PHYSICIAN ADHERENCE TO DEPRESSION GUIDELINES

by

Mary Hisrich Jenkins

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Science
(Pharmacy)

at the

University of Wisconsin - Madison

1998

AWM
J46

Approved: Bonnie L Svarstad
Professor Bonnie L. Svarstad

Date: 1/12/98

ACKNOWLEDGMENTS

I would like to thank many people who have helped and supported me with this project. First, I would like to thank my advisor Bonnie Svarstad for all her help, input, patience, and support throughout this project and all of my graduate studies. I consider her a good friend in addition to a great advisor. I would also like to thank my committee members, Jeanine Mount and Joseph Wiederholt for their input, support, and friendship.

A great amount of thanks go out to Dara Bultman who inspired me to work on this project and offered endless help, support, and friendship. I would also like to thank the other graduate students and friends that offered encouragement including Betsy Sleath, Inger B. Johansen, Ingrid Schmidt, and Oh. Ingrid and Oh deserve special thanks for their contributions on data entry for this project. I also thank all my co-workers and friends at Physicians Plus for their support, flexibility, and understanding throughout this project.

Finally, I would like to thank my family. My family has encouraged, aided, and supported me and are always an inspiration. My husband, Scott Jenkins, offered endless support, motivation, and encouragement in addition to providing me with a zest for continual improvement and enjoyment of life.

TABLE OF CONTENTS

I. Research Problem

Depression is highly prevalent and causes high rates of morbidity and mortality (Johnson et al 1992; von Korff et al 1992; Wells et al 1988a; Wells et al 1988b). Depression is one of the most common clinical disorders treated by health care professionals today. One out of eight individuals will need treatment for depression in their lifetime and surveys have found that 6-8 percent of all outpatients in primary care settings have major depressive disorder (Friedman 1975). The direct and indirect costs of major depressive disorder have been estimated to be approximately $16 billion per year in 1980 (Stoudemire et al 1986). Despite the high incidence of depression in the United States, it is believed that depression remains underdiagnosed and undertreated (Depression Guideline Panel 1993).

The diagnosis and treatment of depression used to be done mostly by specialty physicians but now many primary care providers are diagnosing and treating depression (Hough et al 1987; Shapiro et al 1984). Once the diagnosis of depression is noted, treatment options including medication, psychotherapy, or both are highly successful (Eddy et al 1990; DiMascio et al 1979; Wells 1985; McDonnell-Douglas 1989, 1990; von Korff et al 1992; Weissman et al 1981, 1987). Due to the high prevalence, high costs, significant morbidity and

mortality, and high efficacy of treatment, clinical practice guidelines have been developed on depression by the Agency for Health Care Policy and Research (Depression Guideline Panel 1993).

Practice guidelines have been developed to improve identification, diagnosis, and treatment of major disease states. Now that several guidelines have been developed, it is important to investigate the effects of developing and implementing guidelines into practice. Several areas regarding the effects of practice guidelines need to be studied including: how to best implement guidelines, methods of measuring adherence to guidelines, identifying patterns of adherence, identifying predictors of adherence, and studying the effects of guideline implementation on disease and quality outcomes.

This project focuses on physician adherence to standards based on AHCPR clinical depression guidelines. The primary objectives of this study are: 1) to develop a reliable and valid tool for measuring physician adherence, defined by documentation of standards based on AHCPR clinical guidelines for depression; 2) to identify and describe patterns of documented physician adherence to depression guidelines; 3) to examine if patient characteristics including age, gender, insurance status, and clinical severity are related to physician adherence to depression guidelines; 4) to examine if

physician specialty is related to physician adherence to depression guidelines.

II. PREVIOUS WORK

Guideline development and adherence

General guidelines

The development and use of clinical practice guidelines is becoming more common in the medical profession today. The increasing popularity of using practice guidelines is based on providing standardized, appropriate, and cost effective health care services (Depression Guideline Panel 1993). When practice guidelines are developed and applied by physicians they may offer an effective method of providing and improving positive patient outcomes. However, it is important that guidelines be accessible and usable in order to be implemented and accepted throughout the medical profession.

A variety of medical practices have evaluated the effects of developing and implementing guidelines into practice. The AHCPR has initiated the development of a variety of clinical practice guidelines and in turn research is being done and needs to be done surrounding the use of these guidelines. It is important to document rates of guideline compliance in the various disciplines and also develop and test methods for improving compliance. Research has shown that guidelines can

be developed but implementation is the most difficult step. Mittman et al (1992) noted that methods for guideline development are better understood than for guideline implementation.

Several studies have evaluated the effects of guideline development and have found low rates of physician compliance to existing guidelines. Lomas et al (1989) found that obstetricians were aware and agreed with practice guidelines regarding performing cesarean sections in women but rates of cesarean sections did not go down after guideline development. The researchers concluded that other incentives may be necessary to increase rates of guideline compliance among physicians (Lomas et al, 1989).

Hill et al (1988) evaluated compliance to the 1984 Joint National Committee Consensus Report on High Blood Pressure by a random sample of Maryland physicians. Availability of a copy of the report was 58%, familiarity was 81%, providing care based on guidelines was 65%, and the amount of change in practice behavior to adhere to guidelines was 18% (Hill et al, 1988). The lack of availability of the report itself may suggest a barrier to adherence.

Another study by Headrick et al (1992) noted a low baseline compliance rate of 39% to National Cholesterol Education Program (NCEP) guidelines when conducting a randomized controlled trial in a major urban teaching

hospital. Ellrodt et al (1995) conducted a retrospective study of patients' physicians who were not compliant with guidelines regarding admissions to the hospital for chest pain. It was found that 34% of physicians did not follow guidelines for discharge, 19% of these physicians had no obvious reason for delayed discharge, and 16% of physicians refused to follow guidelines (Ellrodt et al 1995).

These studies found low rates of compliance to guidelines and it has been suggested that other incentives be offered to successfully implement the use of practice guidelines. In an overview of guideline implementation, Mittman et al (1992) suggests strategies such as academic detailing, use of opinion leaders, and use of continuous quality improvement in efforts of improving successful implementation of practice guidelines.

Several articles have done interventions to improve guideline adherence. Cohen et al (1982) studied the effects of providing a checklist of all recommended preventive care guidelines to each patient chart and found a significant increase in performance of preventive care measures. An article by Morrow et al (1995) used peer review, feedback, and financial incentives as methods for successfully improving preventive care. Tierney et al, 1986 used monthly feedback reports to physicians and noted improvement in preventive care practices.

Another article by Myers et al (1988) noted improved

compliance to cesarean section guidelines by implementing a program with a second opinion requirement, objective criteria for indication, and detailed review of individual physician rates of performing cesarean sections.

Another area of interest in these studies is charting adequacy. It is important to look at charting by physicians in efforts of identifying documented adherence to guidelines. In the Morrow et al (1995) article charting adequacy was examined relating to preventive care and was 87% at baseline and improved to 92% post intervention. Preventive care such as immunizations does not require detailed charting as would be necessary for depression and therefore the baseline rate of documented adherence to depression guidelines would be expected to be much lower.

Antidepressant Prescribing Patterns

Several articles have evaluated prescribing patterns of antidepressant medications. Many articles note that depression may be undertreated in terms of utilizing antidepressant medications, using low doses of antidepressants, and treating for an inadequate time frame (Keller et al 1982; Wells et al 1993; Wells et al 1994; Wells et al 1995; Wells, Katon et al 1994; Meredith et al 1994; Matthews et al 1993; Kerr 1994; Orrell et al 1995; Donoghue and Tylee 1996; Horn 1997). Several articles also examine prescribing patterns and attempt to note reasons or predictors

for prescribing practices (Wells et al 1993; Wells et al 1994; Wells et al 1995; Wells, Katon et al 1994; Meredith et al 1994; Strum and Wells 1995; Munizza et al 1995; Kerr 1994; Isacsson et al 1996; Shao et al 1997).

The majority of articles have resulted from the Medical Outcomes Study (Wells et al 1993; Wells et al 1994; Wells et al 1995; Wells, Katon et al 1994; Meredith et al 1994; Strum and Wells 1995). This is an observational study of adult outpatients who received care in either a health maintenance organization, a large multi-specialty, a mixed prepaid and fee-for-service group practice, or a single specialty small group or solo practices.

Wells et al (1993) examined the quality of care for hospitalized depressed elderly patients before and after implementation of a prospective payment system. This used medical record data to examine if admission, psychological assessment, psychological medication management, and neurologic exam were appropriate. It was noted that 85.3% of admissions were appropriate and 67% of patients had appropriate assessments. The mean quality of psychotropic prescribing was 1.41 (range 0-2) and the mean completeness of neurologic exam was 1.4 (range 0-3).

Another article by Wells et al (1994) looked at the quality of care for depressed elderly and examined differences across treatment settings. This study used the same measures

as the study above and found that treatment location or type of hospital (no psychiatric unit, an exempt psychiatric unit, or a nonexempt unit) did not impact the overall quality of care provided.

Wells et al (1995) examined the severity of depression among outpatients based on patient interviews assessing depression symptoms and global measures of psychiatric and physical sickness. These patient self-report measures were compared for general medicine physicians, psychiatrists, and other mental health specialists. It was found that baseline symptom scores were higher for psychiatrists and lowest for general medicine physicians. The type of payment was not related to psychological or physical sickness. This study also found several undetected depressed patients who scored in the range warranting treatment.

Wells, Katon and colleagues (1994) used patient interviews and surveys to determine patient reported utilization patterns for minor tranquilizers and antidepressants. It was noted from patient self-report that 39% of depressed outpatients were receiving sub-therapeutic doses of antidepressant medications. Age, education, race, marital status, type of disorder, and psychological sickness were all associated with use of antidepressant and/or minor tranquilizer medications. The more clinically ill, older patients, more educated patients, and white patients were more

likely to use antidepressants. Patients who were more clinically ill and unmarried patients were more likely to use a minor tranquilizer (Wells, Katon 1994).

The Meredith et al (1994) study examined clinician specialty and treatment style for depressed outpatients. This study compared physician self-report and patient self-report of prescribing and/or utilizing an antidepressant and receiving face to face consultation. Physician self-report noted a rate of prescribing antidepressants to be 59.4%. Physicians also reported a rate of providing face to face consultations to patients 67.4% of the time. The patient report indicated a 18.9% rate of antidepressant utilization and a 55.3% rate of receiving counseling. When examining the physician self-report data, psychiatrists were found to have higher rates of counseling compared to general medicine practitioners.

Strum and Wells (1995) also examined the appropriateness of medication therapy and level of functioning in depressed outpatients based on clinician specialty. It was noted from patient self-report that patients who received an antidepressant from a general medicine physician had lower functioning scores than the patients who received an antidepressant prescription from a psychiatrist.

Other studies have examined antidepressant prescribing using physician self-report (Munizza et al 1995; Matthews et

al 1993; Kerr 1994; and Orrell et al 1995). Munizza et al (1995) noted that 78% of psychiatrist patients received antidepressants. Being female, higher educational level, and age > 44 was associated with increased prescribing of antidepressants. In addition, being female and having a diagnosis of mood disorder was associated with low antidepressant dosing. The Matthews et al (1993) study noted that 23% of clinicians surveyed were using antidepressant doses below the recommended dosages. Kerr (1994) found that 40% of general practitioners and 7% of psychiatrists were prescribing antidepressant therapy less than 4 months. Orrell et al (1995) noted that many of the general practitioners surveyed utilized older tricyclic antidepressants at sub-therapeutics doses and few prescribers surveyed maintained patients on antidepressant therapy more than 3 months.

Two large studies examining antidepressant treatment utilize automated databases. The first by Donoghue and Tylee (1996) examined patterns of prescribing antidepressants and noted that as many as 88% of prescriptions were at doses below those recommended by the depression consensus guidelines developed by the Royal Colleges of General Practitioners and Psychiatrists, and by the British Association for Psychopharmacology. Another study by Horn (1997) utilized data from the Managed Care Outcomes Project and noted that the majority of patients receiving psychoactive drugs do not have

a specific psychiatric diagnosis and many patients with a diagnosis of major depression did not receive treatment with an antidepressant medication.

Three studies examined interventions aimed at improving antidepressant therapy. The first by Callahan et al (1994) measured, via patient self-report and medical record data, improvements in the treatment for depression after increasing visits to the physicians and providing patient-specific recommendations. Noting depression diagnosis in outpatient diagnosis/problem list, discontinuing medications causing depression, initiating antidepressants in patients with depression, and consulting psychiatry were all considered markers for appropriate antidepressant therapy. The rates of appropriate antidepressant therapy for the control group were 12% for diagnosis , 22% for discontinuing medications causing depression, 8% for initiating antidepressants, and 14% for consulting psychiatry. After the intervention, noting the diagnosis and initiating antidepressants improved significantly (32% recorded depression diagnosis, 26% started an antidepressant) while the other measures did not change significantly.

Katon et al (1995) looked at improvement in depression treatment after increasing visits to physicians and by monitoring medication refills. Using patient self-report and prescription record data, the use of adequate antidepressant

doses were compared pre- and post-intervention. Baseline adequate dose for > 90 days was 57.1% for major depression and 40.3% for minor depression. After intervention the rates increased to 75.5% and 79.7% respectively.

A recently published study by Katon et al (1997) examined the effects of a team intervention approach on the quality of depression care. The teams included a combination of a primary care physician/psychiatrist and a psychiatrist/psychologist. The team approach was associated with improved antidepressant utilization, increased patient satisfaction, and improved symptom scores. Prescription billing records and patient self-report were used to measure quality of depression care.

This study will examine and describe documented patterns of adherence defined by standards based on AHCPR depression guidelines. This study will expand the focus beyond simply prescribing and utilizing antidepressants to quality of documented depression care.

Physician Characteristics

Along with determining compliance to guidelines, it is important to identify factors that may be related to physician adherence. Physician characteristics such as age, educational background, type of practice, specialty, and attitudes have all been compared to prescribing patterns.

Becker et al (1972) evaluated physician prescribing

patterns for primary care providers and noted that younger physicians and physicians that had recent medical training were more likely to receive higher expert ratings and to prescribe less chloramphenicol in their practices. The place or location of medical training background in this study did not affect prescribing practices significantly. This study also looked at attitudes and philosophy by using an attitude scale and found that placing much concern about the quality of prescribing, taking a "modern" approach to therapeutics, having a positive view of generic drugs, and having a negative view of the pharmaceutical industry image were all significantly correlated with chloramphenicol prescribing.

In efforts of finding the attributes of a good prescribing physician, Price et al (1971) had physicians rank 87 attributes via questionnaire. At the top of the list of good attributes were good clinical judgment, up-to-date knowledge of field, willingness to refer patients if needed, and also keeping full and accurate clinical records was ranked 16th out of the 87 qualities.

Davidson et al (1995) examined physician characteristics and prescribing for elderly people in New Brunswick using billing information and noted that physicians with higher mortality rates prescribed more antidepressants and were more likely to be male, have larger practices, see more patients per day, and billed more per year.

When examining antidepressant use the Medical Outcomes Study data and resulting articles examined the physician characteristic of physician specialty and how it related to antidepressant use. Wells et al (1995) noted that general medicine physicians had less severely ill depressed patients. Wells et al (1994) noted that psychiatrist-treated patients had increased use of antidepressant medications. Meredith et al (1994) noted that compared with general medicine practitioners, psychiatrists had increased prescribing of antidepressants and increased counseling levels.

Kerr (1994) compared antidepressant prescribing between general practitioners and psychiatrists via questionnaire. The self report data indicated that psychiatrists reported using higher doses of antidepressants and reported continuing therapy for a longer time frame than did generalists. Also via survey questionnaire, Isacsson et al (1996) compared antidepressant prescribing by generalists and psychiatrists in Sweden. This study noted similar results to the above mentioned study, indicating that psychiatrists prescribe higher doses of antidepressant medications. Both studies imply that the higher dosing was more appropriate prescribing.

Shao et al (1997) surveyed physicians regarding knowledge and attitudes about depression and compared results based on being a generalist, non-generalist, or psychiatrist. Results indicated that psychiatrists had more favorable attitudes

about depressed patients and managing depression. Also, psychiatrist depression knowledge scores were significantly higher than the other two physician groups.

Patient Characteristics

Patient characteristics such as age, gender, illness severity, and type of insurance coverage have all been explored and related to the appropriateness of physician prescribing and physician attitudes.

Miller et al (1976) examined physicians' attitudes toward the elderly by surveying physicians in private practice. The majority of the population sampled (92%) cared for the elderly and of these 69% had no specific training in geriatrics. In the survey only 3% reported that patients over 75 received better care than similar younger patients and 45% said they would treat a 25 year old in the emergency room before or over a 75 year old. Also, 71% did not believe in heroic medicine in mentally incompetent elderly patients (Miller et al, 1976).

Several other articles examined the attitudes of psychiatrists toward the elderly. Butler et al (1975) noted in an overview that the elderly are undertreated, citing statistics that over three million elderly with psychiatric problems will never receive help. Ford et al (1980) found that psychiatrists regarded older patients as less ideal, that they were believed to have poorer prognosis, and they were less likely to get psychotherapy.

Another patient factor affecting physician attitudes and practice that has been researched is insurance or payment type. Harris et al (1990) noted that private insurance was associated with a higher cesarian section rate when compared to Medicaid patients. Also, when Blue Cross/Blue Shield of Kansas offered equal reimbursement the cesarian section rate decreased by 50% (Harris et al 1990).

The Medical Outcomes Study data and resulting articles examined the effects of payment type, age, education, race, marital status, type of disorder, and sickness severity on antidepressant treatment. Two studies (Wells et al 1993, Wells et al 1994) noted improved quality of care after the implementation of a Medicaid prospective payment system. Wells et al (1995) noted that patient education was associated with increased illness severity. Wells et al (1994) noted that age, education, race, marital status, type of disorder, and psychological sickness were associated with increased use of antidepressant medications.

Munizza et al (1995), not related to the Medical Outcomes Study, examined age > 44, educational level, diagnosis, and gender as predictors of initiating and/or dose of antidepressant medications. Female patients were more likely to receive antidepressant medication and also had significantly lower daily doses of antidepressants. Patients diagnosed with mood disorder received significantly more

medications at higher doses than other diagnoses. Hong and Shepherd (1996) examined the effects of age, gender, and family background on children's use of psychoactive medications. This study found no effect with family background but did note that age and gender affected prescribing. Younger boys were more likely to receive more psychoactive medications and the opposite was true at older ages (Hong and Shepherd 1996).

Study regarding gender associations to psychotropic prescribing has spanned the past 30 years. Interest in this area stemmed from the fact that psychotropic drugs became commonly prescribed and concerns emerged regarding overuse, dependence and/or side effects (Gabe 1990; Wells et al 1985). Numerous studies have examined the effects of gender on psychotropic prescribing and the majority of studies note that gender differences with regards to prescribing psychotropics do exist (Williams 1983; Hemminki 1982; Cooperstock and Purnell 1982; Williams 1980; Cooperstock 1979; Sleath 1993). Most studies have examined rates of utilization of psychotropics based on gender and have not examined other aspects of psychotropic treatment such as quality of diagnosis and treatment. The most common finding is that females are more likely to use psychotropic medications (Isacson 1992; Svarstad et al 1987; Verbrugge and Steiner 1985; Ferguson 1990, Ray et al 1986).

This study will attempt to identify if physician specialty and patient factors such as age, gender, insurance coverage, and illness severity are related to physician adherence to standards based on nationally recognized clinical practice guidelines on depression.

Need for Research

It is clear from the current studies examining guideline adherence and antidepressant prescribing patterns that improvement is warranted. Clinical practice guidelines are currently available for a variety of practice settings. Due to the potential benefits of improving overall patient outcomes, many health care institutions may expect adherence to these guidelines. Research has shown low rates of compliance to various existing guidelines and improvements in guideline adherence or practice patterns have been noted by providing interventions or incentives (Lomas et al 1989; Hill et al 1988; Headrick et al 1992; Ellrodt et al 1995; Cohen et al 1982; Morrow et al 1995; Tierney et al 1986; Myers et al 1988; Donoghue and Tierney 1996). Incentive based compliance may become more common in the managed care setting of health care.

Based on this review of depression literature, several limitations of current studies were identified that make interpretation of results and implications difficult. A major limitation of current research is the fact that there is a

lack of a standard professionally recognized definition of adherence to depression guidelines or appropriate prescribing patterns. This problem stems from a lack of measurement consensus and conceptual theories related to physician adherence.

A variety of methods have been used to collect data with the bulk of the literature utilizing the method of physician or patient self-report. Self-report methodology is subject to bias and little reliability data exists to support these studies. Many studies simply measured either patient antidepressant drug use or physician antidepressant prescribing and equate this with quality depression care (Keller et al 1982; Wells and Katon et al 1994; Munizza et al 1995; Matthews et al 1993; Kerr 1994; Orrell et al 1995; Donaghue and Tylee 1996). Meredith et al (1994) compared physician report and patient report of antidepressant prescribing and/or use along with report of giving and/or receiving consultation. The results noted very different rates reported for prescribing (59.4%) and using (18.9%) antidepressants based on physician versus patient self-report data. This comparison exemplifies the difficulties in using self-report as the sole measure of quality care.

A few studies from the Medical Outcomes Study incorporated multiple measures of quality (Wells et al 1993; Wells et al 1994; Wells et al 1995; Meredith et al 1994; Strum

and Wells 1995). Wells et al (1993) used medical record data of inpatients to examine appropriateness of admission, psychological assessment, psychological medication management, and neurologic exam. This study, however, was short term in the inpatient setting and did not incorporate any measures of monitoring and/or follow-up. Two other studies used patient self-report to measure antidepressant use and level of functioning (Wells et al 1995; Strum and Wells 1995). Again, inferences of quality care were made based on simply measuring patient self-report of antidepressant use and level of functioning without examining quality of monitoring and follow-up.

The newly published study by Katon et al (1997) examined the effects of an intervention on depression care and utilized the measures of antidepressant use, patient self-report of satisfaction with depression care, and patient self-report of depression symptoms. Although this study incorporated more measures of quality care including patient satisfaction and symptoms, it did not examine physician documentation of these and other aspects of quality depression care.

No studies have defined physician adherence to guidelines or practice patterns by incorporating physician documentation of multiple aspects related to quality outpatient depression care including the quality of diagnosis, treatment, monitoring, and follow-up. All of these are important aspects

in measuring quality depression care and future research needs to focus on defining quality care based on national standards.

Some studies focus on patient predictors and others on physician predictors of quality depression care but current studies rarely incorporate both factors in analysis (Wells et al 1993; Wells et al 1994; Wells et al 1995; Wells, Katon et al 1994; Meredith et al 1994; Strum and Wells 1995; Munizza et al 1995; Kerr 1994; Davidson et al 1995; Isacsson et al 1996; Shao et al 1997). In fact, there is an overall lack of multivariate analysis of predictors in the current literature. In addition, the predictors that have been examined in the current depression literature are basic demographic factors and studies have not addressed much in terms of external, environmental, or organizational factors that potentially impact physician adherence.

Along with a lack of measurement consensus, a lack of theory exists in the area of physician adherence. Unlike patient compliance which has multiple theoretical approaches that have been examined and tested, few theoretical approaches exist for physician adherence. The current literature on physician adherence to guidelines in the area of depression has been largely atheoretical.

A need for future research examining, testing, and establishing a standard for operationalizing and conceptualizing physician adherence exists. This is

especially important as compliance to guidelines becomes expected and defined as a standard of quality care. This study attempts to better define quality of depression care by incorporating multiple aspects other than use and prescribing of antidepressants into the definition of physician adherence. The definition of adherence is expanded to include documentation of diagnosis, regimen, symptoms, instructions, patient beliefs, concerns, compliance, and follow-up. In addition reliability of the measurement tool is tested and demographic predictors examined.

III. APPROACH, HYPOTHESES, AND VARIABLES

Approach

A variety of theoretical models exist to explain compliance behavior in health care. The bulk of compliance theory is focused on patient compliance. When examining the issue of physician compliance to guidelines or practice patterns related to depression care, current research has been largely atheoretical.

The majority of articles examining physician prescribing or patient use of antidepressant medications look retrospectively at the effect of instituting a prospective payment system (PPS) by Medicaid. This data comes form the Medical Outcomes Study (Wells et al 1993; Wells et al 1994;

Wells et al 1995; Wells and Katon et al 1994; Meredith et al 1994; Strum and Wells 1995). The main areas examined in these studies are the effect of the PPS and how input factors affect prescribing or patient utilization patterns of antidepressants. The factors examined include: physician specialty, patient age, patient education, patient race, marital status of patient, type of disorder, patient clinical status, and payment type.

All of the current literature assessing antidepressant use has simply examined antidepressant use and/or prescribing based on demographics, disease factors, payment factors, or has looked at interventions trying to affect the physician prescribing behavior (Keller et al 1982; Wells et al 1993; Wells et al 1994; Wells et al 1995; Wells, Katon et al 1994; Meredith et al 1994; Strum and Wells 1995; Munizza et al 1995; Matthews et al 1993; Kerr 1994; Orrell et al 1995; Donoghue and Tylee 1996; Horn 1997; Callahan et al 1994; Katon et al 1995; Davidson et al 1995; Isacsson et al 1996; Shao et al 1997; Katon et al 1997). These studies all lacked a strong theoretical or conceptual background. A standard theoretical framework or measurement technique has not been developed and this lack of standard makes it difficult to determine actual rates of adherence or determine effects of intervention strategies.

Although a theoretical model for physician documented

adherence to guidelines has not been established, research examining physician prescribing has been conducted unrelated to depression care (Hemminki 1974, 1975a, 1975b, 1976; Segal and Hepler 1982, 1985; Christensen and Bush 1981; Miller 1973). The bulk of this research uses cognitive theories or models as a basis for explaining prescribing behavior. Segal and Hepler's (1982) well known model states that prescribing decisions are based on physician beliefs of benefits and risks of treatment and outcomes. Hemminki (1975b) presents a model that incorporates cognitive, interactional, and organizational aspects. It is an extremely complicated model and therefore difficult to test. These models differ in that cognitive theories of prescribing traditionally focused on physician factors related to prescribing and the Hemminki model incorporates interactional and organizational factors. However, all of these studies and models simply examine prescribing and do not include many factors that may affect compliance to clinical practice guidelines. Clinical practice guidelines not only include prescribing but encompass areas such as diagnosis, monitoring, and follow-up.

In examining the quality of depression care, this study uses previous literature on antidepressant prescribing and/or use to identify provider factors (physician specialty) and patient factors (age, gender, insurance coverage, clinical status severity) that may affect physician adherence to

antidepressant guidelines. Adherence or quality of depression care is defined by evaluating physician documentation of standards based on clinical practice guidelines for depression. This is different from previous studies in that the definition of adherence incorporates the documentation of multiple components of care including documenting the diagnosis, regimen, and interactions between the patient and provider (including documenting instructions given, patient beliefs, concerns, compliance, and follow-up). Due to limited access to input variables, it was difficult to test a model of physician adherence to antidepressant guidelines and therefore, the goal of this study was to develop a starting point in terms of measuring the quality of depression care.

Hypotheses

The hypotheses are based on current literature examining factors that have been shown to affect physician prescribing patterns. As discussed previously these factors include: physician specialty, patient age, patient symptom severity, patient gender, and patient insurance coverage.

1. Physician adherence to clinical guidelines increases with specialty training in psychiatry.
2. Physician adherence to clinical guidelines increases when patient illness severity is high.
3. Physician adherence to clinical guidelines is higher with good patient insurance coverage.

4. Physician adherence to clinical guidelines decreases when patients are female.

5. Physician adherence to clinical guidelines decreases when patients are older.

Variables

Dependent variables were established based on current national guidelines for the diagnosis and treatment of depression and utilized chart review instrument data (Depression Guideline Panel 1993). Independent variables were identified based on current literature examining factors that have been shown to affect antidepressant prescribing and utilized patient interview data.

Dependent variables

1. Quality Indicators
    a. Diagnosis noted
    b. Antidepressant regimen noted
    c. Core symptoms noted
    d. 5/9 symptoms noted
    e. Instructions noted
    f. Patient beliefs, concerns, and/or compliance noted
    g. Follow-up within 6 weeks noted
2. Adherence Variable = sum of quality indicators

Independent variables

1. Physician specialty
2. Patient age

3. Patient gender
4. Patient clinical status severity
5. Patient insurance coverage

IV. RESEARCH SETTING AND SAMPLE

A two phase review was conducted in conjunction with a larger study by Bultman (1997). Data were collected from medical records and via patient interviews. Study participants filled out a pharmacy and medical record release form along with the informed consent to participate in the study. Clients were interviewed two times, once at initiation of antidepressant therapy and again two months later. Medical record data were requested from clients' medical records covering a six month period. The retrospective chart review was conducted at some point approximately two months after completion of the second interview and generally covered the six month period beginning two months prior to initiation of therapy and continuing four months after initiation of therapy.

Sample Population and Recruitment

The sample population consisted of licensed community pharmacies that had a computerized patient profile system located in Dane County, Wisconsin. A community pharmacy was defined as one that is not a mail-order pharmacy or is located

in a hospital. The geographic restriction was necessary due to travel and expense limitations. Computerized profile systems facilitated selection of patients and data collection.

Eligible pharmacies were identified by using a licensed pharmacies roster from the Wisconsin Pharmacists Association (WPhA). To obtain a balanced representation of Dane County pharmacy clients who were initiating antidepressant medications, Dane county was divided into two geographic regions. One region is Madison and contiguous zip code areas and the other being outlying zip code areas. The population of each area compared to Dane County as a whole was used to determine the proportion of pharmacies to select from each region. A list of random numbers was used to select pharmacies from each region. Replacements were made until a total of 20 pharmacies enrolled.

The pharmacy manager or owner of selected pharmacies was contacted with an invitational letter and asked to participate in the study. Pharmacies were asked to recruit 3-7 clients based on prescription volume. Pharmacies received ten dollars per enrollee if three clients were enrolled and clients received twenty dollars after the completion of the second interview.

Pharmacies recruited clients based on the following eligibility requirements: 1) initiating antidepressant medication treatment (no prescription filled in prior 3

months); 2) be 18 years or older; 3) read and write in English. Patients received an information packet that included a cover letter introducing the study, the informed consent (2 copies) to participate in the study, a medical and pharmacy record release form, a daily journal, and information about the researchers. Patients must have returned one signed and dated informed consent and the medical and pharmacy release record to participate in the study.

One hundred patients were recruited as a part of the Bultman study. Once enrolled, patients were to be interviewed twice and medical records were reviewed as described above. A total of 74 medical records were obtained and reviewed by the author. Of these, ten had no information or notes regarding mental health.

V. RESEARCH PROCEDURES AND MEASUREMENT

Data Collection

Data were collected from medical records and two client interviews. The client interviews were conducted by telephone near initiation of therapy and again two months later as a part of the Bultman study. Medical records were requested to cover a 6 month period. The period requested began two months prior to antidepressant initiation and continued for four months after initiation of therapy. A maximum of five

progress notes related to depression were recorded and examined over this time period. The medical record data were collected by using the following procedures: 1) medical record data were requested from the appropriate medical office by contacting the client's reported physician office or clinic site; 2) a letter of medical record request and a copy of the signed medical record release form were to be sent to appropriate agent; 3) chart review instrument was used for data collection (See Appendix D). One graduate student, the author, reviewed all of the medical record data using the chart review instrument.

Operationalizing Physician Adherence

There are a variety of definitions and measures of physician adherence in the literature. There have been four basic research methods used to measure physician prescribing patterns and/or adherence to antidepressant medication use standards. These include physician self-report, patient self-report, medical record data, and prescription record data. All of these methods have been used in the current literature and yield varying rates of adherence and utilize various methods of operationalizing adherence (Keller et al 1982; Wells et al 1993; Wells et al 1994; Wells et al 1995; Wells, Katon et al 1994; Meredith et al 1994; Strum and Wells 1995; Munizza et al 1995; Matthews et al 1993; Kerr 1994; Orrell et al 1995; Donoghue and Tylee 1996; Horn 1997; Callahan et al

1994; Katon et al 1995; Davidson et al 1995; Isacsson et al 1996; Shao et al 1997; Katon et al 1997).

In terms of operationalizing physician adherence several definitions of appropriate therapy have been utilized. The various definitions include: 1) initiating or using antidepressant medications; 2) using adequate dosing and duration of medications; 3) rates of counseling provided; 4) documenting diagnosis and treatment issues; and 5) examining patient level of sickness and functional status. To date, researchers have not established a standardized or uniform way of defining or measuring adherence to antidepressant medication practice patterns or guidelines.

This study uses medical record data and patient self-report data. The medical record data emphasizes physician documentation of seven quality indicators including: 1) diagnosis; 2) antidepressant medication regimen; 3) core symptoms of depression; 4) five out of nine depression symptoms; 5) instructions; 6) patient beliefs, concerns, and compliance; and 7) follow-up within 6 weeks.

The seven quality indicators were developed based on the AHCPR guidelines for the diagnosis and treatment of depression in the outpatient setting (Depression Guideline Panel 1993). See Appendix F for selected AHCPR Depression Guideline Algorithms. The instructions and patient beliefs variables are not explicitly defined in the AHCPR guidelines, however,

the depression guidelines note the importance of educating, counseling, and evaluating patients. The AHCPR guidelines were developed by an expert panel utilizing current literature, DSM-IV criteria for diagnosis of depression, and consensus for treating depression (Depression Guideline Panel 1993). The seven quality indicators are dichotomous variables indicating whether or not a particular indicator was documented. Progress notes one and two were used to identify physician documentation of several quality of care indicators. The first progress note was defined as being the first to mention a depression diagnosis or treatment regimen. The seven indicator variables were then summed to create a summary adherence variable.

The first quality indicator is whether or not the diagnosis was documented in note one or two. The second indicator is whether or not the antidepressant regimen, including drug name, strength, and dosage, was documented within the first two notes. The third and fourth indicators are related to documentation within two notes of the symptoms necessary for a diagnosis of depression, as defined by AHCPR guidelines (Depression Guideline Panel 1993). The "core symptoms" needed for a diagnosis of depression include a depressed mood most of the day, nearly every day and/or a lack of interest or pleasure in usual activities. Then for a diagnosis of depression, five out of nine symptoms should be

present. The nine symptoms include: depressed mood, lack of interest/pleasure, significant weight loss/gain, insomnia/hypersomnia, psychomotor agitation/retardation, fatigue, feelings of worthlessness, impaired concentration, and recurrent thoughts of death or suicide (Depression Guideline Panel 1993).

The remaining quality indicators are related to physician documentation of instructions, patient beliefs, concerns, and/or compliance, and follow-up. The instructions variable included any documented instructions within two progress notes regarding antidepressant regimen, side effects, how the drug works, time to drug effect, written instructions, or any other instructions regarding antidepressant therapy. The patient beliefs variable included any documentation within two notes regarding patients' preferred non-drug method of treatment, patient understanding of disease state, patient understanding of regimen/therapy, patient comments about disease/regimen, and patient compliance. The follow-up variable was if any follow-up visit was recommended and\or occurred within a six week time frame.

Patient interview data were used for measuring patient age (years), gender (0=male, 1=female), clinical status (depression severity), and medical insurance coverage (0=no, 1=yes). Clinical status is a continuous variable that has a numeric value based on a summary of the patient's report of

depression symptoms. The symptoms were scored on a scale with response categories ranging between one and four (1=none or little of the time, 2=some of the time, 3=good part of the time, 4=all or most of the time). See appendix E to view interview tool (Bultman 1997).

Physician specialty was identified via patient self-report and was determined by asking patients to name the physician who prescribed their antidepressant. Specialty information was then obtained by checking the phone book or calling the provider's office. The variable was broken down into non-psychiatry (coded "0") and psychiatry (coded "1") based on reported field of clinical practice.

Reliability

For the purpose of this project, the reliability of the chart review instrument was tested by having the author and one additional person, a pharmacy graduate student, review medical record data for 18 clients using the chart review instrument. The client records were chosen by a random start and then every third record was used until 20 total clients were selected. Of these twenty, two charts had been reviewed on-site and therefore excluded from the analysis. This left the final count of 18 client records. The second reviewer used the chart review instrument to review medical record data for the 18 selected clients. These data were then compared to the data obtained for these same clients by reviewer one, the

author.

The inter-rater reliability was examined by calculating the percent agreement and Cohen's kappa coefficient for each variable used in the analysis. The kappa coefficient normalizes the difference between the observed proportion of cases in which the raters agree and that expected by chance. The kappa statistic measures agreement between two raters and the variables must have the same range of values. If they do not have the same range of values, kappa cannot be calculated (Schumacher et al 1987).

Table 1 shows the results of the reliability testing. The average percent agreement between raters was 93.12%. The percent agreement for individual variables ranged from 72.22% - 100.00%. The kappa coefficient was calculated and ranged from 0.5455-1.0000. Several variables did not have equal row and column values and kappa could not be calculated. The lowest values in terms of agreement were reported in some of the symptom, instructions, follow-up, and patient beliefs, concerns, and compliance categories. In contrast to the diagnosis and regimen categories, these are areas which are not as clear cut and require more interpretation of physician written documentation by the reviewer in order to assign a score. In addition, variation may have been due to reviewer differences and reliability may be improved with more detailed coding instructions.

Statistical Analysis

Examination of the data will begin by describing characteristics of the sample. Patient characteristics such as age, gender, clinical status severity, and insurance information are summarized. Physician specialty is broken down into non-psychiatry and psychiatry and described. Physician adherence to quality indicators and the summary adherence variable are also described.

After descriptive analysis, the relationship between selected patient and physician characteristics and the quality of depression care (defined by the seven quality indicators) were examined using chi-square techniques. Logistic regression is performed to determine the effect of each independent variable on each of the seven quality of care indicators. Logistic regression is chosen because the seven quality of care indicators are binary variables with a zero or one response. Also, not all seven variables had at least an 80/20 distribution. The independent variables entered into each equation include: patient age, gender, clinical status severity, and physician specialty.

The associations between selected independent variables and the summary adherence variable are then examined using bivariate analysis techniques. A regression model predicting adherence, defined by the summary adherence variable, is estimated using linear regression techniques. Linear

regression was chosen because the summary adherence variable ranged from 0-7 and had a fairly normal distribution. The four independent variables of patient age, gender, clinical status severity, and physician specialty all were entered into the equation in an effort to predict the overall quality of depression care.

VI. RESULTS

Characteristics of the Sample

As stated previously, of the 100 patients enrolled in the Bultman study, 74 medical records were obtained after several follow-up contacts. Of these, ten had no information or notes regarding mental health. These cases were excluded from the analysis because it was impossible to determine if no record of depression care was documented or if the mental health records were separated out of the general medical record information. Of the 64 cases with complete data, 60 had identifiable information regarding physician specialty. Self-report data was used to determine physician specialty and of the 64 cases, four physicians indicated by patient self-report were not listed in the phone book and when crossed with medical record data, the physician name or specialty was illegible and/or unidentifiable.

Table 2 presents the descriptive statistics for each of

the study variables including: patient age, gender, clinical status severity, medical insurance coverage, physician specialty, and physician adherence with various quality indicators. Of the 64 clients, the mean age was 37 and ranged from 18-84 years. The sample consisted of 13 male (20.6%) and 51 female clients (79.4%). The clinical status severity ranged from 17-46, with a mean of 33.7. Of the 64 enrollees, 61 (95.2%) reported having medical insurance coverage. Of the 60 clients who had identifiable physician specialties, 39 (64.4%) reported having a non-psychiatrist as their prescriber.

Quality of Depression Care

To determine the quality of care provided or adherence to the clinical practice guidelines, the number of progress notes recorded and the quality of care indicators documented were examined. A total of 22 (34.4%) of the clients had five progress notes regarding depression during the time frame studied. On the other end of spectrum, four (6.2%) had only one progress note documented. Eleven (17.2%) had two notes documented, 20 (31.3%) had three notes, and 7 (10.9%) had four noted documented.

The seven quality of care indicators were described in terms of the documentation of each variable. When examining the diagnosis and regimen, 85.7% (n=54) had a documented diagnosis and 93.7% (n=59) had a documented antidepressant

regimen. To determine the adequacy of physician evaluation and diagnosis of depression, two quality indicators were examined. The first was whether any of the "core" symptoms of depression were documented (depressed mood and/or lack of interest or pleasure, and the second indicator was whether at least 5 out of 9 depression symptoms were documented. According to AHCPR guidelines, a diagnosis of depression requires that at least one of the "core" symptoms be present in addition to having 5 of 9 overall depression symptoms. In this sample, 58.7% (n=37) had a core symptom documented and only 19.0% (n=12) had five out of nine symptoms documented.

The last indicators examined documentation of instructions, patient beliefs, and a follow-up within six weeks. The results indicated that 58.7% (n=37) documented instructions, 52.4% (n=33) documented one or more patient beliefs, and 68.3% (n=43) documented a follow-up appointment within 6 weeks.

The sum of the seven quality indicators ranged from 0-7, with a mean of 4.3, and a standard deviation of 1.7.

Predictors of Quality Depression Care

Based on the current literature and the hypotheses it was expected that some differences in quality of care would be noted based on patient age, gender, clinical status severity, and insurance coverage. The insurance variable in this sample contained 95.2% of clients with insurance coverage and due to

lack of variation was dropped from the analysis. The remaining patient variables were broken down into dichotomous variables of: age <36, >36; male, female; and clinical status severity <35, >35. The age and clinical status severity variables were broken down based on median values. Table 3 lists the quality of depression care by patient characteristics. Chi-square analysis revealed that only clinical status severity was related significantly to documentation of 5 out of 9 depression symptoms ($p<0.05$).

Table 4 shows the quality of depression care by physician specialty. It was hypothesized that quality of care differs between psychiatrists and non-psychiatrists. The chi-square analysis revealed that documentation of 5 out of 9 symptoms differed significantly by physician specialty ($p<0.001$).

The predictors of quality of depression care were examined using logistic regression. Table 5 documents the results of the analysis. The equation contained patient age, gender, clinical status severity, and physician specialty as independent variables. The results show that physician specialty was the only significant predictor (B=2.90; S.E.=1.05; Exp(B)=18.09; 95% CI=2.32,141.38; $p<0.01$) in predicting documentation of 5 out of 9 depression symptoms necessary for obtaining a depression diagnosis with psychiatrists more likely to document symptoms. A second independent variable, gender, approached significance (B=2.34;

S.E.=1.35; Exp(B)=10.42; 95%CI=0.74, 147.12; P=0.08) in predicting documentation of 5 out of 9 depression symptoms with females being more likely to have these symptoms documented. Gender also approached significance (B=-1.25; S.E.=0.70; Exp(B)=0.29; 95%CI=0.07, 1.13; P=0.07) in predicting documentation of patient beliefs, concerns, and compliance with males being more likely to have patient beliefs documented.

Although physician specialty was significant in predicting documentation of 5 out of 9 depression symptoms, the results only apply with confidence to this sample. The confidence interval is large due to the small sample size and distribution of the variables. The results can not absolutely be applied to the general population with confidence.

After examining the seven quality of care indicators, analysis turned to examining the factors affecting overall quality of depression care as defined by the summary adherence variable. Results of the bivariate analysis are presented in Table 6. While patient clinical status severity (r=-0.566) and physician specialty (r=-0.413) were correlated with patient age (p<0.001), none of the patient characteristics were related significantly to the summary adherence measure. As might be expected, physician specialty was associated with patient clinical status severity (r=0.318, P<0.05); however, physician specialty was a weak predictor of the summary

adherence score.

Table 7 shows the final regression equation predicting adherence to antidepressant guidelines using the summary adherence variable. The results again indicate that none of the independent variables significantly predicted overall adherence and results did not differ if variables were dropped from the equation.

VII. DISCUSSION

Discussion of Results

The primary goals of this study were to develop a reliable tool for measuring adherence to clinical practice guidelines for depression, identify and describe patterns of physician adherence, and examine patient and physician characteristics and how these relate to adherence. The reliability of the tool was examined and found to be high with an average percent agreement of 93.12%. Even in areas in which interpretation of physician documentation (symptoms, instructions, and patient beliefs) was required, the percent agreement between reviewers was fairly high and could potentially be improved with more detailed coding instructions.

Some of the most interesting results of the study are related to the second goal of identifying and describing

patterns of documented adherence to depression guidelines. The AHCPR guidelines recommend monitoring acute outpatient treatment every 1-2 weeks and an assessment of treatment response at week 6. (Depression Guideline Panel 1993) During the six month medical record review period, 76.6% of clients had three or more progress notes documented. In other words, almost a quarter of patients had less than three documented telephone or office visit contacts with their provider related to their depression treatment. Whether this lack of follow-up is due to a true lack of follow-up or simply poor documentation of phone and/or check-in type visits is not known.

When examining the quality of depression care as it relates to the recommendations of the AHCPR guidelines, basic quality indicators were chosen to measure adherence. These included documentation of diagnosis, antidepressant regimen, symptoms necessary for a diagnosis, instructions, patient beliefs, and follow-up.

In terms of documenting diagnosis and antidepressant regimen, the majority of providers did have these documented within the first two progress notes reviewed. The fact that 93.7% documented the regimen may indicate the relative importance physicians' place on documenting this information. It is noteworthy that 14.3% of clients did not have a diagnosis documented for the antidepressant medication. This

finding is consistent with Callahan et al (1994) who also noted that the depression diagnosis is not always consistently documented. It has been speculated that due to the stigma of depression, a diagnosis is not always documented (Rost and Smith 1992). Also, many insurance plans have limited payment and/or benefits for mental health treatment and it is possible that depression is underdocumented at times for that reason.

The most striking finding was the apparent lack of documentation of symptoms related to the diagnosis of depression. Only 58.7% of patients had a core symptom(s)(depressed mood and/or lack of interest) documented in the first two notes. In addition, only 19.0% of patients had five out of nine depression symptoms documented. This lack of symptom documentation would imply that only 19.0% of this sample had an appropriate indication for antidepressant therapy. In any case, this lack of documentation of symptoms makes follow-up monitoring and assessment difficult. Without documentation of initial or baseline symptoms, it seems nearly impossible to monitor treatment response and determine if or when a person is in remission.

The next quality indicator evaluated was documented instructions. Over fifty percent of patients had some documented instructions within the first two notes. This variable had a wide range of input including any documentation of instructions regarding antidepressant regimen, side

effects, how the drug works, time to drug effect, written instructions, or any other instructions. It is interesting to note that a little over 40% of providers did not document any instructions regarding treatment or therapy. Again, it is difficult to know whether instructions are not documented or not given.

Effective monitoring and management of patient adherence requires a variety of physician assessment strategies. Part of this assessment therefore includes how physicians note and react to patient beliefs, concerns, and compliance. In this sample, 52.4% of the providers documented one or more of the following; patient preferred non-drug method, patient understanding of disease state, patient understanding of regimen/therapy, patient comments about disease/therapy, and patient compliance. Again, it is difficult to accurately monitor and assess treatment response when there is no documentation of these factors.

The final quality indicator examined was whether the recommended follow-up within six weeks was documented by the providers. Only 68.3% of patients had a follow-up noted within six weeks. This means that over 30% of patients being treated with antidepressants were not monitored before the completion of six weeks of therapy. This again may be related to limited mental health benefits or simply a lack of documented phone consultations. In any case, further

investigation is warranted.

In the current literature, several patient characteristics have been related to various aspects of depression treatment. The hypothesis was that advanced age, female gender, poor insurance coverage, and low clinical status severity would be associated with lower physician adherence to depression guidelines. Unfortunately, the insurance coverage variable in this sample was dropped due to the fact that 95.2% of patients were insured. The sample was relatively young (mean age of 37) and predominantly female (80%). In this sample, age was correlated with both clinical status severity and physician specialty, younger patients reported more symptoms and were more likely to see psychiatrist providers. The reasons behind this finding may be inter-related. It is possible that younger patients are more comfortable with reporting symptoms of depression and due to the higher report of symptoms, younger persons are more frequently referred to specialists.

Clinical status severity was also correlated with physician specialty, with those having higher clinical severity scores seeing more psychiatrist providers. This finding is consistent with current literature showing that psychiatrist providers tend to see sicker patients (Wells et al, 1995).

None of the patient characteristics were found to

significantly predict the seven quality of care indicators or the summary adherence variable. This may have been due to the small sample size and distribution of variables. Gender did approach significance when predicting documentation of 5 out of 9 symptoms, with females having more symptoms documented. Gender also approached significance when predicting documentation of patient beliefs, concerns, and compliance. Interestingly, males were more likely to have these beliefs documented. By one quality indicator, it appears that females have better documentation, however, the increased documentation of symptoms may be due to the notion that females may be more comfortable discussing depression symptoms and therefore more likely to be prescribed antidepressants such as is noted in the current literature (Isacson 1992; Verbrugge and Steiner 1985; Ferguson 1990; Ray et al 1986).

The literature has documented that psychiatrist-treated patients have increased utilization of antidepressants, higher doses of antidepressants, higher levels of counseling, and psychiatrists rated higher in attitudes and knowledge of depression (Wells et al 1994; Wells et al 1995; Meredith et al 1994; Kerr 1994; Isacsson et al 1996; Shao et al 1997). This study examined how documentation of quality of care differs based on physician specialty. When examining the variable of physician specialty, it was found to be significantly associated with one of the seven quality indicators,

documentation of five out of nine symptoms of depression. This finding would indicate that quality of care for depression needs to be evaluated with a larger sample to further examine potential differences between psychiatrist and non-psychiatrist providers and reasons behind these differences.

Although few hypotheses were supported by the results, this study confirms earlier work suggesting that patterns of adherence to antidepressant guidelines warrant improvement. This study also confirms past work showing variability in the quality of antidepressant treatment. Future studies are needed to better understand predictors of the quality of depression care and the kind of interventions that will improve care. Potential predictors that need to be further examined include but are not limited to a more detailed analysis of physician characteristics such as education, knowledge, and attitudes. Also, organizational factors such as practice setting, medical record guidelines or expectations, and staffing expectations or requirements need to be examined.

Discussion of Limitations

The first limitation in this study is geographic. The results may be less applicable because only Dane county pharmacies were enrolled in the study. Dane county has a heavily organized health care environment that highly utilizes

managed care organizations. Secondly, related to the sample is the fact that the sample is skewed in terms of the insurance coverage, age, and gender variables.

The third limitation is access to medical record data. Medical records, especially mental health records, have limited access and may be incomplete. The determination of medical record location was done by contacting the patient reported physician's office prescribing the antidepressant medication or clinic site. Several patients may be seen at multiple sites and by my multiple physicians, thus records will be incomplete. The issue of having multiple clinic sites and physicians also causes difficulty in accurately identifying and coding physician specialty. In addition, several sites refused access to mental health records altogether due to the fact that their own official mental health record release form was not signed. In fact, out of 100 subjects, only 74 records were obtained and only 64 had mental health data.

A fourth limitation is possible difficulty when coding physician responses in the client medical record. Lack of documented information and the content, frequency, and severity of variables were at times difficult to determine. Due to this lack of documentation or difficulty in interpreting what is written, it may be hard to accurately assign a score.

This study also had limited access to various input variables that may have been related to physician adherence to depression guidelines. Since a survey of providers was not done, the only physician characteristic examined was physician specialty.

VIII. CONCLUSION

Depression is a highly prevalent condition that is associated with high rates of morbidity and mortality. Depression is also associated with extremely high costs related to the disease and treatment. Due to these issues, the Agency for Health Care Policy and Research developed practice guidelines for the diagnosis and treatment of depression and many insurance and managed care organizations are adopting depression guidelines as well.

Because the quality of depression care is questioned in the literature, it is important to do further research related to identifying, describing, and improving depression care. The fact that patterns of adherence to identified quality of care indicators warrant improvement in this sample support the recommendation of future studies that look at documented quality of care in the treatment of depression. Most current literature looks at the utilization and dosing of antidepressants and future study needs to expand the focus to

include more specific quality of care indicators.

Specifically, the lack of documentation of symptoms related to a definitive diagnosis of depression needs to be evaluated. The low rates of documenting five out of nine symptoms of depression in this sample indicate that future studies need to be done evaluating tools and/or interventions that may improve documentation of symptoms. Several current tools exist to aid in the diagnosis of depression and maybe if tools were readily available, symptoms would be documented more consistently.

Although the independent variables were not found to be associated with or predictors of the summary adherence variable, several findings in this study were of interest. The fact that physician specialty was associated with patient age and clinical status severity and that age was also associated with clinical status severity should be further examined in a larger more representative sample. The fact that gender approached significance in predicting two of the quality of care indicators would lead to a recommendation to continue examining gender effects on prescribing patterns and overall quality of care provided.

Based on results indicating that physician specialty was associated and predicted documentation of symptoms, future studies could potentially further define why these differences exist and how to improve the overall quality of depression

care.

This project expanded the approach to evaluating physicians prescribing patterns and adherence to practice guidelines by examining more than drug and dose utilized. This study examined how providers documented areas related to a quality diagnosis, assessment, and monitoring. The results of this study suggest that many areas of potential improvement exist. Future studies need to be conducted to further examine depression care with larger and more widely distributed samples.

IX. REFERENCES

Ammerman A, Caggiula A, Elmer PJ, Etherton PK, Keyserling T, et al. Putting medical practice guidelines into practice: the cholesterol model. Am J Prev Med 1994;10(4):209-16.

Anderson RM. Revisiting the behavioral model and access to medical care: does it matter? Journal of Health and Social Behavior 1995;36:1-10.

Becker MH. Patient adherence to prescribed therapies. Medical Care 1985;23(5):539-55.

Becker MH, Stolley PD, Lasagna L, McEvilla JD, Sloane LM. Differential education concerning therapeutics and resultant physician prescribing patterns. Journal of Medical Education 1972;47:118-27.

Black JS, Sefeik T, Kapoor W. Health promotion and disease prevention in the elderly. Arch Intern Med 1990;150:389-393.

Bultman DC. Consumer perspectives of provider communication styles and antidepressants: a study of beliefs and outcomes. Unpublished doctoral dissertation, University of Wisconsin, 1997.

Butler R. Psychiatry and the elderly: an overview. Am J Psychiatry 1975;132(9): 893-900.

Callahan CM, Hendrie HC, Dittus RS, Brater DC, Hui SL, et al. Improving treatment for late life depression in primary care: a randomized clinical trial. J Am Geriatr Soc 1994;42:839-46.

Chesney AP, Brown KA, Poe CW, Gary HE. Physician-patient agreement on symptoms as a predictor of retention in outpatient care. Hospital and Community Psychiatry 1983:34(8):737-9.

Christensen DB, Bush PJ. Drug prescribing: patterns, problems, and proposals. Soc Sci Med 1981;15A:343-55.

Cohen DI, Littenberg B, Wetzel C, Neuhauser D. Improving physician compliance with preventive medicine guidelines. Medical Care 1982;20(10):1040-5.

Cooperstock R. A review of women's psychotropic drug use. Canadian Journal of Psychiatry 1979;24:29-34.

Cooperstock R, Parnell P. Research on psychotropic drug use: a review of findings and methods. Social Science and Medicine 1982;16:1179-96.

Cramer JA, Spilker B, eds. Patient Compliance in Medical Practice and Clinical Trials. Reven Press, New York, 1991.

Davidson W, Molloy DW, Bedard M. Physician characteristics and prescribing for elderly people in New Brunswick: relation to patient outcomes. Can Med Assoc J 1995;152(8):1227-34.

Depression Guideline Panel. Depression in Primary Care: Volume 1. Selection and Diagnosis. Clinical Practice Guidelines, Number 5. Rockville, MD. U.S. Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research. AHCPR Publication No. 93-0550. April 1993.

Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Washington, DC, American Psychiatric Association, 1994.

DiMascio A, Weissman MM, Prusoff BA, Neu C, Zwilling M, et al. Differential symptom reduction by drugs and psychotherapy in acute depression. Arch Gen Psychiatry 1979;36:1450-6.

Dolan JG, Bordley DR. Using the analytic hierarchy process to develop and disseminate guidelines. QRB 1992;18(12):440-7.

Donoghue JM, Tylee A. The treatment of depression: prescribing patterns of antidepressants in primary care in the UK. British Journal of Psychiatry 1996;168(2):164-8.

Donovan JL, Blake DR. Patient non-compliance: deviance or reasoned decision-making. Soc Sci Med 1992;34(5):507-13.

Eddy DM, Hasselblad V, Schacter R. A Bayesian method for synthesizing evidence: the confidence profile method. Int J Technol Assess Health Care 1990;6:31-5.

Ellrodt AG, Conner L, Riedinger M, Weingarten S. Measuring and improving physician compliance with clinical practice guidelines. Ann Intern Med 1995;122: 277-82.

Ellrodt AG, Conner L, Riedinger MS, Weingarten S. Implementing practice guidelines through a utilization management strategy: the potential and the challenges. QRB 1992;18(12):456-60.

Fawcett J. Compliance: definitions and key issues. J Clin

Psychiatry 1995;56(suppl 1): 4-8.

Ferguson JA. Prescribing practices and sex differences. JRSH. 1990;2:45-9.

Ford CV, Sbordone RJ. Attitudes of psychiatrists toward elderly patients. Am J Psychiatry 1980;137(5):571-5.

Frank E, Kupfer DJ, Siegel LR. Alliance not compliance: a philosophy of outpatient care. J Clin Psychiatry 1995;56(suppl 1):11-6.

Friedman AS. Interaction of drug therapy with marital therapy in depressed patients. Arch Gen Psychiatry 1975;32:619-37.

Gabe J. Towards a sociology of tranquillizer prescribing. British Journal of Addiction 1990;85:41-8.

Garetz F.R.. The psychiatrist's involvement with aged patients. Am J Psychiatry 1975;132(1):63-5.

Harris JS. Why doctors do what they do: determinants of physician behavior. Journal of Occupational Medicine 1990;32(12):1207-20.

Headrick LA, Speroff T, Pelecanos HJ, Cebul RD. Efforts to improve compliance with the national cholesterol education program guidelines. Arch Intern Med 1992;152:2490-6.

Hemminki E. The effect of a doctor's personal characteristics and working circumstances on the prescribing of psychotropic drugs. Med Care 1974;12(4):351-7.

Hemminki E. Review of literature on the factors affecting drug prescribing. Soc Sci Med 1975a;9:111-5.

Hemminki E. The role of prescriptions in therapy. Med Care 1975b;13(2):150-9.

Hemminki E. Factors influencing drug prescribing. Drug Intel Clin Pharm 1976;10:321-9.

Hemminki E. Problems in the measurement of psychotropic drug consumption. AJHP 1982;39:325-9.

Hill MN, Levine DM, Whelton PK. Awareness, use, and impact of the 1984 Joint National Committee Consensus Report on high blood pressure. Am J Public Health 1988;78:1190-4.

Hong SH, Shepherd MD. Psychosocial and demographic predictors

of pediatric psychotropic medication use. AJHP 1996;53(16):1934-9.

Horn SD. Overcoming obstacles to effective treatment: use of clinical practice improvement methodology. J Clin Psychiatry 1997;58(Suppl 1):15-9.

Hosmer DW, Lemeshaw S. Applied Logistic Regression. John Wiley & Sons, Inc. New York: 1989.

Hough RL, Landsverk JA, Karno M, Burnam MA, Timbers DM, et al. Utilization of health and mental health services by Los Angeles Mexican Americans and non-Hispanic whites. Arch Gen Psychiatry 1987;44:702-9.

Hulka BS, Cassel JC, Kupper LL, Burdette JA. Communication, compliance, and concordance between physicians and patients with prescribed medications. Am J Public Health 1976;66:847-53.

Isacson D, Carsjo K, Bergman U, Blackburn JL. Long-term use of benzodiazepines in a Swedish community: an eight-year follow-up. Journal of Clinical Epidemiology 1992;45(4):429-36.

Isacsson G, Bergman U, Wasserman D, Redfors I, Sjogvist F. The use of antidepressants and therapeutic drug monitoring by general practicioners and psychiatrists: findings from a questionnaire survey in two Swedish areas. Annal Clin Psych 1996;8(3):153-60.

Johnson DA. Depression: treatment compliance in general practice. Acta Psychiatrica Scandinavica 1981;290:447-53.

Johnson J, Weissman MM, Klerman GL. Service utilization and social morbidity associated with depressive symptoms in the community. JAMA 1992;267:1478-83.

Katon W, Von Korff M, Lin E, Walker E, Simon GE, et al. Collaborative management to achieve treatment guidelines. JAMA 1995;273(13):1026-31.

Katon W, Von Korff M, Lin E, Bush T, Ormel J. Adequacy and druation of antidepressant treatment in primary care. Med Care 1992;30:67-76.

Katon W, Von Korff M, Lin E, Waler E, Simon GE, et al. Collaborative management to achieve treatment guidelines. JAMA 1995;273:1026-31.

Katon W, von Korff M, Lin E, Simon G, Walker E, et al. Collaborative management to achieve depression treatment guidelines. J Clin Psychiatry 1997;58(Suppl 1):20-3.

Keller MD, Klerman GL, Lavori PW, Fawcett JA, Coryell W, et. al. Treatment received by depressed patients. JAMA 1982;248(15):1848-55.

Kerr MP. Antidepressant prescribing: a comparison between general practitioners and psychiatrists. British Journal of General Practice 1994;44(383):275-6.

Leventhal H, Safer MA, Panagis DM. The impact of communications on the self-regulation of health beliefs, decisions, and behavior. Health Education Quarterly 1983;10(1):3-29.

Leventhal H, Cameron L. Behavioral theories and the problem of compliance. Patient Education and Counseling 1987;10:117-38.

Lin EH, Von Korff M, Katon W, Bush T, Simon GE, et al. The role of the primary care physician in patients' adherence to antidepressant therapy. Medical Care 1995;33(1):67-74.

Lomas J, Anderson GM, Domnick-Pierre K, Vayda E, Enkin MW, et al. Do practice guidelines guide practice? N Engl J Med 1989;321:1306-11.

Matthews K, Eagles JM, Matthews CA. The use of antidepressant drugs in general practice. Eur J Clin Pharmacol 1993;45:205-10.

McDonnell-Douglas Employee Assistance Program Study, 1989, 1990 study.

Meichenbaum D, Turk E. Facilitating Treatment Adherence: A Practitioner's Guide. Plenum Press, New York, 1987.

Meredith LS, Wells KB, Camp P. Clinician specialty and treatment style for depressed outpatients with and without medical comorbidities. Arch Fam Med 1994;3:1065-72.

Miller DB, Lowenstein R, Winston R. Physicians' attitudes toward the ill aged and nursing homes. J Am Geriatrics Soc 1976;24:498-505.

Miller RR. Prescribing habits of physicians: a review of studies on prescribing of drugs. Drug Intel Clin Pharm 1973;7:492-500.

Mittman BS, Tonesk X, Jacobson PD. Implementing clinical practice guidelines: social influence strategies and practitioner behavior change. QRB 1992;18(12):413-22.

Morrow RW, Gooding AD, Clark C. Improving physicians' preventive health care behavior through peer review and financial incentives. Arch Fam Med 1995;4:169-9.

Munizza C, Tibaldi G, Bollini P, Pirfo E, Punzo F, et al. Prescription pattern of antidepressants in out-patient psychiatric practice. Psychological Medicine 1995;25:771-8.

Murrery KO, Gottlieb LK, Schoenbaum SC. Implementing clinical guidelines: a quality management approach to reminder systems. QRB 1992,18(12):423-33.

Myers ED, Branthwaite A. Out-patient compliance with antidepressant medication. British Journal of Psychiatry 1992;160:83-86.

Myers SA, Gleicher N. A successful program to lower cesarean-section rates. N Engl J Med 1988;319:1511-6.

Orrell M, Collins E, Shergill S, Katona C. Management of depression in the elderly by general practitioners: I. Use of antidepressants. Family Practice 1995;12(1):5-11.

Price PB, Lewis EG, Loughmiller GC, Nelson DE, Murray SL, et al. Attributes of a good practicing physician. J Med Educ 1971;46:229-37.

Ray WA, Schaffner W, Federspiel CF. Differences between female and male children in the receipt of prescribed psychotropic and controlled-analgisic drugs. Med Care 1986;24(9):801-13.

Rost KM, Smith GR. The deliberate miscoding of major depression in the primary care setting. Paper presented at: the Society for General Internal Medicine; 1992 Apr; Washington, DC.

Schumacher DN, Parker B, Kofie V, Munns JM. Severity of illness index and the adverse patient occurrence index. Med Care 1987;25:695-704.

Segal R, Hepler CD. Prescribers' beliefs and values as predictors of drug choices. AJHP 1982;39:1891-7.

Segal R, Hepler CD. Drug choice as a problem-solving process. Med Care 1985;23:967-76.

Shao WA, Williams JW, Lee S, Badgett RG, Aaronson B, et al. Knowledge and attitudes about depression among non-generalists and generalists. J Fam Pract 1997;44(2):161-8.

Shapiro S, Skinner EA, Kessler LG, von Korff M, German PS, et al. Utilization of health and mental health services: three epidemiologic catchment sites. Arch Gen Psychiatry 1984;41:971-8.

Sleath BL. Patient gender and psychotropic prescribing during the physician-patient interaction. Unpublished doctoral dissertation, University of Wisconsin, 1993.

Stoudemire A, Frank R, Hedemark N, Kamlet M, Blazer D. The economic burden of depression. Gen Hosp Psychiatry 1986;8:387-94.

Sturm R, Wells KB. How can care for depression be more cost-effective? JAMA 1995;273:51-8.

Svarstad BL. Physician-patient communication and patient conformity with medical advice. In Mechanic, D, ed. The Growth of Bureaucratic Medicine: an Inquiry into the Dynamics of Patient Behavior and the Organization of Medical Care. Wiley, New York, 1976.

Svarstad BL. Recognizing noncompliance and barriers to compliance: the brief medication questionnaire. Invited paper, Annual meeting of the American Pharmaceutical Association, San Diego, CA, March 15, 1992.

Svarstad BL. The relationship between patient communication and compliance. In D. Breimer and P. Speiser, eds. Topics in Pharmaceutical Sciences. Elsevier Science Publishers, Amsterdam, 1985.

Svarstad BL, Cleary PD, Mechanic D, Robers PA. Gender differences in the acquisition of prescribed drugs: an epidemiological study. Med Care 1987;25(11):1088-97.

Tierney WM, Hui SL, McDonald CJ. Delayed feedback of physician performance versus immediate reminders to perform preventive care. Med Care 1986;24:659-66.

Verbrugge LM, Steiner RP. Prescribing drugs to men and women. Paper presented at the American Public Health Association annual meeting, Dallas, Texas. 1985.

von Korff M, Ormel J, Katon W, Lin E. Disability and depression among high utilizers of health care: a longitudinal

analysis. Arch Gen Psychiatry 1992;49:91-100.

Webb LZ, Kuykendall DH, Zeiger RS, Berquist SL, Lischio D, et al. The impact of status asthmaticus practice guidelines on jpatient outcome and physician behavior. QRB 1992;18(12):471-76.

Weissman MM, Jarrett RB, Rush AJ. Psychotherapy and its relevance to the pharmacotherapy of major depression: a decade later (1976-1985). In: Meltzer H, editor. Psychopharmacology: the third generation of progress. New York: Raven Press; 1987.

Weissman MM, Klerman GL, Prusoff BA, Sholomskas D, Padian N. Depressed outpatients: results one year after treatment with drugs and/or interpersonal psychotherapy. Arch Gen Psychiatry 1981;38:51-5.

Weingarten S, Ellrodt AG. The case for intensive dissemination: adoption of practice guidelines in the coronary unit. QRB 1992;18(12):449-55.

Wells KB. Depression as a tracer condition for the national study of medical care outcomes - background review. Santa Monica: RAND; 1985.

Wells KB, Golding JM, Burnam MA. Psychiatric disorder and limitations in physical functioning in a sample of the Los Angeles general population. Am J Psychiatry 1988a;145:712-7.

Wells KB, Golding JM, Bűrnam MA. Psychiatric disorder in a sample of the general population with and without chronic medical conditions. Am J Psychiatry 1988b;145:976-81.

Wells KB, Kamberg C, Brook R, Camp P, Rogers W. Health status, sociodemographic factors, and the use of prescribed psychotropic drugs. Med Care 1985;23(11):1295-1306.

Wells KB, Rogers WH, Davis LM, Kahn K, Norquist G, et al. Quality of care for hospitalized depressed elderly patients before and after implementation of the Medicare prospective payment system. Am J Psychiatry 1993;150:1799-1805.

Wells KB, Katon W, Rogers B, Camp P. Use of minor tranquilizers and antidepressant medications by depressed outpatients: results from the medical outcomes study. Am J Psychiatry 1994;151:694-700.

Wells KB, Rogers WH, Benjamin B, Norquist G, Kahn K, et al. Quality of care for depressed elderly pre-post prospective

payment system: differences in response across treatment setting. Med Care 1994;32:257-76.

Wells KB, Burnam A, Camp P. Severity of depression in prepaid and fee-for-service general medical and mental health specialty practices. Med Care 1995;33:350-64.

Williams P. The use of prescribed psychotropic medicines. Public Health Review 1980:215-47.

Williams P. Patterns of psychotropic drug use. Social Science and Medicine 1983;17(13):845-51.

Woolf SH. Practice guidelines: a new reality in medicine. Arch Intern Med 1990;150:1811-8.

X. TABLES

Table 1. Evaluation of Chart Review Instrument Reliability. (N=18)

Instrument Variable	% Agreement	Kappa (SE)
Diagnosis		
Note 1	88.89	*
Note 2	100.00	1.0000 (0.0000)
Regimen		
Note 1	88.89	0.7500 (0.1637)
Note 2	100.00	1.0000 (0.0000)
Symptoms		
Interest, note 1	83.33	0.6824 (0.1683)
Interest, note 2	100.00	1.0000 (0.0000)
Pleasure, note 1	94.44	0.8318 (0.1626)
Pleasure, note 2	100.00	1.0000 (0.0000)
Sad, note 1	77.78	*
Sad, note 2	94.44	0.8947 0.1024)
Slowed, note 1	88.89	0.7778 (0.1481)
Slowed, note 2	100.00	1.0000 (0.0000)
Appetite, note 1	88.89	0.8318 (0.1083)
Appetite, note 2	100.00	1.0000 (0.0000)
Suicide, note 1	88.89	0.7978 (0.1332)
Suicide, note 2	100.00	1.0000 (0.0000)
Concentration, note 1	88.33	*
Concentration, note 2	94.44	0.8922 (0.0973)
Sleep, note 1	83.33	*
Sleep, note 2	100.00	1.0000 (0.0000)

* Kappa not calculated due to empty row or column in matrix.

Table 1. Evaluation of Chart Review Instrument Reliability (N=18) Continued

Instrument Variable	% Agreement	Kappa (SE)
Symptoms (con't)		
Energy, note 1	88.89	0.8294 (0.1114)
Energy, note 2	100.00	1.0000 (0.0000)
Hopelessness, note 1	94.44	0.8318 (0.1626)
Hopelessness, note 2	100.00	1.0000 (0.0000)
Instructions		
Regimen, note 1	72.22	0.5455 (0.1774)
Regimen, note 2	83.33	0.6914 (0.1568)
Side effects, note 1	88.89	0.8085 (0.1273)
Side effects, note 2	94.44	*
How drug works, note 1	88.89	*
How drug works, note 2	100.00	1.0000 (0.0000)
Time drug effect, note 1	94.44	0.7692 (0.2182)
Time drug effect, note 2	100.00	1.0000 (0.0000)
Written, note 1	94.44	0.7692 (0.2182)
Written, note 2	100.00	1.0000 (0.0000)
Other, note 1	94.44	0.8318 (0.1626)
Other, note 2	100.00	1.0000 (0.0000)

* Kappa not calculated due to empty row or column in matrix.

Table 1. Evaluation of Chart Review Instrument Reliability (N=18) Continued

Instrument Variable	% Agreement	Kappa (SE)
Follow-up		
Note 1	72.22	0.5673 (0.1527)
Note 2	83.33	0.7391 (0.1362)
Note 3	88.89	0.8261 (0.1146)
Note 4	94.44	0.8605 (0.1355)
Note 5	88.89	*
Pt. Beliefs, Concerns, Compliance		
Nondrug, note 1	88.89	0.7978 (0.1332)
Nondrug, note 2	100.00	1.0000 (0.0000)
Pt. nondrug, note 1	94.44	0.7692 (0.2182)
Pt. nondrug, note 2	100.00	1.0000 (0.0000)
Disease, note 1	94.44	0.7692 (0.2182)
Disease, note 2	100.00	1.0000 (0.0000)
Regimen, note 1	94.44	0.8318 (0.1626)
Regimen, note 2	100.00	1.0000 (0.0000)
Compliance, note 1	94.44	0.7692 (0.2182)
Compliance, note 2	100.00	1.0000 (0.0000)
Average Total % Agreement	93.12	

* Kappa not calculated due to empty row or column in matrix.

Table 2. Descriptive Characteristics (n=64) [a]

		%	(n)
Pt. Age, mean yr.	37.0		
< 36		53.1	(34)
> 36		46.9	(30)
Pt. Gender			
Male		20.6	(13)
Female		79.4	(51)
Pt. Clinical Status			
Severity, mean	33.7		
< 35		51.6	(33)
> 35		48.4	(31)
Pt. Medical Insurance			
No		4.8	(3)
Yes		95.2	(61)
Physician Specialty			
Non-psychiatry		64.4	(39)
Psychiatry		35.6	(21)
Progress Notes			
Documented			
1 note		6.2	(4)
2 notes		17.2	(11)
3 notes		31.3	(20)
4 notes		10.9	(7)
5 notes		34.4	(22)
Quality of Care Indicators			
Documented			
Diagnosis		85.7	(54)
Regimen		93.7	(59)
Core symptoms		58.7	(37)
5/9 symptoms		19.0	(12)
Instructions		58.7	(37)
Patient beliefs		52.4	(33)
Six week F/U		68.3	(43)
Summary Adherence			
Variable			
Mean	4.3		
Range	0-7		
SD	1.7		

[a] N varies slightly due to missing data

Table 3. Quality of Depression Care by Patient Characteristics. (N=64) [a]

Indicator Documented	Age		Gender		Clinical Status Severity	
	<36 % (n)	>36 % (n)	Male % (n)	Female % (n)	<35 % (n)	>35 % (n)
Diagnosis						
Yes	79.4(27)	90.0(27)	84.6(11)	84.3(43)	87.9(29)	80.6(25)
No	20.6(7)	10.0(3)	15.4(2)	15.7(8)	12.1(4)	19.4(6)
Regimen						
Yes	94.1(32)	90.0(27)	92.3(12)	92.2(47)	93.9(31)	90.3(28)
No	5.9(2)	10.0 (3)	7.7(1)	7.8(4)	6.1(2)	9.7(3)
Core Symp.						
Yes	64.7(22)	50.0(15)	61.5(8)	56.9(29)	54.5(18)	61.3(19)
No	35.3(12)	50.0(15)	38.5(5)	43.1(22)	45.5(15)	38.7(12)
5/9 Symp.						
Yes	26.5(9)	10.0(3)	7.7(1)	21.6(11)	9.1(3)	29.0(9)*
No	73.5(25)	90.0(27)	92.3(12)	78.4(40)	90.9(30)	71.0(22)
Instructions						
Yes	58.8(20)	56.7(17)	53.8(7)	58.8(30)	57.6(19)	58.1(18)
No	41.2(14)	43.3(13)	46.2(6)	41.2(21)	42.4(14)	41.9(13)
Pt. Beliefs						
Yes	52.9(18)	50.0(15)	69.2(9)	47.1(24)	57.6(19)	45.2(14)
No	47.1(16)	50.0(15)	30.8(4)	52.9(27)	42.4(14)	54.8(17)
6 wk. f/u						
Yes	73.5(25)	60.0(18)	84.6(11)	62.7(32)	69.7(23)	64.5(20)
No	26.5(9)	40.0(12)	15.4(2)	37.3(19)	30.3(10)	35.5(11)

[a] Significance level of the chi-square statistic: * $p < 0.05$

Table 4. Quality of Depression Care by Physician Specialty. (N=60) [a]

Indicator Documented	Physician Specialty	
	Non-Psychiatry % (n)	Psychiatry % (n)
Diagnosis		
Yes	84.6(33)	81.0(17)
No	15.4(6)	19.0(4)
Regimen		
Yes	89.7(35)	100.0(21)
No	10.3(4)	0.0(0)
Core Symp.		
Yes	59.0(23)	61.9(13)
No	41.0(16)	38.1(8)
5/9 Symp.		
Yes	5.1(2)	42.9(9)*
No	94.9(37)	57.1(12)
Instructions		
Yes	64.1(25)	52.4(11)
No	35.9(14)	47.6(10)
Pt. Beliefs		
Yes	51.3(20)	47.6(10)
No	48.7(19)	52.4(11)
6 wk f/u		
Yes	76.9(30)	57.1(12)
No	23.1(9)	42.9(9)

[a] Significance level of the chi-square statistic: * $p < 0.001$

Table 5. Logistic Regression Results Predicting Quality of Depression Care. (N=60) [a]

Variable	Diag.	Core	5/9 Sym	Inst.	Pt. Bel.	F/U
Age	1.01 (0.94,1.08)	1.04 (0.99,1.09)	0.94 (0.86,1.03)	1.02 (0.97,1.07)	0.97 (0.92,1.02)	1.00 (0.95,1.06)
Gender	0.94 (0.17,5.32)	1.06 (0.28,4.01)	10.42 (.74,147.1)	1.42 (0.38,5.14)	0.29 (0.07,1.13)	0.28 (0.52,1.57)
Clinical Status Severity	0.97 (0.86,1.08)	1.08 (0.99,1.18)	0.94 (0.81,1.09)	1.01 (0.93,1.10)	0.99 (0.92,1.09)	1.00 (0.91,1.10)
MD Spec.	1.02 (0.21,4.89)	1.25 (0.35,4.42)	18.09 * (2.3,141.4)	0.76 (0.22,2.57)	0.52 (0.15,1.83)	0.35 (0.09,1.33)
Constant	2.42	-3.56	-1.00	-0.86	2.41	1.97
-2 LL	53.10	77.21	39.30	79.20	78.39	68.21
DF	4	4	4	4	4	4
Gfit	59.31	60.45	54.63	60.05	59.95	56.96

[a] Table shows adjusted odds ratios (95% confidence interval).

* $p < 0.01$

Table 6. Bivariate Correlation of Independent Variables and Adherence Variable. (N=60) [a]

Variable	1	2	3	4
1. Age	---			
2. Gender	-0.079	---		
3. Clinical Status Severity	-0.566**	-0.006	---	
4. MD Specialty	-0.413**	-0.117	0.318*	---
5. Adherence	-0.056	-0.050	0.158	-0.006

[a] Based on 2-tailed test
* $p < 0.05$
** $p < 0.001$

Table 7. Final Regression Equation Predicting Adherence to Antidepressant Guidelines. (N=60)

Predictor	b	(SE)	Beta	t
Age	0.003	0.020	0.024	0.143
Gender	-0.201	0.548	-0.051	-0.368
Clinical Status Severity	0.008	0.036	0.038	0.237
Physician Specialty	0.069	0.519	0.020	0.133

Multiple R = 0.067
R-Square = 0.005
R-Square (adj) = -0.068
F-ratio = 0.062, 4 df, p=0.9927

Appendix A: Client Informed Consent Form

INFORMED CONSENT

YOU ARE INVITED TO TAKE PART IN A RESEARCH STUDY ON CLIENT EXPERIENCE WITH ANTIDEPRESSANT MEDICATIONS. IF YOU CHOOSE NOT TO TAKE PART IN THIS STUDY, YOUR MEDICAL CARE WILL NOT BE AFFECTED IN ANY WAY.

Purpose

The purpose of the study is to learn more about problems, concerns and benefits experienced by people prescribed antidepressant medications. The information learned from this research project is intended to improve patient care.

Why have you been selected?

You have been invited to participate because you have been prescribed an antidepressant. In order for our study to be thorough we need the experience and viewpoint of many individuals, so no matter what your experience it will aid this project. Information you can provide is important even if you stop this medication or make any changes in medications.

What does the study consist of?

Your participation involves 4 parts: 1) completing a telephone interview within the next day or two; 2) completing a second telephone interview in two months; 3) reporting special experiences in a journal; and 4) agreeing to release your pharmacy and medical records. The interviews will each require at least 30 minutes of your time. The questions to

be asked are about how you take the medicine, how it is working for you and how you view the services offered by your healthcare providers.

Is there any benefit?

Participation in this study will not provide direct medical benefit to you. Your contribution will help fill in informational gaps on patient experience with antidepressant medications for health care providers. Upon completion of the second interview you will receive a $20 honorarium.

Is there any risk?

Since your treatment is not being affected, the risk of injury is extremely low. The study takes great care in protecting your confidentiality. All data will be collected and handled by a pharmacist researcher. Names will not be used in data files. The identifying key will be kept in a locked file and will be destroyed once data collection is complete.

Are there any costs to you?

There will be no costs to you. Postage stamps and envelopes will be provided. Telephone calls will be made by the researchers.

Who will receive the results of the study?

A general summary, one that in no way identifies individuals or pharmacies will be reported to interested health care providers upon study completion.

If you change your mind....

You are free at any time to withdraw from this study. Whether or not you participate, your physician and pharmacist will continue to provide the best care available to you.

BEFORE YOU SIGN THIS FORM, PLEASE ASK ANY QUESTIONS ON THE ASPECTS OF THIS STUDY WHICH ARE NOT CLEAR TO YOU. WE WILL ATTEMPT TO FULLY ANSWER ANY QUESTIONS YOU MAY HAVE PRIOR TO, DURING, OR FOLLOWING THIS STUDY.

AUTHORIZATION:

I, _____ have read the above and have decided to
(your name)

participate in the research project described. My signature also indicates that I have received a copy of this consent form.

_____ _____ ( )_ _ _ - _ _ _ _
Signature Date Telephone number

Convenient times to be reached by telephone include:
(Check all that apply)

	Daytime	Evening
Monday	_____	_____
Tuesday	_____	_____
Wednesday	_____	_____
Thursday	_____	_____
Friday	_____	_____
Saturday	_____	_____
Sunday	_____	_____

_____
Signature of Principal Investigator

Bonnie L. Svarstad, PhD.
Professor
Telephone: 608-265-2128

Dara C. Bultman, R.Ph., M.S.
Ph.D. Candidate
Telephone: 608-262-3312

Appendix B: Client Medical and Pharmacy Record Release Form

STUDY OF CLIENTS INITIATING ANTIDEPRESSANT MEDICATION

Medical and Pharmacy Record Release Consent Form

Client Name _____

Address _____

City/ State/ Zip _____

Records released to:

Bonnie L. Svarstad, Ph.D. & Research Staff

Department of Social & Administrative Pharmacy

University of Wisconsin-Madison Pharmacy School

For the purpose of research only, I hereby give my permission for the release of medical and pharmacy records.

This consent shall expire twelve months from the date of the signature below.

_____

_____

(Client's signature) (Date)

Appendix C: Medical Record Request Letter

Date

Address

Dear Medical Records Department:

Enclosed is a copy of the medical record release consent forms for the study "Client experience with antidepressant medication: a prospective study of treatment continuation" being conducted by our research team at the University of Wisconsin School of Pharmacy. The study protocol and consent form have been approved by the University of Wisconsin-Madison Center for Health Sciences Human Subjects Committee (protocol #95-720-331).

The patients have given consent for release of all medical and pharmacy records, including mental health, alcohol, and other drug related diagnoses, treatments, and counseling. This release includes all charts and subcharts covering two months before and four months after initiation of antidepressant drug therapy, including lab work and progress notes for all visits to physicians and other health and mental health providers. The patients indicated that their antidepressant prescription was written by the physician whose name is shown on the consent form.

Please call Mary Hisrich Jenkins with any questions or problems at the University of Wisconsin School of Pharmacy (262-4723) or at her home (256-0762). Please forward chart information to:

Mary Hisrich Jenkins, PharmD
University of Wisconsin School of Pharmacy
425 N. Charter Street
Madison, WI 53706-1515

Thank you for your time and effort.

Sincerely,

Bonnie L. Svarstad, Ph.D.
Professor & Chair, Social &
Administrative Sciences Division
Director, Mental Health Research Center

Appendix D: Chart Review Instrument

CHART REVIEW INSTRUMENT

A MEASURE OF PROVIDER USE OF MONITORING ASSESSMENT STRATEGIES IN PATIENTS TAKING ANTIDEPRESSANT MEDICATION THERAPY

Study participant ID_____
Date chart reviewed_____
Reviewer_____

	Visit #1	#2	#3	#4
Date of Appointment				
Type of Contact: telephone/visit				
Provider Name/Type				
#Hospitalizations during study period (# mentioning depression)				
#ER visits during study period (# mentioning depression)				
#Office visits during study period to other prescriber(s) (# mentioning depression)				
# Missed appointments				
Diagnoses/Diagnosis codes noted. Y/N List all psychiatric diagnoses and related conditions				
Other current medical diagnoses				
Antidepressant regimen noted Y/N RX or sample Describe regimen				
Other medications noted Y/N List regimen				

	Visit #1	#2	#3	#4
Any depression assessment scales noted: Y/N Describe:				
AHCPR Depression Symptoms noted: Y/N				
A) Lack of interest in things you used to do				
B) Lack of pleasure in being with friends or family				
C) Feeling sad, blue or down in the dumps				
D) Feeling slowed down or restless				
E) Appetite problems				
F) Thoughts of death or suicide				
G) Problems concentrating, thinking, remembering or making decisions				
H) Trouble sleeping or sleeping too much				
I) Lack of energy/feeling tired all the time				

	Visit #1	#2	#3	#4
J) Feeling hopeless				
K) Feeling anxious				
L) Feeling irritable				
M) Lack of interest in sexual activity				
N) Other Symptoms				
Information about causes of depression Y/N Describe:				

Evidence in Chart of Y/N:	Visit #1	#2	#3	#4
a) Drug abuse				
b) Hypothyroidism				
c) Significant distress or impairment in social, occupational or other areas of functioning				
d) Bereavement				

DOCUMENTED COMMUNICATION

	Visit #1	#2	#3	#4
Instructions noted regarding Y/N:				
a) Antidepressant regimen				
b) Side effects				
c) How drug works				
d) Time to drug effect				
e) Written instructions				
f) Other				
Describe:				
Follow-up appointment noted Y/N Date of follow-up				
Compliance aids noted Y/N				
a) Memory				
b) Family				
c) Homecare				
d) Other				
Non-drug methods for controlling depression noted Y/N Describe:				

DOCUMENTATION OF PATIENT BELIEFS, CONCERNS AND COMPLIANCE

	Visit #1	#2	#3	#4
Patients preferred non-drug method noted Y/N Specify:				
Patient understanding of disease state noted: Y/N Specify:				
Patient understanding of regimen/therapy noted: Y/N Specify:				
Patient compliance noted: Y/N Specify:				
Patient comments about disease/regimen noted: Y/N Describe:				
Drug efficacy noted: Y/N Describe:				
Medication side effects noted: Y/N List:				
Regimen changes noted: Y/N List:				
Communication with other professionals noted Y/N List:				

Appendix E: Interview I Instrument

Source: Bultman, DC. Consumer perspectives of provider communication styles and antidepressants: a study of beliefs and outcomes. Unpublished doctoral dissertation, University of Wisconsin, 1997.

Interview I Instrument
Client Experience with Antidepressant Medication:
A Prospective Study of Treatment Continuation
Study Participant _____
Telephone Number_____
Prescription_____
Interviewer_____
Date/Time_____

Your pharmacist invited you to participate because of your prescription for _____.
I would like to begin with a few questions concerning what you were told about this medication.

1. How were you told to take _____?

   (Probes:)
   Are you to take it every day or does it depend on how you feel?
   Are you to take it at a certain time of day?
   How long does your doctor want you to take this prescription?

2. a. Were you told about any side effects related to taking _____?
   (If yes, what were you told?)

   b. Were you given any instructions about what to do if you experienced a side effect?
   (If yes, get details)

3. Were you told how _____works?
   (If yes) Please describe it to me.

4. Were you told how long it would take before you felt any better?
   (If yes) How long were you told it would be?

5. For what reason did your doctor prescribe _____?

6. Have you started taking the _____?
(If yes) When did you start?
(If no) Are you planing to start?

7. Were you given written instructions about the use of _____?

(If no) Would you have liked written instructions? Why/why not?

(If yes) Were you interested in having written instructions?
Were they useful to you? Why/why not? Who gave them to you?

8. Are you scheduled to have another appointment with the doctor who prescribed _____? (If yes) When is that supposed to be?

9. Different views exist about the causes of depression and other conditions for which _____ is prescribed. How important is each of the following factors in causing your (condition mentioned in Q5)? There are 4 responses: not important at all, marginally important, moderately important and very important. How important would you say _____ is in causing your condition?

USE THE FOLLOWING ANSWER CODE:
Don't Know = 0
Not important at all = 1
Marginally important = 2
Moderately important = 3
Very important = 4

a.	Seasonal causes	0 1 2 3 4
b.	Economic situation	0 1 2 3 4
c.	Biochemical reasons	0 1 2 3 4
d.	Hereditary causes	0 1 2 3 4
e.	Hormonal causes	0 1 2 3 4
f.	Personal relationships	0 1 2 3 4
g.	Physical condition	0 1 2 3 4
h.	Work related issues	0 1 2 3 4
I.	Other:No / Yes (specify)	0 1 2 3 4

Now, as I read the following statements, tell me to what extent you agree with each. The responses range from Strongly Agree to Strongly Disagree. The answer code has 5 possible responses: Strongly Agree, Agree, Neither agree nor disagree, Disagree, or Strongly Disagree.

Use the following answer code:
Strongly Agree = 1
Agree = 2
Neither Agree/Disagree = 3
Disagree = 4
Strongly Disagree = 5

10.	Overcoming depression (or condition mentioned Q5) usually requires taking an antidepressant.	1 2 3 4 5
11.	Antidepressants are useful in treating depression (or condition mentioned in Q5).	1 2 3 4 5
12.	Taking this medication is a good option for me.	1 2 3 4 5
13.	I would prefer a different medication.	1 2 3 4 5
14.	When my doctor gave me this prescription, I had an alternative course of action in mind.	1 2 3 4 5
15.	I have worries or concerns about _____ that have not been dealt with by my health care providers.	1 2 3 4 5
16.	My condition is very serious.	1 2 3 4 5
17.	The severity of my condition warrants use of _____.	1 2 3 4 5
18.	Side effects of _____ are likely to be bothersome.	1 2 3 4 5
19.	Taking antidepressants on a daily basis can be harmful to your body.	1 2 3 4 5
20.	Right now, I intend to take _____as my doctor prescribed.	1 2 3 4 5

21. In regard to the use of _____, is there anything that worries you or causes you some concern? Yes / No
(If yes) What are your worries?
(Insert answer into Interview II, item 12a)

Who prescribed _____ for you?
Is that who you talked with the most? (Determine key provider, i.e. doctor, psychiatrist, nurse practitioner, therapist, counselor, etc. Be sure you know who the client is referring to when responding.)
Now, think about your visit with _____ (provider identified) when the medicine was prescribed. During that visit to what extent would you say _____ (provider) acted in the following ways. This time the response set is:

Not at All = 0
Marginally = 1
Moderately = 2
Very Much = 3

22.	_____ (provider) was friendly during the visit.	0 1 2 3
23.	Asked if you had questions or concerns.	0 1 2 3
24.	Listened to you.	0 1 2 3
25.	Helped you with your concerns related to the use of _____.	0 1 2 3
26.	Gave you clear instructions on how to take _____.	0 1 2 3
27.	Gave you a clear explanation about how _____ would affect you.	0 1 2 3
28.	Made decisions about your treatment without your input.	0 1 2 3
29.	You and _____ planned your treatment together.	0 1 2 3
30.	Discussed alternative treatment options with you.	0 1 2 3
31.	Talked about things that you could do to help you feel better.	0 1 2 3
32.	How would you evaluate your overall experience with this visit? Would you say.....	1 2 3 4 5

Very Satisfied = 1
Somewhat Satisfied = 2
Neither Satisfied nor Dissatisfied = 3
Somewhat Dissatisfied = 4
Very Dissatisfied = 5

Now think about your pharmacy visit when you filled the prescription for _____.
Did someone at the pharmacy talk to you about the use of _____? YES/NO
Would you say the individual was a pharmacist or intern/student or what? RPh/Intern/Student/Other
Do you know the individual who filled your prescription by name? YES/NO
(If yes) What is the individual's name?_____
(If no) Have you seen this individual before or was this the first time?

Okay, now thinking about the pharmacy visit. During that visit to what extent would you say _____ (pharmacist identified) acted in the following ways. Use the following answer code:

Not at All = 0
Marginally = 1
Moderately = 2
Very Much = 3

33.	_____ was friendly during the visit.	0 1 2 3
34.	Asked if you had questions or concerns.	0 1 2 3
35.	Listened to you.	0 1 2 3
36.	Helped you with your concerns related to the use of _____.	0 1 2 3
37.	Gave you clear instructions on how to take_____.	0 1 2 3
38.	Gave you a clear explanation about how _____ would affect you.	0 1 2 3
39.	Made decisions about your prescription without your input.	0 1 2 3
40.	Discussed alternative treatment options with you.	0 1 2 3
41.	Talked about things you could do to help you feel better.	0 1 2 3

42. How would you evaluate your overall experience with this pharmacy visit? Would you say.... 1 2 3 4 5

Very Satisfied = 1
Somewhat Satisfied = 2
Neither Satisfied nor Dissatisfied = 3
Somewhat Dissatisfied = 4
Very Dissatisfied = 5

Additional Comments:

43. _____ is prescribed to treat symptoms from the following list. As I read the items indicate the amount of time you have experienced these symptoms during the two weeks just before you started taking _____. Use the following answer code:

None or little of the time = 1
Some of the time = 2
Good part of the time = 3
All or most of the time = 4

AHCPR DEPRESSION SYMPTOMS (In the 2 weeks before starting medication, how much of the time have you experienced:)	**EXPER-IENCE**	**RANK ORDER GOALS (1-3)**
A lack of interest in things you used to do	1 2 3 4	
A lack of pleasure in being with friends/ family	1 2 3 4	
Feeling sad, blue or down in the dumps	1 2 3 4	
Feeling slowed down or restless	1 2 3 4	
Appetite problems	1 2 3 4	
Thoughts of death or suicide	1 2 3 4	
Problems concentrating, thinking, remembering, or making decisions	1 2 3 4	
Trouble sleeping or sleeping too much	1 2 3 4	
Lack of energy or feeling tired all of the time	1 2 3 4	
Feeling hopeless	1 2 3 4	
Feeling anxious	1 2 3 4	
Feeling irritable	1 2 3 4	
Lack of interest in sexual activity	1 2 3 4	
What other symptoms prompted you to see the doctor?		
Other (specify?)	1 2 3 4	

44. People have different goals when taking medication. In what 3 areas would you most like improvement from _____?

1.
2.
3.

We would like to learn something about your personal background.

45. Which of the following best describes your racial background?
African-American = 1

Asian = 2
Caucasian = 3
Hispanic/ Latin = 4
Native American = 5
Other = 6

46. Are you male or female?
MALE = 1
FEMALE = 2

47. What is your birthdate?

48. Which best describes your level of formal education?
Less than high school = 1
High school = 2
Technical school = 3
College = 4
Bachelor's degree = 5
Beyond Bachelors = 6

49. Tell me about your activities during a typical week. (Get info about daily activity...paid or volunteer work, job, schoolwork, housework, social organizations, exercise, etc.)

50. What is your approximate annual household income before taxes? (include income from all sources such as salaries and wages, Social Security, retirement income, investments, and other sources).

50a.How many people make up your household?

51. Do you have some kind of medical insurance?
0 = NO
1 = YES--->

51a.Does your medical insurance cover your visits to the doctor that prescribed _____? 0=NO 1=YES

51b.Does your medical insurance cover at least some part of the cost of _____? 0=NO 1=YES

51c.What is (are) your medical insurance plan(s)?

52. Do you obtain all your prescriptions from the pharmacy where you received _____?
0 = NO 1 = YES

52a. If no, approximately what % of your prescription medications do you obtain from this pharmacy?_____

52b. List all pharmacies where you have filled prescriptions in the last year.

53. Have you taken antidepressant type medication in the past? 0 = NO 1 = YES

54. Other than taking this prescription, what do you do to improve how you feel?

55. What additional things have been mentioned to you or are you thinking about doing to improve how you feel?

56. Describe briefly your routine or system for taking _____?

57. How would you rate your physical health? Would you say excellent, good, fair or poor?
1 = EXCELLENT
2 = GOOD
3 = FAIR
4 = POOR

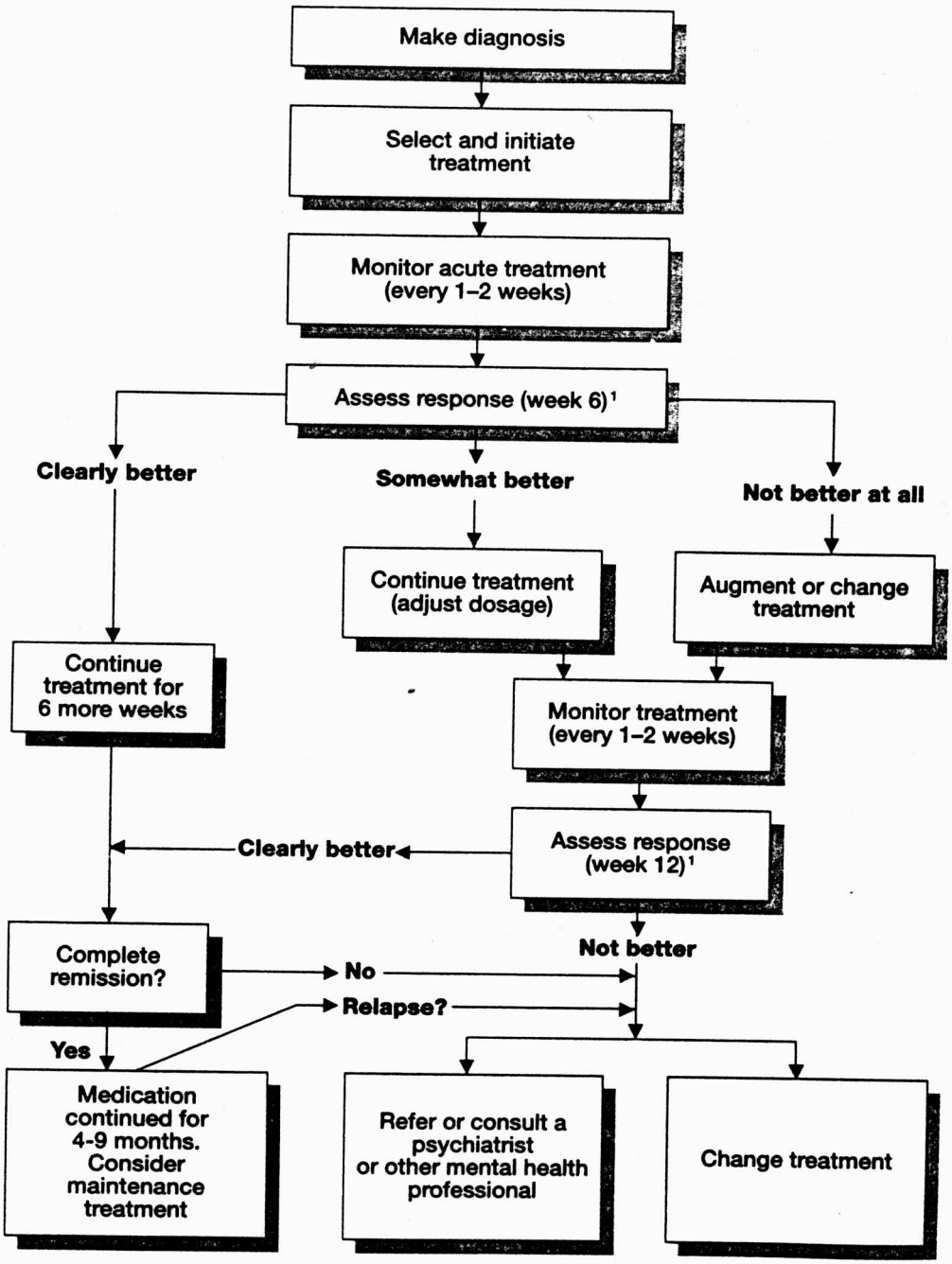
58. How would you rate your emotional health? Would you say excellent, good, fair or poor?
1 = EXCELLENT
2 = GOOD
3 = FAIR
4 = POOR

Thank you for completing this interview. Your time and effort are appreciated.
When would you like me to call for the follow-up interview? (Approximately 2 months from today...schedule DAY _____and TIME _____AM/PM).

Appendix F: Selected AHCPR Depression Guideline Algorithms

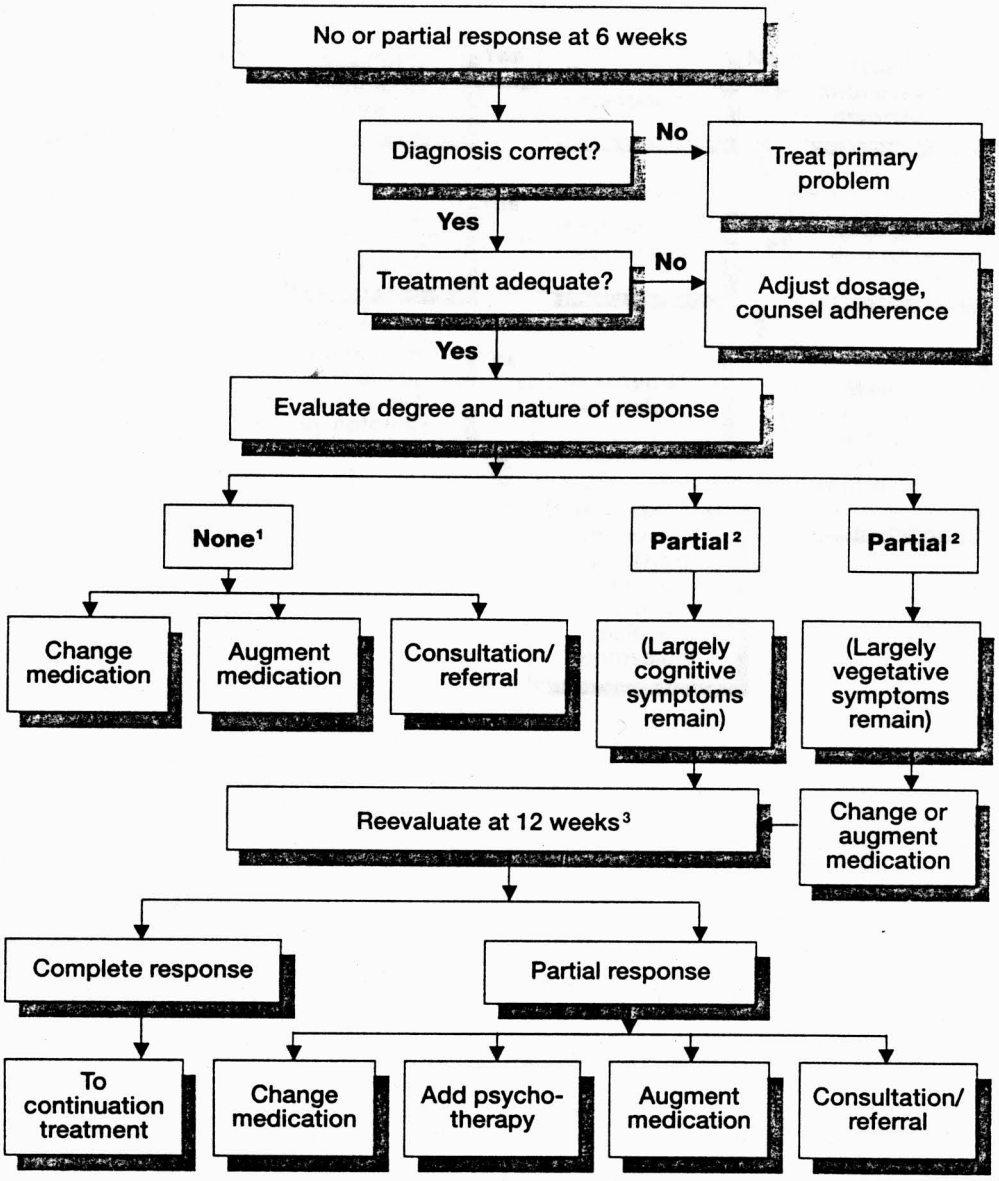
Source: Depression Guideline Panel. Depression in Primary Care: Volume 1. Selection and Diagnosis. Clinical Practice Guidelines, Number 5. Rockville, MD. U.S. Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research. AHCPR Publication No. 93-0550. April 1993

Overview of Treatment for Depression



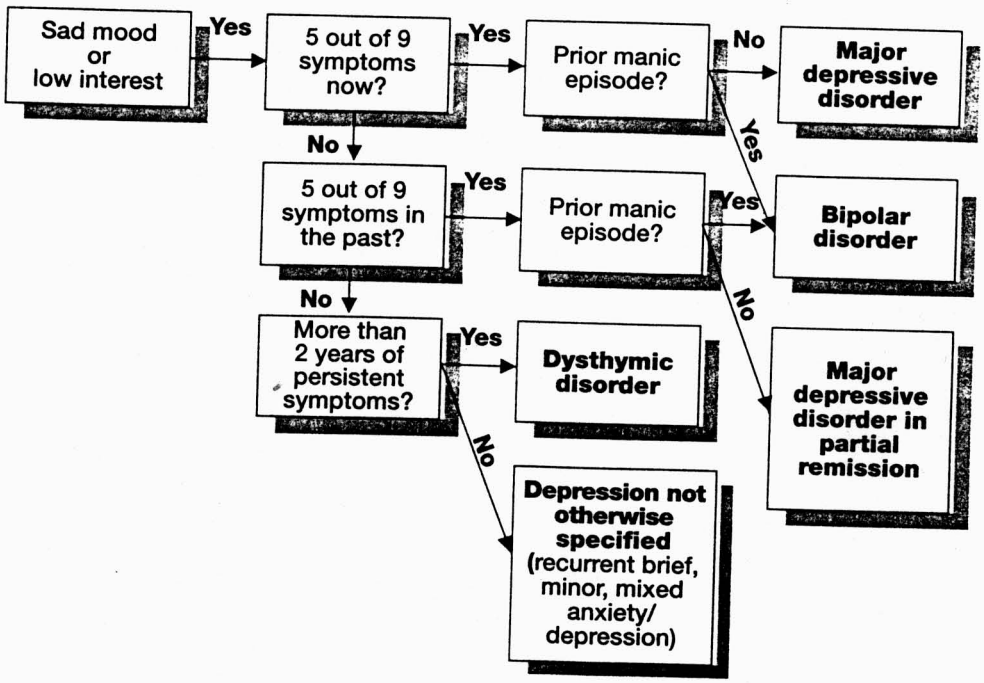
[1]**Note:** Times of assessment (weeks 6 and 12) rest on very modest data. It may be necessary to revise the treatment plan earlier for patients who fail to respond.

Six-week Evaluation: Partial or Nonresponders to Medication



[1]No response—patient is nearly as symptomatic as at pretreatment.
[2]Partial response—patient is clearly better than at pretreatment, but still has significant symptoms. Consultation or referral may be valuable before proceeding further.
[3]Suggestions for management are based on some indirectly relevant studies. logic, and clinical experience.

Differential Diagnosis of Primary Mood Disorders



Appendix G: List of Variables Used in Analyses

Variables Used in Final Analyses

Variable	Definition	Coding
Patient Variables		
1. AGE	Age in years	Continuous
2. DEPRSXS1	Sum of Reported Symptoms for dep.	Continuous
3. GENDER	Patient gender	0=female, 1=male
4. INSURED	Patient medical insurance	0=no, 1=yes
Physician Variable		
MDSPINT	Physician specialty	0=non-psych, 1=psychiatry
Quality Indicators		
1. DIAG12	Diagnosis doc. note 1 or 2	0=no, 1=yes
2. DEPRX12	Antidepressant regimen doc. note 1 or 2	0=no, 1=yes
3. CORE3	Core symptoms of depression doc. note 1 or 2	0=no, 1=yes
4. SYMP12	Five of nine depression symptoms doc. note 1 or 2	0=no, 1=yes

Variables Used in Analyses Continued

Variable	Definition	Coding
Quality Indicators		
5. INST12	Instructions regarding therapy doc. note 1 or 2	0=no, 1=yes
6. PTBEL12	Doc. of pt. beliefs, concerns, compliance, note 1 or 2	0=no, 1=yes
7. FU6WK	Follow-up noted within 6 weeks	0=no, 1=yes
Summary Adherence		
ADHERE	Sum of 7 quality indicators	0=none, 1=one, 2=two, 3=three, 4=four, 5=five, 6=six, 7=seven