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TITLE: MULTI-STEP APPROACH TO EDUCATE HEALTHCARE WORKERS ON ANTIPSYCHOTIC POLYPHARMACY: IMPACT ON PRESCRIBING PRACTICES

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Abstract Type: Innovative Practices

BACKGROUND: Direct patient care by pharmacists has been shown to improve patient outcomes and alter high-risk prescribing patterns. Our organization has deemed antipsychotic polypharmacy (APP) a high-risk practice based on data demonstrating increased morbidity, mortality, and costs associated with APP. Too few psychiatric pharmacists exist to effectively impact all psychiatric inpatients. The goal of this project was to develop educational programming conducted by a pharmacist to impact multiple prescribers.

DESCRIPTION OF SERVICE: Pre-intervention standing APP data was collected for 4 psychiatric units at 2 hospitals. An educational program was designed and implemented. Components of the program are: 1. rates of personal APP compared with peer data; 2. seminar style psychiatrist education on antipsychotic use; 3. nursing education on antipsychotic use; 4. unit based small case discussion; 5. rates of personal APP compared with peer data post intervention. Results of the first 2 steps of this intervention are reported.

IMPACT ON PATIENT CARE: Pre-intervention APP use ranged from 23%-46%. Use of 2, 3, 4, and 5 antipsychotics ranged 15%-21%, 5 -9%, 1%-4%, and 0%-1%, respectively. Due to unit renovations, follow-up data are only available for 3 units. APP decreased on all 3 units. Rate of APP by unit after the first two steps of the educational program were 21%- 35%. Use of 2, 3, 4, and 5 antipsychotics ranged 19-35%, 0%-8%, 0%-2% and 0%-2% respectively. The most significant reduction was in the highest users of APP.

CONCLUSIONS: Use of a program combining disclosure of prescribing practices and seminar style educational programs resulted in decreased APP. The number of patients affected could not be adequately followed by the single psychiatric pharmacist in our system. Units spanned two cities, demonstrating benefit for a larger geographical area than a single pharmacist can adequately cover. It is possible our intervention affected more patients than our results indicate (i.e. patients for whom a non-antipsychotic was prescribed for sleep or agitation). Implementation of the remaining steps is currently underway.

Innovative Practices

Corresponding Author: Jessica L. Gören, PharmD, BCPP

Title: Multi-Step Approach to Educate Healthcare Workers on Antipsychotic Polypharmacy

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Background: Programs such as the Texas Medication Algorithm Project have demonstrated adherence with psychiatric treatment guidelines improves patient outcomes.^{1,2,3} One practice not recommended by most treatment guidelines is use of antipsychotic polypharmacy (APP).^{1,2,3} When it is mentioned, treatment guidelines suggest APP as last line treatment, after optimization of current antipsychotic treatment, clozapine and long-acting preparations.¹⁻⁶ So it is likely high rates of APP and low utilization of clozapine and long-acting preparations can serve as indicators nonadherence with treatment guidelines.

At Cambridge Health Alliance (CHA), baseline data indicating nonadherence with treatment guidelines included APP, sub-therapeutic dosing, and infrequent use of clozapine and long-acting preparations. Reasons for nonadherence with guidelines are numerous and complex. Conflict between experience and the evidence base, distrust of research findings, threat to clinical freedom, lack of time, lack of knowledge, and prescribing comfort have all been cited as reasons for nonadherence with treatment guidelines.^{7,8} However, based on data supporting improved outcomes with use of treatment guidelines^{1,2,3}, CHA chose to implement adherence with treatment guidelines as a 2007-2008 quality improvement project. The goal of this project is to improve adherence with treatment guidelines, as indicated by APP. APP is given high priority based on data demonstrating increased mortality, costs, adverse drug reactions and limited data supporting efficacy.^{9,10} (APP is defined as simultaneous use of two or more standing antipsychotic agents for ≥ 3 days, or at discharge for patients admitted for less than 3 days.)

Site: Cambridge Health Alliance is an innovative, award-winning academic health system that provides high quality care in Cambridge, Somerville, Everett, Revere, and the surrounding Metro-North communities. It includes three hospitals, more than 20 primary care practices, the Cambridge Public Health Department, and the Network Health plan. Approximately, 40% of CHA's services are psychiatric. Adult inpatient psychiatric units have 91 beds located in 3 cities/towns.

In the past 1.5 years CHA's clinical pharmacy department has grown from 1 pharmacist to 7 pharmacists. Currently, several dispensing pharmacists are cross training to perform non-distributive tasks. Within the clinical pharmacy department there is one psychiatric clinical pharmacist specialist (PCPS) to cover all psychiatric inpatient adult units, administrative projects related to psychiatry (formulary review, IRB, medication

reconciliation, etc), psychopharmacology consultations, and the outpatient psychopharmacology service. While, CHA's pharmacy department's goal is to expand the entire department, including PCPSs, CHA cannot sustain this aggressive rate of expansion. In addition, there are not enough PCPSs currently trained to provide adequate services on a national level. Therefore, it becomes imperative to maximize the use of PCPS's time as efficiently as possible through interdisciplinary collaboration and innovative methods.

Innovative Practice: Models typically associated with changes in prescribing behavior are often time-consuming and labor intensive. Academic detailing, face to face visits with clinical pharmacists, and pharmacists rounding have all been shown to influence prescribing behavior and most have been linked to improved patient outcomes and decreased adverse drug reactions.¹¹⁻¹⁴ So, we chose to develop a program to increase the impact one PCPS has on multiple prescribers. This proposal was complicated by the fact that our psychiatric units span 3 cities/towns.

Based on data demonstrating passive attendance at continuing medical education programs does not significantly change prescribing behaviors, we developed a more interactive format targeting multiple disciplines, with several different educational formats. The project was designed to be completed in 6 months. In preparation, pre-intervention standing APP data was collected for 4 psychiatric units at 2 hospitals. Personal data and de-identified peer data were shared with all psychiatrists prior to initiation of educational programming.

An educational program addressing issues associated with APP was developed and delivered to psychiatrists. Examples of topics covered include data concerning APP safety and efficacy, advanced directives, treatment of agitation, and antipsychotic dosing guidelines. Seminars were conducted in a rotating fashion at each of the hospitals. All psychiatrists were required to attend the seminars. Required attendance had an unexpected benefit. Working in different cities/towns psychiatrists from different sites had not previously met. The ability to meet, talk amongst themselves, and identify common problems and solutions made the meetings interactive and enjoyable. Several psychiatrists involved gave unsolicited positive feedback, stating the seminars were educational, interesting, and helpful.

The initial seminar focused on the background of the program. Reasons discussed for program initiation included patient safety, limited efficacy data, upcoming Joint Commission requirements, and promotion of evidence based practice. Supporting information included safety and efficacy data for APP, data supporting evidence based medicine, and internal de-identified APP data. Closing discussion focused on potential barriers, opportunities for improvement, and resources. Follow-up seminars focused on topics identified during the initial seminar. Topics identified were staff resistance, treatment resistance, treatment of agitation and sleep, and side effects of aggressive dosing strategies.

To address concerns of staff resistance a companion nursing course was developed. Since nursing staff often affect psychopharmacologic treatments during inpatient stay it is important that nursing staff understand the APP initiative, new data regarding

antipsychotic use, why prescribing practices are changing, and what role they can play in promoting safe and efficacious use of medications. Due to the large numbers of nurses compared with psychiatrists, these seminars are offered multiple times at each hospital. Continuing education credit is provided for attendance and nursing staff are paid for time spent at the seminar. For nursing staff unable to attend, a home study program was developed and circulated.

Upon completion of the more formal seminars, the goal is to maintain focus on APP, to offer resources for staff when faced with particularly complex patients and allow staff to voice their opinions about the project. As such, the next step of the program focuses on interactive interdisciplinary case presentations during regularly scheduled staff meetings. Staff are presented with an opportunity to address changes they have made, discuss difficulties, and what supports would be useful. A particularly complex case identified by staff is reviewed with an emphasis on evidence based treatments.

The final step is sharing APP post-intervention personal and de-identified peer prescribing data with psychiatrists. This offers objective measurable outcomes for assessment.

To avoid making this a punitive process, use of APP is not tied to performance evaluations for psychiatrists. However, once the psychiatrists and nursing staff are familiar with the initiative and have had time to try alternative prescribing practices, APP may become part of future performance evaluations. Eventually, alerts will be implemented to prompt real time medication review when APP is prescribed. Another planned step will be to use our data for internal as well as external reporting once the Joint Commission APP CORE measure is in place. And finally, if the program is successful this model will be applied to other prescribing initiatives both in and out of the psychiatry department.

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11. Solomon DH, Van Houten L, Glynn RJ, Baden L, Curtis K, Schragger H, Avorn J. Academic detailing to improve use of broad spectrum antibiotics at an academic medical center. *Arch Int Med.* 2001;161:1897-1902.
12. Soumerai SB, Avorn J. Predictors of physician prescribing change in an educational experiment to improve medication use. *Med Care* 1987;25:210-221.
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14. Bond CA, Raehl CL. Clinical pharmacy Services, Pharmacy Staffing, and Adverse Drug Reactions in United Stated hospitals. *Pharmacother* 2006;26:735-747.

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Gören, Jessica L.	POSITION TITLE Assistant Professor, Pharmacy		
eRA COMMONS USER NAME JGören			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Rhode Island	B.S.	1993	Pharmacy
University of Rhode Island	Pharm.D.	1997	Pharmacy

A. Positions and Honors.

Positions and Employment

1993-1995 Director of Pharmacy, Charter Fairmount Hospital, Philadelphia, PA
1997-1998 Psychiatric Pharmacy Practice Resident, Albany College of
Pharmacy, Albany, NY
1998-1999 Fellow, Psychopharmacology, Albany Medical Center, Albany
College of Pharmacy, Albany, NY
1999-2002 Assistant Professor in Pharmacy Practice, Northeastern
University, Boston, MA
1999-2005 Clinical Associate, McLean Hospital, Belmont, MA
2003-2005 Associate Research Scientist, McLean Hospital, Belmont, MA
2005- Assistant Professor Pharmacy Practice, University of Rhode
Island, Kingston, RI
2005- Clinical Psychiatric Pharmacist, Cambridge Health Alliance,
Cambridge, MA
2005- Instructor in Psychiatry, Harvard University, Cambridge, MA

Other Experience and Professional Memberships

1999-2002 Faculty Delegate, American Association of Colleges of Pharmacy
1999- Reviewer, Pharmacotherapy
2000-2001 Steering Committee, Boston Consortium of Teaching Hospitals' Grand
Rounds Programming
2001-2003 Psychiatric Mini Sabbatical Reviewer, American College of Clinical
Pharmacists
2001-2003 Membership Committee, College of Psychiatric and Neurologic
Pharmacists, Chair 2005-
2005- Council Member, Board of Pharmaceutical Specialists
2005- Reviewer, Journal of the American Medical Association
2006 - Member of the Board of Pharmaceutical Specialties Council

Honors

1998 American College of Clinical Pharmacists, Wyeth-Ayerst, Psychopharmacology Fellowship
2005 National Institute of Health, Summer Research Institute in Geriatric Psychiatry

B. Selected peer-reviewed publications (in chronological order).

1. Gören JL, Freidman J. Yawning as an aura for an L-dopa- induced "on" in Parkinson's Disease. *Neurology* 1998;50:823.
2. Gören JL, Levin GM. Quetiapine: a new atypical antipsychotic agent for the treatment of schizophrenia. *Pharmacotherapy* 1998;18(6):1183-1194.
3. Freidman JH, Gören JL. Yawning in Parkinson Disease [letter], reply to letters to the editor. *Neurology* 1999;50(2):1428.
4. Centorrino F, Bahk W-M, Kelleher JP, Eakin M, Gören JL, Baldessarini RJ. Evolving antipsychotic treatment practices for psychiatric inpatients. *Schizophrenia Research* 2001;49 (Suppl):269.
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5. Silveri MM, Parow AM, Villafuerte, Damico KE, Gören J, Stoll AL, Cohen BM, Renshaw PF. Oral treatment with S-adenosylmethionine: Effects on brain bioenergetic status and transverse relaxation time in healthy subjects. *Biol Psychiatry* 2002;51:133S.
6. Lemeiux A, Goldman-Levine JD, Gören JL, Aripiprazole: An antipsychotic with a novel mechanism of action. *J Pharm Technol* 2003;19:365-372.
7. Gören JL, Stoll A, Damico KE, Sarmiento IA, Cohen BM. Lack of toxicity of SAME (S-Adenosyl-L-Methionine) in Humans. *Pharmacotherapy* 2004; 24(11): 1501-1507.
8. Centorrino F, Gören JL, Hennen J, Salvatore P, Kelleher J, Baldessarini RJ. Multiple vs single antipsychotic agents for hospitalized psychiatric patient: A case control study of risks vs benefits. *Am J Psychiatry* 2004;161: 700-706
9. Gören JL. Hyperthyroidism associated with topiramate treatment a case report. *Psychosomatics* 2006;47:529-530.
10. Skeffington PJ, Akus MT, Gören JL. Integrated Health Care System and University-based Clinical Pharmacy Initiative *AJHP in press*

C. Research Support

Completed Research Support

1. Stanley Foundation Grant 2003-2005
Nutritional Correlates of Bipolar and Obsessive Compulsive Disorders
The goal of this project was to identify potential nutritional supplements for the treatment of Bipolar Disorder.
Role: Co-Principle Investigator
2. Stanley Foundation Grant 2000-2004

SAMe and Increases in Methanol and Homocysteine Levels

The goal of this project was to study the oral bioavailability and safety of S-adenosylmethionine in humans

Role: Principle Investigator

3. American College of Clinical Pharmacy 1998-1999

Wyeth-Ayerst Psychopharmacology Fellowship

The goal of this project was to assess admission and discharge rates with atypical antipsychotics

Role: Principle Investigator

Innovative Practices

CPNP 2007

Jessica L. Gören, PharmD, BCPP

My long-term career goal is to develop a program of research focused on medication effectiveness and safety in individuals with serious mental illnesses that includes investigating the outcomes of medication prescribing practices in typical clinical practice settings. My immediate career goal is to understand the prescription of complex, multi-drug regimens ('polypharmacy'), focusing specifically on application of evidence based medicine to antipsychotic use.

The vast majority of work in this field is retrospective in nature and none of the previous trials have focused on assessment of the safety of poly-antipsychotic treatment. At Cambridge Health Alliance (CHA) there are numerous areas for “real time” interventions that translate my research into direct patient care. In addition, CHA is a unique environment in which patients can be followed from inpatient to outpatient treatment settings. The ability to follow community samples inpatient to outpatient for polypharmacy is an untapped area of psychiatric research outside the VA system.

In the past, I have been involved with and overseen studies of antipsychotic polypharmacy. This has been in the form of retrospective reviews, a study design with multiple limitations. However, at CHA I have the opportunity to be the PI on prospective studies. Therefore, it is my goal to use my past work to guide more rigorously designed prospective studies of polypharmacy outcomes. Clinical leadership has been incredibly supportive and allowed me to develop a multidisciplinary team to carry out polypharmacy research. Members of the team are drawn from administration, pharmacy, psychiatry, nursing, risk management and quality improvement. Due to the supportive nature of clinical leadership, several aspects of my research program have been embedded in various departments' goals for 2007-2008.

Areas of future study include correlates of prescription of multiple antipsychotic medications across a range of inpatient and outpatient treatment settings; assessment of polypharmacy's impact on patient quality of life, functional outcomes, and utilization of services; pharmaco-economic outcomes; and impact of implementation of evidence based antipsychotic use.