

Effects of Telephone Counseling on Antipsychotic Adherence and Emergency Department Utilization

Paul F. Cook, PhD; Suzie Emiliozzi, RN; Corey Waters, MBA; and Dana El Hajj, BSN, RN

Despite the benefits of second-generation antipsychotic medications (SGAs) for persons with serious and persistent mental illness (SPMI), most people discontinue treatment within 1 year. Among persons with schizophrenia, 20% to 30% never start treatment,¹ 14% to 32% discontinue treatment within 3 months,^{2,4} and 66% to 72% stop within 2 years.⁵ Among Medicaid recipients, 12-month adherence is as low as 40%.⁶ Although earlier research showed no adherence advantage for SGAs versus older medications,^{6,7} some recent data suggest better adherence.⁸ Nonadherence risk factors include previous nonadherence, recent alcohol or drug use, clinical severity, past antidepressant use, and medication-related cognitive impairment.⁹⁻¹²

Persons with schizophrenia who stop medication are at risk for symptom recurrence, impaired functioning, increased emergency department (ED) use, and hospitalization.^{6,13-15} Repeated hospitalization is a substantial cost for persons with SPMI, approximately 40% of which is due to nonadherence.¹⁶ The average adherent individual has 21 to 35 fewer hospital days over 12 months posthospitalization,¹⁷ and even partial nonadherence increases this risk.¹⁸

Brief cognitive-behavioral¹⁹ and motivational-interviewing^{20,21} interventions have successfully increased SGA adherence, but may be difficult to replicate²² and are not widely available in community practice. Telephonic counseling is a feasible delivery method²³⁻²⁵ that previously was shown to improve antidepressant adherence²⁶ and other chronic medication adherence.²⁷

The current study used a disease management program called *ScriptAssist* to promote SGA adherence. Members were identified from a Medicaid health plan's administrative data and proactively contacted by a registered nurse (RN) with mental health treatment experience. *ScriptAssist* programs^{23,26,27} provide individual psychological interventions targeted to participants' readiness for change, based on the transtheoretical model.²⁸ During each call, RNs assess patients' treatment motivation and adherence concerns, and offer educational, empowering, and decision-support interventions based on the participant's stage of change. They also may mail patients follow-up print materials that emphasize

themes from the call. Participants received follow-up calls from the same nurse over time. Specific patient education materials were created for this SPMI program (eg, coordination of

Objective: To determine whether *ScriptAssist*, a telehealth nursing program using psychological techniques, reduced emergency department (ED) utilization and improved adherence among Medicaid health plan members with serious and persistent mental illness (SPMI).

Study Design: Nonrandomized controlled trial.

Methods: Of 210 eligible Medicaid health plan members with SPMI, 59 (28%) were contacted by phone and 51 (86%) participated. Participants received an average of 3.5 calls over 9 months, with 2.1 attempts per completed call. Participants had clinically significant levels of impairment; medication switching, polypharmacy, and medical comorbidities were common. Intervention group participants' results were compared with those of nonparticipants to rule out regression to the mean, history, and maturation effects. Intervention group participants' results also were compared with baseline data to rule out selection bias.

Results: Program participants had fewer ED visits during the intervention than a comparison group, and reduced their ED use and hospitalization rate compared with the previous year. Participants also had better medication adherence based on pharmacy and interview data.

Conclusions: Cognitive-behavioral and motivational-interviewing techniques can improve antipsychotic medication adherence. Telehealth may be a useful strategy for disseminating these evidence-based techniques. Lessons learned included the importance of real-time referral data, a need to address polypharmacy, and a need to overcome contact difficulties resulting from disease processes and "unknown caller" IDs. Despite these difficulties, using a disease management model, the program was feasible, and the reduced number of ED visits indicated potential cost-effectiveness.

(*Am J Manag Care.* 2008;14(12):841-846)

In this issue
Take-away Points / p845
www.ajmc.com
Full text and PDF

For author information and disclosures,
see end of text.

care, coping with symptoms, warning signs of relapse). RNs received 8 hours of training on the psychological counseling model, plus 16.5 hours of training on SPMI symptoms, treatments, adverse drug events, crisis management, and psychosocial factors related to SPMI such as work, relationship, and family issues. All RNs in the current study had previous experience working with mental health issues, as well as prior experience with the *ScriptAssist* counseling model. To ensure treatment fidelity, RNs received individual and group supervision on the counseling model throughout the study, and any deviations were addressed through individual training.

METHODS

Participants

Persons with SPMI were identified from the membership of a voluntary, managed Medicaid health plan in a midwestern state during the first 6 months of 2006. Members were included if they (1) received a SGA prescription in the past 30 days, (2) were at least 18 years old, and (3) had current health plan eligibility. Members were excluded if they had a recorded diagnosis of dementia or substance dependence. The **Figure** shows the study flow.

Of 210 eligible members, 55 (26.2%) received a prescription for aripiprazole, 30 (14.3%) for ziprasidone, 49 (23.3%) for risperidone, 85 (40.5%) for quetiapine, and 33 (15.7%) for olanzapine. The total number of medications was greater than the number of members, which suggests switching and/or polypharmacy. Members' average age was 33.4 years (SD = 8.2 years), and 83.8% (n = 176) were female. The high percentage of women reflects the fact that members came from a Medicaid plan for women and children.

Although multiple calls and letters were used to reach all 210 eligible members, only 59 (28%) were contacted for enrollment. The most common reason members were not reached was lack of a valid telephone number. All members were asked for informed consent to participate. Three members declined, and 5 declined further contact after the first call. Seven participants opted out later, for an overall total of 25% opting out. This was higher than the 1% to 2% refusal rates seen in *ScriptAssist* programs for chronic physical diseases.²⁷

Participants' self-reported diagnoses included bipolar disorder (n = 22), depression (n = 18), anxiety disorders (n = 10), schizophrenia (n = 2), schizoaffective disorder (n = 1), hallucinations and delusions (n = 3), antisocial personality (n = 1), and borderline personality (n = 1). Concomitant medications included psychostimulants (n = 7), sleep aids (n = 7), antianxiety medications (n = 11), antidepressants (n = 49), older-generation antipsychotics (n = 11), and mood stabilizers (n = 12). Surprisingly, only 8 potential adverse drug

events were reported: fatigue (3 participants), itching/rash (1 participant), stomachache (1 participant), tremors (2 participants), and "just didn't feel right" (1 participant). Medical comorbidities are common with SPMI,^{29,30} and participants reported comorbid hypertension, diabetes, asthma, emphysema, migraine, sleep problems, seizures, and pain. Several noted trauma histories including physical abuse, sexual abuse, or motor vehicle accident.

Procedure

Three RNs made multiple attempts to reach members (mean of 2.1 attempts per completed call), and each patient worked with the same RN over time. In initial calls the RN administered a proprietary screening tool, originally developed in an outpatient psychiatric population, to predict members' nonadherence risk²⁷; 90% of participants were screened "at risk" for nonadherence. At-risk participants received follow-up calls (mean of 7.2 call attempts; mean of 3.5 calls completed) over an average of 4.4 months, with an average call length of 11 minutes (average total contact per participant was 38.5 minutes). Low-risk participants received a toll-free number plus 1 follow-up call at 6 months. During each call, the RN offered cognitive-behavioral counseling or motivational-interviewing interventions based on the participant's readiness for change and individual barriers to adherence. RNs mailed follow-up written materials to 45 participants (88%). A written progress note was sent to the participant's health plan case manager after each call. Four participants reported potential serious adverse drug events; these persons were referred to their primary care providers. Participants did not receive incentives. Data analysis was approved by the Colorado Multiple Institutional Review Board.

Measures

Administrative Data. This study's primary outcome was ED utilization based on health plan administrative data, which is generally considered a valid archival measure of service use. Hospitalizations and recorded diagnoses also were obtained from claims data.

Adherence Measures. Medication adherence was measured using health plan pharmacy data. Pharmacy records are generally considered valid and correlate with other adherence measures.³¹⁻³³ Self-reported adherence also was measured, using the question "how many days in the last week have you taken your medication as prescribed?" The number of days was divided by 7 to calculate a percentage. Nonblinded interviews were conducted by the RN providing the intervention. Nonjudgmental interviews provide valid adherence data,³⁴⁻³⁶ and the current measure has shown 75% agreement with pharmacy data.²³

Analysis Strategy

All analyses were conducted using SPSS 15.0 (SPSS Inc, Chicago, IL). *ED utilization* was defined as the number of ED visits by eligible members, divided by months of eligibility. Rates were multiplied by 12 to calculate per member per year (PMPY) ED rates. There were no missing observations in the administrative data set, and a conservative intent-to-treat analysis was used.

For *pharmacy-based adherence*, members were considered adherent if they had no more than a 14-day gap between the end of one SGA prescription (previous fill date plus days supply) and the next fill date for the same or any other SGA. Complete pharmacy records were available, and an intent-to-treat analysis was used. Prescriptions for non-SGA medications were not included, so members who switched to older-generation antipsychotics were counted as “nonadherent.” For *self-reported adherence*, participants were considered adherent if they reported taking medication as prescribed at least 80% of the time. Self-reported adherence rates were analyzed using all available data for each month of treatment; participants who could not be recontacted were excluded from subsequent analyses. However, participants who indicated at any point that they had stopped treatment were retained in subsequent analyses.

RESULTS

Sample Demographics and Attrition

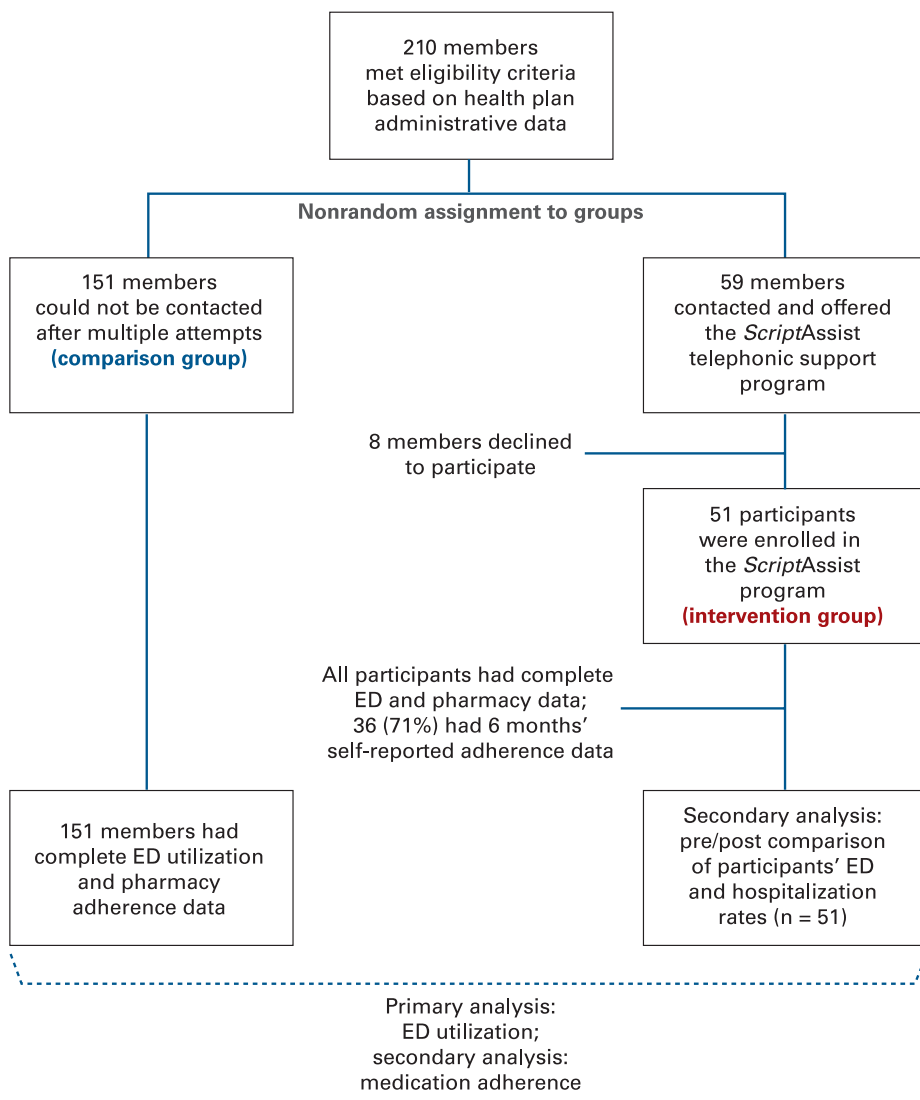
The intervention and control groups were not significantly different in terms of age, sex, or baseline adherence ($P > .24$ for all comparisons). Intervention group participants had fewer previous ED visits ($t = 9.29$; $P < .001$) but more prior hospitalizations ($t = 16.2$; $P < .001$), and

their recorded diagnoses were more likely to include bipolar disorder or psychosis (77% [14/18] vs 30% [12/40] in the control group). In general, results do not suggest that the intervention group was less impaired or more adherent at baseline. Intervention group attrition was 29% (15/51), and was unrelated to age, baseline adherence, or diagnosis ($P > .05$ for all correlations). Men were less likely to leave the intervention group.

Emergency Department Utilization

Participants visited the ED a mean of 1.11 times PMPY during the intervention. Nonparticipants visited the ED a mean of 5.03 times PMPY during the intervention ($t = 9.46$; $P < .001$; effect size [Cohen’s d] = 0.28). To address potential

■ **Figure 1. Study Design**



ED indicates emergency department.

■ **Table.** Effect of Telephone Counseling on Treatment Adherence

Variable	Self-Report Rate for Intervention Group	Pharmacy Rate for Intervention Group	Pharmacy Rate for Comparison Group
Month of treatment			
1	81% (n = 51)	59% (n = 51)	68%
2	81% (n = 48)	—	—
3	79% (n = 47)	59% (n = 51)	36%
4	67% (n = 45)	—	—
5	62% (n = 45)	—	—
6	50% (n = 36)	48% (n = 51)	26%
Average duration (out of 6 months)	4.2 months	3.3 months	2.4 months
Effect size for change in 6-month adherence	$\phi = .22$ (vs comparison pharmacy rate)	$\phi = .20$ (vs comparison pharmacy rate)	—

concerns about self-selection bias, we also tested pre/post changes in utilization within the intervention group. Before the intervention, participants visited the ED a mean of 1.50 times PMPY; during the intervention, they visited the ED a mean of 0.39 time PMPY ($t = 28.8$; $P < .001$). Exploratory data on hospitalizations also showed pre/post improvement, from 5.67 admissions PMPY to 0.98 admission PMPY during the intervention ($t = 14.7$; $P < .001$).

Medication Adherence

Data for both adherence measures are summarized in the **Table**. Baseline adherence for both groups was lower than that observed in some studies,^{1,2,5} but similar to that observed in a recent Medicaid study.⁶

Pharmacy Fill Measure. Among intervention-group participants, 59% ($n = 29$) received at least 3 consecutive months of medication, and 48% were adherent for 6 months, a significantly higher adherence rate than that in the comparison group ($\chi^2 = 8.01$; $P = .004$).

Self-Report Measure. Five participants (9.8%) did not fill an initial prescription, and 18 (35.3%) stopped treatment at some point. Three participants who did not start (60.0%) and 7 of those who stopped (38.9%) agreed to resume treatment after speaking with a *ScriptAssist* nurse. Six-month adherence was 50%, which was higher than the comparison rate ($\chi^2 = 9.47$; $P = .002$).

DISCUSSION

The *ScriptAssist* telephone counseling program reduced ED utilization, both in comparison to members who did not receive the intervention and in a pre/post analysis. Using the

more conservative estimate of program effectiveness—a pre/post reduction of 0.39 visit PMPY—costs of this program were approximately equal to savings achieved through reduction in ED visits. The smaller pre/post reduction in ED visits may have resulted from lower disease severity among members who were reached to participate; if a broader population could have been reached, cost offsets might have come closer to the difference between the intervention and control groups (3.92 visits PMPY). Pre/post reductions in hospitaliza-

tion also were shown for the intervention group in an exploratory analysis and might be an additional source of cost offset. Participants showed improved SGA adherence on self-report and pharmacy measures, supporting the interpretation that reduced ED use resulted from greater adherence.

Lessons from Program Implementation

Although participants received an adequate level of intervention, they were difficult to contact by phone. Staff reported incomplete or inaccurate contact information. Duplicate data were sometimes received, and health plan eligibility frequently expired. However, staff believed the most important barrier was a 2-month average delay from the time members started a new SGA to the time they were identified for the program. Staff said these delays caused them to miss the “window of opportunity” when members had questions; by the time enrollment was attempted, the member’s decision to stop taking medication had already been made. Additional barriers to enrollment included active disease processes that interfered with a working relationship (eg, delusions of persecution) and caller ID features showing “unknown” numbers due to Health Insurance Portability and Accountability Act constraints.

Limitations and Directions for Further Research

This study’s main advantage was high generalizability with a community-based sample and proactive participant recruitment. Participants had clinically significant SPMI-related impairment, with bipolar disorder and other mood disorders being the most common diagnoses. Primary outcome measures were based on administrative data sets with no missing data. However, this naturalistic design also carried limitations. First, polypharmacy and exclusion of older-generation anti-

psychotics complicated analyses for the pharmacy measure, which may have underestimated true adherence. Second, intervention and control members may have received other services during the study period. Finally, the relatively low enrollment rate may have created a selection bias. This concern is mitigated by similarities between the groups, by some indicators showing more severe illness in the intervention group, and by the additional demonstration of pre/post change in the intervention group. Additional research is needed to confirm that *ScriptAssist* improves adherence vis-à-vis a randomized control group; however, this program offers a potential option for a hard-to-treat population.

Take-away Points

Telephone counseling improved antipsychotic medication adherence and reduced emergency department utilization in a managed Medicaid population.

- Disease management approaches can be a cost-effective way to help members with serious and persistent mental illness improve their self-management.
- Telehealth nursing is an effective method for delivering evidence-based adherence counseling approaches in community settings.
- Program participants had severe impairment, including a high prevalence of bipolar disorder and other mood disorders, complex treatments, and comorbid conditions; contacting and retaining these high-risk members required extra effort.

SUMMARY AND CONCLUSIONS

This study tested adherence counseling for persons with SPMI, using a disease management model in a managed Medicaid plan. Telephonic implementation was feasible and effective in reducing ED rates and improving adherence. Because the program can be implemented in community settings, and because costs were largely offset by reduced ED visits, this program has the potential to be cost-effective and may be appropriate for high-risk Medicaid members with SPMI.

Author Affiliations: From the College of Nursing (PFC, DE), University of Colorado Denver, Aurora, CO; the Medication Adherence Programs, *ScriptAssist* (SE), St. Louis, MO; and Centene Corporation (CW), St. Louis, MO.

Funding Source: This study was supported by contract 0506-010-PC with Centene Corporation/*ScriptAssist* Medication Adherence Programs. The contract specifically states that the University of Colorado Denver does not guarantee specific results of the research evaluation, and every effort was made to perform the research in a scientifically valid manner.

Author Disclosure: Ms Emiliozzi is an employee of *ScriptAssist* Medication Adherence Programs, which provided the telehealth nursing intervention described in this manuscript. Mr Waters is an employee of Centene Corporation, the parent company of the organization that provided the medication adherence program described in the manuscript. Dr Cook and Ms El Hajji report receiving payment from Centene Corporation for their involvement in the preparation of this manuscript.

Authorship Information: Concept and design (PFC, SE); acquisition of data (SE, CW); analysis and interpretation of data (PFC, SE, CW, DE); drafting of the manuscript (PFC, DE); critical revision of the manuscript for important intellectual content (SE, DE); statistical analysis (PFC, CW); obtaining funding (PFC); administrative, technical, or logistic support (PFC, SE, CW, DE); and supervision (PFC, SE).

Address correspondence to: Paul F. Cook, PhD, College of Nursing, University of Colorado Denver, 13120 E 19th Ave, Campus Box C288-04, Aurora, CO 80045. E-mail: paul.cook@ucdenver.edu.

REFERENCES

1. **Marder S.** Approaching the adherence challenge. Paper presented at: 155th Annual Meeting of the American Psychiatric Association; May 19, 2002; Philadelphia, PA.

2. **Binder RL, McNeil DE, Sandberg DA.** A naturalistic study of clinical use of risperidone. *Psychiatr Serv.* 1998;49(4):524-526.

3. **Diaz E, Levine HB, Sullivan MC, et al.** Use of the Medication Event Monitoring System to estimate medication compliance in patients with schizophrenia. *J Psychiatry Neurosci.* 2001;26(4):325-329.

4. **Stephenson J.** Delay in treating schizophrenia may narrow therapeutic window of opportunity. *JAMA.* 2000;283(16):2091-2092.

5. **Megna JL, Dewan M.** A naturalistic study of risperidone maintenance treatment of outpatients with severe mental illness. *Psychiatr Serv.* 1999;50(8):1084-1086.

6. **Gilmer TP, Dolder CR, Lacro JP, et al.** Adherence to treatment with antipsychotic medication and health care costs among Medicaid beneficiaries with schizophrenia. *Am J Psychiatry.* 2004;161(4):692-699.

7. **Jones PB, Barnes TRE, Davies L, et al.** Randomized controlled trial of the effect on quality of life of second- vs first-generation antipsychotic drugs in schizophrenia: Cost Utility of the Latest Antipsychotic Drugs in Schizophrenia Study (CULASS 1). *Arch Gen Psychiatry.* 2006;63(10):1079-1087.

8. **Ascher-Svanum H, Zhu B, Faries D, Landbloom R, Swartz M, Swanson J.** Time to discontinuation of atypical versus typical antipsychotics in naturalistic treatment of schizophrenia. *BMC Psychiatry.* <http://www.medscape.com/viewarticle/528683>. Accessed October 20, 2007.

9. **Ascher-Svanum H, Zhu B, Faries D, Lacro JP, Dolder CR.** A prospective study of risk factors for nonadherence with antipsychotic medication in the treatment of schizophrenia. *J Clin Psychiatry.* 2006;67(7):1114-1123.

10. **Elbogen EB, Swanson JW, Swartz MS, Van Dorn R.** Medication nonadherence and substance abuse in psychotic disorders. Impact of depressive symptoms and social stability. *J Nerv Ment Dis.* 2005;193(10):673-679.

11. **Fenton WS, Blyler CR, Heinssen RK.** Determinants of medication compliance in schizophrenia: empirical and clinical findings. *Schizophr Bull.* 1997;23(4):637-651.

12. **Kaplan A.** High treatment noncompliance among BD patients with personality disorders. *Bipolar Disorder & Impulsive Spectrum Letter.* February 7, 2001.

13. **Green JH.** Frequent rehospitalization and noncompliance with treatment. *Hosp Community Psychiatry.* 1988;39(9):963-966.

14. **Svarstad BL, Shireman TI, Sweeney JK.** Using drug claims data to assess the relationship of medication adherence with hospitalization costs. *Psychiatr Serv.* 2001;52(6):805-811.

15. **Valenstein M, Copeland LA, Blow FC, et al.** Pharmacy data identify poorly adherent patients with schizophrenia at increased risk for admission. *Med Care.* 2002;40(8):630-639.

16. **Weiden PJ, Olfson M.** Cost of relapse in schizophrenia. *Schizophr Bull.* 1995;21(3):419-429.

17. **Rosenheck R, Cramer J, Allan E, et al.** Cost-effectiveness of clozapine in patients with high and low levels of hospital use. Department of Veterans Affairs Cooperative Study Group on Clozapine in Refractory Schizophrenia. *Arch Gen Psychiatry.* 1999;56(6):565-572.

18. **Weiden PJ, Kozma C, Grogg A, Locklear J.** Partial compliance and risk of rehospitalization among California Medicaid patients with schizophrenia. *Psychiatr Serv.* 2004;55(8):886-891.

19. **Azrin NH, Teichner G.** Evaluation of an instructional program for improving medication compliance for chronically mentally ill outpatients. *Behav Res Ther.* 1998;36(9):849-861.

20. **Kemp R, Hayward P, Applewhaite G, Everitt B, David A.** Compliance therapy in psychotic patients: randomised controlled trial. *BMJ.* 1996;312(7027):345-349.

■ TRENDS FROM THE FIELD ■

21. **Kemp R, Kirov G, Everitt B, Hayward P, David A.** Randomised controlled trial of compliance therapy. 18-month follow-up. *Br J Psychiatry*. 1998;172:413-419.
22. **O'Donnell C, Donohoe G, Sharkey L, et al.** Compliance therapy: a randomised controlled trial in schizophrenia. *BMJ*. 2003;327(7419):834.
23. **Cook PF, Emiliozzi S, McCabe M.** Telephone counseling to improve osteoporosis treatment adherence: an effectiveness study in community practice settings. *Am J Med Qual*. 2007;22(6):445-456.
24. **Maisiak R, Austin J, Heck L.** Health outcomes of two telephone interventions for patients with rheumatoid arthritis or osteoarthritis. *Arthritis Rheum*. 1996;39(8):1391-1399.
25. **Reynolds NR, Alonzo AA.** Nurse-delivered proactive telephone support improves medication adherence: findings from a randomized controlled trial. Paper presented at: National State of the Science Congress in Nursing Research; Washington, DC; October 12, 2006.
26. **Cook PF, Berdie M, Dubin MD, Wirecki T.** Effect of telephone outreach counseling on patients' adherence to antidepressant medication. <http://www.scriptassistllc.com/programs/research>. Accessed May 13, 2008.
27. **Cook PF.** Adherence to medications. In: O'Donohue WT, Levensky ER, eds. *Promoting Treatment Adherence: A Practical Handbook for Health Care Providers*. Thousand Oaks, CA: Sage; 2006:183-202.
28. **Prochaska JO, Norcross J, DiClemente C.** *Changing for Good*. New York: Avon Books; 1995.
29. **Cohn T, Prud'homme D, Streiner D, Kameh H, Remington G.** Characterizing coronary heart disease risk in chronic schizophrenia: high prevalence of the metabolic syndrome. *Can J Psychiatry*. 2004;49(11):753-760.
30. **Baune BT, Adrian I, Arolt V, Berger K.** Associations between major depression, bipolar disorders, dysthymia and cardiovascular diseases in the general adult population. *Psychother Psychosom*. 2006;75(5):319-326.
31. **Bosworth HB.** Medication treatment adherence. In: Bosworth HB, Oddone EZ, Weinberger M, eds. *Patient Treatment Adherence: Concepts, Interventions, and Measurement*. Mahwah, NJ: Erlbaum; 2006:147-194.
32. **Grymonpre RE, Didur CD, Montgomery PR, Sitar DS.** Pill count, self-report, and pharmacy claims data to measure medication adherence in the elderly. *Ann Pharmacother*. 1998;32(7-8):749-754.
33. **Riekert KA.** Integrating regimen adherence assessment into clinical practice. In: O'Donohue WT, Levensky ER, eds. *Promoting Treatment Adherence: A Practical Handbook for Health Care Providers*. Thousand Oaks, CA: Sage; 2006:17-34.
34. **Choo PW, Rand CS, Inui TS, et al.** Validation of patient reports, automated pharmacy records, and pill counts with electronic monitoring of adherence to antihypertensive therapy. *Med Care*. 1999;37(9):846-857.
35. **Lu M, Safren SA, Skolnik PR, et al.** Optimal recall period and response task for self-reported HIV medication adherence. *AIDS Behav*. 2008;12(1):86-94.
36. **Roth HP.** Measurement of compliance. *Patient Educ Couns*. 1987;10:107-116. ■