Prediction of Irregular Discharges

from the Acute Care Units of

Lakehead Psychiatric Hospital


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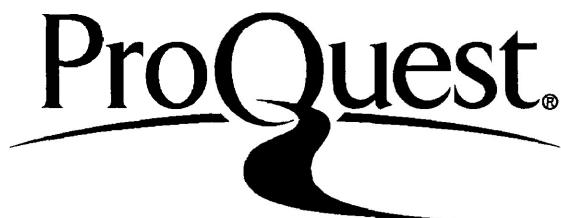September, 1993


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Abstract

A prospective research study attempted to identify persons who would subsequently receive an irregular discharge. The sample consisted of 150 patients who were consecutively admitted to the Acute Care units of Lakehead Psychiatric Hospital. They were examined and rated on variables previously found to be predictive of irregular discharges. The results showed that: (a) the prediction of irregular discharge was met with limited success; and (b) young males were most likely to receive irregular discharges. A retrospective examination of factors motivating patients to discharge against medical advice were investigated through individual interviews. A predominance of negative complaints concerning hospitalization were offered by the patients. During the three month follow-up period, irregular discharged patients were readmitted to hospital more often than their regular co-patients. The treatment team may be better able to meet the needs of at-risk patients by negotiating treatment contracts and by developing special goals that facilitate short durations of hospitalization. Discharge considerations compatible with the recent focus on 'consumer satisfaction' are offered.

Prediction of Irregular Discharges

from the Acute Care Units of

Lakehead Psychiatric Hospital

Irregular discharges from psychiatric facilities

concern all mental health professionals involved in patient

treatment and are predominantly against medical advice

(AMA). Patients discharged irregularly exit the hospital

before their treatment program is deemed complete. Civil

libertarians will argue that a patient has a right to refuse

treatment if they are competent to make such a decision.

However, mental health professionals generally believe that

the benefits of hospitalization may be jeopardized when

treatment is abandoned (Chandrasena, 1987; Chandrasena &

Miller, 1988). The treatment team frequently reacts with

anger over the waste of time and resources for a

noncompliant patient, and guilt for failing to live up to

the patient's expectations concerning hospital care

(Krakowski, 1985; Phillips & Ali, 1983). Steinglass,

Grantham, and Hertzman (1980) suggested that AMA behaviour

reflects a breakdown in the contracting process around

admission and occurs early in the course of hospitalization.

Recent changes to the Ontario Mental Health Act have

been implicated in the increased rate of irregular

discharges. With the less restrictive and less intrusive

amendments to the Act, Fernando, Cooper, Cernovsky, Bailey,

and Velamoor (1990) argued that potentially treatable, acutely ill individuals were leaving hospital prematurely during the first year of Bill 7's introduction. Consequently, patients who discharge irregularly are a special challenge to the mental health care system.

The research literature has largely focused on AMA patient behaviour perhaps due to the prevalence of AMA discharges over less frequent unauthorized discharges (see Atkinson, 1971). Irregular discharge is a comprehensive term that includes AMA and unauthorized leaves.

Many studies have attempted to generate a profile of AMA discharged patients based on various diagnostic and demographic information (Chandrasena, 1987; Dalrymple & Fata, 1993; Phillips & Ali, 1983). Patients who sign out AMA tend to be young, unmarried males (Beck, Shekim, Gilbert, & Fraps, 1983) with frequent diagnoses of personality disorder or schizophrenia (Phillips & Ali, 1983). A common history of substance abuse, criminal activity, and hospitalizations suggest that these patients lead a 'disorganized' lifestyle (Chandrasena, 1987).

Apart from personal characteristics of patients, factors under hospital control may also influence the incidence of irregular discharges. Inadequate ward staffing patterns (Siegel, Chester, & Price, 1982), admission policies (Krakowski, 1985), and negative perceptions of the

ward by the staff (Stuen & Solberg, 1970) have been associated with irregular discharges. Furthermore, the decision to leave the hospital early may be intricately influenced by characteristics of the attending physicians and by conflicting dynamics within patients' relationships with the staff (Schorer, 1965; Smith, 1982).

Some studies have identified repeating AMA discharged patients as a special subgroup within the AMA patient profile (Chandrasena & Miller, 1988; Dalrymple & Fata, 1993; Krakowski, 1985). Patients in this group typically have a lengthy history of hospitalizations and irregular discharges that characterize them as 'revolving door'. Repeating AMA patients differ from single AMA patients whom, by definition, discharge themselves AMA only once. Chandrasena and Miller (1988) found that repeating AMA patients were at high risk for readmission in the short term and had more serious and longstanding illnesses. The repeater group identified by Dalrymple and Fata (1993) remained hospitalized longer, were readmitted sooner and had more negative complaints concerning their stay than single AMA patients. Despite their dissatisfaction, 95% of the repeater group were rehospitalized within two years.

A large body of the literature has outlined patient profiles on the basis of multiple t-tests or chi tests on variables that differentiate regular from irregular

discharges. Unless a correction is made for multiple comparisons, spurious statistically significant findings will inevitably result. Recent studies (Beck et al., 1983; Dalrymple & Fata, 1993; Heinssen & McGlashan, 1988) have used a more powerful statistical procedure, multiple regression analysis, to arrive at a set of predictor variables that differentiate the two patient groups. Using the predictor variables, discriminant analysis calculates a mathematically derived linear function that maximally discriminates between both groups. Having determined the best coefficients and constants for the discriminant function, a score is computed for each patient and used to predict group membership (regular versus irregular) (Steinglass et al., 1980). These procedures are considered to be superior to the traditional approach of applying multiple statistical comparisons to variables (e.g., Fabrick, Ruffin, & Denman, 1968).

The research of Dalrymple and Fata (1993) is of particular interest because they identified predictor variables for both the single and repeating AMA groups, used discriminant analysis to predict group membership and cross-validated these variables on a new sample of patients. They found that AMA discharged patients were less likely to be prescribed hypnotics/anticonvulsants, lithium, and anxiolytic medications, less likely to have a fixed address

at the time of admission, more likely not to receive
medication while in the hospital and more likely to have
utilized the Review Board process than their regularly
discharged counterparts. However, the discriminating
factors were confounded by the presence of two distinct
subgroups of AMA patients in that some factors were
associated with the single group and others with the
repeater group. The repeating AMA patients exceeded the
single AMA patients in terms of previous admissions,
appearances before Review Boards, and percentage of natives.
The level of predictive accuracy of the variables in
predicting AMA discharges approximated 80%.

Very little consistency exists across studies that have
examined post-hospital adjustment of regular and AMA
discharged patients. Some authors (e.g., Chandrasena, 1987;
Stuen & Solberg, 1970; Withersty, 1977) point to the rapid
rehospitalization of AMA patients while others (e.g., Glick,
Braff, Johnson, & Showstack, 1981; Scheer & Barton, 1974)
have found that AMA patients had similar outcomes to
regularly discharged patients and further suggested that AMA
discharges may be a therapeutic rather than a negative
occurrence in that patient empowerment may be enhanced.
Meyer, Margolis, and Daniels (1963) found that AMA
discharges could be viewed as a challenge to both the
patient and family. Singer and Grob (1974) found that a

majority of AMA patients attained a satisfactory level of functioning and had received some kind of non-inpatient psychiatric help since discharge.  In contrast, McGlashan and Heinssen (1988) suggested that outcomes of AMA discharges varied with diagnosis; unipolar affective and schizoaffective patients had poor functional outcomes when compared to regular discharges.  Pam, Bryskin, Rachlin, and Rosenblatt (1973) found that AMA patients fared poorly on a scale designed to assess community adjustment.

Dalrymple and Fata's (1993) study, as well as others (Heinssen & McGlashan, 1988; Louks, Mason, & Backus, 1989), have been retrospective in nature, that is, a set of predictor variables identifying AMA discharges were generated after the fact.  Steinglass et al. (1980) conducted a prospective study to develop an assessment instrument with predictive validity regarding AMA behaviour. Using a brief, structured interview, they were capable of providing data that, when translated into AMA profile form, acquired 80% predictive accuracy for future AMA behaviour. However, Senior and Kibbee (1986) replicated this screening questionnaire and were unable to predict AMA behaviour. Wheeler, Beck, Manderino, Tackett-Nelson, and Gamache (1984) demonstrated that nurses could make judgements that were predictive of AMA discharges.

Past research has demonstrated that prediction of low

base rate behaviour (e.g., dangerousness, suicide) is largely unsuccessful and creates a large number of wrongly classified 'innocent' or 'healthy' individuals (Quinsey, 1980; Pokorny, 1983). Dalrymple and Fata (1993) found that the base rate of irregular discharges ranged from 9% to 23% in a span of ten years. Predicting low base rate behaviour introduces some difficulties in that higher rates of accuracy are found in classifying individuals without the attribute of interest (e.g., not dangerous) than those who are dangerous (Quinsey, 1980). Mathematical computations reveal that given a 90% reliable device and a 10% base rate of behaviour, 50% of the sample with the attribute of interest will be correctly identified. Glaros and Kline (1988) argued that clinicians need to be concerned more with sensitivity, specificity and base rate parameters than with the overall correct predictions made by a test.

## Objectives

The objectives of this study were threefold: (a) to prospectively examine the predictive value of the variables identified by Dalrymple and Fata (1993); (b) to examine the factors motivating patients to discharge AMA; and (c) to determine adjustment of patients at three months from the time of the index discharge. The rationale for each objective will be addressed in turn.

The first objective assumed primary importance. Since

Dalrymple and Fata's (1993) study referred to the patient population at the Lakehead Psychiatric Hospital (LPH), Thunder Bay, their findings should be at least partially replicated at the same mental health centre three years later. Their predictor variables were tested by way of assigning weights to variables, the weights being determined by the proportion of variance accounted for in the original regression equation. Type of discharge was then predicted according to the summation of weighted variables. Simply put, variables identified in retrospect were tested prospectively on a new sample of patients in the same setting. It was reasoned that if patients could be classified as potential regular or irregular discharges during the early stages of hospitalization, more individualized attention could be directed towards the contracting process that occurs at this time.

The remaining two objectives assumed secondary importance to the study. A more thorough examination of the factors motivating patients to leave irregularly would be attempted through individual interviews by someone other than a treatment team member. It was reasoned that patients could be more candid in their disclosures and less apt to be defensive in a situation that does not jeopardize therapeutic relationships. If patients could articulate their reasons for discharging AMA, then the treatment team

may be able to target these as obstacles within the contracting process. This objective is compatible with the emerging focus on client satisfaction as a priority in the evaluation of psychiatric services (Baker & Intagliata, 1982).

In order to meet the third objective, an investigation of hospital contacts during a three month period following discharge would shed light on patients' level of adjustment. A follow-up period of three months served the short term focus of the study and was in line with Scheer and Barton's (1974) outcome study of AMA patients.

Hypotheses

It was expected that the variables identified by Dalrymple and Fata (1993) would have predictive value and could predict discharge type. In light of nurses' daily patient interactions and the findings of Wheeler et al. (1984), it was expected that nurses could also predict discharge type.

As in Dalrymple and Fata (1993), it was expected that the reasons for leaving the hospital AMA would include dissatisfaction with hospital treatment, rules or policy and pressures related to personal matters external to the hospital.

It was expected that patients discharged irregularly would return to the hospital sooner and more frequently

during the three month period than regular discharged patients.

## Method

### General Procedure

Predictions of irregular discharges were made within the first week of admission on the basis of: (a) demographic and clinical data from hospital charts and casebooks; and (b) knowledgeable nurses. Factors previously found to discriminate between discharge groups by Dalrymple and Fata (1993) were examined for each patient. Two prediction scores were calculated for each patient according to the absence or presence of the discriminating factors. On the basis of these scores, each patient was predicted to either receive a regular or irregular discharge. The methods of data collection and prediction procedure are outlined in greater detail.

Patients who met or exceeded the cut-off score for either one of the two prediction scales were interviewed during their hospital stay. Nursing staff predictions of irregular discharges did not influence the decision to interview. The purpose of the interview was threefold: (a) to gather basic information regarding employment, education, domestic accommodations, and satisfaction with services; (b) to gauge global level of current functioning; and (c) to have the patient complete three short questionnaires on

service satisfaction, quality of life, and symptom severity. Comparisons in scores and interview findings were to be made between predicted patients who indeed received irregular discharges and those whom eventually discharged on a regular basis. The interview procedure is discussed in greater detail.

Follow-up data was gathered to compare hospital contacts between regular and irregular discharged patients for a three month period following the index discharge.

A schematic outline of the research design is depicted in Figure 1. Although Figure 1 provides a synopsis of predicted and actual discharges, detailed results are presented in subsequent sections.

Treatment Setting

Lakehead Psychiatric Hospital is the regional tertiary mental health centre in Northwestern Ontario specializing in the diagnosis and treatment of individuals with psychiatric disabilities. Presently, it has a rated bed capacity of 174. There were over 1000 inpatient admissions during 1992. Both inpatient and outpatient services are provided including 24-hour crisis and admitting services, acute psychiatric treatment, rehabilitation programs, psychogeriatric assessment and treatment, chemical dependency programs, and a forensic service. Services have been expanded into the community to include a community

support program, special care homes and community outreach programs.

The Acute Care program consists of two integrated open door units (2C and 4B) each with a rated bed capacity of 18. Service is provided for inpatients ranging in age from 16 to 65 years with a variety of psychiatric disorders. All patients are initially assessed in Crisis and Central Admitting. Both units have multidisciplinary teams that provide individualized treatment and stabilization in preparation for community living. All patients have a potential for short-term rehabilitation.

The goals of the Acute Care program are threefold: (a) to promote stabilization during the acute phase of illness; (b) to provide a safe and secure environment in order to prevent harm to self and others; and (c) to assist patients in identifying problems, goals and treatment planning throughout hospitalization, and to facilitate community placement and follow-up care.

The total number of admissions for 1991-92 was 468 (2C = 240, 4B = 228). During the same year, irregular discharges constituted 17.8% ($\underline{n}$ = 46) of all discharges from 2C and 25.5% ($\underline{n}$ = 25) from 4B.

Discharge Criteria

An irregular discharge is defined as a discharge from the hospital where a patient signs out against medical

advice (AMA) or does not return to the hospital from an unauthorized leave of absence (ULOA). In contrast, a regular discharge occurs when the attending physician issues a discharge order on a patient's behalf and thus, is said to be discharged with medical advice.

Only voluntary patients may sign out AMA and are considered inpatients until midnight the day they leave. If a patient has not returned by that time then he or she is officially terminated as an inpatient and receives an AMA discharge. Voluntary patients who leave the hospital without contacting staff are considered inpatients for a period of 72 hours following leaving the hospital. If a patient has not returned within this time period then he or she is officially terminated as an inpatient and receives an ULOA discharge. Involuntary patients are not permitted to sign out AMA and receive ULOA discharges if they fail to return within a one month time period following leaving the hospital.

Patient Sample

The patient sample consisted of 150 consecutive direct admissions to the Acute Care units between July 9 and October 20, 1992. Patients who were transferred from other programmes (i.e., forensic unit) to Acute Care during this period were not included.

Fifty-three percent of the sample were female, 67%

lived in the Thunder Bay area and their average age was 34.1 years (range; 15 to 72 years).

Demographic and Clinical Data Collection

Each patient's clinical record was reviewed by way of casebook searches and computerized data access for the following demographic and clinical information: (a) demographics; age, gender, Native ancestry, address, date of birth; (b) hospitalization data; admission status, primary diagnosis, number of previous admissions, medications; and (c) history; number of previous irregular discharges, and previous requests for Review Board appearances as defined by the presence of a Form 16 (Ontario Mental Health Act, 1980) or any similar document (e.g., Notice of Hearing) being present in a patient's casebook regardless of whether the Board actually convened or not.

Medication data was collected from charts in the nurses' station generally 2-4 days after the patient's first day of admission. Medications were categorized as anxiolytics, hypnotics/anticonvulsants, lithium, or additional medications. Only the presence or absence of these medications was documented, not dosage levels. Additional medications served as a catch-all category to include those items not listed (e.g., antidepressants, antipsychotics, antiparkinsons).

Although being prescribed no medications automatically

determined the absence of the other medication variables, a patient could have been on medications but not prescribed lithium, anxiolytics, or hypnotics/anticonvulsants in which case the category of additional medications would apply. Furthermore, one type of medication often contraindicates several other medications. Medication variables can never be truly independent but this was unavoidable and may not have had an adverse impact on the analysis of the data.

Prediction

Six-factor prediction score. Each patient was assessed according to the variables outlined in Dalrymple and Fata (1993). Their regression analyses identified nine variables that discriminated between regular and AMA patients and three variables that identified the repeating AMA patient subgroup. In the present study, six of the nine variables were used as a basis for prediction since the remaining three relied on retrospective information (i.e., length of stay, discharge assessment, season of discharge) and could not be used prospectively. Therefore, the following six variables were used: not receiving hypnotics/anticonvulsants, no fixed address, previous request for a Review Board appearance, no medications prescribed, not receiving anxiolytics, and not receiving lithium treatment. Each of the six variables were assigned a weighting according to the unique variance that each

contributed to the multiple regression equation performed by Dalrymple and Fata (1993). These variables and their corresponding weights are shown in Table 1.

Each patient received a score based on the total of these weighted variables, herein referred to as the six-factor prediction score. For example, Patient X with no fixed address, a prior Review Board appearance and not currently medicated with hypnotics/anticonvulsants would receive a six-factor prediction score of 33.1. A score could range from 0 to 43.7. The higher the patient's score, the greater the likelihood of identifying a prospective irregular discharge.

The cut-off score for the six-factor prediction scale was determined on a logical basis. It was decided a priori that the variable accounting for the greatest proportion of variance (no hypnotics/anticonvulsants) needed to be present as well as at least one additional variable that contributed significantly to total variance in the regression equation by Dalrymple and Fata (1993). A cut-off criterion score was established at 25. Patient X with a score of 33.1 would therefore be predicted to receive an irregular discharge.

Three-factor prediction score. A second prediction process used the three variables from Dalrymple and Fata (1993) that distinguished the repeater and single AMA patient subgroups. In the present study, the three

variables were used to identify potential irregular discharges rather than the repeater AMA subgroup since a small number of patients belonging to this subgroup was expected from a total sample of 150 patients. Each of the three variables were weighted according to the unique variance that each contributed to the multiple regression equation (Dalrymple & Fata, 1993). The variables and corresponding weights are displayed in Table 1. Each patient received a score based on the total of these weighted variables, herein referred to as the three-factor prediction score. A score could range from 0 to 39. The higher the score, the greater the likelihood of identifying a prospective irregular discharge.

Determining the cut-off for the three-factor prediction scale followed the same logical argument as the six-factor prediction score. It was decided a priori that either the top variable alone or both of the lower variables needed to be present. A cut-off criterion score was established at 14. Patient X would receive a three-factor prediction score of 35.8 and be classified as a potential irregular discharge once again. When both cut-off scores were tested post hoc during the early stages of data collection, it was found that either minor increments or decrements to the scores made no improvements in the accuracy of predictions thereby validating the appropriateness of the logically-derived

scores.

Nurses' predictions. Each patient's primary nurse or a nurse most familiar with the patient was approached within 2-4 days of the first day of admission and asked to predict how the patient would be discharged. Nurses were asked to explain the reasoning behind their predictions. If the patient had already been discharged, this step was omitted.

Overview. To recapitulate, each patient received two scores, a six-factor prediction score resulting from a summation of six weighted variables and a second prediction score resulting from the sum of three weighted variables. If a patient had a six-factor prediction score greater than 25 or a three-factor prediction score equal to or greater than 14, an irregular discharge was predicted. In addition to the two prediction scores, nursing staff made predictions of discharge type for each available patient.

Measures

Global assessment of functioning scale. A score based on the Global Assessment of Functioning Scale (GAF Scale) is an overall judgement of a person's psychological, social, and occupational functioning. Ratings on the GAF Scale reflect the patient's current functioning and the highest level of functioning during the past year. GAF ratings of current functioning were determined from patient responses to a standard battery of questions and cast into a category

range between 1 and 90 (see Appendix A). Lower ratings were associated with more severe impairments. The GAF scale was selected on the basis of its wide use as a clinical tool in psychiatric settings and its relevance to the DSM-III-R diagnostic system (American Psychiatric Association, 1987).

Client self-evaluation questionnaire. The Client Self-Evaluation Questionnaire (SCL-10) is a reliable and internally consistent measure of psychological distress. The SCL-10 is a shortened version of the original Symptom Checklist-90 and consists of items representing depression, somatization and phobic anxiety. It consists of ten questions on a 5-point Likert format, from 0 (not at all) to 4 (extremely) (Nguyen, Attkisson, & Stegner, 1983). A score was calculated by summing the Likert points for all ten questions (see Appendix B).

Patient satisfaction questionnaire. The Patient Satisfaction Questionnaire (CSQ-8) is a measure of general satisfaction with client services. It has high internal consistency. The CSQ-8 is a shortened version of the original Client Satisfaction Questionnaire-31 and consists of eight questions with each containing four possible responses. A score was calculated by summing the Likert-type points for all eight questions (see Appendix C). Lower scores indicate greater dissatisfaction (Larsen, Attkisson, Hargreaves, & Nguyen, 1979).

Life satisfaction questionnaire. The Life Satisfaction

Questionnaire (LSQ) assesses satisfaction in five life

areas: people, activities, work/school/program, living

domain, and health domain. There are a total of 15

questions (three per area) on a 5-point Likert format, from

1 (I feel just great) to 5 (I feel just awful). The scale

is an adaptation of the seven-point Likert format of the

Satisfaction with Life Domains Scale. The original scale is

an internally consistent measure and evidence confirms its

construct validity. A score was calculated by summing the

Likert points for all 15 questions (see Appendix D) (Baker &

Intagliata, 1982; Lehman, 1983).

Interviews

Initial interview. Interviews were sought from

inpatients predicted to receive an irregular discharge on

the basis of either one of the two prediction scores. All

interviewed patients gave informed consent to participate in

the study (see Appendix E and F). They were not informed

that they had been predicted to receive an irregular

discharge. All interviews were conducted on the Acute Care

units.

During the initial interview, patients were asked a

series of short questions referring to their employment and

academic history, domestic accommodations, previous contacts

with mental health services and satisfaction with services

offered by the LPH (see Appendix G). The next set of
questions referred to the patient's global level of current
functioning in areas of work, personal care, social
activity, symptomatology, mood level and explored any
threats of harm to self or others (see Appendix H). The
three questionnaires included the SCL-10, CSQ-8, and the
LSQ.

Discharge interviews. Interviews were sought from a
second set of patients who had an irregular discharge during
the index admission and had been readmitted to the hospital
shortly afterwards. These patients were not necessarily all
predicted to be irregular discharges but were interviewed
for their discharge experiences. It was believed that this
set of patients could provide valuable hindsight information
about their motivation for, and factors leading to, AMA
discharges. The patients were asked the standard battery of
basic information and GAF scale questions and the three
questionnaires. Unlike the first set of patients, these
individuals were asked a series of additional questions that
referred to their discharge experiences (see Appendix I).
These questions enquired into their type of treatment,
expectations and satisfaction with treatment, reasons for
leaving and future plans.

Follow-up Data Collection

Once a patient was discharged, length of stay was

calculated and the type of discharge was determined from the hospital's computerized patient inquiry system. Follow-up data was collected for a period of three months after the index discharge. The hospital records were examined to determine if and when a patient had been readmitted during this period, the number of days as an inpatient if readmission occurred, and the type of discharge for each subsequent admission. If a patient had two or more readmissions, the number of days as an inpatient was cumulated. Outpatient contacts during this period were collected.

Results

A breakdown of the types of discharges is shown in Figure 2. Five patients were still in the hospital at the time of data analyses and were excluded from further statistical procedures. Of the 145 patients, 31 patients (21.4%) received an irregular discharge. Hereafter, AMA and ULOA discharges were considered collectively as irregular discharges and were not treated separately in the analyses.

Reliability of file search data

Two judges rated all variables including discharge type on 6.7% of the total sample ($n$ = 10). Four variables (status, anxiolytics, review board appearance, previous admissions) had an agreement rate of 90% between judges. Three variables (hypnotics/anticonvulsants, diagnosis,

outpatient contacts) had an 80% agreement rate. The remaining variables had agreement rates of 100%.

Although kappa coefficients are ideal measures of agreement, only one low base rate variable (Review Board) might have produced an inflated estimate of agreement. The variables with 100% agreement would have produced kappa coefficients equal to 1 (Siegel & Castellan, 1988).

<u>Predictions</u>

Table 2 represents the hypothetical 2 X 2 matrix of predicted discharge types against actual discharge types. There are two levels of both predicted and actual discharge type: regular and irregular. The corresponding cells include the number of true positives and true negatives and false positives and false negatives. True positives refer to the patients predicted as belonging to the irregular discharge group and who indeed discharge irregularly while false positives are predicted as belonging to the same group but actually discharge on a regular basis. True negatives refer to those patients predicted as belonging to the regular discharge group and who actually receive regular discharges while false negatives are predicted as belonging to this group but in fact discharge irregularly. Optimally, the number of true positives and true negatives should be maximized.

The base rate is defined as the proportion of actual

positives (i.e., false negatives + true positives) that exist in a sample. The selection ratio refers to the proportion of predicted positives (i.e., false positives + true positives) among the total sample (Wiggins, 1973). In the present study, 31 patients received an irregular discharge producing a base rate of 0.214. Twenty-one patients were identified as potential irregular discharges on the basis of the six-factor prediction score and thirty-five patients on the basis of the three-factor prediction score. However, among both prediction scores, there was an overlap of 13 patients, that is, 13 patients met the cut-off criterion on both scales. This resulted in a total of 43 patients being predicted on the basis of either one of the two scales and avoids double counting the overlap patients. The selection ratios and base rate are illustrated in Table 3.

Accuracy of Predictions

Table 4 shows the 2 X 2 matrices for predictions based on the six-factor and three-factor prediction scales, nurses' predictions, and when the three-factor and nurses' predictions concurred.

Prediction scales. Discharge type could not be predicted by using the six-factor prediction scale $\chi^2(1, \underline{N} = 145) < 1$, n.s. Discharge type predictions based on the three-factor prediction scale was statistically significant

$\chi^2(1, \underline{N} = 145) = 4.57$, $\underline{p}<.03$ indicating that the scale was accurate in predicting discharges.

<u>Nurses' predictions</u>. Nursing staff predicted discharge types for 89 patients. The nursing staff were accurate in predicting the type of discharges. This was statistically significant $\chi^2(1, \underline{N} = 89) = 7.77$, $\underline{p}<.005$.

The nursing staff were inclined to predict an irregular discharge if they felt that the patient in question seemed to lack insight into current problems, had indicated a desire to leave, were typically noncompliant, had a past history of irregular discharges, or had a negative personality style (e.g., demanding, impulsive) that might interfere with complete hospitalization. Common reasons for predicting regular discharges included the nursing staff's awareness that the patient in question wanted help, had sufficient support, was compliant and comfortable with the treatment team, has no past history of irregular discharges, or if the patient was chronically ill and would accordingly require a long period of hospitalization.

<u>Concurred sources</u>. A two-way chi square tested the accuracy of predictions based on the three-factor prediction scale that concurred with nursing staff. The purpose of this analysis was to determine if greater predictive accuracy could be attained when both the three-factor prediction scale and nurses arrived at the same prediction

of discharge type.  Concurring predictions were
statistically significant $\chi^2$(1, N = 57) = 5.34, p<.02.

Predictive Value and Base Rate

Sensitivity is the proportion of true positives that
obtain scores above the cutting point of a prediction scale
(Equation 1).  Similarly, specificity reflects the extent to
which true negatives obtain scores below the cutting point
of a prediction scale (Equation 2).  As cutting points are
altered, sensitivity and specificity values will change in
opposite directions.  Optimally, a predictive instrument
should be highly sensitive and highly specific (Glaros &
Kline, 1988).

$$Sensitivity = \frac{TruePositive}{TruePostive + FalseNegative} \quad (1)$$

$$Specificity = \frac{TrueNegative}{TrueNegative + FalsePositive} \quad (2)$$

The positive predictive value of a test result is the
extent to which true positives exist amongst predicted
positives (Equation 3).  In contrast, the negative
predictive value of a test result is the extent to which
true negatives exist amongst predicted negatives (Equation
4).  When the base rate of an attribute of interest is low,

in this case the base rate of irregular discharges being 0.214, the negative predictive value of a scale is expected to be greater than the positive predictive value (Glaros & Kline, 1988). Overall hit rate refers to the proportion of correct classifications (i.e., true positives + true negatives) among the total sample (Huberty, Wisenbaker, & Smith, 1987).

$$PositivePredictiveValue = \frac{TruePositive}{TruePositive + FalsePositive} \quad (3)$$

$$NegativePredictiveValue = \frac{TrueNegative}{TrueNegative + FalseNegative} \quad (4)$$

The predictive value of a test with cut-off scores vary as a function of its sensitivity and specificity values and the base rate of the attribute of interest. Higher sensitivity and specificity values are associated with higher predictive values. An example of this follows. Suppose that the 'ABC' scale (sensitivity = 80%, specificity = 80%) is used in a setting in which the base rate of AMA discharges is 20%. In a sample of 100 patients, the 'ABC' correctly identifies 16 out of 20 AMA patients (true positives) and 64 out of 80 regular patients (true negatives). The positive and negative predictive values of

the 'ABC' scale are 50% and 94%, respectively. Thus, a positive result from the 'ABC' test in a setting with a base rate of 20% is 50% and does not appear to be impressive. However, the following example will argue that the 'ABC' test is indeed superior to random assignment given a base rate of 20%. Random assignment would have a sensitivity equal to 20% and a specificity equal to 80%. Therefore, 4 out of 20 patients would be correctly identified as AMA (true positives) and 64 out of 80 patients would be identified as regular (true negatives). With random assignment, the positive predictive value equals 20% and the negative predictive value equals 80%. The 'ABC' scale results in an overall hit rate of 80% as compared to 68% using random assignment (Glaros & Kline, 1988).

Sensitivity, specificity, predictive value, and overall hit rate. Sensitivity, specificity, positive predictive value, negative predictive value, and overall hit rates were calculated for the two prediction scales, nurses' predictions, and combined predictions and are shown in Table 5.

Overall hit rates indicated the proportion of correct classifications in a sample of n. With a base rate approximating 21%, the four prediction criteria yielded higher negative predictive values than positive predictive values indicating that it was easier to identify regular

than irregular discharged patients. Nurses' predictions were more sensitive and less specific than predictions based on the three-factor scale. This indicated that nurses' made more false positive errors and fewer false negative errors than the three-factor prediction scale.

## Post Hoc Analyses

## Multivariate Analyses

Multiple regression. A stepwise multiple regression was performed between discharge type as the dependent variable and 15 predictor variables. Two of the predictor variables were significant and entered the regression equation. Table 6 displays the correlations between discharge type and the predictor variables, unstandardized regression coefficients ($\underline{B}$) and the constant, standardized regression coefficients ($\beta$), multiple $\underline{R}$, $\underline{R}^2$, and adjusted $\underline{R}^2$. The multiple regression coefficient ($\underline{R}$ = .28) was significant, $\underline{F}(2, 142)$ = 5.97, $\underline{p}$<.003 and accounted for 8% of the variance (6% adjusted). The two predictor variables that contributed significantly to the prediction of discharge type were age, accounting for 5% of the variance; and gender, accounting for 3% of the variance.

The results indicated that young males (mean age = 28.9 years) were most likely to receive irregular discharges. Correlations indicated that irregularly discharged young males tended to have a history of previous irregular

discharges. They were likely to be medicated with lithium, not prescribed additional medications, and likely to have met the cut-off criterion for the three-factor prediction scale.

Discriminant analysis. A discriminant function analysis was carried out to determine the accuracy of the predictor variables in determining group membership (discharge type). Tables 7 and 8 display the results of the discriminant function analysis. Seven variables that had the highest correlations with discharge type were chosen to enter into the analysis. These included the two predictors (age and gender) identified through the regression analysis, four variables (previous irregular discharges, lithium, additional medications, and the three-factor prediction) that correlated significantly with discharge type, and native status, although not a significant correlation but associated with discharge type. Entering these seven variables into the discriminant analysis accurately predicted group membership for 73% of the cases $\chi^2$(1, $\underline{N}$ = 145) = 23.19, $\underline{p}$<.001.

Characteristics of Regular and Irregular Discharge Groups

Tables 9, 10 and 11 compare the demographic and clinical characteristics across both discharge groups. Independent t-tests and chi tests were conducted on the variables for data explorative purposes. There was no

intent to generate an AMA patient profile from the 18 comparisons of the predictor variables. Gender was statistically significant $\chi^2(1, \underline{N} = 145) = 5.44, \underline{p}<.05$. The results indicated that irregularly discharged patients tended to be young males who stayed in the hospital for shorter durations than their regularly discharged co-patients.

Follow-Up

Independent t-tests were conducted on five follow-up variables and significant differences between variables are indicated in Table 11. Patients discharged on an irregular basis had three times as many subsequent admissions to the hospital and had more irregular discharges during those admissions than regularly discharged patients. During the three month period following the index discharge, nearly 42% of the irregular discharge group were readmitted within three months as compared to 27% for the regular group.

Interviews

Due to variability in the length of hospital stay and the availability of the author to the units, it was not possible to interview every patient prospectively predicted to receive an irregular discharge nor every patient readmitted after an AMA discharge during the index admission. In total, twenty-three patients were approached for interviews; three patients refused. Referring to Figure

1, there were 20 successful interviews; 11 interviews with predicted irregulars during the index admission, 9 of whom received regular discharges; and 9 interviews with predicted regulars during readmission who had a previous AMA discharge (note 1 pre-AMA-discharge interview).

Although the original intention was to compare interview findings and questionnaire scores between true positives and false positives, the small number of true positives precluded any comparisons. On average, the interviews were completed within 10 minutes since many patients tired quickly and GAF ratings could not be reliably determined within this short duration. It was decided a priori to omit the initial interview findings since any differences or similarities among false positives and false negatives would be difficult to interpret.

Reasons for Leaving the Hospital

Nine predicted regular patients who discharged AMA were interviewed regarding their discharge experiences during their next admission. Only one of these interviews was conducted with a patient prior to his discharging AMA and thus, the remaining eight patients disclosed their accounts retrospectively of discharging themselves AMA.

These interviews revealed that the patients recalled many aspects of their hospital experiences such as orientation to the ward, feelings about fellow patients and

staff and concerns about treatment. Two patients indicated
that their initial reaction to hospitalization was marked
with fear and discomfort and decided at that time (amongst
other factors) to leave AMA. One patient voiced her anger
at fellow patients and staff for 'stealing' her personal
effects. Two other patients asserted that hospitalization
and medication were unnecessary and denied their need for
psychiatric treatment. One patient was interviewed
immediately prior to being discharged AMA and indicated that
the hospital services did not meet his needs and would seek
more appropriate treatment elsewhere.

The interviews revealed that unfinished personal and
family matters interfered with treatment completion. One
patient cited employment concerns and family commitment as
reasons for discharging AMA. Another patient was unsettled
with family matters at home.

It became apparent that patients' substance abuse
problems jeopardized their ability to remain hospitalized.
Two male patients disclosed that they left the hospital AMA
in order to continue substance abusing.

The interviews revealed that AMA discharges had been
used for manipulative purposes by some patients. One
individual admitted that he had decided to leave the
hospital prematurely and was successful in obtaining a leave
of absence knowing full well that he had no intention of

returning.  One female placed the blame for her AMA discharge on the staff after being denied a leave of absence to see her spouse and disclosed her intention to discharge AMA during the current admission as soon as possible.  On a subsequent occasion, this female patient admitted that she had intentions to discharge AMA if her treatment team would deny her requests for a discharge when she thought it to be appropriate.

In all, the patients were candid in sharing multiple reasons for discharging themselves AMA.  The interviews revealed that individuals with unpleasant hospital experiences, treatment denial, unsettled personal matters, substance abuse problems, or manipulative intentions were most likely to be unable to complete full hospitalization. Furthermore, it became apparent that the decision to discharge AMA occurred during the early phases of hospitalization.

## Discussion

The results of the present study demonstrated that the prediction of irregular discharges from the Acute Care units of the Lakehead Psychiatric Hospital met with limited success.  The chi test indicated that the prediction of irregular discharges using the six-factor prediction scale was unsuccessful.  The three-factor prediction scale attained sensitivity and specificity rates greater than

rates expected by random assignment (i.e., 21.4% and 78.6%, respectively). Chi tests demonstrated that nurses were able to predict discharge type.

The three-factor prediction scale had a lower sensitivity and higher specificity than nurses' predictions. This translated into more patients being 'missed' in the classification of irregular discharges by the three-factor prediction scale and nurses identifying too many patients as potential irregular discharges. The clinical repercussions of these findings are addressed in a subsequent section.

The low base rate of irregular discharges does not preclude the use of actuarial prediction methods. Patients who were misclassified as irregular discharges during the index admission may possibly discharge irregularly during future admissions. It may be reasonable to assume that the level of risk for an irregular discharge will vary from one admission to the next. False positives may be at risk for irregular discharges in the future, thus later becoming true positives. It may have been that the level of risk remained low during the index admission enabling the false positive patients to complete full hospitalization. A longer follow-up period of false positives may reveal an even greater long term positive predictive value.

Glaros and Kline (1988) demonstrated that when the base rate of behaviour is low (i.e., 21.4%), the negative

predictive value of a test will be greater than the positive predictive value. This was evident in the present study for both the three-factor prediction scale and nurses' predictions. In all, the prediction of regular discharges (true negatives) proved to be easier than correctly classifying irregular discharges (true positives). Low base rates have produced similar difficulties in the prediction of dangerousness (Quinsey, 1980) and suicide (Goldstein, Black, Nasrallah, & Winokur, 1991; Pokorny, 1983).

The regression analyses performed in the present study did not identify the same variables in Dalrymple and Fata (1993). The present study found that age and gender contributed significantly to the regression equation. Young males (mean age = 28.9 years) were most likely to receive irregular discharges. A number of other studies (Beck et al., 1983; Chandrasena & Miller, 1988; Miles, Adlersberg, Reith, & Cumming, 1976; Phillips & Ali, 1983) have found age and gender to be factors. Dalrymple and Fata (1993) matched the groups by age, gender and diagnosis thereby controlling for differences due to these variables. Not matching in the present study allowed for the effect of age and gender to emerge. Predictive accuracy may have been enhanced if age and gender were used.

One intention stemming from the second research objective was to compare interview findings and

questionnaire scores between true positives and false positives. In actuality however, only two interviews were obtained from true positives and it was easier to access readmitted AMA patients for interviews. Interviewing patients regarding their discharge experiences added useful qualitative information and substantiated what other researchers (Dalrymple & Fata, 1993; Phillips & Ali, 1983) have advanced as motivating factors leading to AMA discharges. The patients tended to verbalize a multitude of reasons for signing out AMA most being complaints about their hospitalization. The decision to sign AMA appeared to occur during the initial stages of hospitalization when, according to Steinglass et al. (1980), a breakdown in the contracting process occurs.

The interviews revealed that although no two patients provided identical reasons for leaving the hospital, general themes became apparent from patient's verbalizations. Common reasons for leaving the hospital included an uneasiness with the ward milieu, family and personal issues, substance abuse, denial of illness, and manipulation in which patients pitted an AMA discharge against the treatment team. Similar findings have been advanced regarding ward characteristics (Kecmanovic, 1975; Stuen & Solberg, 1970; Smith, 1982), unsettled personal and family matters (Dalrymple & Fata, 1993; Phillips & Ali, 1983), and

substance abuse problems (Corley & Link, 1981; Harper, Elliott-Harper, Weinerman, Anderson, & Nelson, 1982; Krakowski, 1985; LaWall & Jones, 1980). A lack of understanding into the necessity of hospitalization was also reported by Planansky and Johnston (1970). Other authors (Atkinson, 1971; Fabrick et al., 1968; Harper et al., 1982; Krakowski, 1985) have characterized AMA patients with longstanding personality difficulties or personality disorders. On the basis of patients' disclosures, these factors appeared to contribute to and compound negative reactions to hospitalizations and complaints about treatment and hospital policy. The interview findings strongly suggested that the AMA discharge was an impulsive, spontaneous decision by the patient. Louks et al. (1989) offered a similar conclusion. Many patients admitted in retrospect that their AMA discharge was a poor and ill-advised solution.

As replicated from Dalrymple and Fata (1993), irregular discharged patients returned to the hospital more frequently than their regular co-patients. Descriptive statistics of the time to next admission indicated that the irregular group returned to the hospital sooner than the regular group. This suggests that community adjustment may have been met with some difficulty. A positive finding was that both discharge groups received outpatient treatment. In

all, these results suggest that when patients discharged AMA, they were not entirely rejecting treatment, only the in-hospital component, and continued to seek treatment as outpatients. The difficulties encountered by AMA discharged patients did not appear to dissipate and for some, necessitated rehospitalization. However, these outcome findings need to be interpreted with caution because some patients may not have had easy access to LPH services or may have sought treatment elsewhere. Other patients may have required services at some point beyond the three month follow-up period.

The present findings have limited generalizability to other psychiatric facilities and may be specific to the particular treatment facility and specific sample of this study. The three month follow-up period provided an appraisal of short-term outcome and did not address the level of functioning of irregularly discharged patients in the long run. The difficulties in conducting controlled systematic research in applied settings also needs to be considered. It was not possible to interview all patients predicted to receive irregular discharges and those who were interviewed may have possessed characteristics that distinguished them from predicted patients not interviewed. For example, the interviewed patients may have been more accommodating and cooperative with staff and may have

remained hospitalized longer thereby increasing the likelihood of being interviewed. Patients not likely to be interviewed were those who were less accommodating and had shorter durations of hospitalization.

The present study contributed necessary qualitative information regarding irregularly discharged patients and is fitting with the recent move towards 'consumer satisfaction' in the evaluation of psychiatric services (Baker & Intagliata, 1982). This study has been unique in terms of its prospective identification of potential irregular discharge patients in addition to a retrospective analysis of the factors that motivated some of these patients to leave the hospital. Few prospective studies exist in the literature that test the predictive value of factors that distinguish AMA patients from regular discharged patients (e.g., Steinglass et al., 1980). On the other hand, a plethora of retrospective research identifies the AMA patient profile derived from multiple t-tests or chi square tests (Chandrasena, 1987; Chandrasena & Miller, 1988; Harper et al., 1982;). Although the present study had limited success in predicting irregular discharges, more investigation is needed to address the usefulness of prospective research based on retrospective findings.

Clinical Implications

An inspection of sensitivity, specificity and

predictive values revealed that nurse's predictions produced a high rate of false positive errors while the three-factor prediction scale produced more false negatives. The question that becomes important in clinical settings addresses the value that is attached to these errors. Is a high rate of false positives more acceptable than a high rate of false negatives, or vice versa? There are downfalls to either side of the issue.

In misclassifying patients as potential irregular discharges, the false positives, preventative efforts are misdirected. Additional intervention could have been more usefully directed elsewhere since these patients do not pose a threat to treatment adherence. Nurses should be aware that there may be a tendency to augment the accuracy of correct predictions while minimizing the inaccuracies.

Another undesirable consequence of a high number of false positives is that the treatment team's expectation of an irregular discharge may be communicated to the patient in subtle ways and create a self-fulfilling prophecy. If these expectancies are impressed upon the patient, the patient may interpret these signs perhaps as a lack of personal strength or may instil a sense of futility or promote, unnecessarily, an adversarial doctor-patient relationship. Therefore, a high rate of false positives can have some damaging consequences.

A high rate of false negatives also poses difficulties. These patients unexpectedly discharge AMA and will not have had the benefit of additional intervention that might have been worthwhile and prevented their abandonment of in-hospital treatment. The issue of greater false positives versus greater false negatives becomes a trade-off. With a high rate of false positives, the additional intervention may become a lost resource and would have been better allocated elsewhere. On the other hand, many false negatives imply that the team may be overlooking some patient needs. The most efficient allocation of services requires balancing since false positives and false negatives are inevitable in the absence of a 100% accurate predictive instrument. In essence, the treatment team can determine an acceptable rate of false positives and negatives, both in terms of reasonable resource allocations and maintaining the goals of the Acute Care program.

Some authors have pointed to the enhanced value of hospitalization for patients at risk for AMA discharges when specialized contracts are implemented in the treatment program (Louks et al., 1989; Steinglass et al., 1980; Vander Stoep et al., 1991). One suggestion from this study is to recognize the immediate treatment needs of the at-risk patient and design contracts with limited objectives and specific behavioral goals. Treatment contracts can be

negotiated by both the patient and team and should clearly outline goals, identify problems, patient needs, and the specific plan of action (e.g., type of intervention, frequency of counselling, etc.).

Although negotiated treatment contracts may be beneficial for all patients regardless of the degree of risk for an irregular discharge, treatment non-adherence concerns only some of the patients. Demonstrably, 31 patients in this study were unable to complete their in-hospital treatment while the remaining did. The team needs to objectively identify those patients for which treatment non-adherence may be an appreciable issue and addressed accordingly within the contract.

It might be necessary to carefully design shorter short-term goals for patients identified at risk for irregular discharges. Similar plans have been promoted by Wheeler et al. (1984) and Vander Stoep, Bohn and Melville (1991). These special goals should facilitate short durations of hospitalization. In planning workable goals, anticipated frustration points should be acknowledged and the benefits of working through these difficult stages versus leaving treatment early need to be outlined. The general themes identified in patients' retrospective accounts characterize these frustration points. However, difficulties in identifying at-risk patients and the

practicability of developing treatment plans within this short duration are recognized.

Discharge Considerations

Strategies that are compatible with the focus on consumer satisfaction might include the following efforts:

1. Upon discharge, all patients should receive a package that includes information about mental illness, medication, and crisis hotline numbers. The packages could be tailored to meet patients' needs. It is important for patients to be aware that an irregular discharge does not need to result in an absolute termination of hospital services.

2. The treatment team should continue to encourage all patients to utilize outpatient services. Since irregular discharged patients have difficultly completing in-hospital treatment, outpatient services may be a more suitable venue in meeting treatment needs.

3. The hospital should continue conducting discharge interviews by an individual other than a treatment team member. An optimal method of evaluating service satisfaction and effectiveness is to ask the user of such services.

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Appendix A

<u>Global Assessment of Functioning Scale</u>

# 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. See p. 20 for instructions on how to use this scale.

Note: Use intermediate codes when appropriate, e.g., 45, 68, 72.

Code

| | |
|---|---|
| 90<br>\|<br>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<br>\|<br>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<br>\|<br>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<br>\|<br>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<br>\|<br>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<br>\|<br>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, judgment, 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<br>\|<br>21 | Behavior is considerably influenced by delusions or hallucinations OR serious impairment in communication or judgment (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<br>\|<br>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<br>\|<br>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. |
| 0 | Inadequate information. |

Appendix B

Client Self-Evaluation Questionnaire

## CLIENT SELF-EVALUATION

Below is a list of problems and complaints that people sometimes have. Read each item carefully, and circle one of the answers that best describes HOW MUCH DISCOMFORT THAT PROBLEM HAS CAUSED YOU DURING THE PAST WEEK INCLUDING TODAY. Do not skip any items. If you change your mind, erase your first answer completely. If you have any questions, please ask the questionnaire administrator.

1.  How much were you distressed by feeling lonely?

    | 0 | 1 | 2 | 3 | 4 |
    |---|---|---|---|---|
    | Not at all | A little bit | Moderately | Quite a bit | Extremely |

2.  How much were you distressed by feeling no interest in things?

    | 4 | 3 | 2 | 1 | 0 |
    |---|---|---|---|---|
    | Extremely | Quite a bit | Moderately | A little bit | Not at all |

3.  How much were you distressed by feeling afraid in open spaces or on the streets?

    | 0 | 1 | 2 | 3 | 4 |
    |---|---|---|---|---|
    | Not at all | A little bit | Moderately | Quite a bit | Extremely |

4.  How much were you distressed by feeling weak in part of your body?

    | 0 | 1 | 2 | 3 | 4 |
    |---|---|---|---|---|
    | Not at all | A little bit | Moderately | Quite a bit | Extremely |

5.  How much were you distressed by feeling blue?

    | 4 | 3 | 2 | 1 | 0 |
    |---|---|---|---|---|
    | Extremely | Quite a bit | Moderately | A little bit | Not at all |

6.  How much were you distressed by heavy feelings in your arms or legs?

    | 4 | 3 | 2 | 1 | 0 |
    |---|---|---|---|---|
    | Extremely | Quite a bit | Moderately | A little bit | Not at all |

7.  How much were you distressed by feeling afraid to go out of your house alone?

    | 0 | 1 | 2 | 3 | 4 |
    |---|---|---|---|---|
    | Not at all | A little bit | Moderately | Quite a bit | Extremely |

8.  How much were you distressed by feeling tense or keyed up?

    | 4 | 3 | 2 | 1 | 0 |
    |---|---|---|---|---|
    | Extremely | Quite a bit | Moderately | A little bit | Not at all |

9.  How much were you distressed by feelings of worthlessness?

    | 4 | 3 | 2 | 1 | 0 |
    |---|---|---|---|---|
    | Extremely | Quite a bit | Moderately | A little bit | Not at all |

10. How much were you distressed by feeling lonely even when you are with people?

    | 0 | 1 | 2 | 3 | 4 |
    |---|---|---|---|---|
    | Not at all | A little bit | Moderately | Quite a bit | Extremely |

Figure 4. The SCL-10 as Presented in the Service Evaluation Questionnaire (see Derogatis, Lipman, & Covi, 1973; and Hoffman & Overall, 1978).

Appendix C

Patient Satisfaction Questionnaire

# PATIENT SATISFACTION QUESTIONNAIRE

## Lakehead Psychiatric Hospital

Instructions: Please help us improve our program by answering some questions. Do not sign your name. Give your honest opinions. Please answer all of the questions. Thank you for your help.

CIRCLE YOUR ANSWER:

1. How would you rate the quality of service you have received?

   Excellent          Good              Fair              Poor

2. Did you get the kind of service you wanted?

   No, definitely not    No, not really    Yes, generally    Yes, definitely

3. To what extent has our program met your needs?

   Almost all of my      Most of my        Only a few of      None of my
   needs have been       needs have        my needs have      needs have
        met              been met          been met           been met

4. If a friend were in need of similar help, would you recommend our program to him/her?

   No, definitely not    No, I don't think so    Yes, I think so    Yes, definitely

5. How satisfied are you with the amount of help you have received?

      Quite            Indifferent or          Mostly            Very
   dissatisfied      mildly dissatisfied      satisfied        satisfied

6. Have the services you received helped you to deal more effectively with your problems?

   Yes, they helped    Yes, they helped    No, they really    No, they seemed to
    a great deal         somewhat           didn't help        make things worse

7. In an overall, general sense, how satisfied are you with the service you have received?

      Very              Mostly           Indifferent or          Quite
   satisfied          satisfied        mildly dissatisfied     dissatisfied

8. If you were to seek help again, would you come back to our program?

   No, definitely not    No, I don't think so    Yes, I think so    Yes, definitely

Appendix D

Life Satisfaction Questionnaire

## 6a - Life Satisfaction Questionnaire

Generally how do you feel about these life areas (enter the number beside the area)

| I feel just great | I feel pretty good | I feel neither good nor bad | I feel kind of bad | I feel just awful |
|:---:|:---:|:---:|:---:|:---:|
| 1 | 2 | 3 | 4 | 5 |

### People

-relationships with family     _____

-with friends     _____

-with a loved one     _____

### Activities

-use of recreational facilities (sports, exercise, games)     _____

-entertainment (restaurants, movies, theatres, night clubs)     _____

-meeting with friends and/or family     _____

### Work/School/Program

-people at work/school/program     _____

-the tasks involved in work/school/program     _____

-the financial rewards or supports     _____

### Living Domain

-the place where you live     _____

-the clothes you wear     _____

-the neighbourhood you live in     _____

### Health Domain

-about your degree of wellness     _____

-about sleeping     _____

-about eating     _____

Appendix E

<u>Cover Letter</u>

| Ministry | Ministère | P.O. Box 2930, Station P | C.P. 2930, Succursale P |
| of | de | 580 Algoma Street North | 580, rue Algoma nord |
| Health | la Santé | Thunder Bay, Ontario | Thunder Bay (Ontario) |
| | | P7B 5G4 | P7B 5G4 |

**Ontario**

| Lakehead | Hôpital | Tel: (807) 343-4300 |
| Psychiatric | psychiatrique | Fax (807) 343-4387 |
| Hospital | de Lakehead | |

Dear Participant:


    We are conducting a study of how patients at the Lakehead Psychiatric Hospital adjust to a regular routine after they have been discharged. This information will be very useful to all staff at the hospital.


    This research project will involve interviews. During today's interview, we will be asking for basic information along with some questionnaires. We are interested in knowing about your employment, education, marital status, place of residence, and contact with other services. The questionnaires are concerned with your level of satisfaction and comfort. We will be asking for your opinions about your hospital stay, your future plans, along with a few questionnaires.


    All information you provide will remain confidential although there are limits to confidentiality when there is a substantial risk of harm. The findings of the project will be available to you, at your request, upon completion of the project.


    Thank you for your cooperation.



Yours respectfully,



_____

Researcher



_____

Supervisor,
Director of Research
Lakehead Psychiatric Hospital

Appendix F

<u>Consent Form</u>

| | | P.O. Box 2930, Station P | C.P. 2930, Succursale P |
| --- | --- | --- | --- |

**Ministry Ministère**
**of de**
**Health la Santé**

**Ontario**

P.O. Box 2930, Station P   C.P. 2930, Succursale P
580 Algoma Street North    580, rue Algoma nord
Thunder Bay, Ontario       Thunder Bay (Ontario)
P7B 5G4                     P7B 5G4

Lakehead    Hôpital
Psychiatric  psychiatrique
Hospital     de Lakehead

Tel: (807) 343-4300
Fax (807) 343-4387

My signature on this sheet indicates that I agree to participate in a study by Janice Van Kampen on patients discharged from the Lakehead Psychiatric Hospital. I have been informed that Janice, a student at Lakehead University, is conducting a Master's thesis under the supervision of Dr. A. Dalrymple, Research Director at the Lakehead Psychiatric Hospital.

I have received an explanation about the nature of the study and its purpose.

I understand the following:

. I am a volunteer and can withdraw at any time from the study.

2. My decision to participate will in no way affect my current or future treatment at the Lakehead Psychiatric Hospital.

3. There is no physical or psychological harm.

4. The information I provide will be confidential although there are limits to confidentiality when there is a substantial risk of harm.

5. I will receive a summary of the project, upon request, following the completion of the project.

---

Your Signature                              Date

---

Witness                                     Date

Appendix G

Initial Interview Question Format

# INITIAL INTERVIEW
## AMA RESEARCH PROJECT

Subject #: _____ Ward: _____ Casebook #: |__|__|__|__|__| Date: (___/___/___)
                                                                    yy    mm    dd

Name: _____

Address: _____

Interviewed By: _____

### * PREAMBLE (PURPOSE, CONFIDENTIALITY, ETC.) *

## WORK HISTORY:

Emloyment status: _____ (FT/PT) _____

Place of most recent employment: _____

Type of work: _____

How long at most recent place of employment? _____

If unemployed, for how long? _____

If unemployed, type of financial assistance: _____

NOTES: _____

_____

_____

_____

## ACADEMIC HISTORY:

Highest level of education achieved: _____

Any special training (ie. trades): _____

NOTES: _____

_____

_____

_____

## DOMESTIC ACCOMMODATIONS:

Marital Status: _____

Living Arrangements: _____

How long at present address: _____

NOTES: _____

_____

_____

_____

OTHER:

Contact with other health care services: _____

_____

_____

_____

_____

Effectiveness of the above services: _____

_____

_____

Satisfaction with services offered by L.P.H. staff (probe responses):

_____

_____

_____

_____

_____

_____

_____

_____

Name and address of next of kin or significant other:

_____

_____

NOTES:

_____

_____

_____

_____

_____

_____

_____

_____

Appendix H

Global Assessment of Functioning Question Format

# GAF INTERVIEW
## AMA RESEARCH PROJECT

Subject #: _____ Ward:_____ Casebook #: ☐☐☐☐☐ Date: (___/___/___)
                                                        yy  mm  dd

Name:_____

Address:_____

Interviewed By:_____

### * PREAMBLE (PURPOSE, CONFIDENTIALITY, ETC.) *

1. How is school going? _____
   Are you passing? _____
   Are you employed, if so do you find it difficult to do your job? _____

2. How have you been taking care of yourself lately? _____
   Are you able to dress yourself and keep up personal hygiene? _____

   Are you eating well? _____
   Do you get enough sleep? _____
3. When you were first ill, what were your symptoms? _____

   Are you experiencing any symptoms now? _____
   Are you worried about what people think about you?(probe delusions and hallucinations)

   What do the voices say to you? _____

   Do they talk to you? _____
   What do you see? _____
4. What is your mood? Happy    Depressed    Even keel    _____
5. How are you getting along with other people? _____

   Have you had a lot of arguments lately? _____
   Is it easy for you to carry on conversations with others? _____
   Do you have many friends? _____
6. Do you ever feel like hurting someone? _____
   Have you ever acted on these feelings? _____
   Have you ever felt like hurting yourself? _____
   How long ago did you last feel this way? _____
   Have you ever acted on these felings? How? (Probe suicidal thoughts) _____

TAKE NOTE OF IMPAIRMENT, THEN CAST INTO CATEGORY RANGE BETWEEN 1 AND 90.
    * OFFER THE OPPORTUNITY FOR THE PATIENT TO ASK YOU QUESTIONS.
      THANK THEM FOR THEIR TIME.

FINAL SCORE  [_____]

Appendix I

Discharge Interview Question Format

# DISCHARGE INTERVIEW
## AMA RESEARCH PROJECT

Subject #: _____  Ward: _____  Casebook #: | | | | | |  Date: (____/____/____)
                                                                yy    mm    dd

Name:_____

Address:_____

Interviewed By:_____

### * PREAMBLE (PURPOSE, CONFIDENTIALITY, ETC.) *

Main reasons for leaving (probe responses): _____

_____

_____

_____

_____

_____

Type of treatment receiving: _____

_____

_____

_____

What were you expecting to accomplish by being here? _____

_____

_____

When did the idea first occur to you to leave AMA? (probe circumstances)

_____

_____

_____

Were you satisfied with your treatment program? Why or why not?

_____

_____

_____

_____

_____

Were the hospital staff able to satisfy your needs? Why or why not?

_____

_____

_____

_____

_____

What made you finally decide to leave? _____

_____

_____

_____

_____

What are your plans after discharge? (i.e. employment, family, leisure, living arrangements, outpatient treatment, etc.)_____

_____

_____

_____

_____

_____

Address and telephone number for follow up:

_____

_____

NOTES:

_____

_____

_____

_____

_____

Table 1

Prediction process: Calculating prediction scores

---

Six-Factor Prediction Scale

| Variables | Variance |
|---|---|
| No hypnotics/anticonvulsants prescribed | 20.3 |
| No fixed address | 6.5 |
| Previous application for Review Board appearance | 6.3 |
| No medications prescribed | 6.0 |
| No anxiolytics prescribed | 3.5 |
| No lithium prescribed | 1.1 |
| Total | 43.7 |

Cut-off established at 25

Three-Factor Prediction Scale

| Variables | Variance |
|---|---|
| Previous application for Review Board appearance | 25.0 |
| Previous admissions | 10.8 |
| Native ancestry | 3.2 |
| Total | 39.0 |

Cut-off established at 14

Table 2

A 2 X 2 matrix of actual and predicted discharge types

|                      | Actual discharge | |
| --- | --- | --- |
|                      | Irregular | Regular |
| **Predicted discharge** | | |
| Irregular | True positive | False positive |
| Regular | False negative | True negative |

Table 3

Selection ratios and base rate

---

| | Selection ratio (%) | |
|---|---|---|
| Six-factor prediction | 21/145 | (14.5) |
| Three-factor prediction | 35/145 | (24.1) |
| Six-factor or three-factor | 43/145 | (29.7) |
| Six-factor and three-factor | 13/145 | (9.0) |
| Nurses' predictions | 34/89 | (38.2) |
| | | |
| Actual base rate | 31/145 | (21.4) |

---

Table 4

2 X 2 matrices for the prediction scales, nursing staff

predictions, and concurred predictions: Count (%)

| | Actual discharge | |
| --- | --- | --- |
| | Irregular | Regular |
| Six-factor prediction[a] | | |
| Irregular | 4 | 17 |
| | (2.8) | (11.7) |
| Regular | 27 | 97 |
| | (18.6) | (66.9) |
| Three-factor prediction[b] | | |
| Irregular | 12 | 23 |
| | (8.3) | (15.9) |
| Regular | 19 | 91 |
| | (13.1) | (62.7) |

Table 4 continues

[a]$\chi^2$(1, $\underline{N}$ = 145) < 1, n.s. [b]$\chi^2$(1, $\underline{N}$ = 145) = 4.57, $\underline{p}$<.03.

Table 4 (Continued)

2 X 2 matrices for the prediction scales, nursing staff

predictions, and concurred predictions: Count (%)

|  | Actual discharge | |
|---|---|---|
|  | Irregular | Regular |
| Nursing staff predictions[c] | | |
| Irregular | 10 | 24 |
|  | (11.2) | (27.0) |
| Regular | 4 | 51 |
|  | (4.5) | (57.3) |
| Concurred three-factor and nurses' predictions[d] | | |
| Both: Irregular | 4 | 9 |
|  | (7.0) | (15.8) |
| Both: Regular | 3 | 41 |
|  | (5.3) | (71.9) |

[c]$\chi^2(1, N = 89) = 7.77$, $p < .005$. [d]$\chi^2(1, N = 57) = 5.34$, $p < .02$.

Table 5

Percentages of overall hit rates, sensitivity, specificity, positive and negative predictive values of the different prediction criteria

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Six-factor predictions | 69.7 | 12.9 | 85.1 | 19.0 | 76.4 |
| Three-factor predictions | 71.0 | 38.7 | 79.8 | 34.3 | 82.7 |
| Nurses' predictions | 68.5 | 71.4 | 68.0 | 29.4 | 92.7 |
| Concurred three-factor and nurses' predictions | 78.9 | 57.1 | 82.0 | 30.8 | 93.2 |

Note.

(1) Overall hit rate.

(2) Sensitivity.

(3) Specificity.

(4) Positive predictive value.

(5) Negative predictive value.

Table 6

Multiple regression of 15 variables on discharge type

| Variables | Correlation with discharge type | $\underline{B}$ | Beta |
|---|---|---|---|
| Age | .22*** | 0.01 | 0.20** |
| Gender | −.19** | −0.14 | 0.17* |
| Previous admissions | −.12 | constant = 2.77**** | |
| Previous irregular discharges | −.17* | | |
| Native | −.12 | $\underline{R}^2$ = .08[a] | |
| No fixed address | −.03 | Adjusted $\underline{R}^2$ = .06 | |
| Admission status | −.01 | Multiple $\underline{R}$ = .28** | |
| No medications | .04 | | |
| Anxiolytics | .04 | | |
| Hypnotics/anticonvulsants | .03 | | |
| Lithium | −.15* | | |
| Additional medications | .15* | | |
| Primary diagnosis | .08 | | |
| Review board | .02 | | |
| Three-factor prediction | −.18* | | |

Note. Discharge type was coded (2=irregular, 3=regular).

[a]unique variability = .05; shared variability = .03

*$\underline{p}$<.05. **$\underline{p}$<.01. ***$\underline{p}$<.001. ****$\underline{p}$<.0001.

Table 7

<u>Results of discriminant function analysis</u>

| Predictor variables | (1) | (2) |
| --- | --- | --- |
| Age | −.53 | .41 |
| Gender | .46 | .46 |
| Three-factor prediction | .42 | .24 |
| Previous irregulars | .41 | .32 |
| Lithium | .37 | .39 |
| Additional medications | −.35 | −.43 |
| Native | .28 | .15 |

<u>Note</u>.

(1) Correlations of predictor variables with discriminant function.

(2) Standardized canonical discriminant function coefficients.

Table 8

Classification results: Count (%)

| Actual group | n | Predicted group membership | |
| --- | --- | --- | --- |
| | | Irregular | Regular |
| Irregular | 31 | 23 | 8 |
| | | (74.2) | (25.8) |
| Regular | 114 | 31 | 83 |
| | | (27.2) | (72.8) |

Percent of 'grouped' cases correctly classified: 73%

Table 9

Percentages between discharge groups

| Variables | Discharge group | |
| | Regular | Irregular |
| | $\underline{n}$ = 114 | $\underline{n}$ = 31 |
| --- | --- | --- |
| Male | 47.4 | 71.0 |
| Native | 14.9 | 25.8 |
| Admission status | | |
| Voluntary | 65.8 | 64.5 |
| Involuntary | 34.2 | 35.5 |
| Residence | | |
| Thunder Bay | 70.2 | 58.1 |
| Northwestern Ontario | 18.3 | 29.0 |
| Other | 3.6 | 3.2 |
| No fixed address | 7.9 | 9.7 |
| Medications | | |
| Prescribed | 95.6 | 93.5 |
| Not prescribed | 4.4 | 6.5 |
| Anxiolytics | | |
| Prescribed | 46.5 | 41.9 |
| Not prescribed | 53.5 | 58.1 |

Table 9 continues

Table 9 (Continued)

Percentages between discharge groups

| Variables | Discharge group | |
| | Regular $n = 114$ | Irregular $n = 31$ |
|---|---|---|
| Hypnotics/Anticonvulsants | | |
| Prescribed | 55.3 | 51.6 |
| Not prescribed | 44.7 | 48.4 |
| Lithium | | |
| Prescribed | 7.9 | 19.4 |
| Not prescribed | 92.1 | 80.6 |
| Additional medications | | |
| Prescribed | 93.9 | 83.9 |
| Not prescribed | 6.1 | 16.1 |
| Review Board appearance | | |
| Requested | 17.5 | 16.1 |
| Not requested | 82.5 | 83.9 |

Table 9 (continued)

Percentages between discharge groups

| Variable | Discharge group | |
| | Regular $n = 114$ | Irregular $n = 31$ |
| --- | --- | --- |
| Primary ICD-9 diagnosis | | |
| Alcohol/Drug psychoses | 3.5 | 3.2 |
| Schizophrenic psychoses | 27.2 | 29.0 |
| Affective psychoses | 13.2 | 19.4 |
| Paranoid states | 0.9 | 0.0 |
| Neurotic disorders | 7.0 | 6.5 |
| Personality disorders | 3.5 | 9.7 |
| Sexual deviations | 0.9 | 0.0 |
| Alcohol/Drug dependency | 9.6 | 9.7 |
| Adjustment/Acute reaction | 2.6 | 3.2 |
| Depression | 19.3 | 9.7 |
| Disturbance of conduct | 5.3 | 3.2 |
| Unspecified | 7.0 | 6.5 |

Table 10

Descriptive statistics between discharge groups. Means,

percentages, and (standard deviations).

| | Discharge group | |
|---|---|---|
| Variables | Regular | Irregular |
| | $n = 114$ | $n = 31$ |
| Previous admissions | 4.36 | 6.81 |
| | (7.70) | (11.24) |
| Previous irregular discharges | 0.93 | 1.97 |
| | (2.21) | (3.28) |
| Follow-up | | |
| Subsequent regular discharges | 0.25 | 0.52 |
| | (0.46) | (0.81) |
| Total outpatient contacts | 19.31 | 20.48 |
| | (34.64) | (31.32) |
| Time to next admission | | |
| less than one week | 6.1% | 22.6% |
| less than three months | 21.1% | 19.3% |

Table 11

Independent t-tests using separate variance estimates.

Means and (standard deviations)

|  | Discharge groups | | | |
|---|---|---|---|---|
| Variables | Regular | Irregular | t value | df |
|  | n=114 | n=31 | | |
| Age | 35.56 | 28.90 | −3.87‡ | 98.45 |
|  | (13.21) | (6.67) | | |
| Length of stay (days) | 20.15 | 8.00 | −4.24‡ | 142.01 |
|  | (26.58) | (7.87) | | |
| Follow-up | | | | |
| Subsequent admissions | 0.32 | 0.90 | 2.37† | 32.95 |
|  | (0.57) | (1.35) | | |
| Subsequent irregular | 0.04 | 0.32 | 2.33† | 32.33 |
| discharges | (0.25) | (0.65) | | |
| Total days hospitalized | 5.93 | 15.42 | 2.10† | 34.89 |
|  | (13.05) | (24.18) | | |

†p<.05. ‡p<.001. Two-tailed.

Figure Caption

<u>Figure 1</u>.  A schematic representation of the general

research design.

# RESEARCH DESIGN

150 Admissions

5 in hospital at study end

1. Files reviewed

145 Patients

2. Predictions made on basis of either 6-factor or 3-factor scores

43 Predicted irregulars

102 Predicted regulars

2 Interviews

9 Interviews

3. Predicted AMAs interviewed

Actual discharge

12 Irregulars

31 Regulars

19 Irregulars

83 Regulars

4. Recent AMAs interviewed on readmission

9 Interviews:
1 pre-discharge
8 readmission
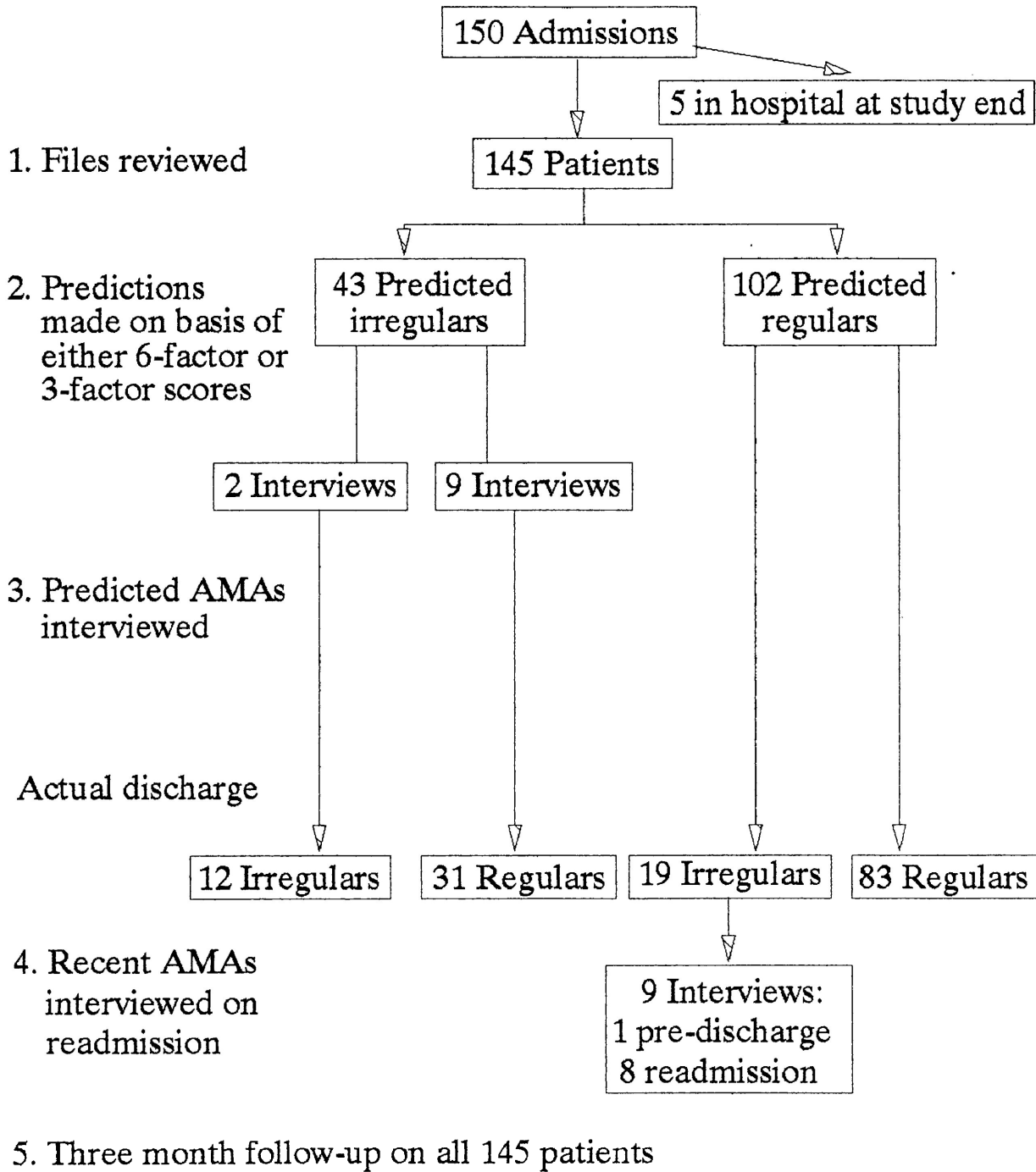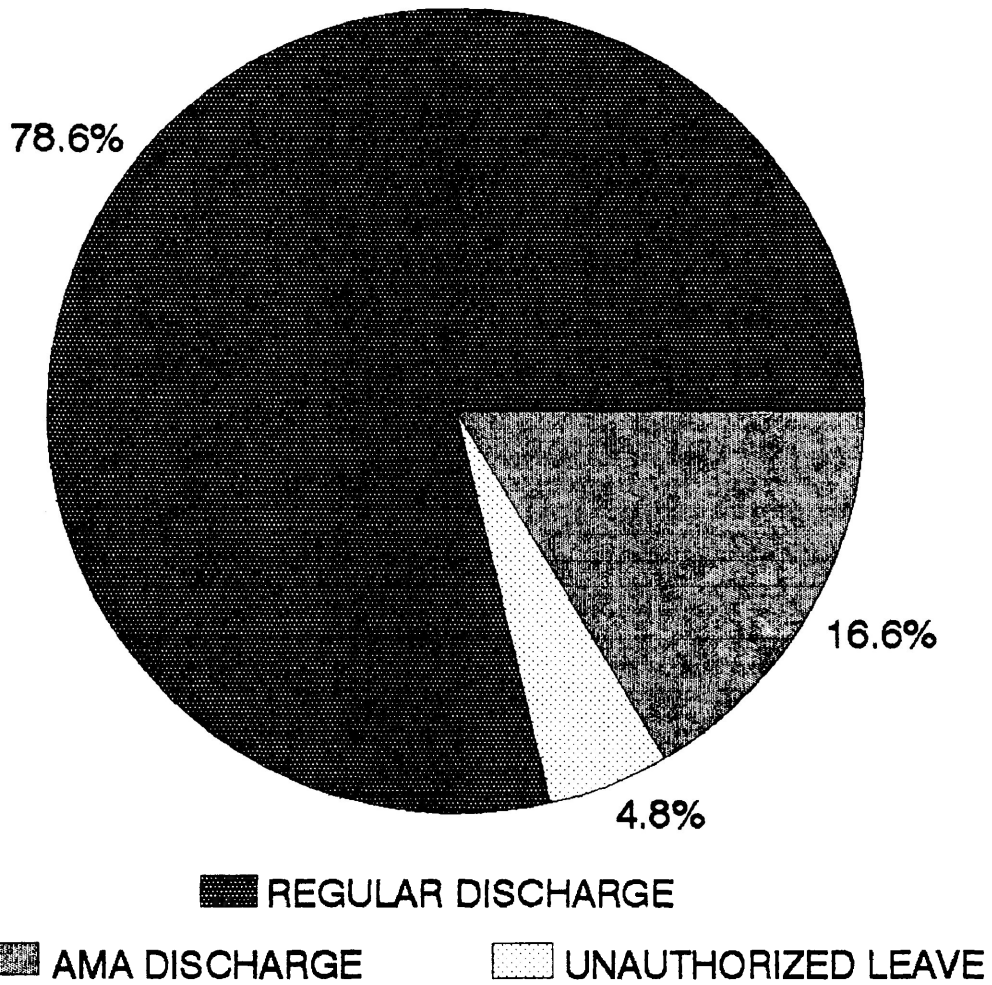
5. Three month follow-up on all 145 patients

Figure Caption

<u>Figure 2</u>.  A breakdown of discharges into regular and irregular types.

# DISCHARGE TYPES



78.6%

16.6%

4.8%

■ REGULAR DISCHARGE

▓ AMA DISCHARGE          ▢ UNAUTHORIZED LEAVE

N = 145