

Long-Term Impact of Web-Based Tools, Leadership Feedback, and Policies on Inpatient Antipsychotic Polypharmacy

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This column describes a series of interventions to decrease antipsychotic polypharmacy in the New York State Office of Mental Health (NYSOMH) network of psychiatric hospitals. Phase 1 consisted of implementation of the Psychiatric Services Clinical Knowledge Enhancement System (PSYCKES), a Web-based application supporting clinical decision making and quality improvement, and a policy requiring approval by NYSOMH's medical director to prescribe more than two antipsychotics per patient. In phase 2 hospital leaders received feedback from the office of the medical director identifying specific patients on polypharmacy. In phase 3, access to PSYCKES continued, but the pri-

or-approval policy and feedback were discontinued. Polypharmacy decreased significantly during phase 1, from 16.9 to 9.7 inpatients per 1,000, and decreased further in phase 2, to 3.9 inpatients per 1,000. In phase 3 the prevalence of antipsychotic polypharmacy remained low at six-month follow-up (3.1 inpatients per 1,000), despite the ending of state-level oversight. On long-term follow-up, polypharmacy increased, eventually rising to 9.2 inpatients per 1,000 after 36 months, but remained well below baseline levels. (*Psychiatric Services* 62:1124–1126, 2011)

Evidence supporting antipsychotic polypharmacy is inconclusive (1). Guidelines recommend its use only as a last-line treatment after adequate trials of monotherapy have failed (2). Although some patients may benefit from antipsychotic polypharmacy (3), its widespread use implies that the practice occurs out of proportion to clinical necessity.

The Joint Commission has recently drawn attention to this practice by recognizing antipsychotic polypharmacy as a quality concern and including two measures about this issue in its set of core measures for hospital-based inpatient psychiatric services (1).

This column describes the short- and long-term impact of a series of interventions to support best practices in psychotropic prescribing. Specifically,

the initiative sought to promote appropriate use of antipsychotics by limiting antipsychotic polypharmacy to those patients for whom it is clinically necessary in the New York State Office of Mental Health (NYSOMH) hospital network. NYSOMH changed its intervention strategies over time, providing the opportunity to examine the impact of each strategy. We report on changes in antipsychotic polypharmacy prevalence during the initiative and during long-term follow-up.

Project setting and background

The NYSOMH inpatient network consists of 20 adult psychiatric hospitals with a combined daily census of 4,227 patients as of June 30, 2010. A majority of inpatients (N=3,043, 72%) had a primary diagnosis of a schizophrenia spectrum disorder.

The Psychiatric Services and Clinical Knowledge Enhancement System (PSYCKES) is a Web-based decision support system that gives providers access to state administrative databases from 1989 onward and supports the implementation of clinical practice guidelines in NYSOMH hospitals (4). PSYCKES was developed by an in-house team from NYSOMH in partnership with clinical supervisors, clinicians, and information technology staff. PSYCKES presents patients' medication and treatment histories for quick review, flags practices outside recommended guidelines, and links individual patients' data to guideline-derived measures of adherence to evi-

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dence-based practices. Quality-indicator reports in PSYCKES summarize performance on polypharmacy and other guideline-driven, cost-conscious indicators. These reports provide data on performance at the state, hospital, ward, and prescriber levels. [More information on PSYCKES and examples of reports may be found in an online appendix to this column at ps.psychiatryonline.org.]

Hospital leadership was offered access to PSYCKES on a voluntary basis to support clinical work, clinical supervision, and quality improvement. Leadership at all 20 hospitals expressed interest. Institutional review board approval was obtained for a study to examine the impact of PSYCKES on prescribing using a randomized design. In December 2004, agency leadership made a policy decision to implement PSYCKES statewide in the belief that it was unethical to withhold a clinically useful tool. Two hospitals deferred implementation due to vacancies in their clinical director positions, and PSYCKES was implemented at the remaining 18 hospitals by April 2005. Training consisted of 1.5 hours of on-site instruction at each hospital. Statewide, 237 (82%) attending psychiatrists registered for PSYCKES access, of whom 164 (69%) completed training. Policies implemented by the office of the medical director as outlined under phases 1–3 were introduced to focus quality improvement efforts on antipsychotic polypharmacy.

Phase 1: PSYCKES and prior approval

PSYCKES implementation was completed in April 2005. That same month the incumbent chief medical officer of NYSOMH (LO) released an antipsychotic polypharmacy policy, which required clinical directors to establish procedures to review and approve requests to add a third antipsychotic for any patient in their hospital. Written approval by the chief medical officer was required for any case approved by the hospital clinical director. Recognizing that antipsychotic polypharmacy may be clinically indicated for a small subset of patients, the policy ensured clinically appropriate access by allowing for 60 days of overlap during

cross-tapers, not blocking prescriptions from being filled as had been the case under earlier authorization policies, and establishing systems to allow for expert psychopharmacological consultation. In phase 1, which lasted from April to August 2005, compliance with the policy was not enforced, but prevalence of antipsychotic polypharmacy was monitored.

Phase 2: Patient-specific feedback to hospital leadership

In the initial three months of the initiative, the rate of antipsychotic polypharmacy declined rapidly. [A figure illustrating rates of antipsychotic polypharmacy is available in the online appendix.] Between months 3 and 4, the rate of decline in antipsychotic polypharmacy slowed, prompting the introduction of phase 2. The chief medical officer's office began introducing quarterly patient-specific feedback to hospital leadership. The feedback reinforced data available to hospitals through PSYCKES. An e-mail sent quarterly to the hospital leadership listed the patients who were receiving antipsychotic polypharmacy without prior approval. In addition, reviews of hospital performance data on the prevalence of antipsychotic polypharmacy and on compliance with the prior approval policy were incorporated as standing agenda items in routine management meetings between state and hospital leadership. This stage lasted almost two years, from August 2005 to May 2007.

Phase 3: End of state-level oversight

In phase 3, which began in June 2007, state-level oversight ended, including the antipsychotic polypharmacy policy and performance feedback to leadership. However, hospitals' access to PSYCKES patient-specific and performance data continued. Hospitals were expected to maintain the internal procedures that they had established for monitoring antipsychotic polypharmacy.

Impact on antipsychotic polypharmacy

The prevalence of antipsychotic polypharmacy was calculated monthly for one year preceding phase 1 to 36 months following initiation of phase 3

(April 2004 through May 2010). Antipsychotic polypharmacy with three or more drugs was defined as simultaneous prescription for longer than 60 days, which allowed for cross-tapers when switching medications and one-week gaps to accommodate temporary discontinuations of medication for any reason. A joinpoint analysis was conducted to detect significant changes in the prevalence of polypharmacy over time (5). The joinpoint analysis creates a best fit line for the data and changes the slope of the line if prevalence changes significantly over time (6).

[A figure presenting the impact of the initiative (April 2004 to January 2008) is presented in the online appendix.] In the year prior to phase 1 the prevalence of antipsychotic polypharmacy generally increased. The first significant decrease in prevalence occurred soon after the beginning of phase 1; between March and August 2005, prevalence decreased 43%, from 16.9 to 9.7 per 1,000 inpatients (joinpoint average monthly change = -10.6% , 95% confidence interval [CI] = -13.0 to -8.1). In phase 2, the prevalence decreased by an additional 60%, to fewer than 3.9 inpatients per 1,000 (joinpoint average monthly percent change = -4.3% , CI = -5.9 to -2.6). Despite the end of state oversight in phase 3, prevalence of antipsychotic polypharmacy remained low during the first six months of follow-up (3.1 per 1,000 inpatients).

In long-term follow-up, the prevalence was observed for 36 months after the introduction of phase 3 in June 2007. The prevalence per 1,000 inpatients increased to 5.4 at 12 months (May 2008), 5.6 at 24 months (May 2009), and 9.2 at 36 months (May 2010), but it did not return to the baseline level of 16.9 at the beginning of phase 1.

Discussion and conclusions

In its psychiatric hospital network, the NYSOMH markedly reduced antipsychotic polypharmacy while it established safeguards for patients who may benefit from use of multiple antipsychotics. This approach utilized several principles to support and promote implementation of best practices in prescribing multiple antipsychotics, namely creating a state policy regarding psy-

chotropic prescribing, monitoring compliance with this policy at the patient and hospital levels, and providing ongoing feedback to leadership.

The PSYCKES application successfully supported implementation by providing access to clinical practice guidelines, quality indicator reports, and individual patient treatment histories. Our results increased confidence that polypharmacy can be reduced even among severely ill individuals. These findings are of interest in light of the JCAHO's inclusion of two measures addressing antipsychotic polypharmacy in its core-measure set for hospital-based inpatient psychiatric services (1). The PSYCKES initiative by NYSOMH provides a potential new best practice for implementation of medication-focused quality improvement.

Phase 1 interventions, including voluntary use of PSYCKES and a prior approval policy, yielded a rapid decrease in polypharmacy rates within three months. Interestingly, these interventions had an impact even without enforcement of the prior approval policy.

In phase 2 ongoing feedback to hospital leadership was introduced to decrease performance variation across hospitals and increase the initiative's impact. Feedback is an intervention strategy that had mixed results in a previous study (7). The characteristics of the feedback may be important to its impact. Our experience suggested that feedback with the following characteristics can help promote evidence-based practices: delivery by state medical leadership through individuals with ongoing professional relationships with leadership at each hospital, reinforcement at standing meetings between hospital executive directors and state operations, delivery in an ongoing, quarterly fashion, references to data that are patient-specific and timely (actionable), comparisons with the performance of other hospitals, data available in PSYCKES to allow leaders to monitor their own performance more frequently, and focus on compliance with an existing policy and performance on a guideline-derived quality measure.

In phase 3, state-level feedback stopped and the approval policy was

rescinded after the introduction of new quality improvement priorities. Hospitals were expected to continue to self-monitor for antipsychotic polypharmacy, but state-level oversight ended. PSYCKES remained available to hospitals. During phase 3, rates remained stable and low for the first six months, then increased slowly over the next three years, but never returned to preintervention levels, even after three years of follow-up.

The fact that no incentives were required to further the initiative's goals, even after oversight ended, speaks to the value of PSYCKES in promoting best practices in psychotropic prescribing. Access to PSYCKES and hospital self-monitoring were the two constant interventions across all three phases. Whether these two interventions—hospital self-monitoring and access to PSYCKES—would have adequately reduced rates remains a question for future study.

Nonetheless, the results suggest that giving providers access to administrative data through a Web-based decision support system such as PSYCKES can support improvement in prescribing practices in the context of a quality improvement project. High rates of hospital interest in implementing PSYCKES, and the decision by leadership in the office of the medical director that it was unethical to withhold PSYCKES from any hospital or physician, indicated that PSYCKES was viewed as a valuable clinical and quality management tool. This study suggested that providing access to administrative data, even a stand-alone application such as PSYCKES, may be valuable in a period when many providers have not yet implemented electronic medical records or prescribing systems. In New York State this study's findings justified dedication of resources toward a Medicaid adaptation of PSYCKES to mental health clinics to support quality improvement and clinical decision making.

Our initiative showed that it is possible to successfully reduce prevalence of antipsychotic polypharmacy but did not provide information about how such reductions affect patient outcomes. Knowing this information will be of value to clinicians and ad-

ministrators interested in improving patient care. It would also be useful to know if this intervention would have a similar impact in other settings, among other populations, and for other quality concerns. Comparing this set of interventions with prescriber incentives and other interventions would also be of interest.

Future incorporation of PSYCKES into electronic medical records, electronic prescribing systems, or regional health information networks would allow for comparisons between automated feedback and feedback delivered through personal communications in social networks.

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