH C-L

Age 5-11 (per 100,000 population 5-11)

188 specialist MH acute bed-days, 0% readmission, 100% occupancy

132 general acute bed-days with MH C-L

Age 12-17 (per 100,000 population 12-17)

3,962 specialist MH acute bed-days, 10% readmission, 87% occupancy.

1,154 general acute bed-days with MH C-L

Age 18-64 (per 100,000 population 18-64)

The figures given below may be combined across the groups for basic modelling, but should really be modelled separately.

8,622 specialist MH acute bed-days, 10% readmission, 87% occupancy; plus

1,443 specialist MH acute bed-days for early intervention in psychosis, 0% readmission, 87% occupancy; plus

126 specialist MH acute bed-days for post-natal depression, 0% readmission, 87% occupancy.

The need for separate modelling arises because only the first rate applies to the whole 18-64 year old population. The rate for the Early Intervention group is based on the specific incidence in 18-24 year olds, which would thus be substantially higher in CSAHS and lower in all rural AHS's, for example. The rate stated is based on the average NSW number of 18-24 year olds in the NSW 18-64 year old population. The PND data is based on 0.4 per cent of the number of mothers giving birth. Thus it would be higher in some of the growth areas. It has been stated as an average per 100,000 people 18-64.

In addition to the specialised mental health beds, the MH-CCP model predicts need for 2,310 general acute bed-days for people with primary mental health diagnoses, supported by MH consultation-liaison.

Age 65+ (per 100,000 population 65+)

8,430 specialist MH acute bed-days, 10% readmission, 87% occupancy.

2,805 general acute bed-days with MH C-L.

This is an area of the MH-CCP model which has been extensively revised from Version 1.05 onwards, since the initial estimates were much lower. The issues are dealt with in Appendix H.

Appendix H: Review of Information for Acute Inpatient care requirements for people 65 and over

Background

In MH-CCP Version 1.0, analysis of the epidemiological data led to a conclusion that the “severe “ levels of mental illness were rarer in people aged 65 and above than in those 18-64.

Because the epidemiological data was based on non-institutional population samples, we also reviewed the rate of psychiatric illness in residents of Hostels and Nursing Homes. This identified an additional group of people, almost the same number as in population surveys, and by definition they would fall into the severe range of illness.

Together the findings suggest a similar level of severe illness as in adults 18-64, but with almost half of older people with this level of illness already being in ongoing care. In the service model, it was assumed that those already in Hostel and Nursing Home care would not contribute to the need for inpatient care for their mental illnesses, but would receive periodic ambulatory care consultation-liaison services only.

In addition, the parameters of inpatient care for adults 18-64 were used for acute admissions in older people, namely an average length of stay of 14 days, 10% readmitted within 12 months, and 85% occupancy.

The overall effect was an estimated acute inpatient need corresponding to 10 beds per 100,000 people aged 65 and over.

Commentary on MH-CCP Version 1.0

Clinical commentary on Version 1.0 was that acute inpatient need for older people had been considerably underestimated. Other commentary indicated that the role of mental health services in relation to dementia needed to be clarified. Specific comments included:

- Even 30 beds per 100,000 is inadequate in practice, and a figure of about 50 beds/100,000 would be more realistic.
- The effects of comorbidity such as substance abuse, personality disorder, mental retardation and dementia) need to be taken into account.
- The epidemiology for the 65 and over age group is weak relative to the adult data because of lack of sampling from residential care facilities and other issues.
- Dementia with related psychiatric/ behavioural abnormalities needs to be addressed because people in this group are heavy consumers of mental health service resources.
- Clarification on dementia services and the role of mental health would assist in planning exercises.
- Elderly patients take roughly twice as long to recover from psychiatric illness as younger adult patients, so the aged should not receive care packages identical with those for younger adults (as in Version 1.0).

General response to commentary

It was recognised from the outset that the mental health care of older people would be difficult to specify to the level of detail required by the MH-CCP Model. MH-CCP requires age-specific population epidemiology to estimate numbers of people in different “care need” groups, and a defined care plan for each group. Neither was readily available for older people in Australia.

The general commentary has been that the epidemiological data underestimates the prevalence of illness in older people, for a variety of reasons, and/or that it is simply “weak”. At the very least it clearly needs more explanation than in Version 1.0.

The epidemiology of mental illness in older people for Version 1.0 was based on aligning data between the Australian National Survey of Mental Health and Wellbeing and a specific analysis of Epidemiologic Catchment Area (ECA) data reported in the US Surgeon-General’s report. So far as surveys of the non-institutionalised population are concerned, there are no better data currently available. In Version 1.0 we also addressed the main gap in the epidemiological data by drawing on a large 1996 survey of Australian Nursing Homes and Hostels. Other forms of institutional care for older people would have only very minor effects by comparison. Overall, there is no reason to suppose that these data should be wrong simply because they do not coincide with other beliefs about the rate of mental illness in older people. The problem is more that the epidemiological data are scattered and difficult to integrate, rather than that they are “weak”. Further work has thus been done to illustrate, verify and explain the epidemiological data.

The exclusion of severe cognitive impairment (mainly dementia) in previous analyses has also been criticised, and we agree with the criticism. However, the epidemiology of dementia is a difficult issue in its own right, and the degree of overlap with functional psychiatric illness is even more complicated. Nevertheless, it is clear from analysis of utilisation data that older people with a primary diagnosis of dementia use about 20 per cent of acute psychogeriatric inpatient care, but that this group is only a very small proportion of all those with dementia, or even of the group with dementia and the most severe levels of “challenging behaviour” requiring 4-6 significant staff interventions per day. This has been explored in more detail and estimates have been made of the contribution of dementia to the need for acute psychogeriatric inpatient care.

The basic source of a number of criticisms is that the estimated need in MH-CCP Version 1.0 was so much lower than the existing level of utilisation seems to indicate. However, in many ways the service utilisation data are “weaker” than the epidemiological data, because so many different services are involved in the care of older people. The level of utilisation of one set of services may easily reflect the available levels of others, rather than the specific need for that particular service in its specialised role. We were unable to review the detailed service utilisation data in NSW for Version 1.0, but that has been a major focus of the current revision.

It is also possible that the lower prevalence of illness in a 12 month period could still generate a higher demand for inpatient care by older people. The epidemiological data do not indicate the number of episodes of illness in a year. It might be that a higher readmission rate is needed for older people. The epidemiological data do not indicate the duration of illness or of treatment. It might be that older people remain ill for longer, or require more time to treat. It may be that the existence of physical comorbidity leads to admission of an older person for mental illness, where a younger adult with the same level of mental illness would not be admitted. Analysis of NSW utilisation data, and information from other sources, has been reviewed to draw some conclusions on these possibilities.

Other aspects of the MH-CCP model become complicated when dealing with small population segments. Specialised services such as psychogeriatric acute inpatient care may not be viable at the local area level. If equivalent care must be provided in another way, it is the care plans that change. It is not possible to consider all the options, but in the revision we have looked at existing usage of general acute inpatient units – not specialist mental health units – in providing inpatient care to older people. This included the whole range of mental illnesses, including dementia, other organic syndromes, mental retardation and substance abuse. The review was complicated by the large number and variety of types of facilities involved, the high rate of dementia, and the difficulty of separating acute from non-acute care in a situation where the so-called “35 day rule” sets a limit not far beyond the average length of stay. A number of different models were used to estimate the proportion of “acute psychogeriatric” patients in these other care setting, yielding different estimates.

Three main findings resulted. One is very simple: the evidence indicates that the average length of stay for people over 64 is about twice that for younger adults, and there are good clinical grounds for regarding this as necessary. That automatically doubles the predicted bed requirements, by itself, to a level just above the current number in NSW. The second finding arises from considering all current utilisation. The number of specialist psychogeriatric beds might need to be up to 75 per cent higher than the number currently available in NSW, if all current utilisation were in specialised beds. This would remove older people from general adult acute mental health units and general acute medical units. In many cases, especially in rural areas, it would not be feasible to do this. Thus the specialist bed requirements depend very much on clinical and service policy decisions about the most appropriate venue of care. Where that care is not scheduled to be in specialised psychogeriatric acute units, there is a need for an appropriate alternative care plan.

The third main finding came from reviewing dementia. It includes the high rate of utilisation of general acute inpatient beds for patients with dementia and other organic syndromes, the high (5%) and increasing prevalence of dementia (0.1% of total population per annum) as a result of population ageing, the large proportion (60 per cent) of those with moderate to severe dementia who are already in Nursing Homes and Hostels, and the large proportion of these (nearly 15%) who have the most severe levels of “challenging behaviour”. In these circumstances the demand for acute beds for patients with primary dementia will be increasing rapidly, and it is already high. If criteria for admission to psychogeriatric acute units are not clear, their target service population could easily be swamped by people with dementia, even if admission were restricted to those with dementia and severely challenging behaviour. In Victorian planning documents this is called “program drift", and is recognised as a significant issue at the boundary between specialist mental health care for older people, and general aged care services. Program drift has already occurred in relation to CADE units. Originally they were units for the “Confused and Disturbed Elderly”, and were constructed with savings from psychiatric hospital reductions. Now they are units for the “Confused and *Demented* Elderly”, and only one remains within the mental health program

Issues Investigated

in arriving at the results in the revised model we have considered the following:

- Definitional issues in relation to dementia Vs mental health
- Existing service levels in Australia
- Planning documents in Australia
- NSW inpatient utilisation by people 65 and over, including utilisation of specialised psychogeriatric units
- Analysis of US service levels for the Medicare-eligible (over 64) population
- Epidemiological data, including dementia
- Clinical treatment issues affecting length of stay
- The Australian Nursing Home population
- Draft report of the Task Force for the Mental Health of Older People

Definitions

There are various "boundary issues" that need to be clarified by definitions before turning to quantitative data. The aim is not to adopt a narrow focus in which only "pure" mental illness is included. It is to identify a practical and workable "interface" for partnership between mental health services and others. The Victorian planning document for psychogeriatric services provides an extended account of the issues at the interface between services for aged care and mental health of older people (see below).

The main interface is naturally with services for dementia. The aim is to identify the proportion of inpatient care for dementia that requires the use of a specialised psychogeriatric acute unit, whether for assessment or for treatment of comorbid mental illness. The same applies to the other "non mental health" diagnoses, but dementia is the main one in this age group.

The relevant strategy document in NSW[132] does not provide an explicit definition of the target population for psychogeriatric services or acute inpatient services. The definitions that follow are a composite of the corresponding Queensland[133] and Victorian[134] planning definitions .

Acute inpatient services provide assessment and treatment for older people with acute symptoms who cannot be supported in the community.

Psychogeriatric services are primarily aimed at people aged over 65 who suffer from:

- A mental disorder complicating an underlying disorder related to ageing such as dementia with psychotic features, or people with psychiatric or severe behavioural difficulties associated with organic disorders such as dementia.
- People who develop what is called a functional mental illness in later life and who may require treatment and care for the first time. The most prevalent disorders that develop in this group are depression, paranoid psychosis and heightened anxiety states.
- People who have had a mental illness for many years and who may now also experience complicating issues relating to growing older. These may be in the form of physical frailty, psychological stress and/or significant changes in their social circumstances (eg. A person with chronic depression who becomes frail or has multiple medical pathology).

MH-CCP Version 1.0 focussed on the second and third groups. It did not address the first group. Some of the issues that have arisen in consultation over MH-CCP Version 1.0 are as follows:

- To some extent, psychogeriatric acute mental health services will necessarily deal with patients whose primary discharge diagnoses are dementia, other organic syndromes such as delirium, and substance abuse, simply because admission may be needed to identify the primary problem. The inclusion of the composite group "mental illness or mental disorder" at various points in the NSW Mental Health Act reflects that reality. However, since most Area Health Services do not have specialised psychogeriatric acute mental health units, the critical question is whether they are the <u>only</u> appropriate way to address the need, or other care models may be equally effective. For example, it seems that delirium is most commonly managed in general medical units, with consultation-liaison services as necessary.
- In Areas that do not have a psychogeriatric acute unit, older patients may be admitted to a general adult acute unit or to a general medical unit. The issue of safety of older and frailer patients needs to be considered in this context, but for example the Queensland plan states explicitly": "Older people with a mental disorder who are otherwise fit and well should receive treatment from general adult mental health services".

- A clear distinction must be made between “psychiatric or severe behavioural difficulties” requiring specialist psychogeriatric acute inpatient care and the more general issue of “challenging behaviour”. Challenging behaviour needs to be addressed in all services, not just those dealing with older people, but only the latter will be considered here.

- The definition of “challenging behaviour” used in the Commonwealth series of reports on residents in Nursing Homes and Hostels is a composite index, based on the frequency and severity of agitation, wandering, verbal disruption, physical aggression, inappropriate social interactions or sexual behaviour, resistance to care, and the attention requirements of the behaviours.[135] To be scored as having severely challenging behaviour: “a person would need to score on average, ‘severe’ on the behaviour items AND require staff problem behaviour attention at least four times per day OR score ‘moderate’ on average on the behaviour items but require staff intervention or attention more than six times per day … residents in this category would be extremely difficult to manage in any environment and would place constant demands on staff.” The prevalence of these behaviours in Nursing Homes and Hostels in Australian is show below. It should be noted that the “psychiatric” group is based on recorded psychiatric diagnoses, and most were former psychiatric patients. The psychiatric group has a very low rate of severely challenging behaviour. By contrast, such behaviours are quite common in the “dementia” group.

Table H-1: Prevalence of challenging behaviour in Nursing Homes and Hostels, Australia, 1996

	Dementia	Neurol-ogical	Psychiatric	Acquired Brain Damage	Intellectual Disability	Other Diagnoses	No Psychiatric Diagnosis
Percentage	46.0	4.2	16.0	0.4	0.5%	4.6%	28.0%
No of patients	61,750	5,640	21,476	540	671	6,174	37,582
			Challenging Behaviour				
None	31.0%	60.0%	67.5%	46.3%	43.4%	66.7%	81.5%
Mild	32.9%	24.3%	25.0%	40.6%	32.0%	23.3%	13.5%
Moderate	21.8%	10.4%	5.8%	11.6%	21.1%	8.6%	4.3%
Severe	14.3%	5.3%	1.7%	1.6%	3.4%	1.4%	0.7%

- Given the prevalence shown in Table H-1, there are about 9,000 people with dementia and severely challenging behaviour in Nursing Homes and Hostels in Australia. That is many more people than could be accommodated in all the psychiatric beds of all types in Australia (6,272 at 30 June 1998). Thus it is problematic to include (as in Victoria) people with dementia and “severe behavioural difficulties” as potentially within the scope of mental health services for older people. Clearly, even the severe level of challenging behaviour found in the survey of Nursing Homes and Hostels cannot be considered as grounds for admission of people with dementia to a specialised psychiatric unit.

- Mental health units are designed to assist in managing challenging behaviour where it occurs in the course of treating a mentally ill person. Mental health staff are trained to manage the behaviour, and have more experience in doing so than general hospital staff. However, the resources allocated to mental health inpatient care have never been based on the prevalence of challenging behaviour in people with other illnesses. There is probably a need for more restrictive environments in general acute hospitals to meet the particular needs of patients with dementia and challenging behaviour, and a need for staff training. Mental health units should not be seen as substitutes for meeting those needs.

- It is important to distinguish the various meanings of "acute". Psychogeriatric acute units are intended to meet the needs of older people with acute illness, but this level of acute illness is likely to persist much longer than the four or five days common in general acute hospitals, and to require after-care. The units thus need to be supported by appropriate sub-acute and non-acute services, including specialised Nursing Homes with adequate mental health expertise (Psychogeriatric Nursing Homes) and adequate acute and non-acute services for dementia.

- The clinical features of acute mental illness in older people are different, and they affect the duration of acute episodes requiring specialist expertise and facilities. Factors likely to require an extended length of stay for effective treatment need to be considered, such as comorbid physical illness, the need to titrate medications, and slower and/or reduced responsiveness to treatment. The US Surgeon-General's report on mental health contains a review of the treatment issues affecting older people, including higher risks of side-effects, the complications arising from polypharmacy, and compliance with complex medication regimes.

Australian levels of service provision

There is considerable variation between Australian jurisdictions in the number of acute psychogeriatric beds per 100,000 older people (Tables H-2 to H-4).

Table H-2: Psychogeriatric Acute Beds, by jurisdiction, Australia, Jun 1996

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
Beds	141	176	33	104	92	-	-	-	546
Beds/100K	17.9	30.7	8.8	56.1	44.3	-	-	-	24.6

Source: National Mental Health Report, 1996, Table A-19

Table H-3: Psychogeriatric Acute Beds, by jurisdiction, Australia, Jun 1997

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
Beds	139	185	30	104	92	-	-	-	550
Beds/100K	17.9	33.2	7.9	56.6	45.5	-	-	-	25.1

Source: National Mental Health Report, 1997, Table A-19

Table H-4: Psychogeriatric Acute Beds, by jurisdiction, Australia, Jun 1998

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
Beds	136	182	30	104	91	-	-	-	543
Beds/100K	18.5	34.3	8.4	60.0	47.6	-	-	-	26.2

Source: National Mental Health Report, 2000, Table A-19

This may reflect variation in the definition of target groups and the preferred venue for service delivery. Definitions and planning parameters extracted from planning documents in other Australian jurisdictions are given below.

Queensland

> Older people with a mental disorder who are otherwise fit and well should receive treatment from general adult mental health services. Psychogeriatric services are primarily aimed at people aged over 65 who suffer from:
>
> A mental disorder complicating an underlying disorder related to ageing such as dementia with psychotic features, or a mental disorder which has arisen for the first time;
>
> A disorder related to ageing complicating a pre-existing mental disorder (eg. A person with chronic depression who becomes frail or has multiple medical pathology).
>
> Age is not the principal criterion identifying the target group for psychogeriatric services.
>
> Acute inpatient services provide assessment and treatment for older people with acute symptoms who cannot be supported in the community.
>
> The mental health planning guideline of 45 acute beds per 100,000 population (aged 65 and over) includes a weighting factor for age to the planning guidelines for general hospital acute inpatient units.
>
> A significant number of older people requiring admission to acute units do not require psychogeriatric expertise. They can and should receive care in a conventional general acute unit. However, some older people will require more specialist care, including access to special purpose areas/units.
>
> Where the catchment population is of sufficient size, a separate ward or part of a ward could be dedicated for this purpose. However, in Queensland the majority of acute units are and will continue to be too small for this degree of specialisation.
>
> For smaller acute units, the design will need to be sufficiently flexible to allow the creation of areas which can be used for the management of psychogeriatric patients when required. This could be achieved through the provision of special-care ensuite rooms and multi-purpose areas which could be used as intensive care areas for this group and other special needs patients. The design of new acute units should incorporate the needs of older people.
>
> The option for acute inpatient services for older people with mental illness to be collocated with geriatric acute units, where they exist, should also be considered. While few such units currently exist in Queensland, this option should be examined in future service planning and hospital redevelopment. [136]

The planning guideline stated for Queensland (45 beds per 100,000 older people) is far in excess of the actual level shown in Tables H-2 through H-4 (8 beds per 100,000). In a more detailed planning document[137] the rationale for planning guidelines is given as:

> Based on the emerging consensus from the National mental health Strategy, model services in Australia and overseas, and findings of national and international research Queensland has adopted population based planning guidelines for the provision of specific mental health service components.

The guideline of 45 psychogeriatric beds is accompanied by one of only 15-20 general acute beds and low levels of community-based staff. The “indicative mental health capital works” program based on the provision of $100 Million within the Queensland 10 year Hospital and Health Services Building Plan and the planning guidelines shows 35 psychogeriatric beds in 1998/99 (Townsville, Gold Coast), 33 in 1999/2000 (Sunshine Coast, Brisbane), and 31 in 2000/01

(Brisbane), for a total of 99 beds. If all were acute and in addition to the existing 30, the total would be 129 beds, or about 35 per 100,000 older people.

Victoria

> APMHS [Aged persons Mental Health Service] will therefore operate within the context of the general aged care system. In the long term full integration of services may become a possibility. To date, attempts at service amalgamation have been problematic – generally because of program drift away from the most vulnerable client group, namely elderly persons with a severe mental disorder and concomitant behavioural difficulties. …
>
> APMHS provide services primarily to people aged 65 years and over. The client group includes:
>
> People who have had a mental illness for many years and who may now also experience complicating issues relating to growing older. These may be in the form of physical frailty, psychological stress and/or significant changes in their social circumstances.
>
> People who develop what is called a functional mental illness in later life and who may require treatment and care for the first time. The most prevalent disorders that develop in this group are depression, paranoid psychosis and heightened anxiety states. It is estimated that 20 per cent of people over 65 years report significant number s of depressive symptoms; between 3 and 4 per cent have a major depressive disorder, and less than 1 per cent have a paranoid psychotic illness.
>
> People with psychiatric or severe behavioural difficulties associated with organic disorders such as dementia. Organic disorders are characterised by physiological changes in the brain with the person experiencing a deterioration in their intellect, judgement and memory, and significant personality changes.…
>
> The presence of mental illness itself does not necessitate a referral to mental health services,. The principle of mainstreaming implies that general aged care services will continue to assist elderly clients with a mental illness until such time when [sic] the client's behaviour or illness will be more effectively be managed by a specialist mental health service.
>
> …
>
> Guides for service developments for APMHS include four acute beds …per 10,000 persons over 65 years of age. It must be noted, however, that these are guides only and must be placed firmly in the local area context and adjusted for local needs.

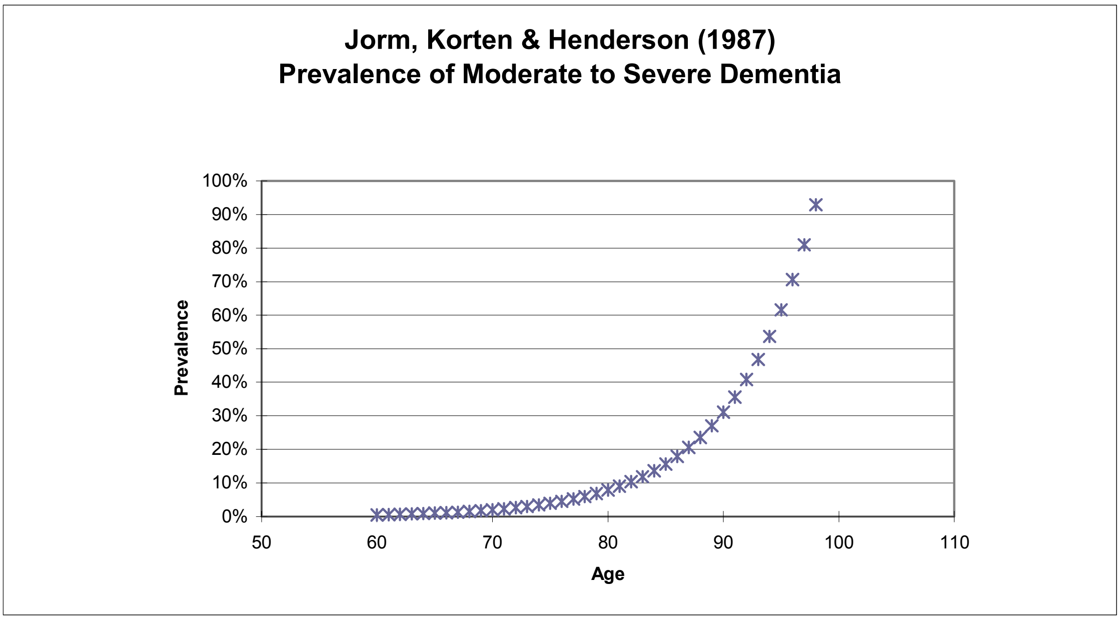
The Victorian guideline translates into 40 acute beds per 100,000 older people, which is not much higher than the level for 1998 shown in Table H-4 (34.3 beds per 100,000). The guideline also assumes 110 Psychogeriatric Nursing Home beds per 100,000 older people for extended care, in a context of progressive integration of aged care and psychogeriatric services, and defined roles for the service components. In particular, the community-based Psychogeriatric Assessment and Treatments Services (PGATs) have "a pivotal role, providing the first point of contact with the aged persons mental; health service for clients and their families", and have a strong influence on acute inpatient care because "all admissions to psychogeriatric beds funded by psychiatric services will occur with involvement of the PGATS in order to ensure that clients are managed in the least restrictive setting." It is thus difficult to relate the very structured planning model of Victoria to Area services in NSW.

Quantifying the impact of Dementia

The Victorian planning document summarises the evidence on dementia as follows: "The most prevalent organic disorder in the elderly is dementia, with Alzheimer's disease and vascular (formerly Multi-infarct) dementia being the most common types. Dementia can also be triggered by a range of other causes, including strokes, brain tumours, alcohol abuse, vitamin B-12 deficiency and some infections (including AIDS). Severe dementia affects 4 to 5 per cent of the population over 65 years. A relatively small number of people develop dementia before the age of 65. Between 65 and 65 years the proportion increases up to 6 per cent and over 75 years there is a very marked increase in the incidence of a person developing dementia."

The epidemiological literature on prevalence of dementia is much more variable than the Victorian summary implies. The prevalence depends on the severity threshold chosen, and there is no uniform definition of "severe". The standard reference is a quantitative review of the published prevalence data by Jorm and others[138]. They found that even though there was considerable variation between studies in the prevalence reported, the rate of increase in prevalence with age followed the same exponential form in each study. The "average" curve fitted to all the data for 22 studies of moderate to severe dementia is the one usually referred to – for example, in the US Surgeon-General's report. It is shown below.

Figure H-1: Prevalence of dementia as a function of age.



The average curve shown above corresponds to an overall prevalence of about 5 per cent for moderate to severe dementia in people 65 and over. The average is the geometric mean of observations in the 22 studies used to derive the original curve of Figure H-1. To show the implications for NSW, the age-specific prevalence curve has been applied to the age distributions in the NSW populations for the 1991 and 1996 censuses, and projections to 2006. Those data are shown in Table H-5 below.

The service implications of "moderate to severe" dementia cannot be defined in the absence of an objective definition of what "moderate to severe" means. However, taking the data in Figure H-1 and Table H-5 as a starting point, comparison of predicted numbers with known service use gives some indication of what "moderate to severe" dementia means in practice.

Table H-5: Expected prevalence of moderate to severe dementia, NSW, 1991 – 2006

NSW		Actual			Actual			Projection			Projection	
		1991			1996			2001			2006	
Age	TOT	Dementia %	Dementia N	TOT	Dementia %	Dementia N	TOT	Dementia %	Dementia N	TOT	Dementia %	Dementia N
0-4	431,479	0.0%	-	439,678	0.0%	-	435,620	0.0%	-	426,400	0.0%	-
5-9	425,563	0.0%	-	438,206	0.0%	-	446,560	0.0%	-	442,740	0.0%	-
10-14	414,776	0.0%	-	434,307	0.0%	-	446,640	0.0%	-	455,130	0.0%	-
15-19	454,064	0.0%	-	422,663	0.0%	-	442,630	0.0%	-	455,010	0.0%	-
20-24	460,314	0.0%	-	462,864	0.0%	-	432,590	0.0%	-	451,370	0.0%	-
25-29	476,225	0.0%	-	472,262	0.0%	-	480,270	0.0%	-	450,480	0.0%	-
30-34	485,127	0.0%	-	491,584	0.0%	-	487,720	0.0%	-	496,520	0.0%	-
35-39	448,208	0.0%	-	492,991	0.0%	-	500,260	0.0%	-	496,210	0.0%	-
40-44	435,763	0.0%	-	453,851	0.0%	-	498,100	0.0%	-	505,240	0.0%	-
45-49	353,857	0.0%	-	433,192	0.0%	-	451,830	0.0%	-	495,930	0.0%	-
50-54	294,456	0.0%	-	345,854	0.0%	-	427,620	0.0%	-	446,620	0.0%	-
55-59	255,809	0.0%	-	285,262	0.0%	-	338,820	0.0%	-	420,990	0.0%	-
60-64	263,477	0.7%	1,844	248,920	0.7%	1,742	276,870	0.7%	1,938	330,780	0.7%	2,315
65-69	241,764	1.4%	3,385	245,490	1.4%	3,437	232,300	1.4%	3,252	260,290	1.4%	3,644
70-74	185,309	2.8%	5,189	215,330	2.8%	6,029	220,190	2.8%	6,165	210,410	2.8%	5,891
75-79	137,714	5.6%	7,712	151,642	5.6%	8,492	179,420	5.6%	10,048	186,240	5.6%	10,429
80-84	81,139	10.5%	8,520	99,757	10.5%	10,474	111,740	10.5%	11,733	135,950	10.5%	14,275
85+	53,707	20.8%	11,171	70,041	20.8%	14,569	91,200	20.8%	18,970	112,880	20.8%	23,479
Total	5,898,751	0.6%	37,820	6,203,894	0.7%	44,744	6,500,380	0.8%	52,105	6,779,190	0.9%	60,034
65+	699,633	5.1%	35,976	782,260	5.5%	43,001	834,850	6.0%	50,167	905,770	6.4%	57,719

Table H-5 shows an estimate of about 45,000 people with moderate to severe dementia in NSW in 1996. Table H-1 shows that there were about 62,000 people with dementia in Nursing Homes and Hostels nationally at about the same time. Since NSW had 29,552 Nursing Home beds out of a national total of 75,004 beds at 30 June 1996[139], it may be taken that about the same proportion of residents of Nursing Homes and Hostels were in NSW. On that basis, about 26,000 NSW people with dementia were in Nursing Home and Hostel accommodation. If we make the reasonable assumption that people in Nursing Home or Hostel care with dementia can be considered to have "moderate to severe" dementia, then the meaning of "moderate to severe" is that 60 per cent of such a group will be accommodated in some form of institutional care. This also implies that about 19,000 older people would be living at home with moderate to severe dementia. Data from the 1999 NSW Older People's Health Survey conducted by Epidemiology Branch of NSW Health estimates the number of older people living at home with dementia[140] at about 21,000. The convergence of these estimates suggests that they are reasonably accurate.

The consequences for hospital utilisation can also be estimated. In 1997/98 there were 1,660 NSW hospital separations (in both psychiatric and general facilities) of older people with a primary diagnosis of dementia. The majority (85 per cent) were from general medical rather than psychiatric units. If we assume as before that these people had "moderate to severe" dementia, and ignore readmissions, then about 3.7 per cent of the 45,000 people with moderate to severe dementia consumed inpatient services in NSW, and 0.6 per cent consumed specialist mental health inpatient services.

In a more detailed study, about 15% of admissions to inpatient psychogeriatric care came from Nursing homes, 20 per cent were hospital transfers, and about 60 per cent were direct admissions from home[141]. Assuming that the original source for hospital transfers is divided between admission from home and Nursing Homes in the same proportions, then about 1,330 of the 1997/98 NSW separations might be considered as coming from the 19,000 people with moderate to severe dementia living at home (7.0 per cent), and 330 from the 26,000 people living in Nursing Homes and Hostels (1.3 per cent).

In summary, though we cannot ignore dementia as a source of mental health inpatient admissions for people 65 years and over, the main impact of moderate to severe dementia is currently on Nursing Home and Hostel care. Sixty per cent of the estimated number of people with this level of dementia are already in ongoing care. Only 1.3 per cent of this group use inpatient services. Of the 40 per cent not in institutional care, about 7 per cent consume inpatient services. Only 15 per cent of those services are provided by specialist mental health units.

However, the same evidence implies that only a small change in the availability of Nursing Home beds, or in the criteria for admission to acute inpatient care, or for specialist psychogeriatric units, could have an enormous impact on demand. Current utilisation reflects current structures for care delivery, and in the case of mental health and older people, it is very sensitive to decisions about the issues mentioned. The detailed analysis follows.

NSW utilisation of inpatient services for mental illnesses in older people

In developing the MH-CCP model we have tried to make direct estimates of service need. We have nevertheless considered utilisation data as an important indicator. Clearly, people cannot use services that do not exist, so in general the level of utilisation is considered to indicate the lower limit of need, if the existing services are being used to capacity. On the other hand it can be argued that excess supply of services can generate utilisation in excess of "true" need for those services. If there is no "gold standard" measure of need available, there is no way to prove that either view of utilisation is correct. However, quantitative comparisons can make one or the other view more plausible in a particular case.

The data in Tables H-2 through H-4 show that NSW has a low level of psychogeriatric acute inpatient beds relative to every state other than Queensland. Consideration of planning models in other States indicates that the weight of opinion favours more psychogeriatric acute beds than NSW has at present.

There is also a precedent for taking this approach in NSW.

Snowdon (1991)

The main local evidence of need for psychogeriatric acute beds is an analysis by Professor John Snowdon.

Snowdon[142] reviewed medical records of 1,396 admissions to the Prince of Wales and Prince Henry hospitals' general adult psychiatry units for a ten year period ending September 1987. These records were for 883 persons aged 65 and over. Based on these utilisation data, "tentative guidelines" proposed were 16 acute beds for functional psychiatric illness and 6 beds for organic disorders in the catchment of 32,000 older people. This corresponds to 50 beds per 100,000 older people for functional psychiatric illness, and a further 19 per 100,000 for organic disorders. As Snowdon noted, the former corresponds to NHS planning guidelines issued in 1972 and 1982 in the UK, but the latter fell well below the UK recommendation of 100 short/medium stay beds for dementia. The latter was attributed to the younger age of the NSW population and the relatively greater use of nursing home accommodation.

In this NSW study population, 45 per cent of the admissions to the general adult units were for depression, 36 per cent for organic brain syndromes (mainly dementia), 9 per cent for schizophrenia and related disorders, 5 per cent for other psychiatric disorders, and 5 per cent for physical or no disorder. The mean number of admissions per person was 1.58, and taking five years (half the interval) as the average opportunity for readmission in this cohort, this suggests about 10%-12% as an estimate of the annual readmission rate.

Estimates of bed requirements were based on data on a subset (N=108) of more recent patients at Prince of Wales Hospital, whose length of stay averaged 33.5 days: (42 days for depression, 23 days for organic brain syndromes, 18 days for schizophrenia, and 28 days for other diagnoses). These stays were considerably longer (8 days) than those of a smaller group (N=41) of patients 60 to 64 at the same unit during the same period. Occupancy was assumed to be 75 per cent, and approximate adjustments were made for the presence of private hospitals in the catchment area, and services provided by other units. It was also assumed that there would be no "exit block" resulting from delayed access to nursing home care or other non-acute care on discharge, that delirium and "pure" dementia would generally be managed in medical wards, and there would be no change in the general practice of assessing dementia.

Analysis of NSW Inpatient Data, 1997-98

Snowdon's analysis was repeated on the state-wide Inpatient Statistics Collection (ISC) for 1997-98. The main differences were that recorded discharge diagnoses were used without review, and that readmissions could not be separately estimated in the absence of uniform identifiers. In other respects, however, the present analysis is more comprehensive, since all discharge records for the year were available, both from psychiatric units and general hospital units.

We divided the data by diagnostic group, by type of facility, and by duration of overall stay. Same day admissions were excluded, since they are considered nationally as a form of ambulatory care. For admissions longer than a year only 365 bed-days were included. It is a practical convention in analysing the ISC to regard admissions of 35 or fewer days as being "Acute" and those of 36 or more days as "Non-Acute". This convention reflects the lack of clinical documentation in the ISC, and does not reflect either the clinical meaning of "acute" illness, or the designation of an "acute" role for an inpatient unit. However, when applied to general surgical and medical admissions with an average length of stay (ALOS) of about 5 days, the "35-day rule" does not generally exclude a large proportion of admissions to acute hospitals. Unfortunately, that is not true of psychiatric admissions, especially those for older people. Snowdon's report of an ALOS of 33.5 days for acute admissions to acute units indicates this quite clearly.

Overview of analysis

Older people with ICD diagnoses in the mental health range are found in almost all NSW Health facilities, so the task of analysis is much more complex than that of considering only a few psychiatric units. For this analysis, data from nearly 300 facilities had to be considered, because dementia could not automatically be excluded, and a large number of general acute hospital beds are occupied by people with a primary diagnosis of dementia, especially in rural hospitals.

The general approach taken was to start with the most clear-cut situation, namely usage of acute psychiatric units. Thereafter, patients in other units were considered in comparison to those in acute psychiatric units to estimate the proportion of "acute psychiatric" demand that they might represent, under various assumptions.

The end result is that NSW might be said to need anywhere between 146 and 256 psychogeriatric acute beds, depending on the number of older people with acute psychiatric illnesses who are best treated in specialist psychogeriatric acute units, specialist general adult psychiatric units, or general hospital medical units, and depending on how the comorbidity of dementia and other organic syndromes with functional illness is managed. This corresponds to a range between about 20 and 30 beds per 100,000 older people.

In addition, current utilisation suggests that the equivalent of about 40 private psychiatric beds are used for a diagnostically similar group of patients.

A byproduct of the analysis is documentation of the volume of inpatient activity associated with dementia and substance abuse.

Key results for colocated acute units

We applied the "35 day rule" here, but only to estimate its effect. There are many psychiatric units in NSW that are known to have an acute role, namely psychiatric units colocated in general hospitals. Under the National Mental Health Policy, all acute inpatient care is intended to be in colocated units of this type, so it is the need for this type of service that we are aiming to estimate. Data from those units thus played a key role in the analysis.

The result on the 1997-98 ISC data is that 976 of 1,315 separations (74 per cent) of older people from colocated acute units had “Acute” LOS by the 35 day rule, but these accounted for only 14,124 of 35,677 bed days (40 per cent), and thus 40 per cent of the beds. In other words, use of the 35 day rule in general would seriously underestimate utilisation by older people of “acute” inpatient care, and overestimate the need for “non-acute” care.

Since data from designated acute psychiatric units in general hospitals provides the only practical way to identify “acute” service utilisation in the 1997-98 ISC, we have used it to address another issue too. It was used to estimate the percentage of people with other primary diagnoses, especially dementia and organic syndromes and substance abuse, whose psychiatric problems result in admission to a specialist acute psychiatric unit. Whereas Snowdon found that organic syndromes (including dementia) were the primary diagnosis for 36 per cent of individuals with acute admissions, he also found that group had the lowest ten-year readmission rate (1.37 versus 1.58 on average), so they would account for a smaller proportion of admissions in general. In colocated acute units we found that 17 per cent of separations and 15 per cent of bed-days for older people were for those who had primary diagnoses of dementia, other organic syndromes, or substance abuse. This may reflect changes in the last ten years since Snowdon’s analysis, or the NSW-wide picture as against one Area, or both.

Though it cannot be proven that the length of stay and the clinical spectrum of older people in colocated acute psychiatric units is appropriate, the demand on those services is high, and it does not seem likely that patients would have been retained in the units longer than clinically necessary, or that they would have been admitted to specialist psychiatric care if their illness could have been managed in another facility.

The total of 35,677 beddays used by older people in co-located acute units would be provided by 112 beds at 87% occupancy (318 occupied beddays per bed per year). NSW currently has 136 designated psychogeriatric acute beds (Table H-3 above). The utilisation in colocated acute units is only part of the picture, however. Many beddays are consumed by older people with psychiatric diagnoses in psychiatric hospitals and in general medical wards. The difficulty in those cases is to determine the clinically “acute” need, since neither that, nor the unit designation, is currently available in the ISC data.

Key results for psychiatric hospitals

Using the 35-day rule to define “Acute LOS”, there were 338 “Acute” and 240 “Non-Acute” separations of older people from psychiatric hospitals, representing 5,230 and 33,939 beddays respectively, with ALOS of 15.5 and 141.4 days respectively. It should be noted that both the number of beddays and the ALOS for “Non-Acute would be much larger if the maximum LOS in a year had not been set to 365 days, but this is the most appropriate calculation for estimating the number of beddays (and thus beds) needed per annum.

There are two ways of converting this finding into an estimate of demand. One would be to take the 35-day definition of “Acute”, which would require a further 5,230/ 318 = 16.4 beds. The other is to suppose that the “acute” proportion of psychiatric admissions are affected by the 35-day rule in the same way as in colocated units – that is, only 40 per cent of bed-days are captured as “acute” by the 35-day rule. On that basis, the true “acute” utilisation would be 5,230 x 100/40 = 13,075 beddays, requiring 16.4 x 100/40 = 41 beds at 87% occupancy.

Key results for general hospital general beds

Using the 35-day rule to define “Acute LOS”, and excluding admissions for dementia, organic syndromes, mental retardation, and substance abuse, as well as admissions to State Nursing

Homes, there were 1,226 “Acute” and 149 “Non-Acute” separations of older people from general wards of general hospitals – but with functional psychiatric primary diagnoses – in 1997-98. These represented 10,741 and 12,598 beddays, with ALOS of 8.8 and 84.5 days respectively. It is not immediately obvious how best to consider this demand.

For comparison, the same restricted analysis was applied to co-located units, and yielded 800 “Acute, functional psychiatric only” versus 295 “Non-Acute, functional psychiatric only” separations, accounting for 11,621 and 18,796 beddays, with ALOS of 14.5 and 63.7 days respectively. If the artificial “35 day rule” is ignored in both cases, the ALOS is 17.0 days for general beds, and 27.8 for psychiatric beds. Thus with the same range of functional diagnoses in each case, and considering acute hospital beds in each case, patients in general beds tend to stay for less time, but there is no other distinction to be made.

It should also be noted that there is no difference in the proportion of people with organic versus functional disorders in general beds between acute hospitals that have a colocated specialist psychiatric unit versus those that do not. 21% versus 19% of all general bed-days for people with primary diagnoses in the ICD9 range 290-319 were used by people with organic primary diagnoses in hospitals with and without acute psychiatric units. In other words, the presence of a specialist unit does not seem to have any effect on the diagnostic pattern of usage of general beds by older people with psychiatric conditions – which is rather surprising.

There are three ways in which this usage of general beds may be converted into an estimate of utilisation by people with acute psychogeriatric conditions.

Taking the most restricted version, there are 10,741 beddays for separations with “Acute” LOS of 35 days or less and functional diagnoses only, equivalent to 10,741/318 = 33.8 beds.

Assuming that the 35-day rule captures only 40 per cent of true “acute” usage increases the estimate to 33.8 x 100/40 = 84.5 beds.

Finally, assuming that the acute psychiatric need applies to the same proportion of people with primary organic conditions in general beds, an addition 17.6 beds would be needed.

Analysis of US service levels for the Medicare-eligible population

The material in this section comes mainly from a paper by Ettner & Hermann[143] that reviewed 1990 Medicare hospitalisation data for patients with primary diagnoses in the ICD9 Chapter 5 range of 290-319. It has been supplemented by information from Dr. Susan Ettner, who was most helpful in clarifying aspects of the data. The general background has been largely taken from the paper, verbatim, but quotation has not been marked.

Ninety-five percent of older people 65 years of age and above participate in the largest public insurance program in the United States, namely Medicare. Medicare is usually the primary payer for inpatient care of older people, so it is responsible for setting policies that maintain a high quality of care while containing costs. Medicare has traditionally distinguiished between the care provided by psychiatric facilities and general hospitals. When Medicare changed from a cost-based system of hospital reimbursement to a prospective payment system in 1983, it exempted psychiatric hospitals and certain psychiatric units. Those facilities were paid according to an alternative method based partly on historical costs, which provided less strict incentives for cost containment.

However, at the same time Medicare imposes a 190-day lifetime limit on coverage of psychiatric hospital care. This limit does not exist for psychiatric inpatient care provided in general hospital psychiatric units or general hospital nonpsychiatric beds. The likely effect is to discourage medicare beneficiaries, particularly those who are chronically ill and have already been hospitalized numerous times. Ettner & Hermann provided a detailed analysis of 1990-1991

Medicare data to evaluate the way in which the various factors were affecting utilization of inpatient care by people 65 and over with illnesses in the ICD 290-319 range. This included dementia and substance abuse.

From an Australian perspective, these US Medicare data are particularly valuable because they are patient-level data (based on a unique identifier that applies throughout the US), and also because this is one area of US health care where private insurance has relatively little effect on access. It is also useful that the data in question come from the same year (1990) for which the Center for Mental Health Services (CMHS) in the US Substance Abuse and Mental Health Services Administration (SAMHSA) has been providing estimates of prevalence in accordance with its responsibilities under Public Law 102-321. PL 102-321 not only established SAMHSA, but also established definitions of Serious Mental Illness (SMI) in adults and Serious Emotional Disturbance (SED) in children for the purposes of federal funding of community mental health services[144]. These have subsequently been operationalized in a series of reports by expert working parties[145,146,147,148] and formal notices in the *Federal Register*[149,150]. Although the specific federal funding is a relatively small proportion of expenditures by US States (about $3 per capita on an average of about $60 per capita); in conjunction with other federal programs such as Medicare and Medicaid it has a significant impact in establishing a framework for State planning.

Table H-5: Medicare and Nursing Home patients with mental illnesses, US, 1990.

Ettner & Hermann 98	Number	Population	% of Population
Medicare Patient's Data Analysed	192,194	29,646,593	0.65%
Uncovered by Medicare (5%)	na	1,560,347	na
Other primary Payers (10%)	21,355	na	na
All Patients	213,549	31,206,940	0.68%
Separations (seps/patient = 1.28)	245,135		
Estimated from information in Mental Health, United States, 1998: 46% prevalence of SMI in 1.8 Million Nursing Home residents, and assuming 90% are 64 and over.			
Estimated Nursing Home Population Over 64 with mental illness	745,200	31,206,940	2.39%

Table H-6: Medicare inpatients with mental illnesses, by diagnosis, US, 1990.

Primary Diagnoses	% of Separations	Number	% of Population
1. Schizophrenic disorders	5.7%	13,739	0.04%
2. Other psychotic disorders	8.2%	19,764	0.06%
3. Bipolar disorder	6.7%	16,149	0.05%
4. Major depressive disorder	28.1%	67,729	0.22%
5. Other depressive disorders	4.4%	10,605	0.03%
6. Anxiety disorders	2.4%	5,785	0.02%
7. Dementia	15.2%	36,637	0.12%
8. Other organic disorders	11.6%	27,959	0.09%
9. Substance-related disorders	12.6%	30,370	0.10%
10. All other disorders	5.2%	12,534	0.04%
ICD 290-319	100.1%	241,271	0.77%
MH Only (excludes 7,8,9)l	60.7%	146,305	0.47%

The data in tables H-5 and H-6 are drawn mainly from the Ettner & Hermann paper, but have been supplemented by other calculations and estimates from other sources to assist comparison with mental health data in NSW.

Before making the comparison (Table H-7) it should be noted that there is a remarkable similarity in the number of Nursing Home residents as a percentage of the population 65 and over. The total Nursing Home and Hostel population in Australia was about 5.8% of the total 65 and over population in 1996, and the Nursing Home (only) population of the United States for 1990 was stated as 1.8 Million (about 5.7% of the 65 and over population) in *Mental Health, United States, 1998.* Unfortunately, the diagnostic distribution in the US Nursing Home population is not stated in the document, and the US definition of "Serious Mental Illness" in adults includes Alzheimer's Disease, which accounts for about half of all cases of dementia. If the diagnostic distribution were the same as in Australian Nursing Homes and Hostels, where the rate of dementia is 46%, that would imply that the 46% rate of SMI stated for the US Nursing Home population should be reduced by about 23%, leaving 23% as the "SMI less Alzheimer's Disease" rate. This is still higher than the 16% for functional psychiatric diagnoses in the Australian Nursing Home and Hostel population. Nevertheless, the main differences lie in inpatient care, it seems, not Nursing Home care.

Table H-7: Inpatients with mental illnesses, by diagnosis, US, 1990 and NSW 1997/98.

Primary Diagnoses	US 1990 % of Seps	US 1990 % of 65+ Population	NSW 1997/98 % of Seps	NSW 1997/98 % of 65+ Population
1,2 Schizophrenic and other psychotic disorders	13.9%	0.11%	3.0%	0.05%
3. Bipolar disorder	6.7%	0.05%	1.9%	0.04%
4,5 Major and other depressive disorders	32.5%	0.25%	14.0%	0.11%
6. Anxiety disorders	2.4%	0.02%	5.5%	0.04%
7. Dementia	15.2%	0.12%	27.1%	0.21%
8. Other organic disorders	11.6%	0.09%	35.7%	0.27%
9. Substance-related disorders	12.6%	0.10%	9.0%	0.07%
10. All other disorders	5.2%	0.04%	3.8%	0.02%
ICD 290-319	100.1%	0.77%	100.0%	0.77%
MH Only (excludes 7,8,9)l	60.7%	0.47%	28.2%	0.22%

The second-last row of Table H-7 shows that people 65 and over with primary diagnoses in the ICD code range 290-319 separated from hospitals in NSW in 1997/98 at the same rate as they did from US hospitals in 1990. The separations correspond to 0.77% of the 65 and over population in both cases. However, whereas mental health separations represented 0.47% of the 65 and over population in the US, they were less than half that (0.22% of 65+ population) in NSW. By contrast, in NSW the inpatient treatment rate was nearly twice as high as the US rate for dementia, and three times as high for other organic conditions. This comparison is for a situation in which there is no obvious access barrier in either case, and where the overall treatment rate for the group of disorders is the same. It suggests that it may be significantly easier for older people to obtain inpatient care for "physical" illnesses in NSW that it is for psychiatric ones.

For MH-CCP, we have used a mental inpatient health treatment rate of 0.5% of the population, the US rate of 1990, not the NSW rate of 1997/98. This includes both acute and non-acute care, both public and private, and both psychiatric and general hospitals, because all are included in the comparison in Table H-7, in both the US and NSW. It also allows for a proportion – about 20%, as at present – of *psychiatric* separations to be for patients with primary diagnoses of dementia, other organic conditions, and substance abuse, and presumably significant psychiatric comorbidity. The increase for the functional psychiatric disorders alone is from 0.22% of the population to 0.40% of the population, and thus about 90 per cent of the US rate of 0.47% of the population. This is consistent with the previous observation that Australian prevalence of mental illness seems to be about 90 per cent of that in the US, where comparisons can be made. This effect is that the overall inpatient treatment rate for ICD Chapter 5 disorders would rise from 0.77% to 0.95%, assuming no change in the hospitalisation rate for the other ICD Chapter V disorders.

It should also be noted that this change does not translate directly into a corresponding increase in bed-days in specialised public acute psychiatric units, because Average Length of Stay and readmission rates, public-private proportions, acute-non acute proportions, and specialised-general proportions are all determined separately. The only issue addressed in this comparison is the population-based inpatient treatment percentage.

Appendix I: Review of the National Mental Health Strategy Consultancy Report: "Development of a Population-based Model for Estimating Need for Mental Health Services" by Rod O'Connor & Associates P/L

Background

In 1995/96 the Commonwealth Mental Health Branch commissioned a consultancy report on population-based funding models from Rod O'Connor & Associates P/L. The February 2000 draft of that consultancy report was sent for review on 5 June 2000. The Report will be published as part of the series under the National Mental Health Strategy. It is referred to here as the *Report* for brevity.

The *Repor*t appears to address the same issues as the MH-CCP model, in the sense that it aimed to estimate population-based need for mental health services. The approach taken is very different, however, and depends on "ecological correlation", that is, the correlation between average population statistics and service utilisation across local areas (SLAs).

The consultancy has extended over a much longer time frame than was originally envisaged, and as a result some of the material is outdated. For example, the review of the 1995/96 NSW Resource Allocation Formula is of historical interest only. The Mental Health Economic Task Force chaired by Helen Lapsley (UNSW) adopted a very different approach to estimating need for the revised RDF of May 1998 and February 2000, and no review of the later work is included.

Nevertheless, the *Report* provides a valuable review of traditional approaches to estimating need. And a good account of some of the issues and data. It also shows what can and cannot be achieved in predicting utilisation data for South Australia and Western Australia in 1996.

Objectives

The objectives of the National Mental Health Strategy "funding models" development were:

- To develop a clearer understanding of the relationship between population characteristics and mental health resource consumption models; and
- To create data sets that will enable resource allocation formulae to be developed according to relative population needs, and to enable such formulae to be modified over time as more information becomes available.

The objectives of the specific consultancy were:

- Review evidence for links between population characteristics and service need;
- Examine existing resource allocation based on service need;
- Identify key factors and develop a conceptual framework; and
- Create a data base to enable resource allocation formulae to be developed and improved.
- The results were to be applicable to both public and private sectors, with a possible subsequent exercise to develop a formula or formulae for allocating resources according to the information concerning relative needs derived from the consultancy.

Review of issues in estimating need

The Report presents a useful but limited overview of the factors that operate between the people in the population who are ill (prevalence) and the people who reach services. A more comprehensive account will be found in the report of the conference on unmet need in psychiatry held by the World Psychiatric Association Section of Epidemiology and Public health in Sydney in 1997[151].

It concludes:

- Prevalence information has considerable advantages, but surveyed prevalence cannot be equated with need.
- Estimates of prevalence via regular and comprehensive direct survey are too expensive to offer a feasible option. Indirect methods, which may be developed based on prevalence or utilisation data, are necessary.
- Studies indicating discrepancies between expected numbers of cases treated and actual numbers treated can be used to indicate possible inequities in resource distribution.
- The evidence favours the development of indirect service-need indicators based on social indicators.

From the NSW viewpoint, as represented in the MH-CCP model and other work, those conclusions are not warranted. The Report generally shows a good appreciation of the different kinds of things that are all labelled as “need”, but in this case it seems to have reverted to the primitive notion that there is a “true” generic measure of “need”. Alternative conclusions may be drawn:

- Surveyed prevalence ***can*** and in fact ***must*** be equated with need (for some level and type of service) , if we accept that diagnosed illness should be treated and if possible cured. Even if no cure or treatment exists, there is still a need for R&D. The conclusion in the report is based on the likelihood that “some individuals will neither seek nor obtain services because of personal and cultural factors”. That does not alter the need – it simply shows that the need may not be perceived. Since 45% of public sector mental health inpatient care in Australia is for patients whose legal status in involuntary, by definition those patients did not perceive a need for treatment. People other than the patient perceived a need for that person to receive treatment. Likewise, there is good evidence that a large proportion of people who committed suicide would have met criteria for mental illness in the period preceding the suicide attempt and its fatal outcome, but only a small proportion had sought mental health care. It is appropriate to recognise that service planning should address current demand, and that uptake of new services would be limited by the factors mentioned. At the same time, an adequate service must address the need, and the barriers to service use, whatever they may be.
- Estimates of prevalence via regular and comprehensive direct survey are ***not*** too expensive to offer a feasible option. NSW is in the process of developing a cost effective approach to obtaining direct estimates of prevalence at the AHS level, via the NSW Health Survey, and has made substantial progress in that direction. Appendix J provides a detailed account of the approach taken in the United States since 1993, which is similar.
- Indirect methods based on prevalence or utilisation data or a combination of both provide a useful supplement, and studies indicating discrepancies between expected numbers of cases treated and actual numbers treated can be used, as suggested, to indicate possible inequities in resource distribution.

- The evidence favours the development of indirect service-need indicators based on social indicators only because of limitations of evidence at the time the Report was prepared.

There is a fundamental difference between the approach taken in the Report, and the principles of the MH-CCP model, but there are also similarities. The Report aims to predict utilisation directly, using various averaging, regression, and other adjustment processes develop a synthetic estimate of "need". There is no way that an entirely empirical model of synthetic "need" can describe what good care should be, or respond proactively. It is always reliant on projecting historical utilisation, and the use of the term "need" is quite misleading in such a model.

By contrast, the MH-CCP model explicitly translates estimates of prevalence into predictions about utilisation and resources need, by defining the nature of the care package appropriate for each group. Evidence about effective care can be readily included in such a model. Evidence about one particular population group can be readily built into such a model. The relation between the estimated numbers in need of each care package, the quantity of care in the care package, and the resource needs, are all visible and may be debated.

However, there is an important resemblance between the approaches. The US approach described in Appendix J, and the similar approach being developed in NSW, also uses synthetic estimates based on socio-demographic census data, but aims to predict ***prevalence***, not utilisation. The step from prevalence to utilisation is a separate one, which in the NSW case is filled in by the MH-CCP model.

In other words, the approach taken in the Report has followed the traditional route of trying to work directly from population indicators other than the most relevant ones – the rate of illness – to the service need. This makes the epidemiology of illness irrelevant to funding of the services to prevent or treat it. The more clinically relevant alternative is to take population epidemiology seriously, and focus on two tasks: finding workable approximations of the detailed epidemiology needed in service modelling; and developing care packages that are appropriate to each identified group.

A strength of the Report is its review of supply factors: that is, the way in which the supply of services may distort utilisation patterns.

Another strength is its review of funding models.

Appendix J: Population-based planning of mental health in the United States, 1993-1999: Estimates of prevalence of “Serious Mental Illness” in adults and “Serious Emotional Disturbance” in Children

Summary

This appendix is designed to address concerns expressed about the use of prevalence data as the basis for resource need prediction in the MH-CCP model. In particular, it explains the reasons why we have based our work on aligning Australian and US prevalence data and definitions wherever possible as a basis for planning. It contains the main text of the debate in the United States on the same issues since the restructuring of mental health and substance abuse services in 1992.

The Center for Mental Health Services in the US was charged by legislation with responsibility for producing prevalence estimates. These estimates were then to be submitted by States as part of their annual applications for Federal Community Mental Health Block Grant Funds – a program about twice the size of the NSW mental health budget. Expert working parties were appointed to review the definitions and available data and produce estimates. Each major stage was subject to a public commentary process. The conclusions and debate were reported in the United States ***Federal Register***. The Federal Register is “the official daily publication for Rules, Proposed Rules, and Notices of Federal agencies and organizations, as well as Executive Orders and other Presidential Documents”, and thus has a similar role to the the NSW Government Gazette.

Background: Uncertainties in Estimation and Prediction

As described more fully in the explanation of the MH-CCP model, the total resources predicted for a standard population of 100,000 are calculated by multiplying the Aaverage≅ resources required to treat one individual in a designated group by the estimated number of people in that group who will exist in the population in a 12-month period - the prevalence of that group, or the prevalence of Apeople who need that level of service, on average≅.

Concern has focused on the fact that uncertainty in estimating the number of such people translates directly into uncertainty in estimating the resources required. That is undoubtedly true. However, it needs to be placed in the context of many other uncertainties in the planning processes currently used, in the care plans themselves, or the staffing profiles and in the time use estimates used in translating from services delivered to clients and the resources needed to deliver them. It must also be set against the uncertainty of whether the ongoing operation or expansion of existing services can be justified, when there is little consistent evidence available to the NSW Health Department on the characteristics of the clients served, or the outcomes of those services.

In addition, the impact of uncertainties in estimated numbers is multiplied by the quantity of resources in the corresponding care plan. Thus the impact of uncertainties is very different for different groups, and we have focused attention most closely on the most resource-intensive groups.

At one extreme, the care plans associated with the AContinuous Inpatient≅ groups in adults entail 365 days of inpatient care per annum, and more than one clinical FTE per patient per annum. It is obviously important to estimate the number of people who need that intensive level of care as precisely as possible. In practice, we have estimated the number to be no more or less than the current direct count of the number of people currently receiving that level of care, and the number determined to need it after a review of all clients of registered boarding houses, as a rate per 100,000.

At the other extreme, the AMild/ Early Intervention≅ level of diagnosable illness entails, in most cases, an assessment requiring 90 minutes. Since one clinical staff FTE can deliver 1171 hours of such care, using current time-use estimates, an absolute error of 800/100,000 (0.8%) in the estimated number of people in this group (about 5% in most cases) represents an error of about 1 FTE in resources. That is, a variation of about 20% in the prevalence estimate for the AMild≅ group would generate a variation of only about 2% in the predicted ambulatory care requirements, which average about 50 FTE/100,000 age-specific population. By contrast, an error of 1 patient in the VLS group - one person with a need not met, or one person in VLS care who does not need that intensity of care - generates a similar error in resource predictions.

In other words, the consequences of uncertainty about the needs of those currently using services have much greater impact than the prevalence estimates in general, because we have been obliged to keep the estimates of service need for the more intensive service groups fairly closely aligned with evidence about current utilisation, as is clear at the relevant points in the model.

Since the uncertainties about current utilisation seem not to be widely known, it may be helpful to state them in this context, because it has been a major objective of the Centre for Mental Health for the last five years to reduce those errors, and that objective is now reflected in the Mental Health Information Development Program between now and June 2003.

- Prior to the work done in 1995/96, NSW expenditure in the mental health program was under-stated by Areas by about $40 Million (about 10%), with the result that NSW was erroneously stated to have the lowest level of per capita mental health expenditure in Australia in the National Mental Health Reports of 1993, 1994 and 1995. One consequence that was drawn to the attention of the NSW Health Minister was that $38 Million in National Mental Health Reform and Incentive Funding under the Medicare Agreement from 1995 was placed at risk by the apparently poor performance of NSW in achieving the objectives of the National Mental Health Strategy. This was corrected, with the Minister=s support, after a great deal of work by CMH staff and Areas, from 1995/96 onwards. By June 1998 all funding due to NSW was received.

- Analysis of the Inpatient Statistics Collection for 1995/96 showed 30% under-reporting of inpatient activity in acute psychiatric units co-located in general hospitals, with the activity wrongly classified to the general acute program. This was corrected by the CMH from the 1996/97 collection onwards, but all years before 1996/97 are subject to this uncorrectable error. There were many consequences of this uncertainty about inpatient activity, one of which was extreme difficulty experienced in constructing a realistic Resource Distribution Formula for the mental health program.

- Despite these corrections, the processes of dissection of aggregate accounts into the funding programs for the Unaudited Annual Returns each year are still variable and require extensive auditing for reconciliation. Initial variances in expenditure and estimated staff numbers are about 5% state-wide. Comparisons of activity reports in the Department of Health Reporting System (DOHRS) and in the Inpatient Statistics Collection (ISC) supplemented by the annual 30 June Census conducted by the CMH show variances of about 2% in state-wide inpatient activity.

- Variations in the number of Non Admitted Patient Occasions of Service per Direct Care Clinical staff FTE per week span a four-fold range, from about 10 NAPOOS/FTE/week to 40 NAPOOS/FTE/week across Areas, with no systematic Urban/Rural or any other identifiable pattern.

- Variations in bed-day costs for acute inpatient units span almost a two-fold range.
- Variations in NSW regional population projections between the Australian Bureau of Statistics and the NSW Department of Urban Affairs and Planning average about 2%.

The aim of these comparisons is simply to make the point that concerns about the precision of estimates used in planning should not focus on the novel concept of relating estimates of need to prevalence estimates. It should not be assumed that utilisation data are either free of error or provide some Aobjective≅ criterion for assessing the results of a formal planning model. The uncertainties of historical factors leading to the current levels of service provision, and their geographical distribution, are by no means trivial.

The Value of the US Planning Approach

MH-CCP Version 1.0 used prevalence estimates for adults that were based on aligning US and Australian population surveys of mental illness. Commentary received on the prevalence data prior to version 1.05 is that there is a risk in applying data from other places and times to Australia, NSW, or a local Area Health Service, in a model where estimates of the need for treatment resources rest so heavily on estimates of need based on population data. Up to a point, this is a perfectly valid comment. However, the same might be said in general of the estimated values of the force of gravity. The issue is not whether it may vary from one place or time to another on the earth, since it undoubtedly does. Rather, it is the degree of variation, and the extent to which due diligence has been exercised in considering factors that would make a particular assumption more or less likely to be valid in the context to which it is applied.

This is not the place to review the international epidemiological literature on the prevalence of mental illnesses, which in any case is about to multiply rapidly in volume and cross-cultural diversity with the extensive series of AWorld Mental Health 2000" (WMH 2000) studies now being conducted in more than 20 countries around the world. However, when the same methods are used to ascertain the prevalence of mental illnesses against the same diagnostic criteria, the results thus far have been remarkably consistent. That is particularly the case when the degree of functional impairment in personal, social, and occupational/educational life, and the degree of chronicity, are used to identify those who have been most disabled by mental illness.

For those not familiar with this literature, it may be helpful to work through the issue as it has been dealt with recently in the United States, in a context where very significant amounts of money depended on the conclusions of the expert task forces convened to deal with the problem of using prevalence estimates from one geographic region and time to estimate the expected prevalence in another geographic region at another time.

The United States is a much more diverse society than Australia, from one State to the next, and the concerns raised by States in a debate over national Aneeds based≅ funding raise all the issues that jurisdictions within Australia, or NSW, raise about the construction of measures of need. This is exacerbated by the wider diversity. For example, unpublished studies by the Global Burden of Disease Unit at Harvard University have looked at mortality within the US, county by county, and have shown that mortality variation within the US spans 75 per cent of the range of mortality variation from highest-mortality to lowest-mortality countries in the world as a whole. The US has counties in which the expectation of life is as high as in Japan, and others where it is as low as in many poverty stricken countries of Africa. Within Australia the only extreme mortality variation is between aboriginal people and the remainder. It is directly visible in those States, not including NSW, that identify aboriginal people well enough in their mortality data for the Australian Bureau of Statistics to regard it as acceptable for publication, and it is visible by inference in NSW from the relative deficiency of older aboriginal people in the periodic Census data.

US Public Law 102-321

In 1992, the 102nd Congress of the United States passed Public Law Number 102-321, the ADAMHA Reorganization Act. This Act created the Substance Abuse and Mental Health Services Administration (SAMHSA) within the US Department of Health and Human Services, to administer special funding and programs for community mental health and substance abuse services, and provide a national coordination role.

In particular, the Center for Mental Health Services (CMHS) within SAMHSA was charged with responsibility for administering Block Grants to States and Territories. In applying for Block Grants, States and Territories were required to submit estimates of the incidence and prevalence of Serious Mental Illness (SMI) in adults, and Serious Emotional Disturbance (SED) in children and adolescents. Although the amount of Block Grant funding had increased by 90 per cent to about $700 Million by 2000, it remains small component only (about 3 to 4 per cent) of overall mental health expenditure in the US. Nevertheless, the work done to provide the required estimates has highlighted the absence of specific epidemiological data at the State level within the US, and motivated a great deal of recent work that is highly relevant when considering similar issues in Australia.

In broad terms, both the relative amount of special national funding and the set of activities undertaken by the US CMHS have strong parallels with the Australian National Mental Health Strategy over the same period, since 1992/93. Dr Ron Manderscheid from CMHS was the invited international expert reviewer of progress under the Australian National Mental Health Strategy in 1997. His comments were in general very positive, noting that in a number of Areas Australia was at the leading edge of developments. One of his suggestions for future developments is reflected in the MH-CCP model: that Australia would benefit from taking a population focus and identifying the needs of particular groups. This was already in train in NSW, as Dr Manderscheid noted.

The US definition of Serious Mental Illness (SMI) and Serious and Persistent Mental Illness (SPMI).

The MH-CCP model has departed from and improved on the US planning framework by recognising that all levels of illness warranting a diagnosis are serious enough to warrant provision of some level of specialised care, even if only an assessment and referral for care to general health services. Nevertheless, we chose to follow the published 1993 definitions of the US National Mental Health Advisory Council in the MH-CCP treatment of Serious and Persistent mental Illness (SPMI) in adults, because that level of combined illness, functional impairment, and chronicity is the one that generates the need for the most intensive and expensive levels of care, and in particular inpatient care provided by public mental health services funded largely by States, both in Australia and the US.

More recent developments in the US have differentiated the term Serious and Persistent Mental Illness (SPMI) for the combination of illness, functional impairment and chronicity previously referred to as SMI, with an estimates prevalence of about 2.6 per cent. The final estimates for SMI were 5.4 per cent nationally in the US.

The following section is a complete transcript from the US *Federal Register* (Volume 58, Number 96, May 20, 1993, pp. 29422-29425) recording the final conclusion and definitions after public consultation. The original documents are not readily available in Australia, but may be obtained from the State Library of NSW.

[Federal Register,** Volume 57, Number 163, August 21, 1992, pp. 33890 - 37979**]

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Alcohol, Drug Abuse, and Mental Health Administration

Mental Health Services

ACTION: Notice of Request for Comments

SUMMARY: The Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) is soliciting input from the public for definitions of two populations: (1) Adults with Serious Mental Illness, and (2) Children with a Serious Emotional Disturbance.

Public Law 102-321. The ADAMHA Reorganization Act, enacted July 10, creates a new substance Abuse and Mental Health Services Administration (SAMHSA). A new Center for Mental Health Services is established within SAMHSA to provide national leadership in the prevention and treatment of mental disorders.

Title II of the Act establishes a separate Block Grant for Mental Health Services in the Center. The Block Grant will be used to provide community mental health services to adults with serious mental illness and children with a serious emotional disturbance. Under Title II of the act, the Secretary of Health and Human Services is requested, within 90 days of enactment, to establish and disseminate to the States definitions of adults with serious mental illness and children with serious emotional disturbances and to establish standard methods for making required estimates of incidence and prevalence which the States will use as a condition for receiving the grant. This responsibility has been assigned by the Secretary to ADAMHA in preparation for the creation of the new SAMHSA.

Preliminary to publication of definitions in the **Federal Register** in early October, ADAMHA is soliciting comments from the public concerning definitions both of Aadults with serious mental illness≅ and Achildren with a serious emotional disturbance≅ which meet the needs of the States and constituency groups.

ADDRESS: Interested organizations and/or individuals should send comments by September 4 to: Irene S. Levine, Ph.D., ADAMHA, 12-95 Parklawn Building, 5600 Fishers Lane, Rockville, Maryland 20857.

Dated: August 29, 1992

Joseph R. Leone,
Associate Administrator for Management, ADAMHA.

[FR Doc. 92-20199 Filed 8-20-92: 8.45 am]

BILLING CODE 4160-20-M

[Federal Register,** Volume 58, Number 96, May 20, 1993, pp. 29422 - 29425**]

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Substance Abuse and Mental Health Services Administration

Estimation Methodology for Adults with Serious Mental Illness (SMI)

AGENCY: Centre for Mental Health Services, Substance Abuse and Mental Health Services Administration, HHS.

ACTION: Final Notice

SUMMARY: This notice establishes a final definition for: (1) Children with a serious emotional disturbance, and (2) adults with a serious mental illness. It also describes the proposed process for developing standardized methods for identifying and estimating the size of these two populations within each State. This action is being taken to comply with the requirements of Public Law 102-321, the ADAMHA Reorganization Act, which amends and supersedes Public Law 99-660. The definitions will affect State agencies (the recipients of Federal block grant funds for mental health services) and are necessary because the new law requires States to include incidence and prevalence estimates of the two populations as part of the State application for a Community Mental Health Services Block Grant award. The definitions are intended to encourage comprehensive planning for mental health services at the State level which will address the multiple needs of both of these populations, whether or not the State agency is the provider of the planned services.

EFFECTIVE DATE: Immediately. It is the view of this Department that delaying the effective date for a period of thirty days is unnecessary and contrary to the public interest, and therefore this rule is effective immediately. This rule provides definitions for States and is necessary for State applications for Community Mental Health Services Block Grants. No party will be adversely affected by the immediate application of these definitions, whereas a delayed effective date will hinder comprehensive planning for mental health services by States. In any event, the provisions of 5 U.S.C. 553(d) do not apply since this rule relates to a grant program.

FOR FURTHER INFORMATION CONTACT: Irene S. Levine, Ph.D., Deputy Director, Center for Mental Health Services, (301) 443-0001.

Background

Public Law 012-321, the ADAMHA Reorganization Act, was enacted on July 10, 1992. This law, which amended the Public Health Services Act, created the Substance Abuse and Mental Health Services Administration (SAMHSA). The Centre for Mental Health Services (CMHS) was established within SAMHSA to coordinate Federal efforts in the prevention and treatment of mental illnesses and the promotion of mental health. Title II of Public Law 102-321 establishes a Block Grant for Community Mental Health Services, administered by CMHS, which allows for allocation of funds to States for the provision of community mental health services to both children with serious emotional disturbances and adults with a serious mental illness. Definitions of the terms “children with a serious emotional disturbance” and “adults with a serious mental illness” and establishment of standardized methods for making estimates of the overall number (prevalence) and the number of new cases (incidence) for these two populations are required as part of the implementation process for the new block grants.

Summary of Comments

This document reflects a thorough review and analysis of comments received in response to two earlier notices published in the *Federal Register*, one on August 21, 1992 (p. 37979), the other on November 6, 1992 (p. 53118).

Nearly 1,200 letters were received by the close of the public comment period, expressing either support or concern regarding the proposed definitions. Those expressing support generally praised the breadth of the proposed definitions; many of these letters were poignant in that they cited instances where individuals were denied services because their disorders were not considered “serious” despite the fact that they were associated with functional impairments that substantially interfered with or limited the performance of one or more major life activities. This segment of the respondents favoured broad definitions and suggested that service priorities be established by States (with input from concerned citizens) within these broad parameters.

Those expressing concern generally noted that the use of Federal block grant funds should be limited to individuals with the most severe and disabling disorders, such as schizophrenia and major mood disorders. These letters, which also contained compelling personal stories, noted the importance of measuring “seriousness” by both disability and duration criteria, in addition to diagnosis. The letters described eloquently the devastating effect of these illnesses upon those with the disorders, as well as their families, and noted the paucity of public funds available for even this most needy and disabled group. A smaller set of letters focused on the inclusion or exclusion of specific disorders, such as substance use disorders, developmental disorders, attention deficit disorder (ADD), and Alzheimer’s disease.

These final definitions seek to strike a balance in addressing the diverse concerns outlined in this summary and discussed in greater detail below. The definitions are intended to be broad enough so that States will be able to develop an accurate description of the population in need of mental health services. Inclusion in the target population is based on the presence of functional impairment that seriously interferes or limits the performance of one or more major life activities, in addition to a qualifying diagnosis.

State mental health agencies play an important leadership role in planning a statewide “system of care” that draws upon Federal community mental Health Services Block Grant funds, as well as other public and private resources, to meet the needs of both children and adults. Since it is obvious that resources for each of these populations are inadequate in relation to need, States need to continue to set priorities to assure that the most seriously emotionally disturbed children and seriously mentally ill adults are given priority for services. In the case of adults, this most seriously mentally ill population is largely comprised of persons with schizophrenia and major mood disorders. Attention should also be given to those individuals with serious mental illnesses whose disorders have resulted in homelessness or inappropriate involvement in the criminal justice system.

Inclusion in or exclusion from the definitions is not intended to confer or deny eligibility for any other service or benefit at the Federal, State, or local levels. Additionally, the definitions are not intended to restrict the flexibility or responsibility of State or local governments to tailor publicly-funded service systems to meet local needs and priorities. However, all individuals whose services are funded through Federal Community Mental Health Services Block Grant funds must fall within the criteria set forth in these definitions. Any ancillary use of these definitions for purposes other than those identified in the legislation is outside the purview and control of CMHS.

Duration Criteria

Some comments suggested that duration criteria be added to each definition. Since duration criteria are already considered in making a specific □Diagnostic and Statistical Manual of Mental Disorders□ (DSM-III-R) diagnosis, adding additional criteria for duration would either be redundant or in conflict with the duration criteria already associated with specific diagnoses. To provide additional clarification, specific language has been inserted in both definitions noting that these disorders have episodic, recurrent, or persistent features.

Severity Criteria

Some comments urged that severity criteria be added to each definition. As initially drafted, both definitions required that to qualify as “serious”, a diagnosable mental, emotional or behavioral disorder must *also* be accompanied by functional impairment. In the revised definition, the threshold for functional impairment has been more specifically described as “substantially interfering with or limiting” one or more activities. Furthermore, the severity of functional impairment will be operationally defined during the process of developing standardized methods for estimation.

Etiology of the Disorders

Some comments suggested that any definition of “serious emotional disturbance” and “serious mental illness” must include specific language explaining that these are brain diseases with a neurobiological basis. Similarly, suggestions were made to narrow the definitions so that they include only those diagnoses whose etiology has been proven to be neurobiological.

Other comments acknowledged that although there is growing scientific evidence suggesting that some disorders (e.g., schizophrenia and mood disorders) have a neurobiological component, it is still not always possible to discern definitively which disorders are exclusively biological in origin, which disorders are exclusively psychosocial in origin (with no biological component), and what the relative contributions of biological and psychosocial factors are in the etiology of these disorders.

Since rapid advances are still taking place that can be expected to enhance our understanding of the neurobiology of mental illnesses, it would be premature to limit these target populations to only those diagnoses which have to date been documented as having neurobiological etiologies or to determine the extent of neurobiological involvement in given disorders.

Need for Cultural and Ethnic Sensitivity

Concerns were raised that the definitions of a serious emotional disturbance in children and serious mental illness in adults need to be sensitive to cultural and ethnic conceptions of illness. Those expressing concerns should be assured that, in operationalizing the definitions, CMHS will make every effort to incorporate the cautions expressed in DSM-III-R (pp. xxvi-xxvii) relating to the use of diagnostic categories and the need to be sensitive to differences in language, values, behavioral standards or norms, and idiomatic expressions of distress. Experiences or behaviors that may be normative in one culture can be interpreted as pathological in another. It is also recognized that certain symptom clusters are unique to particular cultures and may be no less disabling than those appearing in DSM-III-R. These and all other cultural and ethnic concerns relating to the definitions of mental illness should be seriously considered.

Inclusion of Attention Deficit Disorder

Concerns were raised from differing points of view about whether ADD should be included in the child definition or not. Some parents raised concerns about the negative effects of stigma if children with this disorder were “labelled” as having a serious emotional disturbance. Some treatment providers and educators, on the other hand, raised concerns about the difficulty in making a definitive diagnosis of ADD and the need to assure such children access to appropriate services. It was decided to include ADD in the definition because a significant group of children with functional impairments associated with this disorder might otherwise be excluded from services.

Inclusion of Alzheimer’s Disease

Numerous concerns were raised about the inclusion versus exclusion of individuals with Alzheimer’s disease in the definition. The group of letters supporting inclusion noted that individuals with Alzheimer’s disease often “fall through the cracks of the treatment system”, despite the needs of those afflicted, for mental health services to deal with the psychiatric sequelae of this disabling disorder. Another group of comments noted that Alzheimer’s disease is excluded from the definition of persons subject to Preadmission Screening and Annual Resident Review (PSARR) under the Omnibus Budget and Reconciliation Act (OBRA) for 1987, as well as from the definition of adults with serious mental illness found in the nursing homes provision of OBRA for 1990. These letters suggested that inclusion of Alzheimer’s disease in the definition of adults with serious mental illness might inadvertently be used as a rationale for denying coverage under OBRA. Because of the strong clinical rationale for inclusion, the definition includes the diagnosis of Alzheimer’s disease. It should be noted, however, that this inclusion is not intended to confer or deny coverage under OBRA to individuals otherwise eligible for that coverage.

Exclusion of Substance Use Disorders

Many comments correctly pointed out that substance use plays a strong role in exacerbating mental, emotional, and behavioral disorders and particularly increases the risk for serious emotional disturbance in children and adolescents. Also, some comments accurately noted that substance use disorders are included as diagnosable mental disorders in DSM-III-R.

Nevertheless, the decision to exclude substance use disorders from these definitions is based primarily on the fact that the Federal Government (through the Center for Substance Abuse Treatment) administers a separate substance abuse treatment block grant intended to fund treatment and prevention services to the States. Separate needs assessment procedures are required by the Congress to govern awards award of these substance abuse funds. If substance use disorders were included in these definitions, needs assessment activities required by the two newly separated mental health and substance abuse block grant programs of the two Centers would significantly overlap. We also believe that Congress did not intend that the limited funds now available to States under the Community Mental Health Services Block Grant be used to fund substance abuse services in the absence of a diagnosable mental disorder.

Finally, it should be noted that given the frequent co-occurrence of mental and substance use disorders and the need to provide better integrated care for individuals within this population, this exclusion does not apply to individuals who meet all other criteria set forth in these definitions and have a co-occurring substance use disorder. This latter group is included in the target definitions and applicants for Community Mental Health Services Block Grant funds will be encouraged to serve these individuals.

Exclusion of Developmental Disorders

Comments were also received concerning the exclusion of developmental disorders (including mental retardation and pervasive developmental disorders). Although these disorders are included within DSM-III-R, they have been excluded from this final notice unless they co-occur with another diagnosable serious emotional disturbance or serious mental illness. While comments received cited the frequent involvement of mental health practitioners in treatment planning and service delivery for these individuals (particularly autistic children), separate Federal block grant funds and processes for needs assessment cover these population groups.

Exclusion of "V" Codes

Concerns were raised as to whether or not DSM-III-R "V" Codes should be included in the definitions. These have been excluded in the final definition because they represent conditions that may be a focus of treatment but are not attributed to a mental disorder.

Exclusion of "At Risk" Groups

Persons at risk for serious emotional disturbance or mental illness are not included in these definitions. Mental health needs are shaped by a multitude of forces, including biology, environment, and life events. It is recognized that serious emotional disturbance or mental illness occurs more predictably in the presence of certain risk factors. These factors include, but are not limited to, homelessness; family history of mental illness; physical or sexual abuse or neglect; alcohol or other substance abuse; HIV infection; chronic and serious physical or developmental disability or illness; heavy and/or persistent substance use; and, in children, multiple out-of-home placements. Nevertheless, in our deliberations, the importance of approaching the needs of children and adolescents within a developmental context was stressed. Prevention and early intervention services should focus on people experiencing any of these risk factors. It should be noted that people with specific combinations of risk factors are at much higher risk for serious emotional disturbance or mental illness.

Congruence of the Child Definition With Other Federal Definitions

Concern was also expressed that the definition of "serious emotional disturbance"in children should be congruent with the definitions of other Federal agencies and/or departments, particularly the U.S. Department of Education (DOE) which uses the identical term in the regulations implementing part B of the Individuals with Disabilities Education Act (IDEA). This was felt to be important since the same children often seek various types of services from different agencies. While it makes sense that definitions used by Federal child-serving agencies conform to one another, the fact that identical terms may be used for different purposes should be kept in mind.

The definition used in this final notice is broader than the definition used in part B of IDEA. Thus, children who are considered seriously emotionally disturbed under this definition could be classified as having a different impairment under part B of IDEA. For example, certain children with attention deficit disorder considered "seriously emotionally disturbed" under this definition, would be considered "other health impaired" under part B of IDEA.

In this regard, it should be noted that meeting the criteria for a "serious emotional disturbance" under this definition does *not* confer eligibility for special education services funded by DOE under IDEA. Children accepted for IDEA services under the category of "Serious Emotional Disturbance" must meet specific IDEA criteria. Because of the incongruity between these two Federal definitions, any referrals from States, local, or private educational agencies for IDEA services should not be made using the “serious emotional disturbance” designation developed under this statute. Referrals to these educational agencies may use DSM-III-R terminology.

Standardized Methods for Estimation.

The definitions presented here will serve as the basis for developing standardized estimation methodologies by each State to determine the prevalence and incidence of serious mental illness in adults and serious emotional disturbance in children and adolescents. Although the definitions are being made available now, it is not anticipated that the estimation methodologies will be developed and available for use by States in time for the fiscal year (FY) 1994 Community Mental Health Services Block Grant applications. Thus, while States are encouraged to use these new definitions in FY 1994 applications, they will not be required to do so until the estimation methodologies have been developed and disseminated.

The estimation methodologies for “adults with a serious mental illness” and “children with a serious emotional disturbance” will be developed by two separate groups of technical experts who will operationalize the key concepts in each definition on the basis of available data sets. The CMHS will continue to consult with the National Institute of Mental Health and other Federal agencies in operationalizing these definitions. As noted earlier, a key activity of each group will be to develop operational measures for functional impairment. The goal will be to develop overall prevalence and incidence rates for socio-demographic subgroups that can be applied to respective population counts for a State in order to produce final State estimates. If relevant data sets are not available to achieve this goal, then the technical experts will recommend a plan and timetable through which such data can be collected.

Definitions

Definition of Children With a Serious Emotional Disturbance

Pursuant to section 1912(c) of the Public Health Service Act, as amended by Public Law 102-321 “children with a serious emotional disturbance” are persons:

- From birth to age 18[1],
- Who currently or at any time during the past year[2],
- Have had a diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within DSM-III-R[3],
- That resulted in functional impairment which substantially interferes with or limits the child’s role or limits the child=s role or functioning in family, school, or community activities[4].

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[1] The definition of serious emotional disturbance in children is restricted to persons up to age 18. However, it is recognised that some States extend this age range to persons less than age 22. To accommodate this variability, States using an extended age range for children=s services should provide separate estimates for persons below age 18 and for persons aged 18 to 22 within block grant applications.

[2] The reference year in each of the definitions refers to a continuous 12-month period because this is a frequently used interval in epidemiological research and because it relates closely to commonly used planning cycles.

[3] It is anticipated that the fourth edition of the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders, or DSM-IV, will be published and available in late 1993 or early 1994. The tenth revision of the International Classification of Diseases (ICD-10), developed by the World Health Organization, was published in 1992, but will probably not be officially adopted in the United States until late in the 1990's. These revised nomenclatures are likely to affect both the language of mental disorders and the types of disorders currently included or excluded from these definitions. As appropriate, the definitions will be updated by CMHS accordingly.

[4] Functional impairment which Asubstantially≅ interferes will be operationally defined as part of the process of developing standardized methods for estimation.

These disorders include any mental disorder (including those of biological etiology) listed in DSM-III-R or their ICD-9-CM equivalent (and subsequent revisions), with the exception of DSM-III-R "V" codes, substance use, and developmental disorders, which are excluded, unless they co-occur with another diagnosable serious emotional disturbance. All of these disorders have episodic, recurrent, or persistent features; however, they vary in terms of severity and disabling effects.

Functional impairment is defined as difficulties that substantially interfere with or limit a child or adolescent from achieving or maintaining one or more developmentally-appropriate social, behavioral, cognitive, communicative, or adaptive skills. Functional impairment of episodic, recurrent, and continuous duration are included unless they are temporary and expected responses to stressful events in the environment. Children who would have met functional impairment criteria during the referenced year without the benefit of treatment or other support services are included in this definition.

Definitions of Adults With a Serious Mental Illness

Pursuant to section 1912(c) of the Public Health Service Act, as amended by Public Law 102-321 "adults with a serious mental illness" are persons:

- Age 18 and over[1],
- Who currently or at any time during the past year[2],
- Have had a diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within DSM-III-R[3],
- That has resulted in functional impairment which substantially interferes with or limits one or more major life activities[4].

These disorders include any mental disorder (including those of biological etiology) listed in DSM-III-R or their ICD-9-CM equivalent (and subsequent revisions), with the exception of DSM-III-R "V" codes, substance use, and developmental disorders, which are excluded, unless they co-occur with another diagnosable serious emotional disturbance. All of these disorders have episodic, recurrent, or persistent features; however, they vary in terms of severity and disabling effects.

Functional impairment is defined as difficulties that substantially interfere with or limit role functioning in one or more major life activities including basic daily living skills (e.g., eating, bathing, dressing); instrumental living skills (e.g., maintaining a household, managing money, getting around the community; taking prescribed medication); and functioning in social, family, and vocational/ educational contexts. Adults who would have met functional impairment criteria during the referenced year without the benefit of treatment or other support services are considered to have serious mental illnesses.

Dated: May 14, 1993

Joseph R. Leone,

Acting Deputy Administrator, Substance Abuse and Mental Health Services Administration.
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DEPARTMENT OF HEALTH AND HUMAN SERVICES

Alcohol, Drug Abuse, and Mental Health Administration

Estimation Methodology for Children with a Serious Emotional Disturbance (SED)

AGENCY: Centre for Mental Health Services, Substance Abuse and Mental Health Services Administration, HHS.

ACTION: Solicitation of Comments

SUMMARY: This notice describes the proposed methodology for identifying and estimating the number of children with a serious emotional disturbance (SED) within each State. This notice is being served as part of the requirements of Public Law 102-321, the ADAMHA Reorganization Act of 1992.

COMMENT PERIOD: The Administrator is requesting written comments which must be received on or before December 5, 1997.

ADDRESSES: Comments should be sent to Judith Katz-Leavy, M.Ed., Senior Policy Analyst, Office of Policy, Planning and Administration, Center for Mental; Health Services, Parklawn Building, Room 15-87, 5600 Fisher's Lane, Rockville, MD 20857. (301) 443-1563 fax.

FOR FURTHER INFORMATION CONTACT: A detailed paper outlining the estimation methodology described here is available from: Judith Katz-Leavy, M.Ed., Senior Policy Analyst, Office of Policy, Planning and Administration, Center for Mental; Health Services, Parklawn Building, Room 15-87, 5600 Fisher's Lane, Rockville, MD 20857. (301) 443-1563 fax.

Background

Public Law 012-321, the ADAMHA Reorganization Act of 1992, amended the Public Health Services Act and created the Substance Abuse and Mental Health Services Administration (SAMHSA). The Centre for Mental Health Services (CMHS) was established within SAMHSA to coordinate Federal efforts in the prevention, treatment and promotion of mental health. Title II of Public Law 102-321 establishes a Block Grant for Community Mental Health Services (Block Grant) administered by CMHS, which permits the allocation of funds to States for the provision of community mental health services to children with serious emotional disturbance and adults with a serious mental illness. Public Law 102-321 stipulates that States estimate the incidence (number of new cases) and prevalence (total number of cases in a year) in their applications for Block Grant funds, see 42 U.S.C. 300 (2). The statute also requires the Secretary to establish definitions of adults with a serious mental illness and children with a serious emotional disturbance. In addition, the Secretary is required to develop standardized methods for the states to use in providing the estimates required as part of their block grant applications. See 42 U.S.C. 300 (2). As part of the process of implementing this new Block Grant, definitions of the terms "children with a serious emotional disturbance" and "adults with a serious mental illness" were announced on May 20, 1993 in the **Federal Register**, Volume 58, No. 96, p 29422. Subsequently, a group of technical experts was convened by CMHS to develop an estimation methodology to "operationalize the key concepts" in the children with a serious emotional disturbance. A similar group has prepared an estimation methodology for adults with a serious mental illness.

Serious Emotional Disturbance (SED)

The CMHS definition is that "children with a serious emotional disturbance" are persons:

- From birth up to age 18;
- Who currently or at any time during the past year,
- Have had a diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within DSM-III-R,
- That resulted in functional impairment which substantially interferes with or limits the child's role or functioning in family, school, or community activities (p.29425).

The definition goes on to indicate that, "these disorders include any mental disorder (including those of biological etiology) listed in DSM-III-R or their ICD-9-CM equivalent (and subsequent revisions), with the exception of DSM-III-R "V" codes, substance use, and developmental disorders, which are excluded, unless they co-occur with another diagnosable serious emotional disturbance" (p. 29425). .

Further, the definition indicates that, "Functional impairment is defined as difficulties that substantially interfere with or limit a child or adolescent from achieving or maintaining one or more developmentally-appropriate social, behavioral, cognitive, communicative, or adaptive skills. Functional impairment of episodic, recurrent, and continuous duration are included unless they are temporary and expected responses to stressful events in the environment. Children who would have met functional impairment criteria during the referenced year without the benefit of treatment or other support services are included in this definition" (p. 29425).

The first decision that was made was to focus on community epidemiological studies done in the United States that used either the DSM-III-R, or its predecessor, the DSM-III, and that provided information on the prevalence of mental disorders using a structured interview procedure. The group decided that given the relatively small number of community epidemiological studies that had been conducted in the United States, it would be a mistake to exclude those few studies that had used the DSM-III, given its considerable similarity to the DSM-III-R.

The most frequently used structured interview procedure was the Diagnostic Interview Schedule for Children (DISC), originally developed by A. Costello and his colleagues (A. Costello, Edelbrock, Dulcan, Kalas, & Klaric, 1984), which includes both child and parent versions. Other interview procedures include the Diagnostic Interview for Children and Adolescents (DICA, Herjanic & Reich, 1982), the Child and Adolescent Psychiatric Assessment (CAPA, Angold & E. Costello, 1995), and the Composite International Diagnostic Interview (CIDI, Kessler et al, 1994).

The group elected to consider that a child met the criteria of a diagnosable disorder either if a diagnosis was obtained from his/her own report on the structured interview, or from the parent's report on the structured interview, or from the combination of the youth's report and the parent's report, even if neither one met the criteria separately. While there are other approaches to combining data from two or more sources that were considered and have been used (Cohen, Velez, & Kohn, 1987; Reich & Earls, 1987), the group chose to use this "either/ or" approach because it was believed that discrepant responses can be a source of valuable information.

The greater challenge for the group was operationalizing the concept of "functional impairment which substantially interferes with or limits the child's role or functioning in family, school, or community activities" (**Federal Register**, 1993, p. 29245). Part of the difficulty was in identifying appropriate measures, and understanding the inter-relationship between the different measures , but the greatest difficulty was in determining the appropriate threshold or cut-off point on a scale for concluding that there was functional impairment that was "substantially" interfering with functioning.

After much discussion, it was decided that in the absence of any "gold standard" that could be used as a basis for establishing such a cut-off point, and in the absence of any social validation process that has established a consensus on what the threshold should be, data would be presented for cut-off points at two levels of functional impairment. This has the benefit of providing additional information to planners and policy-makers to us, and to stimulate further discussion and research to try to better establish an appropriate threshold. The higher prevalence rate to be reported, which uses the more inclusive and less conservative cut-off point, still meets the definition of "seriously emotionally disturbed." The less inclusive and more conservative estimate can be used for more targeted efforts to plan on behalf of a more limited number of children whose level of functional impairment is especially severe.

A variety of measures of impairment were used in the community studies, and their psychometric properties were reviewed for the group by Hodges (1994). The most frequently used measure is a global measure, the Children's Global Assessment Scale (Bird, Canino, Rubio-Stipec, & Ribera, 1987; Shaffer, Gould, Brasic, Ambrosini, Fisher, Bird, & Ahwalia, 1983), on which a youngster receives a rating ranging from 0 to 100 with lower scores indicating greater impairment. Scores are given in ten point intervals, and for each score there is a narrative description of the meaning of the score.

The group considered several cut-off points on the CGAS, and decide to use a score of 60 or lower as the cut-off point for the less conservative definition of serious emotional disturbance. The narrative description for 60 is:

"Variable functioning with sporadic difficulties or symptoms in several but not all social areas. Disturbance would be apparent to those who encounter the child in a dysfunctional setting or time but not to those who see the child in settings where functioning is appropriate."

This decision was made partly on the basis of the work by Bird and his colleagues that indicates that,

"Empirical work has demonstrated that the optimal cut-off score on the CGAS that demonstrates definite impairment is a score lower than 61" (Bird, Shaffer, Fisher, Gould, Staghezza, Chen, & Hoven, 1993, p. 103).

The score of 50 will be used as the more stringent cut-off score to denote the more severe impairment. The narrative description for 50 is:

"Moderate degree of interference in most social areas or severe impairment in functioning in one area, such as might result from, for example, suicidal preoccupations and ruminations, school refusal and other forms of anxiety, obsessive rituals, major conversion symptoms, frequent anxiety attacks, frequent episodes of aggressive or other anti-social behavior with some preservation of meaningful social relationships".

Data Sources

There are no national epidemiological studies of mental disorders for children and/or adolescents that have been conducted in the United States. This deficit makes it difficult to derive prevalence rates that are generalizable to the entire United States. In the absence of national studies, the group chose to examine the results from eight smaller, and more localised studies including, Kashani, et al. (1987), Costello, et al. (1988) (1994), Bird, et al. (1988), Kessler, et al. (1994), Jensen, et al. (1995), MECA (Lahey, et al., 1996, Shaffer, et al., 1996), and Costello, et al., (1005). (see Table 1 for a summary of these studies).

The group of technical experts determined that it is not possible to develop estimates of incidence using currently available data. However, it is important to note that incidence is always a subset of prevalence. In the future, incidence and prevalence data will be collected.

Study	Measure and DSM System	Sample Size and age[5]	Measure of impairment
Kashani et al 1987	DICA/DSMIII	N=150, 14-16 yr. olds	Rating of 3 or 4 by Clinicians on 4 Point Scale of Need for Tx and Impairment
Costello et al 1988	DISC 1.3 DSMIIIR.....	Screened=789, Interviewed=278, 7-11 yr. olds.	CGAS 60 or less
1994 (follow-up)..................	DISC 2.3 DSMIIIR.....	Screened=789, Interviewed=263, 12-18 yr. olds.	CGAS 60 or less
Bird et al 1988	DISC 1.3*/DSMIII......	n=777 first stage n=386 second stage 4-16 yr. olds	CGAS 60 or less
Kessler et al 1994	CIDI/DSMIII-R (adult diagnoses)	n=600 (about), 15-17 yr. olds (Part of study of 15-54 yr. olds)	Aggregation of 5 measure. (Sic)
Jensen et al 1995...............	DISC2.1/DSMIIIR......	n=295 6-17 yr. old..............	In tx or need of tx Internal impairment (1 or more) Internal impairment (2 Domains or more)
MECA (Lahey et al, 1996 Shaffer et al, 1996)	DISC2.1/DSMIII-R	n=1265 9-17 yr. Olds..........	CGAS 60 or Less CGAS 50 or Less. Internal impairment, (3 or more), (5 or more).
Costello et al 1995	CAPA/DSMIII-R	2 stages n=4500 9, 11 and 13 yr. olds	Internal impairment, (1 or more), (2 or more), (3 or more). CGAS (60 or less) CAFAS (20 or higher)

Estimation procedures

Based on the CMHS definition of serious emotional disturbance, and the existing data bases which provide prevalence rates that can be applied to this definition, it is estimated that the prevalence rate of serious emotional disturbance in children 9-17 years of age is in the range of 9-13 percent. Presently the data are inadequate to estimate prevalence rates for children under the age of nine. It is also concluded that is a more stringent definition of impairment is desired than was used for the estimated range of 9-13 percent, then the range is from 5-9 percent. The difference between the two estimates is that the measured level of functional impairment is greater in the second estimate and has been characterized in Figure 1 as "extreme functional impairment". Children at both levels of impairment are considered to have a "serious emotional disturbance" however; the group of children falling into the range 5-9 percent constitutes a subset of the 9-13 percent.

It should be noted that the estimated prevalence range for 9-17 year olds is higher than the range recommended by Kessler et al. (1995) for serious mental illness in adults (5.7 percent). The higher estimate for 9-17 year olds is consistent with the fact that using the National Comorbidity Study (NCS) data base, which served as the main data base for the estimation of prevalence in adults, Kessler found that the 12 month prevalence for 15-17 year olds was 8.7 percent. To further understand this difference, however, it is important to recognize that within the 18-54 year range there are differences associated with age. For example, in Kessler's first article, it was reported that "disorders are consistently most prevalent in the youngest cohort (age range 15-24 years) and generally decline monotonically with age" (Kessler et al., 1994, p. 13). This was also the case with serious mental illness, as reported by Kessler et al. (1995). This finding

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[5] The original table has the heading ASystemSample size and age≅. The word ASystem≅ is presumably a typographical error, and has been omitted here. [MH-CCP Note]

of highest prevalence rates in youngest adults with rates decreasing with increasing age was not only obtained in the NCS but also in the Epidemiologic Catchment Area study, completed in the early 1980s (Regier et al., 1988). Also, the longitudinal research by Cohen et al. (1993), and the findings of Reinherz et al. (1993) on 17-19 year olds point to especially high prevalence rates for older adolescents.

Within the 9-17 year age range, the data are adequate to permit determination of gender and socio-economic differences abut are not adequate to permit determination of race differences. The comparative analyses by Costello & Messer (1995) are particularly useful for looking at gender and socio-economic differences. Both for global and specific measures of impairment, they find the prevalence rates of serious emotional disturbance in the samples already mentioned to be about twice as high in low socio-economic groups as in high socio-economic groups. This finding is consistent for every one of the seven data bases included in the analysis by Costello & Messer (1995). Jensen et al. (1995) fail to find different prevalence rates by socio-economic status in their study. However, as they point out the socio-economic range in their sample was limited by the fact that all of the youngsters were military dependents.

The following steps were taken to adjust for the differences in socio-economic circumstances. The 1995 estimates of children and adolescents with serious emotional disturbance by state are provided in Table 3.

Step 1

States were sorted by poverty rates (1995), in ascending order. Using this sort order, States were initially classified into three groups of equal proportions, i.e., the first 17 states were put into Group A; the next 17 States into Group B; the remaining 17 States, into Group C. However, in reviewing the results, we noted that observations 17 and 18 differed by .01 percent. Observation number 18 was included in group A. For this reason, Group A has 18 cases, Group B has 16 cases, and Group C has 17 cases. Group A is the group that has a relatively low percentage of children in poverty. Group B is the mid point, and Group C is the group with the highest percentage of children in poverty.

Step 2

At a level of functioning of 50 (LOF=50), the number of children and adolescents with SED is calculated to be between 5-7 percent of the number of youth 9-17 years for Group A. For Group B, the estimate is between 6-8 percent of the number of youth 9-17 years. The estimated SED population for Group C is calculated to be between 7-9 percent of the number of youth 9-17 years.

Step 3

At a level of functioning of 60 (LOF=60), the number of children and adolescents with SED is calculated to be between 9-11 percent of the number of youth 9-17 years for Group A. For Group B, the estimate is between 10-12 percent of the number of youth 9-17 years. The estimated SED population for Group C is calculated to be between 11-13 percent of the number of youth 9-17 years.

TABLE 2.- 1995 ESTIMATES OF CHILDREN AND ADOLESCENTS WITH SERIOUS EMOTIONAL DISTURBANCE; STATE ESTIMATES ALGORITHMS

States	Estimated population			
	LOF*=50		LOF*=60	
	Lower Limit (percent)	Upper Limit (percent)	Lower Limit (percent)	Upper Limit (percent)
Group A, Lowest percent in poverty	5	7	9	11
Group B, Medium percent in poverty..............................	6	8	10	12
Group C, Highest percent in poverty	7	9	11	13
*LOF=Level of functioning from the Children=s Global Assessment Scale.				

Analyses show very similar prevalence rates for girls and boys in the seven sites. The absence of gender differences is also apparent in the findings of Jensen et al. (1995). Kessler (1995), however, reports a higher prevalence rate in females than males using the adult diagnostic categories, and an older adolescent sample (15-17 year olds). There is no indication that overall prevalence rate of serious emotional disturbance differs by gender within the 9-17 age range although there clearly are gender differences in prevalence of particular diagnoses, such as conduct disorder and depression, and there are suggestions that the rates may diverge in later years of adolescence.

Overall, there is support for the use of socio-economic status as a correction factor in developing a methodology for the estimation of the prevalence of serious emotional disturbance. There is no empirical basis at this point for using other correction factors.

TABLE 3.- 1995 ESTIMATES OF CHILDREN AND ADOLESCENTS WITH SERIOUS EMOTIONAL DISTURBANCE BY STATE

	State	Number of youth 9-17	Percent in poverty	LOF*=50		LOF*=60	
				Lower limit	Upper limit	Lower limit	Upper limit
Total		33,706,204		2,118,269	2,792,391	3,466,516	4,140,636
1	New Hampshire	147,695	4.07	7,385	10,339	13,293	16,246
2	Alaska	90,955	8.96	4,548	6,367	8,186	10,005
3	New Jersey	932,671	9.60	46,634	65,287	83,940	102,594[6]
4	Utah	349,086	9.76	17,454	24,436	31,418	38,399[7]
5	Minnesota	643,892	11.30	32,195	45,072	57,950	70,828
6	Colorado	491,930	11.34	24,597	34,435	44,274	54,112
7	Nebraska	231,037	11.62	11,552	16,173	20,793	25,414
8	Missouri	709,439	11.74	35,472	49,661	63,850	78,038
9	Kansas	354,722	12.55	17,736	24,831	31,925	39,019
10	Wisconsin	706,004	12.56	35,300	49,420	63,540	77,660
11	Hawaii	143,901	13.97	7,195	10,073	12,951	15,829
12	North Dakota	91,443	14.13	4,572	6,401	8,230	10,059
13	Virginia	790,359	14.38	39,518	55,325	71,132	86,939
14	Nevada	186,695	14.41	9,335	13,069	16,803	20,536
15	Indiana	758,633	15.24	37,932	53,104	68,277	83,450
16	Rhode Island	115,176	15.36	5,759	8,062	10,366	12,669
17	Delaware	85,396	15.56	4,270	5,978	7,686	9,394
18	Maine	160,434	15.57	8,022	11,230	14,439	17,648
19	Vermont	76,500	15.79	4,590	6,120	7,650	9,180
20	Maryland	608,209	15.80	36,493	48,657	60,821	72,985
21	Wyoming	75,106	16.21	4,506	6,008	7,511	9,013
22	Georgia	942,161	16.30	56,530	75,373	94,216	113,059
23	Massachusetts	680,101	17.12	40,806	54,408	68,010	81,612
24	Iowa	385,583	17.39	23,135	30,847	38,558	46,270
25	Washington	714,567	17.81	42,874	57,165	71,457	85,748
26	Connecticut	378,473	18.03	22,708	30,278	37,847	45,417
27	Pennsylvania	1,462,731	18.07	87,764	117,018	146,273	175,528
28	Oregon	411,543	18.22	24,693	32,923	41,154	49,385
29	Michigan	1,275,452	18.36	76,527	102,036	127,545	153,054
30	Ohio	1,451,220	19.33	87,073	116,098	145,122	174,146
31	Idaho	183,829	20.57	11,030	14,706	18,383	22,059
32	South Dakota	108,855	20.74	6,531	8,708	10,886	13,063
33	North Carolina	879,091	21.06	52,745	70,327	87,909	105,491
34	Kentucky	504,373	21.25	30,262	40,350	50,437	60,525
35	Illinois	1,517,182	22.14	106,203	136,546	166,890	197,234
36	Tennessee	658,573	22.23	46,100	59,272	72,443	85,614
37	Montana	126,834	22.39	8,878	11,415	13,952	16,488
38	Arkansas	337,718	22.44	23,640	30,395	37,149	43,903
39	Texas	2,623,654	24.53	183,656	236,129	288,602	341,075
40	California	3,968,950	24.97	277,827	357,206	436,585	515,964
41	Oklahoma	457,496	24.98	32,025	41,175	50,325	59,474
42	Arizona	542,019	25.31	37,941	48,782	59,622	70,462
43	Florida	1,623,697	25.50	113,659	146,133	178,607	211,081
44	New York	2,141,435	25.51	149,900	192,729	235,558	278,387
45	West Virginia	231,390	26.93	16,197	20,825	25,453	30,081
46	Alabama	547,671	27.50	38,337	49,290	60,244	71,197
47	Louisiana	639,158	29.69	44,741	57,524	70,307	83,091
48	South Carolina	470,875	32.11	32,961	42,379	51,796	61,214
49	Washington, DC	48,365	35.33	3,386	4,353	5,320	6,287
50	New Mexico	251,231	36.59	17,586	22,611	27,635	32,660
51	Mississippi	392,694	37.03	27,489	35,342	43,196	51,050

Conclusions

Of the 33 million children and adolescents between the ages of 9-17 in the United States, 9-13 percent or 3.5-4 million of these youngsters have a serious emotional disturbance at a score of 60 or lower on the

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[6] This is a correction of 10,259 in the original. [See FR 63(137) 1998, p.38662] [MH-CCP Note]

[7] This is a correction of 3,839 in the original. [See FR 63(137) 1998, p.38662] [MH-CCP Note]

Children=s Global Assessment Scale. A more stringent definition of impairment, representing a score of 50 or lower on the Children=s Global Assessment Scale shows a range of 5-9 percent or 2.1-2.8 million youngsters with a serious emotional disturbance (see Figure 1). Currently there are not sufficient studies to determine the prevalence rate in very young children ages birth-8. Therefore the estimated number of children with serious emotional disturbance presented here is a low estimate since it only included data for 9-17 year olds.

Limitations

There are several limitations for these estimates. First, it must be recognized that these estimated ranges are based on the findings from many modest-sized studies which varied not only in population but often in instruments that were used (particularly for measurement of impairment), methods that were used to collect the data, and even the diagnostic system that was used.

Second, there are only two studies that include youngsters under the age of nine, and these studies are not adequate to provide a base for any estimate of the prevalence of serious emotional disturbance for children under the age of nine. The estimate presented here is intended for children between nine and 17 years of age.

Third, the data are also inadequate to determine prevalence estimates for children of different racial and ethnic backgrounds. Several of the studies included youngsters of color in their sample and two studies were done exclusively on Hispanic youngsters in Puerto Rico (Bird et al., 1988, & one of the MECA sites). However, the sample sizes are too small and not sufficiently representative of African-American, Hispanic, Asian American, or native American populations to permit estimates to be made.

Fourth, with the absence of any large national studies, it is not possible to determine whether rates differ in urban versus rural areas, or different regions of the country.

Scope of Application

Inclusion in or exclusion from the definition is not intended to confer or deny eligibility for any service or benefit at the Federal, State, or local levels. Only a portion of children with a serious emotional disturbance seek treatment in any given year. Due to the episodic nature of serious emotional disturbance, some children and adolescents may not require mental health services at any particular time. Additionally, the definition is not intended to restrict the flexibility of the State or local government to tailor publicly funded service systems to meet local needs and priorities. However, all individuals whose services are funded through Federal Community mental Health Services Block Grant funds must fall within the criteria set forth in these definitions. Any ancillary use of these definitions for purposes other than those identified in the legislation is outside the purview and control of CMHS.

It is anticipated that additional work will be done in future years to refine and update the estimation methodology. CMHS will keep States apprised as this work develops.

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BILLING CODE 4160-20-U.

Figure 1

Population Proportions

	Figure shows three concentric circles representing the 5-19% in the centre, with the overlapping 9-13%, and then the overlapping 20%, with arrows from the text below.	
5-9% Of 9 to 17 year olds (2.1 - 2.8 million) Youth with a serious emotional disturbance, & extreme functional impairment	9-13% Of 9 to 17 year olds (3.5 - 4.0 million) Youth with a serious emotional disturbance, with substantial functional impairment	20% Of 0-17 year olds (13.7 million) Youth with any diagnosable disorder

BILLING CODE 4160-20-C.

Dated: September 22, 1997.

Richard Kopanda,
Executive Officer, SAMHSA.

[FR Doc. 97-26372 Filed 10-3-97; 8:45 am]

BILLING CODE 4160-20-U.

[Federal Register,** Volume 63, Number 137, July 17, 1998, pp. 38661 - 38665**]

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Substance and Mental Health Services Administration

Children with a Serious Emotional Disturbance; Estimation Methodology

AGENCY: Centre for Mental Health Services, Substance Abuse and Mental Health Services Administration, HHS.

ACTION: Final Notice

SUMMARY: This notice describes the final methodology to identify and estimate the number of children with a serious emotional disturbance (SED) within each State. This notice is being published as part of the requirements of Public Law 102-321, the ADAMHA Reorganization Act of 1992.

EFFECTIVE DATE: October 1, 1998.

Background

Public Law 012-321, the ADAMHA Reorganization Act of 1992, amended the Public Health Services Act and created the Substance Abuse and Mental Health Services Administration (SAMHSA). The Centre for Mental Health Services (CMHS) was established within SAMHSA to coordinate Federal efforts in the prevention and treatment of mental illness, and the promotion of mental health. Title II of Public Law 102-321 establishes a Block Grant for Community Mental Health Services administered by CMHS, that permits the allocation of funds to States for the provision of community mental health services to children with SED and adults with a serious mental illness (SMI). Public Law 102-321 stipulates that States estimate the incidence (number of new cases) and prevalence (total number of cases in a year) of individuals with either SED or SMI in their applications for block grant funds. As part of the process of implementing this new block grant, definitions of the terms Achildren with a serious emotional disturbance≅ and Aadults with a serious mental illness≅ were announced on May 20, 1993 in the **Federal Register** Notice, Volume 58, No. 96, p 29422. Subsequently, a group of technical experts was convened by CMHS to develop an estimation methodology to Aoperationalize≅ the key concepts in the definition of children with SED. A similar group prepared an estimation methodology for adults with a SMI (March 28, 1997, **Federal Register** Notice, Volume 62, No. 60 p.14928.)

Summary of Comments

This document reflects a thorough review and analysis of comments received in response to an earlier notice published in the **Federal Register**, on October 6, 1997. Ten letters expressing either support or concern regarding the proposed methodology were received by the close of the public comment period. Those expressing support praised the efforts of the CMHS team of technical experts to develop reliable State estimates for the number of children with SED. Comments expressing concern generally noted limitations similar to those identified by the team of technical experts in the original October 6, 1997, **Federal Register** notice, These limitations included the exclusion of children from birth to age 8 and the exclusion of variables such as ethnicity and geographical location. Additionally, concerns were raised about whether the proposed methodology represented prevalence rates more precisely than State surveys or local data collection efforts.

Before expressing the comments, CMHS extends appreciation to representatives from Atlantic County, New Jersey, and the University of Texas Medical Branch at Galveston for directing attention to errors made in Table 3- 1995 Estimates for Children with SED by State. The New Jersey upper estimate for less-impaired children should read 102,594, and the Utah upper limit should read 38,399. These corrections to Table 3 have been made and will be reflected in all subsequent publications.

Purpose of the Methodology

Although several comments indicated satisfaction with the estimation methodology, several others requested that CMHS clarify appropriate use of the methodology. In response, CMHS emphasizes that the methodology for children and adolescents with SED was developed specifically for States to use in the area of planning and program development. Since it is obvious that resources for this population of children are inadequate in relation to need, States should continue to set priorities to assure the most cost-effective use of all available resources. Inclusion or exclusion of any individual based on this methodology is not intended to either confer or deny eligibility for any other service or benefit at the Federal, State, o local level.

Estimation Methods

Some comments suggested that surveys and other State-specific or local data would provide more precise estimations than the proposed methodology. CMHS understands this concern. However, a group of technical experts established by CMHS determined that the most valid method to estimate the prevalence of SED was to examine findings from extant community epidemiological surveys that used a structured diagnostic interview connected to the DSM-III or DSM-III-R system. The group of technical experts thoroughly searched for findings that met this criteria (sic) and incorporated findings from all of the studies in its report. CMHS recognizes the value of local or statewide surveys but continues to support the view that the most valid estimates can be derived from community epidemiological studies that have used a structured diagnostic interview. CMHS will support the use of State data if they are based on community epidemiological studies that include a standardized diagnostic interview that is linked with the DSM system and that also includes a measure of functional impairment.

Concerns were also raised that the singular use of poverty as an adjustment to prevalence rates was based on convenience. This is not the case and the October 6, 1997, Federal register Notice summarizes the fastidious efforts taken to examine other potential variables. For each of the other variables considered, either insufficient evidence existed to determine if an adjustment should be made (e.g., for variables such as race and ethnic background, and population density) or the available evidence suggested that adjustment should not be made (i.e., gender). The findings from these efforts indicated that the prevalence of SED is greater in children from low socio-economic backgrounds than in children from middle-class or upper-class backgrounds. As a result, the decision was made to include in-poverty as an adjustment factor. While the data were clear about an overall relationship, in the absence of any national studies, the quantitative adjustment that should be made could not be determined with precision. It therefore was decided that since the report could offer only general estimates of prevalence, given the shortcomings of the available data, the simplest and perhaps clearest way to adjust for percent-in-poverty would be to divide the States into groups based on the percent-in-poverty. Although this Agrouping≅ method may potentially exaggerate the differences between States that fall in different categories, the percent-in-poverty measures differ in a relatively minor way. Because the estimates are not to be used to determine funding levels, the decision was made to use this grouping method despite minor problems. It is hoped that additional research will permit more precise estimations in the future.

With regard to estimation methods, concerns were also raised that the selection of povery as the only variable to Acorrect≅ the estimated prevalence of SED would produce data that underestimates the State prevalence rates of SED. Several States emphasized that additional factors, including geographical data (urban/ rural), would provide more representative data. CMHS recognizes the importance of this data. However, presently, the data in this area is not precise enough to draw estimates; in the absence of a national study, CMHS chose to utilize and analyze the most precise data available. In this instance, percent-in-poverty rates proved to be the most precise data available. As new data become available, these issues will be revisited.

One comment raised specific questions about the comparability of the prevalence estimates for children with SED with estimates from other studies. For example, Knitzer, in Aat the Schoolhouse Door≅, estimates that 3 to 5 percent of children are Ajudged to be seriously emotionally disturbed≅ (p. Xii). However, this book was published in 1990, before CMHS developed the definition of SED on which the present estimate is based and before the results of most of the studies included in the present report were available. Similarly, the 1969 Joint Commission on the Mental Health of Children indicates that 2 to 3 percent suffered from severe disorders. The present report is based not only on more recent data but also on new instruments and a revised diagnostic system.

Finally, concerns were raised that prevalence estimates for children/ adolescents with SED in individual States are not uniformly consistent with estimates for adults with SMI published by CMHS. In comparing data for children and adults, it should be remembered that the data for children cover a restricted period of nine years (from ages none through 17) while the adult estimates are for the adult lifetime, beginning at age 18 and over. Therefore, it is not surprising that within the same State estimates for children may be lower or higher than adults. Further, the group of technical experts that developed estimates for SMI found substantially higher prevalence rates in young adults than in older adults. Consequently, States with a higher percentage of elderly will have lower overall prevalence rates of SMI than will States with a high percentage of young adults. When comparing adult prevalence rates with those for children, it is important to remember that the children=s data are based on a relatively short developmental stage in relation to the adult rates.

Exclusion of Children Age Birth to 8

Several comments acknowledged the paucity of research on children from birth to 8 years and inquired about futire research efforts by CMHS to address this population. CMHS acknowledges the need to develop estimation methodology for this very important population of young children. Current plans for developing this methodology include an updated literature review of prevalence data for children with a SED in the birth to 8 age group. CMHS will make these data available when obtained.

Exclusion of Puerto Rico

It was brought to the attention of CMHS that there was significant interest in obtaining prevalence estimates for children with SED in Puerto Rico. Estimates of children with SED published on Monday, October 6, 1997, in **Federal Register**, Notice Volume 62, No 193, p. 52139, were based on 1995 U.S. Census Bureau population and poverty rate data. These census Bureau estimates are not available for Puerto Rico and other U.S. territories. CMHS responds to these comments by obtaining SED estimates for Puerto Rico derived from 1990 census data (the most recent year for which data are available).

According to the Census Bureau, the poverty rate for Puerto Rico in 1990 was 66.8 percent for persons under 18 years. Using the steps outlines on page 52141 of the above **Federal Register** Notice, Puerto Rico with a poverty rate of 66.8 percent will be included in group C (the group with poverty rates in excess of 22 percent). At a level of functioning of 50 (LOF=50), the number of children and adolescents with SED is estimates to be between 7-9 percent of youth 9-17 years of age. At a level of functioning of 60 (LOF=60), the number of children and adolescents with SED is estimated to be between 11-13 percent of youth 9-17 years of age.

TABLE 1.- ESTIMATES OF CHILDREN AND ADOLESCENTS WITH SERIOUS EMOTIONAL DISTURBANCE; STATE ESTIMATES ALGORITHMS

Territory	Number of youth 9-17	Percent in poverty	LOF*=50		LOF*=60	
			Lower limit	Upper limit	Lower limit	Upper limit
Puerto Rico................................	602,309	66.8	42,162	54,208	66,254	78,300
*LOF=Level of functioning from Children=s Global Assessment Scale.						

Exclusion of Substance Use Disorders

The decision to exclude substance use disorders from this estimation methodology was addressed in the 1993 federal register Notice that provided a national definition of SED. Because substance use disorders are not included in the definition of serious emotional disorder, they are not included in the current estimation methodology. Please see the **Federal Register** Notice (1993, 58(96), p. 29424) for a more detailed explanation.

Instrumentation

CMHS stresses that the methodology is based on the Children=s Global Assessment Scale (CGAS) because the CGAS was the mosy commonly used instrument found in the community-based epidemiology literature received by the group of technical experts. When other instruments were used, the findings were taken into consideration. CMHS recognizes that a number of States use the

Children=s Adolescent Functional Assessment Scale - Mini Scale and, consequently, does not discourage the use of this instrument.

Definition of Serious Emotional Disturbance

Some States expressed concern that the definition of SED used to estimate prevalence may result in an overestimate of prevalence by counting children who had a diagnosis and functional impairment over a 2-year period rather than a 1-year period.

The definition used to estimate prevalence is Atotal number of cases in a year≅. None of the studies cited in the report gathered prevalence information of a duration of greater than a year. In fact, most of the studies used to formulate the prevalence estimates utilized the Diagnostic Interview Schedule for Children, which derives prevalence information for a 6-month time period. Therefore, not only does the definition ensure against an overestimate of prevalence but also there is a possibility of a slight under estimate, based on the methods used.

Estimation procedures

The following steps were taken to adjust for differences in State socio-economic circumstances. The 1995 State-by-State estimates of children and adolescents with SED are provided in Table 3.

Step 1

States were sorted by poverty rates (1995), in ascending order. Using this sort order, States were initially classified into three groups of equal proportions, i.e., the first 17 states were put into Group A; the next 17 States into Group B; the remaining 17 States, into Group C. However, in reviewing the results, we noted that observations 17 and 18 differed by .01 percent. Observation number 18 was included in group A. For this reason, Group A has 18 cases, Group B has 16 cases, and Group C has 17 cases. Group A is the lowest percentage of children in poverty; Group B represents a mid-point; and Group C includes the highest percentage of children in poverty.

Step 2

At a level of functioning of 50 (LOF=50), the number of children and adolescents with SED is calculated to be between 5-7 percent of the number of youth 9-17 years for Group A. For Group B, the estimate is between 6-8 percent of the number of youth 9-17 years. The estimated SED population for Group C is calculated to be between 7-9 percent of the number of youth 9-17 years.

Step 3

At a level of functioning of 60 (LOF=60), the number of children and adolescents with SED is calculated to be between 9-11 percent of the number of youth 9-17 years for Group A. For Group B, the estimate is between 10-12 percent of the number of youth 9-17 years. The estimated SED population for Group C is calculated to be between 11-13 percent of the number of youth 9-17 years.

TABLE 2.- 1995 ESTIMATES OF CHILDREN AND ADOLESCENTS WITH SERIOUS EMOTIONAL DISTURBANCE; STATE ESTIMATES ALGORITHMS

States	Estimated population			
	LOF*=50		LOF*=60	
	Lower limit	Upper limit	Lower limit	Upper limit
Group A Lowest percent in poverty	5%	7%	9%	11%
Group B Medium percent in poverty...............................	6%	8%	10%	12%
Group C Highest percent in poverty	7%	9%	11%	13%
*LOF=Level of functioning from the Children=s Global Assessment Scale.				

TABLE 3.- 1995 ESTIMATES OF CHILDREN AND ADOLESCENTS WITH SERIOUS EMOTIONAL DISTURBANCE BY STATE

State		Number of youth 9-17	Percent in poverty	LOF*=50		LOF*=60	
				Lower limit	Upper limit	Lower limit	Upper limit
	Total	33,706,204		2,118,269	2,792,391	3,466,516	4,140,636
1	New Hampshire	147,695	4.07	7,385	10,339	13,293	16,246
2	Alaska	90,955	8.96	4,548	6,367	8,186	10,005
3	New Jersey	932,671	9.60	46,634	65,287	83,940	102,594
4	Utah	349,086	9.76	17,454	24,436	31,418	38,399
5	Minnesota	643,892	11.30	32,195	45,072	57,950	70,828
6	Colorado	491,930	11.34	24,597	34,435	44,274	54,112
7	Nebraska	231,037	11.62	11,552	16,173	20,793	25,414
8	Missouri	709,439	11.74	35,472	49,661	63,850	78,038
9	Kansas	354,722	12.55	17,736	24,831	31,925	39,019
10	Wisconsin	706,004	12.56	35,300	49,420	63,540	77,660
11	Hawaii	143,901	13.97	7,195	10,073	12,951	15,829
12	North Dakota	91,443	14.13	4,572	6,401	8,230	10,059
13	Virginia	790,359	14.38	39,518	55,325	71,132	86,939
14	Nevada	186,695	14.41	9,335	13,069	16,803	20,536
15	Indiana	758,633	15.24	37,932	53,104	68,277	83,450
16	Rhode Island	115,176	15.36	5,759	8,062	10,366	12,669
17	Delaware	85,396	15.56	4,270	5,978	7,686	9,394
18	Maine	160,434	15.57	8,022	11,230	14,439	17,648
19	Vermont	76,500	15.79	4,590	6,120	7,650	9,180
20	Maryland	608,209	15.80	36,493	48,657	60,821	72,985
21	Wyoming	75,106	16.21	4,506	6,008	7,511	9,013
22	Georgia	942,161	16.30	56,530	75,373	94,216	113,059
23	Massachusetts	680,101	17.12	40,806	54,408	68,010	81,612
24	Iowa	385,583	17.39	23,135	30,847	38,558	46,270
25	Washington	714,567	17.81	42,874	57,165	71,457	85,748
26	Connecticut	378,473	18.03	22,708	30,278	37,847	45,417
27	Pennsylvania	1,462,731	18.07	87,764	117,018	146,273	175,528
28	Oregon	411,543	18.22	24,693	32,923	41,154	49,385
29	Michigan	1,275,452	18.36	76,527	102,036	127,545	153,054
30	Ohio	1,451,220	19.33	87,073	116,098	145,122	174,146
31	Idaho	183,829	20.57	11,030	14,706	18,383	22,059
32	South Dakota	108,855	20.74	6,531	8,708	10,886	13,063
33	North Carolina	879,091	21.06	52,745	70,327	87,909	105,491
34	Kentucky	504,373	21.25	30,262	40,350	50,437	60,525
35	Illinois	1,517,182	22.14	106,203	136,546	166,890	197,234
36	Tennessee	658,573	22.23	46,100	59,272	72,443	85,614
37	Montana	126,834	22.39	8,878	11,415	13,952	16,488
38	Arkansas	337,718	22.44	23,640	30,395	37,149	43,903
39	Texas	2,623,654	24.53	183,656	236,129	288,602	341,075
40	California	3,968,950	24.97	277,827	357,206	436,585	515,964
41	Oklahoma	457,496	24.98	32,025	41,175	50,325	59,474
42	Arizona	542,019	25.31	37,941	48,782	59,622	70,462
43	Florida	1,623,697	25.50	113,659	146,133	178,607	211,081
44	New York	2,141,435	25.51	149,900	192,729	235,558	278,387
45	West Virginia	231,390	26.93	16,197	20,825	25,453	30,081
46	Alabama	547,671	27.50	38,337	49,290	60,244	71,197
47	Louisiana	639,158	29.69	44,741	57,524	70,307	83,091
48	South Carolina	470,875	32.11	32,961	42,379	51,796	61,214
49	Washington, DC	48,365	35.33	3,386	4,353	5,320	6,287
50	New Mexico	251,231	36.59	17,586	22,611	27,635	32,660
51	Mississippi	392,694	37.03	27,489	35,342	43,196	51,050

Dated: June 29, 1998.

Joseph Faha,
Director, Legislation & External Affairs.

[FR Doc. 98-19039 Filed 7-16-98; 8:45 am]

BILLING CODE 4160-20-U

[Federal Register, *Volume 64, Number 121, June 24, 1999, pp. 33890 - 33897**]***

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Substance Abuse and Mental Health Services Administration

Estimation Methodology for Adults with Serious Mental Illness (SMI)

AGENCY: Centre for Mental Health Services**, Substance Abuse and Mental Health Services Administration, HHS.**

ACTION: Final Notice

SUMMARY: This notice establishes a final methodology for identifying and estimating the number of adults with serious mental illness (SMI) within each State. This notice is being served as part of the requirements of Public Law 102-321, that ADAMHA Reorganization Act of 1992.

EFFECTIVE DATE: October 1, 1999.

FOR FURTHER INFORMATION CONTACT: Ronald W. Manderscheid, Ph. D., Chief, Survey and Analysis Branch, Centre for Mental Health Services, Parklawn Building, Rm 15C-04, 5600 Fishers Lane, Rockville, MD 20857, (301) 443-3343(voice), (301) 443-7926 (fax), rmanders@samhsa.gov (e-mail).

Scope of Application

All individuals whose services are funded through the Federal Community Mental Health Services Block Grant must fall within the definition announced on May 20, 1993, in the **Federal Register**, Volume 58, No. 96, p. 29422. Inclusion or exclusion from the estimates is not intended to confer or deny eligibility for any other service or benefit at the Federal, State, or local level. Additionally, the estimates are not intended to restrict the flexibility or responsibility of State or local governments to tailor publicly-funded systems to meet local needs and priorities. Any ancillary use of these estimates for purposes other than those identified in the legislation is outside the purview and control of CMHS.

Background

Public Law 012-321, the ADAMHA Reorganization Act, was enacted on July 10, 1992. This law, which amended the Public Health Services Act, created the Substance Abuse and Mental Health Services Administration (SAMHSA). The Centre for Mental Health Services (CMHS) was established within SAMHSA to coordinate Federal efforts in the prevention and treatment of mental illnesses and the promotion of mental health. Title II of Public Law 102-321 establishes a Block Grant for Community Mental Health Services, administered by CMHS, which allows for allocation of funds to States for the provision of community mental health services to both children with serious emotional disturbance (SED) and adults with a serious mental illness (SMI). Pub. L. 102-321 stipulates that States will estimate the incidence (number of new cases in a year) and prevalence (total number of cases in a year) in their applications for Block Grant funds. As part of the process of implementing the new Block Grant, definitions of the terms Achildren with a serious emotional disturbance≅ and Aadults with a serious mental illness≅ were announced on May 20, 1993 in the **Federal Register**, Volume 58, No. 96, p 29422. Subsequent to this notice, a group of technical experts was convened by CMHS to develop an estimation methodology to Aoperationalize the key concepts≅ in the definition of adults with SMI. A similar group has prepared an estimation methodology for children and adolescents with SED. The final SED estimation methodology was published on July 17, 1998, in the **Federal Register**, Volume 63, No. 137, p. 38661.

Summary of Comments

This final notice reflects a thorough review and analysis of comments received in response to an earlier draft notice published in the Federal Register, on March 28, 1997, Volume 62, No. 60, p. 14928.

CMHS received only nine comments expressing opinions about the proposed methodology. Several questions were raised. These questions are summarised in four broad areas: Operational definition of SMI, complexity of the methodology, differences among States, and other related comments.

Operational definition of SMI

Some comments suggested that the SMI definition was too broad.

The definition of SMI was published on May 20, 1993, in the **Federal Register**, Volume 58, No. 96, p. 29422. This definition cannot be changed by the methodology outlined below.

SMI was defined as the conjunction of a DSM mental disorder and serious role impairment. The Diagnostic Interview Schedule (DIS) estimates were not enhanced. A respondent had to have a DIS/ Composite International Diagnostic Interview (CIDI) diagnosis *and* an impairment to qualify for the operational definition of SMI. This means that the estimated annual prevalence of SMI is always equal to or less than the DIS/CIDI estimates of disorder prevalence/ The charge to the technical committee was to make what is considered to be the best decisions based on available data about impairment to operationalize the definition of SMI. The report of the committee describes in great detail how and why the technical experts chose specific indicators.

It is important to note that Pub. L. 102-321 explicitly states that SMI includes impairments in functioning. As a result, the technical experts were required to include one component of the operational definition that assesses functioning in social networks. Strict criteria were used, such as reports of extreme deficits in social functioning to qualify for this type of impairment. A respondent must either have one of the following two profiles: (I) Complete social isolation, defined as having absolutely no social contact of any type - telephone, mail or in-person - with any family member or friend and have no one in his or her personal life with whom he/she has a confiding personal relationship; or (ii) extreme dysfunction in personal relationships, defined as high conflict and no positive interactions and no possibility of intimacy or confiding with any family member or friend. These persons comprise about 10% of those classified as having SMI. The remaining 90% either have a severe disorder like schizophrenia or bipolar disorder, or a disorder and work impairment, or a disorder and report being suicidal.

The rationale for the 57% prevalence estimate of SMI among prison inmates is well documented in the committee=s report. A review of epidemiological studies in inmate populations found that the average estimated prevalence of any DIS disorder is 57%. The technical experts concluded that all inmates with any of these disorders, by definition, were functioning inadequately in social roles by virtue of the fact that they were incarcerated.

This definition was adopted for very practical reasons. It is important to remember that the inmate population represents less than one percent of the adult population, and the prevalence estimate of 57% is based on published work.

Some comments urged that the definition of SMI did not constitute the service population for public mental health services.

This final notice includes a statement about the scope of application of the estimates. That statement defines what is and is not intended by the definition and the methodology.

Complexity of the Methodology

Some comments noted that the use of the Baltimore sample as a basis for estimating national SMI rates among elderly persons may have introduced errors into the estimates for persons aged 55 years and older.

The technical experts were mandated to arrive at the best estimates based on currently available data. The Baltimore ECA data were the best currently available for persons 55 years and older. Nationally representative data would have been used if such existed. It will be important in future to improve the data available to produce estimates for all age groups.

Some comments were made about distortions in State estimates and lack of theory.

The technical experts used all available data on State-level variables that could be obtained readily from the Federal government on an annual basis and explored the effects of these variables in predicting SMI. Such variables were deliberately selected to increase the ease of application of th estimation methodology by the States in the future. The experts believed and continue to believe that they could do no less than exhaustively consider the full range of potentially important predictors of

SMI, irrespective of available theory. The analytical iterations are explained in the committee=s report. These explanations provide all the detail a specialist in applied statistics or demography would need to evaluate the procedures adopted. These procedures are consistent with currently accepted methods for making small area estimates. Government agencies currently use similar methodologies to make estimates of other State-level social policy variables.

Some comments suggested that confidence intervals were not provided for State prevalence estimates.

Confidence intervals have been provided in this final notice, since estimates are based upon samples rather than a complete enumeration.

Some comments suggested that the estimation methodology paper was difficult to understand and that complex statistical procedures were inadequately explained, with insufficient rationale.

In writing the paper, the authors were sensitive to the importance of being clear about major decisions. The authors have had a great deal of experience writing reports of empirical studies for critical scientific and peer review. By the standards of this scientific review process, the level of documentation presented in the estimation methodology report is quite high.

Some comments indicated that no adjustment was made in the methodology to address the phenomenon of different levels of reporting of psychiatric symptoms by ethnic groups.

The technical experts included information to discriminate nonhispanic whites from all other racial groups in the model. No fine-grained distinctions were made about race/ethnicity because of the small numbers of people in specific race/ethnicity subsamples in the surveys that were analyzed. As part of the analysis, the technical experts obtained all the information that was readily available from the Census Bureau on Census Tract-level, County-level, and State-level demographic variables. All these variables were included in efforts to predict and estimate the prevalence of SMI.

Some comments suggested that the factor analysis was inadequate and that important issues not described (e.g., the number of variables in the analysis or how missing data were handled) could have affected the results.

The factor analysis was carried out on a Census data file containing County-level data from the 1990 Census. The sample size was the number of Counties in the U.S., while the number of variables was over 100 Census characteristics. Some of the characteristics were quite highly correlated across Counties, like median household income and mean household income, or the number of men in a County and the number of women in a County. Factor analysis was used as a way of reducing redundancy prior to performing further analyses. The factor analytic procedures employed represent the state-of-the-art for similar data reduction procedures.

Some comments were made about the use of varimax rather than oblique rotation, the decision to examine only the first ten factors in the solution, and the use of factor-weighted scores.

The group of technical experts explored both oblique and rigid rotations and also looked at the unique factors after the first ten. :Unique factors≅ refer to factors in which there is only a single variable with a high loading. Variance was noted to be trivial after the first ten factors. No factors after the first ten had more than one variable with high loadings. Factor-weighted and factor-based scales are very highly correlated, therefore the choice of one over another did not affect the results of the analysis.

Some comments noted that Census data are strongly influenced by population size and suggested that this effect could be removed to find a more meaningful structure.

A similar procedure was actually used. All count variables were transformed (e.g., number of vacant houses, number of people on welfare) into population proportions. This procedure removes the effect of population size.

Some comments suggested that users of the public mental health system may have low levels of income. However, the key significant income predictor was an interaction term for high income and urbanicity associated with reduced prevalence of SMI.

The technical experts were surprised to find the absence of high income people was a stronger predictor of SMI than the presence of low income people. This was investigated in considerable detail, trying a number of different specifications in search of a low income effect. These included a specification involving the assessment of neighbourhoods with a bimodal distribution of high income and low income people, as well as a specification that examined the effect of degree of variation in income in the community (e.g., differentiation between a community with an average income of $30,000 due ta all families having this income versus another due to 10% of families making #210,000 and the other 90% making $10,000). After a careful review, the technical experts concluded that the data did not support a low income effect or any effect of income variance for SMI. It is important to note that there is a strong low income effect for estimates of persons with severe and persistent mental illness (SPMI), even though such an effect could not be sound for SMI.

It is noteworthy that the analysis of income effects was confined to neighbourhoods (Census Tracts) due to the fact that the Census Bureau would not release individual-level family income data cross-classified by other Census variables at either the Tract, County, or State levels. The Census Bureau decision was based on the concern to maintain confidentiality of Census records.

Some comments requested future consideration of SMI incidence.

Currently, no nationally representative data are available on incidence of SMI. The group of technical experts has made recommendations to CMHS regarding the need for future data collection to obtain incidence data.

State Differences

Some comments suggested that SMI prevalence was higher in the West and in the Southwest, compared with other regions of the US.

The magnitude of the SMI estimates. Averaging approximately 5-6% of the adult population in a year, is very plausible. It is generally agreed that 2-3% of the adult population suffer from severe and persistent disorders such as schizophrenia, other nonaffective psychoses, and bipolar disorder. Based upon the estimation methodology, an additional 2-3% of the adult population suffer from serious anxiety, nonbipolar mood disorders, and other disorders. It would be highly suspicious if the estimates were any less.

In the draft notice of the estimation methodology, point estimates were provided for State SMI prevalence figures. In this final notice, a 95% confidence interval is used to calculate the SMI prevalence as a range. State prevalence of SMI is estimated to be between the upper and lower percent limits for each State. Based on these analysis (sic), one cannot conclude that rates differ among States. Hence, the same prevalence rate and percentage standard error are applied to all States to produce the numerical estimates provided in table 1. See the footnote to table 1 for further information on this estimation procedure.

Some comments noted that the inclusion of Alzheimer=s disease contributes appreciably to the counts and that, since the definition cannot be changed at this point, the report should clearly note that this is the case.

This is a good suggestion.

Some comments noted that only 10 States are at or below the national average, and that the majority of these States are quite small, therefore a mathematical explanation of this phenomenon would be appropriate.

This comment does not reflect the nature of the estimation methodology. As stated in the draft Federal register notice f march 23, 1997, Volume 62, No. 60, page 14931, the national total estimated number of persons with SMI is derived from direct, weighted counts from the surveys used. However, the State totals were computed from synthetic modeling at the County level, and county estimates were summed to arrive at State totals. These two approaches are not the same. Therefore, they are subject to different types of sampling and non-sampling errors. As a result, the sum of State totals will not necessarily equal the U.S. total, and State estimates cannot be compared directly with the national average.

Some comments suggested that use of national probability estimates did not permit consideration of regional and state differences, which could affect the relationship between key analytical variables.

Because of the difficulties of obtaining data, the technical experts made the assumption that the effects of all the predictor variables were the same across all States. More precise estimates could have been made if representative samples from each State had been available.

Other Related Comments

Some comments noted that the exclusion of homeless and institutionalized persons, those living in group quarters, and those without telephones excludes the segments of the population with the highest risk of SMI.

The Epidemiologic Catchment Area (ECA) and the National Comorbidity Survey (NCS) studies were both household surveys, so there is no exclusion of non-telephone households. Although national data were used to estimate the overall U.S. prevalence of the omitted population groups, due to lack of data, no attempt was made to estimate how many homeless people or persons in the other excluded segments reside in each State.

Some comments suggested the need to have prevalence estimates for Puerto Rico.

The prevalence estimates for Puerto Rico are included in this notice.

Some comments suggested validity studies that could form the basis for modifications and refinements to the estimation methodology.

Validation studies could help refine the estimation methodology. However, the mandate to the technical experts was to develop the best estimates with currently available data rather than only propose new data collections. As noted earlier, the technical experts have recommended that CMHS carry out a nationally representative survey once each decade in the Census year explicitly designed to assess the prevalence of SMI and SPMI, with oversampling to allow estimation by State. Execution of validation studies as part of this survey would permit the evaluation of and increased precision in State-level estimates.

Some comments urged SAMHSA to increase Block Grant Funds for States to offer services to the number of persons who have SMI.

The first step in such a process is the one currently being undertaken, i.e., using the estimation methodology to produce estimates showing that the number of adults with SMI exceeds the number who can be served with currently available finds.

SMI Estimation Methodology

Data Sources

Data from two major national studies, the NCS and the ECA, were used to estimate the prevalence of adults with SMI. The NCS, a nationally representative sample household survey conducted in 1990-91 assessed the prevalence of DSM-III-R disorders in persons ages 15-54 years old. This sample included over 1,000 census tracts in 174 counties in 34 States. The ECA, a general population survey of five local areas in the U.S., was conducted in 1980-85 to determine the prevalence of DSM-III disorders in persons age 18 and older. The ECA data utilized for the present analysis were limited to the Baltimore site because that was the only site that had disability data needed to operationalize the criteria for SMI. Although the Baltimore sample is not nationally representative, it is used in this analysis because the ECA provides a rough replication and check on the NCS data. Also, the NCS does not have data on persons 55 years and older, so the ECA data are used to estimate the prevalence of serious mental illness among persons 55 years and older.

The group of technical experts determined that it is not possible to develop estimates of incidence using currently available data. However it is important to note that incidence is always a subset of prevalence. In the future, information on both incidence and prevalence data will need to be collected.

Serious Mental Illness (SMI)

As previously defined by CMHS, adults with a serious mental illness are persons 18 years and older who, at any time during a given year, had a diagnosable mental, behavioral, or emotional disorder that met the criteria of DSM-III-R *and* A*** that has resulted in functional impairment which substantially interferes with or limits one or more major life activities.***≅ The definition states that A*** adults who would have et functional impairment criteria during the referenced year without the benefit of treatment or other support services are considered to have serious mental illnesses.***≅A DSM-III-R AV≅ codes, substance use disorders, and developmental disorders are excluded from this definition.

The following criteria were used to operationalize the definition of serious mental illness in the NCS and ECA data:

(1) persons who met criteria for disorders defined as severe and persistent mental illnesses (SPMI) by the National Institute of Mental Health (NIMH) National Advisory Mental Health Council (National Advisory Mental Health Council, 1993).

To this group were added:

(2) Persons who had another 12-month DSM-III-R disorder (with the exclusions noted above), and

- Either planned or attempted suicide at some time in the past 12 months, or
- Lacked any legitimate productive role, or
- Had a serious role impairment in their main productive roles, for example consistently missing at least one full day of work per month as a direct result of their mental health, or
- Had serious interpersonal impairment as a result of being totally socially isolated, lacking intimacy in social relationships, showing inability to confide in others, and lacking social support.

Estimation Procedures

Two logistic regression models were developed to calculate prevalence estimates for adults with SMI.
(a) A Census Tract Model for years in which the decennial U.S. census is conducted.
(b) A County-Level Model to be used in intercensal years.
In non-censal years, the county-level model will be used to estimate SMI prevalence, after adjustments for known relationships with the census tract model.

Formula

Census-Tract Model

Using 1990 census data, a logistic regression model was developed to calculate predicted rates of SMI for each cell of an age by sex by race table for each of the 61,253 Census Tracts in the country. Next, the rates were multiplied by cell frequencies and subtotaled to derive tract-level estimates. Finally, the tract-level estimates were aggregated to arrive at county-level and state-level prevalence estimates of adults with SMI. This regression methodology is often used in small area estimation (Ericksen, 1974; Purcell & Kish, 1979). The actual Census Tract Model equation is specified immediately below:

PARAMETER ESTIMATES FOR CENSUS TRACT MODEL

Predictor	Odds ratio	95% Confidence interval
Intercept	*0.02	(0.01-0.04)
Individual-Level Variables		
Age:		
18-24	*1.94	(1.18-1.37)
25-34	1.32	(0.86-2.03)
35-44	1.46	(0.96-2.21)
45-54	1.00	
Sex:		
Female	*2.23	(1.57-3.19)
Male	1.00	
Race:		
Nonhispanic white	1.00	
Black/Hispanic/other	*0.49	(0.28-0.87)
Marital Status:		
Married/Cohabiting	1.00	
Never Married	*3.90	(1.15-3.08)
Separated/Divorced/Widowed	*1.88	(2.41-6.31)[8]
Census Tract Level Variables		
F2 (High socio-economic status)	1.16	(0.90-1.49)
F4 (Immigrants)	0.99	(0.85-1.14)
County-Level Variables		
County Urbanicity:		
Metropolitan	1.12	(0.85-1.49)
Other	1.00	
Interactions Among Variables		
Female X Separated/Divorced/Widowed	*0.47	(0.24-0.91)
Female X Never Married	*0.47	(0.28-0.78)
Non White X Separated/Divorced/Widowed	*2.62	(1.29-5.33)
Non White X Never Married	1.81	(0.95-3.44)
Female X F2	*0.70	(0.51-0.96)
Urbanicity X F2	*0.75	(0.51-0.95)
F2 X F4	*0.78	(0.64-0.94)

* Significant at the .05 level, two-tailed test; F2= Census Tract factor score for high socioeconomic status (SES); F4= Census Tract factor score for immigrants.

The estimate for persons 55 years and over is derived from analysis of ECA data in conjunction with NCS data. The prevalence ratios amongst ECA respondents ages 55-64 years and 65 years and above, were found to be 84 percent and 31 percent as large, respectively, as the prevalence estimate for NCS respondents 18-54 years old, after controlling for differences in gender and race. NCS State-level estimates were extrapolated using these ratios. These ratios did not differ significantly by sex or race. A factor of .81[9] was applied to State-level SMI estimates for the age range 18-54 to derive the

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[8] This confidence interval, and the one immediately below, have possibly been transposed since they must bracket the odds ratio. Alternatively, the odds ratios have been transposed. [MH-CCP Note]

[9] This is almost certainly a typographical error, and should be 0.84. [MH-CCP Note]

rate for the age range 55-64, and .31 was used to arrive at the estimate for persons 65 and older. A weighted sum (by age distribution of each State) was calculated to determine the final State-level prevalence estimate.

County Model

US Census Bureau tract-level data are available only for years in which the decennial U.S. Census is conducted. To obtain prevalence estimates for adults with SMI during intercensal years, the group of technical experts used biennial individual- and county-level data from the Census Bureau=s small area estimation program. Predicted values from the logistic regression equation were used to calculate county-level estimates. In contrast to the Census Tract Model, the initial estimates using this approach were calculated at the county level. These county-level estimates were then summed to provide State-level prevalence estimates. The actual county-level model equation is specified immediately below:

PARAMETER ESTIMATES FOR COUNTY-LEVEL MODEL

Predictor	Odds ratio	95% Confidence interval
Intercept	*0.04	(0.02-0.07)
Individual-Level Variables		
Age:		
18-24	1.69	(1.00-2.85)
25-34	1.10	(0.65-1.88)
35-44	1.24	(0.71-2.15)
45-54	1.00	....
Sex:		
Female	1.58[10]	(1.17-2.13)
Male	1.00	....
County-Level Variables		
Urbanicity:		
Metropolitan	1.35	(0.99-1.85)
Other	1.00	

* Significant at the .05 level, two-tailed test; F2= Census Tract factor score for high socioeconomic status (SES); F4= Census Tract factor score for immigrants.

Adjustments for persons age 55 years and older is carried out as in the Census Tract Model. An adjustment factor (Census Bureau, Fay, 1987; Fay & Herriot, 1979) based on the ratio of County-Level Model estimates for 1990 and Census Tract Model estimates for 1990 can be used to adjust estimates for subsequent years from the County-Level Model. This procedure assumes that the Census Tract Model is more accurate than the County-Level Model.

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[10] This should probably be starred as significant, since the 95% C.I. does not include 1.00. [MH-CCP Note]

County and State Estimates

As stated earlier, Census Tract Model prevalence estimates were summed to derive county estimates, and county estimates were summed to arrive at State estimates. The 12-month prevalence of SMI is estimated nationally to be 5.4 percent (with a standard error of 0.9 percent) or 10.2 million people in the adult household population (95 percent confidence interval ranging from 7.0 million to 13.4 million), of which 2.6 percent or 4.8 million adults have SPMI (figure 1). When the standard error is considered, State estimates do not vary. Hence, State estimates are defined as 5.4 percent of the adult population, with a 95 percent confidence interval of plus or minus 1.96 times 0.9 percent.

The above estimates are based on noninstitutionalized persons residing in the community. Limited information currently exists on SMI estimates for persons institutionalized (i.e., persons in correctional institutions, nursing homes, the homeless, persons in military barracks, hospitals/ schools/ homes for persons who are mentally ill or mentally retarded). Fischer and Breakey (1991) indicate that, on average, the SMI prevalence rate for these groups, (including about 5 million people or 2.7 percent of the adult U.S. population) is about 50 percent. The following assumptions were made in deriving rough estimates of SMI prevalence for persons who are institutionalized;

(a) For 1.1 million residents of correctional institutions, 100 percent of whom are adults, prevalence of SMI is estimated to be 57 percent;

(b) For 1.8 million residents of nursing homes, 100 percent of whom are adults, prevalence of SMI is estimated to be 46 percent;

(c) For 0.5 million persons who are homeless, 80 percent of whom are adults, prevalence of SMI is estimated to be 50 percent;

(d) For 0.6 million persons in military barracks, all of whom are adults, the SMI prevalence rate is equivalent to that of the adult household population;

(e) For 0,45 million persons in hospitals, homes, and schools for persons who are mentally ill, 80 percent of whom are adults, prevalence of SMI is estimated to be 100 percent;

(f) For 0,6 million persons in other institutional settings such as chronic disease hospitals, homes and schools for persons with physical disability, and rooming houses, 50 percent of whom are adults, prevalence of SMI is estimated to be 50 percent.

State estimates of each of these populations can be added to the State SMI populations identified below.

Only a portion of adults with SMI seek treatment in any given year. Due to the episodic nature of SMI, some persons may not require mental health services at any particular time.

Provision of Estimates to States

CMHS will provide each State mental health agency with estimates in order to initiate the first cycle of use. Subsequently, CMHS will provide technical assistance to States to implement the methodology using State demographic information.

The initial set of State estimates in provided in table 1 below. Further background information on these estimates can be found in Kessler, et al., (1998).

TABLE 1. - ESTIMATED 12-MONTH NUMBER OF PERSONS WITH SERIOUS MENTAL ILLNESS, AGE 18 AND OLDER

[By State, 1990*]

State	Point Estimate	95% confidence interval	
		Lower Limit[11]	Upper Limit
Alabama	161,017	110,327	211,708
Alaska	20,396	14,730	26,817
Arizona	144,942	104,680	190,572
Arkansas	93,398	63,995	122,801
California	1,188,502	814,344	1,562,660
Colorado	131,389	90,026	172,752
Connecticut	137,027	93,889	180,165
Delaware	27,153	18,605	35,701
District Columbia	26,450	18,123	34,776
Florida	543,871	372,652	715,090
Georgia	256,549	175,784	337,315
Hawaii	44,718	30,640	58,795
Idaho	37,711	27,235	49,582
Illinois	458,149	313,917	602,381
Indiana	220,763	151,263	290,262
Iowa	111,125	76,141	146,109
Kansas	98,062	67,190	128,933
Kentucky	147,485	101,054	193,915
Louisiana	161,606	110,730	212,482
Maine	49,622	34,000	65,244
Maryland	195,438	133,911	256,965
Massachusetts	251,821	172,544	331,098
Michigan	369,173	252,952	485,394
Minnesota	173,249	118,708	227,790
Mississippi	98,629	67,579	129,678
Missouri	205,321	140,683	269,959
Montana	31,156	21,348	40,964
Nebraska	62,066	42,527	81,605
Nevada	48,864	33,481	64,247
New Hampshire	44,847	30,728	58,965
New Jersey	320,259	219,437	421,082
New Mexico	57,690	39,528	75,851
New York	741,469	535,505	974,894
North Carolina	271,214	185,832	356,597
North Dakota	25,024	17,146	32,902
Ohio	434,558	297,753	571,363
Oklahoma	124,663	85,417	163,909
Oregon	114,382	78,373	150,392
Pennsylvania	490,689	336,213	645,165
Puerto Rico[12]	195,719	159,550	231,817
Rhode Island	42,000	28,778	55,222
South Carolina	138,591	94,960	182,221
South Dakota	26,867	18,409	35,325
Tennessee	197,671	135,441	259,901
Texas	656,136	449,575	862,698
Utah	59,152	40,530	77,774
Vermont	22,662	15,528	29,797
Virginia	252,861	173,257	332,466
Washington	194,686	133,396	255,977
West Virginia	72,895	49,946	95,843
Wisconsin	194,550	133,303	255,798
Wyoming	17,175	11,768	22,582
Total	10,191,412	7,043,431	13,374,301

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[11] The lower limits are 3.7 percent of population except for Alaska, Arizona, Idaho, and New York, where they are 3.9 percent. This is consistent with the table in Mental Health, United States, 1998, but must be a typographical error in both cases. [MH-CCP Note]

[12] Because Puerto Rico is a U.S. Territory rather than a State, the Table notes are strictly correct, but in fact the prevalence estimate for Puerto Rico is considerably higher than 5.4 percent. There is a separate Block Grant allocation to Territories, so this has no effect. [MH-CCP Note]

Does not include persons who are homeless or institutionalized.
* Because there are no differences among States, the estimate for each State is calculated as 5.4 percent of the total State adult population. The size of the 95 percent confidence interval for each State is equal to the percentage plus or minus 1.96 x o.9 percent. The percentage estimate and the percentage standard error are identical across States. However, the numeric estimates and numeric standard error vary depending on the State adult population. The percentage standard error (0.9 percent) used to compute the upper and lower 95-percent confidence limits is estimated using jackknife repeated replication (JRR) variance analysis (Kish and Frankel 1974). The JRR calculations assume that the imputation ratios and the population proportions in the different age groups based in the census data are correct. The confidence limits simulate the error introduced into the estimates by imprecision in the prevalence estimates for NCS respondents in the age range 18-54.

Limitations

The ECA and NCS were designed to study lifetime prevalence of mental disorders rather than 12-month prevalence. As a result, the emphasis in diagnostic assessment was on lifetime disorders. In addition, functional impairment was not a primary focus in either the ECA or NCS.

Current data cannot provide estimates of incidence. Additional information needs to be collected in the future.

It is anticipated that additional work will be done in future years to refine and update the estimation methodology. CMHS will apprise States as this work develops.

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Figure 1. Estimated Total Population (ages 18+) 12-Month Prevalences and Population Projections of DSM-III-R Severe and persistent Mental Illness (SPMI), Serious Mental Illness (SMI), and Any Mental Illness Based on Pooled Baltimore ECA/NCS Data

		Centre of figure shows three concentric circles representing the SPMI percentage in the centre, with the overlapping SMI percentage, and then the overlapping AAny 12-month DSM-III-R Mental Disorder≅ percentage, with arrows from the text at left and right.		
Population Proportions (Percent of people)			Population Projections (Millions of people)	
SPMI	2.6		SPMI	4.8
SMI	5.4		SMI	10.2
Any 12 Month DSM-III-R Mental Disorder	23.9		Any 12-Month DSM-III-R mental Disorder	44.2

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Endnotes

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[1] New South Wales Health Department. *Caring for Mental Health: A Framework for Mental Health Care in NSW*. Sydney: New South Wales Health Department, State Health Publication No. (CMH) 980153, October 1998 (p. 8).

[2] Raphael, B. *A population health model for the provision of mental health care*. Canberra: Commonwealth of Australia, 2000.

[3] Australian Health Ministers, *Second National Mental Health* Plan, Mental Health Branch, Commonwealth Department of Health and Family Services, July 1998.

[4] *Evaluation of the National Mental Health Strategy: Research Components.* Mental Health Branch, Commonwealth Department of Health and Family Services, December 1997 (p. 5). The reviewer, Dr Ron Manderscheid, is the Chief, Survey and Analysis Branch, Division of State and Community Systems Development, in the Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, United States Department of Health and Human Services, and formerly (1981-92) Chief, Statistical Research Branch, (US) National Institute for Mental Health. Dr. Manderscheid has been the one of the principal editors of the series, *Mental Health, United States* since its inception 1983.
[see URL: http://www.mentalhealth.org/cmhs/biographies.htm]

[5] Australian Bureau of Statistics. *Mental Health and Wellbeing Profile of Adults.* Canberra: Commonwealth of Australia, 1998. (ABS Cat No 4326.0).

[6] Department of Health and Aged Care. *Mental health information development: National information priorities and strategies under the Second National Mental Health Plan 1998-2003.* (First edition June 1999). Canberra: Commonwealth of Australia, 1999.

[7] Leginski W, Croze C, Driggers J, Dumpman S, Geersten D, Kamis-Gould E, Namerow J, Patton R, Wilson N, Wurster C. *Data standards for mental health decision support systems: A report of the task force to revise the data content and system guidelines of the mental health statistics improvement program.* Washington: National institute of Mental Health, US Department of Health and Human Services, 1989. This 250+ page document may be downloaded from URL: http://www.mhsip.org/library.html

[8] **Examples:** The American Psychiatric Association Guidelines for the treatment of Panic Disorder (1998) noted that in 12 studies reviewed for the guidelines the length of CBT treatment for panic disorder ranged from four to 16 weeks. Similarly, the APA Practice Guidelines for Eating Disorders, Major Depressive Disorder, Bipolar Disorder and Substance Abuse Disorders provide outlines of treatment, and accounts of relevant issues, but are not readily converted to a quantitative estimate of the care required to achieve an adequate outcome. Thus “Assessment of the need for hospitalisation” in major depressive disorder list a series of criteria that differentiate patients who may be better managed in hospital than not, but data on the proportion of service clients who meet these criteria is not available, let alone population data. Nevertheless, having an authoritative set of clinical indications is an essential step towards being able to quantify the need for a particular service for a particular condition treated in accordance with a practice guideline.

[9] Health Department of Western Australia. *Purchasing intentions 1999-2000.* Perth: Health Department of Western Australia, April 1999, pp 12-13. The relevant section of this 248 page document states: “*Exceptional Episodes*: A significant observation from admitted patient data has been the identification of groups of episodes that account for about 24% of provider inputs but only about 5% of separations. These are termed ‘exceptional episodes’ and are distinguished from the norm by one or more of their high cost, unusual length of stay or rare occurrence. As the insurer of last resort, the government is required to deal with all community needs, especially those that involve the greatest risk. Exceptions are not separately purchased but emerge when activity, expected to be predictable, becomes exceptional by length of stay. The time, frequency and place of exceptional occurrences are difficult to forecast leaving providers and system resources, in a fixed funding model, vulnerable. Since 1997/98, the process for managing exceptional activity, in consultation with providers, has been through an Exceptional Episodes Insurance Pool (EEIP). The Pool comprises some of the money that would otherwise have been paid to providers for exceptions. It is managed collaboratively by the Exceptions Pool Advisory Group (EPAG) comprising Departmental and provider representatives with clinical advice provided by the Exceptional Episodes Clinical Group (EECG). These Groups review claims for payment from the Pool and consider submissions from providers for additional resources. The process of competing for limited exception funds in a climate of peer review promotes greater management of risk among providers and a shared understanding of the basis of necessary exceptional activity. In 1997/98 the EEIP comprised 35% of the estimated budget for exceptional episodes. In 1998/99 this increased to 75%. In 1999/00, 100% of the anticipated budget for exceptions will be paid into the pool.”

[10] Example: The US National Institute of Mental Health in the US has recently allocated $26 Million to a five year multi-centre (N=4000 patients) trial that builds on the Texas Medication Algorithm Project (TMAP). The Star-D (Sequenced Treatment Alternatives to Relieve Depression) project will apply the TMAP depression algorithms to manage the care of the 50 per cent of people with depressive illness who do not respond to their first “routine” antidepressant medication. The aim and expectation is a 100 per cent remission rate. URL for STAR-D: http://www.edc.gsph.pitt.edu/stard/
URL for TMAP: http://www.mhmr.state.tx.us/centraloffice/medicaldirector/tmaptoc.html

[11] NSW Health Department. *A framework for managing the quality of health services in New South Wales.* State Health Publication No (HPA) 990024, February 1999.

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[12] The easiest reference for this work is the summary booklet that can be downloaded from the Global Burden of Disease Unit web site at http://ww.hsph.harvard.edu/organizations/bdu. The relevance is, as the authors noted: "…estimates of the numbers killed or affected by particular conditions or diseases may be exaggerated beyond demographically plausible limits by well-intentioned epidemiologists who also find themselves acting as advocates for the affected populations in competition for scarce resources. If the currently available epidemiological estimates for all conditions were right, some people in a given age group or region would have to die twice over to account for all the deaths that are claimed."

[13] WHO, 1994.

[14] Queensland Health Department. *Queensland mental health services: Optimal staffing profiles and recurrent costs for selected inpatient units.* Mental Health Unit Hospital Redevelopment Project, October 1997.

[15] Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[16] Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

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[18] Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

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[20] Luk ESL, Robinson P, Birleson P, Cooper H. Assessment in child and adolescent psychiatry: interstate difference. *Australasian Psychiatry* 1999;7:141-142.

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[24] Andrade AR, Lambert W, Bickman L. Dose effect in child psychotherapy: outcomes associated with negligible treatment. *Journal of the American Academy of Child and Adolescent Psychiatry* ;2000:39: 161-168.

[25] Zubrick SR, Silburn SS, Burton B, Blair E. Mental health disorders in children and young people: scope, cause and prevention. *Australian and New Zealand Journal of Psychiatry*, in press 2000.

[26] U.S. Department of Health and Human Services. *Mental Health: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Centre for Mental Health Services, National Institutes of Health, National Institute of Mental Health, 1999, p171.

[27] Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[28] Kowalenko, N., Barnett, B., Fowler, C.. and Matthey, S The perinatal period: interventions in mental health. Vol 4 in Kosky, R., O'Hanlon, A., Martin, G. and Davis, C. (Series Eds) *Clinical Approaches to Early Intervention in the Mental Health of Young Children*. Adelaide: Australian Early Intervention Network for Mental Health in Young People, 2000. [A copy of this book can be downloaded from the AusEinet website: http://auseinet.flinders.edu.au]

[29] Commonwealth Department of Health and Aged Care (1998) *Mental Health Promotion and Prevention National Action Plan under the Second National Mental Health Plan: 1998-2003*. Canberra: Commonwealth Department of Health and Aged Care.

[30] Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[31] Mrazek, P.J. and Haggerty, R.J. *Reducing Risks for Mental Disorders: frontiers for preventive intervention research*. Washington: National Academy Press, 1994.

[32] **Data Note:** 9.2 per 1000 children under the age of 1 year (782) and 6.7 per 1,000 1-2 year olds (588) are at risk due to neglect or are abused and 10% of new babies are at risk (mother with severe PND) (8685) = 1369+8656=10,055 = 5.8%

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[33] Campbell SB, Cohen JF, 1991, Prevalence and correlates of post-partum depression in first-time mothers. *Journal of Abnormal Psychology* 1991;100:2594-2599

[34] **Data Note:** 9.2 per 1000 children under the age of 1 year and 6.7 per 1,000 1-2 year olds of this population have substantiated abuse and/or neglect. (Australian Bureau of Statistics: *Children Australia: A Social Rep*ort, 1999 (ABS Cat No 4119.0)

[35] **Data Note:** This corresponds to Tier 4 in the planning model in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[36] Mrazek PJ, Haggerty RJ. *Reducing Risks for Mental Disorders: frontiers for preventive intervention research*. Washington: National Academy Press, 1994, p. 248.

[37] Prior M, White J, Merrigan C, Adler R. Preschool behaviour problems in a multicultural Australian urban area. *Journal of Paediatrics and Child Health* 1998;34:164-169.

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[41] **Data Note:** 10% in Richman N, Stevenson J, Graham P. *Pre-school to school – a behavioural study.* London, Academic Press, 1982; 14% have a significant level of behaviour problems in Thompson MJJ, Stevenson J, Sonuga–Barke E, , Nott P, Bhatti Z, Price A, Hudswell M. Mental health of preschool children and their mothers in a mixed urban/rural population: I. Prevalence and ecological factors. *British Journal of Psychiatry* 1996;168:16-20; 13% have behavioural problems, 10% aggressive and 7.7% anxiety in McGee R, Silva PA, Williams S. Behavioural and developmental characteristics of aggressive, hyperactive and aggressive-hyperactive boys. *Journal of the American Academy of Child and Adolescent Psychia*try 1984;23:270-279.

[42] **Data Note:** 52 per cent of total prevalence in Zubrick SR, Silburn SR, Garton A, Burton P, Dalby R, Carlton J, Shepherd C, Lawrence D. *Western Australian Child Health Survey: Developing health and well-being in the nineties.* Perth, Western Australia. ABS and the Institute for Child Health Research,1995. (ABS Cat No 4303.5); 7 per cent in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[43] **Data Note:** This corresponds to Tier 3 in the planning model in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[44] **Data Note:** This corresponds to Tier 4 in the planning model in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[45] **Data Note:** This corresponds to Tier 4 in the planning model in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[46] Zubrick SR, Silburn SR, Garton A, Burton P, Dalby R, Carlton J, Shepherd C, Lawrence D. *Western Australian Child Health Survey: Developing health and well-being in the nineties.* Perth, Western Australia. ABS and the Institute for Child Health Research,1995. (ABS Cat No 4303.5)

[47] Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[48] U.S. Department of Health and Human Services. *Mental Health: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Centre for Mental Health Services, National Institutes of Health, National Institute of Mental Health, 1999.

[49] Zubrick SR, Silburn SR, Garton A, Burton P, Dalby R, Carlton J, Shepherd C, Lawrence D. *Western Australian Child Health Survey: Developing health and well-being in the nineties.* Perth, Western Australia. ABS and the Institute for Child Health Research, 1995. (ABS Cat No 4303.5)

[50] **Data Note:** 10% aggressive and 7.7% anxiety in McGee R, Silva PA, Williams S. Behavioural and developmental characteristics of aggressive, hyperactive and aggressive-hyperactive boys. *Journal of the American Academy of Child and Adolescent Psychia*try 1984;23:270-279.

[51] **Data Note:** This corresponds to Tier 3 in the planning model in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[52] **Data Note:** This corresponds to Tier 4 in the planning model in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[53] **Data Note:** Current NSW utilisation = 0.04% as against 0.02% in Tier 4 of the planning model in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[54] Zubrick SR, Silburn SR, Garton A, Burton P, Dalby R, Carlton J, Shepherd C, Lawrence D. *Western Australian Child Health Survey: Developing health and well-being in the nineties.* Perth, Western Australia. ABS and the Institute for Child Health Research, 1995. (ABS Cat No 4303.5)

[55] Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[56] Zubrick SR, Silburn SR, Garton A, Burton P, Dalby R, Carlton J, Shepherd C, Lawrence D. *Western Australian Child Health Survey: Developing health and well-being in the nineties.* Perth, Western Australia. ABS and the Institute for Child Health Research, 1995. (ABS Cat No 4303.5)

[57] **Data Note:** 52 per cent of total prevalence in Zubrick SR, Silburn SR, Garton A, Burton P, Dalby R, Carlton J, Shepherd C, Lawrence D. *Western Australian Child Health Survey: Developing health and well-being in the nineties.* Perth, Western Australia. ABS and the Institute for Child Health Research,1995. (ABS Cat No 4303.5); 7 per cent in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[58] **Data Note:** This corresponds to Tier 3 in the planning model in Kurtz Z. *Treating children well: a guide to the evidence base in commissioning and managing services for the mental health of children and young people*. London: The Mental Health Foundation, 1996.

[59] **Data Note:** For the 16-17 year old proportion of the adolescent age group, this is based on the 1 per cent found for adults in Australian Bureau of Statistics. *Mental Health and Wellbeing Profile of Adults.* Canberra: Commonwealth of Australia, 1998. (ABS Cat No 4326.0); for the 12-15 year old proportion of the adolescent age group it is taken as 0.04 per cent based in current NSW utilisation.

[60] Australian Bureau of Statistics. *Mental Health and Wellbeing Profile of Adults.* Canberra: Commonwealth of Australia, 1998. (ABS Cat No 4326.0).

[61] Andrews G, Hall W, Teesson M, Henderson S. *The mental health of Australians*. Canberra: Mental Health Branch, Commonwealth Department of Health and Aged care, April 1999.

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[65] Robins LN, Regier DA (Eds). *Psychiatric disorders in America: The Epidemiologic Catchment Area Study.* New York: Free Press, 1991.

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[72] Australian Bureau of Statistics. *Mental Health and Wellbeing Profile of Adults.* Canberra: Commonwealth of Australia, 1998. (ABS Cat No 4326.0).

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[74] Spitzer RL, Williams JBW, Gibbon M, First MB. The structured clinical interview for DSM-III-R (SCID). I: history, rationale, and description. *Archives of General Psychiatry* 1992;49:624-629.

[75] Williams JBW, Gibbon M, First MB, Spitzer RL, Davies M. Borus J, Howes MJ, Kane J, Harrison GP Jr, Rounsaville B, Wittchen H-U. The structured clinical interview for DSM-III-R (SCID). II: multisite test-retest reliability. *Archives of General Psychiatry* 1992;49:630-636.

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[78] Offord DR, Boyle MH, Campbell D, Goering P, Lin E, Wong M, Racine YA. One-year prevalence of psychiatric disorder in Ontarians 15 to 64 years of age. *Canadian Journal of Psychiatry* 1996;41:559-563.

[79] Goering P, Lin E, Campbell D, Boyle MH, Offord DR. Psychiatric disability in Ontario. *Canadian Journal of Psychiatry* 1996;41:564-571.

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[82] National Advisory Mental Health Council. Health Care Reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry*. 1993;150:1447-1465.

[83] **Example:** The Texas Department of Mental Health and Mental Retardation serves a total population of 20.3 million, of whom 14.7 million are adults. It uses ECA prevalence adjusted for sociodemographic characteristics of Texas counties (some of which have populations equivalent to Queensland, or 50% of NSW) for an overall estimate of 19.64% of the adult population with mental illness, and 2.75% as its “adult mental health priority population” (estimated as 403,392 in the year 2000). By law, the use of state mental health funding is limited to this group. Unlike NSW, TDMHMR has uniform registration and documentation of the 91,305 adult clients it served in the first two quarters of 1999, so the estimated public sector treatment rate of 0.62 % of the adult population (22.6% of the priority population) is quite precise. It is similar to the 0.7% estimated for NSW. Within that client group, 27,562 had a primary diagnosis of schizophrenia (30.1%); 34,112 major depression (37.3%); 12,181 bipolar disorder (13.3%); 7,907 other depression (8.6%); 9,396 other diagnoses (10.3%) and 19,743 had comorbid substance abuse (21.6%). Space does not permit the reproduction of the 500 page quarterly report on full DSM-IV multiaxial diagnosis, outcome measures, improvement with treatment, usage of services, client satisfaction, and other data which TDMHMR makes available on its web site to the public of Texas within 3 months of the end of each quarter. Even the crosstabulation of each “uniform assessment variable” with each other, including the program of care in which each person has received services is too extensive to reproduce. These may be found at http://www.mhmr.state.tx.us by looking in their Planning, Research and Evaluation group.

[84] Working group for mental health care in Emergency Departments. *Final report and recommendations*. Sydney: NSW Health Department, 1998.

[85] **Data Note:** Adult prevalence of disorder for 18-64 year olds was estimated by taking 90 per cent of the estimates for disorders (excluding cognitive impairment) in 18-54 year olds as reported in US Department of Health and Human Services. *Mental Health: A Report of the Surgeon General*’. Rockville MD: US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Centre for Mental Health Services, National Institutes of Health, National Institute of Mental Health, 1999. This was decided after comparison with Australian estimates from the limited range of corresponding diagnostic groups in Australian Bureau of Statistics. *Mental Health and Wellbeing Profile of Adults.* Canberra: Commonwealth of Australia, 1998. (ABS Cat No 4326.0).

[86] National Advisory Mental Health Council. Health Care Reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry*. 1993;150:1447-1465; NMHSS.

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[87] 17.8- (4.2+2.8%) = 10.8%

[88] National Advisory Mental Health Council. Health Care Reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry*. 1993;150:1447-1465; Less than 7% with persistent symptoms for 12 months are severe (AM JNL National Advisory) (7% - 2.8% = 4.2%). Treatment Protocol Project: Management of mental disorders. Volume 1: Second Edition. WHO1997 (5%)

[89] National Advisory Mental Health Council. Health Care Reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry*. 1993;150:1447-1465; NMHSS

[90] Goldstein G, Hall W, Andrews G. The incidence of schizophrenia in New South Wales, Australia: A psychiatric case register study. *Acta Psychiatrica Scandinavica* 1984;70:220-227.

[91] **Data Note:** 10% of babies in first year will be at risk because of maternal postnatal depression – 10% of women in the post natal year will have severe depression (Campbell, SB and Cohen JF, 1991, Prevalence and correlates of post-partum depression in first-time mothers. *Journal of Abnormal Psychology, 100, p2594-2599)*;

[92] ABS (1998). National Survey of Mental Health and Wellbeing – Adult 1997.

[93] ISC data (HOIST 1998/97)

[94] The "percentage reached" is intended to reflect a realistic limit on the percentage of the relevant population who will seek, find, and accept care that is available. The extent to which this percentage may be modified by appropriate mental health promotion needs to be considered.

[95] Mihalopoulos C, McGorry PD, Carter RC. Is phase-specific, community-oriented treatment of early psychosis an economically viable method of improving outcome?. *Acta Psychiatrica Scandinavica* 1999;100:47-55.

[96] Information provided by Prof Phil Boyce

[97] US Department of Health and Human Services. *Mental Health: A Report of the Surgeon General*'. Rockville MD: US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Centre for Mental Health Services, National Institutes of Health, National Institute of Mental Health, 1999. ABS (1998). National Survey of Mental Health and Wellbeing – Adult 1997. Adapted from above report by taking 90% of Best US estimate 18-54 and excluding cognitive impairment.

[98] National Advisory Mental Health Council. Health Care Reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry*. 1993;150:1447-1465; NMHSS.

[99] National Advisory Mental Health Council. Health Care Reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry*. 1993;150:1447-1465; NMHSS

[100] **Data Note:** Percentages of diagnoses in nursing home and hostel residents (N=134,223) were Dementia (46%), Neurological (4.2%), Psychiatric (16%), Acquired Brain Damage (0.4%), Intellectual Disability (0.5%), Other Diagnoses (4.6%), No Diagnosis (28%). The "psychiatric" category thus does not include dementia or other conditions, but "people with functional psychiatric diagnoses including anxiety, depressive, bi-polar, psychotic and paranoid disorders and schizophrenia". In hostels, 10.2% of residents had a previous psychiatric history (4.% community, 6% inpatient). In nursing homes there were 12.1% with a previous psychiatric services history (4.2% community, 7.9% inpatient). Since 21.5% of hostel residents and 35.3% of nursing home residents had unknown history, these figures are consistent with the 16% of residents meeting criteria for severe mental illness, as defined for adults 18-64. Source: Commonwealth Department of Health and Family Services. *Care needs of people with dementia and challenging behaviour living in residential facilities: Resident Profile Survey. Aged and community care service development and evaluation reports Number 26.* Canberra: Commonwealth of Australia 1997.

[101] National Advisory Mental Health Council. Health Care Reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry*. 1993;150:1447-1465.

[102] 17.8- (4.2+2.8%) = 10.8%

[103] U.S. Department of Health and Human Services. *Mental Health: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Centre for Mental Health Services, National Institutes of Health, National Institute of Mental Health, 1999.

[104] National Advisory Mental Health Council. Health Care Reform for Americans with severe mental illnesses: Report of the National Advisory Mental Health Council. *American Journal of Psychiatry*. 1993;150:1447-1465.

[105] Andrews G. *The Tolkien report: A description of a model mental health service.* UNSW: Department of Psychiatry, 1991.

[106] Lapsley H. *The costs and cost-effectiveness of mental health services in NSW.* Report to NSW Department of Health, 1989.

[107] Andrews G. *The Tolkien Report – 1994: A model for matching the available workforce to the demand for services.* UNSW: Department of Psychiatry, 1994.

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[108] Mental Health Commission. *Blueprint for mental health services in New Zealand: How things need to be*. Wellington: Mental Health Commission, December 1998.

[109] Andrews G, Henderson S (Eds) *Unmet need in psychiatry: problems, resources, responses.* (Scientific symposium of the World Psychiatric Association Section of Epidemiology and Public Health, Sydney, 1997). Cambridge: Cambridge University Press, 2000.

[110] There are two main ways of quantifying the direct economic benefits to insurers and providers of effective clinical care and prevention. The most common way is to estimate the reduction in future cost of treatment. However, the difficulty with this approach is that the "cost"/"benefit" conclusions are totally dominated by the assumed discount rate for dollar savings in future as against dollar expenditures now, if the time interval between investment and return is a long one. This amounts to predicting interest rates in future, which is by no means an exact science. A preferable and more objective approach is to estimate current costs as a result of past failures to prevent and treat effectively. For more information see Collins DJ, Lapsley HM. *Estimating the economic cost of drug abuse in Australia.* (National campaign against drug abuse monograph series, No 15. Canberra: Australian Government Publishing Service, 1991.

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[113] Health Department of Western Australia. *Purchasing intentions 1999-200.* Perth: Health Department of Western Australia, April 1999, pp 12-13.

[114] Stevens A, Raftery J (Eds) *Health Care Needs Assessment*. Vols I and II. Oxford: Radcliffe Medical Press, 1994.

[115] NSW Ministerial Advisory Committee on Health Services in Smaller Towns. *Report to the NSW Minister for Health: A framework for change.* Sydney: NSW Government, 2000.

[116] The Clinical Antipsychotic Trials of Intervention Effectiveness project (CATIE) is a new research project to evaluate the clinical effectiveness of atypical antipsychotics in the treatment of schizophrenia and Alzheimer's disease. (see the Web site http://www.catie.unc.edu/).

[117] McGrew JH, Bond GR, Dietzen LL et al, Measuring the fidelity of implementation of a mental health program model. *Journal of consulting and clinical psychology* 1994;62:670-678.

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[122] **Data Note:** The contact duration fields for records in the Victorian PRISM records and the conversion into times are (1) less than 15 minutes = 7.5 minutes, (2) 15 to less than 30 minutes = 22.5 minutes, (3) 30 minutes to less than 60 minutes = 45 minutes, (4) 1 hour to less than 2 hours = 90 minutes, (5) 2 hours to less than 4 hours = 180 minutes, (6) 4 hours or more = 240 minurtes. Source: Office of Psychiatric Services. Community Services Information System: Coding reference manual. Psychiatric Records Information Systems Manager (PRISM). Melbourne" Health Department Victoria, June 1992, p.52; and personal communication from Mr Phil Barelli, Victorian Department of Health & Community Services, July 2000.

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[126] 17.8- (4.2+2.8%) = 10.8%

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[127] The "percentage reached" is intended to reflect a realistic limit on the percentage of the relevant population who will seek, find, and accept care that is available. The extent to which this percentage may be modified by appropriate mental health promotion needs to be considered.

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