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A systems analysis of an area mental health service

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Catherine B Keith
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Abstract

The mental health services existing in a defined geographic area in New Zealand were studied in an effort to establish priorities for service development. It was clear from a preliminary review of the services that while community based services were operating in the area, they were under-resourced and very poorly monitored. They did not provide care that was comprehensive and the population they were intended to service was not clearly specified. Information about who used the services, where they came from and why, was difficult to obtain. There were no psychiatric beds in the general hospital in the area which served a population of approximately 300,000. Acute inpatient care was provided in a 300 bed psychiatric hospital remote from the main centres of population. The acute area of this hospital provided 50 beds and appeared to be under strain most of the time. No standardised criteria for admission and discharge to and from the service were in place. The aims of the acute service, the boundaries of clinical responsibility between assessment, symptom control, treatment and continuing care were vague.

To begin the study, a scale was developed and used to assess the feasibility of evaluating individual psychiatric services. A one day census of patients registered with the services was then carried out. The services included inpatient services, general hospital and court liaison services, community mental health centres, day hospital programmes, domicilliary nursing services, a substance abuse service, a rapid assessment service and a child and family service. The census uncovered a lack of adequate record systems for both patient and management information. As a consequence, a patient case register, based on a minimum data set of patient information, was developed. Meantime, a preliminary review of the acute services in the psychiatric hospital revealed a service under stress. Major sources of this stress were identified as inadequacies in the physical environment and a large and apparently uncontrollable variation in amount of service use by individuals admitted to the acute area. In the last phase of the research, the problem of uncontrollable variance in amount of acute inpatient service use was examined. This focus on acute

inpatient care was justified because it was the most restrictive and expensive form of care offered and there was clearly a need to describe and explain how this service worked and whether it was cost effective.

A study of five hundred and thirty eight people admitted to the acute inpatient service during 1988 was designed to determine the factors which predicted amount of service use. An instrument was constructed to record information on selected predictor variables. The instrument was built around the registration form developed in the process of establishing the patient information system. Predictor variables were chosen from an extensive literature review of factors determining service use, and from clinical and management opinion on what information was most necessary for service development and clinical management. Choices were also made to include information which was being gathered at the time, albeit unsystematically, by existing clinical history taking and admission and discharge procedures. The research method involved selecting a comprehensive range of predictor variables as potential indicators for amount of acute psychiatric service use, and dividing them into systems variables, which were by definition outside the control of the patient, socio-economic variables and behavioural variables which were consumer characteristics. A range of socio-economic, systems and behavioural variables was approved for inclusion in the study by the researcher, clinicians and management. These variables were measured and related to the criterion variable, amount of service use (ASU). The criterion (ASU) was defined as number of bed days spent in the acute inpatient service during a twelve month period.

Variables categorised as systems variables (environmental and service features over which the consumer had no control), were found to be the strongest predictors of service use, compared to sociodemographic factors or behavioural characteristics of the users. This suggested that the system of service was provider rather than consumer driven. The results also indicated that, in the absence of evidence to support the effectiveness of

acute inpatient care, there was a need to develop alternatives. There was an equally urgent need to implement evaluation procedures which will begin to measure the effectiveness of care delivered in all mental health service settings.

The methods developed in this thesis (to determine evaluation feasibility, to develop a client case register, to determine predictor variables for amount of service use) resulted in a useful general model which can be used to describe, explain and to some extent predict and control patterns of human service use in a variety of settings. The theoretical underpinnings for the work, which were originally derived from general systems theory, from the discipline of evaluation research and from the community psychology literature, are strengthened and endorsed by the results. The data obtained extend the case register system developed in the early phases of the project to provide a substantial foundation on which to build a comprehensive data base. This can be regularly updated and expanded allowing for ongoing service evaluation. For the first time in the region, clinical and service policy decisions can be based on information which is both objective and reliable.

Acknowledgements

This project was approved by the relevant Hospital Ethical Committee in 1986. It was supported by the Area Health Board and University in the city where the research occurred. I sincerely thank all the staff at the hospital and in the community mental health services where the research was carried out, for their continuing interest and help with this project. A special debt is owed to Dr Ian Gibb Medical Superintendent of the Psychiatric Hospital at the time. His support for my ideas and trust in my ability to bring them to fruition never wavered, despite numerous political difficulties and massive disruption and change in Hospital Board structure during the early stages of the work. I also acknowledge a substantial debt to current senior management staff, both in the Auckland Area Health Board and the Auckland University's School of Medicine. Without their encouragement, it would not have been possible to finish the work.

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deserve medals for their understanding and tolerance. Both my parents died while this work was in progress and there is a sense in which the work is a memorial to them.

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List of Abbreviations

AHB	Area Health Board
AIMS	Abnormal Involuntary Movements Scale
APA	American Psychiatric Association
ASU	Amount of service use
BPRS	Brief Psychiatric Rating Scale
CGI	Clinical Global Impressions
CMH	Community Mental Health
CMHC	Community Mental Health Service
CHL Eq	Chlorpromazine equivalents
DIS	Diagnostic Interview Schedule
DOS	Digital Operating System
DRG's	Diagnostic Related Groups
DSMIIR	Diagnostic and Statistical Manual Third Edition Revised
ECA	Epidemiological Catchment Area
ECDEU	Early Clinical Drug Evaluation Units
EFS	Evaluation Feasibility Scale
EPS	Extra Pyramidal Symptoms
GPA	Grade Point Average
ICD 9 CM	International Classification of Diseases 9th revision, Clinical Modification
MDS	Minimum Data Set
MIS	Management Information System
MMSE	Mini Mental State Examination
NHC	National Housing Commission
NIMH	National Institute of Mental Health
NIPI	Need for Inpatient care Index
NOK	Next of Kin
NOSIE	Nurses Observation Scale for Inpatient Evaluation
PD	Provisional Diagnosis
PDN	Psychiatric District Nurses
PIF	Patient Information Form
SACHSO	Special Advisory Committee on Health Service Organisation
SCS	Social Competence Scale
SSAS	Social Support Appraisal Scale

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- 1 Interview Schedule for acute services preliminary review
2. Instrument for determining predictor variables for amount of service use in inpatient care
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Stein, Test, & Marx (1975) state that "The community, in contrast to the hospital, has stronger demand characteristics for appropriate behaviour, has more healthy role models for the patient to emulate, and requires much less generalisation to implement what is learned in treatment"(p. 517).

Chapter 1

Research rationale , background and literature review

Chapter 1 provides some background to highlight the importance of the problem which the research is designed to address. A brief summary of historical information about the care of the mentally disordered is presented. The research question is identified and relevant literature is reviewed and summarised.

1.1 Rationale

In this project community psychology principles and practice are applied to mental health services research problems. Community psychology aims to develop an empirical research base that can clarify the relationship between individual functioning, organisations and community environments. It can be seen as 'systems level therapy' informed by the methods and practice of social science research. The motto 'no research without development' is appropriate for the current action research project. Throughout the work the value of an interdisciplinary generalist approach to care is highlighted along with the need to develop innovative services for underserved populations. The concepts of 'cultural pluralism' and 'person-environment fit' are key concerns. The idea of 'community' as 'interaction' is central. This definition of community is derived from the verb to commune and it was chosen because it implies development of linkages between people. Such a definition is broader than one which assumes some common identity between residents and equates with a geographic area.

The project represents a general attempt to make a complex and rather chaotic health service delivery system more transparent, so that it can be developed and improved. The work is best described as a systems analysis, carried out to determine the 'motive force' for a particular health service system. The research is problem driven rather than method driven (Anderson & Ball, 1978). A multimethod approach is

used. Both quantitative and qualitative data are brought to bear on the problem to achieve a shift in degree of belief about how our health service systems function. Throughout the research project the researcher functioned as a community psychologist, developing organisational structures and providing data to inform decision-making. Concurrent employment by the Hospital Board as a research psychologist with a mandate to carry out research which was useful for service development and planning, within the mental health service in the area, ensured the necessary access to decision makers and information.

The stages in the project are represented in Figure 1. Each phase in the work was a necessary precursor to the one that followed. In social programme evaluation, systems analysis has evolved into a mix of quantitative and qualitative approaches characterised by close analysis of the actual processes involved in service delivery, attention to relationships with other systems, and organisational functioning. The research described here comprised the following components: The design and application of the evaluation feasibility scale test, the one day census, the development of a patient case register system and the acute services preliminary review. These components are each good examples of action research. They combined in a logical sequence of research activity, and helped to develop communication links within the service making the nature of its functioning clearer. The last stage of the study reported in Chapters 5, 6 and 7 represents an attempt to determine predictors for amount of acute psychiatric service use, This was undertaken because high variance in amount of acute psychiatric service use was identified as a major problem by staff working in the acute residential services in the area.

The general aim of this research was to develop an explanatory model which would account for and, if possible, enable service planners and providers to predict and control amount of acute inpatient psychiatric service use. The logic of the

methodology used in the last phase of the work, namely stepwise multiple regression analysis, is generally straightforward in statistical terms. It is by no means ideal but was chosen as probably the best tool available to address the particular research problem identified, at the time the work was conceived, in 1986.

Stages in the research project 1986 - 1990

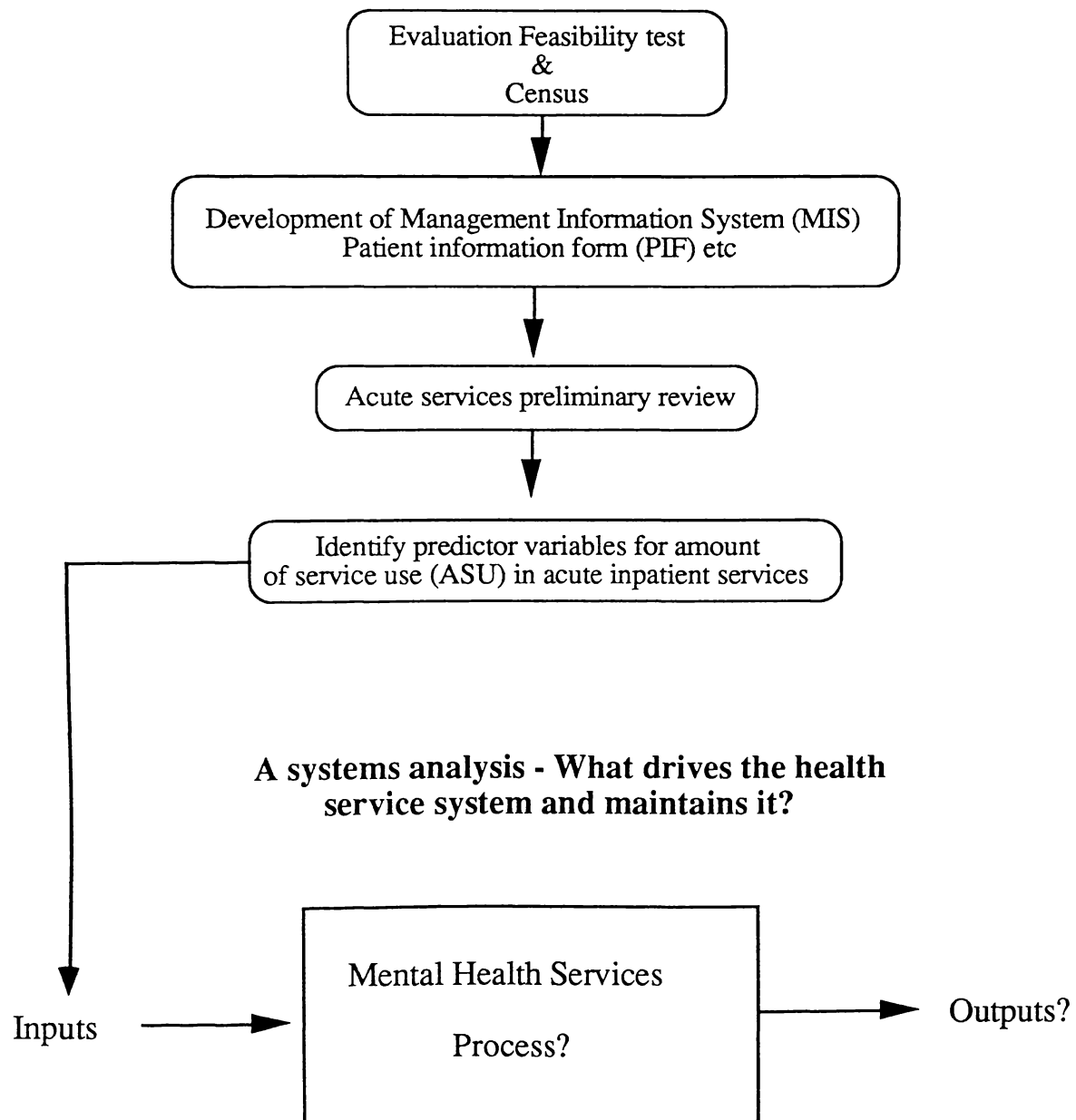


Figure 1. Stages in a systems analysis of a health service

It is a powerful, well established, widely used procedure for building models and determining trends in human services delivery systems, economics and other areas. The technical notion of 'prediction' as used in the language of forecasting does not imply 'cause'.

1.2: Background

The history of the care of the mentally disordered is rich in myth and folklore.

Historical reports of modes of care prior to the 17th century support the view expressed by Allderidge (1979) that care givers "have all been going round in circles for at least the last 750 years: that there are very few, if any, ideas on the public and institutional care of the mentally disordered which have not been round at least once before" (p.321). She cites the 13th century foundation deed of Holy Trinity Hospital in Salisbury as an early example of a psychiatric service within a general hospital.

Psychiatry is a branch of medicine that deals with the science and practice of treating mental, emotional or behavioural disorders, especially those originating in endogenous causes or resulting from faulty interpersonal relationships (Merriam, Merriam, & Co., 1971). It developed in the mid nineteenth century as a specialty in medicine, which was relatively late compared with other specialties like internal medicine and surgery. In the context of the current research psychiatry was considered within the wider framework of medicine or 'illness services'. It was also considered in the context of 'mental health services'. These favour a cultural definition of health and overlap with social, educational and other human service systems. Mental health can be defined as the ability to adjust to new situations and to handle personal problems without marked distress, and still have enough energy to be a constructive member of society (Lippmann, 1982). Community Health has been defined by the academic departments of community health and preventive and social medicine in New Zealand as; that part of scientific knowledge and those disciplines or actions concerned with health or health care in total populations (Richards, 1981).

Specialist hospitals for the mentally disordered were established in England in the 17th century and appeared in New Zealand and Australia during the 19th century when these countries were colonised by the British. Psychiatry seemed to be detached from the rest of clinical medicine during this period, both administratively and developmentally. This trend changed during the last half of the 20th century, when psychiatric practice underwent another major change, with significant consequences for the delivery of care to the mentally disturbed and disabled. The availability and use of psychotropic drugs for treating the severely mentally disordered enabled this population to be managed outside institutional settings. For example, lithium was reintroduced in 1949, as a treatment for mania, and chlorpromazine came into general use for the treatment of psychosis in 1952. The opening of psychiatric units in general hospitals and the development of community based treatment centres and alternative services provided in the private sector further increased the range of services and treatments available. Non-medical services such as the counselling and social services provided by churches and other non governmental agencies were developed both within the public sector and outside of it. However, the skills and training required to provide optimum care for the mentally disordered were still widely debated (Lewis & Lewis, 1977; Lippmann, 1982). For instance, supporters of alternative settings believe that the most appropriate people to deliver services are lay persons or clients themselves (Heller, Price, Reinhartz, Riger, & Wandersman, 1984).

The initial concerns of the community mental health field were to change patterns of service delivery to increase access to mental health services for persons in need (Richards, 1981). A community mental health programme should be a system of service with easy flow between its component parts - an integrated system. A programme should meet the full spectrum of mental health related needs in the community. Community mental health (CMH) refers to all activities undertaken in

the community in the name of mental health. It can be distinguished from more traditional clinically orientated activities by its emphasis on practice outside of hospitals, on the total community or total defined population (a catchment area, rather than an individual) and by its focus on preventive services rather than treatment. Hence CMH involves the application of public health concepts to psychopathology.

In 1967, in the early stages of planning Community Mental Health Centres in the United States, it became clear that programmes would only meet the needs of the people as a whole if they were targeted to prevent mental illness and improve the mental health of populations, as well as of individuals (Caplan, 1970). Prevention is usually divided into three levels - primary secondary and tertiary. Primary prevention involves preventing the maladaptive behaviour from occurring and reduces the number of new cases. Secondary prevention aims to develop techniques for early case finding so that early intervention is possible. Tertiary prevention refers to services rendered to identified cases and to rehabilitation to limit disability and reduce the probability of recurrence. CMH also entails comprehensiveness and continuity of service. It involves indirect service in the form of consultation and education. The emphasis in CMH is on clinical strategies that have the potential to meet more needs more quickly; for example, brief psychotherapy and crisis intervention. Caplan defines mental health consultation as a way of communicating, not as a new profession. In CMH, rational planning is included as part of the decision-making process with a resource development plan which can be altered and extended as required.

A basic principle underlying CMH is that mental health, illness or 'dis-ease' is the responsibility of the whole community, and not the special 'property' of any group with a vested interest, namely mental health and illness professionals. Confusions between the notions of 'community psychiatry' and 'community mental health' and

the tendency to use the terms interchangeably can be minimised if community psychiatry is regarded as a subset of CMH. It is a more specialised field dealing with more serious disorder and operates within CMH, which is a general service catering also for disorders which are often socially rather than medically defined. However, like CMH, community psychiatry is concerned with optimising the adaptive potential and psycho-social life skills of individuals as well as lessening the amount of pathology in population groups (for example communities and functional groups) by population wide programmes of prevention, case finding, case treatment and rehabilitation. The individual becomes important not only as an individual problem, but also as a 'flag' or indicator of a more general psychiatric need in a population group (Lippmann, 1982).

It is generally agreed in the published literature on psychiatric service provision (Dowland & McKinlay, 1985; Goffman, 1961; Wing, 1978) that admission to a psychiatric hospital has disadvantages as well as advantages. It can lead to increased use of hospital care in the future and interfere with a person's work and accommodation status (Tantam, 1985). Irrespective of treatment location, the prognosis for serious mental disorders is not good and community care has not proved to be a panacea. Evidence for this is reported in detail in the literature review.

According to a World Health Organisation report on mental health services in Europe (Freeman, Friers, & Henderson, 1985), the reintegration of psychiatric inpatient care into general medical care through general hospital units has been very slow overall. For example, while England has favoured such reintegration, Scotland has retained a far higher ratio of beds in specialist psychiatric hospitals for the population and a low proportion of general hospital beds. In New Zealand, psychiatric hospitals came back under the administrative authority of hospital boards and away from direct Health Department control after 1969. This encouraged closer liaison between psychiatry and other medical specialties. In New Zealand

there has often been considerable resistance when attempts are made to establish psychiatric units in general hospitals. This was true in the region studied in the present research, where there was no general hospital psychiatric unit.

The decision was made to carry out the present research because there was a reasonably well developed system of community services operating in the area and support for the work was available from the Hospital Board, who saw the district as a priority in terms of mental health, social service and general health needs. The area studied is diverse in terms of geography as well as in terms of the cultural mix of the residents. When this study was begun in 1985, published material describing the nature and range of existing psychiatric services in New Zealand was sparse (Dowland, 1984; Dowland & McKinlay, 1985; National Health Statistics, 1987; Parks, 1985). The essential components of alternatives to psychiatric hospital care in New Zealand had not been isolated or described. The effects of changing policies and changing criteria for admission to inpatient care were difficult to interpret. The ratio of admissions for schizophrenia and recurrent affective disorders had altered, with a trend towards applying a diagnosis of mania rather than a diagnosis of schizophrenia, to those presenting with psychotic symptoms (Joyce, 1987). Increased readmission rates between 1974 and 1984, for functional psychoses in acute psychiatric services in New Zealand were accompanied by decreased rates of first admission. This is considered by Joyce to be a direct result of policies about deinstitutionalisation and length of hospital stay.

The deinstitutionalisation movement involves fundamental changes in the organisational arrangements for dispensing mental health care (Scott & Black, 1986). Deinstitutionalisation includes:

- a) the prevention of inappropriate mental hospital admissions through the provision of community alternatives to treatment.

- b) the establishment and maintenance of community support systems for people receiving mental health services in the community (Braun, et al.1981; Kochansky, Shapiro, Greenberg, Gudeman, Johnson, & Shaw, 1981; McCreadie, Affleck, & Robinson, 1985; Parks & Pilisuk, 1984; Shadish, Orwin, Silber, & Bootzin, 1985).
- c) the release to the community of all institutionalised patients who have been given adequate preparation for such change.

Psychiatric services in the city where the research was undertaken had been the subject of considerable concern (Andersen & Company, 1987; Committee of inquiry into procedures used in certain psychiatric hospitals in relation to admission, discharge or release on leave of certain classes of patients, 1988). However, any objective assessment of services was difficult because of the lack of information essential for evaluation and subsequent planning and service development. While this poverty of information was general in the health services, it was particularly serious for psychiatric services. The Hospital and Related Services Taskforce (1988), reporting on the relative efficiency of the hospital sector in New Zealand, wrote that the kind of data needed to enable the sector to be properly managed was not available.

With reference to psychiatric and geriatric services, the report went on to say that deficiencies in the quality of the information available automatically excluded these major services from the Arthur Andersen study (Andersen & Company, 1987; Taskforce on Hospital and Related Services, 1988). In 1987, Arthur Andersen and Company were contracted to the Taskforce on Hospital and Related Services (chaired by Alan Gibb) to assess the relative performance of New Zealand public hospitals. Their task was to quantify the improvements that could be achieved through better methods of clinical, patient and administrative management. They found so little information on which to make valid judgements about geriatric and psychiatric services - two health areas that use considerable resources - that these

services were omitted from the report. Yet these were areas where the quantity and quality of service was often criticized by both providers and users (Dowland & McKinlay, 1985; National Mental Health Consortium, 1989).

It was clear that before assessment of service effectiveness could occur, an accurate and clear description of what the service was, and who it was for, was needed (Davidoff, Guttentag, & Orfutt, 1977). For this adequate Management Information Systems (MIS) are essential. According to Davidoff et al. (1977) one of the least utilised and least understood purposes of an MIS is internal programme planning. They likened many mental health service programmes to small boats lost at sea. Figures 1 and 2 illustrate the futility of trying to determine outputs when process is not understood and inputs have not been defined in such a way that they can be measured. Without knowledge of inputs, it may be possible to describe and use a system but it will not be possible to explain it, predict how it will behave, or control and manage it. Yet competent management and professional planning and evaluation of services are clearly essential minimum requirements for an efficient and effective health care system.

At the time when the current research was planned, informal and formal meetings and discussions were held with both mental health services consumers and providers. During these meetings consumers complained that they did not have enough say in determining what health services were developed for their communities and little, if any, say in how the services were delivered. Providers also complained that they were not supported or resourced adequately; that they were overworked and lacked autonomy and control over workloads.

The primary and most general research question was clearly to determine what it was that motivated and sustained health service systems. Was it consumer need, and if so, by whom and how was this need expressed? Alternatively, was provider

self interest the force driving our health service systems? In this work a method is developed to answer this question for a particular mental health service system. A primary aim for the research was to develop a model to investigate a mental health service. Such a model should describe and explain how the service system worked to enable service providers and developers to better predict and control its functioning.

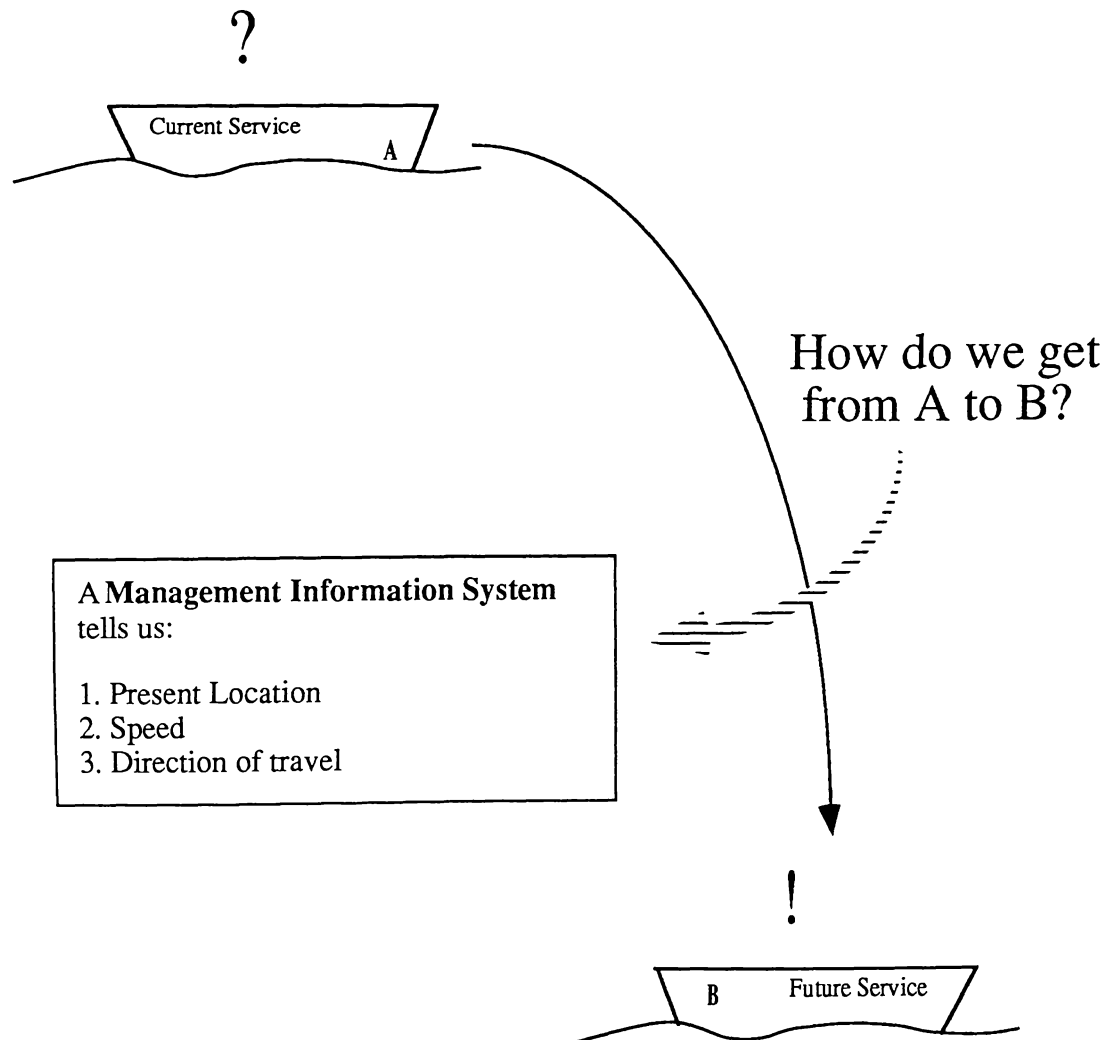


Figure 2. Functions of a Management Information System

The method will be general enough to apply to other systems in other places.

In summary, the study set out to more clearly identify determinants of mental health service use. The literature reviewed below suggests that such indicators are hard to identify and measure. It is also apparent that factors which influence whether or not a person is admitted to a particular service in the first instance may not be the same as the factors which influence how long they stay in the service after admission.

1.3: Literature Review

In this section, published studies about psychiatric service use, about alternatives to inpatient care, cost effectiveness of services, social factors as determinants of service use and about the deinstitutionalisation movement, are reviewed.

Service use and alternatives to inpatient care

The factors which are likely to correlate with greater use of inpatient facilities have not been clearly identified in the literature (Apsler & Bassuk, 1983; Endicott, Herz, & Gibbon, 1978; Hoult, 1986; Joyce, 1987; Levene, Donaldson, & Brandon, 1985). Neither are the characteristics of those who require inpatient care clearly defined (Creed, Anthony, Godbert, & Huxley, 1989). Research carried out in Australia by Hoult, in 1986, suggested that the best predictor of admission was past use of the service. Work in England by Hirsch (1987) supports Hoult's findings. Recent studies suggest that community based care is as effective, or more effective, than inpatient care for the acutely mentally disordered (Braun et al., 1981; Hoult, 1986; Stein & Test, 1980; Wing & Furlong, 1986). However, there is little evidence (Hirsch, 1987) to indicate that the presence of community services in an area reduces use of available beds in the area (Malcolm, 1987). While discharging long stay patients into the community frees up beds and reduces the number of bed days/per year, demand for acute beds increases when these patients relapse (Hirsch, 1987). A reciprocal relationship between bed usage on the one hand, and the availability of day places and other community based programmes and ancillary services, such as domiciliary visits, on the other, has not been confirmed, according to Hirsch.

That hospital admission is not essential for many patients and that intensive community based programmes have clinical and social advantages for the patient is well documented (Hoult, 1986; Peet, 1986; Wing & Morris, 1981; Wykes, 1982). Tantam (1985) stated that "it does appear that some community-based programmes are as effective as hospital treatment for many American patients" (p.3). The Endicott studies, carried out in the United States in 1978 "emphasize the need to evaluate patients quickly, to strive for a brief stay in hospital, and to keep the patient integrated into his or her family and community, unless there is a strong contraindication" (Endicott, Herz, & Gibbons, 1978, p.712). However, it was clear that until the elements that constitute treatment and care in different environments are formalised and clearly described, it will not be possible to measure or compare their effectiveness (Braun et al, 1981; Raeburn, 1976; Thomas, 1983; Washburn, Vannicelli, Longabaugh, & Scheff, 1976). Although full time hospitalisation offers 24 hour 'care', this says nothing about the intensiveness or effectiveness of the treatment and care offered (Fink & Weinstein, 1979). According to the literature reviewed, there is some distance to travel before effective outputs from mental health services can be adequately identified, defined and measured (Jenkins, 1990).

Consumer versus provider influence

Bloom (1971, 1979) stated that traditionally mental health programmes tended to develop in response to what mental health professionals enjoy doing and bears little relation to the mental health needs of the community serviced. Those who refer people to mental health services continue to follow personal preferences, if indeed choice is available (Washburn et al., 1976). However there was often no alternative to inpatient care. Protection of the patient or others is a common reason for inpatient admissions given by clinicians who are otherwise willing to treat seriously ill patients in a day hospital when such a facility is available (Creed, Anthony, Godbert, & Huxley, 1989). In a critical appraisal of day hospital and community treatment for

acute psychiatric illness, Creed, Black, and Anthony (1989) highlight the finding that staffing levels and the attitudes of staff appear to be responsible for variation in the feasibility of day care, along with severity and chronicity of the presenting complaint. The pathways between specialist mental health services (secondary services) and primary care services are often hard to find.

Primary health care is essential health care made universally accessible to individuals and families in the community by means acceptable to them, through their full participation, and at a cost that the community and the country can afford. It forms an integral part of both the country's health system, of which it is the nucleus, and of the overall social and economic development of the country (World Health Organisation Primary Health Care, in a report to the NZ Board of Health, 1988). Overseas studies (Tantam, 1985) indicate that uncertainty about the division of responsibility for patients at home, between general practitioners, psychiatrists and other community carers, slowed the development of alternatives to psychiatric hospitalisation. The fact that 'partial hospitalisation' is underutilised as an alternative to 24 hour care is attributed to subjective anxieties of families and physicians. This supports Washburn et al., (1976), Rappaport, (1977) and Creed, Black, and Anthony, (1989), in their claim that the non-clinical biases of physicians are as important in determining treatment site, as is the patient's psychopathology.

Experience in the United States as well as in New Zealand and elsewhere indicates that plans which are imposed from above are likely to meet with resentment and criticism from below (Bloom, 1979; Heller et al., 1984; National Mental Health Consortium, 1989). Public and consumer participation is considered desirable and there is a movement in the USA towards more lay and citizen involvement in the planning and administration of publicly funded services. Organisational arrangements are also required which allow for both evaluation and quality assurance (Royal Australian and New Zealand College of Psychiatrists, 1982 b;

Rosen, Miller, & Parker, 1989). The effect of funding sources on health service development needs to be understood in this context.

Efficacy

A pervasive problem for those trying to assess the efficacy of health service processes and outputs is the vagueness associated with the inputs and definitions of service components. Outcome studies are considered to be central to measuring comparative efficacy of treatments but their usefulness has been limited by variations in diagnostic criteria, in definitions of recovery and relapse, in methods of data collection, in sources of information and in patient populations. This has produced confusing and contradictory results (Keller, M. B., et al., 1987). Outcome measures are inadequate for both inpatient and community care (Ashley-Miller, 1990; Jenkins, 1990). When comparing hospital and non-hospital based treatments, Braun et al. (1981) were concerned with the possibility of type II errors; that is, of failure to detect a difference in treatment effect when one existed. Estimates of power of the statistical tests used (Bird & Hall, 1986; Minium & Clarke, 1982) were not performed in the studies reviewed by Braun et al. Bird and Hall (1986) indicated that "In the absence of information about power, the interpretation of statistical tests which fail to reject the null hypothesis is necessarily ambiguous" (p.199). Add to this the vagueness associated with defining 'mental wellbeing' and 'clinical improvement' and it is likely that a statistically significant result from an outcome study can be either spurious or trivial in a practical or clinical context.

Some alternatives to inpatient care have been developed in Australia (Hoult, 1986), England (Vaughan, 1985; Peet, 1986; Wykes, Creer, & Sturt, 1982) and in the United States (Blair & Kahn, 1984; Keisler, 1982 a, b; Stein & Test, 1980). A deinstitutionalisation policy had been in place in the United States for 15 years by 1979 and in 1981 Braun et al. published a review of outcome studies, to explain how deinstitutionalisation affected psychiatric patients. They concluded that scientific

information was severely limited, in the context of the hundreds of thousands of patients moved to the community from hospital. Many people were not followed up after discharge. Record keeping procedures were unreliable and documentation on discharged people's whereabouts and progress was non-existent or inadequate. A similar situation was identified 20 years ago in Scotland (Baldwin, 1971). This led to improvement in management information systems and the development of psychiatric case register systems based on person orientated cumulative records.

A series of studies by Harding, Brooks, Ashikaga, Straus, & Breier (1987) has provided support for the feasibility of managing previously hospitalised patients in the community. These longitudinal studies of persons with severe mental disorder were carried out in Vermont in the United States. One half to two thirds of the sample had achieved considerable improvement or recovered, when they were reassessed after 25 years (Harding et al., 1987). With respect to alternatives to hospital admission, the most rigorous and relevant studies (Braun et al., 1981) allowed the qualified conclusion that selected patients managed outside hospital in experimental programmes do no worse, and by some criteria have psychiatric outcomes superior to those of hospital control patients. Psychiatric status in general (as measured with global scales) tended to be similar in both experimental and hospital control groups. A not surprising finding was that deinstitutionalisation was likely to be unsuccessful in the absence of continuing care in the community. However, a review of 33 studies by Avison and Speechley (1987) suggested that "little theoretical or methodological progress has been made in identifying the factors that are conducive to the adjustment of discharged patients on their return to the community" (p.10).

Service utilisation versus need

Before satisfactory alternatives to acute inpatient care can be developed, more information is needed to explain both patterns of service use and need for service (Wykes, Creer, & Sturt, 1982). According to Hagendorn (1977), a common error is a

tendency to rely too much on utilisation data as a measure of need. He points out that in fact, utilisation is two stages in advance of need. A need must be expressed as a demand to the mental health service system and the system must then respond to that need, before utilisation results. However, because of inadequate record keeping systems it was not even possible to get an accurate measure of mental health service usage in New Zealand, especially about out-patients. Examples of efforts to measure need for service are the Epidemiological Catchment Area (ECA) Program (Freedman, 1984; Robins et al., 1984) carried out in the United States, and the Christchurch Epidemiological Study, carried out in New Zealand (Hornblow, Bushnell, Joyce, Oakley-Browne, & Wells, 1990). These studies attempted to estimate incidence and prevalence of psychopathology in communities and to estimate risk factors and predictors for mental health service usage.

The instrument used for these studies, the Diagnostic Interview Schedule (DIS) was constructed at the request of the National Institute of Mental Health (NIMH) for use in the Epidemiological Catchment Area (ECA) Projects (Robins, Heltzer, Croughan, & Radcliff, 1981). Results from these studies have been questioned because validity data were not obtained for the DIS before it was used in the United States study. The studies have also been criticised, because lay interviewers were used to make diagnoses and some diagnostic criteria had to be omitted. The Diagnostic and Statistical Manual version 111 Revised (American Psychiatric Association, 1987), requires some assessments to be made specifically by psychiatrists. The usefulness of the DIS as a measuring instrument for psychiatric disorder in the elderly was also questioned (Anthony, et al., 1985; Burvill, 1987; Helzer, et al., 1985). However, these critics agreed that the work represents a significant attempt to assess the extent of mental health problems (or psychopathology) in the general population, in these localities. Methodological difficulties which faced similar attempts in the 1960's remain (Dohrenwend & Dohrenwend, 1969; Cherulnik, 1983).

Cost effectiveness

When making the decision about whether or not to admit a person to a psychiatric hospital, considering the costs and benefits involved was seen as an integral element of professional responsibility (Engelhardt & Coverdale, 1986). There is conflicting evidence in the literature (Hirsch, 1987; Hoult, 1986; Tantam, 1985) concerning the relative cost effectiveness of alternative types of care for the severely mentally disordered in other countries. In a series of studies carried out in the United States, Endicott, Herz & Gibbon, (1978) demonstrated that brief hospitalisation followed by day or out patient care had clear benefits for patients and their families and was achieved at a lower cost than standard hospital care. Other more recent studies provide economic analysis in support of alternative care (Keisler, 1982a; Mosher, 1983), but Weisbrod, Test, & Stein (1980) found that hospital costs were less than a comprehensive alternative community care programme.

Efficiency in any setting must include a range of costs and benefits, other than the achievement of therapeutic goals (Easton, 1987; Taube, Goldman, & Lee, 1988). Decisions about service provision and treatment access are necessarily complex (Apsler & Bassuk, 1983; Essock, Grayson, & Norquist, 1988) irrespective of who is paying for the service and how much. Costing various service components can be complex, but quantifying 'effectiveness' is even more difficult. How treatment goals are defined, by whom and who assesses whether these goals have been met is a very contentious issue in mental health care. How patient satisfaction is measured and how this is related to the attainment of a specified 'quality of life' for the individual are matters still to be resolved (Leyman, 1986). These indicators along with social indicators need to be entered into any equation used in the assessment of whether or not services are cost effective. Because social indicators are difficult to define and measure in relation to individual quality of life they are more often than not left out of the calculation.

Social factors (disadvantage, support, disablement)

Social disadvantage is a concept which implies some kind of social deprivation and also a judgement about what is 'normal' and 'valuable' in socio-economic terms. It assumes unequal access to resources. It can encourage an ethnocentric rather than a multicultural approach to assessment of a persons socio-economic status. As a predictor variable for mental health service usage social disadvantage is reported to be unresponsive to specific therapies. It requires social policy change (Rappaport, 1977). Studies in Britain (Buglass, 1980; Gibbons, Jennings, & Wing, 1983; Jarman, 1983, 1984; Jones & Poletti, 1985) and the United States (Avison & Speechley, 1987) found a high correlation between some measures of social disadvantage and use of services, but relationships were by no means clearly established. Factors such as service access and proximity are well known confounding variables in such studies (Hirsch, 1988). In New Zealand, Reinken, McLeod, and Murphy (1985), found that number of cars per family was the most significant negative correlate of use of primary health services. It is difficult to establish adequate reliability both for definition and for measurement of 'disadvantage'.

This also applies to 'life event stressors' and to psychiatric diagnosis. What constitutes a 'case' is not consistently defined (Andreasen, 1990; Wing, Mann, Leff, & Nixon, 1978). It is not surprising that relationships between social factors and 'mental illness' are unclear. This kind of difficulty has led to reports of low reliability for the DSM-III-R Axis IV, which attempts to measure psychosocial stressors (Rey, Stewart, Plapp, Bashir, & Richards, 1987). Indicators of social disadvantage, such as homelessness, poverty and unemployment, are often given as psychosocial stressors and in spite of reliability and validity problems, there is some agreement in the literature that psychosocial stress and premorbid functioning are variables that may have aetiological or prognostic value (Rey et al. 1987).

There is some evidence to suggest that stressful life events do not necessarily predict mental ill-health or service use, unless there is also a lack of social support (Holahan & Moos, 1981, 1982). The global concept of 'social support' (Henderson, 1984) is held to be a meta-construct which is too complex to measure with a single scale or instrument (Seigert, 1987). Two important divergent dimensions of social support are often measured; network size and perceived social support (Sarason, Levine, Basham, & Sarason, 1983). The extent to which a person's perception of their social and family support differs from objective measures of such support by outsiders, was discussed by Vaux, Philips, Holly, Thomson, Williams, & Stewart (1986). They claim that 'perceived' or subjective lack of social support is more likely to correlate with mental illhealth, and subsequent service use, than lack of so called 'actual' or objective social support. While some of the research instruments used have been of questionable reliability and validity, in 1983 Leavy reported, in a review of the research on social support, that lack of social support is consistently found to be associated with increased psychological distress. Seigert (1987) endorses this view. However, the possibility that measures of social support are confounded with measures of symptoms and outcome may lead to spuriously high correlations between social support and wellbeing (Slavin & Compas, 1989).

The relationships between social disablement, as distinct from disadvantage, clinical symptoms and service usage, is by no means clear (Hurry, Bebbington, & Tennant, 1987). Social disablement refers to a deficit which causes inferior social performance and is a characteristic of the person rather than of the environment. Deficits in social role performance are reported to be closely related to symptom severity (Hurry & Sturt, 1981). A circularity in the relationship between the symptoms of psychiatric illness and the inability to fulfil 'normal' social roles is apparent (Twaddle, 1969). The commonly held view of mental disorder corresponds to failure to perform 'normal' social roles. Inability to continue with normal activities was at least as predictive of psychiatric service use as the presence of

psychiatric symptoms, in a sample of American students (Mechanic & Greenley, 1976). Like 'health' it is clear that 'social performance' is culturally defined and measures can never be entirely satisfactory, because they are relative to social expectations (Platt, 1981). In an argument in support of community care, Stein, Test, & Marx (1975) state that "The community, in contrast to the hospital, has stronger demand characteristics for appropriate behaviour, has more healthy role models for the patient to emulate, and requires much less generalisation to implement what is learned in treatment"(p. 517).

It has been pointed out that one person's poor social performance is another person's burden (Fadden, Bebbington, & Kuipers, 1987) raising the important issue of the effects of mental disorder on the sufferer's family. These effects must have implications for admission to inpatient care, for psychiatric management, for the provision of support services and for social policy. Herz, Endicott, and Spitzer (1976) found that "There was no major differential family burden as a function of length of hospitalisation" (p.795). There is some evidence to suggest that longer initial hospitalisation produces more family intolerance. It is clear that resources, training and support for carers in the community are needed, for optimum care in a non stressful environment to be sustained.

Main points from the literature review

1. The influence of service providers tends to dominate decisions about service and how it is delivered. The non-clinical biases of physicians influence the choice of service to which a person is admitted. Referral patterns also reflect the idiosyncratic preferences of professionals rather than client need or symptomatology. This is not to say that the consumer voice is not heard, or indeed, that this voice is always rational.

2. The presence of community psychiatric services in an area did not appear to affect bed use in that area. However there is evidence that for individual cases, community based care decreases inpatient service utilization (Fenton, Tessler, & Struening, 1979).
3. Psychiatric treatment in any setting is often a 'black box' - poorly documented and described.
4. Vagueness in defining what constitutes a case and what constitutes 'well-being' is a problem.
5. While innovative alternatives to inpatient care have been developed they tend to be poorly funded and develop in isolation, rather than as components of a comprehensive system of service for a defined area.
6. Follow up is mostly inadequate and discharge information is difficult to access if it is available at all.
7. Patients managed in the community did no worse than inpatient controls and by some criteria for outcome, did better. Outcomes tend to be mostly similar between matched inpatient and outpatient groups.
8. There is a tendency to rely on utilisation data as a measure of need.
9. Cost benefit analysis of psychiatric care is difficult, largely because of a dearth of information and a lack of adequate procedures to record and access relevant patient and management information.
10. Social factors are seen as important determiners of service use, but because they are difficult to operationally define and quantify they are often neglected.

In Chapter 1 the research question has been clearly identified and the strategy designed to answer the question has been explained. Background information on the context and environment in which the research was to occur was provided along with a brief description of the research methodology and orientation. From an extensive literature review ten main points were extracted. which reinforced the need for the

current study, highlighted the extent of knowledge about mental health service provision and further defined and clarified the research question. In Chapter 2 the difficulties involved in developing flexible and appropriate systems of mental health care for the diverse population in the region chosen for the research, are discussed.

Chapter 2

Problems and priorities, political and cultural context, methodological perspectives

A brief outline of the problems inherent in providing a system of service for the mentally disordered is given in this chapter. Contemporary health strategies in New Zealand are discussed and the political context in which the work was conducted is described. A brief discussion of cultural context is intended to provide some background to the culture of the indigenous people of New Zealand. This is followed by a discussion of how to define the problem to be addressed in research terms. The chapter concludes with a brief statement of assumptions and research priorities.

2.1: The Problems

The mental health organisational system which was being studied was different in many ways from similar systems for physical medicine, possibly because presenting problems were less clearly defined in most cases. Furthermore, the mental health service system was difficult to analyse because the 'product' or outcome of service delivery was hard to define, and definition was a necessary prerequisite for measurement. The majority of patients with chronic psychiatric disorder survive for many years and prevalence rates can be expected to increase given that there is no known cure for the commonly identified serious psychiatric disorders (Foucault, 1967). As their number in the community grows, theory on which to base development of programmes for care has increasing practical import. Such theory indicates the data which are relevant to care, and what new situations extend the social roles available to the patient (Susser, 1968).

There were a number of diverse organisations in the mental health service sector in the region at the time this research was carried out (1986-1990). However, apart from an 'ailing' hospital board, no institutional structures existed to stabilise and support their

development and functioning as a coordinated system of service. In the region where the study was carried out, the mental health service system was a rapidly expanding and grossly disorganised system which lacked integration and definition along both dimensions of organisational structure; vertical and horizontal. That is, lines of authority and responsibility were unclear, as were interfaces with other organisations involved in service delivery to the mentally disordered. Integration and cooperation with the general health and primary medical care systems in the region was poor. Mental health service delivery systems in the area appeared to be unable to meet expanding service needs. The experience of unplanned deinstitutionalisation of the mentally disordered in the United States demonstrated clearly that without sound organisational structure, efficient functioning is impossible (Talbot, 1980).

The product

Like 'education', 'mental health' is a service system where it is very hard to objectify the product or output. But effective and stable organising requires institutional definitions that construct visibility of the product, of the techniques that produce it, of the necessary resources and of the sovereign authority to manage all this (Meyer, 1986). To effectively run an organisation or system of service to produce something, in this case, mental health, a clear operational definition of the product is required. But, the mental health system is different from, for example, the education system, in that there are no consensual institutional rules for defining someone as 'healthy' or 'sick', or for distinguishing a 'successful' treatment from a 'failure'. As Meyer (1986) pointed out, there is nothing equivalent to a Grade Point Average (GPA), a credit hour, a degree, which in the education system make the invisible visible. There are no such established qualifications and rules to indicate who is 'mentally healthy' or 'unhealthy'. It is argued in this thesis that any definitions of mental health will be cultural and social in origin (Abbott & Durie, 1986; Wing, 1978).

The technology

It is clear that in such invisible domains, technical definitions are rationalised by professionalising them. The product becomes something which is passed on by a licensed practitioner. What is mental health treatment? There are many different types of professionals claiming competence in this area and very unclear authority rules or accountability systems. There is often a lack of communication and cooperation between professional groups and areas of responsibility for care are not clearly defined. When production functions are unclear, as is the case in this mental health service system, it is impossible to assess what resources are required.

2.2: Contemporary health philosophies and structures in New Zealand

When the Health Department Special Advisory Committee on Health Services Organisation (SACHSO) was formed in 1982, their first question was, what is wrong with the present organisational structure? Their answer was, on the one hand, a lack of coordination in the planning, and sometimes too the delivery, of health care and on the other, it's unresponsiveness to changing public attitudes, such as the shift towards promotion of preventive and community services. On the basis of this diagnosis SACHSO developed the following proposals: - the integration of the public sector agencies in an area to form an Area Health Board - coordination amongst the public, private and voluntary sectors, with service development groups as the key, along with mechanisms for planning and community involvement. In summary, the functions of the new board, ie the Area Health Board, would replace the activities of hospital boards and district offices of the Department of Health. Area Health Boards would also provide additional functions relating to:

1. Planning
2. Promotion of community involvement
3. Liaison with individuals and organisations (including voluntary agencies, departments of state and local authorities) concerned with the promotion and maintenance of health

4. Investigation and assessment of the health needs of the community
5. Making available to the public reports, information and advice concerning the public health and health services in the board area (Dept of Health,1982).

These functions had not been given priority by hospital boards in the past.

Newly constituted Area Health Boards expressed a commitment to ensure that consumers have the structures and opportunity to participate in planning services and choosing modes of service delivery. The Area Health Board in the study region came into being at the end of 1988. The Area Health Board Act (New Zealand Government 1983) was only enabling legislation according to the then Minister of Health, but it assumed that there was in fact a choice available to consumers. The population diagnosed as severely mentally disordered provided a test of this assumption and expressed commitment of area health boards, for two reasons:

1. The symptoms of severe disorders, such as schizophrenia, include lack of insight to a degree which often precludes informed choice, or rational decision-making.
2. Acute inpatient care provided the only service in the region at the time of the study (Figure 3), which catered adequately for severely mentally disordered people who were a potential danger to themselves or to others.

At this stage the custodial function of care had still to be acknowledged by service providers. It also needed to be made clear to the public who lack understanding of the need for asylum as distinct from treatment. Such a custodial function is implicit in the notion and existence of 'safe care' units. Where such units fit in the overall system of mental health care services needed to be clarified. A safe care unit was planned for the area but there was controversy about whether it was needed and where it should be.

A System of Psychiatric Services

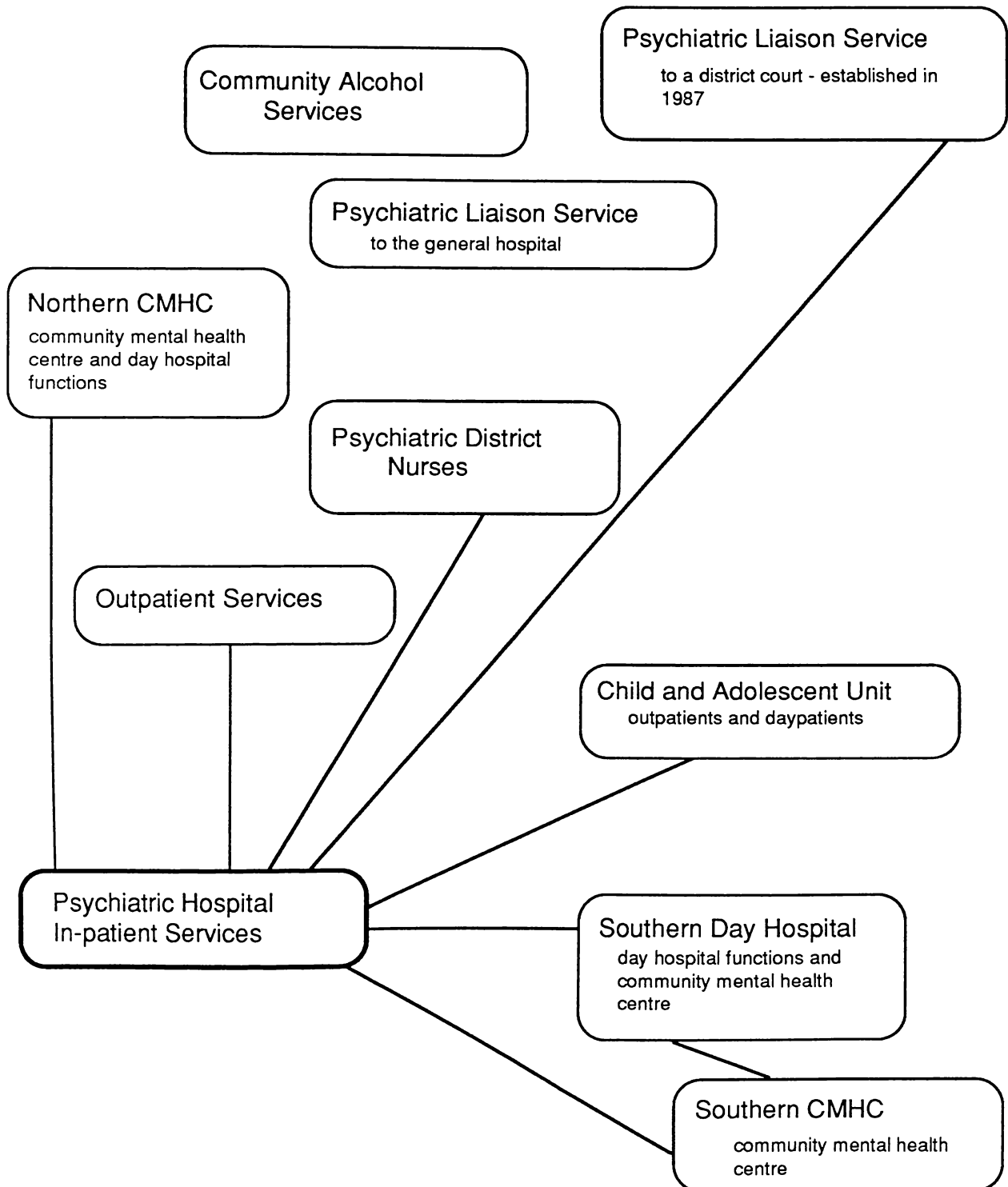


Figure 3. A system of psychiatric service for a defined geographic area

Resources were required so that management strategies could be developed for the potentially dangerous mentally disordered person and for mentally disordered offenders who were not dangerous. Then as now, vagueness over what constituted dangerousness resulted in confusion about the need for hospitalisation, asylum, inpatient care, and about what these terms imply (Monahan & Cummings, 1975). During the time of the current study, psychiatric services in the region had been the subject of two major scandals relating to the care of mentally disordered offenders. This resulted in the committee of inquiry into procedures used in certain psychiatric hospitals in relation to admission, discharge or release on leave of certain classes of patients (1988) and the closure of the Maori mental health unit at the other psychiatric hospital in the city. As part of their professional oath, doctors make a commitment to 'do no harm'. Harm can and does arise when insufficient or inappropriate resources are available for care. The committee of inquiry mentioned above demonstrated that inaction, failure to intervene, or conservative treatment, could be construed as failure to fulfil this commitment and as neglect, in some cases.

In the wake of these structural and philosophical changes, planning groups and consortiums proliferated at both national and local level to design 'ideal' mental health services systems (National Mental Health Consortium, 1989). It was apparent that differing perceptions of need resulted in the development of different models of treatment and care, and to widely varying opinions about what care was appropriate, how it should be delivered and who should deliver it. Philosophies of treatment were based on particular definitions of health, illness and 'dis-ease'. As well as these theoretical and philosophical problems, there were practical problems associated with estimating cost effectiveness. Because of the diversity of problems and conditions encompassed by psychiatry, a comprehensive approach to service development is needed, to ensure that a range of facilities and personnel are available to those in need in the community to be serviced (Hunter-Williams, 1987; Leibrich, 1988). In this study 'diagnosis' was viewed as a tool for the proper application of medical treatment, but not

as an explanation of the problem. The position was taken that the patient, or client, had a right to skilled medical treatment as one option available in a balanced range of helping facilities (Auckland Hospital Board, 1986; New Zealand Board of Health, 1986; Peet, 1986).

There are many suggestions in the literature for comprehensive systems of mental health care. (Hagendorn, 1977; Heron, 1982; Hirsch, 1988; Lippmann, 1982). One 'ideal' system of mental health services for a given catchment area which fulfilled the objectives of the new national health policies included a resource for mental health education and consultation, combined with four basic treatment resources:

1. An assessment and referral service, (community mental health centre or psychiatric day clinic).
2. A case management resource, (outpatient plus domiciliary and extramural resources).
3. An alternative living environment, (inpatient services).
4. A crisis intervention service, (rapid assessment 'round the clock' service).

Such an 'ideal' system of mental health service for a given catchment area could be compared with existing services. While all the components of care in this model existed in the research region (Figure 3, p.28), they were on the whole poorly resourced compared with other health services and there was little evidence of effective cooperation between components in the service system. A system of control which operated remotely from the base hospital, usually in 'management by crisis' mode, was not effective for support or consultation. It can be seen in Figure 3, where the psychiatric liaison services and the substance abuse services are not connected to the base hospital at all, that management of a service could be temporarily suspended, when negotiations for a change in responsibility or line management (in this case to the general hospital in the area) were in process.

The principle was widely accepted that for mental health services, as for health services in general, a flexible approach to planning and service development was required, to ensure that services were consistent with the values and resources of the communities to be serviced. However the lack of resources and sound structure and management ensured that this principle was not practiced (Auckland Hospital Board, 1986; New Zealand Board of Health, 1986). At this stage it was necessary to establish mechanisms for consumer input into service development and planning, as none existed in the area under study. Such a structure (for example, a local mental health association, a service development group, or some other co-ordinating body) facilitates monitoring and distribution of information, as well as consumer participation in priority setting, resource allocation and planning. The composition of such a group is clearly a subject for research in itself. Options have been documented in working papers on service development groups and community committees (Dept of Health, 1982). As a community psychologist, the researcher worked with local community workers to establish a mental health interest group in the region and empower it by obtaining hospital board resources to support its growth and effective functioning. This group developed in parallel with other similar groups in other parts of the city. The groups then combined to form an effective advocacy group for mental health services throughout the city, the Mental Health Association (Inc).

2.3: Political context.

The Hospital Board's Strategic Plan (1986) acknowledged the need for an effective strategy for integrated service development in the area of the study. That there was an unacceptably high level of 'entropy' (disorder) in health service systems in New Zealand was acknowledged nationally, as well as locally. The proposed area health board legislation, which was due for implementation in 1988, promised significant change through radical restructuring of the public health system. It was therefore timely for local service systems to reorganise, to ensure that change occurred

throughout the health service system, to bring about benefits to the consumer, in the form of improved health service delivery and quality care.

At the time of the research (1986-1990), the trend in delivery of psychiatric services was towards care that was community based, rather than institution or hospital based. However, in New Zealand the majority of funds allocated for psychiatric services were still required to maintain large hospitals which provided inpatient care in settings usually remote from centres of population (New Zealand Board of Health, 1986). This was the situation in the study area.

Local information was urgently required to inform decisions about how the local mental health budget was to be spent, what services were to be developed and where they should be located. Questions about the relationship between service access, proximity and service use needed to be answered, hence the research was relevant and timely from a management and service development point of view. The area which the hospital served included a large city as well as an extensive rural area.

This example of health services research was carried out at a time of great upheaval and change in health services in New Zealand. Services throughout the country were being restructured and subjected to additional financial constraints. Independent reviews of health and hospital services in New Zealand stressed the need for health professionals to be accountable and pinpointed serious wastage and inefficiencies in the public health system (Hospital and Related Services Taskforce, 1988). Local problems added to these national pressures. The new area health board responsible for services in the region under study was dismissed in March 1989 by the Minister of Health, following alleged financial mismanagement, and replaced by a commissioner. In this context the study focused on questions which influenced important clinical and policy decisions. Questions about how and where services are

best delivered, as well as questions about who the services are for and who should be providing them, needed to be answered before services could be evaluated.

This attempt to evaluate the system of mental health services existing in the area led to an exploration of the relative importance of variables which might predict amount of service use (ASU) in an acute psychiatric setting, in one psychiatric hospital. The work was carried out against a background of budget cuts, a hospital closure and uncertain futures for both staff and services. The importance of 'Amount of Service Use (ASU)' as the criterion variable for the acute services study is discussed in more detail in Chapter 4. The hospital where the study was carried out also administered a range of community based services. These were all considered in the analysis as components of the mental health service system shown in Figure 3, (p.28).

These services supplemented acute inpatient care but at this time could not be seen as alternatives to it because only the inpatient service provided 24 hour care and an alternative living environment. These two components of care are sometimes needed for some patients. Tantam (1985) stresses that it is wrong to perpetuate the idea that hospital care is somehow opposed to community care. He advocates "considering hospital care with, amongst other things, hostel placement, work resettlement courses, and day hospital attendance, as one of a range of carefully judged social interventions which the psychiatrist can deploy in assisting the patient to lead his life as little hampered by his illness as possible" (p.4). It is interesting to note that in the studies reviewed by Mosher (1983) a significant finding was not that hospital admission is no good, but that conventional aftercare (at least in the United States) could be improved.

By developing a model for the investigation of the service and identifying the variables which predict continuing need for acute inpatient care this thesis will lay a foundation for further work which will be designed to assess and compare service effectiveness.

2. 4: The importance of cultural context in New Zealand

It is widely accepted that cultural barriers (for example, cultural differences between providers and consumers of health care) impede the attainment of health (Varghese, 1983). Trained Maori mental health personnel are in the extreme minority in New Zealand and yet Maori are over-represented in the population who use our mental health services with apparently little positive outcome (Durie, 1984). The majority of the Pacific Islanders resident in New Zealand lived in the study region, which also had a higher population of Maori than the country as a whole. A high proportion of Maori and Pacific Island people were admitted to the acute inpatient psychiatric services in the region. A proactive approach was clearly required from existing mental health service providers in the region.

The dichotomy of mind and body is seen as a product of Western scientific thinking by Maori and is alien to their holistic concept of health which acknowledges the unity of the four cornerstones of health: the soul, the mind, the body and the family (te taha wairua, te taha hinengaro, te taha tinana, te taha whanau). The impact of western colonisation in New Zealand has resulted in alienation of generations of Maori from their language and their land. These examples of cultural pollution have far-reaching implications for the self esteem and mental health of contemporary Maori.

The need for culturally appropriate and sensitive services was acknowledged by members of the public in the course of public meetings attended by the researcher on health service development issues. Culture was mentioned as important both by clinical staff working in the services and by mental health service administrators. However, examples of how to develop such services were very difficult to find. (Abbott & Durie, 1987; Rankin, 1986; Rappaport, 1977). Preliminary field work in the research area made it clear that differences existed between the cultural groups in the study area about what constituted 'mental disorder' and about what 'caused' it. Not surprisingly,

this led to differences in belief about what was an appropriate response to and 'treatment' for mental disorder. It is generally acknowledged that current mental health services in New Zealand are not culturally sensitive to the indigenous people, namely the New Zealand Maori (Committee of enquiry into procedures used in certain psychiatric hospitals in relation to admission, discharge or release on leave of certain classes of patients, 1988; Mental Health Consortium, 1989).

The description which follows in the remainder of this section is intended to give a background to understanding how some of the indigenous people of New Zealand perceive 'mental disorder'. It draws attention to the importance of cultural context for developing mental health services and for assessing how appropriate they are.

Behaviours which may be acceptable to Maori in the context of their beliefs may be unacceptable in a legal, moral and social system which is European in origin. Unless this is understood, efforts to provide an appropriate and effective system of care for this very significant group of consumers will fail (Rankin, 1986).

The ritual of encounter is important in Maori culture and ritual precedes any business. Business may refer to a meeting of great importance, to a visit by a clinician to a person's home, or to an everyday event such as borrowing a lawnmower from a neighbour. The Powhiri, or welcome is the example of Maori ritual which visitors to New Zealand are likely to experience and which visitors to a Maori home may need to understand. The Powhiri acknowledges the deity, the home, the deceased and then those who meet for business.

Four important value dimensions in Maoridom are:

1.) The Whanau which connotes the extended family. People are more important than things to the Maori. The various indicators of kinship, such as the Tribe, Hapu, Whanau, Iwi are very significant and comprise a kind of political system in which mana or status is defined. Mana is a spiritual concept. Ranking within the whanau

may be quite different to that in secular life. 'Whakapapa' refers to geneological pathways. The carved house is the personification of a common ancestor and it typically has an embracing shape. The Marae is a place to stand - a sanctified piece of land set aside for the purpose of meeting, talking etc. The context of the Whanau is very wide. For example, a woman may say "I have 8 children". Two of these can be miscarriages. The veil between life and death is more transparent in Maoridom.

2) Whenua - land, 3) Te Reo - language and 4) Wairua - which connotes everything to do with spirituality are the three other important values. Wairua is wider than God, church and religion and has to do with the soul and feelings. It also ramifies into custom, especially concepts such as Tapu (sanctity) and Noa (commonness).

Mate Maori

This is the term for Maori sickness. The underlying concept of Mate Maori is spiritual. It applies to schizophreniform and other (physical) illness. However, Mate Maori is an aetiological assignation rather than a diagnostic entity. Ideas about treatment are hence often fundamentally different from those derived from a traditional Western European system of psychiatric classification (Blake Palmer, 1956). It is believed that you get Mate Maori either through a hara (breach) or through a makutu. Hara translates literally as mistake and has no moral connotation. The concept of hara depends on the belief that the body is bounded by tapu. If there is a break in these, Mate Maori is the result. Such breaks can be the result of breaches of protocol for example. The hara is to do with violation of a given norm. The concept of sin is not totally inappropriate, but hara has nothing to do with God. The enquiries of the Tohunga in a case of Mate Maori are similar to the clinical history taking that is familiar to professionals trained in conventional European mental health systems.

The second form of Mate Maori (makutu) is a spiritual affliction from afar (Blake Palmer, 1954). Treatment may consist of prayers for restoration. It may consist of beating out the evil spirit. This would not be considered an acceptable 'treatment' in

the context of traditional mental health care in New Zealand. This example of Maori treatment illustrates how important it is to understand a person's culture in order to better understand their value systems and the motivations for their behaviour. Only then can we begin to communicate with them in a meaningful way. (Durie, 1985; Ministerial Advisory Committee on a Maori Perspective for the Department of Social Welfare, 1986; Rappaport, 1977).

As part of the process of setting up the present research, a consumer representative group was established with representation from both Maori and Pacific Island communities, local bodies, voluntary and social service agencies, to work as a consultative group. Regular meetings were held between this group and staff in the Hospital Board services in the area and the Hospital Board was encouraged to ensure that the group had an effective voice, by maintaining a mailing list and providing typing services, until the consultative group could obtain resources to function more independently.

The community consultative group developing in the study area observed Maori protocols when organising and running meetings and performed a valuable educative role in this respect, for all those unfamiliar with Maori customs. It was hoped that the group would begin to make what previously appeared to be rather inflexible, ethnocentric mental health services a little more understandable and acceptable to the indigenous people. Increased cultural awareness should increase acceptance by other minority client groups in the area. The research was designed to make data on the ethnicity of service users available to support the establishment of a Maori Mental Health Unit in the region, and to advocate for Maori community workers to be employed as members of comprehensive interdisciplinary mental health teams.

2.5: Methodological Perspectives

The research was carried out when, for the first time in New Zealand, health administrators were realising that planning was important enough to warrant allocation of resources to it. Hospital Boards were employing planners and the result was a moderately successful attempt to apply formal planning principles to service development strategies. Planning is considered by the author to be almost synonymous with formative evaluation. Like planning, formative evaluation tends to be a neglected area compared with process and outcome evaluation (Western, 1983). It refers to the continuous monitoring of services so that revisions can be made without delay or interference to service delivery. It also includes all preliminary planning activities associated with needs assessment, goal setting, resource allocation and decisions as to the feasibility of evaluation. An underlying purpose and justification for this health services research exercise, was the production of information that was useful for service development and planning. Again, planning is similar in practice to formative evaluation because it explores alternative ways of achieving a desired development. Planning and formative evaluation then assess the costs and benefits of each approach, to assist management in using resources cost effectively.

Some basic aims for planning mental health services can be identified as:

1. Early intervention
2. Decentralisation
3. Maximum use of alternatives to full time hospital care
4. Continuity of care
5. Comprehensive services
6. Maintenance of patient self esteem

These aims are all consistent with the philosophy which defines community mental health as discussed in Chapter 1. Such aims must be translated into measurable objectives if they are to have a place as outcome measures in any evaluation research strategy.

It was anticipated that methods from epidemiology, social science, evaluation and planning would be used in a systems analysis. The systems approach was used here as a problem solving and decision-making methodology. Systems methods have grown through a process of trial and error, in the face of complex previously unmanageable problems. As with planning, they require an ability to perceive wholes rather than parts, different levels and interrelationships. It was very clear that "The complacent certitude that comes with the random allocation of control and experimental groups is seldom vouched to socio-medical research, as with human medicine in general. A high degree of plausibility is as much as can be hoped for" (Susser, 1968, p. vi).

When choosing research methods, the aim was to maximise the relevance and believability of the results, while maintaining integrity and rigour by ensuring that methods chosen were reliable and valid. A systems analysis (Cavallo, 1979; Van Gigh, 1974) was used to determine the 'motive power' for this particular health service system. A multi-method approach was used and both qualitative and quantitative information was gathered (Cook & Campbell, 1979). A brief explanation of General Systems Theory follows.

General Systems Theory (Cavallo, 1979) examines the structure and functioning of a group of interacting components in which the whole group, working together, has greater import than the sum of the independent parts. This synergistic whole has a functional structure composed of interactive connections. Although the way these parts are organised cannot be altered without disturbing the overall system's functioning, the components themselves can be replaced with similar parts with little disruption to the system. What the component does for the overall arrangement is more important than what the component is. This functional analysis is based upon the organismic principle that the whole determines the function of the individual parts. If interactions occur only within the system itself, it is a closed system and no factors external to it

can affect its functioning. A system that can be affected by external factors is called an open system. Living systems are all open. As social and health service systems have people as components, they are also open systems.

However, most systems theory is ahistorical. This is a serious shortcoming for understanding social and health service systems as it provides a cross section of elements that are residues of diverse past processes (Meyer, 1987). It is important to retain an historic perspective when trying to understand, control and predict the development of health service systems, hence an addition to a systems approach is needed. Population ecologists have an alternative model of organisational change. This represents change as the consequence of new organisations being created and older ones failing to survive, not as the result of incremental changing by individual organisations. These views provide an alternative to views which overstate the adaptive capacity of organisations and provide material to inform the development of a model for a system of mental health service. They are consistent with a multimethod approach which applies a variety of evidence or data to the same problem or hypothesis, to achieve a more convincing and believable result, in many applied research situations, than could be achieved using single method approaches.

The challenge at this time was to decide on methods to model, describe and explain the system of service which existed at the time in the study area. Because of the essentially interdisciplinary nature of health services research, there was opportunity to explore a variety of literatures and knowledge bases in the search for information to inform the development of a suitable model. Epidemiology is the study of the distribution of 'health' and 'disease' in populations and the factors which 'cause' the distributions. Social science methods make it possible to interpret the significance of such distributions, study health and illness behaviour and analyse the structures and functions of health and medical organisations (Susser, 1968). Evaluation seeks to apply systematic scientific methodologies in looking back and asking - what have we

been doing - have we been doing it well - is it what we set out to do and what effect has it had? It is also looking forward and saying - how should we be using our resources now and in the future? How should we be changing? (Lippmann, 1982).

2.6: A systems view of the problem

Figure 1, p 4 summarises the steps taken in the development of this thesis. The method is best thought of as a systems analysis. The system of service studied was an open system in which changes occurred throughout the four and a half year research period, independent of research interventions. In the current study, an instrument was developed as an evaluation tool to assess the feasibility of evaluating a system of psychiatric service. The intention was that repeated measures obtained from the use of this scale (Figure 4, p. 49) would enable services to assess and reassess their progress towards service goal attainment. This procedure is intended to provide a cybernetic feedback loop in the process of performance measurement and service evaluation. A one day census of patients registered with the services in the system was then carried out. This uncovered a lack of adequate record systems for patient and management information. A patient information system based on a minimum data set of patient information was developed to fulfil this need. Meantime, a preliminary review of the acute services in the psychiatric hospital revealed a stressed service system. Major sources of stress were identified as inadequacies in the physical environment and a wide and apparently uncontrollable variance in amount of service use by individuals admitted to the acute area. This work is described in Chapters 3 and 4.

An instrument was then constructed to determine predictor variables for amount of acute psychiatric service use from the minimum data set patient information form developed for use in all the services (Appendix II). All of the people admitted to the service during 1988 were studied to determine the factors which predicted service use. A range of socio-economic, systems and behavioural variables were measured and compared with the criterion variable which was amount of service use. This was

defined as number of bed days spent in the service during a twelve month period. The results obtained from this part of the research were expected to specify predictors, or inputs to the service system in preparation for further research involving the evaluation of process. Figure 1 represents the systems analysis in schematic form.

The four assumptions which follow in this section have crystalised as a result of a conscientious effort to overview the research problem. They also represent an attempt by the author to make personal biases explicit, so that readers may make the necessary adjustments when assessing the results and arguments which follow. There is after all, no such thing as value free science as the following quotation indicates:

"There are no generally applicable 'rules of induction', by which hypotheses or theories can be mechanically derived or inferred from empirical data. The transition from data to theory requires creative imagination."

(Hempel, 1966, p. 15).

2.7: Assumptions

1. An acceptable strategy for service development and delivery must take the individuals need as a primary consideration in the context of community needs. Services provided should be related to the individual consumer's need for care and reintegration. This should be the starting point for both service planning decisions and the evaluation of outcome.
2. Community care should not be seen as a cheap option, or as anti-hospital, anti-treatment or anti-psychiatry, but as a 'normalising' trend to re-integrate individual and environment (Creed, Black & Anthony, 1989; Turner, 1988).
3. An over-riding assumption was that service effectiveness should be measured by an assessment of the consumer's ability to reconstruct and reactivate

'normal' social networks. An information feedback system was considered to be essential, as follow up and aftercare are critically important for the maintenance of treatment gains. Return to the pre-treatment environment can be followed by reoccurrence of symptoms, if stressors are still present there.

4. Effective rehabilitation was therefore seen as the best prevention strategy. This assumption supports the idea that the concept of 'cure' is often inappropriate. This notion is central to the belief endorsed in this study that for some, 'mental disorder' never really goes away (Shepherd, 1986; Turner, 1988). Rehabilitation is the restoration to health and working capacity of a person incapacitated by disease, mental or physical, or by injury. It is a word that came into prominent use during the 1939-45 war, reflecting the growing awareness of the medical profession that the treatment of a sick or injured person does not end at the moment of recovery from the immediate effects of illness or injury. For example, a person with a fractured limb or spine has to recover full use, not only of the injured part, but of the whole body. S/he has to recover confidence and the ability to work and enjoy life.

2.8: Research priorities

Information gained from local field work and from extensive review of the literature on mental health service provision in New Zealand and overseas, indicated that the factors which precipitate admission to acute psychiatric inpatient care were seldom, if ever, clearly specified. The mental health data published each year by the Department of Statistics gives national summaries of referral sources by ethnic origin (excluding psychiatric units in general hospitals for some reason) (NHSC, 1989) but no information on reasons for referral. In New Zealand, psychiatric hospitals appeared to be the dominant service in a region's psychiatric service system when they existed. In the area of the study, all of the other services appeared to be controlled by and

subservient to the needs of the institution. The acute area in the hospital had the highest staff to patient ratio and was the most expensive service to run. It became obvious that what determined use of this particular type of care needed to be understood, before appropriate alternatives could be considered, or developed in a rational way. However, before predictor variables for amount of acute service use could be identified, some preliminary work was needed to provide a clearer overview and understanding of the existing service system.

This preliminary work is seen in context in Figure 1 (p. 3):

1. An evaluation feasibility test was applied to all of the services in the area.
2. A one day census of all patients registered with the services (figure 3, p.28) was conducted to provide patient utilisation information.
3. A patient information system was developed which included people using the community based services. These preliminary studies are described in Chapter 3.
4. A preliminary review of the acute services in the hospital was carried out in 1986 as this part of the service system appeared to be very severely strained. A description of this work is given in the first section of Chapter 4.

Chapter 3

Setting the scene

In the first section of Chapter 3 an exercise to assess the feasibility of evaluating the system of services in the region is described. It is an example of formative evaluation, in that it involves preliminary activities needed both for planning services and for establishing accountability procedures in those services. The evaluation feasibility exercise is followed in section 3.2 by an account of a one day census which was carried out in January 1986. The purpose of the census was to find out who was using the services, what the service users were like and where they came from. The census was repeated twice, in June 1986 and in November 1986, to see whether the time of the year made a noticeable difference to the number of people using the services, and to get an idea of the throughput of service users. In section 3.3 the development of a patient information system for community service users is described.

3. 1: Formative evaluation

In general terms, the political climate which dominated throughout the project, was tense and unstable, influenced by the extensive restructuring of health services occurring locally and nationally and by the fact that mental health services were being reviewed at national and regional level (Andersen, 1987; Taskforce on Hospital & Related Services, 1988). In the city where the research was undertaken mental health services were going to be given highest priority along with geriatric services (Hospital Board Strategic Plan, 1986). A commitment to 'normalisation' 'deinstitutionalisation' and relocation in the community for psychiatric patients, along with the development of community care programmes, was expressed at both Hospital Board and Hospital Management level. However, very little information about service use or effectiveness was available for planners, for managers or for clinicians. An urgent need for better information systems was highlighted at this

early stage in the research. It was not possible to identify or describe the population of service users from the existing medical record system, which focused almost exclusively on hospital inpatients.

The work outlined in this section attempted to estimate whether or not it was possible to evaluate the services, and to gather service utilisation data to find out who was using the services currently. This information was not available from existing records. Efforts to assess needs and develop services were being made in some areas, but there was a need for a systematic and comprehensive overview and formative evaluation of services in the region.

Assessment of service 'evaluation readiness'

The hardest and first task for a researcher planning an action research activity in a new setting is to develop a framework appropriate for understanding and describing the conditions which exist in the community of concern. Three questions need to be asked. What services existed there already? What did people want? How could they get what they wanted? To begin to find the answers to these questions it was necessary to become familiar with the settings in which staff worked, particularly those outside the hospital campus. If advances in community health care are to be made 'community experiments' which require the trust, understanding and indeed, permission of those who live and work in the community to be serviced must be undertaken. Through informal and formal discussion, an attempt was made to understand staff concerns and priorities for service development and delivery. While expressed demands do not necessarily match need as assessed by others, such demands reflect concerns that must be taken into account in practice.

As stated in Chapter 2, formative evaluation refers to the continuous monitoring of services so that revisions can be made without delay or interference to service delivery. It includes all preliminary planning activities associated with needs

assessment, goal setting, resource allocation and determining the feasibility of evaluation of any sort. The distinction between formative and process evaluation is not entirely clear cut in that formative evaluation can also include an assessment of process, providing a feedback mechanism for planning and service development. Conceptually, it is analogous to planning, or 'front end analysis' and precedes analysis of process. It is a necessary prerequisite for process and outcome evaluation, both of which are more time limited and interrelated. Process and outcome evaluation are appropriate once plans have been implemented and inputs and outputs from the service, as well as the components of the service, are operationally defined. Services can be adapted and changed in the light of data from process and outcome evaluation.

It is worth noting when beginning an evaluation, that there is no logical link between measures of 'facts' about outcome and performance for a service, and assessment of the 'value' of such outcome and performance. In this type of work, the evaluator's biases should be made explicit and be clearly stated when results are reported. Since in this project evaluation results were to be used to change programme performance (that is, service delivery products and process) it was necessary to select fair and credible standards of performance (operationally defined procedures and outputs) at the outset. How these standards were set, the design of the evaluation and methods used to gather and process information, as well as results, was explained to staff working in the services. Ideally, each service would design and implement its own evaluation and monitoring procedures. However, initial discussions with staff in the services indicated that service objectives were not well defined and no clear strategies had been specified to measure service output.

Evaluation research (Heron, 1982; Lippmann, 1982; Windle, 1986) indicates that there are at least four prerequisites for a successful health service evaluation. These include:

1. Translation of service goals into operationally defined objectives
2. The specification of precise criteria for admission and discharge
3. Accurate and accessible client information
4. Clearly defined responsibilities and boundaries, geographic and clinical.

These four prerequisites were framed as questions for a simple Likert type scale used as an instrument in this study (Figure 4, p.49).

Method

Sample

The services taking part in this exercise were the services administered by a psychiatric hospital in a New Zealand city. As well as a base psychiatric hospital which had approximately 300 beds, (Figure 3, p. 28) the service system included psychiatric district nurses (PDN's) a substance abuse service, liaison services to one of the local courts and to the general hospital, a child and family outpatient service, outpatient services operated by hospital based staff and a range of services located within the hospital itself. These included a psychotherapy service, a geriatric assessment unit as well as psychogeriatric inpatient care. Long term care was also provided for those chronically and seriously disabled by psychiatric disorder and for some intellectually handicapped people.

Instrument.

A simple scale of four questions, The Evaluation Feasibility Scale (EFS), was designed around the issues mentioned above, to determine evaluation readiness. Use of the scale was intended to inform staff of requirements for service evaluation and to provide them with the opportunity to participate in the early stages of evaluation method development. The aim was to design a tool which had high face validity and was quick and simple to use. It was to be piloted by the staff and also applied to each of the services by the researcher to check for inter-rater reliability and control for biases. It is important to note that the Evaluation Feasibility Scale was not used as a

measure of the effectiveness of the service, or an indicator of worth, or merit. It attempted to measure the degree to which the service was 'evaluation ready'.

An Evaluation Feasibility Scale for service evaluation by Catherine B. Western		Office use only.
Instructions: Place a tick over the face which best represents your answer to each of the following questions.		Code
1. How well defined are service objectives?	     0 1 2 3 4	
2. How well established are criteria for admission and discharge?	     0 1 2 3 4	
3. How clear are boundaries of responsibility both clinical and geographic?	     0 1 2 3 4	
4. How adequate are record keeping systems?	     0 1 2 3 4	
Mean Score (0 - 4)		
Name of Service		
Date		

Figure 4. The Evaluation Feasibility Scale.

Clearly, services with simple structures and functions are more likely to rate higher on the EFS than those services which have complex objectives and structures. For example, the long stay hospital which accommodated mainly elderly females, was scheduled to close. For this particular service, goals were very clear and easy to

measure, being simply the reduction to zero of inpatient numbers by relocation in the community, or the base hospital.

Procedure

The piloting procedure for the scale yielded quantitative information in the form of scores. Qualitative information was obtained from staff, in response to questions about the validity of the scale. The scale was also applied independently to all of the services by the researcher, before any results were obtained from staff. The two scores obtained for each service were then compared. An arbitrary cut off score of 'two' was chosen to indicate a degree of 'service evaluation readiness'. Services scoring above this could proceed to develop a suitable evaluation strategy. Services which scored below the cut off were expected to institute procedures to improve their scores on the EFS in readiness for further evaluation.

Results and Discussion

In general, staff in the services rated their service higher than did the researcher, but when the values assigned to the subscores were rank ordered the relative positions of

Table 3.1: Scores on evaluation feasibility scale for nine services administered by a psychiatric hospital in October 1986

Service	Objectives	Admission &Discharge Criteria	Boundaries	Records	Total	Mean	Rank Order
Long stay Hosp	3	3	4	2	12	3	1
Psych Dis Nurses	3	3	2	2	10	2.5	2
Child & Family	2	2	2	2	8	2	3=
Base Hospital	2	2	2	2	8	2	3=
CMHC South	1	1	1	1	4	1	5
CMHC North	1	0	2	0	3	.75	6=
Crisis/Liaison	1	1	0	1	3	.75	6=
Subst Abuse	2	0	0	0	2	.5	8
OutPatient	0	0	0	0	0	0	9

the services were the same, with two exceptions. The ordering of the scores assigned to the services by the researcher was the same as the ordering of the mean of both staff

and researcher scores. In both cases, only four services scored above the cut off score of two (Table 3.1.). All staff who participated reported that they found the exercise useful. They were not averse to the idea of repeating the exercise at a later date. It became obvious that, with the possible exception of four services, evaluation was not feasible until service objectives were clearly defined, criteria for admission and discharge were established, boundaries of responsibility, both geographic and clinical were drawn and record keeping procedures were improved. Improvement in these areas at the individual service level was necessary before any evaluation of the system of service as a whole could be contemplated. This small scale was effective in the setting for which it was designed for two reasons. It provided a method to enable the services in the region under study to be rank ordered to assist decisions about priorities. The exercise involved service providers in the development of measures suitable for service evaluation. Such involvement tended to ensure their commitment to the evaluation process and generated a willingness to carry out the extra tasks involved.

3.2: The one day census

A one day census of all patients registered with the nine services administered by the Hospital was carried out in January, June and November in 1986 to provide a description of the demographic and clinical characteristics of patients currently using the services which could be compared with the 1986 census data. Variables such as referring agent, main reason for acceptance to service and provisional diagnosis category were also included in the information gathering sheet for all service users, so that the information gathered could form a basis from which to develop measures for the effectiveness of the service variables. It would also enable those planning and developing services to begin to specify the factors controlling patient referral and discharge. The census exercise was considered to be an essential part of the formative evaluation. It not only uncovered inadequacies in record keeping systems which needed to be rectified, but also, for the first time, provided a data set of baseline

information about service users. It also created an opportunity and need to consult with staff, to reach agreement on the variables which were most general and most important to include in a basic patient information system for mental health services in the area.

Method

Information from approximately five thousand patients was collected from the admission and discharge records of the nine services (Figure 3, p.28) on three separate census days during 1986. Three data points were chosen initially to demonstrate trends or consistencies which might occur in the user population and to control for differences which might result from seasonal effects. The total of approximately 5,000 observations refers to separate individuals and not 'registrations' or 'admissions to service'. Many of these individuals were registered on more than one of these census days. A total of approximately 3,000 people was registered on each of these three occasions. Variables to be compared with the national census data were age, town, sex and race. Variables of clinical importance such as referring agent, reason for acceptance to service, provisional diagnosis and amount of time registered with the service were collected where possible.

Because patient information was not recorded in a systematic way, data gathering was difficult and slow. Individual services were consulted and suggestions for more efficient and consistent ways to collect and record information were sought. There was no noticeable improvement in the way records were kept during this year (1986). The information from the November census was not entered into the SAS data set with the January and June census information, since no improvement was apparent in the quantity or the quality of the November information. It was clear at this time that a substantial intervention was required to effect an improvement in the amount of information which was currently retrievable to inform decisions about service development. General agreement was reached among managers and clinicians that a form was needed on which to record a standardised minimum set of information,

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called the minimum data set (MDS). Work began in 1987 to develop such a patient information form (p. 210) from the basic data sheet drawn up for the census exercise.

Results and Discussion

Variables of interest which were not recorded in an accessible way by some of the services were: race, provisional diagnosis, referring agent and reason for acceptance to service. Information on the latter two was so sparse that it is not reported in these results. The final sample of 4,076 patients included those in the first two censuses. Information on race was obtained for 1,052 patients and provisional diagnosis for 1,334 patients. The percentage of the patient sample for which race and provisional diagnosis information was missing is high (72% and 67% respectively) even after laborious manual extraction from available clinical files.

Because of the importance of developing culturally sensitive and appropriate services the race distribution of the general population in the study area (Department of Statistics, 1986) was compared with the distribution in the patient sample. It can be seen that Europeans were appropriately represented in the patient population, Maoris were over represented and Pacific Islanders were under-represented (Table 3.2).

TABLE 3.2: Race & Age distribution in 1986 patient cohort and general population

% Race distribution	European	Maori	Pacific Is	other
Total population	65.7	12.9	10.5	6.3 + (4.6, mixed)
Registered Patients	69.8	20.8	6.6	2.8
% Age distribution	0-14years	15-64years	65+	
Total population	27.1	65.2	7.7	
Registered Patients	10.7	79.9	9.4	

(Even though information on race was only obtained for 33% of the patient population at this time, it was considered probable that this group was reasonably representative

of the whole patient sample. This was subsequently shown to be the case). Females outnumbered males in the total patient sample by 53% to 45%. The age group distribution in the general population given in Table 3.2 can be related to the distribution in the patient population. More detailed examination of the patient sample showed that the majority (53.5%) were in the age categories between 21 and 45 years. Provisional diagnosis information was not available from the majority of the services.

It was interesting to note that the total number of patients registered with the nine services on each of the three census days remained almost constant at approximately 3,000, despite admissions and discharges, to create a throughput of about 5,000 people. This suggested that a relatively stable 'full house' or 'ceiling' existed for each service. How constraints on access to service were defined and whether they were imposed by the clients or by the providers was unclear, as criteria for admission and discharge were seldom specified.

Of the four services which rated highest on the Evaluation Feasibility Scale, (Child and Family, Long stay Hospital, Base Hospital and the Psychiatric District Nursing (PDN) service), the PDN service required further study, as many patients used this service in conjunction with other services in the hospital administered system. Such patients were recorded and counted once only, as part of the non-PDN service population. Hence the PDN patients registered by the census counts included only those who were not registered with another service at the time. These people represent about 25% of the service's actual caseload. The Base Hospital results also warranted separate detailed analysis as they were drawn from a range of services and units with different objectives and requirements for care. Examples of two specialist inpatient units in the hospital were the psychotherapy unit and the geriatric assessment unit. Preliminary field work which involved the researcher in formal and informal discussions with staff indicated that the location of these services at a

site remote from public transport systems and centres of population had serious implications for access for visitors. The isolated location also limited opportunities for patients in care to have contact with the community and participate in everyday normal activities. Observations by anthropologists carrying out research in the institution at this time reinforced these concerns (Dowland & McKinlay, 1985; Parks, 1985) and there was a need to establish procedures to collect systematic data from visitors and patients.

The results obtained from this study provided descriptive information about service users and gave a starting point for service development and evaluation. The results could not, by themselves, form a basis for inferring *need* for service. As mentioned in Chapter 1 the relations existing between use and need for service is complex and poorly understood (Hagendorn 1977). Peoples' thresholds for help-seeking are affected by many factors other than severity of symptoms and chronicity of the complaint (Friedman & West, 1987). The extent to which services publicised their activities and are accessible and available is governed by available resources, and this affected policies for admission and discharge and hence patterns of use. The paradoxical and indirect relationship, if there was one, between need for services and patterns of service use was considered to be outside the scope of this study.

A decision was made at this point in the work to focus on the inpatient services for three reasons:

1. Inpatient care consumed the greatest resources (80% of budget) and was hence expensive compared with the community services which collectively cared for the vast majority of the people in care (more than 80% of the sample).
2. The long stay Hospital was scheduled to close in the near future and so an opportunity existed to monitor a hospital closure and the transfer of some patients into the Base Hospital and others into community settings.

3. It was necessary to establish a data base of information from which conclusions could ultimately be drawn about the relative effectiveness of different types of treatment and care and existing record systems were better for inpatient services than for other services.

Hence special attention was given to the census results from the inpatient services. Compared to the total sample the number of Base Hospital inpatients over 65 (and in the over 75 age category) was large. Unlike the total sample obtained from all the services from the one-day census, males outnumbered females. This could have been because the long stay Hospital provided care for the majority of long stay female inpatients at the time. The fact that a psychopaedic hospital was located in the study area explains the lack of inpatients in the 0-15 category. Patients of school age were admitted to a regional inpatient child and adolescent service. Maoris were over-represented and Pacific Islanders under-represented in the base hospital inpatient population, as they were in the out patient population, when compared with the 1986 population census figures for the area. There were some intellectually handicapped patients but the majority of Base Hospital inpatients were diagnosed as having a major psychiatric disorder. The majority of inpatients in the long stay villas at the Base Hospital had home addresses in the south of the area near where the hospital was located. The acute service area of the hospital has fairly large groups of patients coming from the northern half of the district where the population is denser, despite the greater distance to travel from home to the hospital.

Planning began for a review of the acute inpatient services at the Base Hospital, to proceed concurrently with the development of the patient information system described in the next section. Meantime, discussion occurred with staff at all levels to bring about improvement in record keeping so that clinical and management information could be related in a meaningful way. For this, caseloads needed to be documented in terms of individual patients as well as episodes of care. In the past the

only statistics collected were number of admissions and discharges, which were in terms of episodes of care. It was expected that improved quantity and quality of information would inform decision-making and provide a basis for service planning, development and evaluation. Computerisation was seen as an essential part of this process and efforts were made to obtain suitable hardware and software for medical record keeping at the base hospital and subsequently at the community clinics. It was clear that a basic management information system was an essential prerequisite for any kind of useful service evaluation.

The process of developing a patient information form (PIF), which is described in the next section, is an example of how to standardise and improve the amount and quality of patient information available, around the concept of a 'minimum data set'. Work was concentrated on reaching agreement on the information required for a patient information form. This became the minimum data set for all services in the research region (Appendix II, form W1). A group was set up which included interested staff from the eastern, central, northern and western parts of the city, to attempt to reach a consensus on the minimum data set. As a result, the PIF was recommended for use in all of the mental health services in the city.

3.3: Developing the patient information system

To begin the process of developing a patient information system, a form for a minimum data set of information for each patient was developed (Appendix II, form W1). Categories and codes were derived for each item of information recorded so that the draft form was self coding and the information from it easy to enter into a computerised data base. The variable 'reason for acceptance to service', was given particular attention in relation to admission criteria. At the time of the study there was no formal requirement to apply criteria for admission or discharge to any of the services in the study area. If inflow and outflow for services were to be controlled and measured such criteria were essential. A list which could form the basis for a check

list during initial assessment for admission to the services was developed from the American Psychiatric Association Manual for Peer Review (Altman, 1981) and discussed at meetings with staff. A draft form was then designed and circulated for comment. The task of encouraging staff to use such a form and check list became urgent, as staff insisted that their services were overloaded and resources were inadequate to meet needs. Reliable data were needed to support applications for more staff.

Management Information Systems (MIS)

If modern information technology is used imaginatively, a given piece of information is recorded only once and used any number of times for a variety of purposes. A Management Information System can be described as a systematic method to collect, store, retrieve and transmit information, on patients, staff activities and fiscal transactions (Broskowski, 1976). It is a particular tool used for specific purposes and is an essential prerequisite for programme planning and evaluation. The development of an effective Patient Information System was considered to be a prerequisite and necessary foundation for the current research undertaking. In this study the development of a case register system for all patients using the Board services in the area is described. Time and resource constraints did not allow the development of information collection systems for the other two necessary components of a complete MIS; namely staff activities and fiscal transactions.

A Management Information System (MIS) can serve a vital integrative function in a complex organisation such as a modern psychiatric hospital, which operates multiple and decentralised programmes. As demonstrated in Figure 2 (Chapter 1, p. 11) it allows management to fix its present position so that a new course can be charted (Davidoff et al., 1977). In other words, before any assessment of service effectiveness can occur, a description is needed of what the service is, and who it is for. Such a description requires an adequate information base, so an initial task is often to

develop a system to collect relevant information. Some effort to develop a Mental Health Information System in Wellington was documented by Howden Chapman (1987). However this system lacked flexibility and was not able to be upgraded as computer technology advanced. It was an inpatient based system which could not be easily applied to community service users. For these and other reasons the system was not maintained in the region where it was piloted.

Information on inpatients was more reliable and complete than information about people using related day hospital, liaison, outpatient, domiciliary and community mental health services. This was the situation throughout New Zealand, because of the requirements of the National Health Statisticians. This was certainly true in the area under study even though more than 2,500 people used the community services at any one time, compared with approximately 350 inpatients. For this reason, particular attention was given to developing data gathering procedures for the patients using services other than inpatient psychiatric hospital services. In this section the results of intervention on patient information for the two adult community mental health centres (CMHCs) in the area are reported and discussed. The CMHCs served catchment populations of 160,000 and 122,000 approximately. In 1986 the estimated combined caseload for these two services at any one time was 1,500 people.

The aim of this part of the research was to bring about an improvement in the quantity and quality of information available in all of the mental health services in the area by a particular intervention, namely the design and introduction of a patient information system. Any improvement in information resulting from using the system would be documented for the two services mentioned above initially. Similar measurements would be applied to the other services when more resources became available to support the work.

Method

Sample

For the exercise described in this section the sample was the two community mental health centres in the research area. Both services provided day hospital programmes in addition to CMHC services for some patients. In 1988 the southern CMHC separated the CMHC and the day hospital functions in different locations hence from 1988 results are recorded for three services.

Instruments

The key instrument was a Patient Information Form (PIF) which was developed from the information gathering sheet designed for the census described in section 3.2 of this chapter. The PIF was a self coding data capture form which provided basic information (a minimum data set) for each patient on admission to a service. This included name, previous names and alias, ID number, date of birth, sex, race, marital status, religion, legal status, domiciliary code category, date of admission, time of admission, history of previous service usage, bed state of service on admission (if a residential service), referring agent, main reason for acceptance to the service and provisional diagnosis (Refer Appendix II form W1). The variables included in the minimum data set on the patient information form included variables necessary to uniquely identify the patient, variables which clinicians and managers agreed were of primary importance and some variables from the existing hospital admission form. Ultimately the intention was to replace the existing hospital admission form with the PIF so that all mental health services collected and recorded the same basic minimum information.

Procedure

Formal and informal discussion with hospital staff working in all of the services revealed the following concerns:

1. The apparent failure of psychiatric services to take account of and respond to cultural differences

2. Lack of a mechanism through which consumers could participate in service planning
3. Severe accommodation shortages for patients on discharge and a lack of group houses, hostels and other supervised accommodation
4. Aggressive behaviour encountered by staff in domiciliary and community settings
5. Problems of access to service because of inadequate public transport associated with low density population

These concerns acted as pointers to variables which needed to be included in a minimum data set on the patient information form. A draft form was circulated widely among staff. It was discussed and modified at a series of meetings before coming into use in several of the services on 1 September 1987. The long term objective was to create an integrated electronic system suitable for use in all services. Such a system would create a data base of patient information which could be kept up to date and accessed by clinicians and managers to inform decision making.

Information from the data capture forms was entered into a data base which was written in Dataflex. It could be used under both Xenix and DOS operating systems on micro computers and on VAX systems. Tables could be generated for reports as required and the information from these tables entered into a spreadsheet which had a graphics module. Using simple descriptive statistics, results were presented to staff in the form of graphs that were easy to read and interpret. It was hoped that this type of feedback would be sufficiently rewarding for staff, to ensure their continued cooperation in the effort to develop management information systems.

In 1988, 1989 and 1990, information was extracted from the newly established data base on three variables which had particular relevance for service development at the time; referring agent, race and reason for acceptance to service. The quality and

quantity of information available was compared with the 1986 one-day census information for the two services which acted as Community Mental Health Services for the region. In 1990, information on the variable provisional diagnosis category was retrieved retrospectively from the data base for 1988 and 1989, to determine staff compliance on supplying information on this variable.

Results

1986 results

At the time of the one day census information taken in 1986 there were no criteria for admission and discharge and no consistent discharge procedures or record keeping systems. For these reasons, a fully accurate count of patients registered with the services was not possible in 1986, but a conservative estimate counted an approximate total of 3,000 registered for all services on each of the census days. More than a thousand of those counted on the second day were not registered on the first, but many had had previous admissions, suggesting a population of "revolving door" patients. This was also true of the two community mental health centres reported on in this section. Focusing on just two services made it feasible to measure the effect of the introduction of the patient information form. In 1986, there was insufficient information available on race, referring agent, reason for acceptance to service and provisional diagnosis to report at all. Quantity of available information on these variables was measured again following another census in 1988. In 1988, when the census was repeated for the two services, the pattern of readmissions was even more obvious.

1988 results

Figure 5 shows the data for race for the Northern CMHC and the Southern CMHC after the patient information form (PIF) had been in use for six months. Information on race is recorded for 83% and 91.5% of all new patients registered in the six month period up to March 1988. This represented a dramatic improvement compared with the 1986 information.

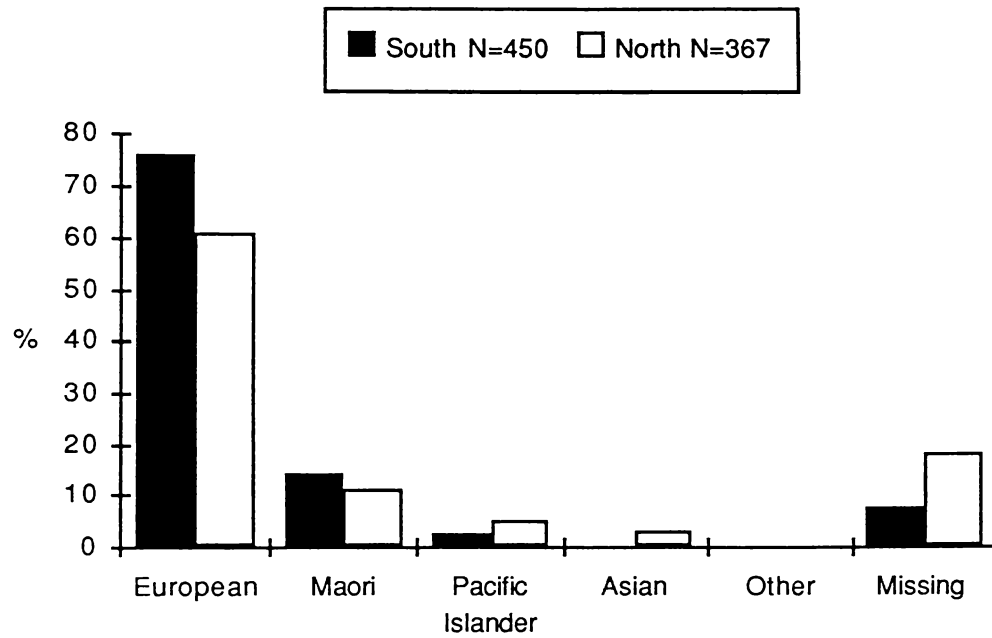


Figure 5. Race distribution for two CMHCs in 1988

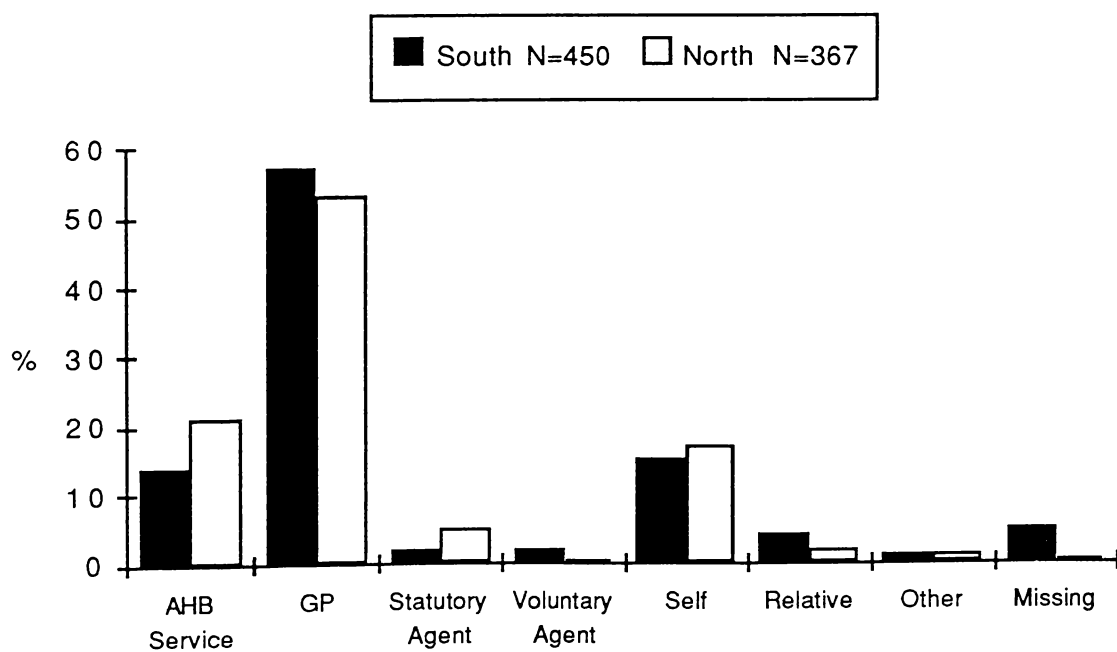


Figure 6. Referring agent distribution for two CMHCs in 1988

The distribution in Figure 5 reflects the racial distribution of the general population in the study region (13% Maori and 10.5% Pacific islander) at the time except that, as for the services in general, Pacific Islanders under used the services. The Maori percentage of the general population in the area is 17 not 13 if those of mixed race are included. It was clear that the amount of data missing from the Northern area service, where the resident Pacific Island population is high, needed to be reduced before more could be said about the results.

Figures 6 and 7 show the amount of information available on referring agent and reason for acceptance to service in 1988. It can be seen that most referrals to the community mental health services came from General Practitioners.

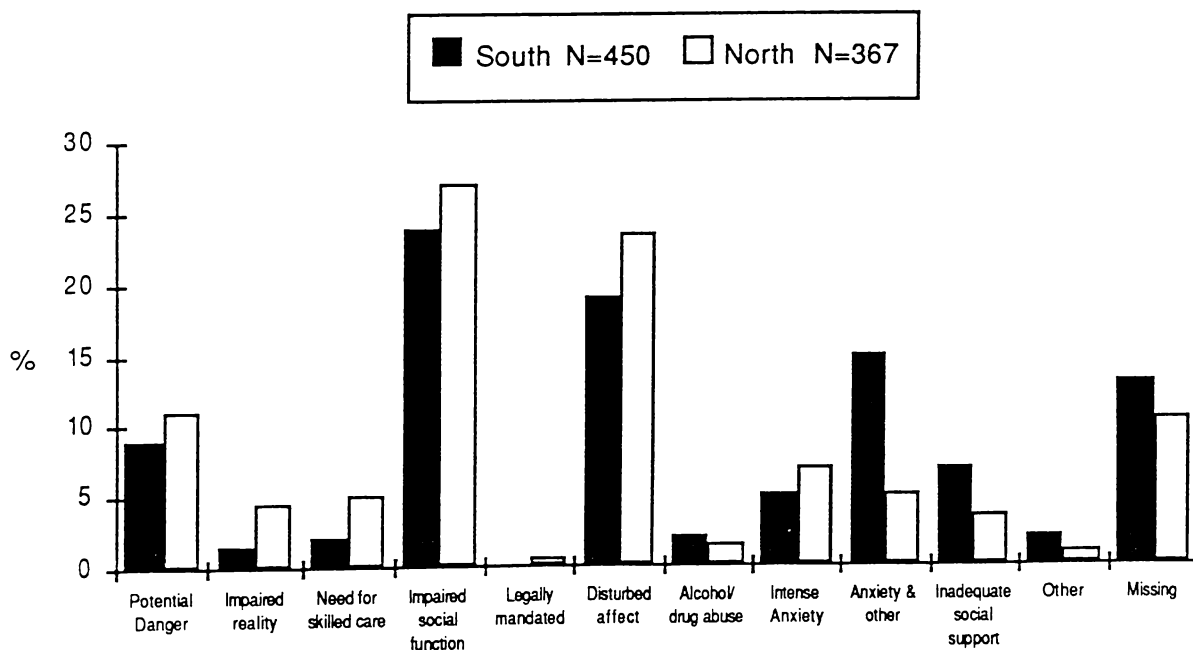


Figure 7. Reason for acceptance to service distribution for two CMHCs in 1988

The census taken in 1986 showed that this contrasted with referrals into the acute inpatient service of the base hospital, which came mostly through other Hospital/Area Health Board services. The improvement in amount of information available on these two variables is noticeable because in fact no information was available in

1986. The major reasons for acceptance to service related to impaired functioning in social, familial and occupational areas and disturbances of mood, behaviour and thinking. This was different to the distribution on this variable in the inpatient population, where the majority could be classified as potential danger to themselves or others, or as having impaired reality testing.

1990 results

Figure 8 shows the variation in information missing on the four variables studied for 1989 and 1990.

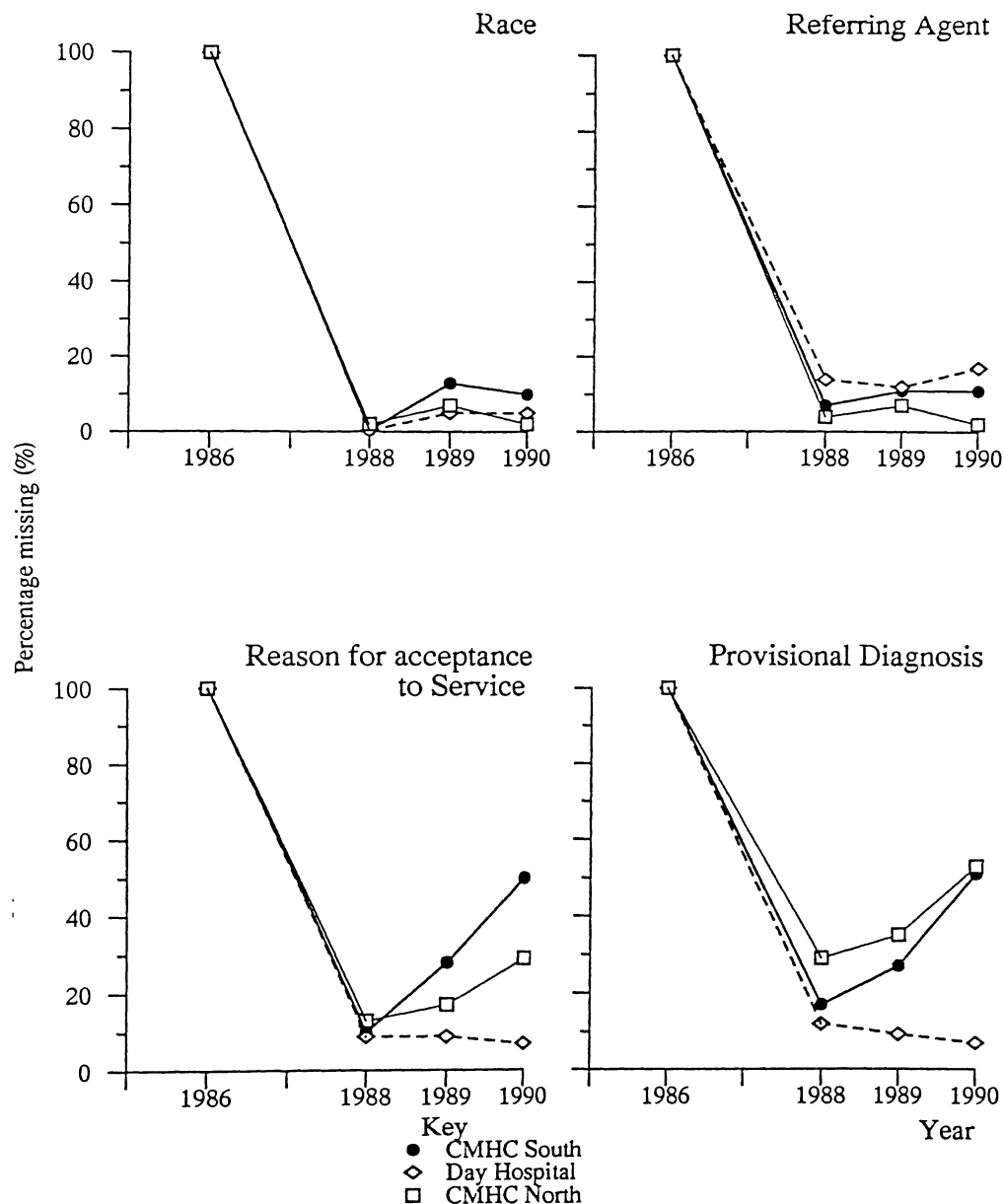


Figure 8. Missing information from 2 CHMC's and 1 Day Hospital

The patient information system was implemented in September 1987 and the improvement in the amount of information available after this date can be clearly seen in Figure 8, p. 48. The Southern District CMHC divided into two services in 1988 in an effort to separate, to some extent, the day hospital/continuing care functions from the community mental health centre functions (early assessment and treatment). The day hospital service was exceptionally good at maintaining the data base for the variables provisional diagnosis and main reason for acceptance to service, compared with other services which continued to demonstrate reluctance to collect information on these variables. It was noticeable (Figure 8) that when encouragement and reward for reporting complete information was absent the amount of missing information increased. Discussion continued with staff in all the services who were using the PIF and suggestions for changes were considered and implemented when there was adequate reason and majority support for them. The aim was to develop a case register system that was responsive to changing needs given the somewhat conflicting requirement for consistency over time in the definitions for the information recorded. The Northern CMHC continued to include patients who were attending day hospital programmes in the total patient numbers.

Discussion

This study illustrates that prior to the introduction of the Patient Information Form, the information available from these two adult community services was minimal, incomplete and haphazard in the way it was recorded. What was recorded was laborious to recover. This was unsatisfactory for managers, researchers and clinicians, as well as consumers. For example, the region had more Maori and Pacific Island people than any other area in New Zealand and the lack of adequate data on the ethnic origins of psychiatric patients was cause for concern for those trying to develop and provide culturally appropriate services. Data on 'referring agent' and 'reason for acceptance to service' were even more scanty, yet knowledge

about who sends people, and for what reason, is essential if managers and planners are to make informed and appropriate decisions about service development.

The introduction of a simple data capture form, developed in collaboration with staff, resulted in information that was retrievable on all of these variables for the first time. As well as providing a description of the demographic characteristics of patients which could be related to the National Census, the information gathering system which was introduced gave an indication of who referred patients and for what reason, as well as a picture of the clinical problems presenting. In addition, the data base formed a basis from which measures for the effectiveness of the service variables could be developed. Staff in the units using the system were in a better position to develop and implement admission and discharge procedures and to initiate performance measurement and quality assurance projects.

Enough preliminary information was now available to determine the feasibility of process and outcome evaluation for individual services. A further challenge for any good management information system was to establish procedures for rapid data analysis and feedback to managers and clinicians. Because information was stored electronically efficient and rapid processing was possible, allowing for regular reporting to staff in all the services using the system. This maintained cooperation to ensure that data gathering continued. Now that the medical record system for community mental health services was improved, it was reasonable to expect better communication between the services and better followup of those apparently seriously disturbed people who used both the inpatient and community based services.

The intervention described here was a first step towards developing conditions necessary for evaluating psychiatric services. Top priority was given to establishing a comprehensive MIS and the first stage of this was to standardise and implement a method to record, store and retrieve patient information. The results reported above

confirmed the success of the method. It was general enough to be used for psychiatric services in other geographic areas and for other health and social services. Because it was based on a minimum data set for each individual patient, the system was flexible and expandable.

The system was flexible enough to allow for modifications to the data capture form, to include suggestions from staff who were using the system and take advantage of knowledge gained from examining results. For example, the categories for ethnic origin were originally chosen to be consistent with the national census, because this enabled the patient population to be compared with the total area population, so that incidence and prevalence rates could be calculated. However, the category 'European' was felt to be unsatisfactory by many staff. It included, and obscured, both the largest group of New Zealanders (those of European origin) and New Zealand's largest minority group, British migrants. It may be that these distinct cultural groups should be identified as such. A more detailed set of categories for race used in conjunction with the minimum data set will also allow Maori tribal groups and different Pacific Island races to be identified. Research is needed to establish the mental health status of such groups. The type of information system developed for this project makes such research feasible. With respect to ethnicity, there was general agreement that it is how a person defines themselves that is important, especially those of mixed ethnic origin. Staff were encouraged to take account of this when recording data. While some staff expressed concern over confidentiality of patient information when it was stored on computers, most accepted that the information was in fact more secure in this electronic storage system than in the manual medical record system. Meetings with staff were held on a regular basis and on request, to explain the security of the procedures and to discuss other concerns and suggestions for changes. As there was high staff turnover in the services, new staff were given information about the case register at these meetings.

Further developments

Systems to capture information which was additional to the Minimum Data Set information (second level information) continued to evolve as expansions on the minimum data set. This allowed for more detailed analysis of the basic variables, both clinical and demographic. The forms and data sets produced were tailored to suit individual services. The fact that the MDS functioned as a core for more complex information systems that were developing endorsed the generality and usefulness of the method.

The instrument developed for the acute services study reported in the following chapters was a detailed expansion and development of the minimum data set developed and described here. As reported earlier in this chapter, pressure on the acute inpatient services led to further study of these services at this time. The acute services study is introduced in Chapter 4. In the literature reviewed in Chapter 1, it was often stated that the most costly and intensive form of health care delivery is inpatient care and that hospital stay can be shortened without harm to the patient (Andersen & Co., 1987; Hollister, Kemper & Woolridge, 1979; Wilkinson & Pelosi, 1987; Wykes & Sturt, 1986). It has also been said that the New Zealand public hospital financing structure lacks incentives to change existing practices, which focus heavily on beds. Andersen and Co. claimed that in fact perverse incentives maintained existing systems of service delivery. The existing stock of land and buildings is considered to be both a valuable resource and a major constraint on change (Andersen & Co., 1987). The impacts of change on personnel were often manifest as mismatches, shortages in some areas and surpluses in others.

Chapter 4

Acute service study

4.1: Preliminary review of acute admission services

At the time when the patient information system was being developed in 1986, an attempt was being made by the researcher to determine what resources were required to maintain the existing system of service. This effort exposed primitive accounting procedures which did not enable services to be individually costed. The basic formula used by health services management at the time, to make rough assessments of cost, was based on a breakdown of 80% of total cost for salaries and 20% for operating expenses and plant. When the services administered by the psychiatric hospital in the study were considered in relation to this formula, it was obvious that the acute admission service, which at the time consisted of two 20-25 bed free standing two story brick villas, was the most expensive of all the services. It was also a service which appeared to be under stress at this time. Reasons given for this stress were; pressures to admit more people than there were beds available, a lack of appropriate services to refer people on to, inadequate facilities, uncongenial accommodation for staff and patients and high staff turnover. A request was made by hospital management for a review of the organisation and function of the acute admission villas, in response to reports which they had received from clinical staff, of high stress levels among staff working there.

The review required a detailed evaluation of the operation of the acute inpatient services because of their high resource cost and also because this mode of care delivery was the most intrusive or restrictive from the patient perspective. The need to identify the stressors existing in the service at the time provided an opportunity to review the service prior to carrying out the detailed study of acute service users. Management would be supplied with much needed, timely information. The staff

working in the area were also keen to participate with any project which might improve their working conditions. The review was carried out at the same time as a patient information system was being developed.

The aims of this phase of the project (Figure 1, p. 3) were: 1) to design and conduct a study to identify the stressors in the acute inpatient villas, so that changes could be made which would alleviate pressure, and 2) to make recommendations to clinicians and management for both short term and long term planning for acute services.

Method

Sample

Four groups of people made up the sample. The first group consisted of the 91 people who were in the acute villas on three separate census days between June and December of 1986. Each person was counted only once, irrespective of number or duration of admission, which in some cases spanned more than one of the three dates sampled. Of these 91 people 44% were male and 66% were female. Ages ranged between 16 and 87 years with a mean age of 37.5 years. Sixty six percent of the sample were European, 20% were Maori, 8% were Pacific Islanders and the remaining 6% classified as Asian or other.

The second and third groups were people who were admitted to the acute villas during two six month periods. There were 299 people admitted between 1 January and 30 June 1985 and 355 people admitted between 1 January and 30 June 1986. The age, sex and race distribution for these people was similar to the 91 people in group 1 above. Males comprised 43.5% and 66.5% were female. Ages ranged from 15 to 91 years with a mean of 39 years. Sixty-seven percent were European, 21.5% were Maori, 7.5% were Pacific Islanders and the remaining 4.5% were classified as either Asian, other or missing. Amount of service use was calculated for the people in these three groups.

The fourth group of people in the sample were the thirty-five staff (14 male and 21 female) who were interviewed. All were either working on the villas or as psychiatric district nurses looking after people when they were discharged from the acute area into the community. The staff who completed interview schedules were from a variety of disciplines and a wide range of experience and levels of training.

Instruments

An interview schedule was designed to gather information about what were perceived by staff as 'problems' in the setting (refer Appendix 1). The first section consisted of two open ended questions inviting staff to specify service functions and to state what the barriers were to performing these functions. The second section of the schedule contained a list of 'problems' which could be classified as a problem, not a problem or a major problem. The form designed initially to gather the information for the census, described in Chapter 3 was used to record patient information (Form W1, Appendix II).

Procedure

Information was gathered from the following four sources:

1. From 'key informants', in this case the 35 staff.
2. Retrospective patient information was gathered about the 91 people in the villas on the three census days. The demographic and clinical information was extracted from medical records and villa records and entered into a SAS data set. The three patient groups were combined and the referring agent distribution and provisional diagnosis distribution were calculated.
3. The number of bed days spent in hospital was recorded for each individual patient and the variation in daily bed occupancy rate was recorded.
4. Two longitudinal samples (N=299 and 365) of acute service users, were also selected for study. The two groups comprised all of the people admitted to the acute villas for the first six months of 1985 and 1986.

The Amount of Service Use information obtained from the longitudinal samples was compared with the first sample of 91 people in the villas on the three census days.

Such a multimethod approach to data gathering is intended to establish reliability and eliminate and minimise the biases inherent in any single method. In this instance the method helped ensure that information gathered was representative of the population using these acute services.

Results

Results were obtained from the interview schedules completed by 35 staff. The problem priority ranking from the 35 staff is given in Table 4.1.

TABLE 4.1: Combined problem scores from 35 staff ^a

Problem	Score
Ward Geography	49
Length of stay	48
Staff shortages	41
Lack of coordination with other services	39
Violence	38
Inappropriate referrals	36
Unit and staff goals unclear	31
After hours referrals	31
Insufficient beds	14

^a The highest possible score for an item (problem) is 70, as each problem was given a score of 0,1 or 2, depending on severity, by 35 staff.

Unit functions identified by key informants in the acute services study were:

1. Assessment
2. Treatment and management of acute symptoms and stabilisation of medication regimes
3. Provision of a safe and therapeutic environment for acutely disturbed patients
4. Referral as soon as possible to other services for treatment and rehabilitation
5. Development and provision of programmes tailored for individual patient's needs
6. Provision of inservice education for all ward staff to maintain clinical standards
7. Provision of training for medical and nursing staff who were not ward staff.

These seven functions were identified by the majority of staff. Additional functions mentioned were: Mobilisation of community facilities and prevention of acute mental illness. Some respondents specified that the units should not try to be all things to all people and the units should function as crisis intervention centres, with a maximum stay of 2 to 3 weeks, referring patients to suitable services within or outside the hospital for continuation of care.

Additional problems identified as major by staff in acute villa study

1. The units were too large.
2. There was an inappropriate mix of patients by age and diagnosis.
3. There was a lack of suitable places to refer patients on to.
4. The environment was unsafe.
5. Multiple problems relating to staffing included:
 - (i) Staff turnover was too rapid.
 - (ii) There was little or no inservice training for staff.
 - (iii) There was a shortage of registered staff.

- (iv) Too many students and 'outsiders' created extra pressure.
- (v) Tutor supervision of students was inadequate or lacking altogether.
- (vi) Burnout and frustration arose because of lack of patient progress and a perceived lack of opportunity to discuss problems and policy changes with management.
- (vii) Staff's attention was divided between too many tasks: administration, teaching, therapy and care.
- (viii) More male staff and non-European staff were needed.

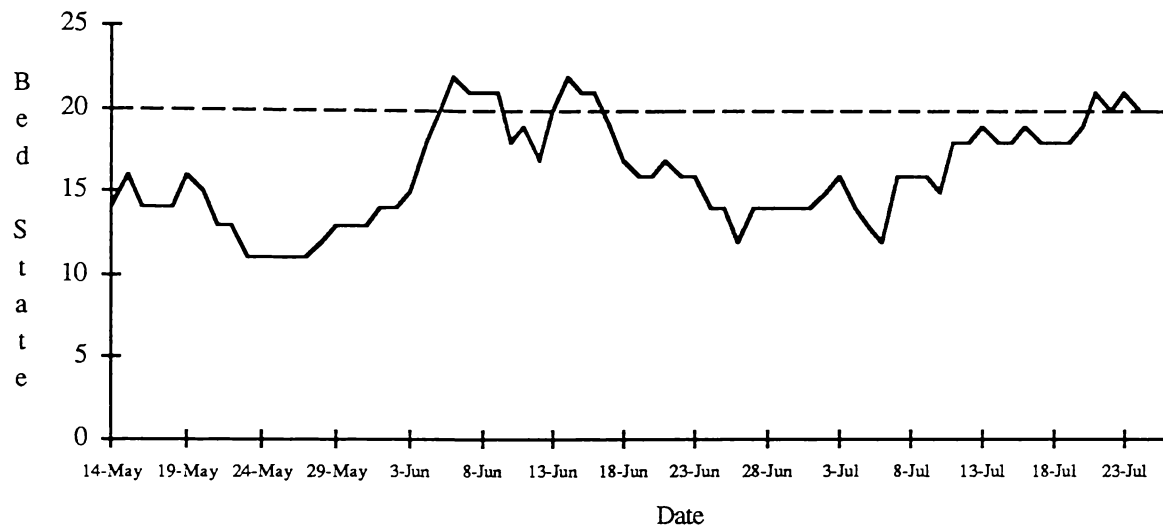
Twenty eight percent of staff identified these problems as major. Additional problems mentioned by 35% of staff were:

1. There was too great a distance between units and the catchment population.
2. Illicit drugs were available for use by patients.
3. Telephone use by patients was a problem.
4. Drug therapy was 'overused' as a first choice for management, prior to assessment.
5. The service lacked cultural relevance.
6. Mother baby facilities were inadequate.

Table 4.2: Referring agent and provisional diagnosis distribution across the patient samples (N=755)

Referring agent	%	Provisional Diagnosis	%
AHB service	35.1	Non-psychotic disorder	23.1
General Practitioners	16.5	Mental retardation	1.1
Statutory agency	28.6	Organic psychosis	2.2
Relative	7.7	Schizophrenic psychosis	27.5
Self	1.1	Major affective disorder	37.4
Other	5.5	Other non-organic psychosis	5.5
Missing data	5.5	Missing data	0

Bed state in Villa 7 from 14 May 1986 to 31 July 1986.



Bed state in Villa 8 from 14 May 1986 to 31 July 1986.

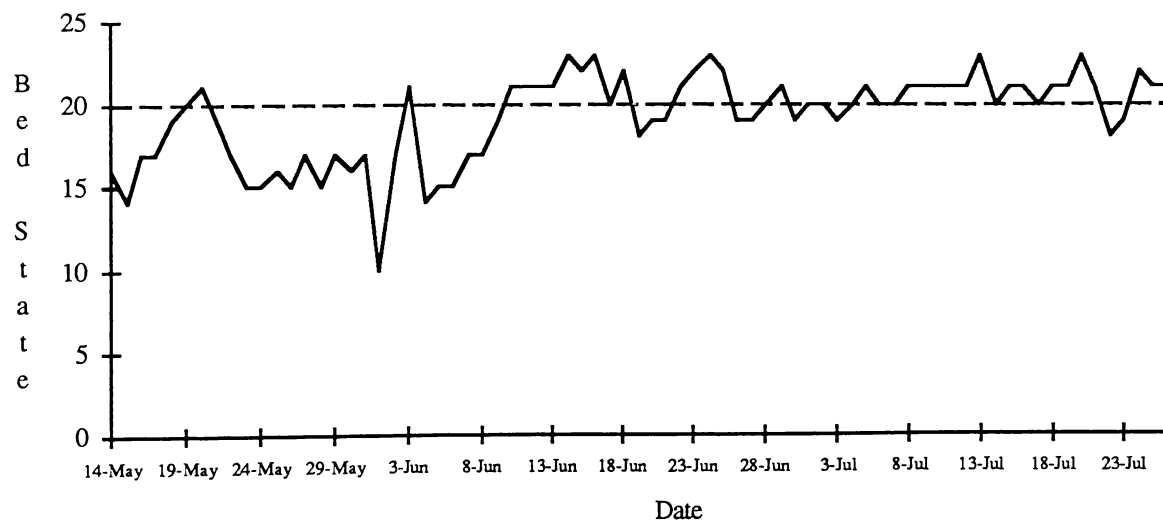


Figure 9: Daily bed occupancy rate in 2 acute villas for 6 weeks in 1986

The mean Amount of Service Use (ASU) for the 91 people sampled on the 3 census days in 1986 was 7 weeks in a year. Stays ranged between .6 and 27.1 weeks. The mean ASU for the 299 people using the service during the first six months of 1985 was 3 weeks and for the 365 people admitted in the same six month period in 1986 mean ASU was 4.3 weeks. Hence there appears to be an increase in the average amount of service use in the service over time, between January 1985 and September 1986, from 3 to 7 weeks. However, it was unclear whether weekend leave days were included or excluded from the service use estimates in some cases, so the information obtained is of dubious reliability. The exercise highlighted the need to standardise medical record procedures for recording number of days in inpatient care. The daily bed occupancy rate for the two villas indicated that there were seldom empty beds. The recommended maximum was 20 for each villa, but this figure was often exceeded and it was not unusual to have 22 or 23 in a villa. The average bed occupancy rate was higher for the Northern sector villa (Figure 9).

Information about the increase in population in the study region between the 1981 and 1986 censuses is given in Table 4.3.

TABLE 4.3: Northern and Southern catchment populations 1981 & 1986^a

Service	Number(1981)	Number (1986)
Northern area	181,161	232,900 ^a
Villa 8		
Southern area	81,633	91,000 ^a
Villa 7		
Total	264,794	323,900 ^a

^a These figures are provisional and overestimate the final 1986 census figures which were not available at the time of the study.

Discussion

The results show that in addition to ward geography (a term used to describe the physical characteristics of the villas), variability in patient amount of service use was the problem identified as major by most of the thirty-five staff participating in the review. While some variability was inevitable, given the unpredictable nature of the population served, some control over and limits on duration of stay are essential for adequate planning and programme implementation. For this reason admission and discharge criteria need to be specified and enforced. Reasons for the apparent increase in average amount of service use between January 1985 and December 1986 required further investigation. Non standard methods for counting 'bed-days' cast doubt on the reliability of this retrospective comparison, but the individual patient information collected and recorded tended to confirm a lack of pattern, with the service use distribution varying between 0.6 weeks and in excess of 27 weeks for a 12 month period. Further analysis was needed to establish whether or not 'pressure on beds' was a significant predictor of amount of patient service use. Like most research this preliminary study raised a plethora of questions and issues to be addressed.

At this stage of the research endeavour, it was considered most useful to focus on a few of the major concerns identified, so that policy could be developed to effect change, even before results from the more detailed analysis of acute services which was being planned by the writer became available. Otherwise 'paralysis by analysis' could occur and the action research project could lose credibility. Some feedback to participants, as well as to management, was necessary at this stage, to inform urgent decisions. These decisions had to be made, irrespective of information available, to relieve pressures on staff working in the area since it was clearly in a state of crisis at this time.

The information on amount of patient service use was considered in detail by hospital management. The implications the results had for workload and pressure on beds

were also discussed. The difference in size of population in the catchment areas for the two villas appeared to be increasing the workload for Villa 8, which served the Northern half of the catchment. The results suggested a faster throughput of patients and more pressure to admit patients in Villa 8 than in Villa 7. This was not surprising in view of the larger population which Villa 8 served. It was obviously important to try to identify the causes of the variance in amount of service use for planning at ward level to be possible at all. Further analysis was required along with clarification on what constituted a discharge, especially in relation to long leave, weekend leave and holiday discharge, so that more accurate information on patient service use could be gathered.

This preliminary acute service review reinforced the need for improved record keeping procedures identified in the previous phase of the research (Chapter 3). A system was needed which recorded patient's admission and discharge careers, along with other basic demographic data, to establish a relationship between clinical data at ward level and management data at central administration level. Such a system would integrate data to facilitate research for manpower and service planning as well as inform clinical practice. A systematic and concentrated effort would be required to achieve a data base that was both comprehensive and responsive to clinical and management needs. Computers were needed to assist the process. A basic information system could then be designed to facilitate and record movements of patients between services which would cooperate to ensure that the patient was provided with a variety of choices for treatment and care. Transfer between services could occur with a minimum of stress for both staff and patients and duplication of records would be minimal with such a system in place.

The following recommendations were made to the Hospital Management Group as a result of this preliminary review of the acute admission service:

1. Boundary changes between the northern and southern parts of the hospital catchment area should be made to rectify an imbalance which existed because of a faster growing population in the Northern half of the district. Because of the high levels of stress and difficulty experienced by staff in the Villa serving the Northern part of the hospital's catchment area, re-drawing this boundary line was seen as an urgent task for management.
2. The acute villas should be temporarily closed for admissions, to establish and maintain a lower bed occupancy rate.
3. Improved liaison and communication between the acute and sub acute villas and between the acute services and the community services should be actively sought.
4. The information gathering system developed during this project should be extended to include the sub acute areas and all the community services administered by the Hospital.
5. Further analysis of the acute service users should be supported by management.
6. Systems to ensure faster and more frequent transfer of patients to the sub acute area, once acute symptoms have been controlled, should be put in place.
7. Admission and discharge criteria for the acute services should be specified and enforced.
8. A description of the services functions (charter) should be drawn up to support these criteria.
9. The number of extranumary staff who spend time in the villas between 9am and 4pm, from Monday through to Friday should be reduced.
10. Resources should be made available to develop an electronic management information system to improve current medical record systems and procedures.

With the exception of 6, 7 and 10 these strategies were implemented promptly.

Recommendation 10 was implemented in 1987-88. Both of the acute villas moved to newly renovated villas and while the constraints imposed by the structure of these old buildings still applied, the environments were much more pleasant and less stressful to be in. This led to a noticeable improvement in staff morale, as reported by senior supervising staff, reinforced for a while by the attention that their problems were receiving from management.

Where to from here?

An important question which remained unanswered was, what do we need psychiatric hospitals for? There was a clear need to distinguish between the need for 'asylum' and the need for 'treatment'. A prevalent assumption, amongst both consumers and providers of health care, which seemed to arise out of the belief that health service providers were well-intended and wise, was that service providers had designed the **structure** correctly and all that was necessary was to insert the appropriate mixes of personnel and equipment to obtain 'improved health' as an outcome. This assumption did not take account of the fact that even in well designed and well structured services, systems failures can and do occur. The following three suggestions implied that when services were developed the consumers' needs were not the most important consideration. Firstly, factors other than severity of symptoms precipitated admission (Allderidge, 1979). Secondly, expediency was a common criterion for admission to a psychiatric bed (Tantam, 1985). Finally, decisions about treatment goals were subservient to the need for protection for the individual and for society (Creed, Black, & Anthony, 1989). This may be quite appropriate. However, that consumer needs are not the first consideration is not often acknowledged. The conflict of interest between the needs of the individual and the needs for a safe community is not easy to resolve but must be taken into account when services are planned and developed.

At the end of this phase of the research the aims were:

1. To improve record-keeping systems to the point where comprehensive evaluation of the system of mental health services was possible.
2. To determine factors predicting amount of acute psychiatric service use.
3. To determine whether systems variables, rather than behavioural or demographic variables were the best predictors of amount of service use in this setting. If this was the case, then it would follow that the system of service was provider driven, rather than consumer driven.

Potential problems for prediction were raised at this point in the study. The preliminary review of the acute services revealed a large variance in amount of service use in the setting of between 0.6 and 27 weeks. This variance can be interpreted as 'disorder' or 'entropy' in the system if it is unsystematic or uncontrolled. To 'describe' or 'explain' such variance, such entropy or disorder seemed to be feasible, but was there something paradoxical (or self contradictory) about attempting to 'predict' 'disorder'? Is it logically possible to determine predictor variables for amount of acute psychiatric service use? The work described in the rest of this thesis is an attempt to find this out.

4.2: Predicting acute service use.

In this section more reasons for focusing on acute inpatient care to develop a model to predict amount of service use are given. The choice of criterion and predictor variables is justified. The classification of variables as socio-demographic, systems and behavioural is explained. It was hoped that the study described here might encourage service planners and providers to find out whether viable and less expensive alternatives to inpatient care exist for acutely disturbed psychiatric patients in the area. The need for the study became apparent following the preliminary review described above. As was stated in the general introduction in Chapter 1, a clear description of a service is needed before assessment of its

effectiveness can occur. That is, operational definition of the components which make up a service must precede measurement and evaluation of their effectiveness.

As a first step towards more comprehensive service evaluation, this research aimed to establish:

1. Who used acute psychiatric care
2. Why people are admitted to this form of care
3. How much acute psychiatric care these individuals use.
4. An attempt was also made to identify variables which predict amount of acute psychiatric service use, so that the question of what influences movement through this particular kind of service could be answered.

Hirsch (1988) listed component parts of an idealised service for the mentally ill in the community. The lists were constructed against the background of the use of beds, especially admission beds in general hospital psychiatric units. It was suggested that the presence or absence of other services would affect the free movement of patients in and out of the psychiatric admission unit, and therefore determine the numbers of beds used and staff required. There were no psychiatric beds in the general hospital in the area where the research described in this thesis was carried out. In other districts in the city, changes in the Mental Health Act governing the gazetting of general hospitals had affected admissions to general hospital psychiatric units. At the time the study was carried out (1986-1990) general hospitals could not take Special Patients (those committed under the Criminal Justice Act or other patients who were formally committed (New Zealand Government, 1987). The result was that different populations were served by acute services in general hospital psychiatric units and in psychiatric hospitals. (This situation is changing with new legislation).

Five hundred and thirty eight people admitted as inpatients to the acute services of a psychiatric hospital during a twelve month period, were studied to determine the

variables which predicted amount of service use. The behavioural and demographic characteristics of people using the services were described and the treatment received recorded. The criterion variable which was chosen as a measurable indicator of service use was the number of days spent in the acute area of the base hospital.

Following the preliminary review described in the previous section, a 10 bed intensive care unit (Villa 2) was opened, so in 1988 the acute service included villas 2, 7 and 8. A comprehensive range of demographic, behavioural and systems variables were considered for each patient admitted to these villas, and relationships between these variables and amount of service use (ASU) were examined.

4.2.i: Amount of Service Use (ASU) as the criterion variable

Patient length of stay is a major statistic used to measure relative health service performance and it was used in a recent assessment of public hospital performance in New Zealand (Andersen & Co., 1987). In the report of their assessment of hospital performance, psychiatric hospital relative service performance "was not quantified due to inadequate data, the wide ranges of length of stay and the difficulty of standardization" p.III-2. The research reported in this thesis was designed to remedy the deficit in information about psychiatric service use in at least one area in New Zealand. It is not suggested that amount of service use is an indicator of service efficiency, or even necessarily of severity of illness. It may be more an indicator of lack of services receiving patients from the acute area, or lack of available accommodation and support in the individual patient's home environment. Research is needed to verify this kind of speculation. This research project acknowledges that currently it does not seem to be possible to explain, predict or control amount of service use, and aims to provide a method to help achieve this. 'Amount of Service Use (ASU)' is used as the criterion variable in this study rather than 'length of stay', which tends to refer to a continuous number of days in hospital, not taking account of weekend leaves and holiday discharges. These absences are often separated by multiple short stays in hospital within a relatively short time period.

In the literature on overseas services Tantam (1985) reported that the studies reviewed by Mosher (1983) showed no clear relationships between service utilisation in general, characteristics of patients, or features of systems of service. That is, a relationship between 'need for service' and 'service utilisation' did not emerge in Mosher's review. In Friedman and West's study of relative length of stay in outpatient care the main findings were that (1) use of psychiatric outpatient care may reflect treatment history rather than current clinical need and (2) treatment utilisation was not related to demographic characteristics, symptoms or clinical improvement (1987). Treatment seeking behaviour appeared to be a stable characteristic of the population studied and this behaviour was not related to concurrent severity of symptoms or success of treatment (Friedman & West, 1987). The current study may indicate whether similar conclusions can be applied to use of acute inpatient care. It was assumed that people were encouraged to return to their normal environments as often as possible during a stay in hospital, to prevent institutionalisation and encourage maximum social integration and contact with home and family.

4.2.ii: The predictor variables

Predictor variables were classified as either demographic, behavioural, or systems variables in this study. The variables to be considered as possible predictors for amount of acute psychiatric service use were chosen at the time when the minimum data set for patient information was being developed to establish a case register for all Health Board mental health services in the area. With the exception of the identifying information (name, date of birth, address and ID number) all of the variables from the minimum data set (MDS) were included (Appendix II form W1). Additional variables were selected to provide as comprehensive a list of potential predictors as possible. Thirty eight predictor variables were chosen, each on the basis of the potential it could have, according to the literature reviewed, to predict amount of acute

psychiatric service use (Figure 10, p. 87). Further justification for the particular variables chosen is given below and in the method in Chapter 5 (p. 130).

Behavioural variables

A whole constellation of symptoms and behaviour are targets for treatment and management during an acute admission. Some are complex variables (e.g. severity of illness), requiring detailed assessment and more than one type of measure to accurately represent them. The following behavioural variables were identified as most important by clinicians;

Pre-morbid level of functioning.

The literature reports of previous research suggest that past performance predicts future performance and that prognosis is affected by pre-morbid levels of functioning. Goal targets are often related to previous performance levels. Whether this variable predicts amount of service use is not reported

Cognitive impairment

Organicity, when present, has implication for management and care which are different from those required for functional mental illness and it is important to screen for this on initial assessment. The research provided an opportunity to see whether cognitive impairment significantly affected amount of acute service use.

Co-morbidity

The co-existence of a substance abuse problem and psychiatric illness is defined as co-morbidity and patients afflicted in this way are often poorly reported, hard to identify and hard to manage and treat. An independent system of service which specialises in treating substance abuse clients does not provide adequately for those with co-existing psychiatric disorder either. The census information obtained in phase 2 of this research indicates that as many as 33% of registered psychiatric patients have a substance abuse problem. A lack of operational definitions distinguishing recreational use and abuse means that these prevalence rates are unreliable. The research aims to address at least some of these problems.

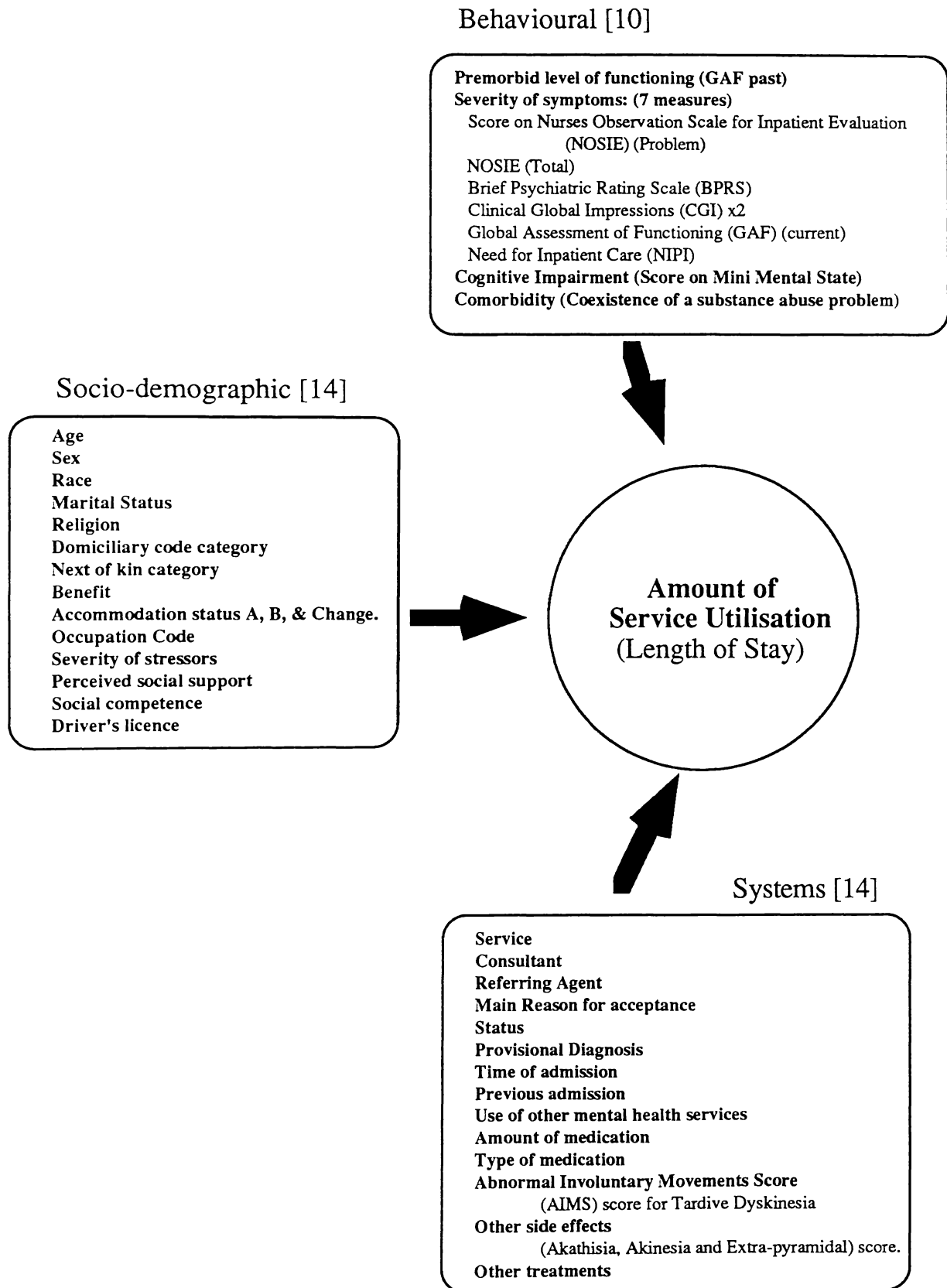


Figure 10. Indicators for amount of service use by acute psychiatric inpatients.

Severity of illness (symptoms):

Measuring "mental illness" is a complex and difficult task given that definitions are unclear and global measures of levels of severity of illness are likely to vary across both time and raters. (Severity of illness and severity of symptoms are used synonymously in this study).

There was a need to determine both whether these behavioural variables influenced admission and readmission to acute inpatient services, and how long people stayed in the service. There was also a need to collect detailed information about these variables to effectively treat and manage people in the setting. The research provided an opportunity to assist clinicians by designing and standardising information gathering procedures for these variables (Thompson, 1989). A welcome 'spin off' of such activity was to foster a mutually beneficial cooperation between clinicians and researchers. Historically, barriers between them have been detrimental to the development and delivery of optimum mental health care (Wetzler, 1989).

Socio-demographic variables

There is debate in the literature (Jarman, 1983, 1984; Reinken, McLeod and Murphy, 1985) on whether or not social disadvantage (as defined in terms of material deprivation and low socioeconomic status) is associated with psychological misery or disability. Colhoun & Maxwell (1982) found in a study in Dunedin New Zealand, that there was no association and they quoted overseas research to highlight the dangers of making assumptions about the prevalence of mental illhealth in socially deprived areas. Several important socio-demographic variables were included in the instrument, in addition to the basic demographic variables included in the minimum data set (such as sex, age and race, etc.). These included:

Next of Kin (NOK) category

Next of Kin (NOK) category was important in relation to potential provision of support and care.

Occupation status

Information was collected on occupation status and whether or not a person was on a benefit.

Accommodation status

Accommodation status of the patient before and after their stay in hospital was recorded.

Socio-economic status

Socio-economic status was defined in terms of occupation status (Elley & Irving, 1976; Johnston, 1983), benefit status and educational status and information on these variables was collected using the Social Competence Scale (SCS) and specially designed forms (Appendix II form W2 and form W3).

Perceived social and family support

Information was gathered on perceived social support and family support (Barrera, 1986; Parker & Barnett, 1987). Note that next of kin status is relevant for family support and as an indicator of social support, as is accommodation status.

Severity of stressors

The degree of severity of stressors was also expected to predict mental health and subsequent psychiatric service use (Gordon, Vijay, Sloate, Burket, & Gordon, 1985).

Information on all these variables was clearly relevant to the provision of alternative living environments and community care, for users of acute inpatient services. The literature review indicated that these variables also related to incidence and prevalence of mental ill-health (Mann, 1979; Monroe & Steiner, 1986) and hence possibly to use of acute psychiatric services. Another assumption was that the level of functioning or 'wellness' needed to make discharge practical, or even possible, would vary with the amount of support available in the setting to which the person was to be discharged (Brown, Andrews, Harris, Adler, & Bridge, 1986; Cutrona, 1984; Holahan & Moos, 1981).

Systems variables

Systems variables were defined to include those variables which were external to the patient and outside the patient's range of influence and control. Previous service use, referring agent and treatment variables are example of systems variables as are legal status and reason for referral. Note that there were no systematic criteria for admission in the hospital where this study was carried out. Criteria for admission to, and discharge from, an acute psychiatric setting appeared to vary between hospitals, units, consultants and therapists and there was not always a policy concerning minimum and maximum length of stay for each episode of care. As mentioned above, the presence or absence of such criteria will obviously affect ASU. It is anticipated that the research will lead to the development of a process which will standardise criteria for admission to, and discharge from, acute psychiatric inpatient care.

Legal Status

Legal status was a variable of particular interest because of the debate over who should be committed, pending changes in the law relating to mental health in New Zealand (Dawson, Abbott, & Henning, 1987; Malcolm, 1989; New Zealand Government, 1987), because of the relatively high rate of involuntary admissions compared with in the United Kingdom, and because of the fluctuations in rates caused ostensibly by provider embarrassment after adverse media coverage of incidents involving psychiatric patients in the community.

Provisional Diagnosis

Provisional diagnosis was considered to be a summary label, or descriptor, for defined groups of clinical signs and symptoms. Because any such classification system is externally applied, the provisional diagnosis variable was defined as a systems variable, rather than a description of behavioural characteristics of the person. Whether or not psychiatric diagnoses fulfil psychometric requirements for reliability and validity cannot be discussed in detail in this study, but it is clearly a relevant issue (Goldberg, 1972; Eagles, Hunter & McCance, 1988; Robins & Barrett,

1989). An effort was made to gather more detailed DSM-III-R assessment information for all the people studied. Provisional diagnosis category was included as a variable to attempt to discover whether diagnostic formulations were useful predictors of service use compared with behavioural variables of interest, such as need for inpatient care, severity of symptoms, pre-morbid level of functioning. According to Gordon, Vijay, Sloate, Burket, & Gordon, (1985). diagnosis in general, and DRGs in particular are poor predictors of hospital length of stay.

One of the justifications for using diagnostic nomenclatures and categories, of often unproven validity and reliability (Fernando, Melsop, Nelson, Peace, & Wilson, 1986; Grove, Andreasen, McDonald-Scott, Keller, & Shapiro, 1981) is the claim that it is possible to predict outcome and course of disorder by reference to them (Robins & Barrett, 1989; Spitzer, Williams, Gibbons, & First, 1988). However, there is no body of evidence to suggest that amount of acute psychiatric service use will be significantly different between diagnostic groups. The current Diagnostic Related Groups (DRGs) for psychiatry are poor predictors of cost (Essock, Grayson, & Norquist, 1988; McGrath & Tantam, 1987). In other countries, such as the United States) and in medical specialties other than psychiatry, cost of care is estimated according to Diagnostic Related Groups, (DRGs) (Essock, Grayson, & Norquist, 1988; Taube, Goldman, & Lee, 1988) and such categories have direct relevance to funding and service development and provision. New Zealand provided a free public health system for its citizens and therefore the need to estimate the cost of care for individuals was not pressing, until recent changes in the public health service system included requirements for quality assurance, evidence for cost effectiveness and accountability.

Treatment as a predictor and systems variable

Forms were designed to gather information on treatment received during the time spent in the acute service, as well as on discharge. A compliance rating was included. (Form D7 & Form W3, Appendix II). Because the prescription of

psychotropic medication appeared to be a preferred treatment in the setting, reviewing existing prescribing practices was necessary, to determine the relationship between treatment and amount of service use. Information on amount and type of treatment was gathered as a precursor to work which would examine psychotropic drug prescribing patterns in an acute psychiatric setting in more detail. The basic drug treatment information obtained would be analysed to indicate whether a more detailed review of current prescribing practices should be given priority. The relationship between treatment and diagnosis was not clear (Andrews, 1989; Longabaugh, Stout, Kriebel, McCullough, & Bishop, 1986). The reliability and validity of the diagnostic categories used to guide treatment choices required closer examination (Grove et al., 1981).

Relationships between drug dosage and optimum therapeutic effect were expected to be complex and difficult to determine (Edwards & Kumar, 1984). The results obtained will be considered in relation to prescriptions recommended and dose ranges given in the New Ethicals Catalogue at the time of the data collection (Adis Press, 1988), and in other papers specifying appropriate criteria (Altman, 1981; Bragan, 1984; Dorsey et al, 1979). The systematic upgrading of prescribing patterns is said to be an essential tool for quality control of psychiatric pharmacotherapy (Schmidt, Czerlinsky, & Stockel 1987). Electronic drug recording systems and peer review of medication have been shown to reduce the prevalence of poly-pharmacy and inappropriate prescribing in some hospital settings (Alexander, Nashrallah, Perry, Liskow, & Dunner, 1983; Craig & Mehta, 1984; Overall et al, 1987; Wells, Guthrie, Knot, & Fink, 1986). It is hoped that this research will provide information to assist the development of a monitoring system for psychotropic drug prescription.

Of the variables listed above, the literature review suggested that previous admissions and possibly use of other services would be strong predictors of service use (Hoult, 1986). Variables such as accommodation status, socio-economic status, perceived

social and family support and proximity to service (as indicated by domiciliary code category) have also been documented as strong predictors of service use. These demographic variables were expected to be intercorrelated. Behavioural variables such as premorbid level of functioning, severity of symptoms, self care skills, cognitive impairment, dangerousness and improvement rating were also expected to influence amount of service use (ASU). A meaningful relationship between these variables and type and amount of treatment was expected. Systems variables were expected to be the best predictors of acute inpatient psychiatric service use.

In choosing which predictor variables to include in the study the researcher was informed and influenced by results from previous studies analysing who uses psychiatric services and why, as well as by the consultative process which had occurred with clinicians and other medical researchers during the design of the research. There was also an intention to establish a data base which would continue to be used and updated after the study was complete, and a desire to incorporate both procedures which were in use currently, and information which was already being gathered as part of routine assessment. The systems set up to gather, record and update information on the variables discussed were useful for clinicians, as well as for managers and service planners and hence the work involved in their development could be justified independent of the research project described here. The commitment of the community psychologist, or action researcher, to contribute in a substantive and practical way in the research setting was to be fulfilled according to the rule recorded on page one of this thesis: 'No research without development'. A potential outcome from the study was an improved data base of patient information which would be continually updated and accessible in the future to clinicians, managers and researchers.

Chapter 5

Method

In this chapter the method developed to determine predictors variables for amount of service use is detailed. The setting, sample and instrument are described and details of the procedure followed are reported.

5.1: Setting:

The population of the area where the study was carried out was 282,150 (Department of Statistics, 1986) 13% of whom were Maori, and 10.5% of whom were Pacific Islanders. Five percent were of mixed non-european or other ethnic origin, leaving approximately 66% European and the remainder unspecified. If those of mixed race are included the Maori figure becomes 17%. At the time of the study 50% of the Maori population in the city where the research was carried out lived in the study area as did one third of the population of the city. The percentage of people under 15 in the research region was 27.5% compared with 22.1% for the whole city. Sixty five percent were between the ages of 15 and 64. The remaining 7.5% were over 65, compared with 10.2% for the whole city.

As indicated on page 84, three villas now comprised the acute area in the hospital chosen for the study, following the opening of an intensive care unit in 1987. The focus on acute psychiatric care was justified because it was the most costly and intensive form of care provided in the hospital. (The study was carried out before the opening of a safe care unit at the hospital). Together the three villas provided 50 beds. Villa 2 had 10 beds and was the intensive care unit. Villa 8 and Villa 7 had 20 beds each and served specific geographic areas; the Northern half of the study area with a population of approximately 170,000 and the Southern half with a population of approximately 120,000 respectively (Department of Statistics, 1986). It was usual for patients from both villas 7 and 8 to transfer to and from villa 2 when intensive care

was required. Both villas 7 and 8 had a team of staff headed by a consultant psychiatrist. Villa staff had responsibility for ensuring follow up of patients. This was achieved through the community mental health centres and the continuing care facilities provided by a day hospital and the psychiatric district nurses in the catchment area which the villa served.

5.2: Subjects

The subjects were all of the people admitted to the acute villas at the hospital during the year 1988 including those returning from long leave. The characteristics of these people are summarised below in terms of the variables of interest. More detailed information is contained in Appendix IV. Of the 538 people studied, 269 were male and 269 were female.

Age

The acute services were designed to serve a population aged between 18 and 64 years. Other people are taken care of by child and family and geriatric assessment services. The acute service users in the cohort studied were at the younger end of the age range with 31% aged from 25 to 34 years and 24% from 15 to 24 years (Refer Appendix IV). That is, 55% of the cohort studied were under 35 years of age. The Maori patients tended to be younger ($N=144$, mean=30, $SD=10.79$). The European group were older ($N=315$, mean=39, $SD=15.22$). The Pacific Island people were similar to Maori ($N=54$, mean=30, $SD=11.06$).

Race

As can be seen in Appendix IV, 59% of people in the cohort were European compared with 67% in the population. (Department of Statistics, 1986). Maori were over-represented in the cohort compared with the population, with almost twice as many psychiatric inpatients (27%) as would be expected from the population figures (17% if those of mixed race are included). As stated above, half of the total Maori population of the city live in study district (Underhill-Sem, 1988). Pacific Islanders were appropriately represented with 10% in the acute service sample compared with 10.5%

in the population. It can be seen that the total percentage of Pacific Islanders registered with all the services in 1986 was lower at 6.6% (Table 3.2, p. 53).

Marital status and religion

Forty-eight percent of the people admitted had never been married. Twenty-two percent were married, 4% were defacto, 11% were separated and 9% were divorced. Only 3.5% were widowed. Thirty six percent gave their religion as either Anglican, Catholic, Presbyterian, Methodist or Baptist. Twenty percent preferred not to answer questions about religion. The remaining group either said that they had no religion (17%) or specified other religions (14%). Information about religion was not obtained for 13%.

Next of kin (NOK), Benefits and Occupations

Forty five percent gave next of kin as parent, 18% as spouse, 8% as children, 13% as sibling and 8% as another extended family member. Four percent gave friend as the NOK and 4% were missing NOK information. Thirty-seven percent of the sample were on either sickness or invalids benefit, 15% were on unemployment benefit, 8% were on national superannuation and 6% were on the domestic purposes benefit. That is, two thirds (66%) of the 479 people for whom benefit information was obtained were on benefits. Forty eight percent gave their occupation as beneficiary and 6% were retired. Nineteen percent were unskilled or partly skilled. Fifteen percent were designated as housepersons. Nine percent were classified as skilled workers. Four percent gave an occupation of managerial. Noone gave a professional occupation.

Drivers Licence and Accommodation status

Forty seven percent of the people studied had drivers licences, 28% did not. Information about drivers licence was not obtained for 25%. More detailed information on the accommodation status of the people in the cohort is in Appendix III. Information was collected on where the people using the service came from. The study area was divided into 14 sub-areas which were consistent with local body boundaries.

5.3: Instrument

The instrument developed to identify predictor variables for amount of service use is attached as Appendix II. The form developed to collect the minimum patient information for all services (Form W1), was used as a basis to develop a data capture system for the study. Information on additional systems and socio-demographic variables were collected on forms W2 and W3 (Appendix II) along with discharge information. A literature search provided a variety of scales which have been used to measure the variables of interest. When choosing scales to include in the instrument which would measure some of the more complex variables such as severity of symptoms and social support, consideration was given to documented reliability, validity and robustness across raters and settings and to whether or not special training was required to administer the scales (Endicott & Spitzer, 1978; Formbonne, Peron-Magnan, Fuhrer, & Simon, 1986; Guy, 1976; Goldberg, 1972; Lyerly, 1973).

Because the information would be gathered by staff who were involved in the clinical assessment and care of the patients in a busy setting, it was also important that the task of administering the tests was compatible with other tasks and could be assimilated into ward routine. The work provided an opportunity to replace existing information gathering and recording procedures with more systematic ones, to provide a more comprehensive and consistent assessment of the patient. Meetings were held to explain the procedure to staff. The forms were colour coded. The instrument was piloted over a period of six weeks at the end of 1987. The reliability and validity of the instrument was considered sufficiently acceptable after piloting in 1987, to proceed with its use. Further reliability checks were made throughout the course of the study. Relevant published studies on past use of the scales included in the instrument are reviewed in the description of the individual scales which follows in this section.

Because an effort was being made to capture information on many different variables, considerable variation in the reliability and validity of the results was expected. This was inevitable because of the variation in the degree of difficulty involved in both defining and measuring some of the variables accurately. The scope of this study did not allow for detailed assessment of the reliability and validity of the diagnostic categories used. It is expected that the data obtained in this research will provide useful baseline information for research to determine their psychometric adequacy. According to Gordon, Vijay, Sloate, Burket, and Gordon (1985), diagnosis in general, and Diagnostic Related Groups (DRGs) in particular are poor predictors of amount of hospital service use. Reliability coefficients and norms were calculated from the data which was obtained in this study for some of the scales used and these data confirmed the satisfactory reliability reported in the literature. Tests for internal consistency and internal validity using Cronbach's Alpha provided satisfactory results for the Social Support Appraisal Scale (SSAS) and the Nurses Observation Scale for Inpatient Evaluation (NOSIE).

Measures of severity of Symptoms

A review of the published literature and wide consultation with other researchers and mental health professionals occurred, to ensure that measures of behaviour which were reliable and valid across a range of ages and diagnostic groups were chosen for inclusion in the instrument (Bech, Kastrup, & Pataelson, 1986; Godfrey, Frost, Snelling, Knight, Shelton, & Longmore, 1986; Wetzler, 1989). The preliminary review suggested that the majority of people using the acute services under study came from a group sometimes called 'young chronic'. They are mostly young with diagnoses of severe disorders and had multiple admissions. However, the acute villas also sometimes provided an admission and assessment service prior to transfer into other services within the hospital. The psychotherapy unit and the geriatric assessment unit were examples of such specialist services within the

hospital. Measures chosen needed to be appropriate for patients of different ages with different presenting problems.

Because 'severity of symptoms' is rather a vague concept it was anticipated that it would be difficult to measure accurately. Five measures were therefore chosen in the hope that the scores would converge. The inclusion of several scales enabled scores for each scale to be compared for each patient, to check for reliability and internal consistency. It was expected that high correlations would occur for scores from scales which purported to measure the same thing. The Nurses Observational Scale for Inpatient Evaluation (Honingfield & Klett, 1965, Philip, 1973, 1979), was used to measure extent of disability, or behavioural disturbance, in conjunction with the Brief Psychiatric Rating Scale (Overall & Gorham, 1962) and the Clinical Global Impressions Scale (Guy, 1976). Material from the Diagnostic & Statistical Manual of Mental Disorders version III revised, namely axis V, the Global Assessment of Functioning (GAF) scale, was also included (American Psychiatric Association, 1987). This was derived from the Global Assessment Scale (Endicott, Spitzer, Fleiss, & Cohen, 1976) during the development of the DSM-III-R. It provided another measure of severity of symptoms, (maladaptive behaviour, or level of functioning) and also gave a measure of pre-morbid level of functioning (past GAF as compared to current GAF). A description of the behaviour rating scales which were included in the instrument, and some detail on their reliability and validity follows.

The Brief Psychiatric Rating Scale (BPRS)

The BPRS was developed by Overall and Gorham in 1962 to provide a rapid assessment of behaviour change and at the same time, a comprehensive description of major symptom characteristics (Flemenbaum & Zimmerman, 1973; Lentz, Paul, & Calhoun, 1971; Overall & Gorham, 1962, 1963). Hedlund and Vieweg (1980) provide a comprehensive psychometric justification for the BPRS. According to

Rhoades and Overall (1988), the strongest evidence for its adequacy derives from discriminant validity documented over 25 years of clinical trials.

Pokorny, Thornby, Kaplan & Ball, (1976) compared people who had been in a psychiatric institution for five years with people who had been discharged during the same five year period, on BPRS scores and a number of other variables that had been recorded five years previously. They found significant differences between these two groups on five of the BPRS items. These were the items emotional withdrawal, conceptual disorganization, mannerisms and posturing, unco-operativeness, and disorientation. Pokorny et al. (1976) developed an equation (which included conceptual disorganization) for predicting outcome status. They reported that their model was able to correctly discriminate outcome status for 79% of the individuals in their sample. One weakness with their study was that the initial assessments from which the BPRS scores were drawn are the same measures used in determining the optimal placement for each individuals at the time of the initial assessment.

Reliability

Overall & Gorham (1962) reported inter-rater reliability of items ranging from .56 to .87 for the BPRS. Flemenbaum & Zimmerman (1973) also reported reliability of items ranging from .19 to .75. The BPRS appears to have moderate test-retest reliability according to Flemenbaum & Zimmerman (1973). Reliability of items was reported as ranging from .58 to .89 and -.03 to .91 in two studies. Some items (tension, mannerisms & posturing, and excitement) in the BPRS appear to have doubtful reliability, and it is these that contribute the low reliability coefficients. While the psychometric properties of the BPRS may be limited by today's standards, it has accumulated an extensive set of norms over years of use and has a demonstrated sensitivity to treatment effects (Raskin, 1988). Flemenbaum and Zimmerman (1973) are hesitant to use their data to attribute general characteristics of reliability to the BPRS. However, the procedure they used is useful as a method for

describing rater populations and as a base for systematic efforts to improve reliability. When dealing with a rating scale of this type which is little more than a structured global rating of pathology, the particular rater is a more crucial factor in determining reliability than is the test itself. Each population of raters has its own reliability.

"Error" variance in ratings can be due to random errors of observation and rating, day to day patient variability, the dynamics of the rating situation and systematic differences in the way raters observe and interpret particular behaviours.

Traditional correlational techniques do not take systematic rater differences into account. If this "between rater variance" is added to total error variance then the reliability coefficient can be significantly reduced. The experience and training of the rater using the scale will influence the consistency of ratings. Inter-rater reliabilities are applicable only within populations of raters with similar qualifications, training and experience.

Table 5.1. Item total correlations between the BPRS total and the BPRS symptom constructs.

Item	r	Item	r
SC	.34	HO	.35
AX	.36	SU	.38
E W	.52	HB	.45
CD	.60	MR	.43
GF	.24	UC	.49
TE	.43	UT	.52
MP	.46	BA	.38
GR	.14	EX	.20
DM	.25	DO	.39

All coefficients except GR were significant at $p < .0001$. The correlation coefficient used is Pearson's r . $N=305$. (Refer Appendix II, Form D2 for item abbreviations).

Table 5.1 shows the item-total correlations of the BPRS. This measure of homogeneity is relevant to validity as it helps to characterise the domain sampled by the test. However, the contribution of internal consistency information to validation is limited as little can be learned about what a test measures without an external criterion (Anastasi, 1982). The information presented in Table 5.1 suggests that as the coefficients are nearly all of moderate size that no one item provides as much information as the total score. The item grandiosity does not correlate well with the total score. Eliminating this item could enhance the validity of the BPRS.

Validity:

Adequate validity data for psychiatric rating scales is difficult to obtain because of the absence of criteria that are both clinically acceptable and statistically usable. In practice the validity of the scale frequently depends on the accumulated experience of the raters using the scale. The BPRS had face validity with the medical staff who would be administering it because its use has been widely reported in the literature. The current study provided an opportunity to examine the construct validity of the scale by comparing it with other measures of illness severity. Correlations with other scales used to measure severity of illness are reported in Chapter 6.

One of the main criticisms levelled at the BPRS has been directed at the choice of abstract symptom concepts and the questionable effort to achieve brevity. As Klett (1968) points out unreliability mushrooms as the abstraction level of the constructs to be rated increases. The BPRS is a good deal shorter than those scales from which it was developed and shorter scales rarely achieve the reliability of longer scales. Manchanda, Hirsch, and Barnes (1989) list what they consider to be a number of flaws with the BPRS and its use. They examined 73 studies which used the BPRS and found that while the scale is not designed specifically for assessing schizophrenia, it is used extensively for this purpose. In fact only nine of the 18 symptom constructs reflect psychotic symptomatology. Raskin and Crook (1976) found the BPRS to be

less sensitive to antidepressant drug effects than other scales specifically designed to sample the symptoms of depression. In more than a third of the studies reviewed by Manchanda et al (1989), the BPRS total score was the only assessment measure employed. This gives no indication of whether the observed change in score results from a change in psychotic, neurotic or affective symptomatology. A further problem is the lack of cues for rating severity, making interpretation of findings across sites and studies difficult.

This is a scale which depends heavily on rater's reliability and ratings made with the original BPRS tend to be highly idiosyncratic. A number of modifications have been developed which may improve this situation. McGorry, Goodwin and Stuart (1988) developed and used a nursing modification. The modifications made to the original BPRS format included: ratings made by nurses, ratings made on the basis of the entire shift rather than just the interview, definitions provided, item calibration, standard probes for items not based solely on observation, and an extensive training program. The reliability coefficients reported for the BPRS (Nurses Modification) compare well with those reported for the original scale.

The Nurses Observation Scale for Inpatient Evaluation (NOSIE)

Using the NOSIE, nursing personnel score their unobtrusive observations of patient behaviour. The scale does not require the patient to be interviewed and is ideal for multiple administrations.

The NOSIE-30 consists of three positive factors - social competence (SC), social interest (SI), and personal neatness (PN), and three negative factors - manifest psychosis (MP), irritability (IR) and retardation (RE). Between three and five items contribute to each factor. Each item is rated on a 5-point frequency of occurrence format, from never to always. Items marked with an asterisk on the hand scoring key should be reflected (that is, 0=4, 1=3, 2=2, 3=1, and 4=0). Other instructions for

scoring are provided on the test forms. The profile sheet allows for easy norming of the final score. The scale was designed for nurses to use and training is advised.

The development of the NOSIE-80 is outlined in Honigfeld and Klett (1965). A number of items were written especially for the measure, although most were "borrowed" from existing scales. All 100 items were adapted to a five point "frequency-of-occurrence" format. Observations and ratings on 307 male schizophrenic patients (aged 55 to 69) on this 100 item scale were made by pairs of raters. Factor analysis suggested that six or seven factors could account for the scale. The scale length was reduced to 80 items making up the seven scales (social competence, social interest, personal neatness, cooperation, irritability, manifest psychosis, and psychotic depression). The norm group was then extended to include younger schizophrenic patients (N=630 aged 26 to 74; Honigfeld, Gillis & Klett, 1966). Factor analysis of change scores (to assess the usefulness for measuring change over time) resulted in the number of items being reduced to 30. The factors cooperation and psychotic depression were dropped and a new factor, retardation, introduced.

The NOSIE was originally designed to assess longstay schizophrenic patients in the ward environment. Over the years it has been found to be a versatile and treatment sensitive scale with predictive as well as monitoring value (Pattison & Rhodes, 1974; Philip, 1979). It is used extensively in conjunction with a physician rating scale, or scale such as the Brief Psychiatric Rating Scale (BPRS), to measure maladaptive behaviour/mental disorder. The NOSIE has been used with day hospital attenders of the 'young chronic' variety indicating that the range of scores available on the NOSIE scales will accommodate the observed behaviour of this group of patients. Philip (1979) notes that this group are now replacing the long-stay population as those most in need of rehabilitation.

Like the BPRS, the NOSIE scale had face validity with the nursing staff whose task it was to administer it, and also with the consultant psychiatrists who were responsible for the people in care. It is relatively quick and easy to administer and it has been shown to be robust across diagnostic groups, raters and time (Dingemans, Bleeker & Frohn-De Winter, 1984; Dingemans, Stobberingh & Smit, 1986; Gray, 1972; McMordie & Swint, 1979; Philips, 1979). It lends itself to repeated administration and can be used to monitor behaviour change during treatment, in conjunction with the BPRS and/or the CGI. NOSIE scores have been found to reliably predict rehabilitation and it has been used with effect to screen for entry into rehabilitation programmes (Philip, 1979). A cross-cultural study of the reliability and factorial dimensions of the NOSIE by Dingemans et al (1984) found good inter-rater reliability between Dutch, American and British studies with the exception of the personal neatness and social competence scales, confirming earlier cross cultural work by Philip (1977).

Philip (1979) used the NOSIE as a predictor of the outcome of rehabilitation in a large group of long-stay patients. He found that the NOSIE scores obtained in 1973 differentiated outcome groups in 1977. That is, inpatient scores on the factors interest, neatness, psychosis and retardation were significantly different from those of the day patients and discharged patients. The factors competence and irritability also differentiated between inpatient, day patients and discharged patients. Philip then developed a multiple regression equation using the variables age, length of stay, sex, and the six NOSIE factor scores. This equation predicted 32.3% of the variance in outcome status for inpatients, day patients and discharged patients. Age and psychosis were found to be the two most important variables contributing 24% of the variance in outcome status to the equation.

McMordie and Swint (1979) also found some evidence for the predictive utility of the NOSIE. Twelve patients rated by a number of nursing personnel on the NOSIE were

followed-up after 12 months to determine their outcome status. The results showed that the NOSIE total score, the NOSIE subscores (total positive and total negative factors) and the factor scores on social competence and personal neatness, differentiated between the outcome groups (discharged-improved and continued hospitalization). In all instances the ratings were in favour of the discharged-improved group, with this group scoring more highly on the positive factors than the continued hospitalization group, and lower than the continued hospitalization group on the negative factors.

The NOSIE (total score) appears to have generally satisfactory inter-rater reliability. Lentz, Paul & Calhoun, (1971) reported reliability coefficients ranging from .72 and .95 for the total score on the NOSIE. Cronbach's Alpha coefficients obtained in the current research ranged between .84 and .94 for N=355 and the norms obtained from the data gathered in the current research were consistent overall with the norms reported in the literature for the scale.

Norms: The NOSIE-30 scale was normed on 630 male chronic schizophrenic inpatients aged 26-74 (Honigfeld, Gillis & Klett, 1966) and these norms are provided with the NOSIE score sheet. This group of patients had been regarded as hard to assess using symptom rating scales and psychiatric interviews. Since then the scale has been used with women (Gray, 1972), and individuals with diagnoses other than schizophrenia (Pattison & Rhodes, 1974). Appendix IV provides 'norms' for one New Zealand setting calculated for the cohort in the 1988 acute service study. Comparison of the New Zealand 'norms' obtained from the current acute service study (N=538), and the American norms, indicate that the New Zealand patients were rated more positively than those who make up the Honigfeld norms.

Reliability

NOSIE reliability coefficients published in some studies are given in Table 5.2. The reliability coefficients vary but are generally high falling in the region of 0.7.

Table 5.2. Summary of the research on the reliability of the NOSIE-30.

Type of Reliability	Diagnosis	Age	N	LOS	Reliability Coefficients							
					SC	SI	PN	IR	MP	RE	TO	
<i>Lentz, Paul & Calhoun (1971)</i>												
Interrater (across shifts)	Schizophrenic	44	137	14 yrs	.66	.72	.79	.67	.73	.58	.72	
Interrater (within shifts)	Subsample of above		56		.82	.96	.95	.84	.85	.86	.95	
<i>Philip (1973)</i>												
Intra-class	Schizophrenic (male)	58	30	30 yrs	.91	.88	.87	.80	.70	.81		
<i>McMordie & Swint (1979)</i>												
Intra-class	VA Med Ctr patients		12		.71	.55	.70	.71	.35	.62	.73	
<i>Farrell & Mariotto (1982)</i>												
Intra-class (aides)	76% of subjects	35	207	48 days	.61	.63	.70	.48	.56	.52		
Intra-class (observers)	schizophrenic				.52	.68	.72	.70	.62	.72		
Intra-class (both)					.55	.81	.76	.72	.61	.72		
<i>Current study</i>												
Intra-class	Psychiatric patients	36	354	31 days	.92	.84	.89	.94	.90	.86		
Intra-class	Schizophrenic	35	99	30 days	.93	.85	.90	.94	.91	.87		

Across experiments the factor personal neatness was rated the most consistently, while the factor manifest psychosis was rated the least consistently adding to the evidence that more abstract concepts (manifest psychosis compared with personal neatness) are less reliably measured.

Validity

Construct Validity: Philip (1977) and Gray (1972) examined the factor structure of the NOSIE. Gray (1972) concluded that the factor structure obtained from his sample of 539 male and female inpatients at a Canadian psychiatric hospital was similar to the structure reported by Honigfeld, Gillis and Klett (1966). Philip (1977) also found that his 321 British psychiatric inpatients produced a factor structure almost identical to that of Honigfeld et al (1966).

Table 5.3. Correlations between the NOSIE-30 and other psychiatric rating scales.

Study	Scale	Intercorrelations							
		N	SC	SI	PN	IR	MP	RE	T
<i>Lentz, Paul &</i>	Minimal Social Behaviour Scale	137	.50	.46	.34	-.16	-.24	-.33	.51
<i>Calhoun(1971)</i>	Social Breakdown Syndrome	137	.59	.44	.47	-.24	-.32	-.47	.63
	Gradient Index								
<i>Philip (1973)</i>	Wings Social Withdrawal	46	.89	-.71	-.75	.03	.00	.71	
	Wings Socially Embarrassing Behaviour	46	.30	-.25	-.30	.43	.34	.01	
<i>Fombonne et al</i>	Brief Psychiatric Rating Scale	176						at 0 months	-.37
<i>(1986)</i>		147						at 9 months	-.64
		134						at 18 months	-.66
<i>Mariotto & Paul</i>	Minimal Social Behaviour Scale	80	-.55	.50	.48	.09	-.08	-.43	.53
<i>(1974)</i>	Social Breakdown Syndrome	80	.70	.59	.46	-.13	.19	-.54	.69
	Gradient Index								
	Inpatient Multidimensional Psychiatric Scale	80	-.43	-.24	-.36	.19	.30	.29	-.46
<i>Current Study</i>	Social Support Appraisal Scale	78	.03	-.10	.00	.21	.07	.05	-.10
	Brief Psychiatric Rating Scale	227	-.40	-.31	-.11	.16	.12	.33	-.39
	NOSIE Problem Scale	151	-.41	-.32	-.31	.27	.37	.12	-.46

(Refer Appendix II for factor abbreviations)

The NOSIE-30 was designed specifically to measure therapeutic change. Drug treatment has been found to be associated with improved ratings on four NOSIE factors - social competence, personal neatness, irritability and manifest psychosis (Honigfeld, Rosenblum, Blumenthal, Lambert & Roberts, 1965).

Criterion-related Validity - Concurrent: A number of studies have examined correlations between the NOSIE and other scales. The results given in Table 5.3 show that the intercorrelations are generally in the expected direction. That is, a test which correlates positively with the positive NOSIE scales correlates negatively with the negative scales, and vice versa. No explanation was offered by the author for the exceptions to this trend (the Wing's Social Withdrawal with social competence (SC) (Philip, 1973). Philip (1973) found that social competence, social interest and personal neatness were significantly related to prior length of stay, the correlations

being -.20, -.42 and -.23 respectively. In the current study the NOSIE total and personal neatness scores were significantly related to length of stay with correlations of -0.25 and -.31 ($p < .05$). While statistically significant, these correlations are not large enough to have practical clinical importance. Age was not found to be significantly related to NOSIE score by Philip (1973) or in the current study. Psychiatrists and nurses ratings of improvement have been found to be associated with NOSIE scores (Fombonne, Peron-Magnan, Fuhrer and Simon, 1986). Significant mean differences were found between the "moderately or greatly improved" group and the groups containing those who had deteriorated, not improved or only slightly improved.

Criterion-related Validity - Predictive: A number of studies have looked at the predictive utility of the NOSIE by comparing NOSIE scores with outcome status. McMordie and Swint (1979), and Philip (1979) both found low scores to be associated with continued hospitalization while high scores were associated with an outcome status of discharged. Pattison and Rhodes (1974) found that low NOSIE scores were associated with an outcome of death in patients with severe chronic lung disease, while high scores were associated with improvement/discharge.

The New Zealand reliability data provided by the current work adds to the impressive reliability data available. However Cronbach's α is just a measure of homogeneity - the consistency of ratings on all items in a test. According to these data the NOSIE factor scales appear to be homogeneous and rated consistently within raters. Lentz, Paul and Calhoun (1974) also provide data suggesting good interrater reliability. The validity findings are less impressive. Studies have shown that NOSIE scores meaned for a group of individuals reflects the type of score we would expect for an individual in that group, but single subject data showing multiple administrations of the NOSIE and an external criterion over a period of time would strengthen claims for the validity of the NOSIE.

The Need for Inpatient Care Index (NIPI)

A special index was designed by the author to measure 'need for inpatient care'. It was developed in 1986 for use in the preliminary review of acute psychiatric services described in Chapter 4 and represented an attempt to define what was unique about this particular form of care. It related to qualities such as 'safe environment', social impairment, dangerousness (Monahan & Cummings, 1975) and need for intensive care and professional assessment (Appendix II). The NIPI requires approximately 1 minute for administration. Four items related to patient behaviour and the extent to which the patient requires safe and professional care are rated on a 5 point scale (0 minimum - 4 maximum) The NIPI was originally designed for use by nursing staff. Raters are simply instructed to rate each patient on a five point scale.

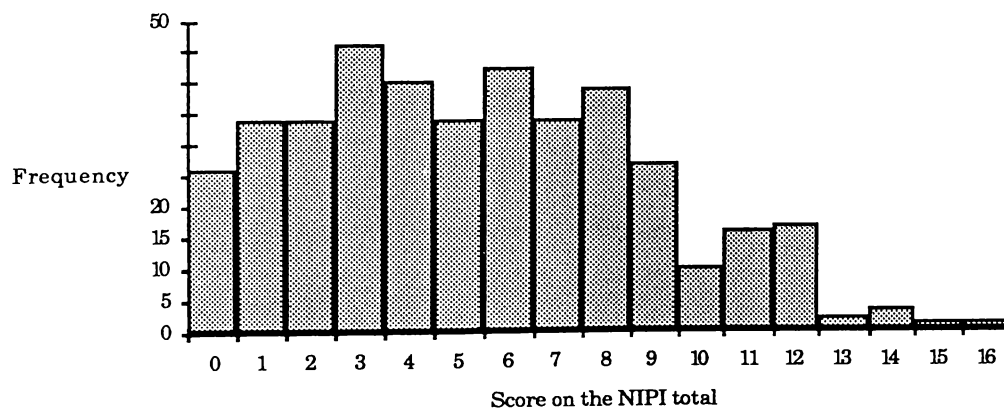


Figure 11. Distribution of scores on the NIPI total.

Norms

Figure 11 shows the distribution of scores on the NIPI total for the 1988 acute service study cohort. It can be seen in Figure 11 that scores on the NIPI total are positively skewed, with the bulk of individuals obtaining scores under 10. That is, more individuals were assigned low rather than high NIPI scores.

Reliability

The NIPi is not a published scale hence no published reliability coefficients are available. Because the scale contains only one item on each dimension, a measure of internal reliability such as Cronbach's alpha is not appropriate. The scale was administered only once for each patient so interrater reliabilities could not be calculated.

Validity

Table 5.4 shows the interitem and item-total correlations of the NIPi. The item-total correlations are all of a moderate to high level suggesting that the NIPi is internally consistent. The interitem correlations are all of a low to moderate level which suggests that all items measure different aspects of the construct the NIPi is designed to measure, namely need for inpatient care. The item-total correlations involve the correlation between each NIPi item and the sum of the other three items.

Table 5.4. Inter-item and item-total correlations (N=406, p=0.0001)

	Violent	Social	Int. Care	Attention	Total
Violent	1.00	.24	.30	.20	.29
Social		1.00	.53	.51	.56
Int. Care			1.00	.68	.70
Attention				1.00	.64
Total					1.00

Tables 5.5, 5.6, and 5.7 presents correlations between the NIPi items and items/scores from other scales which attempt to measure similar constructs. Hence a series of high correlations was expected.

Table 5.5. Correlations between the first NIPi item ("How violent is the patient?") and two other measures of violent/hostile behaviour.

	NIPi 1:		
	Violent	N	P
BPRS: Hostility	.30	77	0.01
NOSIE: Irritability	.45	331	0.00

Table 5.6. Correlations between the second NIPI item ('How socially impaired is the patient?') and four other measures relating to social functioning.

	NIPI 2:		
	Socially Impaired	N	P
SS-A	.10	143	0.25
NOSIE: Social Competence	-.49	331	0.00
NOSIE: Interest	-.34	331	0.00
SCS	-.14	327	0.01

It can be seen from the above tables that the NIPI items 1 and 2 correlate well with items from other psychiatric rating scales attempting to measure similar constructs. Only the SS-A vs NIPI2 failed to reach significance at the .05 level.

Table 5.7. Correlations between the third and fourth NIPI items ('How much does the patient need intensive care?' and 'How much does the patient need skilled attention from mental health professionals?') and five other measures relating to severity of illness.

	N	NIPI 3:		NIPI 4:	
		Intensive care	P	Skilled attention	P
BPRS	76	.45	.00	.43	.00
NOSIE total	331	-.35	.00	-.26	.00
NOSIE problem	117	.07	.42	-.03	.76
NCGI	142	-.15	.07	-.16	.06
DCGI	98	.01	.96	-.05	.63

Table 5.7 shows that NIPI items 3 and 4 correlate well with BPRS and the NOSIE total. Correlations with the NOSIE problem, NCGI and DCGI failed to reach significance.

Correlations between the NIPI and other psychiatric rating scales used in the current study to measure severity of illness are reported in Chapter 6.

The NIPI is a short scale which is easy to use and therefore suitable for repeated measures. Any experienced mental health professional can use it. The results

obtained in the current study (see Chapter 6) and the data reported above provide some evidence for the validity of the NIPI. The NIPI correlated significantly with the BPRS and NOSIE total scores and differentiated between some reason for acceptance to service categories. Individuals who scored 0 to 3 on the NIPI were found to have significantly lower lengths of stay than individuals who scored 7 to 16. The NIPI did not differentiate between provisional diagnosis groups. Concurrent measures on the same individuals, at the same time, need to be made to establish inter rater reliability and repeated measures are needed to determine reliability over time and sensitivity to change in clinical state with treatment.

The Clinical Global Impressions (CGI) scale

This scale was included in the instrument to assess severity of illness (symptoms), improvement since admission, and the interaction between drug effectiveness and side effects. It was developed by the Early Clinical Drug Evaluation Unit (ECDEU) for use with all research populations to give a non symptom focused measure of severity of illness, across a range of conditions. Clinicians' global impressions of illness and improvement were found to be more reliable and sensitive to change than symptom focused measures, by Lipman, Cole, Park and Rickels (1965), in the early development and testing of the CGI. The users were expected to rate according to their experience with other people with the same condition. The scale was included in both the nurse's and the doctor's part of the instrument developed for this study, to obtain a measure of inter-rater reliability for the scale and these results are reported in Figure12 in Chapter 6 (p. 143). As the three items making up the CGI are all global scales requiring only one rating, the CGI is quickly administered by those who are familiar with it. Ease of administration is the CGI's main strength.

The CGI scale consists of a rating on an 8 point scale ranging from 1 (normal, not at all ill) to 7 (among the most extremely ill patients). A score of 0 indicates that no assessment was made. The severity of illness component requires at least one

pretreatment and one post-treatment assessment. The global improvement rating is also based on a 8 point scale ranging from 1 (very much improved) through to 7 (very much worse), with 0 indicating no assessment was made. The efficacy index requires a rating on therapeutic drug effect (from "marked" to "unchanged or worse") and side effects (from "none" to "outweighs therapeutic effect"). These two items make up a 4x4 matrix (see Appendix II) which contain encoded numbers representing the efficacy index. The efficacy index can be calculated by dividing the therapeutic score by the side effects score. This results in a matrix in which the minor diagonal reflects instances where the therapeutic and toxic effects of treatment are equivalent. Those scores in the upper left quadrant indicate that the therapeutic effects outweigh the toxic effects of treatment. The scores in the lower right quadrant indicate that the toxic effects of treatment outweigh the therapeutic effects. The global improvement item and efficacy index require only a post-treatment assessment.

The severity of illness item is rated on the basis of the raters total clinical experience with the particular population of which the patient is a member. The patient is rated in terms of the severity of their illness at the time of, or in the week preceding, the rating. The global improvement item constitutes the total improvement whether or not the improvement is due entirely to drug treatment. This item is rated on the time span since admission, not on the period since the last rating. The efficacy index is rated on the effect of any drug treatment used, and covers the time span of the week preceding the rating. The scale was developed during the Pharmacological Research Branch of the National Institute of Mental Health collaborative schizophrenic studies (Guy, 1976).

Reliability

No reliability data is reported by Guy (1976). Mazure, Nelson, Jatlow, Kincare, and Bowers (1990) used a modified version of the CGI to rate 66 patients retrospectively

from clinical records. An intraclass correlation coefficient of 0.76 ($p < 0.001$) was reported.

Validity

No published studies based purely on the psychometric properties of the CGI have been found and the validity of the CGI seems to depend on studies which have used the CGI to demonstrate the effects of antipsychotic drugs. A decrease in severity of illness ratings which coincides with the introduction of an antipsychotic drug would constitute evidence for the validity of the CGI only if the drug is effective in reducing severity of illness. Given that the purpose of such studies is to show that a particular drug is useful in reducing symptoms, and the CGI is used as a measure of this reduction, this method of validating the CGI is circular in logic and hence unsatisfactory. This type of experimental information (examples of which are described below) provides the only evidence for or against the validity of the CGI.

A number of studies have examined the therapeutic effect of remoxipride in the treatment of schizophrenia. Of these several have used the CGI as one of the assessment measures (Chouinard, 1987; Deo et al, 1990; Lindstrom et al. 1990). Chouinard (1987) found that an increase in the rating severity of symptoms correlated with the withdrawal of haloperidol, and a subsequent decrease in ratings correlated with remoxipride treatment. The improvement in ratings from the end of washout to the end of a six week treatment period with remoxipride were statistically significant, though clinically small. The BPRS ratings showed a similar pattern, with a significant difference between the end of washout ratings and end of treatment ratings. Deo et al (1990) and Lindstrom et al (1990) on the other hand, found no statistically significant differences between a haloperidol group and a remoxipride drug group on the CGI severity of illness, nor did they find any differences from baseline to end of treatment. They did find differences from baseline to last rating on the BPRS items suspiciousness and hallucinatory

behaviour (Deo et al, 1990) and on the BPRS factors activation factor and a hostile/suspiciousness (Lindstrom et al, 1990).

Izmeth, Khan, Kumarajeewa, Shivanathan, Veall and Wiley (1988) examined the effect of zuclopenthixol decanoate in the management of behavioural problems in mentally handicapped patients. They found that the reduction in severity ratings was significantly greater in the zuclopenthixol decanoate group than in the placebo group at two weeks and eight weeks. No improvement in the zuclopenthixol decanoate group over placebo, from baseline to two weeks, was evident in any BPRS factors. Only manifest psychosis showed an improvement at eight weeks. Three BPRS factors showed improvement in the zuclopenthixol decanoate group over placebo from baseline to weeks four, six, eight, ten, and 12.

Hence the findings on the sensitivity of the CGI to drug efficacy is mixed, with some studies finding improvements in the severity of illness ratings that correlate with the introduction of a antipsychotic drugs and correlate with the results of other rating scales (Chouinard, 1987). Other studies fail to find improvements in CGI scores where expected (Deo et al, 1990; Lindstrom et al, 1990; Izmeth et al, 1988).

Published validity data is confounded by the use of experimental interventions. Because the CGI is a simple likert type scale, the important issue may be the ability of *rater* to rate consistently, and the degree to which groups of *raters* concur. The use of calibration items, and prompt questions for raters are examples of ways that the scale could be improved to enhance reliability. Rater training and practice to gain experience using the CGI's in the clinical setting, as in the current study, should also enhance reliability.

DSM-III-R Axis V Global Assessment of Function (current) Scale (GAF)

The designers of the DSM-III-R Axis V (Appendix II form D3) also presumed that the current rating of level of functioning would reflect the patients current need for treatment, but published research on the validity of the DSM-III-R version of the Axis V measure was hard to find in the literature. Skodal, Link, Schrout and Horwath (1988) expressed concern at the DSM-III-R revision of the scale, which added symptoms to the DSM-III axis V rating. It was previously comprised of indicators of occupational and social functioning. They felt that the earlier scale (Axis V, DSM-III) was a measure more independent of Axis I diagnosis. Some validity information on the DSM-III version of Axis V can be extracted from a study by Gordon, Jardiolin & Gordon (1985), on length of hospital stay of psychiatric patients. Vaillant and Schnurr (1988), claim that their procedures to establish construct validity suggest that Axis V is a valid dimensional measure of impairment.

Measures of other behavioural variables:

The MMSE and the GAF past measure constructs (state of cognitive functioning and premorbid level of functioning) which are different from severity of symptoms, but some degree of correlation between these two scales and the severity of symptoms measures was expected.

The Mini Mental State Examination of cognitive functioning (MMSE)

The Mini Mental State (Folstein, Folstein & McHugh, 1975; Lezak, 1983) has been used extensively overseas to detect cognitive deficit (Lezak, 1983), and non routinely in New Zealand psychiatric settings as a screening device for organic impairment. There is some good evidence for the validity of the Mini Mental State Examination (MMSE) for cognitive functioning (DePaulo & Folstein, 1978, Folstein, Folstein & McHugh, 1975, Tsai & Tsuang, 1979). Anthony, LeResche, Niaz, Von Korff & Folstein (1982) provide evidence for the sensitivity and specificity of the MMSE. This evidence is summarised below. The mean scores for the different diagnostic

groups obtained from using the scale in the current study were similar to those reported in the literature and discriminated well between people with diagnosed organic states and those with functional disorders.

Reliability:

Only one study (Folstein et al, 1975) documents original reliability findings. These are given in Table 5.8.

Table 5.8 Reported reliability for the Mini Mental State Examination:

Type of Reliability	Interval	Subjects	N	Age	Pearson's
Test-retest	24 hrs	Depressive symptoms	22	41.2	.887
Inter-rater	24 hrs	Depressive symptoms	19	45.6	.827
Test-retest	28 days	Elderly depressed, demented	23	74.1	.988

Validity:

A number of studies have examined the validity of the MMSE. The first of these was Folstein et al (1975). They found that scores on the MMSE correlated with diagnostic groups in the expected direction. The mean score for patients with dementia was 9.7, for depression with cognitive impairment 19.0, for uncomplicated affective disorder (depressed) 25.1 and the mean score for normals was 27.6. Thus the MMSE scores correlate with clinical judgement of the *presence* and *severity* of cognitive impairment. In Folstein's study there was no significant increase in MMSE scores in the group of demented patients following treatment, while a significant increase in MMSE scores was observed for both the depressed and depressed with cognitive difficulties groups. MMSE scores correlated well using the Wechsler Adult Intelligence scale (WAIS) as an external criterion (MMSE vs Verbal IQ, $r = .776$; MMSE vs Performance IQ, $r = .660$)

DePaulo and Folstein (1978) compared MMSE scores for patients with cerebral lesions to those with peripheral disorders and they found that 50% of the patients in the cerebral abnormalities group scored less than 24 on the MMSE, while none of the patients in the peripheral disorders group obtained a score less than 24. Tsai and

Tsuang (1979) compared MMSE scores of those with abnormal CT scans and those with normal CT scans. They found that those with abnormal scans achieved an average score of 20.4 (SD 8.3) while those with normal scans achieved an average score of 26.4 (SD 5.6). The difference between these two groups was statistically significant.

Anthony, LeResche, Niaz, Von Korff, and Folstein (1982) investigated the sensitivity and specificity of the MMSE for detecting dementia or delirium in a general medical ward. They found that the sensitivity of the MMSE was 87%, the specificity 82.4%, the false positive ratio 39.4% and the false negative ratio 4.7%, where psychiatric judgement as to the presence/absence of dementia or delirium was compared with MMSE scores $>$ or ≤ 23 . When Brayne and Calloway (1990) examined the effects of age, socio-economic status (SES) and education in a group of elderly women they found that low MMSE scores were associated with a lower level of education, a greater age, and lower SES.

This published reliability and validity information for the MMSE suggests that the scale is a consistent and valid measure. MMSE scores correlate with diagnostic groups (Folstein et al, 1975) and with brain abnormalities (DePaulo & Folstein, 1978; Tsai & Tsuang, 1979). The sensitivity and specificity reported are good (Anthony et al, 1982). Socio-demographic variables such as age, socio-economic status and education are reported to affect scores on the MMSE (Brayne & Calloway, 1990) and the high number of false positives reported by Anthony et al. (1982) indicate restricting use of the MMSE for screening only. It should not be used as a sole diagnostic method for detecting cognitive impairment.

Global Assessment of Functioning (past) Scale (GAF)

The Diagnostic and Statistical Manual third edition revised (DSM-III-R) Global Assessment of Functioning (GAF past) Scale was chosen to measure premorbid

level of functioning. If it is the case that people return to their previous level of functioning, after an episode of psychiatric illness, ratings of the highest level of functioning at some time during the year preceding the admission (GAF past) can be assumed to have some prognostic value. However, because the GAF has been recently modified to include symptoms as well as indicators of social and occupational functioning and there have been no studies to assess the effect of this change (Skodal et al, 1988), more information is needed to confirm the validity of the scale. Data from the current study may contribute towards establishing this.

Comorbidity

Frequency counts were taken from information collected on 'main reason for acceptance to service' information collected on form W1 (Appendix II) and from analysis of discharge summaries, in an attempt to measure the extent of comorbidity in the sample (refer p. 86).

Measures of socio-demographic variables

Forms were designed to collect information on accommodation status, occupation, next of kin, benefit, drivers licence and country of residence (Appendix II forms W1 and W2) . Information derived from the literature review (p. 19 - 22) indicated that all these factors may influence amount of psychiatric service use, but relationships between such measures of social disadvantage and other sociodemographic variables are not clearly established. Discussion with consumers and providers of service was also taken into account when choosing these variables.

Severity of stressors

The DSM-III-R Axis IV measure for severity of stressors (Appendix II form D3) has been found to be more valid when only severe stressors are listed, compared with when minor stressors are included. (Rey, Stewart, Plapp, Bashir & Richards, 1987). Clinicians were instructed to base their rating on their assessment of the stress an

"average" person in similar circumstances with similar sociocultural values would experience from that stressor (American Psychiatric Association, 1987, p. 26).

The Social Competence Scale (Zigler & Philips, 1961)

This scale was used more as a measure of socio-economic status than as a measure of social competence in this study. Occupation categories were derived from the work of Elley & Irving (1976) and Johnston (1983) and these also provided some indication of socio economic status. The notion of social competence is considered to be too vague to be usefully applied to this population but the SCS was expected to provide summary information on education not easily retrievable from other sources, to complete a social status and social competence profile for the patients studied. The NOSIE, which was used to measure self care and estimate basic social acceptability ratings, in terms of activities of daily living, was also considered to be a measure of social competence for this population. The following data collected in the current study was examined to assess the reliability and validity of the SCS.

Reliability

Satisfactory item-total correlations were obtained. These are presented in Table 5.9.

Table 5.9. Item-total correlations.

SCS items	r
Age	.60
Education	.65
Marital Status	.66
Occupation	.78
Employment History	.62

Validity

The SCS was correlated with other rating scales in the instrument. The results are presented in Table 6.1 (p. 138).

The Social Support Appraisal Scale (SSAS)

The Social Support Appraisal Scale (Vaux et al, 1986) was included to provide a measure of perceived social support, in line with research which supports the view

that this dimension of social support is more predictive of mental health, than objective assessment of network size. (Barrera & Ainley, 1983; Hirsch, 1980; Sarason, Levine, Basham & Sarason, 1983; Sarason, Shearin, Pierce & Sarason, 1987; Seigert, Patten & Walkey, 1987; Seigert, Chung & Taylor, 1990). The SS-A is a 23 item instrument (Appendix II form NI). All items relate to Cobb's 1976 definition of social support and relate to the extent that an individual believes that he/she is loved by, esteemed by, and involved with family, friends, and others (reported in Vaux et al). Three scores are computed: a total score which is the sum of all 23 items, a family score which is the sum of 8 family items, and a friends score which is the sum of 7 friend items. No published norms are available.

Reliability

The findings of Vaux et al (1986) and data from the current study (refer Chapter 6) found that the SS-A scale proved to be a reliable scale as measured by Cronbach's alpha. Table 5.10 shows that the family and friend scores are reasonably homogeneous, while the total score obtained an even higher reliability coefficient.

Table 5.10. Reliability coefficients of the SS-A Scale

	Vaux et al (1986)		Current study
	Student (N=517)	Community (N=462)	Psychiatric (N=174)
SS-A Total	.90	.90	.90
SS-A Family	.80	.81	.79
SS-S Friend	.84	.84	.70

NB. The coefficients reported by Vaux et al (1986) are mean coefficients across the five samples in the student group and five samples in the community group. Vaux et al (1986) reported intercorrelations between the family and friend scales of .51 for the student samples and .52 for the community samples. In the current study a correlation of .61 was obtained between these two scales ($p=0.0001$, $N=174$). These

findings support the notion that the friend and family subscales contribute unique information to the total score.

Validity

Vaux et al (1986) report validity data on associations between the SS-A and other measures of support appraisal, network resources and supportive behaviour, distress and well-being, and personality. For each of these measures they used one or more of their 10 samples and reported the findings separately for each sample. As their samples were neither randomly selected nor comparable to one another, the results of analyses using the community samples drawn from a telephone book and one sample of undergraduates have been reported on here. Of the samples drawn from the community Sample C3 (n=44) and Sample C5 (n=52) responded via a mail survey, while Sample C4 (n=140) were interviewed by telephone. The student sample, S4 (n=100) were administered the survey as a group (Vaux et al, 1986). The following data from Vaux et al's study is presented to support the validity of the SS-A scale.

The items which comprise the Support Network Satisfaction scale (that is, emotional support, socializing, practical support, financial support, and advice/guidance) resulted in correlations with the SS-A total ranging from .21 to .34, with a mean of 0.26 and standard deviation of 0.05. These analyses used the C4 sample and the results were significant to at least the 0.01 level. Four other measures of support appraisal have been correlated with the SS-A, and the results are presented in Table 5.11. The Perceived Social Support scale which also comprises items concerning family and friends resulted in high correlations between family subscales, and between friends subscales. The Provision of Social Relations and Revised Kaplan scale also correlated at a moderate to high level with the SS-A, while the Social Support Questionnaire results in moderate correlations with the SS-A.

Table 5.11. Correlations between the SS-A scale and measures of support appraisal

	SS-A		
	Total	Family	Friend
PSS Family	.79***	.82***	.48***
PSS Friends	.52***	.32	.72***
SSQ: Number	.28*	.24	.33**
SSQ: Satisfaction	.47**	.38**	.36**
PSR	.73***	.54***	.67***
RKS	.66***	.45***	.61***

* $p < .05$ ** $p < .01$ *** $p < .001$

PSS: the Perceived Social Support Scale (using sample C3)

SSQ: the Social Support Questionnaire

PSR: the Provision of Social Relations (PSR)

RKS: the Revised Kaplan Scale (RKS) (all using sample C5).

The correlation between the SS-A and other measures of support appraisal provide good initial evidence for the validity of the SS-A.

Support Resources

Eight measures of support resources were correlated with the SS-A total data collected from the C4 (n=140) sample. These measures can be grouped under the headings network size, relationship characteristics, and network composition. Five measures of support behaviour (emotional, social, practical assistance, financial assistance and advice/guidance) from the S4 (n=100) sample were completed on friends and family. The correlations produced from these analyses were low to moderate and significant to at least the 0.05 level in all but one case.

Distress and Well-being

Four measures of distress and well-being were correlated with the SS-A total again using data collected from the C3 sample (n=44). These were depressed mood, positive affect, negative affect, and loneliness. The analyses produced negative moderate to high correlations with depressed mood, negative affect, and loneliness, and

moderate positive correlation with positive affect. All correlations were significant to at least the 0.05 level.

Measures of treatment and side effects of treatment

It was necessary to design a data capture form to summarise basic medication information (Appendix II form D7) as existing record keeping systems made summaries of treatment information extremely difficult to access. Because the form was not completed accurately for the bulk of the people in the study, it was necessary to retrieve treatment information from discharge summaries and medication sheets in clinical files. This was a laborious and time consuming exercise but yielded the most accurate information available about treatment during the hospital stay.

Extrapyramidal side effects (EPS) are a major limitation in the use of neuroleptic medications for the treatment of serious psychiatric disability. Tardive dyskinesia (TD) is identified in the literature as a special public health problem and clinical nonrecognition of these disorders is prevalent (Rao, Cowie and Mathew, 1987; Weiden, Mann, Haas, Mattson and Frances, 1987). This was the justification for including two measures, one for EPS and the other for TD.

The Abnormal Involuntary Movement Scale (AIMS)

This scale was used to provide a measure of tardive dyskinesia, a chronic condition produced by long term use of psychotropic medications (Simpson, Lee, Zoubok & Gardos, 1979). It was developed by the Psychopharmacology Research Branch of the Early Clinical Drug Evaluation Unit (ECDEU) of the National Institute of Mental Health (NIMH) and because of the great need for a measure for dyskinetic movements, the scale was made available to the wider scientific community, and used extensively, despite the fact that it had not been validated using psychometric procedures (Guy, 1976). The last 15 years has provided a wealth of examples of research using this scale and it is currently the definitive instrument for screening

for TD. Its validity and reliability seems to stem almost entirely from a consistent relationship between high positive scores and the clinically observable dyskinesias which are the correlates of TD. However, there have been some efforts to cross validate the scale with other measures, such as the Rockland Scale (Simpson, Lee, Zoubok and Gardos, 1979).

Extra Pyramidal Symptoms & other side effects Scale

A form was designed to measure extrapyramidal side effects (EPS) of medication and akathisia and akinesia (Appendix II). This was derived from other published scales which were too long to include. Two sources were the Simpson & Angus (1970) scale for EPS measurement and the work of Van Putten (1974, 1978, 1985, 1986). The items on the EPS are rated on a four point scale from 0 (normal) to 4 (extreme/severe). In the original scale, the items which are rated are gait, arm dropping, shoulder shaking, elbow rigidity, leg pendulousness, head dropping, glabella tap, tremor, and salivation. A total score is obtained by adding the items and dividing by the number of items.

Reliability

Simpson et al (1964) obtained an interrater reliability of .79 across the two physicians used in their study. The following interrater reliability coefficients were published by Simpson and Angus (1970).

Table 5.12. Reliability coefficients published by Simpson & Angus (1970).

Item	Mean r	r Range
Gait	.52	.22-.78
Arm Dropping	.73	.58-.89
Shoulder Shaking	.78	.69-.94
Elbow Rigidity	.59	.20-.89
Leg Pendulousness	.75	.62-.78
Head Dropping	.70	.62-.78
Glabella Tap	.87	.60-1.00
Tremor	.56	.29-.94
Salivation	.59	.16-1.00
Total Score	.87	.71-.96

In the interests of brevity, the items leg pendulousness, glabella tap and head dropping were deleted in the current study after consultation with clinicians who had used the Simpson and Angus (1970) scale extensively. The scale developed for the present research incorporated a section at the beginning to assess akathisia and akinesia. This addition was made also following clinical advice after the scale was piloted (Appendix II form D6).

Validity

Construct Validity: Increases in scores on the EPS scale are associated with continuing neuroleptic drug treatment (Simpson, Amuso, Blair & Farkas, 1964). High drug dosage levels are associated with high EPS scores, while lower dosage levels are associated with lower EPS scores (Simpson, Angus & Edwards, 1967; Simpson & Angus, 1970; Levinson, Simpson, Singh, Yadalam, Jain, Stephanos and Silver, 1990). Levinson et al (1990) found a correlation of .52 ($p=.01$) was detected between drug dosage and EPS ratings. Vagen and Gostestam (1986) examined the side effects of antiparkinsonian medication and found no significant differences between three drug groups and a placebo group. Across time analyses (before drug administration, and 1, 3 and 6 hours after drug administration) also failed to show significant differences in EPS scores. It is possible that the medication was not effective in reducing the side effects or the EPS scale may not have been sensitive enough to detect a reduction in extrapyramidal symptoms. (Vagen and Gostestam (1986) conclude that a large proportion of antiparkinsonian drugs are administered without adequate justification).

Criterion-related Validity: Extrapyramidal side effect ratings were not significantly correlated with blood perphenazine levels ($r=-.11$) or with total drug levels ($r=-.13$) in a study conducted by Mazure, Nelson, Jatlow, Kincare and Bowers (1990). They did, however find a significant correlation between the EPS scale and Clinical Global Impressions ($r=.68$ $p=0.0001$).

In the current study six of the EPS items were used to rate extrapyramidal side effects. These were gait, arm dropping, shoulder shaking, elbow rigidity, tremor and salivation. The findings relating to the EPS are presented in Table 5.13.

Table 5.13: Item total correlations for the EPS scale.

Item	r
Gait	.76
Arm Dropping	.81
Shoulder Shaking	.78
Elbow Rigidity	.79
Tremor	.59
Salivation	.51

Only Simpson et al (1964) and Simpson and Angus (1970) report on the EPS's reliability and validity. The reported reliability coefficients are adequate for the total score, but are not particularly high for some of the individual scales such as gait, elbow rigidity and tremor. The validity data is largely construct validity obtained from experiments examining the side effects of various neuroleptic drugs.

Psychometric properties of the instrument

While this is not a psychometric study, the researcher was concerned to ensure that the individual scales used and the instrument as a whole fulfilled requirements for reliability and validity. The pilot project provided evidence that while some of the measures available appeared to be just 'the best of a bad lot' they were robust both across raters and time. An additional aim of the research was to build a data base from which adequate norms and reliability and validity for the instruments used could be established. Guidelines could then be developed for clinicians on which measures to use for particular tasks and populations. Some of the relevant information has been recorded above and some is reported in the results in Chapter 6. Because of their use in clinical trials, to determine the effectiveness of treatments, some scales chosen (for example the BPRS, NOSIE, MMSE, AIMS) have been widely used and extensively reported in the last 25 years of published psychiatric research.

5.4: Procedure

As indicated in section 4.2.i, amount of service use (ASU) as represented by length of stay in the service is often used by service funders to assess hospital performance. ASU determines both the number of beds provided and the number of staff required to service these, with obvious impact on the resource required to run the service.

Psychiatric patients are subjected to different release procedures when they are on leave from hospital, depending on their legal status. In addition to outright discharge, voluntary patients are given holiday discharge and weekend leave.

Committed patients can be on long leave from the hospital for as long as two years. If they return to hospital during such a period they are not formally admitted, because they have not been technically 'taken off the numbers', or 'discharged', even though for long periods of time they may not be occupying a bed. These procedures complicated measurement of amount of service use in terms of "bed days" for any defined period.

Medical records and clinical files were examined for all people using the acute service (villas 2,7,& 8) during 1988 to obtain this information. Amount of service use for patients was defined to include 'bed days' and excluded days when a bed would be kept for a patient on weekend leave. A bed day was recorded if the person was in hospital at midnight. A stay of less than 24 hours which did not include midnight was not counted. Four amount of service use (ASU) measures were retrievable from the electronic daily report system which had been set up in the hospital as part of the development of the patient information system described in Chapter 3.

These ASU measures were;

1. The total time on the books in the year. This included days out on long leave, when formal patients remain on the hospital numbers.
2. Time spent in hospital, including days in villas other than the acute villas.

3. Time spent in the acute area in bed days.
4. Time in each individual acute villa.

The criterion measure used in this study for amount of acute service use was (3), the total number of bed days in the acute villas during 1988, recorded in weeks. Because of the difficulties involved in manually extracting accurate service use information from clinical files, and the time and resource constraints on the project, it was not possible to use 'number of admissions' and need of intensive care as measured by admissions to Villa 2 and NIPI scores, as weighting factors on the criterion variable, amount of service use, or as additional criterion. The intention is to perform this analysis as an additional project (p. 172).

Informal discussions and formal meetings were held with clinicians and managers, to find out what information they collected, or would like collected, in addition to the minimum data set, to facilitate their work. Meetings and discussions were held with staff who would be involved in the information gathering, as well as with senior hospital personnel from administration and clinical disciplines. These meetings occurred during the development of the instrument and further meetings were held to discuss the draft version which was prepared for piloting. Efforts were made to ensure that no duplications in information gathering were occurring and that only useful information was gathered. It was generally agreed that knowledge of the selected variables was essential to:

- Identify the patient
- Adequately treat the patient
- Ensure follow up of the patient
- Predict the outcome of treatment
- Make informed decisions and choices for treatment and care
- Make informed judgements about efficacy of treatment and care
- Maintain an optimum state of health for the patient
- Plan services and predict need for services in the catchment area

Make decisions about staffing levels and resource allocation for service provision in the catchment area.

The above reasons provide additional justification for the choice of predictor variables included in the study. The information was gathered, in most instances, by the senior nurse and the psychiatric registrar involved with the patient, as well as by the ward clerk. Where appropriate some assessment was carried out by a therapist from another discipline, if they happened to be the primary case worker, or had particular information. Hence a social worker, occupational therapist, junior doctor, consultant or psychologist was sometimes involved. Staff training meetings were held and repeated frequently throughout the study period, because frequent staff changes were normal in the setting and it was vital to ensure that observations that were made and recorded were consistent with the specified procedure.

The first data capture instrument was piloted in September and October of 1987, on approximately 80 patients, and modifications were made to some of the forms as a result of suggestions from staff. Two visiting English final year medical students worked on the project for 4 weeks during this time, carrying out independent and parallel assessments of the patients. This provided a valuable reliability check on the instrument and confirmation of face validity. It also provided an independent measure of the administration times for the scales, from competent highly motivated trainees who had no other clinical responsibility in the setting.

Following the pilot, more meetings were held with staff to clarify the procedure and to alleviate concerns about confidentiality and security of information. Many staff had no experience with electronic medical record systems and they needed to know that the research had ethical committee approval and senior Hospital Board management endorsement. They also needed to know that personal information about patients would not be entered or stored anywhere outside the hospital medical record system. Nurses, doctors, clerks, other administrative staff, as well as

consultants and managers attended these meetings. Feedback was obtained on how the procedures could be used to improve clinical practice and to increase the amount and quality of information available to clinicians and managers, through improved record keeping and electronic storage of information. Some suggested changes to the method involved a change in the order of administration of some of the scales and additions to the extra-pyramidal symptoms scale (EPS), to include assessment of akathisia and akinesia. The final data capture system (Appendix II) was used to record information for all patients admitted to the acute area of the hospital in 1988.

Ward staff administered most of the scales as soon as possible after the patient was admitted, during initial examinations, interviews and the taking of the clinical history. Thus information on the specified range of behavioural, demographic and systems variables was recorded for each patient, so that the relationship between each variable and ASU could be determined. Discharge information and information relating to treatment was collected as soon as possible after discharge. This usually meant one or two days, but it could take up to four weeks to obtain this discharge information. The detailed treatment information took longer to retrieve. A random sample of 100 people was drawn from the cohort and more detailed drug treatment information was entered into a separate data set for this group.

5.5: Data analysis:

Frequency counts:

Data were transferred into a SAS data set and frequency counts for the criterion and predictor variables were calculated. These data were used to determine reliability coefficients and norms for the rating scales included in the instrument.

Correlational analysis:

Correlations were then performed between the independent variables and ASU. Most of the data were ordinal and data which were ratio (eg age vs amount of service use) were heteroscedastic (ie amount of service use was not evenly scattered in arrays for age). Since it is a non parametric test, Spearman's correlation coefficient was used instead of Pearson's to obtain preliminary measures of relationship between the independent variables and ASU. Because the raw service use data were extremely skewed, wherever a parametric test was used (eg One-way ANOVA or two sample t-test) ASU was transformed by the function: $\log_{10}$ (amount of service use). Variances between groups were unequal on many of the measures. According to Howell (1987) this is a particular problem when the number of observations in each group are unequal. All means reported in the tables are transformed ASU means converted back to the form of the original data. The raw score means are higher in value than those recorded in the correlation tables (Appendix IV). Non parametric analyses used the raw ASU data. Categories were joined together when the number of observations in a category was too small to contribute meaningful information to the analyses. Where two categories could not be sensibly combined (as with student and retired, in the occupation categories) the data in the smallest category were deleted from the analyses.

Multiple regression analysis

Stepwise regression analysis was chosen as the procedure to determine which variables were the strongest predictors of amount of service use. (Cohen & Cohen, 1975; Kerlinger & Pedhazur, 1973; Pedhazur, 1982; SAS Institute Inc, 1985; Tabachnick & Fidell, 1989). In the logic of multiple regression, as near as is possible to an exhaustive set of relevant predictor variables is sought, to avoid the criticism that "something else", which has not been included, could be as good a predictor as those chosen. However more variables require more subjects in the sample, so in the end a trade off occurs, with the limiting factor on sample size being

the resources available for the study and time constraints imposed by the design. Most of the socio-demographic and systems variables were categorical. These were converted into dichotomous variables. Details of the conversion procedure which was followed are given in Appendix VI. Only variables which reached a default significance level of $p < 0.05$ entered the regression analyses. After the categorical variables had been dichotomised there were 36 individual systems variables, 62 individual socio-demographic variables and 10 individual behavioural variables available for the regression analyses. A stepwise regression analysis was carried out for each of the three groups of predictor variables. These 3 analyses yielded 8 systems variables, 12 socio-demographic variables and 4 behavioural variables, all of which were entered into a final stepwise regression analysis. The results of these analyses are recorded in Chapter 6, section 6.6.

Chapter 6

Results

Section 6.1 of this chapter contains a description of the service use distribution. This is followed in sections 6.2, 6.3 and 6.4 by frequency counts for predictor variables not already given as part of the description of the sample in Chapter 5. Intercorrelations between scores on the rating scales, used in the study to measure behavioural variables, are also given in section 6.3.i. The major results of the study are described in section 6.6. These were obtained from the stepwise regression analyses. The individual models resulting from applying this procedure to the three groups of predictor variables; socio-demographic, behavioural and systems are presented followed by the results from the final stepwise regression analysis. This final equation was constructed by entering the variables which made up the three previous models into another regression analysis, to identify the strongest possible combination of predictors for amount of service use.

Results obtained from the correlation analyses between the predictor variables and the criterion (amount of service use) are documented in section 6.5. The correlation analyses were carried out to confirm or disconfirm results obtained using the stepwise regression procedure. Intercorrelations between predictors which correlated highly with amount of service use are reported and discussed in Appendix IV.

6.1: Service Use Distribution

The criterion measure which was chosen as an indicator of amount of service use was the number of weeks spent in the acute area during the 12 months of 1988. At the time of the study, the acute area of the hospital included villas 2, 7 and 8. The average amount of service use for the sample studied was 4 weeks (SD = 4.5 weeks). The median was just under 3 weeks (19 days) and the range was between .1 and 34.4 weeks. Most of these stays were made up of multiple 'admissions' interspersed with time spent in other settings. The details of individuals movements in and out of the acute service during

the study period were quite complex, because of variation in admission, discharge and transfer procedures. Such procedures were determined by the legal status of the person to be accommodated, as well as by the availability of appropriate supervision and support.

Twenty two percent of the people in the sample used the service less than 1 week in total for the 12 month period. Fifty percent of the sample used the service for less than three weeks and 75% for less than six weeks. Figure 11 shows the service use distribution by percentage of the cohort for weekly periods. While most of the people were at the lower end of the range it was clear that the 25% using the service for more than six weeks (42 days) could represent a potentially expensive drain on resources. Closer analysis of this group showed that of the 135 (approximately 25%) who used the service for more than six weeks, 50 had stays of between six and nine weeks, 36 people had stays totalling between 9 and 13 weeks and 20 people had stays of between 13 and 26 weeks. Two people used the service for totals exceeding 26 weeks.

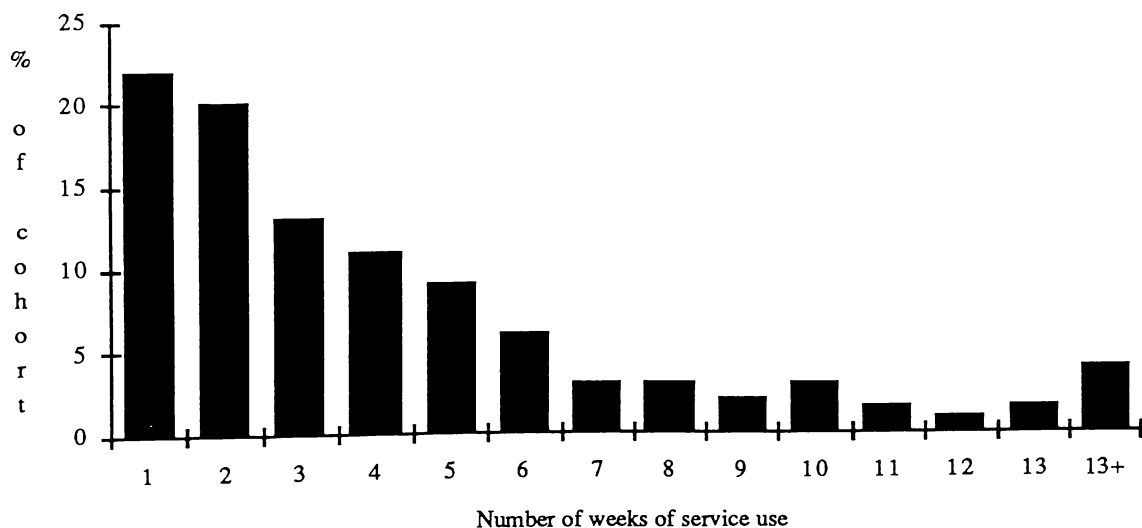


Figure 12. Service use distribution for 538 acute psychiatric patients

6.2: Socio-demographic characteristics

The demographic characteristics of the cohort are described in Chapter 5 and in Appendix IV. Frequency counts on the social factors which were measured by rating scales are given below.

Severity of stressors

This variable was measured by a DSM-III-R Axis IV rating (Appendix II, Form D3). The minimum and maximum scores were 1 and 6 respectively. A mean score of 2.66 (SD = 1.12) was recorded. Scores were obtained for 316 people. Twenty percent of these people were not considered to have undergone any acute events or enduring circumstances relevant to the disorder. A further 20% had experienced a mild stressor possibly relevant to the disorder. Thirty-nine percent were considered to have experienced a moderate stressor and 17% a severe stressor. Just under 4% were considered to have experienced an extreme or catastrophic event or circumstance relevant to the disorder.

Social competence

Correctly completed scores on the Social Competence Scale (Appendix II, Form N4) were obtained for 343 people. Sixty three scores were incomplete and the remaining 132 people in the cohort were missing information from this measure. The lowest total score which could be obtained on this test was zero and the highest was nine. The mean score was 3.20 (SD = 2.5). Most of the sample studied (72%) produced scores of less than 5 indicating a low level of social competence relative to the general population.

Significant positive correlations were obtained between the SCS and the NOSIE total score, the personal neatness NOSIE factor score and a negative correlation was significant with manifest psychosis providing some evidence for the reliability and validity of the scale. While the correlations were low, they are in the expected direction.

Table 6.1. Correlations between the SCS and other scales used in the instrument.

	r	N
SS-A	-.01	126
NIPi	-.06	331
MMSE	.12	32
BPRS	.08	63
AIMS	-.14	18
EPSE	-.25	17
NOSIE problem	-.19	98
NOSIE total	.20**	286
social competence	.09	
social interest	.06	
personal neatness	.27**	
irritability	-.03	
manifest psychosis	-.25**	
motor retardation	-.14*	
NCGI	.02	118
DCGI	-.04	87
Axis IV	-.15	90
GAF current	.04	84
GAF past	-.03	81

* p<.05 ** p<.001

Perceived social support

This was measured by the Social Support Appraisals Scale. Scores were obtained for only 173 people. Fifty two people returned incomplete data which could not be scored and the remaining 313 were missing information on this form. The mean score was 24.53 (SD 12.67). The range was 37, the mode was 24 and the median 23. The minimum and maximum scores were 0 and 63 respectively. Correlations were calculated between the SS-A total scores, family scores and friend scores and other scales used in the instrument and no significant or sizable correlations were obtained. (These correlations are reported in Table 1 in Appendix IV).

A number of patients (N = 365) did not complete the questionnaire. This limited the range of responses, hence lowering the obtained correlation coefficients. The relatively low number of forms completed may reflect the difficulties associated with using self rating scales with seriously disabled psychiatric populations. Of all the scales in the instrument developed for this study, this was the least popular. The lack of face validity which was demonstrated with this population may offset the reported reliability of the scale as a measure of perceived social support.

6.3: Behavioural characteristics

Previous level of functioning

This was measured by the Global Assessment of functioning (GAF) - past, rating. Information was obtained for 308 people (57%). Minimum and maximum scores were 1 and 90 respectively. A mean score of 62.82 (SD = 18.88) was recorded suggesting a relatively high level of functioning in the past compared with levels recorded on admission to the acute service. These were lower, as measured by the GAF current.

Comorbidity:

Comorbidity, or the coexistence of a substance abuse problem and a psychiatric disorder, was recorded as being a problem for 127 people, or 27% of the sample for whom data was available (n=476). Sixty two people had missing data. Sixty seven people were identified as having a polysubstance abuse problem, 50 an alcohol problem and 10 a problem with marijuana use. No standard procedure for reporting comorbidity was in place prior to this study and closer review of clinical files provides evidence to suggest that it is underreported. The results obtained here may be a conservative estimate of comorbidity in this group.

Cognitive Impairment

Ratings for cognitive impairment from correctly completed Mini Mental State examinations were obtained for only 34% of the total sample (185 people). Of these, 35% scored below 24 out of a possible score of 30, indicating a need for further assessment for

organic impairment. (The Mini Mental State Examination is a screening device for organic impairment, and 24 is taken as a cutoff score).

Norms: The following table summaries mean MMSE scores found in various experimental and diagnostic groups discussed in Chapter 5 p.117 - 119:

Table 6.2: Mean MMSE scores for reported experimental and diagnostic groups

<u>Group</u>	<u>Age</u>	<u>N</u>	<u>Mean</u>	<u>SD</u>
Folstein et al (1975) Sample A				
Dementia	80.8	29	09.6	5.8
Depression with cognitive impairment	74.5	10	19.0	6.6
Depression	49.8	30	25.1	5.4
Normal	73.9	63	27.6	1.7
Folstein et al (1975) Sample B				
Mania	39.5	14	26.6	3.5
Schizophrenia	44.6	24	24.6	6.6
Personality disorder with drug abuse	34.3	32	26.8	2.5
Neurosis	25.6	27	27.6	2.4
DePaulo & Folstein (1978)				
Cerebral lesions	56.4	42	22.7	
Peripheral disturbances only	43.8	26	28.0	
Tsai & Tsuang (1979)				
Abnormal CT scans		31	20.4	8.3
Normal CT scans		32	26.4	5.6
Current Study				
Organic psychosis	42.5	12	21.8	7.5
Schizophrenic psychosis	33.5	54	24.9	5.8
Major Affective Disorder	38.2	67	24.8	5.0
Paranoid & other non-organic psychosis	35.8	12	27.9	2.4
Personality disorder	29.0	14	27.8	3.5
Other non-psychotic disorders	38.6	16	27.6	3.3
No psychiatric disorder	33.7	3	30	0.0

Severity of Symptoms (illness)

Ratings for severity of symptoms were obtained from seven different sources.

Brief Psychiatric Rating Scale (BPRS) scores were obtained for 353 people (60%). The mean score obtained was 38.87 (SD = 9.75). This indicates that most had clinically

significant psychiatric morbidity. Only 9 people were possibly without indications of serious psychopathology, with scores of less than 20. Two people had scores over 70.(Refer Figure 13).

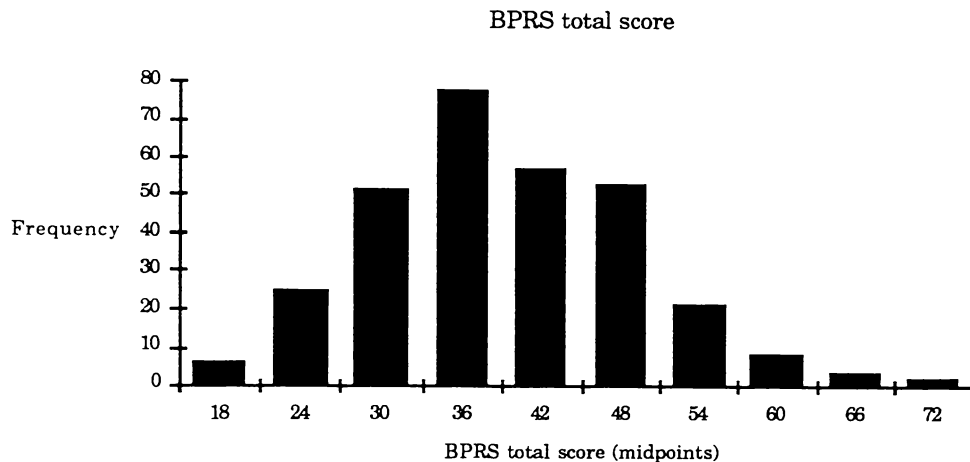


Figure 13. Distribution of BPRS total scores in the acute services study N = 305)

The information on the 305 people reported in the above graph was derived from returns that were completed for all 18 items in the scale. Table 2 in Appendix 4, p. 247, shows that the BPRS does not correlate strongly with any of the other measures used in the current study. The highest correlation for these scales is between the NOSIE total score and the BPRS. The only other moderately high correlations in this table are with the NIPI, and side effects (Scale for Akithesia, Akinesia and Parkinsonian side effects). Because it was designed to measure change in mental health status the BPRS may not be as suitable as some of the other scales, such as the CGI and GAF, as an indicator of normal versus abnormal levels of psychopathology.

Global Assessment of Functioning (GAF) - current scores were obtained for 315 people. Minimum and maximum scores were 1 and 90 respectively. Sixty percent scored below the mean score of 44.22 (SD 21.23) indicating that the overall level of functioning of the people admitted was low.

Clinical Global Impressions (CGI) -

Doctors scores were obtained for 319 people. The mean score was 3.91 (SD = 1.12). The possible minimum score was zero and the maximum seven.

Nurses scores were obtained for 394 people. The mean score was 3.35 (SD = 1.41). Again the possible maximum score was seven and the minimum zero.

In the current study nursing staff and doctors administered the scale on admission and discharge. The distribution of severity of illness scores are given in Figure 14.

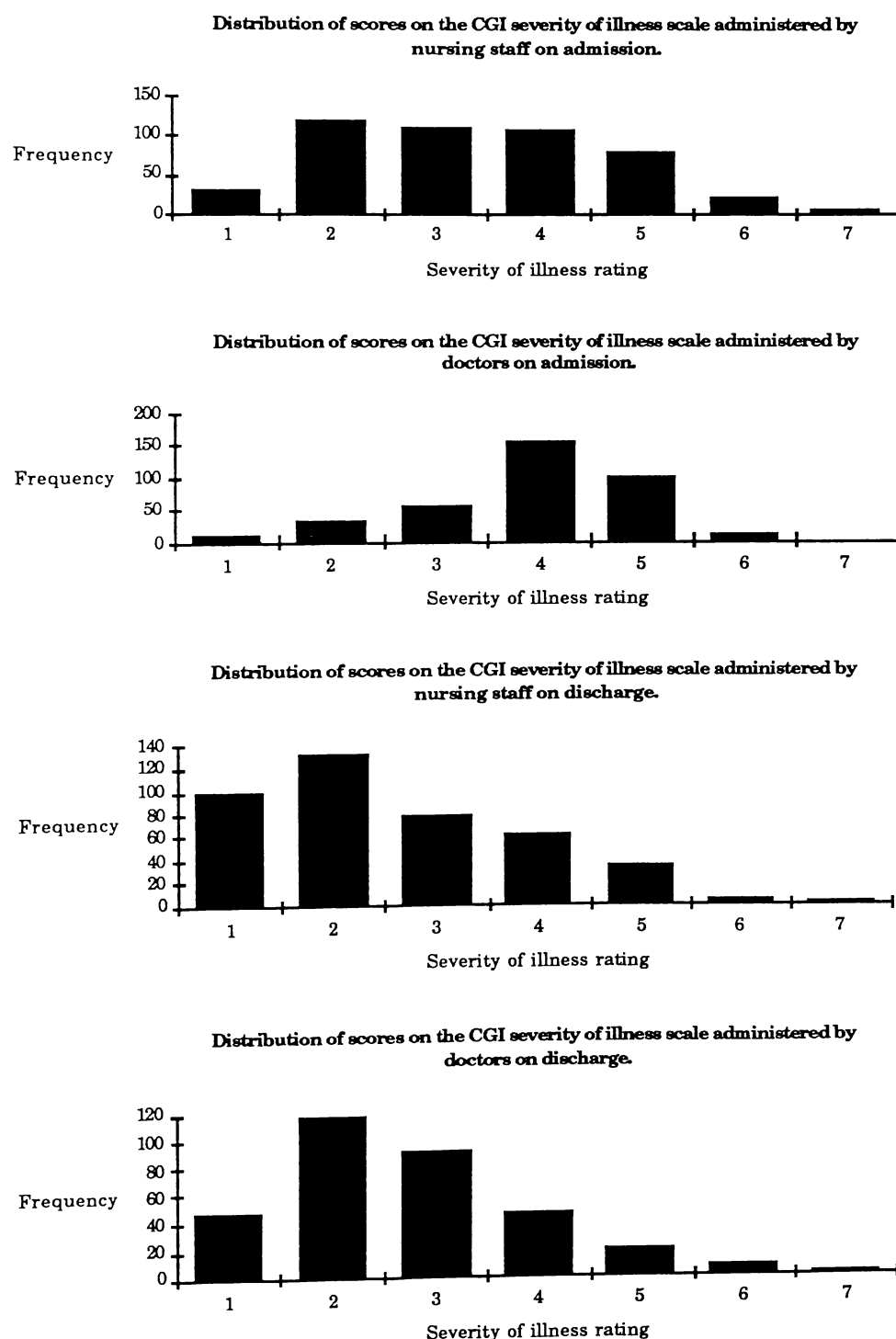


Figure 14. Distribution of CGI scores on admission and discharge

These data suggest that the doctors tended to rate patients as more severely disturbed than the nurses did using the CGI on admission and discharge. The intercorrelations between the CGI ratings made by doctors and nurses on admission and on discharge are as follows: On Admission: $r=.37$, $N=19$, $p=.12$. On Discharge: $r=.62$, $N=12$, $p=.03^*$. It can be seen that very few scores were included in these calculations because it was rare for doctors' and nurses' ratings to be completed on the same day. As the pairs of ratings correlated were made on the same day and on the same people, a higher correlation between the two admission ratings, and the two discharge ratings was expected than was obtained. The admission ratings failed to reach statistical significance but the discharge ratings were statistically significant.

Table 6.3. Correlations between the CGI scale and other psychiatric rating scales given on admission.

Scale Rater	N		r		P	
	Nurse	Doctor	Nurse	Doctor	Nurse	Doctor
SS-A	55		-.15		.26	
NIPI	153	<i>16</i>	.58	<i>.44</i>	.00**	<i>.09</i>
SCS	134	<i>12</i>	.07	<i>-.46</i>	.39	<i>.13</i>
MMSE	12	<i>56</i>	-.34	<i>-.36</i>	.28	<i>.01**</i>
BPRS	46	<i>147</i>	.59	<i>.51</i>	.00**	<i>.00**</i>
AIMS	15	<i>95</i>	.14	<i>.22</i>	.62	<i>.03*</i>
EPSE	14	<i>89</i>	.42	<i>.32</i>	.13	<i>.00**</i>
NOSIE problem	121	<i>11</i>	.65	<i>.24</i>	.00**	<i>.48</i>
NOSIE total	127	<i>11</i>	-.30	<i>-.58</i>	.00**	<i>.06</i>
Axis IV		<i>88</i>		<i>.14</i>		<i>.21</i>
GAF current		<i>82</i>		<i>-.56</i>		<i>.00**</i>
GAF past		<i>80</i>		<i>.11</i>		<i>.33</i>

* $P \leq 0.05$ ** $P \leq 0.01$

CGI ratings made by nurses are in plain text, while CGI ratings made by doctors are in bolded italics. Where $N < 6$ the correlation coefficient has been omitted.

Correlations between the severity of illness scale (CGI) and other psychiatric rating scales administered on the same day are given in Table 6.3 above. The admission

ratings by nurses and doctors were found to be significantly related to a number of psychiatric rating scales. Severity of illness ratings by nurses were found to be significantly related to the NIPI, the BPRS, the NOSIE problem and the NOSIE total. Of these only the BPRS is administered by doctors. Severity of illness ratings by doctors were found to be significantly related to the MMSE, the BPRS, the AIMS, the EPSE, and the GAF current. All of these scales are administered by doctors. The correlations between same profession ratings appear to be higher than correlations between different profession ratings.

Nurses Observation Scale for Inpatient Evaluation (NOSIE)

NOSIE problem scores were obtained for 325 people. On a scale of 1-4, from minimal to severe disability, 34% scored 1, 37% scored 2, 26% scored 3 and the remaining 3% scored 4. Correctly completed NOSIE total scores were obtained for 238 people. Scores ranged between 86 and 198. The mean score was 150, (SD = 28.4) and the mode 154. The lower return rate for this measure appeared to be due to complexity and a lack of clarity in the scoring procedure compared to the other measures.

Need for Inpatient care Index (NIPI) scores were obtained for 400 people. The mean score was 5.38 (SD = 3.44). The minimum possible score was zero and the maximum was 16.

Table 6.4. Results of comparison of NIPI scores with five external criteria.

	Analysis	N	NIPI	p
Reasonfor acceptance	Chi-square	366	17.29*	0.03
Diagnosis	Chi-square	342	10.68	0.22
Amount of service use	ANOVA	406	5.91**	0.00
Age	ANOVA	406	1.19	0.30
Comorbidity	Chi-square	92	4.75	0.31

* P<0.05 ** P<0.01

As with the BPRS scores, any score above zero indicated a need for inpatient care and likely psychiatric morbidity. The results of the comparison of NIPI total scores with

reason for acceptance to service, provisional diagnosis, amount of service use, age, and comorbidity are shown in Table 6.4.

It was expected that particular reasons for acceptance to service would be associated with a higher need for inpatient care than other reasons for acceptance to service. This expectation was supported by the Chi-square analysis which showed a significant difference between reason for acceptance to service categories.

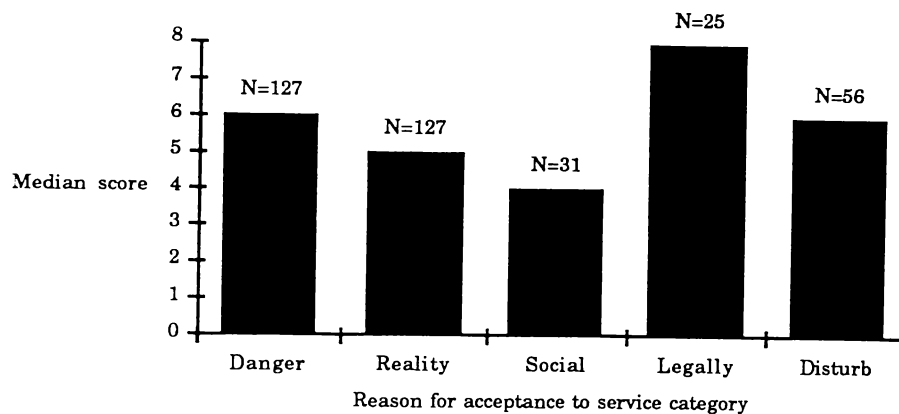


Figure 15. Median NIPI ratings for each reason for acceptance to service category.

Figure 15 presents the median NIPI score for each reason for acceptance to service category. It can be seen that those with legally mandated admissions obtained the highest median scores on the NIPI, while those with impaired social familial and occupational functioning obtained the lowest. No such differences were evident between the provisional diagnosis categories. Individuals who scored 0 to 3 on the NIPI were found to have a significantly lower amounts of service use than individuals who scored 7 to 16 on Tukey's test ($p < 0.05$). Table 6.5 shows the mean amount of service use for the three levels of NIPI score.

Table 6.5. The mean amount of service use for 3 levels of NIPI scores.

NIPI scores	N	Means	sd
Low (0 to 3)	140	24.31	26.62
Medium (4 to 6)	116	31.09	26.03
High (7 to 16)	150	36.53	36.02

NIPi scores were not found to be associated with age. The co-existence of substance abuse problems in addition to psychiatric illness did not result in a perceived need for a higher level of inpatient care as measured by the NIPi.

Table 6.6. Correlation of NIPi with other psychiatric rating scales.

	N	r	p
SS-A	143	.06	0.45
SCS	327	-.07	0.18
MMSE	42	-.02	0.90
BPRS	76	.49**	0.00
AIMS	23	-.03	0.91
EPSE	22	.10	0.67
NOSIE p	117	.08	0.36
NOSIE t	331	-.49**	0.00
NCGI	142	-.11	0.20
DCGI	98	-.03	0.80
Axis IV	103	.14	0.14
GAF curr	96	.04	0.72
GAF past	96	-.12	0.25

** p=0.0001

Table 6.6 shows the correlations between the NIPi and other psychiatric rating scales used in the study. The BPRS and the NOSIE total correlated significantly with the NIPi total. As the NIPi aims to measure an individual's need for professional care we would expect it to correlate highly with measures of severity of illness (assuming that individuals perceived as being sicker require more intensive care than other patients).

From the results reported on p 140 to 146, on the severity of symptoms measures, it is apparent that the sample studied consisted mainly of people with significant psychopathology.

6.3.1: Intercorrelations between behaviour rating scale scores

Table 6.7 gives the intercorrelations between the behaviour rating scales used to measure severity of symptoms, past level of functioning, cognitive impairment and need for intensive inpatient care.

Table 6.7. Inter-correlated behaviour rating scores : Highest coefficients for each scale.*

BPRS	DCGI .550	GAFcurr -.350	NIPi .288	NCGI .253	NOSIEp .237
NCGI	NOSIEp .644	NIPi .589	DCGI .378	BPRS .253	Mini -.172
DCGI	BPRS .550	GAFcurr -.409	NCGI .378	NIPi .333	NOSIEp .319
NOSIEp	NCGI .644	NIPi .599	DCGI .319	BPRS .237	GAFcurr -.218
NIPi	NOSIEp .599	NCGI .589	DCGI .333	BPRS .288	NOSIEt .210
Mini	DCGI -.0255	BPRS -.229	NOSIEp -.204	NIPi -.181	NCGI -.172
GAFcurr	DCGI -.409	BPRS -.350	NOSIEp -.218	NCGI -.163	NOSIEt -.160
GAFpast	BPRS -.168	NOSIEt -.157	GAFcurr .146	DCGI -.134	NIPi -.122
NOSIEt	BPRS .211	NIPi .210	DCGI .195	NOSIEp .177	GAFcurr -.160

*p<.01

Relationships between scale scores can be read off from Table 6.7. For example, having a high score on the Global Assessment of Functioning - current, correlated most highly with low scores on the Doctors CGI (DCGI), the BPRS and the NOSIE problem. There was also a negative correlation with the Nurses CGI (NCGI) but this was not as strong. These unsurprising results provide some support for the validity of the scales as measures of severity of symptoms and for their reliability. High Brief Psychiatric Rating Scale scores correlated most highly with Doctors CGI scores, GAF current, NIPi score, Nurses CGI scores and NOSIE problem scores.

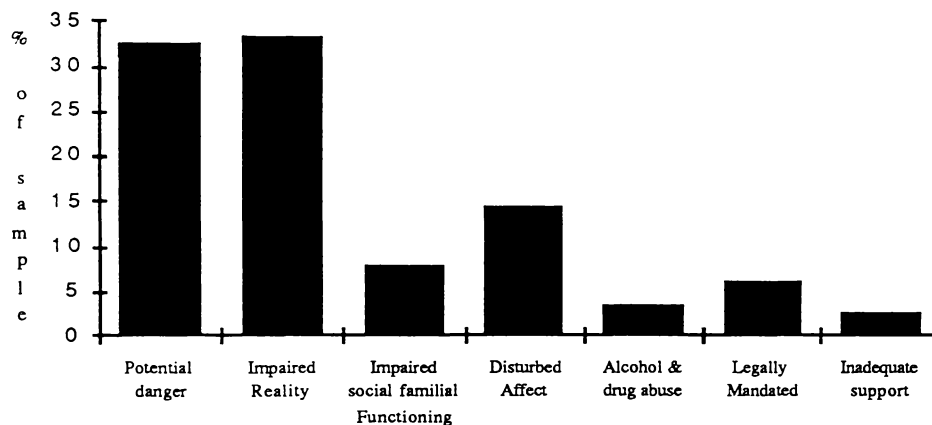
6.4: Frequency distributions for systems variables

Referring agent

Almost 60% of the cohort were referred by other Hospital Board services. Just over 12% were referred by general practitioners, 22% by voluntary and statutory agencies and 6.5% were referred by relatives, friends or self.

Reason for acceptance to service

Details on reason for acceptance to service categories are given in Figure 16. The most commonly given reasons for acceptance to service were impaired reality testing and potential danger to self or others. Both these categories are clear indicators for a need for a high level of supervision and care.



Reason for acceptance categories as ordered in Form W1 Appendix II

Figure 16. Distribution for reason for acceptance to service for 538 acute patients.

Provisional diagnosis categories

Figure 17 demonstrates that most of those referred (74.5%) were diagnosed as having a major psychotic disorder.

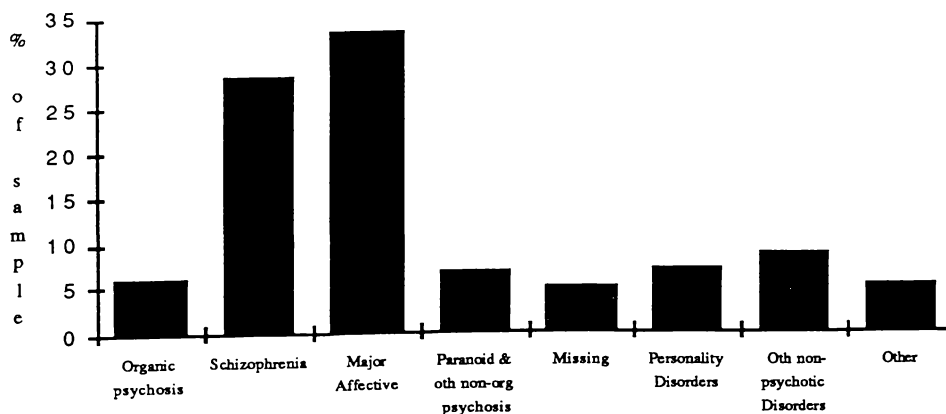


Figure * Prov. Diagnosis c

Provisional diagnosis categories as ordered in Form W1 Appendix II

Figure 17. Distribution for provisional diagnosis categories for 538 acute patients

Thirty-seven percent were classified as having major affective disorder, 32% as schizophrenic and 5.5% as other non-organic psychosis. Seven percent was diagnosed as having an organic psychosis and 17% as having either a personality or other non-psychotic disorder.

Previous use of service

Nearly 70% of the people admitted during the 12 month period had used the service before and about 30% were first admissions confirming what is reported (Hoult, 1986) that past service use predicts future service use. (N=487 since 51 people were missing information on this variable).

Time of admission

Frequency count information on time of admission, service, consultant and other predictor variables are recorded in detail in Appendix IV, p. 188 & 189. About 58% were admitted after hours (ie between 5pm and 8am) and 42% were admitted during office hours (N=476 as 62 people were recorded as missing this information). The high proportion of after hours admissions confirms the need for more extensive 24 hour assessment services in the community.

Abnormal Involuntary Movements Scale (AIMS) score

From the total of 538 in the sample, AIMS scores were obtained for only 222 people (41%). Sixty-nine of these scored more than zero indicating the presence of symptoms of tardive dyskinesia. The minimum possible score was 0 and the maximum 23. However, the mean score recorded was low (1.79, SD = 4.06). More detailed analysis of the individual symptom scores is needed to confirm or disconfirm the validity of these results.

Scale score for akathisia, akinesia and other extra-pyramidal side effects

Two hundred and twenty three people had these scales completed for them by the doctor as part of clinical assessment. The minimum possible score was 0 and the maximum was 38. A mean score of 6.46 (SD=8.39) was obtained. Scores of two or less were recorded for 120 people for whom valid scores were obtained and it is unclear whether they had

clinically significant signs and symptoms of side effects. The remaining 103 who scored between 6 and 38 clearly require further assessment.

Table 6.8. Correlations between the EPSE scale and other scales in the acute study.

Scale	N	Correlation with with EPSE scale	P
SS-A	6	.47	n/s
NIPi	22	.09	n/s
SCS	17	-.23	n/s
MINI	18	.15	n/s
BPRS	174	.20*	0.01
AIMS	186	.41**	0.001
NOSIEprob	58	-.19	n/s
NOSIEtotal	20	-.13	n/s
NCGI	70	-.14	n/s
DCGI	51	.21	n/s
Axis 4	60	-.14	n/s
GAF cur	55	.06	n/s
GAF past	52	.17	n/s

**p=0.001. *p<0.01

It is important to note that the scale is a screening device only and does not provide a comprehensive neurological assessment. The correlations shown in Table 6.8 were obtained between the scores on the EPSE and other scales used in the study.

6.5: Results of correlation analyses

The correlation analyses were performed prior to carrying out a multiple regression analysis, to provide an independent measure of the strength of the relationships between the predictor and criterion variables. The results are given in Table 6.9 and Table 6.10. Detailed information is recorded in Appendix IV, p. 241 - 245.

Socio demographic variables

Only age had a correlation with amount of service use that was statistically significant. A comparison of the age of each patient with the number of days that each person spent at the institution showed that there was a very slight tendency for amount of service use to decrease as the age of patients increases. ($r = -.10$, $p < .02$).

Systems variables

Of the systems variables only six appeared to be correlated with amount of service use to an extent that was statistically significant. These were status, whether the person had used the intensive care unit (Villa 2) or not, the number of psychotropic drugs prescribed, the prescription of all types of antipsychotic drug, the prescription of reserpine and the presence of akathisia, akinesia and other extra-pyramidal side effects of medication. These relationships are shown in Table 6.9. Appendix IV gives detailed results of the correlation analyses including the transformed means for amount of service use between the comparison groups, and the non-significant correlations.

Table 6.9: Relationships between systems variables & ASU

Variable	Number	Test
Service	538	$t = 4.55^{***}$
Amount of medication	535	$F = 123.80^{***}$
Type of medication:		
anti-psychotics	417	$t = 5.14^{***}$
anti-depressants	140	$t = 4.31^{***}$
anti-manics	134	$t = 6.57^{***}$
anti-anxiety	120	$t = 3.26^{**}$
hypnotics	235	$t = 2.81^{**}$
anti-parkinsonians	287	$t = 6.48^{***}$
anti-convulsants	119	$t = 3.57^{**}$
Reserpine	37	$t = 7.96^{***}$
Other side effects	144	$r_s = .22^{**}$
Provisional diagnosis	483	$F = 3.40^{**}$
Status	538	$F = 4.34^*$

* $p < .05$, two-tailed. ** $p < .01$, two-tailed *** $p < .001$

Status

Those people who were classified as special and remand used the service more than the rest of the cohort. Differences in amount of service use between voluntary and ordinary committed patients were not significant.

Villa 2 (Intensive Care)

Patients who had been in intensive care (Villa 2) used the acute service more than those who had not. Two hundred and twenty five people (42%) of the total sample had a stay in Villa two demonstrating a need for intensive care at some time during the study period.

Number of different psychotropic drugs

There was a linear relationship between the number of different drugs prescribed and the number of days spent in hospital. In general, a short length of stay was associated with the prescription of a small number of drugs, while a long length of stay was associated with the prescription of a larger number of drugs. No causal relationship is implied and the treatment variables such as the number of different drugs prescribed can be seen as an effect, as well as a predictor of service use. It is the strength of the relationship that is important, not the direction. The fact that this variable is more closely correlated with amount of service use than any other variable has practical relevance both for service management and development and for assessing efficacy of treatments. The variable was considered to be a legitimate indicator for amount of service use and it was included with the variables used to develop a model for the first regression equations.

Type of drug

All of the psychotropic drug categories individually correlated with amount of service use. Patients on each of the different types of medication (anti-psychotic, anti-depressants, anti-manic, anti-anxiety, hypnotics, anti-parkinsonians, anti-convulsants, and reserpine) had higher amounts of service use than patients not on that particular type of medication. Treatment other than drug therapy was not recorded in a systematic way on the few occasions when it was mentioned at all. As stated above, the drug treatment information was very difficult and time consuming to retrieve. While

number of different drugs and type of drugs are reported for the whole sample of 538 information on actual dosage received is only reported for a random sample subset of the sample and for the group who had been prescribed seven or more psychotropic drugs. These results are given in Table 6.18, Figure 16 and Figure 17.

Side Effects

Side effects (measured by the Scale for akathisia, akinesia and parkinsonian side effects) correlated significantly with amount of service use ($r_s = .22$, $p < .01$).

Reserpine

The number of people prescribed reserpine was small ($N = 37$) and they were likely to be in the high service user group ($t = 7.96$, $p < .001$).

Provisional Diagnosis category

Those with a provisional diagnosis category of other non psychotic used the service less than those classified as having a major affective disorder. However, overall, the differences between groups of the variable provisional diagnosis category were not significantly related to amount of service use.

Previous admission and use of other services

The variables previous admission and use of other services showed no significant relationship to the criterion variable, amount of service use. Details are in Appendix IV. Published research suggests that previous service use predicts further service use, (Hoult, 1988) and these variables may well predict the probability of being admitted without necessarily predicting the amount of time spent in hospital during a finite period, (in this case 12 months).

Behavioural Variables

There was more missing data on the behavioural variables and the results are considered less representative of the cohort than the other variables for this reason. Except for co-morbidity, the behavioural variables are continuous, not category variables, unlike most of the socio-demographic and systems variables.

Premorbid level of functioning

A relationship was found between the Global Assessment of Functioning (past) and amount of service use but the correlation is low ($r_s = -.13$, $p < .02$). This showed that a low premorbid level of functioning correlated with more service use. This finding is consistent with previous research (Hoult 1986).

Table 6.10: Correlation of behavioural variables & ASU

Variable	Number	Spearman's r_s
BPRS score	323	.32**
Nurse's CGI score	394	.29**
Doctor's CGI score	319	.28**
NOSIE problem score	325	.26**
NIPI score	400	.23**
MMSE	185	-.21**
GAF (current) score	316	-.14*
GAF (past) score	308	-.13*

* $p < .05$, two-tailed. ** $p < .01$, two-tailed

Severity of symptoms

The measures used to assess severity of symptoms (that is, the NOSIE problem, BPRS, NIPI, doctor's and nurse's CGI, and GAF current) all resulted in statistically significant correlation coefficients. This may mean that those with more severe symptoms used the service more, but the correlations are very small. The Brief Psychiatric Rating Scale (BPRS) showed the strongest relationship ($r_s = .31$), nurse's CGI ($r_s = .29$), then doctor's CGI ($r_s = .28$), followed by the NOSIE problem ($r_s = .26$), the NIPI ($r_s = .23$), and finally the GAF current ($r_s = -.14$). There was no significant relationship between the NOSIE total score and the criterion ($r_s = .08$, $p = .15$, $N = 369$).

Cognitive impairment

MMSE scores obtained for various diagnostic groups overseas are similar to the scores obtained in this study. Scores on the Mini Mental State Examination were negatively

correlated with amount of service use scores ($r_s = -.21$, $p < .00$) indicating that more cognitive impairment would result in more acute psychiatric service use. Again, the correlation is low.

Comorbidity

No significant differences were shown between those with poly-substance problems, those with alcohol problems and those with marijuana problems or between those who had a co-morbidity problem ($n = 127$) and those who did not (Appendix IV).

6.6: Regression analyses

Systems Variables

Table 6.11 presents results of the regression equation drawn from the pool of systems variables. The model accounted for 41% of the variance in amount of service use ($\text{adj } R^2 = .41$, $p = .0001$).

Table 6.11: Stepwise regression results for systems variables

Variable	Partial R^2	F value	p	Beta
No. of psychotropic drugs	.32	90.84	.0001	.46
Other status	.03	8.50	.0040	.18
Use of other services	.02	7.50	.0068	.18
Use of reserpine	.02	6.74	.0101	.16
Stay in villa 2	.02	4.97	.0270	.14
Receive other treatments	.01	4.65	.0323	.09
Consultant A.	.01	2.73	.1003	.10
Presence of side effects	.01	2.58	.1102	.10
Model $R^2 = .44$ $\text{adj } R^2 = .41$				

Receiving a high number of different psychotropic medications was the strongest predictor for high service use in this model, and having 'other' or 'special' status was the next strongest predictor variable. A stay in the intensive care unit (Villa 2) and use of reserpine or other services accounted for a small but significant amount of the

variance accounted for by the model. Receiving other treatments, having consultant A and the presence of side effects of medication did not have beta weights significant at the $p < .05$ level and did not add much to the model.

Socio-demographic Variables

When applied to the socio-demographic variables, the stepwise regression procedure produced a model containing 12 socio-demographic variables which accounted for 30% of the variance in amount of service use ($\text{adj}R^2 = .30$, $p = .00$). The 12 variables are listed in Table 6.12 along with the details as to the amount of individual variance they contribute to the prediction. The results in Table 6.12 suggest that two socio-demographic variables which indicated where a patient was discharged to had the greatest influence on amount of service use.

Table 6.12: Stepwise regression on socio-demographic variables

Variable	Partial R^2	F value	p	Beta
Disch. into sup accomm.	.08	13.5398	.0018	.23
Disch. into hospital	.06	10.2285	.0001	-.28
Psychosocial stressors	.05	8.6835	.0073	.19
Managerial occup. code	.03	5.1988	.0151	-.17
Liv.in locality O	.03	5.6597	.0049	.21
Liv. own home on adm.	.03	5.0376	.0296	-.16
Living in locality M	.02	3.1436	.0118	-.18
Being widowed	.02	3.2724	.0984	-.12
Pref. not answer religion	.02	3.2574	.1109	.11
Living in locality P	.01	2.6762	.0414	-.15
Living in locality MA	.01	2.9129	.073	-.13
Sex	.01	2.1494	.14	-.11
Model $R^2 = .36$		$\text{adj} R^2 = .30$		

More specifically, service use was greater for patients discharged into supervised accommodation and was less if patients were discharged to another area of the hospital.

Having greater severity of psychosocial stressors predicted increased service use. Living in particular localities tended to predict amount of service use, as did having managerial occupation status. All of these twelve variables went into the pool to determine the final model. However it can be seen that the contribution made to variance in amount of service use by the variables sex, living in locality MA, being widowed and preferring not to answer questions about religion were not significant.

Behavioural variables

Four behavioural variables remained in the model formed from all of the behavioural variables (refer Table 6.13). The equation accounted for 23% of the variance in the dependent variable ($\text{AdjR}^2 = .23$, $p = .0001$).

Table 6.13: Results of stepwise regression on behavioural variables*

Variable	Partial R^2	F value	p	Beta
Severity of symptoms [CGI, (Doctor)]	.16	34.57	.0001	.19
Severity of symptoms [CGI, (Nurse)]	.04	8.66	.0037	.20
Past GAF score	.03	6.33	.0128	.14
Severity of symptoms [BPRS score]	.02	4.23	.0413	.17
Model $R^2 = .25$		adj $R^2 = .23$		

* For abbreviations see list on page xi.

Constructing the final model

The four behavioural variables in the behavioural equation, the 12 socio-demographic variables in the socio-demographic equation and the 8 variables from the systems regression equation were pooled. The regression procedure selected 11 variables from these 24, yielding an equation which accounted for 50% of the variance ($\text{AdjR}^2 = .50$, $p = 0.0001$). Details are given in Table 6.14.

Table 6.14: Final stepwise regression equation

Variable	Partial R ²	F value	p	Beta
No. of psychotr drugs	.35	109.8188	.0001	.37
Illness score (CGI D4)	.06	19.1854	.0001	.12
Disch to another ward	.04	15.5998	.0001	-.23
Illness score (CGI N5)	.02	7.2264	.0078	.14
Past GAF	.02	6.1062	.0143	-.09
Manager occup. code	.01	3.8307	.0517	-.10
Pres. of side effects	.01	3.5259	.0619	.10
Disch. to sup accom.	.01	3.7922	.0529	.09
Living in locality M	.01	2.6390	.1059	-.09
On reserpine	.01	2.3525	.1267	.09
BPRS score (D2)	.01	2.1809	.1414	.09
Model R ² = .56 adj R ² = .50				

It can be seen from Table 6.14 that number of psychotropic drugs prescribed accounted for most of the variance in this equation. The contributions made by Clinical Global Impression scores, by past level of functioning score and by being discharged to another area in the Hospital, were also significant. The last six variables listed in Table 6.14 were not significant at $p > .05$ and together accounted for less than 6% of the variance in ASU.

To discover the unique contribution of other variables in the model in Table 6.14 above, the variable 'number of psychotropic drugs prescribed' was forced out of the final regression. The best model of $R^2 = .41$ (adjusted, *without* drugs), compared with a best model of $R^2 = .50$ (adjusted *with* drugs). There were the same number of variables in both of these models. The two variables 'living in locality M' and 'BPRS score' were forced out, and the variables 'stay in intensive care (V2)', 'use of other services', and 'having consultant A' entered this model.

Table 6.15: Final stepwise regression equation without variable 'number of psychotropic drugs prescribed'

Variable	Partial R ²	F value	p	Beta
Illness score (CGI D4)	.14	34.93	.00	.07
Disch to another ward	.09	22.56	.00	-.24
Illness score (CGI N5)	.06	17.04	.00	.06
Pres. of side effects	.04	11.90	.00	.01
Past GAF	.03	9.35	.00	-.00
On reserpine	.02	7.51	.00	.24
Disch. to sup accom.	.02	5.89	.02	.15
Manager occup. code	.01	3.70	.06	-.25
Intensive care (Villa 2)	.01	3.35	.07	.10
Consultant A	.01	3.64	.06	.12
Other services	.01	3.50	.06	.09
Model R ² = .45 adj R ² = .41				

Unadjusted percentages are as follows: Twenty three percent of the variance was accounted for by behavioural variables in this model, one percent from a socio-demographic variable (managerial occupation code) and 20% of the variance was from systems variables, indicating that even when the variable no of psychotropic drugs prescribed was excluded, systems variables still accounted for a high proportion of the variance in ASU.

6.7: Preliminary results of medication sampling study

Further analysis on the medication information was needed, to estimate *amount* of medication prescribed (average daily dose). A sampling study (called the medication sampling study) was carried out, to determine the relationship between amount of drug prescribed and amount of service use. A random sample of 100 was drawn from the 538 acute service users in the study. Average daily doses of drug prescribed on chosen days were calculated for the random sample and also for the people who were prescribed the

highest number of different psychotropic drugs during 1988. The relationship between number of different types of drugs prescribed and the mean total daily dose of drug prescribed was investigated by comparing these groups and their relative amount of service use. Some information about the psychotropic medications prescribed for the different diagnostic groups, during their stay in hospital, is presented. The random sample chosen from the cohort had the provisional diagnosis category distribution given in Table 6.16.

TABLE 6.16: Provisional Diagnosis Category of sample (n=81)

Provisional Diagnosis	N	%
Schizophrenia	24	29.6
Major affective disorder	37	45.7
Other disorders	18	22.2
Missing information	2	2.5

This is not significantly different from the distribution in the cohort as a whole (Figure 17, p.148) and indicates that the random sample was representative of the whole sample of 538 people.

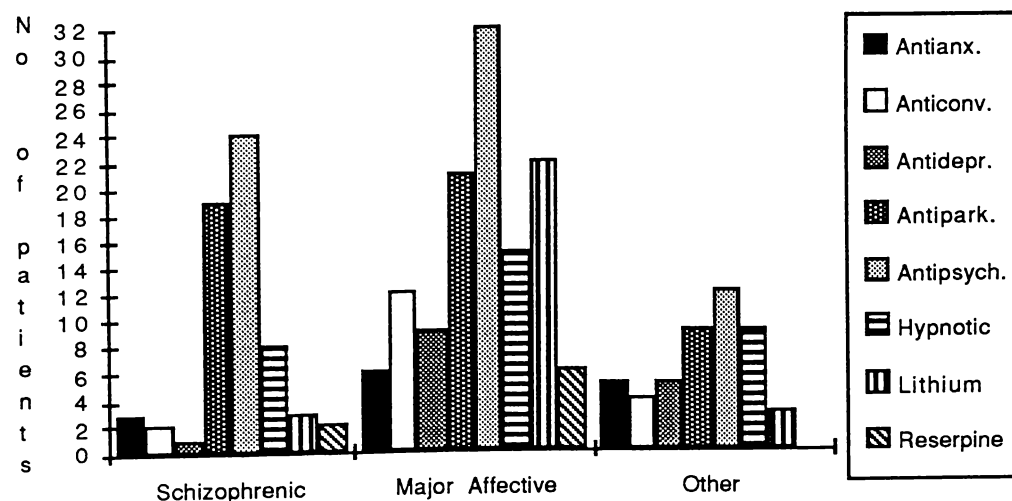


Figure 18. Drug types for random sample of 81 acute patients by diagnostic group.

The drug types prescribed for the people in the random sample (n=81) are given in Figure 18. Two people in the sample of 81 had missing information. Only 14% were not

prescribed antipsychotic medication, so the results which indicate amount of antipsychotic medication can be reasonably applied to the whole sample. The mean total daily dose of antipsychotic drug given to the random sample chosen from the total sample of 538, was compared with that given to the group who received seven or more different psychotropic drugs, during the twelve month study period. This was to determine whether number of different psychotropic drugs prescribed correlated with amount of medication received.

TABLE 6.17: Mean total daily dose of antipsychotic drug given

Group	N	x chl equiv	Range	SD
7 + drugs	89	752	415 - 927	175
Random sample	81	465	278 - 526	72

It can be seen in Table 6.17 that those receiving seven or more different psychotropics had a higher mean daily dose of antipsychotic drug, than the group which is representative of the whole acute sample. However, further analysis is required to determine the significance of this relationship, as the samples used were not independent of each other.

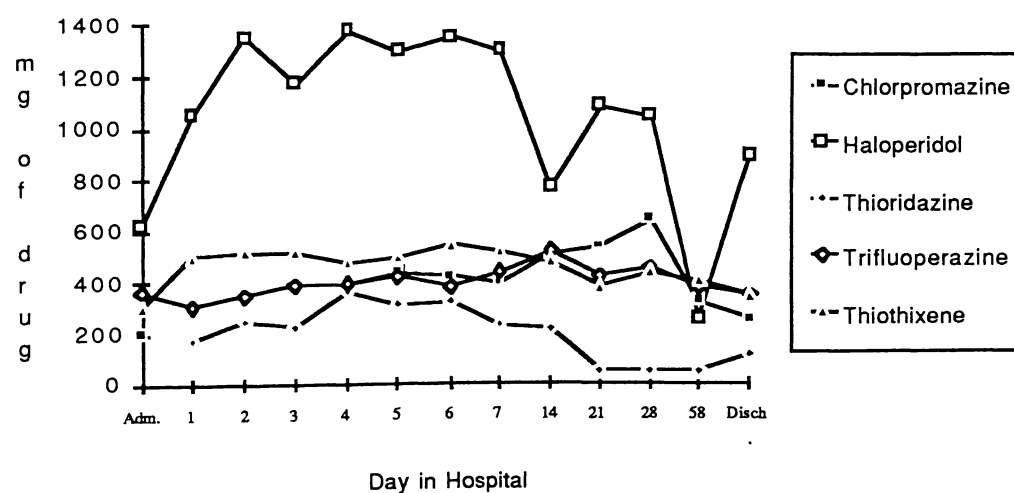


Figure 19. Mean daily dose of different antipsychotics in Chlorpromazine equivalents.

No account was taken of amount of other psychotropics, such as anti depressants, in this comparison. Haloperidol range was 1300 -1800 chlorpromazine equivalents for the 7+ drug group. This was high relative to guidelines given in the literature at the time and relative to levels for other antipsychotic medications (Baldessarini et al., 1984; Davis, 1976; Kane, 1989). Figure 19 illustrates the levels in chlorpromazine equivalents for 5 antipsychotics prescribed for this group.

6.8: Summary of results

In this chapter, results of research to determine predictors for amount of service use in acute psychiatric settings have been presented. The major predictors were identified by means of a series of stepwise regression analyses which first identified the strongest predictors within each of the three categories of variable; socio-demographic, behavioural and systems variables. The strongest predictors selected by these analyses were entered into another stepwise regression analysis to determine the best model for explaining variance in amount of service use. The model which resulted explained 50% of the variance in amount of service use. Treatment as represented by number of different psychotropic drugs prescribed accounted for the majority of this variance.

Because of difficulties associated with retrieving data on medication, information on the variable 'amount of medication' was not available to be used in the regression analyses. A medication sampling study was carried out to provide information on this variable (as represented by mean daily dose of antipsychotic medication) and its relation to amount of service use and number of different psychotropic drugs prescribed. The major findings from the sampling study are reported here. The correlational analyses provided additional information to confirm the major findings - that systems variables, in particular treatment variables, were the strongest correlates of amount of service use. Information on intercorrelations between predictor variables gives a fuller and clearer picture of the group of people studied and the complexity and difficulties associated with providing treatment and care for them. The results of the

intercorrelations between predictors are detailed in Appendix IV along with detailed reports of the nonsignificant findings.

The results reported in this chapter provide strong support for the thesis that, once people were admitted to the acute inpatient psychiatric service studied, systems variables over which they had little control tended to determine amount of service use, rather than socio-demographic factors or behavioural characteristics of the individuals. The model derived from regression of systems variables alone predicted 41% of the variance in amount of service use, compared with 30% by the socio-demographic and 23% by the behavioural models. When all the variables were considered together, treatment variables were still the strongest predictors of amount of service use (ASU). As stated above, even when the variable 'no of different psychotropic drugs' was forced out of the final regression analysis, systems variables predicted a high proportion of the variance in ASU (Table 6.15, p. 159). The Clinical Global Impressions (CGI) measure of emerged as the most useful measure of illness severity in terms of ability to predict ASU (Tables 6.13, 6.14 and 6.15).

A further study to examine the intercorrelations between the significant behavioural variables and significant systems variables, would be useful to help identify how they influence each other. Only their effect on amount of service use has been examined in detail in the current work. Comparative analysis of the socio-demographic variables with the other groups may illuminate how they influence psychological wellbeing, and help to identify relevant measurable social indicators for mental health service use.

Chapter 7

Discussion of results of acute services study

The relationships between the criterion and predictor variables are discussed in some detail in this chapter. The methodology used for the final phase of the work, namely stepwise multiple regression analysis, is generally straightforward in statistical terms. It is by no means ideal, but was chosen as probably the best tool available to address this particular problem at the time the project was conceived in 1986. It is a powerful and very well established, widely used procedure for building models and determining trends in human service systems, economics and other areas. The notion of 'prediction' in a technical sense is widely used in the language of forecasting and it does not imply 'cause'. Needless to say, the procedure has limitations which attach to any multivariate analysis and to linear mathematical modelling theories in general. The writer welcomes the development of the more powerful applied tools which are coming out of Chaos Theory (Gleik 1987). These should facilitate the development of more accurate non-linear models to demonstrate how complex systems work.

The specific research task was to identify predictor variables for amount of acute inpatient psychiatric service use (ASU). The thesis to be investigated was that ASU is influenced more by factors controlled by providers, than by consumer characteristics. If this is the case, then it should follow that systems variables will predict amount of acute psychiatric service use more effectively than behavioural or demographic variables. The results obtained and reported in Chapter 6 confirm this thesis.

A comprehensive range of variables was studied. The systems variables were, by definition, factors which were outside the control of service users. Among these,

treatment variables most strongly predicted amount of service use. Stepwise regressions provided a final model which accounted for 50% of the variance in amount of service use. The strongest predictor for high service use was the number of different psychotropic drugs prescribed.

From the final model obtained from the stepwise regression procedure, it was possible to form a picture of high and low service users. The people who used acute inpatient care most were likely to have been given a high number of different psychotropic drugs over a 12-month period. They were likely to have side effects from the drugs and require discharge to supervised accommodation. They scored highly on the Clinical Global Impressions scale for severity of symptoms, suggesting that a more severely disturbed group had been identified and was being given more treatment. What was unexpected was the fact that more care (amount of service use) and treatment (in this case number of different psychotropic drugs) did not appear to result in a decrease in the continuing need for this type of care. The preliminary findings from the medication sampling study suggest a tendency for prescription of more different psychotropic drugs to correlate with a greater mean daily dose of anti-psychotic drug, but more detailed analysis is required to establish the extent and significance of this relationship.

From the final regression analysis (Table 6.16) it can be seen that discharge to another hospital, or in most cases to another ward in the same hospital, was a variable which predicted low service use. This may indicate that a proportion of the sample were in the acute service either for assessment only, or for management in intensive care (Villa 2) when behaviour was unacceptable in other settings. Of those admitted to acute inpatient care, the people who used the service least were most likely prescribed three psychotropic drugs or less, over a 12 month period. The reason they were accepted into the service was most likely to have been 'impaired social and familial functioning', rather than more urgent criteria such as 'danger to self or

others' or impaired reality testing, disordered behaviour, affect and thinking (Appendix II). They were likely to have an occupation code of managerial assigned to them. They are therefore in the highest socio-economic group for this sample, none of whom were given an occupation code of professional. The low service users were most likely to have higher premorbid levels of functioning than the rest of the sample.

As indicated on page 55, Friedman and West (1987) found in a study of relative length of stay in outpatient care, that use of psychiatric outpatient services may in fact reflect treatment history (previous psychiatric service use) rather than current clinical need. However, a limitation in their study was that the difference between 'psychiatric disability rating' and 'severity of symptoms' was not made clear. Why one should correlate with service use, but not the other remains mysterious. If standard measures for assessing 'severity of symptoms' or 'psychiatric disability' were used, the concepts would be less vague and more useful as indicators of treatment outcome. There are mental health status measures based on present state, which are not linked to diagnostic classificatory systems, such as the Rosser Index (Rosser & Watts, 1972). This index may be a more robust and useful general measure for mental health status than the measures used in this study, which relate more to diagnosis and aetiology. The Rosser Index does not consider prognosis, or diagnosis, but defines and measures two main components of illness severity; observed disability and subjective distress (Rosser & Kind, 1978). In the current study, previous service use did not predict amount of service use, once a person was in the acute setting, but it was clearly a risk factor for being admitted in the first place, as two thirds of the cohort studied had used the service before.

7.1: Need for followup care and outcome assessment procedures

More rigorous and standardised followup procedures than were in place at the time of this study need to be implemented, underpinned by better information systems, so

that health status before and after discharge can be evaluated in a way that is consistent and reliable across raters and treatment settings (Ashley-Miller, 1990). Clearly, discharge status and followup information is essential, if the effectiveness of treatment received is to be adequately monitored and assessed, and decisions made about the relative cost effectiveness of alternative methods of care. Service use information must be linked to reliable information from discharge status measures and followup status measures to establish the relationship between amount of service use and clinical outcome. The severity of symptoms data obtained using the Clinical Global Impressions (CGI) scale showed a change in illness rating between admission and discharge from more to less severe (Figure 14, p. 142). However, the parts of the CGI which were designed to record improvement ratings and treatment efficacy were completed for so few people that the data were not analysed (p. 220 and p. 230). Attempts to obtain follow up information were unsuccessful and this has serious implications, both for service accountability and for clinical responsibility.

A system of outcome indicators for mental health care is urgently needed (Jenkins, 1990). In the absence of such indicators, and in the light of the results obtained in the current research, the possibility that no treatment at all may have produced results that were as good as the treatment that was received in this setting, at this time, cannot be ignored. In cases where drug side effects are distressing and sometimes result in permanent disability, it can be argued that treatment which is inadequately monitored may contribute to the person's problems rather than diminish them (Barnes, 1989). According to Zito, Craig, Wanderling, & Siegal, (1987)

"One of biological psychiatry's greatest challenges today is the need to discriminate drug induced behavioural toxicity from illness behaviours" (p. 782).

The results of the acute inpatient study reported here suggest that treatment, in the form of number and amount of psychotropic drugs prescribed, did not reduce amount of acute inpatient service use. However, a relationship between 'treatment seeking

behaviour' and 'treatment received' was not established and it is unclear why people continue to present for treatment in inpatient settings. The current work does not indicate that the patient is given a choice. In the current study, 47% of the sample were non voluntary admissions and there was no evidence that alternative care was available, or offered, to the remaining 53%. Rosen, Miller and Parker (1989) raise the issue of consumer choice in relation to setting guidelines and standards for mental health care. Other research shows that being perceived by the referring agent as a potential danger to self or others is the major reason for referral to inpatient, rather than day patient, or outpatient care (Creed, Anthony, Godbert & Huxley (1989). This supports the view that provider anxiety and community embarrassment are important factors influencing patient placement in care.

Andrews et al. (1989) note that "Psychiatrists generally agreed that hospitalisation should be brief when improvements in symptomatology are evident" p. 363. It is also important that when improvements in symptomatology are *not* evident, restrictive placements and interventions should be time limited, and alternative care strategies sought. Examples of the effectiveness of community care and the dangers associated with a prolonged stay in residential psychiatric settings are enumerated by Hoult (1986) and others (Goffman, 1961) as indicated in Chapter 1. Interference with social and work opportunities are just two of the negative consequences of prolonging psychiatric hospital stay (Diamond, 1987; Sederer, 1992; Wykes, T. 1986).

7.2: Restatement of the findings

No causal inferences can be drawn from the results of this study, but it can be stated with confidence that a measure of the number of different drugs prescribed provides a better indicator for amount of service use, than measures for any of the other variables studied. This is a substantive and important finding, even taking into account the problems relating to measurement outlined in the next paragraph. The relationship between amount of service use and number of of drugs prescribed is both

linear and strong. The relation between measures of severity of disorder and amount of service use is weak in comparison but the CGI scores consistently predicted ASU (Tables, 6.13, 6.14 and 6.15, p. 157 - 159). The relation between provisional diagnosis category and amount of service use is not significant. In fact, there is no comparable strong relation between amount of service use and a measure for any of the other variables analysed in the study.

It is true to say that this may reveal as much about the absence of sensitive and accurate measures for behavioural and social indicators, as about the strength of treatment variables as indicators for service use. The need for accurate and standard measures for mental health status is again highlighted. While the scores obtained on the CGI (and to a lesser extent, the BPRS) were significantly related to amount of service use (ASU), they cannot quantify as accurately as the simple counting procedures which are applicable to cardinal data, such as number of different medications, and number of weeks of service use. In practice, the degree of difficulty associated with retrieving, recording and measuring the drug treatment information more than cancelled out any potential advantage over measures of behaviour.

Note that while it has been established that the most reliable indicator for amount of acute psychiatric service use is number of different psychotropic drugs prescribed, the significance of the relationship between number of different psychotropic drugs prescribed and *amount* of medication, as indicated by average daily dose, has not been established. The medication sampling study begins to address this question and further analysis will cast more light on this relationship. In a study of pharmacotherapy in 136 schizophrenic patients newly admitted to hospital, Zito and her group found no statistical association between amount of service use and mean daily dose of antipsychotic medication.

The current study suggests that, for the group studied, inpatient care and treatment did not reduce the continuing need for such care. However, group data such as that presented by this work does not give any measure of individual behaviour change. Longitudinal analysis of individual cases and studies using multiple base line single subject designs are needed to support claims for treatment effectiveness, or ineffectiveness, irrespective of the settings in which treatment occurs. More work is also needed to determine the extent to which the setting itself is to be considered part of the treatment. Research has established the fact that the treatment environment is an important mediator in the delivery and effectiveness of therapy. The pioneering work of Moos (1975b) is an attempt to document and describe the salient components of treatment settings. They can be said to constitute important treatments in themselves in some cases (Dowland and McKinlay, 1985; Monahan & Vaux, 1980).

7.3: Amount of service use (ASU) as the criterion variable

As indicated in Chapter 5 (p. 129) standardising measures for 'amount of service use' was difficult, because leave arrangements, and what constituted an 'admission' a 'readmission' or a 'transfer' varied between services, and according to the legal status of the patient. What constitutes one day's stay in hospital had to be operationally defined for the purpose of the study. If a person was occupying a bed at midnight on a particular day, that person was counted as being present in the villa on that day, even if the stay was for less than 24 hours. This was consistent with daily reporting procedures within the hospital.

It is important to emphasise that the criterion variable, amount of service use (ASU), is not an indicator of outcome or clinical improvement. This study has highlighted the fact that there are major difficulties associated with developing reliable treatment outcome measures in mental health, even before questions about relative cost effectiveness can be answered. Diagnostic Related Groups (DRGs) are used in general medicine as a cost control, quality assurance and process and outcome

service evaluation tool, but there are problems associated with the use of DRGs in mental health, as indicated on p.98. Nevertheless, there is an urgent need for reliable outcome measures combined with accurate and standardised recording for amount of service use (Wilkinson & Pelosi, 1987; Zito, et al., 1987).

It was not clear from the results of this research what controls, if any, were operating on decisions to admit and discharge in individual cases. The wide variance in amount of service use suggests a rather chaotic environment, with few controls or criteria for admission and discharge. The variance in ASU suggests a lack of policy in the acute service system with respect to assessment and time limited programmes for symptom control and treatment. Criteria for admission and discharge were not specified, or used, and the effects of bedstate on decisions to admit, transfer and discharge people were idiosyncratic and difficult to determine. A closer look at the patterns of movements in and out of hospital, for first admissions, and for committed versus voluntary patients, is very desirable. However, the wide variance in ASU suggests that clinical management of these individuals tended to be reactive rather than proactive, and very much in the crisis mode. This reflected the *modus operandi* of the mental health service system in general, at all levels at the time, at least in the region of the study.

Calculating and describing the distribution of amount of service use (Figure 11, p. 136) made it possible to identify the low service use groups, and the highest service use groups for further study. The reasons for admission for the 21 people who stayed only one day, are relevant for establishing criteria for admission to this form of care. It is important to consider how these people could have been placed, if staffing arrangements had made it possible to carry out triage before admission, rather than after admission, as was the normal procedure in the setting at the time of this work.

The importance, for resource allocation and use, of determining the factors which distinguished the group who used the service most is also self evident (26 people spent more than 13 weeks in hospital during this year and two of these had stays of 27 and 34 weeks). More detailed study of this high service use group is planned. The results of the present study identify the high service users as those who are prescribed the highest number of different psychotropic drugs. If this is a consequence of a third variable, such as severity of disorder, or resistance to treatment, then it is important to identify what this variable is. While there is some lack of confidence in admission and discharge procedures, variations in these procedures may tend to average out. ASU may be a variable which is systematically imposed, for example by pressure on beds (Figure 9, p. 76). In contrast, the decision to prescribe psychotropic drugs may be more of a random institutional decision. In situations where there is also a lack of confidence in the effectiveness of psychotropic drugs, then it is inconsistent to use ASU to assess the value of treatments, and reliable measures for assessing clinical improvement must be routinely used, to justify continuing treatment.

The findings described in this thesis would be enhanced if information had been obtained which related number of admissions and readmissions, returns from leave, from holiday discharge and absence without leave (AWOL), to amount of service use. The improved medical records system which is in place in the hospital as a result of the MIS, developed as part of this research project, make this possible now (Chapter 3 section 3).

The people in the sample who were present in the service prior to 1 January 1988 and after 31 December 1988 (N=25) were not included in the cohort of 538 because amount of service use would have been underestimated for these people. A 'survival analysis' (SAS, 1985) is a procedure which could estimate the residual amount of service use for this group.

7.4: Treatment as a predictor variable

In this section the most powerful predictor for ASU in the final regression equation, number of different psychotropic drugs, is discussed first. Problems associated with assessing and treating acutely disturbed psychiatric patients are considered. The results of the current research indicate that continuing drug therapy most powerfully predicts ongoing need for treatment. It was difficult to document and consider other forms of treatment as predictor variables for acute service use, because of the way information was recorded, or in this case, not recorded. There was no systematic procedure for recording interventions and treatments other than drug treatments. Staff compliance for filling in the form which was designed to capture this information (Appendix II, Form D7) was poor.

Prior to the 1940's the number of people in psychiatric hospitals in New Zealand was double what it is now. The sample studied in this research may well be people who would have remained permanently in hospital if admitted 40 years ago. If this is so, then today's treatment appears to be a better alternative. Nevertheless, the results presented here serve as a reminder that cures or permanent solutions for the management of severe psychiatric disorders have not been identified. There is no consensus on the skills and training that best equip people to care for the severely mentally disordered, and no consensus on the settings where such caring should occur (Caccia & Watson, 1987). Some so-called 'talk' and 'group' therapies have been documented as harmful (Prochaska, 1979) hence strict monitoring and recording procedures are urgently needed for all treatment procedures. There is no room for complacency about the current options for treatment and care.

If psychotropic drugs are the best option available at this time, then safeguards to ensure that they are always used appropriately must be established (Altman, 1981; Johnson, 1985; McMillan, Harrison, Rogers, Tong & McLean, 1986; Michel &

Kolakowska, 1981). The toxic nature of the products and the fact that some are marketed and distributed when no controlled studies have been carried out, to determine their effectiveness or safety, highlights this need (Andreasen, 1990). Good recording and monitoring of therapies, their rationale, effects and side effects is essential in this situation. The following quote from an article evaluating treatment effectiveness is relevant.

"Unfortunately most treatments in psychiatry produce only small or moderate effects, hence the importance of careful research methods. Research on the benefits of psychiatric treatment is difficult. One difficulty is that the aetiology of most psychiatric disorders is still unclear and it is not possible to predict from an aetiological model which treatment strategies are likely to prove effective." Andrews, 1989. p. 181.

Medication: amount and type

The results of this research demonstrated that for this population, as with many other psychiatric inpatient populations (Andrews, et al., 1986; Zito, et al., 1987), drug treatment was the principal treatment offered by service providers. However, in the current research setting, treatment was not documented in a way that was accessible to clinicians, at times when information was urgently needed to inform choices for continuing treatment. No other treatments were consistently reported, apart from electro convulsive therapy (ECT). The documentation for this treatment was also poor and difficult to access and interpret. At the level of clinical management, better follow up and reporting on this group of patients should be an urgent priority given the evidence that they tend to chronicity (only 30% of the sample were first admissions).

Most of the sample studied in the research described in this thesis, were diagnosed as having a major non organic psychosis (74.5%). The distribution is similar to that in the sample for the preliminary review described in Chapter 4 (Table 4.2, p. 75). This suggests that there is some consistency over time, at least by diagnostic category, in

the population using this service. Thirty-seven percent were classified as having a major affective disorder, either bipolar or unipolar, 32% as having schizophrenia and 5.5% were classified as other non-organic psychosis. However differential diagnosis between these groups is reported to be difficult (Andreasen, 1990; Goodwin & Jamison, 1990). Boundaries between different levels of affective disorder and between different categories of psychoses are very unclear. Since the treatments recommended for these major conditions are not interchangeable, the prescribing physician must face many difficult dilemmas when making treatment decisions.

There is some evidence in the literature to suggest that the generous use of psychotropic drugs, for symptom suppression and control, may be maintaining a sub-culture of disabled people (Van Putten, 1974, 1975, 1978, 1986; Weiden, Mann, Haas, Matlson & Francis, 1987; Zito, et al., 1987). It is possible that some of these so called 'revolving door patients', or new young long-stays, may be suffering as much from the effects of their treatment, as from the effects of their disorder (Braude & Barnes, 1983; Duvoisin, 1970; Morgan & Gopalaswamy, 1984; Rifkin, Quitkin & Klein, 1975). Results from the current study are best used to endorse the view that any tendency to poly-pharmacy must be strictly monitored and controlled. But, how is poly-pharmacy distinguished from appropriate trial and error? (Baldessarini, Katz & Cotton, 1984; Clark & Holden, 1987; Diamond, Tislow, Snyder & Rickels, 1976; Raft, Davidson, Toomey, Spencer & Lewis, 1975; Rapp & Kaplan, 1981).

Any set of psychopharmacological criteria will be arbitrary to some extent, but the importance of such standards, as aids to busy clinicians, has been well documented (Dorsey et al., 1979). The view that it should not be necessary to provide an elaborate justification to withdraw medication, was strongly expressed and endorsed at the RANZCP New Zealand Branch meeting (Andreasen, Silverstone & Wehr, 1990). Andreasen (1990) stressed that drug withdrawal strategies should be considered important and legitimate treatments in themselves.

Guidelines for prescribing appear to vary, even within New Zealand, and the volume of information, and indeed misinformation, distributed by drug companies is too great for any clinician to absorb, or make reasonable sense of. In New Zealand, as in other developed countries, psychotropic drugs are one of the largest classes of prescription drugs. They are used extensively by psychiatrists and other medical practitioners. For this reason, prescribing practices have major public health implications (Prien, Balter & Caffey, 1978). This research has uncovered a need for a project to implement psychopharmacological criteria in New Zealand. Such criteria would provide a model for both public and private practice and encourage comparable practice across treatment settings.

Drug companies market their products to doctors extremely aggressively and effectively. The overt and covert pressure resulting from sophisticated advertising needs to be acknowledged and controlled (Public Health Association of New Zealand, 1990). Specialist doctors will want to use remedies which many years of hard work and training have licenced them to apply. They are well intended, and have been highly trained to believe that such remedies are safe and the best available. This may not be the case. The lack of more proven effective alternatives creates added pressure to do 'something'. It could be that alternatives and adjuncts to drug therapy need to be tested and considered more often as treatments of first choice in acute psychiatric settings (Bloch, 1985).

These research findings do not imply that negligence or malpractice is occurring. They strongly suggest that given the extremely low ratio of consultant to patient which existed in the area at the time of the research, adequate screening and monitoring of psychotropic drug prescription could not be expected to occur. When the ratio between consultant and patient numbers is very low, it is likely that decisions for prescribing and monitoring will necessarily be made, either by a consultant with

inadequate personal knowledge of the patient, or by unqualified practitioners. Criteria developed by a task force set up in the USA in the 1970s presume that the physician has personally seen and documented a reevaluation of the patient's condition on each occasion when a new prescription is written, or a change in the medication is ordered (Dorsey et al., 1979).

The reality in inpatient as well as in community settings is that the contact time between patient and psychiatrist is relatively low. The consultant is heavily dependent on information and advice from other carers, who are mostly nurses in inpatient settings, or non-professionals, such as relatives, in community settings. Psychiatry and psychiatrists are particularly vulnerable to abuse. Carers sometimes apply pressure on psychiatrists to prescribe psychotropic drugs to make the carers management task easier (Bloch, 1990). Clinical indications and the patient's need and well-being then become secondary considerations. These situations can be avoided when competitive relationships within treatment teams are replaced by cooperation and open and clear communication to inform treatment decisions and increase the range of treatments available. The results of this research highlights the basic and widely accepted principle; that an interdisciplinary team approach is essential for optimum care, irrespective of the setting where treatment occurs. It is also evident that more research which compares drug treatments with other treatments is needed.

7.5: Non treatment systems variables as predictors for ASU

'Status' and 'use of other services': These were the only two non treatment systems variables to appear in the stepwise regression for systems variables. There were no non treatment systems variables in the final stepwise regression equation. As indicated in the results of the correlation analysis between systems variables and the criterion variable (Appendix IV), the variable previous admission showed no significant relationship to amount of service use. The stepwise procedure used in the

regression analysis was set with a default significance level of $p < 0.15$, for entry of any one variable into the model. The variable previous admission did not reach this level and hence it was not entered in the regression analysis. Similarly, referring agent and provisional diagnosis were not identified in this study as important predictors of amount of service use.

However, these variables could well be influential predictors for being admitted in the first place. The description of the sample given in Chapter 5 and in Appendix IV indicates that they are. Seventy percent of the sample studied were readmissions. Published research suggests that previous service use predicts further service use, (Hoult, 1988) and this variable may well predict the probability of being admitted, without necessarily predicting the amount of time spent in hospital during a finite period, (in this case 12 months). With respect to time of admission, the fact that the majority of admissions to this acute inpatient service occurred outside of office hours, supported the need for alternative 24 hour, seven day a week services, to enable triage to occur before, rather than after admission to acute inpatient care. This should enable a proportion of those currently admitted to inpatient care for initial assessment to be diverted to alternative, and perhaps more appropriate and culturally sensitive, programmes of care.

7.6: Socio-demographic variables as predictors

It was clear from the literature review introducing this work that social indicators are often neglected, when equations are developed to guide the distribution of resources for service development and planning. This could be because they are difficult to define and measure accurately, compared with economic indicators. The results obtained in this research may reflect these difficulties, and provide a conservative indication of the importance of social variables as indicators of amount of acute psychiatric service use. This applies particularly to the following variables:

Accommodation status and change: The results of this study show that accommodation status on discharge was a significant predictor for amount of acute psychiatric service use. Discharge to supervised accommodation and discharge to another part of the hospital appeared in the final regression equation predicting high and low service use respectively (Table 6.12, p.156; Table 6.14, p.158 and Table 6.15, p. 159). There is an urgent need to distinguish the 'hotel' aspects of mental health care from 'hospital' functions. The study confirmed the need for a taxonomy of treatment components, so that it is possible to determine the significance of items which make acute inpatient care different from forms of acute treatment which are not residential. The whole issue of accommodation need for a population generally perceived as disadvantaged or underprivileged, namely, psychiatric patients, needs further study. The information presented in Appendix III, shows that 63% of the sample had a different accommodation status on discharge from their accommodation status on admission. A research project was commissioned by the National Housing Commission (NHC) to assess serious housing need in New Zealand.

"Widespread concern was expressed at the limited availability and standard of accommodation for ex-psychiatric patients" (National Housing Commission, 1987, p. 83).

Mental health problems are also often reported to be a consequence of housing problems.

Domiciliary code category: The area with the highest rate of admissions had a mixed population in terms of socio-economic status. It was near to the General Hospital and a Community Mental Health Centre (CMHC) and had better public transport and access systems than most of the other districts in the study area. This may have caused an increase in amount of service use relative to other areas where access to service was more of a problem. When considering domiciliary code, or locality as a predictor of service use, the qualitative information collected from discussions with staff about the districts which the patients came from, indicated that a variety of

factors, including the preferences or biases of referring agents and proximity to CMHCs, were influencing the results obtained here. Two of the districts had a predominantly Pacific Island and Maori population. This study has shown that the chance of being an acute psychiatric service user was greater for Maoris, than for other racial groups (p.95), so it was not surprising that these two districts had relatively high rates of admission to the acute psychiatric service. The relations between the socio-economic profile of particular localities (as distinct from ethnic composition), and the prevalence of psychological disorder in those localities, is complex and Colhoun and Maxwell (1987) warn against assuming parallels.

Age and Race: The sample studied was made up predominantly of young adults and this has obvious implications for potential prolonged service use, and corresponding demand on resources, given that the serious disorders diagnosed for the majority have no known cure. The mean age of the Maori and Pacific Island group was noticeably younger than the European. Philip (1979) found length of stay to be significantly negatively correlated with age, as did Zito et al. (1986). The results of the current research showed a very slight negative correlation between age and ASU, but the relationship was not strong enough for age as a variable to appear in the final equation. The current study examined the length of time a patient spent in the acute area of a psychiatric institution, in a 12 month period from the time of his/her admission to that area. Philip was looking at length of time in an institution of a group of longstay patients, and Zito et al., were studying a sample of newly admitted schizophrenic patients. These three study populations are not comparable. While race appeared to be a significant factor in determining whether or not a person was admitted to acute psychiatric care, neither race nor social competence nor socio-economic status (measured by score on the social competence scale in this research) predicted amount of acute inpatient service use.

Social support: The attempt to measure perceived social support in this population was not very successful, lending credence to Goldberg's (1972) observation that it is not appropriate to use self rating scales with seriously ill or disturbed people. However, the social support appraisal scale used in the instrument may well prove to be a useful measure for people in the recovery phase of an acute attack of psychiatric illness. The instrument when it was completed, was done reliably, as demonstrated by the reliability coefficients reported on p 123. The Brief Social Support Questionnaire, which was developed for use in New Zealand during the time this research was proceeding (Seigert, Patten & Walkey, 1987) may also be a useful measure of social support for this population during the acute phase of illness. The relevance of next of kin and marital status for the social support variable needs further investigation. It may be that for acute psychiatric service users 'perceived social support' is not the most appropriate dimension of social support to examine, despite its documented relationship with mental well being. Perceptions of support are likely to be influenced by psychological state and it is not easy to control for symptom levels when measuring perceived support (Schonfeld, 1991). It may be also useful to measure objective components of social support such as network size and material contributions, although they are said to be subject to confounding with life events. Schonfeld (1991), reports that the specific functions of support take on greater importance during major life transitions.

7.7: Behavioural variables as predictors

Severity of symptoms as measured by the Clinical Global Impressions scale administered by both doctors and nurses, the Brief Psychiatric Rating Scale, and previous level of functioning scores were the measures of behaviour which best predicted amount of service use (Table 6.15, p.162).

Clinical Global Impression scores of the severity of symptoms: If the doctors' and nurses' CGI's scores and the NOSIE problem scores are accepted as measures of

symptom severity as judged by therapists, then correlations between these scores and ASU, and correlations between the BPRS scores and ASU should be similar. The correlation between ASU and the doctors' CGI was .28, between ASU and the nurses CGI was .29, and between ASU and the NOSIE problem was .26. These coefficients are of similar size and they are not particularly different from the size of the highest obtained rating scale coefficient, that between the BPRS and ASU ($r_s = .31$). When the scores from the scales were entered into the final stepwise regression analysis the results obtained indicated that the CGI was a better predictor of amount of service use than the BPRS, accounting for more unique variance. Hence, results from the current research support the view that a global rating scale which is simple to administer, may provide a more reliable and sensitive measure of illness severity than more complex scales, which attempt to aggregate symptom measures which are themselves abstract, and often unreliably defined (Lipman et al, 1965). The results confirm the usefulness of the CGI as having some reliability across both time and raters (p. 142 - 144).

The Brief Psychiatric Rating Scale score: The correlation of the BPRS score and ASU was a moderately sized coefficient which could be of clinical use. Clearly, no assumptions can be drawn from these results as to whether the BPRS was a more valid and accurate measure of severity of symptoms than the more global judgements made by the therapists using the CGI. While results reported in Table 6.9 (p. 148) show that the measures used to determine severity of symptoms were intercorrelated, it cannot be assumed that the scales used are functionally equivalent in predicting ASU.

Global Level of Functioning - Past: Premorbid level of functioning (Axis V past) was expected to show a high negative correlation with amount of service use, indicating that high functioning prior to admission predicts lower ASU (Hoult, 1986). In the Chicago Follow Up Study (Straus & Carpenter, 1972) chronicity (that is, length of

prior illness) was presented as a powerful predictor of outcome. It was suggested that most change, for all diagnostic groups, occurs early in the course of illness - after acute hospitalisation and prior to follow up assessment. In the correlational analyses in the current study, GAF-past scores showed a slight negative correlation with ASU, but the relationship between ASU and occupation status was stronger. (Occupation status can also be regarded as an indicator of level of functioning). However, high GAF (past) scores emerged as significant predictors for lower ASU in the stepwise regression analysis (Table 6.15 p. 162). The reliability and validity of the Global Assessment of Functioning (GAF) has to be established before more can be said about the results obtained in this research on the levels of functioning of the sample prior to admission to acute care. As the DSM-III-R is used more, additional reliability information should be available for this measure (Fernando et al. 1986; Skodal et al, 1988).

GAF Current score: In the current research Axis V (DSM-III-R) was also used as a measure of present functioning. The results of the correlation analysis were in the expected direction, but showed a very low negative correlation between ASU and the DSM-III-R version of the Axis V current. Unlike the past GAF scores, the scores obtained on the GAF (current) did not appear as predictors in the regression analyses reported on page 160 - 163. Until more information has been reported from research which uses the DSM-III-R multi-axial system, including Axis IV and Axis V, an additional measure for level of functioning, or illness severity, such as the CGI, should be used in conjunction with the GAF(current).

The NOSIE scores: There was no significant correlation between NOSIE total scores and ASU. The NOSIE total scores were hard to interpret initially because of difficulties experienced with scoring, but when the data were reanalysed, using a corrected scoring procedure the reliability coefficients and the norms obtained from the current study data were consistent with those reported in the literature (Table 5.2

p. 107). The NOSIE Problem single item scale did not present these difficulties for reliability or validity. The NOSIE total and the NOSIE problem scores were completed by the same people, at the same time, on the same patient, on (theoretically) similar behavioural constructs. The correlation between the NOSIE total and ASU is noticeably lower than the correlation between ASU and the NOSIE problem possibly for the reasons outlined above.

The Mini Mental State Examination of Cognitive Function (MMSE) score: The MMSE (a measure of the severity of cognitive impairment) showed a slight to moderate negative correlation with ASU. That is, a higher score on the MMSE (indicating less cognitive impairment) correlated with lower service use. While in the expected direction, the MMSE scores did not emerge as predictors for ASU in the regression analyses.

Need for Inpatient Care Index score: This scale attempted to capture information on characteristics, such as dangerousness, which were not assessed adequately by the other severity of illness measures used in the instrument. Correlations between the Need for Inpatient Care Index (NIPI) and the criterion, indicated a slight tendency for high scores (high need for inpatient care) to be more strongly associated with increased service use, than low scores. Relatively high positive correlations were obtained between the NIPI, the NOSIE problem, the nurses CGI, doctors CGI and the BPRS scores. Quite strong negative correlations were obtained between the NIPI, the MMSE and GAF current scores. This is encouraging evidence for the validity of the NIPI as a measure of symptom severity and perceived need for intensive treatment and care (Table 6.9, p. 148).

The above discussion shows that the correlations between scores on the behaviour rating scales and amount of service use were low. Some reasons for this could be:

1. Assessing severity of psychiatric disturbance presupposes that it is a continuous variable and that there is an axis (or continuous dimension) of psychiatric illness on which any individual can be placed. In fact, research evidence suggests that psychiatric illnesses are a heterogeneous collection of clinical syndromes and disease processes (Goldberg, 1972); that there is a qualitative as well as a quantitative difference between cases and non cases. The serious psychiatric disorders which appear to affect the majority of people in this cohort have a low incidence in the general population and it is to be expected that the screening devices used to assess symptom severity would lack sensitivity with this population.
2. The rating scales were designed to measure constructs like severity of symptoms which intuitively would be expected to correlate with amount of service use, but the construct validity and reliability of the scales have yet to be clearly demonstrated. Also these constructs are not equivalent to 'amount of service use', so even in theory a perfect correlation would not be expected.
3. While inter-rater reliability appeared to be satisfactory in this research it is never perfect and differences in ratings due to information variance, observation variance, terminology variance and ignorance of clinical phenomena would effectively lower correlations (Thompson, 1989).
4. The other potential predictors, including the socio-demographic variables and systems variables studied, could act as confounding variables and contribute to lowering correlations between the scores obtained and the criterion variable, amount of service use.

7.8: Variables which were not significant predictors

The research has successfully unravelled the complex of factors which determine how much use particular individuals makes of acute inpatient care, after they have been admitted to that form of care. The model procedure developed to describe the differential effect of variables on amount of service use is robust, easily understood and reliable to use in other human service settings. The variables which predict

admission in the first place are not examined and identified in this study, but the data gathered confirm previous research (Hoult, 1986), that those who have used the service before, are more likely to be admitted, than those who have not. Those who are young, Maori and of low socioeconomic status, also have a higher risk for admission to acute psychiatric care.

Biculturalism: However, the fact that New Zealand Maori are over represented in the cohort, compared with other racial groups, reinforces the need to address the special requirements of this group (Chapter 2 p 34 - 37). The appropriateness of the service offered must be questioned when the language of the carers is poorly understood by the recipients of care. The same carers have only limited, if any, understanding, of or insight into, the expectations of people whose frame of reference and expectations, whose vision of disease, death and treatment, is very different from theirs (Champey, 1991; Committee of enquiry into procedures used in certain psychiatric hospitals in relation to admission, discharge or release on leave of certain classes of patients, 1988; Durie, 1985).

On the whole, medical and other professional training programmes fail to address this issue adequately. Hence cultural barriers impede access to care, obtention of informed consent and delivery of sensitive, effective treatment. This is a serious practical problem, because inpatient mental health services are frequently used by minority cultural groups, both indigenous and immigrant (National Health Statistics Centre, 1989). Being Maori appears to be a high risk factor for being admitted to acute inpatient psychiatric care and bi-culturalism remains a challenging and unresolved issue to confront in the task of providing service to the seriously mentally disturbed in New Zealand (Haines & Abbott, 1985). The present research demonstrated how a relatively restrictive and unproven treatment modality and setting (acute residential care) was the only option available to a population with a high proportion of minority culture clients. Further cultural

isolation and alienation can be anticipated, following admission to a service which is European professional in conception and *modus operandi* (Goffman, 1961; Dowland & McKinlay, 1985).

The current research has identified a need for well resourced locality based community assessment and treatment teams, to assess clients and design treatment plans for individuals, *prior* to admission to acute inpatient care, so that this restrictive environment can be avoided for those more appropriately placed elsewhere. Such a policy change would make the development of culturally responsive care plans possible, and feasible, given adequate resources.

Previous admissions and time of admission: As indicated on p. 178 above, there was no significant difference in amount of service use (ASU) between those who were admitted during office hours, and those who were admitted after-hours, or between those with a history of previous admissions and those without previous admissions. Likewise, ASU did not vary significantly between those who had non-drug treatments and those who had no such alternative treatments, or between those on medication for conditions other than their psychiatric illness and those not on such medication. Nor was there any difference between the referring agents, between the reasons for acceptance to the service or between the numbers of services previously used, in terms of ASU. Scores on the Abnormal Involuntary Movements Scale (AIMS) did not correlate significantly with amount of service use (Appendix IV, p. 246). No relationship was demonstrated between amount of service use and the variables perceived social support, or social competence. Neither gender, possession of a driver's licence, race, marital status, religion, next of kin or benefit were significantly related to ASU.

Provisional diagnosis and labelling: Overall, the differences between the categories of the provisional diagnosis variable were not significant. There are many limitations associated with using current psychiatric diagnostic systems but there

are also some clear advantages. The system used in this study provided a first approximation at a provisional diagnosis category system which was consistent with both the International Classification of Diseases Version 9 Clinical Modification, (ICD-9-CM) system, developed and used in Europe and the Diagnosis and Statistical Manual version III, revised, (DSM-III-R) developed in the United States specifically for psychiatric disorders. The system is proving to be useful for clinical management and service planning, as well as for research (Appendix II form W1).

A wide variety of issues, including those relating to service funding and stigmatisation, were raised by service staff when information on provisional diagnosis was requested. The identification of mental illness with deviant behaviour was considered inappropriate by many staff working in community settings, in the context of differing standards for so-called normal behaviour across cultural groups and the strong correlation race had with indicators of underprivilege. The negative consequences of having a psychiatric label, and the ethics of assigning diagnoses, in the absence of cure or effective treatment, were among the issues raised by providers during the consultations that occurred during the research. Social norms for appropriate behaviour differed widely between the significant ethnic minority and cultural groups which were resident in the study region at the time of the research. This was raised as a problem which is not adequately addressed by mental health professionals, when diagnoses are made and treatments prescribed. The inherent circularity of psychiatric diagnosis due to the fact that 'psychiatric illness', as specified by current classificatory systems, is defined in terms of 'problem' behaviour, suggested a need for more public education, to increase understanding of psychiatric disorder and tolerance for deviance, and 'different behaviours' (Talbot, 1980; Whitmer, 1980; Wing, 1978).

7.9: Instrument Validity

The psychometric adequacy of the instrument used depends on the validity and reliability of the individual scales and measurement procedures it contains. The results obtained in this research confirm the usefulness of some scales as reported in the literature. As Table 6.12 (p. 165) shows, the scale which correlated most with ASU was the Brief Psychiatric Rating Scale, but, the measure which was most strongly predictive of amount of service use in the model developed from regression procedures was the Clinical Global Impression Scale (CGI), as administered by doctors, and then as administered by nurses (Tables 6.13, p.158 and 6.14, p.158). When treatment variables were removed from the model, scores on this scale accounted for the majority of the variance in amount of service use (Table 6.15, p.159). As noted earlier, intercorrelations between the behaviour rating scales may have "washed out" some effects. The results obtained provide evidence for the usefulness of both the BPRS and the CGI, and some direction for clinicians looking for reliable measures of symptom severity. However, it should be noted that Manchanda et al (1989) end their critique of the BPRS by stating that they consider the construct validity of the BPRS is incompatible with current concepts of psychopathology. Reliable operational definitions are prerequisite for accurate measurement and in the absence of such definitions for the BPRS, use of the CGI is preferred as a measure of illness severity. The superior performance of the CGI in this research, the ease with which it is administered, and the evidence that global measures of illness severity are more reliable than scales (like the BPRS) which increase complexity, by fragmenting the notion of illness severity, favour the use of the CGI (Lipman et al, 1965).

Correlations between scales which purport to measure the same construct, provide some evidence for the convergent validity of the scales, and the current research results suggest this kind of convergence. It can be seen from Table 6.9, p. 148, that the best inter-correlations obtained were between the nurses' severity of symptoms

measures (NOSIE problem, NIPI, and CGI), between the doctors' severity of symptoms measures (BPRS, GAF current, and CGI), and between some of the doctors' and nurses' scales (doctors' and nurses' CGI, doctors' CGI and NIPI, and the doctors' CGI and NOSIE problem). As these are all severity of symptoms measures it was expected that they would be highly correlated. The correlations were quite low, possibly for reasons suggested on p. 185 - 186 above.

Initial reservations about the psychometric properties of some of the rating scales included in the instrument proved to be unwarranted and in general the accuracy of the information obtained was excellent, largely due to fastidious cross checking by research assistants working on the project. While the overall reliability and validity of the instrument used in the study is satisfactory, for the purpose it was designed for (to determine predictors for amount of service use), it does not provide a method which enables conclusive statements to be made about the relation between effectiveness of drugs and amount of service use, or about the relation between effectiveness of drugs and severity of disorder. As stated in the previous section, case control studies or single subject designs to measure the effects of interventions over time are needed, to explain these relations. Additional information to confirm the psychometric adequacy of the behaviour rating scales used is needed, so that degree of disorder can be measured consistently, along with improvement and changes in mental health status. Meanwhile it cannot be assumed that amount of service use (ASU) accurately reflects mental health status. Nor can a relation be assumed between ASU and treatment effectiveness. It could be useful in the future if a measure like 'number of different psychotropic drugs' could be validated and established as a proxy index for psychiatric morbidity, as well as for ASU.

Chapter 8

General Discussion

In this final chapter the main findings from the research are summarised and the appropriateness of the methodology is discussed. The relevance of the findings from the study are examined and the recommendations which were made to policy makers and service administrators, to encourage translation of the research findings into practice, are noted. Useful outcomes from the research are reported. The generality and usefulness of the explanatory model which has been developed in the course of the research is discussed. The point of this health services research exercise was to attempt to develop an explanatory model which would account for, and if possible enable service providers to predict and control, amount of service use. The work describes how systems analysis can be used as a general method to make a complex and rather chaotic health service delivery system more transparent, so that it can be developed and improved. The work is problem driven rather than method driven. A consultative interactive process was established between consumers, clinicians, policy makers and planners, in the setting where the research occurred. This ensured that procedures established as a result of the research were informed by need, and contributed to service development. Suggestions for further research are made.

8.1: Utilisation of the research findings

The results obtained in this research highlight the importance of developing methods to assess the clinical effectiveness of psychopharmacological treatment in an acute psychiatric hospital setting. Such effectiveness has not been reliably established to date, partly because performance indicators have tended to focus on measures of inputs (such as number of consultations) and process (such as type of programme), rather than measures of outcome (Jenkins, 1990). In the absence of outcome

information, no useful cost benefit analysis is possible (Wilkinson & Pelosi, 1987). However, it is usually unproductive to study outcome, if the process which links the input to the outcome is poorly understood (Lewin, 1979). Hence before outcome can be measured and assessed for effectiveness, detailed description of the components of care and the process of care delivery, as well as the characteristics and changing mental health status of the users, is needed. Until a taxonomy is developed which identifies and operationally defines components which constitute inpatient care, the effectiveness of inpatient care cannot be measured or compared with alternative modes of care. Acute inpatient care may generate a population of users who quickly become dependent on this environment and form of care, in the absence of noticeable clinical improvement or other desirable outcomes (Mental Health Foundation, 1986; New Zealand Planning Council, 1987).

“Patients, like muscles and minds, lose function when not engaged in the rhythms, routines, and relationships of everyday life. Patients should spend no more and no less time in the hospital than is absolutely necessary” (Sederer, 1992, p. 531).

In the city where the research was undertaken, psychiatric services were already deinstitutionalised to a large extent. The populations in the psychiatric hospitals in the city had been substantially reduced (National Health Statistics Centre, 1985, 1989) from a total resident of 897 in 1984, to a total resident of 630 in 1987, reducing to a total resident of 267 in 1992. The mental health services in the region were, by overseas standards, poorly resourced. Many of the staff who are responsible for patients in the community have not been given special training for work which involves delivering care in a setting where service providers often have very little control. However, there are no good reasons to reverse the process of deinstitutionalisation by encouraging patients back into inpatient care. There is no evidence from the current work that hospitalisation is effective. Accountability becomes very important when scarce resources and financial constraints require major funding decisions, which involved reallocation, or withdrawal of funds from existing programmes. Mental

health service providers are accountable to the service consumers, as well as to the service funders (Sharfstein, 1992). At the time of the current research, hospital care appeared to be still the only care offered to some patients. There are many pressures to maintain and develop structures and styles of service delivery that are functional and convenient for the providers (Andersen & Co, 1987; Creed, Anthony, Godbert & Huxley, 1989). It is necessary to continually examine how effective these service delivery methods are for the consumers, and to what extent services are, in fact, consumer driven (National Mental Health Consortium, 1989). The deinstitutionalisation process requires a shift away from the argument that, if people are in beds, then they must be very sick, and therefore, the carer is doing something important and legitimate.

8.2. Research outcomes

The following list details some of the outcomes from the current research project:

1. Parts of the instrument developed for this study have been subsequently developed and used, for a variety of information gathering projects, by clinical staff working in the mental health services, in the city where the research was undertaken. More systematic clinical outcome evaluation is occurring as a result.
2. The Mini Mental State of Cognitive Functioning is now used routinely as part of the clinical history taking, to screen for organic impairment, replacing “serial sevens” (which is a single item test) or just clinical judgement.
3. The writer’s role, (to carry out research which is useful for service development and planning) has subsequently expanded into a research and development unit for mental health services in the region, as a result of the utility of this research.

4. The patient information system which has come into use in all publicly funded mental health services in the region, as a result of the work described in Chapter 3, section 3, is a major practical contribution towards improving management, clinical and research information sources, in the wider city region. The case register of psychiatric patients which has resulted is the first of its kind in New Zealand and includes community service users as well as inpatients. This data base of over 35,000 records is continually updated and allows for accurate routine reporting of service use in the region, resulting in subsequent improvement in the ability to monitor clinical care. Approximately 9,000 service users are registered at any one time for the regions population of just under one million people.

5. Forms and software have been developed which will collect second level data which are additional to minimum data set information. Debate centres around the wider ethical and confidentiality issues relating to informed consent, which the use of any information system raises. The need for accountability in the expenditure of public money on services, is a central consideration in the debate.

6. The research has highlighted how difficult it is for mental health service providers to assess the efficacy of what they do. The need for alternative, appropriate, cost effective treatment delivery styles and settings becomes urgent, when there is reliable evidence that the efficacy of existing services (in this case acute inpatient care) cannot be demonstrated. The project reported here provides an example of operational health services research which can inform decisions and impact on service development and planning in a constructive way. The fact that senior management acted on the recommendations, to fund a more flexible community based assessment and treatment team for the seriously mentally disabled in the region, is evidence for the believability of the results of the research reported here.

7. The writer was commissioned to write a general specification for a core area mental health service. This will provide national guidelines for the purchasers of mental health services; i.e. Regional Health Authorities. Such a general specification, based on knowledge gained from this research, is appropriate for any mental health service system in the world. The types of evaluation procedures and strategies created for the project (including the development and maintenance of the patient case register mentioned above) have general application and some have been adopted by service providers, throughout the region, to fulfill purchaser contracting requirements.

8. The method developed to determine predictors for ASU can be used to generate baseline information on amount of service use. When reliable procedures for assessing clinical improvement have been developed further and implemented systematically, this service use information can be related to service outcome measures (such as individually specified goal attainments for clients). This initiative will establish an adequate foundation for quality assurance and service evaluation. It may then be possible, with the help of a taxonomy of care components, to assess the value (or efficacy) of acute psychiatric inpatient care in relation to the value (or efficacy) of alternatives systems of care. The method is generalisable to other health service systems, other geographic regions and other areas of human service delivery, such as education and social welfare. It is robust and simple enough to have wide application.

9. The assumptions outlined on page 42 and 43 of this thesis were endorsed by the findings of the research and they are transposed into the following guidelines for mental health service development and planning:

The view that effective rehabilitation in the community is the best 'prevention' strategy, if what is to be prevented is prolonged stay in acute inpatient psychiatric care, is supported by the research findings.

The notion that iatrogenic (treatment induced) illness must be systematically evaluated (Shepherd 1986) is endorsed by the findings.

With more home-based treatment, the increased burden of care that is transferred to relatives and carers, who have historically been untrained and unsupported, must be entered into any equation involving components of mental health care (Fadden et al., 1987). The systematic collection of accurate data on social support and other social and demographic variables, such as next of kin and accommodation status is essential, to develop standard social indicators, measures of burden, and other consequences of care delivery methods. The current research has developed suitable procedures for such information gathering.

8.3. Recommendations

As a result of the current study, a report was produced in 1990 and the following recommendations were made to the General Manager of the Area Health Board in the region. It was suggested that a working party be convened to develop procedures to implement the recommendations:

1. Systems to ensure faster and more frequent transfer of patients to the sub acute area, once acute symptoms have been controlled, should be put in place and admission and discharge criteria for the acute services should be developed and implemented. A description of the services functions (charter) should be drawn up to support these criteria.

2. Standardised methods for measuring clinical improvement should be adopted. It would then be possible to assess the effectiveness of treatments. If the notion of cure is inappropriate for those with some chronic psychiatric illnesses, then (in addition to relief of psychotic symptoms) expected optimal levels of functioning for each individual should be specified as goals. Work is needed to define and describe the components of care in all settings in detail, so that quality assurance is possible and general statements can be made about service effectiveness. Continued effort and funding is required to develop alternatives to acute psychiatric inpatient care, for those with acute psychiatric disturbance, so that patients and families may have more choice about where treatment is carried out.
3. Acute beds should be provided for the research region in a more accessible location, so that day care becomes a viable alternative to inpatient care. Motel type accommodation could be provided for those with accommodation needs, so that these needs are not confounded with need for treatment and professional health care. The service studied is relatively remote from population centres and other services. This geographic and social isolation may have led to treatment programmes and prescribing practices which were different from other acute psychiatric services in the region and in the rest of New Zealand.
4. Improved methods for documenting treatment information need to be developed and put in place, to increase the reliability of recorded information and make it accessible to clinicians involved in continuing care. A reminder to clinicians that, reasons for medication changes need to be carefully documented, may be appropriate. Procedures for consultation and peer review endorsement of decisions to change treatment could be

established (Brayley, Rafalowicz, and Yellowlees, 1989; Dorsey et al., 1979).

5. Further analysis of data from the study, including detailed analysis of drug data, is needed to establish the relationships between dosages and number of different drugs prescribed. It is recommended that this work be resourced adequately since it is likely to be labour intensive.
6. Better procedures should be implemented to ensure that adequate follow up of this group of patients occurs after discharge from the acute setting.
Improved clinical and management information systems should be given priority for development and adequately resourced.

8.4. Further research

In addition to the research required by the above recommendations, more work is planned which will describe the high acute service users by age, race, provisional diagnosis category and legal and treatment status. The status of this group in terms of their relative social support, severity of symptoms and need for inpatient care will also be described. The distinction between safe care, the need for asylum and the protection of the individual patient, as distinct from the need for community safety will also be examined. The relative merits of sub-acute inpatient care versus rehabilitation programmes in the community, for this population, will be explored (Lam, 1991; Leff, Berkowitz, Shavit, Strachan, Glass, and Vaughn, 1990; Seivewright, Tyrer, Casey and Seivewright, 1991). It is not known whether 'chronicity' in the sense of becoming a recidivist, is a characteristic of the individual, or of the treatment system in which the patient becomes embedded; a kind of mass treatment trap that can develop, as a result of the tendency to treat 'risk factors', rather than symptoms, or illness (Jackson and Kawachi, 1992). This is of course not to say that treatment 'causes' chronicity, any more than a drop in

barometer pressure 'causes' a storm. The extent to which iatrogenic factors contribute to continuing use of acute psychiatric inpatient care needs to be established. Detailed description of clinical status on admission, discharge and at followup are needed, to determine improvement status for individuals and extent of side effects. Only then, will it be possible to carry out cost benefit analysis, of the treatment and care available to acutely disturbed psychiatric patients (Andrews, 1989).

8.5. Towards alternatives to inpatient care

The difficulties associated with providing adequate and effective care for a population of acute psychiatric service users are formidable. Adequate controls are needed in treatment settings to protect both patients and carers. The distinction between treatment and safe care is important. For the non-dangerous mentally disordered in particular, 'treatment' should constitute more than three meals a day and a bed (Rappaport, 1977). Results from this study indicate that psychotropic drug therapy is the treatment most often offered to this population. However, documentation for treatment is poor and difficult to access. The information obtained on amount of service use did not provide evidence for the effectiveness of treatments given. It seems reasonable to state that it needs to be clearly demonstrated that for each individual case the benefits of medication outweigh the costs (Hollister, 1982).

Problems with differential diagnosis between major affective disorder (affecting 37% of the acute cohort) and schizophrenia, are widely reported (Joyce 1987). Given that schizophrenia was a diagnosis applied to one third of the acute inpatient sample studied in this research, and given that up to 40% of those with this diagnosis have been shown to be unresponsive to psychotropic medication (Brenner et al, 1990), it was a matter of concern that prescription of such medication was, not only the treatment of choice, but the *only* treatment offered to many in this setting.

A higher ratio of staff to patients would enable alternatives to drug therapy to be developed and used where appropriate. It would also increase the opportunity for a complete assessment to occur before the person's level of functioning is altered by the effects of medication. The importance of such treatments as 'time-out', therapeutic environment (Monahan & Vaux, 1980; Munoz, Snowden & Kelly, 1979), rest and recreation, supportive psychotherapy, occupational therapy and other more active behaviour change procedures needs emphasis. In the service studied, drug treatment appeared to dominate and possibly obscure other strategies for management and care (Garfield & Bergin, 1986). The following points are emphasised:

- i) that the notion of 'cure' is inappropriate when 'cause' is not known and treatment effects are unproven and
- ii) that effective rehabilitation, and maintenance of optimal functioning in a benevolent environment should be seen as the achievable goal (Shepherd, 1986).

The effort made in this research project to obtain three-month followup information on those discharged was unsuccessful (Appendix V). Low staff compliance returning follow up information and an apparent reluctance to assume responsibility for patients who were unknown to the clinician and seen as difficult and/or incurable by them, were major contributing factors. It became clear that many staff perceived work with this group of patients as unrewarding (Andrews et al., 1986). Because acute psychiatric service users tend to be mobile, and often transient, their ongoing care is often the responsibility of many different therapists. Clear communication between carers depends on accurate and accessible documentation. The need to put systems in place to ensure good service management and access to reliable information about patients was uncovered by the research. In the United States, lack of adequate and effective administrative structures resulted in a failure to care for the deinstitutionalised mentally disturbed (Talbot, 1980). If adequate followup

procedures are not in place for people discharged from acute psychiatric care, the same kind of neglect can be expected to occur in New Zealand. A shift towards a more comprehensive locality based system of assessment and care for the seriously mentally disturbed (Dean & Gadd, 1990) could prevent this from occurring and make the concepts of 'follow-up', 'acute', and 'crisis' redundant. The emphasis would be on 'continuity of care', maintenance of insight, optimal functioning, and support in the least restrictive setting available. Ideally, this setting is the person's home. Home-based acute care only becomes possible through active close communication and consultation.

8.6 Confirmation of thesis, summary and conclusion

The mental health services provided by the state, for a defined geographic area, have been systematically reviewed and a useful method has been developed to describe, explain and predict amount of service use in the most expensive and restrictive of those services, acute inpatient care. The research method chosen for the final part of the study involved selecting a comprehensive range of predictor variables as potential indicators for amount of acute psychiatric service use, and dividing them into systems variables, which were by definition outside the control of the patient, other socio-economic variables, and behavioural variables which were clearly consumer characteristics. A stepwise multiple regression analysis was carried out to determine which type of variable accounted for most of the variance in amount of service use. The results obtained provide convincing and believable evidence, that *systems* variables accounted for most of the variance in service use, for the particular system of service studied. There is no reason to suppose that similar services in other localities in New Zealand, and the rest of the developed world, would return different results if the method was applied to them, but replication is needed to determine whether this is the case.

The results also support a thesis that is often stated in the literature on human service delivery systems, and the evaluation of these systems, namely that such systems are provider not consumer driven (Department of Health, 1982; National Mental Health Consortium, 1989). The implications of these findings for provision of culturally appropriate and sensitive services are clear and cause for concern. While ethnicity was not a predictor of amount of acute psychiatric use for the sample of service users after admission, being Maori was clearly a high risk factor for being admitted to this form of care in the first place. It is hoped that the findings from this research will be used to support the development of alternative mental health resource centres and locality based comprehensive mental health teams. Such teams can fully assess and manage acute problems which arise in the course of serious mental illness, both in the home and in more culturally appropriate respite facilities and other accommodations.

Health services research takes place in an uncontrolled environment that is constantly changing and often chaotic. A linear method traditionally used for prediction, stepwise multiple regression analysis, was chosen to analysis the quantitative information gathered in the final part of the research. An underlying concern of the researcher at the time was that such methods oversimplified the complex questions which the research was attempting to answer. Further literature review introduced the writer to more complex nonlinear models and theories; Chaos Theory (Gleick, 1987) and a sub-type of Chaos Theory called Catastrophe theory (Postle, 1980). These theories appeared to supply more appropriate starting points to develop explanatory models for both the behaviour of persons with severe psychological disorder, and for the behaviour of complex organisations, such as health care systems. While such theories could not be used to answer the current research questions, because practical applications and technologies were not available at the time, the fact that the theories existed, and that methods are being developed to apply them, provides incentive to any health services researcher

addressing complex problems. In summary, a glimpse into the non-linear world of Chaos theory, where it is recognised that even the simplest of systems creates extraordinarily difficult problems for prediction (the weather for example) supplies motivation to continue to look for new ways to solve complex problems, while using, for the moment, the best tools available.

Early in this work excessive variance in amount of service use was interpreted as 'disorder' or 'entropy' (Thom, 1980). The concern was that attempting to 'predict' 'disorder' was paradoxical, or self contradictory. The research results have allayed this concern, for while it is not possible to predict randomness, systematic distortions in a functional pattern can be predicted. It is reasonable to claim that this is just what has been identified in this study. That is, a systems variable which is provider controlled, namely psychotropic drug prescription, creates systematic distortions in the functional pattern of service use. These distortions are powerful, robust and measurable. The method and the model which has identified this effect for the mental health service system studied, can be generalised and used to determine indicators for service use in other human service systems, such as education. This would lead to a better understanding of how, why and for whom such systems are functional, or dysfunctional.

Meanwhile, it is clear from the current work that there is a need to examine procedures for treatment outcome evaluation and develop means to implement such evaluations. A rational taxonomy of operationally defined components of care, is also needed, so that the differential value of these components can be assessed, for each individual receiving care. Individual care plans can then be matched to individual need, in a service delivery system that is more flexible, more accountable, more responsible, and hence more efficacious, than existing systems of mental health service.

8.7: Epilogue

In this thesis an attempt has been made to analyse a system of psychiatric service in a way that is constructive for service users, providers and planners. It has been carried out with humility, in the knowledge that it is easier to be critical than to be correct.

APPENDICES

APPENDIX I**EVALUATION OF ACUTE ADMISSION SERVICES**To staff of Villa 7 and Villa 8

The Hospital Management Group (HMG) are aware that there is considerable stress in the acute admission wards. The aim of this exercise is to identify where the pressure is coming from so that strategies can be developed to relieve it.

Answers to the following questions are sought.

1. What do you consider the function of this villa to be?

2. What problems make it hard for you to perform this function?

PTO

Please place a tick in the appropriate space

Problem	Major problem	A problem	Not a problem
Staff and unit goals are unclear			
Staff shortages			
After hour referrals			
Inappropriate referrals			
Prolonged length of stay of some patients			
Lack of coordination with other services			
Patient violence and attacks on staff			
Ward geography			
Insufficient beds			
Other Problems 1..... 2..... 3..... 4.....			

A summary of the results and conclusions which are drawn from them will be circulated to the staff who have participated and suggestions for improving the admission services will be sought.

Thankyou for your interest and help.

Catherine

Catherine Western
Community Psychologist

APPENDIX II

DATA CAPTURE FORMS ADMISSIONS TO ACUTE PSYCHIATRIC SERVICES

A preliminary study of the acute inpatient services in the district revealed that variability in amount of service use was the greatest problem for staff, next to defects in the physical environment. The large variation (4-190 days in a 1986 sample makes planning and organisation difficult at ward level. Pressures on staff are increased by the unpredictable nature of the work load.

The current review measures the relationship between amount of service use and a comprehensive range of demographic and clinical variables. Concurrently, it aims to facilitate and standardise record keeping while improving clinical practice.

To achieve this the cooperation of key staff members is essential. There are four sets of forms, as follows:

1. **Pink Forms, Numbers W1 - W3.**
This is the basic demographic data and will be able to be filled out by the ward clerk. (Most of the information is already recorded on the hospital patient admission form) Main reason for acceptance to service and provisional diagnosis will be available from the notes filled out by the admitting doctor (Form D3).
2. **Blue Forms, Numbers N1 - N5.**
To be completed by senior nurses associated with the patient. Most of the forms should be able to be completed after the initial assessment interview. The administering of the social support appraisal scale may need to be delayed depending upon the patients condition at the time of admission. Note that marking of the forms merely requires circling of the appropriate number. The second assessment on Form N5 is to be completed just prior to discharge.
3. **Yellow Forms, Numbers D1 - D7**
For registrars of other doctors to complete. Most of the tests are clinical ratings that will be used in clinical management. The only "form filling" is to quantify the amount of psychotropic medication the individual has been receiving during the course of their stay. This form (D7) is completed on discharge. The second assessment on Form D4 is to be completed just prior to discharge also. The other forms are to be completed as soon after admission as possible.
4. **Green Forms**
These are duplicates of Forms N1, N2, N5 and D2, to be completed at the three month follow up date (refer Form W3). Ideally, they would also be completed just prior to discharge.

If further explanation of any form is required, please telephone Catherine at XXXXXXXXXX between 8am and 4pm. Thankyou for your assistance.

Catherine Western
Community Psychologist.

FORMS FOR WARD CLERK TO COMPLETE

210
Auckland Area Health Board Mental Health Services Patient Information Form

Form W1

I.D.

Surname		First Names		Alias	
Address _____ _____		Phone _____ <i>Home</i>		Previous Names (Surname first) _____ _____	
		Date of Birth Day Month Year Age 		Sex Male 1 Female 2		Domiciliary Code
Race European 1 N.Z. Maori 2 Pacific Islander 3 Asian 4 Other 5 Specify _____		Marital Status Never Married 1 Married 1st time 2 Remarried 3 Separated 4 Divorced 5 Widowed 6 De Facto 7		Religion Anglican 1 Presbyterian 2 Catholic 3 Methodist 4 Baptist 5 No religion 6 Prefer not to answer 7 Other religion 8 Specify _____	
Referring Agent Area Health Board Service 1 General Practitioner 2 Statutory Agency 3 Voluntary Agency 4 Self 5 Relative 6 Other (specify) 7		Status Voluntary 1 Committed 2 Special 3 Remand 4 A&D Act 5 Other 6 Specify _____		Date first seen Time Seen am pm History Has person used this service before? Yes No List other mental health related services used by person (most recent first): _____ _____ _____	
Main Reason for Acceptance into Service (mark only one) Potential Danger to self, others or property 1 Impaired reality testing accompanied by disordered behaviour 2 Need for skilled observation, high dose medication, therapeutic milieu 3 Impaired social familial or occupational functioning 4 Legally mandated admission 5 Disturbance of affect, behaviour and thinking 6 Excessive use of alcohol, drugs or other chemical substances 7 Intense anxiety 8 Anxiety accompanied by somatic symptoms or concerns not explained by other disease 9 Inadequate social and/or familial support 10 Other 11 Specify _____		Provisional Diagnosis Organic Psychosis 1 Schizophrenic Psychosis 2 Major Affective Disorder 3 Paranoid & other Non-Org. Psychosis 4 Childhood Disorders 5 Personality Disorder 6 Other Non-psychotic Disorders 7 Mental Retardation 8 No Psychiatric Disorder 9 No Diagnosis Assigned 10			
Comments _____ _____ _____					
Therapist Surname		First Names		Service	

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICESFORM W 2 DEMOGRAPHIC DATA

Patient's name

Ward:

Instructions: Complete as soon after admission as possible. Most information will be available from clinical history but the patient and/or family may have to be consulted for some.

Next of Kin:Relationship

Name:

Address:

Phone No: Home Work

Usual Doctor's name:

Address:

Phone:

Patient's current occupation

Patient's usual occupation

Beneficiary

Yes

No

☒
☐
N.Z Resident

Yes

No

☒
☐

If yes, tick appropriate box below

National Super

War

Unemployment

Sickness

D.P.B

Widow

Other

☒ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7

Specify

Place of birth.....Driver's Licence

Yes

No

☒
☐
Accommodation status

A. With legal husband or wife

With partner as couple

Living alone

Living with other persons,
(e.g. (parents, flatmates)

Please specify

☒ 1
☐ 2
☐ 3
☐ 4

B. Living in own home

Living in rental accommodation

Board house, unsupervised

Supervised accommodation

Hospital

Other

Please specify

☒ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6

Admission Summary prepared by: Date:

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICESFORM W3 - DISCHARGE DATA

Patient's name:

Ward:

Ward Clerk's name:

Date:/...../.....

Instructions: Complete as soon as possible after discharge.Discharge Date:

--	--	--

Accommodation Status on Discharge:

A. With legal husband or wife

With partner as couple

Living alone

Living with other persons,
(parents, flatmates)

☒

1
2
3
4

B. Living in own home

Living in rented accommodation

Boarding house, unsupervised

Supervised accommodation

Hospital

Other

☒	1
	2
	3
	4
	5
	6

Medication on Admission

YES

NO

☒

TypeAmount

Medication on Discharge

YES

NO

TypeAmount

Referred to:ServiceAppointment Date

--	--	--

ThreeMonth Follow-Up Date (e.g. for BPRS, CGI, NOSIE):

--	--	--

Name of Assessor:

Ward Bed State on Discharge:

Name of Consultant:

Name of Ward Charge:

Name of Registrar:

Patient's Name:

.....

Admission Date:

.....

FORMS FOR SENIOR NURSE TO COMPLETE

(N1 - N5)

INSTRUCTIONS:

The first scale (Form N) requires contact with the patient.

The others can be scored from your impressions and knowledge of the patient Forms N2 - N5.

ADMISSION TO ACUTE PSYCHIATRIC SERVICES

FORM N1

SOCIAL SUPPORT APPRAISALS SCALE (SS-A)

Vaux, Philips, Holly, Thomson, Williams, Stewart (1986)

Patient's Name:.....

Nurse's Name:.....

Date:...../...../.....

INSTRUCTIONS: The Senior Nurse is to complete this form as soon after admission as possible.

First ask the patient to complete the reverse side of this form. Stay with the patient while this is done.

This 23 item scale is based on Cobbs (1976) definition of social support "information leading the subject to believe that he is cared for, loved, esteemed, and a member of a network of mutual obligations." p.300

3 scores are typically computed:

SS-A total (sum all 23 items)

SS-A family (sum of 8 family items)

SS-A friends (sum of 7 friend items)

The remaining 8 items refer to people or others in a general way.

SS-A total (Social Support Score)

SS-A family (Family support score)

SS-A friends

Below are a list of statements about your relationships with family and friends.
Please indicate how much you agree or disagree with each statement as being true.

	(circle one number in each row)			
	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
My friends respect me	1	2	3	4
My family cares for me very much	1	2	3	4
I am not important to others	1	- 2	- 3	- 4
My family holds me in high esteem	1	2	3	4
I am well liked	1	2	3	4
I can rely on my friends	1	2	3	4
I am really admired by my family	1	2	3	4
I am respected by other people	1	2	3	4
I am loved dearly by my family	1	2	3	4
My friends don't care about my welfare	- 1	- 2	- 3	- 4
Members of my family rely on me	1	2	3	4
I am held in high esteem	1	2	3	4
I can't rely on my family for support	- 1	- 2	- 3	- 4
People admire me	1	2	3	4
I feel a strong bond with my friends	1	2	3	4
My friends look out for me	1	2	3	4
I feel valued by other people	1	2	3	4
My family really respects me	1	2	3	4
My friends and I are really important to each other	1	2	3	4
I feel like I belong	1	2	3	4
If I died tomorrow, very few people would miss me	- 1	- 2	- 3	- 4
I don't feel close to members of my family	- 1	- 2	- 3	- 4
My friends and I have done a lot for one another	1	2	3	4

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICES
FORM N2 NURSES' OBSERVATION SCALE FOR INPATIENT EVALUATION (NOSIE)

Patient's Name:

Nurse's Name:

Date:/...../198

INSTRUCTIONS: For each of the 30 items below you are to rate this patient's behaviour as it most usually is. Circle the frequency which best describes this patient on each item. Ignore Roman numerals in right margin (V, IV etc)
Ideally repeat every 5-7 days.

CODE: 0 = NEVER 1 = SOMETIMES 2 = OFTEN 3 = USUALLY 4 = ALWAYS

1.	Is sloppy	0	1	2	3	4	III
2.	Is impatient	0	1	2	3	4	IV
3.	Cries	0	1	2	3	4	VII
4.	Shows interest in activities around him/her.....	0	1	2	3	4	II
5.	Sits, unless directed into activity	0	1	2	3	4	VI
6.	Gets angry or annoyed easily	0	1	2	3	4	IV
7.	Hears things that are not there.....	0	1	2	3	4	V
8.	Keeps clothes neat.....	0	1	2	3	4	III
9.	Tries to be friendly with others.....	0	1	2	3	4	II
10.	Becomes easily upset if things don't suit.....	0	1	2	3	4	IV
11.	Refuses to do ordinary things expected.....	0	1	2	3	4	IV
12.	Is irritable and grouchy.....	0	1	2	3	4	IV
13.	Has trouble remembering.....	0	1	2	3	4	I
14.	Refuses to speak.....	0	1	2	3	4	I
15.	Laughs or smiles at funny comments or events.....	0	1	2	3	4	II
16.	Is messy in eating habits.....	0	1	2	3	4	III
17.	Starts up a conversation with others.....	0	1	2	3	4	II
18.	Says feels depressed or blue.....	0	1	2	3	4	VII
19.	Talks about his/her interests.....	0	1	2	3	4	II
20.	Sees things that are not there.....	0	1	2	3	4	V
21.	Has to be reminded what to do.....	0	1	2	3	4	I
22.	Sleeps, unless directed into activity.....	0	1	2	3	4	VI
23.	Says that he/she is no good.....	0	1	2	3	4	VII
24.	Has to be told to follow hospital routine.....	0	1	2	3	4	I
25.	Has difficulty completing even simple tasks on own.....	0	1	2	3	4	I
26.	Talks, mutters or mumbles to self.....	0	1	2	3	4	V
27.	Is slow moving and sluggish.....	0	1	2	3	4	VI
28.	Giggles or smiles to self without apparent reason.....	0	1	2	3	4	V
29.	Quick to fly off the handle.....	0	1	2	3	4	IV
30.	Keeps self clean.....	0	1	2	3	4	III

How much of a problem/sick/socially disabled is this patient:

- 1 = Minimal - requires little supervision
- 2 = Mild - requires some supervision
- 3 = Moderate- requires a lot of supervision
- 4 = Severe - requires constant supervision

ADMISSION TO ACUTE PSYCHIATRIC SERVICESNEED FOR INPATIENT CARE INDEX (N1P1) by C.B Western (1986)FORM N3

Patient's name

Nurse's Name:.....

Date

INSTRUCTIONS: Complete as soon after admission as possible.

Rate each patient on a five point scale, 0 - 4, minimum to maximum for each of the following four questions. Respond by circling the most appropriate number.

- | | | | | | |
|---|---|---|---|---|---|
| 1. How violent is the patient? | 0 | 1 | 2 | 3 | 4 |
| 2. How socially impaired is the patient? | 0 | 1 | 2 | 3 | 4 |
| 3. How much does the patient need intensive care? | 0 | 1 | 2 | 3 | 4 |
| 4. How much does the patient need skilled attention from mental health professionals? | 0 | 1 | 2 | 3 | 4 |

TOTAL -----

MEAN $\bar{X}$ -----

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICES
FORM N4
SOCIAL COMPETENCE SCALE (SCS)

Patient's Name:

Nurse Name:.....

Date:/...../198

The variables of age, education, marital status, occupation and employment history are used as social competence indices. Each variable is divided into three categories as follows (Zigler & Phillips, 1961):

Instructions: Circle appropriate number

<u>Age</u> 24 years and below	0
25 -44 years	1
45 years and above	2

Education

None or some grades including special school	0
Passed school certificate, completed 6th & 7thF	1
Completed one year university or more	2

Marital status

Single	0
Separated, divorced, remarried or widowed	1
Single continuous marriage	2

Occupation

Unskilled or semiskilled	0
Skilled and service	1
Clerical, sales, professional, managerial	2

Employment history

Usually unemployed	0
Seasonal, fluctuating, part-time	1
Regularly employed	2

The social competence score is the mean of the scores

Total score _____

Mean score _____

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICESCLINICAL GLOBAL IMPRESSIONSFIRST ASSESSMENT

Patients Name:

Nurse's Name:

Date / / 198

INSTRUCTIONSSEVERITY OF ILLNESS

Considering your total clinical experience
with this particular population, how mentally
ill is the patient at this time?

0 - Not assessed

1 - Normal, not at all ill

2 = Borderline mentally ill

3 - Mildly ill

4 = Moderately ill

5 = Markedly ill

6 = Severely ill

7 = Among the most extremely
ill patients

CLINICAL GLOBAL IMPRESSIONS (2nd Assessment)

Nurse's Name.....

INSTRUCTIONS: Circle appropriate numbers below

EFFICACY INDEX

Rate this item on the basis of DRUG EFFECT ONLY.

- Select the terms which best describe the degrees of therapeutic effect and side effects and records the number in the box where the two items intersect.

EXAMPLE: Therapeutic effect is rated as "Moderate" and side effects are judged "Do not significantly interfere with patient's functioning". Circle 06.

Rate total improvement whether or not, in your judgment, it is due entirely to drug treatment.

Compared to condition at admission to the project, how much has the patient's condition changed?

- | | |
|------------------------|---------------------|
| 0 = Not assessed | 4 = No Change |
| 1 = Very much improved | 5 = Minimally worse |
| 2 = Much improved | 6 = Much worse |
| 3 = Minimally improved | 7 = Very much worse |

THERAPEUTIC EFFECT

None

Do not significantly interfere with patient's functioning	significantly interferes with patients functioning	outweighs therapeutic effect.
---	--	-------------------------------

MARKED - Vast improvement.
complete or nearly complete remission of all symptoms

01

02

03

04

MODERATE - Decided improvement. Partial remission of symptoms.

05

06

07

08

MINIMAL - Slight improvement which doesn't alter status of care of patient.

09

10

11

12

UNCHANGED OR WORSE
Not Assessed = 00

13

1

15

16

Patient's Name:

.....

Admission Date:

.....

FORMS FOR DOCTOR TO COMPLETE

(D1 - D7)

The Mini Mental State test, AIMS, and rating scale for extra-pyramidal side effects require contact with the patient. The other forms can be completed from your standard examination of the patient.

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICES

FORM D1. MINI MENTAL STATE TEST OF COGNITIVE FUNCTION

Patient's Name:

Doctor's Name:

Date: ____ / ____ / ____

Instructions: Complete this as soon as possible after admission. Make sure you have several blank pieces of paper and a pencil. Unless otherwise stated score

1 = correct: 0 = incorrect.

If the patient is mentally retarded (as by measured IQ) or illiterate, only give simple items and insert "0" for all omitted scores. If you do not know whether the patient could not or would not do the item, mark incorrect.

This test covers most of the signs of Organic Brain Syndrome (OBS) including aphasia, agnosia and apraxia.

1. ORIENTATION:

Ask "What is the date today?" then ask specifically for the parts omitted: e.g. what time of year is it?

Date (dd/mm)	.....	1	0
Year	.....	1	0
Month	.....	1	0
Day	.....	1	0
Season	.....	1	0

"Can you tell me the name of this hospital?"	.....	1	0
of the nearest Villa?	.....	1	0
of the nearest town?	.....	1	0
of the province?	.....	1	0
of this country?	.....	1	0

2. REGISTRATION:

Ask the patient if you may test memory. Then say "ball, flag, tree" slowly about 1 second each. After saying all three ask patient to repeat them. This first repetition determines the score (0 - 3)...score.....().

But, if cannot repeat all 3, then repeat up till 6 trials until perfect. If cannot get all three after 6 trials, recall cannot be meaningfully tested later. Note number of trials ...() ... (do not include in score).

3. ATTENTION & CALCULATION:

Ask subject to subtract (or count backward by) 7 from 100. If subject makes an error, adjust subsequent numbers expected93 1 0

86	....	1	0
79	....	1	0
72	....	1	0
65	....	1	0

If patient cannot or refuses to do above, (i.e. zero score) ask patient to spell world backwards - d-l-r-o-w.

Number of letters in correct order (ENTER ONLY IF ZERO ABOVE).....().

4. RECALL

[illegible]

5. LANGUAGE

```
5.1 Naming: Show subject watch and ask what it is - repeat with pen
                                watch..... 1      0
                                pen   ..... 1      0
```

5.2 Repetition: Ask subject to repeat "No ifs, ands or buts"
(once only unless patient is deaf) - no prompting..... 1 0

5.3 3-stage command: Give the subject piece of plain blank paper, say:
 "take the paper in your right hand, fold it in half, and put it on the floor"

Takes paper in right hand	1	0
Folds paper in half	1	0
Puts paper on floor	1	0

5.4 Reading: On a blank piece of paper print the sentence "Close your eyes" in large letters. Ask patient to read it and do what it says. Score correct only if he/she closes eyes.

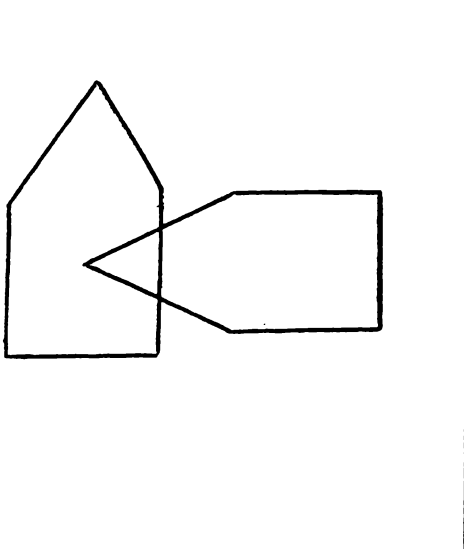
Closes eyes	1	0
-------------------	---	---

5.5 Writing: Give subject a blank piece of paper and ask him/her to write a sentence. It is to be written spontaneously. It must contain a subject and verb and be sensible. Correct grammar and punctuation are not needed.

Writes sentence 1 0

5.6 Copying : Ask the subject to copy the diagram below in the space provided. All 10 angles must be present and two must intersect to score 1 point. Tremor and rotation are ignored.

Draws pentagons.....	1	0
----------------------	---	---



```

6.  TOTAL CORRECT SCORE .....(out of 30) ..... [  ]
    ABNORMAL SCORE? ...0 = >23; 1 = 18-23; 2 = 1-18 ..... [  ]
    SCORE PROBABLY VALID? (e.g. no refusals) ..... (Y/N) ..... [  ]

```

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICES
FORM D2 BRIEF PSYCHIATRIC RATING SCALE
(Overall & Gorham)

Patient's Name:

Doctor's Name:

Date:/...../.....

INSTRUCTIONS: This form consists of 18 symptom constructs, each to be rated on a 7-point scale of severity ranging from "not present" to "extremely severe". If a specific symptom is not rated mark "0" - Not Assessed.

Enter the number which best describes the patient's present condition in the boxes below

NOT ASSESSED 0	NOT PRESENT 1	VERY MILD 2	MILD 3	MODERATE 4	MODERATELY SEVERE 5	SEVERE 6	EXTREMELY SEVERE 7
1. SOMATIC CONCERN: Degree of concern over present bodily health. Rate the degree to which physical health is perceived as a problem by the patient, whether complaints have a realistic basis or not.				10. HOSTILITY: Animosity, contempt, belligerence, disdain for other people outside the interview situation. Rate solely on the basis of the verbal report of feelings and actions of the patient toward others; do not infer hostility from neurotic defences, anxiety nor somatic complaints. (Rate attitude toward interviewer under "unco-operativeness").			
2. ANXIETY: Worry, fear or over-concern for present or future. Rate solely on the basis of verbal report of patient's own subjective experiences. Do not infer anxiety from physical signs or from neurotic defence mechanisms.				11. SUSPICIOUSNESS: Belief (delusional or otherwise) that others have now, or have had in the past, malicious or discriminatory intent toward the patient. On the basis of verbal report, rate only those suspicions which are currently held whether they concern past or present circumstances.			
3. EMOTIONAL WITHDRAWAL: Deficiency in relating to the interviewer and to the interview situation. Rate only the degree to which the patient gives the impression of failing to be in emotional contact with other people in the interview situation.				12. HALLUCINATORY BEHAVIOUR: Perceptions without normal external stimulus correspondence. Rate only those experiences which are reported to have occurred within the last week and which are described as distinctly different from the thought and imagery processes of normal people.			
4. CONCEPTUAL DISORGANISATION: Degree to which the thought processes are confused, disconnected or disorganised. Rate on the basis of integration of the verbal products of the patient; do not rate on the basis of patient's subjective impression of his own level of functioning.				13. MOTOR RETARDATION: Reduction in energy level evidenced in slowed movements. Rate on the basis of observed behaviour and of the patient only; do not rate on basis of patient's subjective impression of own energy level.			
5. GUILT FEELINGS: Over-concern or remorse for past behaviour. Rate on the basis of the patient's subjective experiences of guilt as evidenced by verbal report with appropriate affect; do not infer guilt feelings from depression, anxiety or neurotic defences.				14. UNCO-OPERATIVENESS: Evidence of resistance, unfriendliness, resentment and lack of readiness to co-operate with the interviewer. Rate only on the basis of the patient's attitude and responses to the interviewer and the interview situation; do not rate on basis of reported resentment or unco-operativeness outside the interview situation.			
6. TENSION: Physical and motor manifestations of tension, "nervousness" and heightened activation level. Tension should be rated solely on the basis of physical signs and motor behaviour and not on the basis of subjective experiences of tension reported by the patient.				15. UNUSUAL THOUGHT: Unusual, odd, strange or bizarre thought content. Rate here the degree of unusualness, not the degree of disorganisation of thought processes.			
7. MANNERISMS AND POSTURING: Unusual and unnatural motor behaviour, the type of motor behaviour which causes certain mental patients to stand out in a crowd of normal people. Rate only abnormality of movements; do not rate simple heightened motor activity here.				16. BLUNTED AFFECT: Reduced emotional tone, apparent lack of normal feeling or involvement.			
8. GRANDIOSITY: Exaggerated self-opinion, conviction of unusual ability or powers. Rate only on the basis of patient's statement about himself or self-in-relation-to-others, not on the basis of his demeanour in the interview situation.				17. EXCITEMENT: Heightened emotional tone, agitation, increased reactivity.			
9. DEPRESSIVE MOOD: Despondency in mood, sadness. Rate only degree of despondency; do not rate on the basis of inferences concerning depression based upon general retardation and somatic complaints.				18. DISORIENTATION: Confusion or lack of proper association for person, place or time.			

ADMISSIONS TO PSYCHIATRIC SERVICESFORM D3: PROVISIONAL DIAGNOSIS SHEET

Patient's Name.....

Doctor's Name.....

Date/...../.....

INSTRUCTIONS:

Complete as soon after admission as possible using the DSMIII R manual (1987) when it is available.

PROVISIONAL DIAGNOSIS

Organic Psychosis	☒	90
Schizophrenic Psychosis	☐	95
Major Affective Disorder	☐	96
Paranoid and Other Non-Organic Psychosis	☐	97
Personality Disorder	☐	01
Other Non-Psychotic Disorders	☐	03
Childhood Disorders	☐	13
Mental Retardation	☐	17
No Psychiatric Disorder (Include V Codes)	☐	60
No Diagnosis Assigned	☐	

AXIS I Clinical Syndromes, V CodesCODE

AXIS II Developmental Disorders, Personality Disorders.

AXIS III Physical Disorders and Conditions

<u>MAIN REASON FOR ACCEPTANCE TO SERVICE</u> (mark only one)		✓
Potential danger to self, others or property.....	☐	01
Impaired reality testing accompanied by disordered behaviour.....	☐	02
Need for skilled observation, high dose medication,..... therapeutic milieu.	☐	03
Impaired social, familial, or occupational functioning.	☐	04
Legally mandated admission.	☐	05
Disturbance of affect, behaviour or thinking.	☐	06
Excessive use of alcohol drugs or other chemical substances.	☐	07
Intense anxiety.	☐	08
Anxiety accompanied by somatic symptoms or concerns not explained by other disease.	☐	09
Inadequate social and/or familial support.....	☐	10
Other. <i>Specify:</i>	☐	11

Axis IV. Severity of Psychosocial Stressors

Axis IV provides a scale, the Severity of Psychosocial Stressors Scale, for coding the overall severity of a psychosocial stressor or multiple psychosocial stressors that have occurred in the year preceding the current evaluation and that may have contributed to any of the following:

- (1) development of a new mental disorder
- (2) recurrence of a prior mental disorder
- (3) exacerbation of an already existing mental disorder (e.g., divorce occurring during a Major Depressive Episode, or during the course of chronic Schizophrenia)

(Note: Post-traumatic Stress Disorder is an exception to the requirement that the stressor has occurred within a year before the evaluation.) The current disorder that related to the psychosocial stressor may be either a clinical syndrome, coded on Axis I or an exacerbation of a Personality or Developmental Disorder, coded on Axis II. In some instances the stressor is anticipation of a future event, e.g., imminent retirement.

Circle appropriate
number below

Severity of Psychosocial Stressors Scale: Adults

Code	Term	Examples of stressors	
		Acute events	Enduring circumstances
1	None	No acute events that may be relevant to the disorder	No enduring circumstances that may be relevant to the disorder
2	Mild	Broke up with boyfriend or girlfriend; started or graduated from school; child left home	Family arguments; job dissatisfaction; residence in high-crime neighborhood
3	Moderate	Marriage; marital separation; loss of job; retirement; miscarriage	Marital discord; serious financial problems; trouble with boss; being a single parent
4	Severe	Divorce; birth of first child	Unemployment; poverty
5	Extreme	Death of spouse; serious physical illness diagnosed; victim of rape	Serious chronic illness in self or child; ongoing physical or sexual abuse
6	Catastrophic	Death of child; suicide of spouse; devastating natural disaster	Captivity as hostage; concentration camp experience
0	Inadequate information, or no change in condition		

Name Stressor(s)

Axis V. Global Assessment of Functioning

Axis V permits the clinician to indicate his or her overall judgement of a person's psychological, social, and occupational functioning on a scale, the Global Assessment of Functioning Scale (GAF Scale), that assesses mental health-illness.

Ratings on the GAF Scale should be made for two time periods
(1) Current - the level of functioning at the time of the evaluation.

(2) Past year - the highest level of functioning for at least a few months during the past year. For children and adolescents, this should include at least a month during the school year.

Ratings of current functioning will generally reflect the current need for treatment or care. Ratings of highest level of functioning during the past year frequently will have prognostic significance, because usually a person returns to his or her previous level of functioning after an episode of illness.

Global Assessment of Functioning Scale (GAF Scale)

Consider psychological, social, and occupational functioning on a hypothetical continuum of mental health-illness. Do not include impairment in functioning due to physical (or environmental) limitations.

Note: Use intermediate codes when appropriate, e.g. 45,68,72.

Code

- | | |
|---------------|--|
| 90

81 | Absent or minimal symptoms (e.g. mild anxiety before an exam), good functioning in all areas, interested and involved in a wide range of activities, socially effective, generally satisfied with life, no more than everyday problems or concerns (e.g. an occasional argument with family members). |
| 80

71 | If symptoms are present, they are transient and expectable reactions to psychosocial stressors (e.g. difficulty concentrating after family argument); no more than slight impairment in social, occupational, or school functioning (e.g. temporarily falling behind in school work). |
| 70

61 | Some mild symptoms (e.g. depressed mood and mild insomnia) OR some difficulty in social, occupational, or school functioning (e.g. occasional truancy, or theft within the household), but generally functioning pretty well, has some meaningful interpersonal relationships. |
| 60

51 | Moderate symptoms (e.g. flat affect and circumstantial speech, occasional panic attacks) OR moderate difficulty in social, occupational, or school functioning (e.g. few friends, conflicts with co-workers). |
| 50

41 | Serious symptoms (e.g. suicidal ideation, severe obsessional rituals, frequent shoplifting) OR any serious impairment in social, occupational, or school functioning (e.g. no friends, unable to keep a job). |
| 40

31 | Some impairment in reality testing or communication (e.g. speech is at times illogical, obscure, or irrelevant) OR major impairment in several areas, such as work or school, family relations judgement, thinking, or mood (e.g. depressed man avoids friends, neglects family, and is unable to work; child frequently beats up younger children, is defiant at home, and is failing at school). |
| 30

21 | Behaviour is considerably influenced by delusions or hallucinations OR serious impairment in communication or judgement (e.g. sometimes incoherent, acts grossly inappropriately, suicidal preoccupation) OR Inability to function in almost all areas (e.g. stays in bed all day; no job, home, or friends). |
| 20

11 | Some danger of hurting self or others (e.g. suicide attempts without clear expectation of death, frequently violent, manic excitement) OR occasionally fails to maintain minimal personal hygiene (e.g. smears feces) OR gross impairment in communication (e.g. largely incoherent or mute). |
| 10

1 | Persistent danger of severely hurting self or others (e.g. recurrent violence OR persistent inability to maintain minimal personal hygiene OR serious suicidal act with clear expectation of death). |

Enter code number in boxes.

Current GAF

Past year GAF

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICESCLINICAL GLOBAL IMPRESSIONSForm D4 FIRST ASSESSMENT

Patients Name:

Doctor's Name:

Date / / 198

INSTRUCTIONSSEVERITY OF ILLNESS

Considering your total clinical experience with this particular population, how mentally ill is the patient at this time?

- 0 - Not assessed
- 1 - Normal, not at all ill
- 2 = Borderline mentally ill
- 3 - Mildly ill
- 4 = Moderately ill
- 5 = Markedly ill
- 6 = Severely ill
- 7 = Among the most extremely ill patients

Form D4

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICESCLINICAL GLOBAL IMPRESSIONS (2nd Assessment)

Patients Name.....

Doctor's Name.....

Date...../...../198

INSTRUCTIONS: Circle appropriate numbers below

SEVERITY OF ILLNESS

Considering your total clinical experience with this particular population, how mentally ill is the patient at this time?

- 0 = Not assessed
 1 = Normal, not at all ill
 2 = Borderline mentally ill
 3 = Mildly ill
 4 = Moderately ill
 5 = Markedly ill
 6 = Severely ill
 7 = Among the most extremely ill patients

GLOBAL IMPROVEMENT

Rate total improvement whether or not, in your judgment, it is due entirely to drug treatment.

Compared to condition at admission to the project, how much has the patient's condition changed?

- 0 = Not assessed 4 = No Change
 1 = Very much improved 5 = Minimally worse
 2 = Much improved 6 = Much worse
 3 = Minimally improved 7 = Very much worse

EFFICACY INDEX

Rate this item on the basis of DRUG EFFECT ONLY.

Select the terms which best describe the degrees of therapeutic effect and side effects and records the number in the box where the two items intersect.

EXAMPLE: Therapeutic effect is rated as "Moderate" and side effects are judged "Do not significantly interfere with patient's functioning". Circle 06.

THERAPEUTIC EFFECT	SIDE EFFECTS			
	None	Do not significantly interfere with patient's functioning	significantly interferes with patient's functioning	outweighs therapeutic effect.
MARKED - Vast improvement. complete or nearly complete remission of all symptoms	01	02	03	04
MODERATE - Decided improvement. Partial remission of symptoms.	05	06	07	08
MINIMAL - Slight improvement which doesn't alter status of care of patient.	09	10	11	12
UNCHANGED OR WORSE	13	14	15	16
Not Assessed = 00				

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICES

FORM D.5 ABNORMAL INVOLUNTARY

MOVEMENTS SCALE (AIMS)

Patient's Name:

Doctor's name:

Date: / /

INSTRUCTIONS: Complete Examination Procedure (reverse side)
before making ratings.MOVEMENT RATINGS: Rate highest severity observed.
Rate movements that occur upon activation one
less than those observed spontaneously.Code: 0 = None
1 = Minimal, may be
extreme normal
2 = Mild
3 = Moderate
4 = Severe

		(Circle One)
FACIAL AND ORAL MOVEMENTS	1. Muscles of Facial Expression e.g. movements of forehead, eyebrows, periorbital area, cheeks; include frowning, blinking, smiling, grimacing	0 1 2 3 4
	2. Lips and Perioral Area e.g. puckering, pouting, smacking	0 1 2 3 4
	3. Jaw e.g. biting, clenching, chewing, mouth opening, lateral movement	0 1 2 3 4
	4. Tongue Rate only increase in movement both in and out of mouth, NOT inability to sustain movement	0 1 2 3 4
EXTREMITY MOVEMENTS	5. Upper (arms, wrists, hands, fingers) include choreic movements, (i.e. rapid, objectively purposeless, irregular, spontaneous), athetoid movements (i.e. slow, irregular, complex, serpentine). Do NOT include tremor (i.e. repetitive, regular, rhythmic)	0 1 2 3 4
	6. Lower (legs, knees, ankles, toes) e.g. lateral knee movement, foot tapping, heel dropping, foot squirming, inversion and eversion of foot	0 1 2 3 4
TRUNK MOVEMENTS	7. Neck, shoulders, hips e.g. rocking, twisting, squirming, pelvic gyrations	0 1 2 3 4
GLOBAL JUDGMENTS	8. Severity of abnormal movements	None normal 0 Minimal 1 Mild 2 Moderate 3 Severe 4
	9. Incapacitation due to abnormal movements	None, normal 0 Minimal 1 Mild 2 Moderate 3 Severe 4
	10. Patient's awareness of abnormal movements Rate only patient's report	No awareness 0 Aware, no distress 1 Aware, mild distress 2 Aware, moderate distress 3 Aware, severe distress 4
DENTAL STATUS	11. Current problems with teeth and/or dentures	No 0 Yes 1
	12. Does patient usually wear dentures?	No 0 Yes 1

EXAMINATION PROCEDURE

Either before or after completing the Examination Procedure observe the patient unobtrusively, at rest (e.g. in waiting room).

The chair to be used in this examination should be a hard, firm one without arms.

1. Ask patient whether there is anything in his/her mouth (i.e. gum, candy, etc.) and if there is, to remove it.
2. Ask patient about the current condition of his/her teeth. Ask patient if he/she wears dentures. Do teeth or dentures bother patient now?
3. Ask patient whether he/she notices any movements in mouth, face, hands or feet. If yes, ask to describe and to what extent they currently bother patient or interfere with his/her activities.
4. Have patient sit in chair with hands on knees, legs slightly apart, and feet flat on floor. (Look at entire body for movements while in this position.)
5. Ask patient to sit with hands hanging unsupported. If male, between legs, if female and wearing a dress, hanging over knees. (Observe hands and other body areas.)
6. Ask patient to open mouth. (Observe tongue at rest within mouth.) Do this twice.
7. Ask patient to protrude tongue. (Observe abnormalities of tongue movement.) Do this twice.
- 8. Ask patient to tap thumb with each finger, as rapidly as possible for 10 - 15 seconds; separately with right hand, then with left hand. (Observe facial and leg movements.)
9. Flex and extend patient's left and right arms (one at a time). (Note any rigidity and rate on DOTES.)
- 10. Ask patient to stand up. (Observe in profile. Observe all body areas again, hips included.)
- 11. Ask patient to extend both arms outstretched in front with palms down. (Observe trunk, legs and mouth.)
12. Have patient walk a few paces, turn, and walk back to chair. (Observe hands and gait.) Do this twice.

■ Activated movements

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICES

Form D 6 Scale for Akathisia, Akinesia and Parkinsonian side effects.

Patient's Name

Doctor's Name

Date/...../.....

Instructions

(Complete examination procedure as for the AIMS in Form D 5)

		Circle Number								Code
Akathisia:	Subjective restlessness									
	Feels need to move	0	2	2	3	4	5	6		
Akinesia:	Decreased facial expression. . .	0	1	2	3	4	5	6		
	Decreased expressive gestures .	0	1	2	3	4	5	6		
	Decreased spontaneous movement .	0	1	2	3	4	5	6		
Bradykinesia:	Slow movement, rigidity, difficulty with rapidly alternating movements	0	1	2	3	4	5	6		
Voice abnormality:	Jerky, weak, monotone, dysarthria mumbling, tremor, quaver	0	1	2	3	4	5	6		
Breathing abnormality:	Jerky, grunting, hiccups . . .	0	1	2	3	4	5	6		
<u>Parkinsonian side effects:</u> (Circle number)										
<u>GAIT</u>										
The patient is examined as he walks into the examining room, his gait the swing of his arms, his general posture, all form the basis for an overall score for this item.										
This is rated as follows:										
0 - normal										
1 - diminution in swing while the patient is walking										
2 - marked diminution in swing with obvious rigidity in the arm										
3 - stiff gait with arms held rigidly before the abdomen										
4 - stooped shuffling gait with propulsion and retropulsion										
<u>ARM DROPPING</u>										
The patient and the examiner both raise their arms to shoulder height and let them fall to their sides. In a normal subject, a stout slap is heard as the arms hit the sides. In the patient with extreme Parkinson's syndrome the arms fall very slowly:										
0 - normal, free fall with loud slap and rebound										
1 - fall slowed slightly with less audible contact and little rebound										
2 - fall slowed, no rebound										
3 - marked slowing, no slap at all										
4 - arms fall as though against resistance; as though through glue										

P.T.O.

SHOULDER SHAKING

The subject's arms are bent at a right angle at the elbow and are taken one at a time by the examiner who grasps one hand and also clasps the other around the patient's elbow. The subject's upper arm is pushed to and fro and the humerus is externally rotated. The degree of resistance from normal to extreme rigidity is scored as follows

- 0 - normal
- 1 - slight stiffness and resistance
- 2 - moderate stiffness and resistance
- 3 - marked rigidity with difficulty in passive movement
- 4 - extreme stiffness and rigidity with almost a frozen shoulder

ELBOW RIGIDITY

The elbow joints are separately bent at right angles and passively extended and flexed, with the subject's biceps observed and simultaneously palpated. The resistance to this procedure is rated. (The presence of cogwheel rigidity is noted separately). Scoring is from 0-4 as in Shoulder Shaking test.

- 0 - normal
- 1 - slight stiffness and resistance
- 2 - moderate stiffness and resistance
- 3 - marked rigidity with difficulty in passive movement
- 4 - extreme stiffness and rigidity
shoulder

TREMOR

Patient is observed walking into examining room and then is re-examined for this item

- 0 - normal
- 1 - mild finger tremor, obvious to sight and touch
- 2 - tremor of hand or arm occurring spasmodically
- 3 - persistent tremor of one or more limbs
- 4 - whole body tremor

SALIVATION

Patient is observed while talking and then asked to open his mouth and elevate his tongue. The following ratings are given

- 0 - normal
- 1 - excess salivation to the extent that pooling takes place if the mouth is open and the tongue raised
- 2 - when excess salivation is present and might occasionally result in difficulty in speaking
- 3 - speaking with difficulty because of excess salivation
- 4 - frank drooling

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICES

FORM D7, PSYCHOTROPIC MEDICATION

DATE:

Patient's name:

Doctor's name:

Instructions: Fill in this at discharge. Record drugs used during admission (no trade names). Do not include medical drugs.

TYPE	AVERAGE		ROUTE (Tick box)			NUMBER OF DAYS
	DAILY	DOSE	ORAL	PARENTERAL	DEPO	ON DRUG
<u>ANTIPSYCHOTIC:</u>						
Chlorpromazine.....			☐	☐	☐	
Fluphenazine			☐	☐	☐	
Haloperidol			☐	☐	☐	
Pericyazine			☐	☐	☐	
Thioridazine.....			☐	☐	☐	
Trifluoperazine.....			☐	☐	☐	
Other:			☐	☐	☐	
<u>ANTIDEPRESSANT</u>						
Amitriptyline.....			☐	☐	☐	
Amoxapine			☐	☐	☐	
Clomipramine.....			☐	☐	☐	
Doxepin.....			☐	☐	☐	
Imipramine.....			☐	☐	☐	
Other.....			☐	☐	☐	
<u>ANTIMANIC:</u>						
Lithium Carbonate...			☐	☐	☐	
Other:			☐	☐	☐	
<u>ANTIANKXIETY:</u>						
Alprazolam.....			☐	☐	☐	
Diazepam			☐	☐	☐	
Other:			☐	☐	☐	
<u>HYPNOTIC:</u>						
Chloral Hydrate.....			☐	☐	☐	
Nitrazepam.....			☐	☐	☐	
Temazepam			☐	☐	☐	
Other:			☐	☐	☐	
<u>ANTIPARKINSON:</u>						
Benzhexol			☐	☐	☐	
Benzotropine.....			☐	☐	☐	
Orphenadrine.....			☐	☐	☐	
Procyclidine.....			☐	☐	☐	
Other:			☐	☐	☐	

	<u>AVERAGE</u>	<u>ROUTE (Tick box)</u>		<u>DAYS ON DRUGS</u>
	<u>DAILY DOSE</u>	Oral	Parenteral Depo	
<u>ANTICONVULSANT :</u>				
Carbamazepine.....		☐	☐	
Clonazepam.....		☐	☐	
Phenobarbitone.....		☐	☐	
Phenytoin.....		☐	☐	
Primidone.....		☐	☐	
Sodium Valproate.....		☐	☐	
Other.....		☐	☐	

Compliance: Rate on a scale of 0 - 4 from poor (0); fair (1); good (2); very good (3); excellent (4). Circle the number which describes the person's behaviour.

0 1 2 3 4

Treatments other than drugs: circle yes or no.

Yes No

If yes, complete section below:

OTHER TREATMENTS

ECT	☐	1
O.T.	☐	2
Individual psychotherapy	☐	3
Behaviour modification	☐	4
Group therapy	☐	5
Family therapy	☐	6
Supportive psychotherapy	☐	7
Milieu therapy	☐	8
Other (state)	☐	9

Number of therapies:

☐

APPENDIX III

Accommodation Status

The accommodation status of people in a sample of 538 acute service users is given in Table A

Table A : Number of people in the cohort by Accommodation status categories

Accommodation Status A (who the person lived with)

Category	On Admission		On discharge	
	N	%	N	%
1. Those living with legal spouse	103	19.1	90	16.8
2. Those living with partner as a couple	15	2.8	15	2.8
3. Those living alone	57	10.6	28	5.2
4. Those living with other persons	272	50.6	271	50.5
5. Missing data	91	16.9	133	24.77
Total	538		537	

Accommodation status B (Type of dwelling)

Category	On Admission		On Discharge	
	N	%	N	%
1. Living in own home	207	38.5	179	33.3
2. Living in rental Accommodation	100	18.6	69	12.8
3. Living in unsupervised boarding house	9	1.7	11	2.0
4. Living in supervised accommodation	71	13.2	71	13.2
5. Living in Hospital	0	0	13	2.4
6 Missing	151	28.1	194	36.1

Accommodation Status Change

200 people did not change their place of abode or who they lived with.

39 changed who they lived with but not where they lived.

125 changed where they lived but not the fact that they were still living with other people.

120 changed both where they lived and who they lived with.

54 people were missing accommodation status change information.

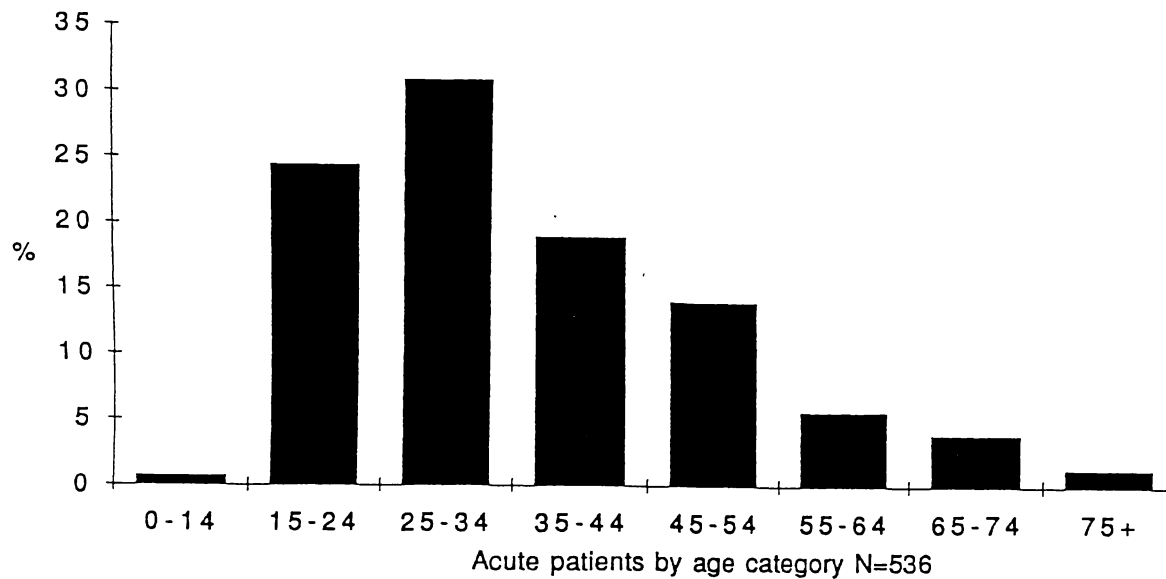
APPENDIX IV

Appendix IV includes detailed information about the relationships between the predictors and the criterion variable, which is of interest, but not significant, or central to the main findings and arguments in the thesis.

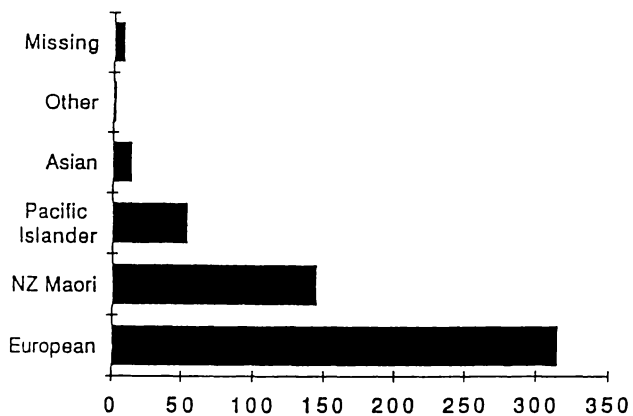
Included are:

- 1) **Some frequency counts**
- 2) **Detailed relationships between predictors and criterion**
- 3) **Two tables of non significant correlations between the SS-A and BPRS and other rating scales**
- 4) **Intercorrelations between predictors which appeared in the regression.**

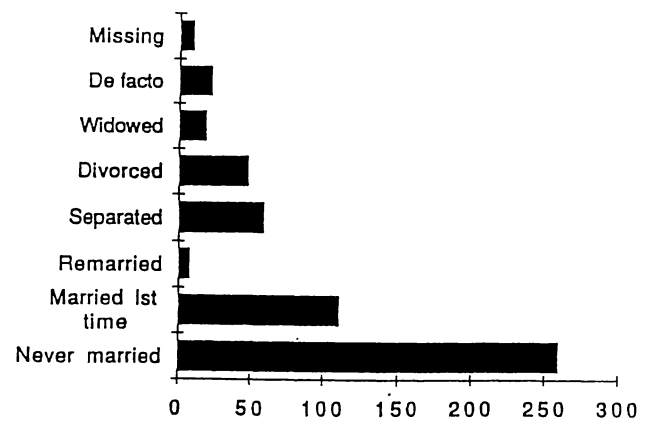
Frequency counts on some predictor variables



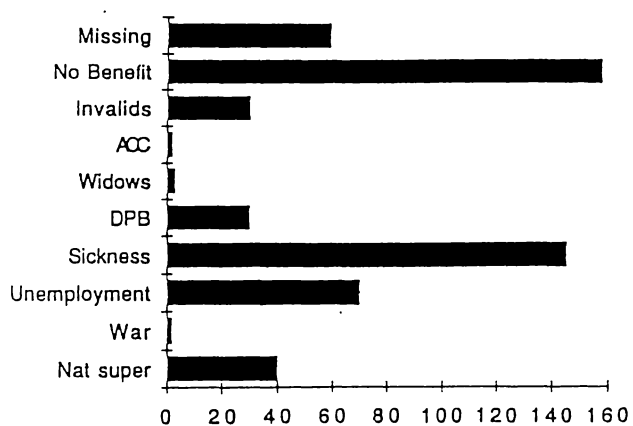
Race Acute Inpatients N=538



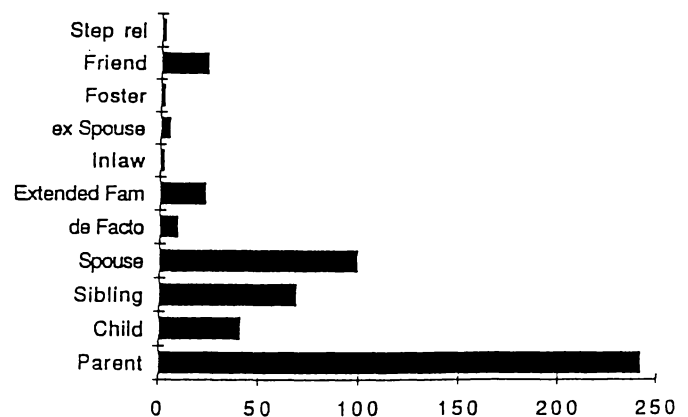
Marital Status Acute Inpatients N=538



Benefit 1988 inpatients N=538



Next of Kin Category Inpatients N=538



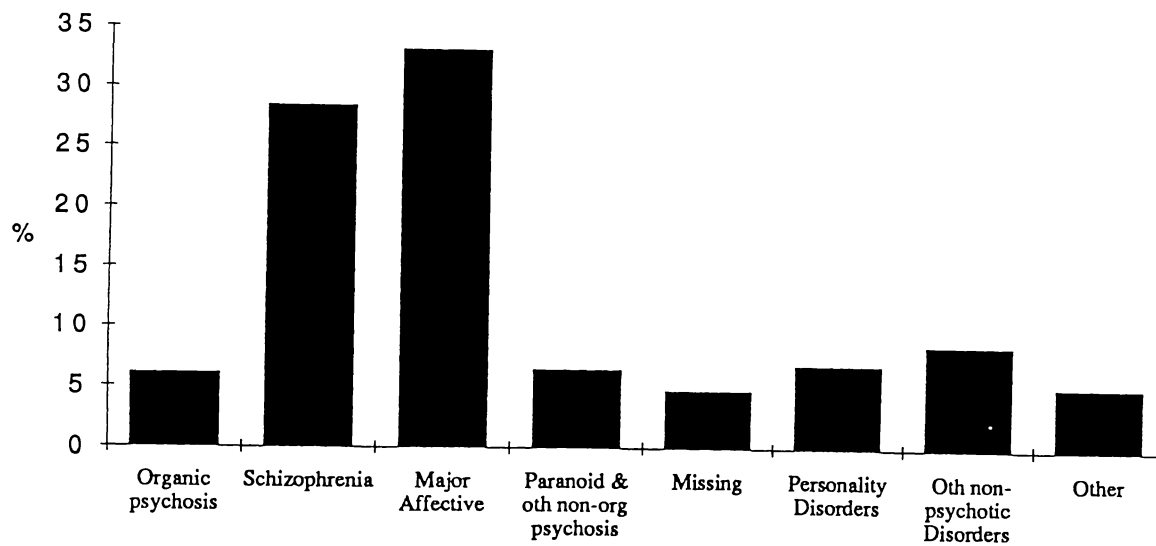
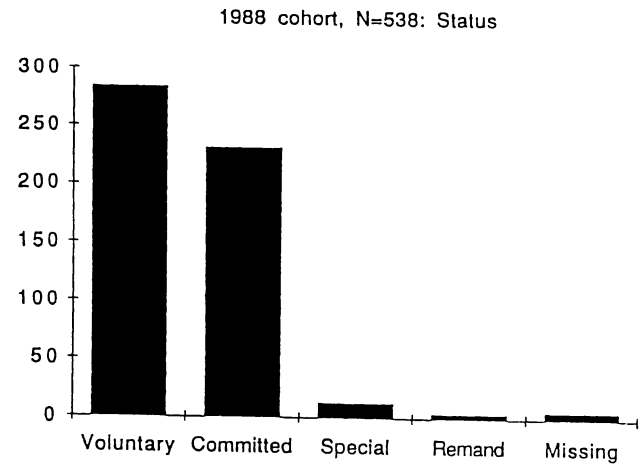
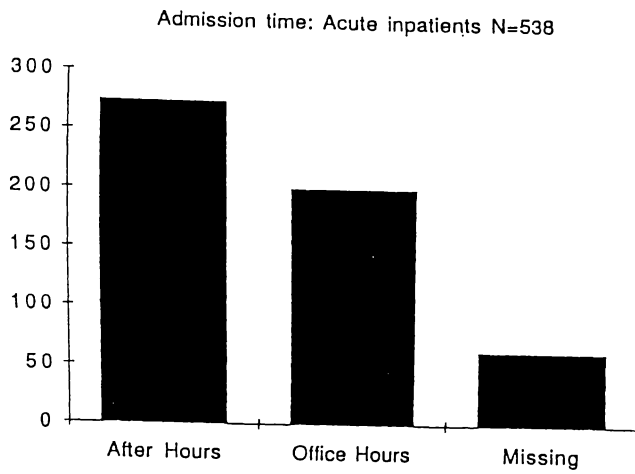
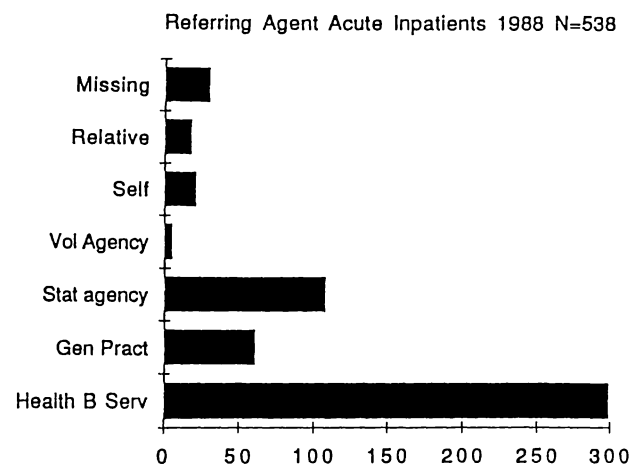
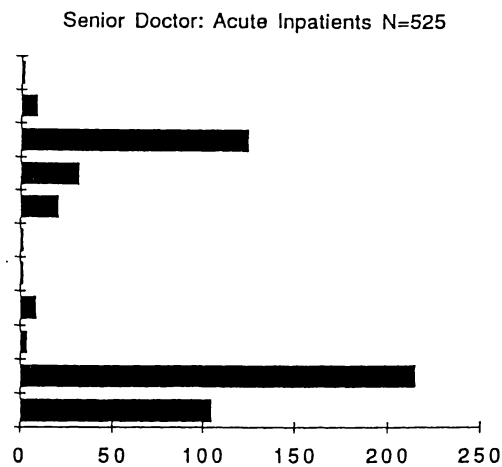


Figure * Prov. Diagnosis categories



2) Detailed relationships between predictors and criterion

Relationships between Socio-demographic variables and Amount of Service Use (ASU).

<u>Variable</u>	<u>Procedure</u>	<u>Result (mean amount of service use in brackets).</u>	<u>Number</u>	<u>Comments</u>
Age	Spearman's	$r_s = -.10$ $P = 0.02$	533	Correlation between age and ASU.
Sex	Two sample t-test for independent samples	$t = 0.10$ $P = 0.33$ male (17) female (16)	269 <u>269</u> 538	No significant difference between males and females in terms of ASU (transformed).
Race	One-way ANOVA	$F = 1.86$ $P = 0.14$ european (16) maori (17) pisland (18) other (29)	315 145 54 <u>17</u> 522	No significant differences between ethnic groups in terms of ASU (transformed).
Marital status	One-way ANOVA	$F = 0.71$ $P = 0.62$ never mar (18) married (15) separated (16) divorced (15) widowed (14) defacto (19)	260 119 59 48 19 <u>23</u> 528	No significant differences between the six marital status groups in terms of ASU (transformed).
Religion	One-way ANOVA	$F = 1.88$ $P = 0.10$ anglican (11) presb-meth (16) catholic (16) bapt-other (19) none (19) no answer (16)	61 50 74 86 89 <u>110</u> 470	No significant differences between religious groups in terms of ASU (transformed)..
Domiciliary Code	One-way ANOVA	$F = 1.19$ $P = 0.30$ Auckland (12) Paku-How (17) Otahuhu (12) Papatoetoe (20) Otara (20) Mangere (17) Manurewa (20) Clev-Papa (17) Pukekohe (17) Cor-Thames (14) Other (14)	50 41 31 38 54 71 86 55 44 28 <u>27</u> 525	No significant differences between the different areas in terms of ASU (transformed).
Next of kin	One-way ANOVA	$F = 1.86$ $P = 0.10$ parents (19) children (17) siblings (17) spouses (15) other family (11) friend (13)	242 41 69 99 43 <u>24</u> 518	No significant differences between next of kin category and ASU (transformed). Nb. "Other family" includes defactos, extended family, in-laws, ex-spouses, foster parents and foster children.

Benefit	One-way ANOVA	F=1.06 P=0.3852 nat super (14) unemploy (20) sickness (17) DPB (16) invalid (13) no benefit (16)	40 70 145 30 30 <u>157</u> 472	No significant differences between the various types of benefit in terms of ASU(transformed).
Accommodation status change	One-way ANOVA	F=0.61 P=0.06569 no ch (16) ch who (16) ch where (19) ch w & w (16)	200 39 125 <u>120</u> 484	No significant differences between accommodation change and ASU (transformed).
Occupation	One-way ANOVA	F=1.88 P=0.0964 mangerial (10) skilled (24) part-unskil (15) houseperson (17) benefit (17) retired (14)	19 90 90 73 231 <u>31</u> 534	No significant differences between occupation categories in terms of ASU (transformed). Nb. "Skilled" includes non-manual skilled and manual skilled, while "part-unskil" includes partly-skilled and unskilled. Data from students (n=7) deleted from this analysis.
Severity of stressors	Spearman's	$r_s = -0.03136$ P=0.5786	316	Correlation between Axis IV code and ASU.
Perceived social support	Spearman's	$r_s = 0.14716$ P=.0534	173	Correlation between scores on the Social Appraisal Scale and ASU.
Drivers licence	Two sample t-test for independent samples	t=0.7470 P=0.4555 driver (17) non-dr (15)	254 <u>151</u> 405	No significant difference between those with and those without drivers' licences in terms of ASU (transformed).
Social competence	Spearman's	$r_s = -0.07471$ P=0.1674	343	Correlation between scores on the Social Competence Scale and ASU

Relationships between behavioural variables and Amount of Service Use (ASU).

<u>Variable</u>	<u>Procedure</u>	<u>Result (mean length of stay (in brackets)).</u>	<u>Number</u>	<u>Comments</u>
NOSIE total	Spearman's	$r_s = .07$ $P = 0.15$	369	Correlation between the NOSIE total score and ASU.
GAF (past)	Spearman's	$r_s = -.13$ $P = 0.02$	308	Correlation between Global Assessment of Functioning (past) and ASU.
NOSIE problem	Spearman's	$r_s = .26$ $P = 0.00$	325	Correlation between the NOSIE problem score and ASU.
BPRS	Spearman's	$r_s = .31$ $P = 0.00$	323	Correlation between Brief Psychiatric Rating Scale score and ASU.
NIPi	Spearman's	$r_s = .23$ $P = 0.00$	400	Correlation between the Need for Inpatient Care Index and ASU.
Doctor's CGI	Spearman's	$r_s = .28$ $P = 0.00$	319	Correlation between the doctor's CGI's and ASU.
Nurse's CGI	Spearman's	$r_s = .29$ $P = 0.00$	394	Correlation between the nurses's CGI and ASU
GAF (current)	Spearman's	$r_s = -.14$ $P = 0.01$	316	Correlation between the Global Assessment of Functioning and ASU.
Cognitive impairment	Spearman's	$r_s = -.21$ $P = 0.00$	185	Correlation between scores on the Mini Mental State of Cognitive Functioning and ASU.
Comorbidity	Two sample t-test for independent samples	$t = -0.80$ $P = 0.43$ no comorb (16) comorb (18)	370 <u>106</u> 476	No significant difference between those with existing substance abuse problems and those without such problems in terms of ASU (transformed).
Comorbidity	One-way ANOVA	$F = 0.25$ $P = 0.78$ poly subst (20) alcohol (18) mariju (16)	67 50 <u>10</u> 127	No significant difference between those with co-existing substance abuse problems in addition to their psychiatric illness and those without such problems., in terms of their ASU(transformed).

Relationship between systems variables and Amount of Service Use (ASU).

<u>Variable</u>	<u>Procedure</u>	<u>Result (mean length of stay in brackets).</u>	<u>Number</u>	<u>Comments</u>
Service	Two sample t-test for independent samples	t=4.54 P=0.00 Villa 2 (22) not villa 2 (14)	225 <u>313</u> 538	A significant difference detected between those who have been and those who have not been in Villa 2 . ASU transformed.
Consultant	One-way ANOVA	F=0.60 P=0.66 A(19) B(17) C(17) D (17) E (13)	106 29 142 215 <u>20</u> 512	No significant difference exists between consultants in terms of the ASU (transformed) of their patients.
Referring agent	One-way ANOVA	F=0.86 P=0.46 AAHB (16) GP (14) agent (19) self-relative (15)	292 61 107 <u>32</u> 492	No significant differences between referring agents in terms of the ASU (transformed).
Main reason for acceptance to service	One-way ANOVA	F=1.99 P=0.07 potent danger...(16) impaired real...(21) impaired soc...(12) legally mand...(20) dist of affect...(17) alcohol-drug...(14) inad support...(14)	163 167 39 30 72 17 12 500	No significant differences between reason for acceptance categories and ASU (transformed). Nb. Three categories (N=15) have been deleted from this analysis.
Status	One-way ANOVA	F=4.60 P=0.01 voluntary (15) committed (18) other (33)	284 235 <u>19</u> 538	A significant difference between the status categories in terms of ASU (transformed) detected.
	Tukey's HSD	95% confident that the difference between the following groups is greater than zero : Other vs Voluntary		People who comprise the "other" status category have a significantly longer ASU (transformed) than those who are in the "voluntary" group. No other significant differences are evident.
Provisional diagnosis	One-way ANOVA	F=3.12 P=0.01 organic psych (14) schiz psychosis (17) major affective (21) non-organic ps (15) personality dis (13) non-psychotic (12)	33 154 179 35 37 <u>46</u> 484	A significant difference between provisional diagnosis categories in terms of ASU (transformed). Nb. Four provisional diagnosis categories (N=29) deleted from this analysis.
	Tukey's HSD	95% confident that the difference between the following groups is greater than zero : Major affect vs Non-psy		People who comprise the "major affective" group have significantly longer ASU (transformed) than those in the "non-psychotic" group No other significant differences are evident.

Time of admission	Two sample t-test for independent samples	t=1.36 office hours (18) after-hours (16)	202 <u>274</u> 476	No significant difference between those admitted in office hours and those admitted after-hours in terms of ASU (transformed).
Previous admission	Two sample t-test for independent samples	t=.10 readmission (17) first admin (16)	314 <u>143</u> 457	No significant difference between those with and those without previous admissions. and ASU transformed.
Use of other service	One-way ANOVA	F=0.20 P=0.82 1 service (18) 2 services (16) 3 or more (16)	141 28 <u>13</u> 182	No significant difference between the number of services previously used in terms of ASU.
Amount of medication	Linear contrast	F=123.80 P=0.00		A significant linear relationship exists.
	One-way ANOVA	F=18.88 P=0.00 1 drug (8) 2 drugs (9) 3 drugs (10) 4 drugs (18) 5 drugs (22) 6 drugs (26) 7 drugs (33) 8 drugs (33) 9+ drugs (49)	37 56 75 93 73 59 37 25 <u>27</u> 535	A significant difference exists between the number of drugs administered and ASU (transformed).
	Tukey's HSD	95% confident that the difference between the following groups is greater than zero : 9+ drugs vs 1 to 5 drugs 8 drugs vs 1 to 3 drugs 7 drugs vs 1 to 4 drugs 6 drugs vs 1 to 3 drugs 5 drugs vs 1 to 3 drugs 4 drugs vs 1 to 3 drugs		Significant differences in terms of the ASU (transformed) exist between the groups listed.
Type of medication:	Two sample t-test for independent samples			
anti-psych		t=5.14 P=0.00 anti-psyc (19) not-anti (10)	417 <u>115</u> 532	A significant difference detected between those on and those not on anti-psychotics. Nb. t corrected for unequal variances.
anti-depress		t=4.31 P=0.00 anti-depress (23) not anti-dep (15)	140 <u>392</u> 532	Significant difference between those on and those not on anti-depressants.
anti-manic		t=6.57 P=0.00 anti-manic (27) not anti-manic (14)	134 <u>398</u> 532	A significant difference exists between those on and those not on anti-manics Nb. t corrected for unequal variances.

anti-anxiety		t=3.26 P=0.00 anti-anxiety (22) not anti-anx (15)	120 <u>412</u> 532	A significant difference exists between those on and those not on anti-anxiety drugs.
hypnotics		t=2.81 P=.00 hypnotics (19) not hyp (15)	235 <u>297</u> 532	A significant difference exists between those on and those not on hypnotics. Nb. t corrected for unequal variances.
anti-park		t=6.48 P=0.00 anti-park (22) not anti-park (12)	287 <u>245</u> 532	A significant difference exists between those on and those not on anti-parkin-sonians. Nb. t corrected for unequal variances.
anti-conv		t=3.56 P=0.00 anti-convs (23) convs (15)	119 <u>413</u> 532	A significant difference exist between those on and those not on aniti-convulsants.
Reserpine	Two sample t-test for independent samples	t=7.96 P=.00 resp prescrib (46) resp not prescrib (15)	37 <u>501</u> 538	A significant difference exists between those on reserpine and those not on reserpine in terms of ASU (transformed). Nb. t corrected for unequal variances.
Tardive Dyskinesia	Spearman's	r _s =.10 P=0.43	69	Correlation between scores on the Abnormal Involuntary Movement Scale and ASU
Other side effects	Spearman's	r _s =.21 P=0.01	144	Correlation between scores on the Scale for Akathisia, Akinesia and Parkinsonian side effects.
Other medication	Two sample t-test for independent samples	t=.70 P=0.48 yes (20) no (17)	19 <u>519</u> 538	No significant difference between those who had medication for conditions other than their psychiatric illness and those who have not had additional medication.
Other treatment	Two sample t-test for independent samples	t=1.78 P=0.08 other (20) no other (5)	122 <u>2</u> 124	No significant difference between those who have had treatment other than drug treatment and those who have not had non-drug treatment.

3) Two tables showing correlations between rating scales

Table 1. Correlations between other scales in the instrument and the SS-A Scale.

	Total	Family	Friend	N
NIPI	.01	.02	-.04	67
SCS	-.05	.00	-.19	59
MMSE	.48	.51	.55	7
BPRS	-.12	-.20	-.07	26
EPSE	-.23	-.13	-.41	5
NOSIE problem	-.05	-.06	-.06	50
NOSIE total	-.10	-.01	-.12	60
social competence	.03	.09	.01	
interest	-.10	-.05	-.04	
personal neatness	.00	.10	-.14	
irritability	.21	.20	.18	
manifest psychosis	.07	-.00	.06	
motor retardation	.05	-.07	.09	
NCGI	-.15	-.23	-.16	55
DCGI	-.29	-.20	-.35	5
Axis IV	.75	.75	.69	4
GAF current	-.83	-.85	-.98	3
GAF past	.93	.94	1.00	3

Table 2. Correlations between the BPRS and other severity of illness measures

	N	Correlation with BPRS Pearson's r	P
SS-A	31	-.05	0.81
NIPI	73	.46	0.001
SCS	58	.03	0.81
MSE	30	-.12	0.54
AIMS	170	.18	0.02
Side effects	163	.34	0.00
NOSIE prob	86	.11	0.31
NOSIE total	58	-.35	0.01
NCGI	100	-.02	0.84
DCGI	80	.08	0.504
Axis 4	83	-.13	0.254
GAF curr	77	.14	0.23
GAF past	72	-.14	0.233

(Refer p.ix ? for abbreviations)

4. Intercorrelations between predictor variables

Intercorrelations for the predictor variables which correlated highly with amount of service use are recorded below, with intercorrelations for other predictors of interest. These results identify multicollinearity where it exists between predictor variables and provide additional information on the characteristics of this group of acute service users.

Number of different psychotropic drugs prescribed

This variable correlated most highly with having reserpine, other treatments, being in Villa 2, obtaining a high score on the nurses CGI, doctors CGI and the BPRS. It also correlated with a low score on the MMSE, having side effects from medication and having a major affective provisional diagnosis classification, as well as with being a first admission.

Stay in the intensive care unit (Villa 2)

Being in Villa 2 correlated most highly with non-voluntary status, youth, being given more different psychotropic drugs, being committed, being referred by a statutory agency, never having been married, being a beneficiary and having antiparkinsonians, reserpine and antipsychotics, having high scores on the NIPI, Doctors CGI, Nurses CGI, low current GAF scores and not being European.

Status

Being classified as 'other status' indicated a significantly higher service use and correlated most highly with being referred by a statutory agent, being unemployed, being Maori, being male, living in locality M, being classified as a legally mandated admission, not being prescribed antidepressants, being younger than the rest of the cohort, not being a first admission, having a low current GAF and no side effects.

Reserpine

The group prescribed reserpine (n = 37) were characterised by also being on antimanic, antipsychotic, antiparkinsonian and anticonvulsant drugs, having a diagnosis of major affective disorder with manic episodes, having a high score on the nurses clinical global impressions (CGI) scale and the AIMS scale for tardive dyskinesia.

Extra pyramidal side effects and akathisia and akinesia

Having side effects such as akathisia, akinesia and other extra-pyramidal symptoms from medication, correlated most highly with a high score on the AIMS, indicating the presence of tardive dyskinesia, a low MMSE score, a high number of different psychotropic drugs, a high BPRS score, referral by self or relatives, low use of other services, a high GAF current score and a high score on the NIPI. Why there is a relationship between side effects and a high GAF score is not clear.

Age

Being young correlated most highly with being in Villa 2, with being a beneficiary, unemployed, unmarried and Maori and having parents as next of kin. Increasing age correlated with being retired, having a high score on the social competence scale, having a child as next of kin and with being European.

Provisional diagnosis

Those classified as having non psychotic disorders used the service less than those diagnosed with a major affective disorder. The former classification correlated most highly with drug abuse, a high axis 4 (severity of stressors score), with not having many psychotropic drugs, with not having antipsychotics or antiparkinsonians, with not being schizophrenic or using intensive care, with higher scores on the SSAS with being European, having voluntary status and being admitted because of 'disturbance of affect'. Having a provisional diagnosis of major affective disorder correlated most highly with having antimanic drugs and a greater number of psychotropic drugs. It also correlated with having reserpine, being married, having a high score on the Social Competence Scale and the Doctors' Clinical Global Impressions, with having other treatments, a high past Global Assessment of Functioning, with a high NOSIE problem score and with not being on a benefit.

Race

Being European correlated most highly with having a high score on the Social Competence Scale (SCS), a drivers licence, age, with not living in locality O or locality M, with being prescribed anti-depressants, with not being a beneficiary or unemployed, with scoring high on the SSAS and the MMSE, with not being in the intensive care unit (Villa 2) with having a managerial occupational status and with being classified as skilled. It is also of course true that Europeans are less likely to be admitted to this form of health care than Maori people. Being Maori correlated most highly with a younger age, not having a drivers licence, living in locality O and

locality M, a low score on the SSAS and the SCS, with not being prescribed antidepressants, with being of other (special) status, with being a beneficiary and unemployed, with a low score on the MMSE, with not living with spouse or in locality P, locality PK or locality H, with not being retired or on National Superannuation.

Accommodation status change

Having no accommodation status change correlates with being European, having a higher SCS, being married and with being Presbyterian or Methodist. It correlated negatively with being Maori or Pacific Islander, with having a legally mandated admission and with having a high score on the AIMS and NIPI.

Perceived Social Support

Having a high score on the Social Support Appraisal Scale correlated with being voluntary, having antidepressants, having hypnotics, having side effects, being referred by Health Board services, scoring high on the Axis 4 stressors scale, and the BPRS, with not having antipsychotics or reserpine prescribed. It also correlated negatively with being Maori and having antiparkinsonians prescribed.

Driver's Licence

Having a driver's licence correlated most highly with being European, scoring highly on the Mini Mental State Scale for cognitive functioning, having a high score on the Social Competence Scale, being classified as skilled and with not being on a benefit, not living in localities O, OH or M, and with not being female, an invalid, a houseperson, a Maori or a Pacific Islander.

First Admissions

Being a first admission correlated with being prescribed antipsychotics, antimanics and anticonvulsants, with having a high number of different antipsychotic medications, a low DSM-III-R GAF past, a low DSM-III-R axis 4 rating for stressors, with not being a legally mandated admission, with not being unemployed and with being on a sickness benefit.

APPENDIX V

Three month followup data capture forms.

ADMISSIONS TO ACUTE PSYCHIATRIC SERVICES

GREEN FOLLOW UP FORMS

These scales are to be completed by the therapist who is following the patient up three months after their discharge from hospital. Please return the forms to

If further explanation of any form is required, please telephone Catherine on between 8am and 4pm. Thankyou for your assistance.

Catherine.

Name (Alias)				4769	
Address				Lodge Rest Home	
				Ward GAU	
Admitted to		17/03/1988		Status INT	
Hospital				Maiden Name	
Date of Birth	Age	Sex	Marital State		Religion
15/01/...	73	M	Separated		
Race	N.Z. Resident		Occupation		
European	Y		Retired		
War Service	S/S Benefit Type		S/S Benefit		Type
	National Supe		Husband/Wife		
Next of kin			Relationship		Status
			Wife		From
					Change To
Address			Phone No.		
Adm No 1 Previously in Psychiatric Hospital at					

Attached are copies of the following four scales to be completed and returned to me as soon as you are able:

NOSIE,
BPRS
Social Support-A scale
Clinical Global Impressions

APPENDIX VI

PROCEDURE FOR PREPARING VARIABLES USED IN THE REGRESSION EQUATIONS

SYSTEMS VARIABLES

Eighteen of the original systems variables were selected for the stepwise regression procedure. These were:

1. 1st Ad
2. stayed in villa2
3. stay in villa7 or villa8
4. time of admission
5. status - dichotomized
6. referring agent - dichotomized
7. reason for acceptance - dichotomized
8. provisional diagnosis - dichotomized
9. use of other services
10. admitting ward - dichotomized
11. consultant - dichotomized
12. D6 side effects scale
13. total no. of psychotropics
14. given ECT or not
15. given other trtmnts or not
16. taking reserpine or not
17. on other medication or not.
18. AIMS score (side-effects).

The categorical variables with 3 or more categories had to be dichotomized in order to be used in the regression procedure. An outline of how this was done for each variable is given below:

STATUS

There were 4 categories: 1-4. People with a status of 4 were not included as there were only 6 people in this category.

Status No.	Freq	Dichotomous variable name
1	284	volunt
2	234	not included
3	14	oth_stat
4	6	deleted

So there were three possible categories of status in the regression equation: voluntary, committed & special.

REFERRING AGENT

There were 8 values used for this variable. Some of the categories were combined if there numbers were small and they could be logically merged. This included statutory and voluntary agents as one group and self and relatives as another.

Ref Agent No.	Freq	Dichotomous var. name
0	24	deleted -as these were missing values
1	299	aahb
2	61	genprac
3	108	)
4	5	) agent
5	21	)
6	18	).not included (self & relatives)

14 2 deleted

So there were 4 possible categories of referring agent in the regression procedure:
AAHB, general practitioner, agent(statutory & voluntary) & self/relative.

REASON FOR ACCEPTANCE

There were 11 values originally used for this variable. Three values were deleted from the analysis, one was the 'missing' category and the other two had insufficient people in that category to warrant its inclusion.

Reas. for Accept.	Freq	Dichotomous var. name
0	20	deleted -as these were missing values
1	163	danger
2	170	impreal
3	12	skillobs
4	38	impsoc
5	31	legmand
6	72	distaff
7	17	drugabu
8	2	deleted
9	3	deleted
10	10	not included (inadequate soc/fam support)

So there were 8 categories for reason for acceptance, 7 used in the analysis.

PROVISIONAL DIAGNOSIS

There were 10 values used in this variable. Three were deleted from the analysis.

Prov. Diag no.	Freq	Dichotomous var. name
0	24	deleted -these were missing values
1	34	orgpsych
2	150	schizo
3	181	majaffec
4	37	nonorgpy
6	37	persdis
7	44	nonpsych
8	8	deleted
9	8	deleted
10	15	not included (no diag assigned)

So 7 categories of provisional diagnosis were used in the regression analysis.

ADMITTING WARD

There were 10 values used in this variable. 7 were deleted because of low frequencies.

Adm. Ward No.	Freq	Dichotomous var. name
1	1	deleted
2	96	admward2
3	2	deleted
4	1	deleted
6	11	deleted
7	205	admward7
8	215	not included (admward8)
14	1	deleted
17	1	deleted
18	5	deleted

So 2 categories for admitting ward were used in the regression analysis: admitting ward 2 & admitting ward 7; admitting ward 8 was not included in the analysis.

CONSULTANT

There was a total of 10 senior doctors responsible for patients in the sample. However 5 were deleted from the regression analysis because the number of patients they were responsible for was too low.

Consultant	Freq	Dichotomous var. name
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A	20	not included
B	29	B
C	215	C
D	142	D
E	7	deleted
F	7	deleted
G	7	deleted
H	1	deleted
I	3	deleted
J	106	J

So there were 5 senior doctors used in the regression analysis: A B C D & J. With A being excluded from the regression equation.

A total of 36 individual variables were used in the stepwise regression procedure.

RESULTS OF STEPWISE REGRESSION PROCEDURE ON SYSTEMS VARIABLES

Eight systems variables ended up in the final regression equation which had an adjusted R-square of 0.4124 ($p=0.0001$, $R\text{-square}=0.4362$).

SOCIO-DEMOGRAPHIC VARIABLES

Nineteen socio-demographic variables were included in a regression analysis. These were:

1. domiciliary code - dichotomized
2. age
3. sex
4. race - dichotomized
5. marital status - dichotomized
6. religion - dichotomized
7. severity of psychosocial stressors (axis IV)
8. next of kin - dichotomized
9. occupation - dichotomized
10. benefit code - dichotomized
11. NZ resident or not
12. Admission accommodation status A - dichotomized
13. admission accommodation status B - dichotomized
14. has drivers' licence or not
15. discharge accommodation status A - dichotomized
16. discharge accommodation status B - dichotomized
17. accommodation status change - dichotomized
18. social support scale (N1)
19. social competence scale (N4)

The majority of these were categorical variables with three or more categories and consequently had to be dichotomized for the regression analysis. A brief outline of this procedure is given below (refer also to computer printout of frequency counts for each variable).

DOMICILIARY CODE

There were 11 categories of this variable. Ten were included in the analysis.

RACE

There were 4 categories of this variable: European, Maori, Pacific Islander and Asian. The Asian category was not given a dichotomous variable in the regression analysis.

MARITAL STATUS

The 'remarried' category was deleted from the analysis as this only included 8 people. There were 6 other categories of marital status: never married, married 1st time, separated, divorced, widowed & de facto. The de facto category was not dichotomized for the regression analysis.

RELIGION

Eight of the original religious categories were retained for analysis. The Presbyterian and Methodist categories were combined to create one dichotomous variable, as were the Baptist and Other categories. The Anglican category was not dichotomized for the regression equation so this left 5 dichotomous variables in the equation.

NEXT OF KIN

Six categories of this variable were used: parents, children, siblings, spouses, others, friend. The friend category was not dichotomized in the regression equation.

OCCUPATION CODE

There were 6 categories of this variable: managerial, skilled (manual & non-manual), partly/unskilled, houseperson, beneficiary & retired. The retired category was not dichotomized for the regression equation.

BENEFIT CODE

Six categories of this variable were used: National Super, unemployment, sickness, DPB, invalids & not on a benefit. The National Super category was not dichotomized for the regression equation.

ADMISSION ACCOMMODATION STATUS A

There were 4 categories to this variable: Living with legal spouse, partner, alone or with others. The spouse category was not dichotomized for the regression equation.

ADMISSION ACCOMMODATION STATUS B

Four categories of this variable were used: Living in own home, rental accommodation, supervised accommodation & other. The 'other' category was not included in the regression equation.

DISCH. ACCOMMODATION STATUS A

There were 4 categories of this variable, as on admission, with the spouse category not dichotomized for the regression procedure.

DISCH. ACCOMMODATION STATUS B

There were 6 categories to this variable: Same categories as on admission plus boarding house & hospital. The 'other' category was not dichotomized for the regression equation.

CHANGE IN ACCOMMODATION STATUS

There were 4 categories used for this variable. These were: change in both where & who one lived with, change in who but not where, change in where but not who & change in neither. The 'change in both' category was not dichotomized for the regression equation.

So a total of 62 individual socio-demographic variables were available for the stepwise regression analysis.

RESULTS OF STEPWISE REGRESSION ON SOCIO-DEM VARIABLES

The stepwise regression procedure produced a model containing 12 socio-demographic variables and accounted for 30% of the variance in amount of service use ($\text{adj}R^2=0.3011$, $p=.0001$).

BEHAVIOURAL VARIABLES

Ten of the original behavioural variables were used for the stepwise regression procedure. These were:

- 1) Current GAF (DSM-III Axis V).
- 2) Past GAF (DSM-III Axis V).
- 3) Severity of illness (D4).
- 4) Severity of illness (N5).
- 5) Presence of comorbidities.
- 6) Mini mental state test score (D1).
- 7) BPRS score (D2).
- 8) NOSIE total score.
- 9) NOSIE problem score.
- 10) NPI score.

None of these variables were categorical variables so they could be entered directly into the stepwise regression analysis.

RESULTS OF REGRESSION PROCEDURE ON BEHAVIOURAL VARIABLES

Four behavioural variables remained in the final step of the regression procedure. The equation accounted for 23% of the variance in the dependent variable ($R\text{-square}=0.2510$, $p=0.0001$, $\text{Adj. } R\text{-square}=0.2336$).

FINAL REGRESSION EQUATION

The 4 behavioural variables in the final behavioural equation, the 12 socio-demographic variables in the final socio-demographic equation and the 8 variables from the systems regression equation were pooled. The regression procedure selected 11 variables from these 24 to formulate an equation which accounted for 50% of the variance ($R\text{-square}=0.5307$, $\text{adj } R\text{-square}=0.5039$, $p=0.0001$).

APPENDIX VI1

The following technical reports were produced by the R&D Unit in 1991.

480 (12x40) individual service unit monthly reports from the patient case register information system. (2 pages each).

48 4x 12 monthly district reports.(Approx 2-3 pages each)

Nos. 91/0(1) to 91/0(12).

12 monthly summary reports of Auckland Area Health Board mental health services use. (Approx. 12 pages each)

18 Special reports as listed below:

- | | |
|------------|--|
| No. 91/1 | Draft report on characteristics of a sample (N=49) of "revolving door" acute psychiatric service users |
| No. 91/2. | Preliminary report of analysis to identify predictors for "number of different psychotropic drugs prescribed" in a sample of acute service users. |
| No. 91/3 | Adolescent admissions to acute adult psychiatric services. |
| No. 91/4. | Admissions to the psychosomatic services at Auckland Hospital from Jan 1991 to March 1991. |
| No. 91/5. | Patient length of stay in Ward 5 Carrington Hospital between Jan 1990 and March 1991. |
| No. 91/6. | Racial categorisation of admissions to five mental health services in South Auckland between 1 June 91 and 30June 91. |
| No. 91/7 | A demographic description of readmissions to Kingseat Hospital between 1/7/90 and 4/5/91. |
| No. 91/8. | Analysis of current clients at the Cottage (31/7/91) by domiciliary area and therapist. |
| No. 91/9. | Report on the 'religion' variable for episodes of care registered as current in the Auckland mental health services data base on 29/5/91. |
| No. 91/10. | Frequency distribution for the 'reasons for acceptance into service' variable for clients registered as current (6/5/91) with the AAHB mental health services. |
| No. 91/11. | Key worker caseloads across mental health services. |
| No. 91/12. | Admission statistics for community mental health |

centres (CMHC's) in the Auckland region.

- No. 91/13. Draft report on psychometric properties of eight scales used in clinical assessment of psychiatric patients.
- No. 91/14. Frequency count on mental health service users registered on the National Master Patient Index (NMPI) in October 1991
- No. 91/15. Manual for the Auckland mental health services patient information system.
- No. 91/16. Socio demographic description of admissions to Ward 10a Auckland Hospital 1989-1991.
- No. 91/17. Review of existing psychotropic drug prescription monitoring systems.
- No 91/18. Preliminary report on the development of a psychotropic drug prescription monitoring system.

These reports total approximately 260 pages

Produced by AAHB MHS Research and Development Unit,. Auckland. 1991

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