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Kendra Babcock PharmD
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**NURSE PRACTITIONER AND PHARMACIST COLLABORATION IN RURAL
CONGREGATE HOUSING FACILITY**

**A report submitted to the
College of Pharmacy
University of Minnesota
Postgraduate (PGY1) Pharmacy Residency Program**

**in partial fulfilment
of the requirements for the
Certificate of PGY-1 Pharmacy Practice Residency**

**by
Kendra Babcock, PharmD**

03/14/2019

Todd Lemke, PharmD, CDE

Jennifer Klocker, PharmD

Tim Stratton, PhD, MS, BCPS, FAPhA

Project Advisors

Jean Moon, PharmD, BCACP

Site Liaison

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Abstract

A Certified Nurse Practitioner (CNP) expanded her clinical services to include a project called Senior Transitions (ST). The CNP visited assisted living facilities in the area and conducted rounds on each of the facility's patients participating in the ST program. The CNP had collaborated with pharmacists in her prior practice setting and wanted to continue doing so in her new practice setting. A pharmacy resident was assigned to participate in co-visits with the CNP at a local assisted-living facility and consulted on any medication-related questions regarding long-term care facility patients which were followed by the practitioner. While conducting co-visits and assessing each patient's medication list, the resident identified and tracked drug therapy problems. Data collected from September 26, 2018 to April 15, 2019 was reviewed the number of drug therapy problems resolved for patients seen in the previous 30 days, with the aim to resolve 90% of identified drug therapy problems. With the goal of the study of evaluating the impact of pharmacist intervention on medication lists and resolved drug therapy problems, a total of 36 patients were assessed with 89% of drug therapy problems (N=127) being qualified as resolved by April 15, 2019.

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Thank you,

Kendra Babcock

Introduction

Healthcare teams have demonstrated improved patient care by making the most of the synergies among different health professions.¹ Among patient populations, elderly patients can benefit most from pharmacist intervention, as most often have extensive medication lists, also called polypharmacy. Patients, providers, and payers want better care for patients, especially in the form of de-prescribing and resolved drug therapy problems, given that most geriatric patients have polypharmacy. Polypharmacy is described as four or more prescribed drugs, and compliance has been shown to decrease with polypharmacy regimens.² Studies have shown that pharmacists can improve prescribing, reduce healthcare resource use and medication costs, and contribute to clinical improvements in many chronic medical conditions.³ By exploring a nurse-practitioner and pharmacist collaborative model, this study explored the effect that having a pharmacist on a healthcare team can have on drug therapy problems, polypharmacy regimens, and primary care as a whole. The overall goal of the project is to establish and evaluate the impact of a nurse practitioner-pharmacist collaborative team practice in a senior congregate housing facility, with the quality goal that pharmacist resolved drug therapy problems will increase weekly from 0% to 90% by April 15, 2019.

Literature involving a nurse-practitioner and pharmacist collaborative practice are lacking, but not unheard of.¹⁻⁴ Specifically, however, a nurse-practitioner and

pharmacist collaborative practice in a congregate housing setting has not been previously explored in the available literature. This setting is unique: it is an assisted-living facility, however, it is filled entirely with retired Catholic Sisters. Instances are reported of pharmacists working in long-term care settings,⁵ or with underserved populations in a similar group housing setting,⁶ but no specific references to nurse-practitioner and pharmacist collaboration in a long-term setting such as this congregate group housing were found. Given the anticipated shortage of physicians,¹ pharmacists working with other primary care providers may become a common practice in the future. Reporting how this new collaborating relationship between nurse practitioner and pharmacist works in an innovative setting could further progress healthcare team collaborative practices.

Methods

The practice site consisted of 70 retired nuns, 42 of which were enrolled in the Senior Transitions program. Many patients' at the facility were 80 years of age and older, a demographic that held true for the 36 patients assessed by the pharmacy resident. All patients seen were female, given the nature of the congregate living facility being for retired Catholic nuns. Prior to the initiation of the Senior Transitions program, all the Sisters living at the congregate housing facility went to see their provider in an outpatient, ambulatory setting. This was hard for the older adult Sisters to do, and thus, the Senior Transitions program, with a provider coming to do exams in-house weekly, was developed and implemented in the congregate housing facility. A collaborative practice agreement was signed by the Senior Transitions nurse practitioner in September of 2018 for the pharmacy resident to use and reference to make medication therapy recommendations and changes (Appendix A). The pharmacy resident started co-visits with the provider once weekly, including a comprehensive medication review and thorough discussion of medications in each patient visit. After a few months of co-visits, the pharmacy resident started seeing patients once weekly individually and made any necessary medication adjustments as outlined in the scope of practice by the collaborative practice agreement (Appendix A).

From September 26, 2018 to April 15, 2019, once monthly, the resident assessed how many drug therapy problems had been resolved regarding the patients

seen in the previous 30 days, with the aim to have resolve 90% of identified drug therapy problems for each week the resident was assigned to work with the CNP. Resolved drug therapy problems were classified as 'closed' and unresolved drug therapy problems were classified as 'open' in Epic ®. Inclusion criteria included any patients living at the congregate living facility who were enrolled in the Senior Transitions program, and consented to a pharmacist participating in their visits with the nurse practitioner. Upon completion of a co-visit with the provider, a thorough chart review and a comprehensive medication review, the pharmacy resident would suggest any medication therapy changes, based on diagnosed drug therapy problems, with the provider and patient in the co-visit. A drug therapy problem was classified as resolved once the desired clinical outcome from the drug therapy change was attained. If resolving a drug therapy problems required dose adjustment or titration, the provider would send over a new prescription for the adjusted dose and the pharmacy resident/provider team would follow-up biweekly to assess adjustments until the drug therapy problem was classified as resolved or the patient could not tolerate the recommended change.

Results were pulled through a report from Epic ® I-vents. Due to a lack of direct patient-linked data, this study was found to be exempt by the University of Minnesota IRB for IRB review. A total of 36 patients were assessed, with 89% of drug therapy problems (N=127) being qualified as resolved by April 15, 2019. The major drug therapy problems identified and addressed by the pharmacy resident were unnecessary drug therapy, dose too high, and dose too low (Table 1).

The pharmacist was responsible for assessing resolution of drug therapy problems. The pharmacist was responsible for contacting the Epic ® team to pull the data and compiling it for analysis.

Results

The pharmacy resident started seeing patients with the provider in September of 2018 and stopped data collection at the congregate living facility in April of 2019. Forty patients met the inclusion criteria and the pharmacy resident saw and identified drug therapy problems on 36 of them. A total of 36 different patients were reviewed by the pharmacist over 8 months. 127 drug therapy problems were identified, with 113 being classified as 'closed' by April 15, 2019 and 14 being classified as 'open.' An average of 3.5 identified drug-therapy problems were identified per patient. Overall, 88.976%, or 89%, of pharmacist-identified drug-therapy problems were resolved over the course of the project. Over 8 months, the pharmacist removed an average of 3.3 medications per patient (de-prescribing of inappropriate or ineffective medications). The most commonly identified drug therapy problem was 'Unnecessary Drug Therapy,' with a total of 65 instances being identified throughout the project. Please see Table 1 in the Tables/Figures section for a breakdown of identified drug therapy problems. The least commonly identified drug therapy problem was 'Drug-Drug Interaction,' with only 1 instance being identified throughout the project. The most medications removed on a single patient was 15.

Discussion

Overall, 89% of identified drug-therapy problems were classified as 'closed' by April 15, 2019, just missing the apriori goal of 90% resolved drug therapy problems. Given the prevalence of polypharmacy in the elderly population, and an average of 3.5 drug-therapy problems per patient, pharmacist intervention was helpful in de-prescribing unnecessary medications and assisting in eliminating polypharmacy for 36 older adult patients. The most prevalent drug-therapy problem was 'Unnecessary Drug Therapy.' This was due to the unique age group assessed in the congregate housing environment described in the introduction. Again, most patients assessed for this project were greater than 80 years old, making many preventative medications clinical-benefit-versus-risk conversation very different than most patients. This unique patient population is also perhaps an explanation as to why resolved drug therapy problems was slightly below the goal of 90%. Due to the fragility in this specific age group, many drug therapy interventions took weeks to become fully resolved, as often many medications had to be slowly down-titrated or up-titrated.

Some limitations of this study include the fact that nurse practitioner satisfaction and medication cost savings were not evaluated. Patient satisfaction with pharmacist intervention and co-visits was also not assessed. This could be a separate study to further determine the value of a pharmacist collaborative practice model service such as this. Another limitation of this study was related to sustainability. Billing for pharmacist

services was not attempted throughout this study. Analyzing reimbursement for pharmacist services would be important as this could help offset pharmacist salary cost. However, due to pharmacists not being recognized providers under Medicare, sustainability of this service may be a barrier for future teams under a similar practice model.

Conclusion

This study, as is, showed that pharmacist intervention for congregate living facility patients, especially older-adult patients, can improve patient's medication lists, by resolving drug therapy problems. The hope is that this will result in better patient outcomes and improved patient care, two outcomes that were not assessed in this study.

Appendix A

A. Collaborative Practice Agreement

CentraCare Health Paynesville Clinical Pharmacist

Scope of Practice Collaborative Practice Agreement

Upon referral by the below signed provider for patients seen in outpatient, long term care or home care settings, the pharmacist may perform the following duties under protocol.

Patient education

Upon referral by provider, the pharmacist can schedule any necessary education, provide education and schedule follow up appointment for education as necessary.

Medication management

The following scope of practice is applicable to outpatient, home care and long-term care settings.

Upon patient self-referral for medication therapy management, the pharmacist can review the patient medication regimen, medical records and laboratory results, make medication modifications to a patient's medication therapy and make modifications to the patient for non-prescription medication treatments.

Upon referral by a primary care provider, the pharmacist can schedule appointments, see patients for medication management, arrange for necessary laboratory work, start or stop or adjust prescription and non-prescription medications related to the referral, and refer patients to other health care providers as needed.

The following disease specific practices can be ordered, initiated or preformed “per protocol” after referral by a primary care or specialty care provider.

Diabetes and associated diagnoses

- Laboratory tests: Hemoglobin A1c, Lipid panels including individual values, Chem 8 including individual values, TSH, Microalbumin/Cr ratio, blood glucose, C peptide and associated Type 1 diabetes diagnostic tests, ketone, beta-hydroxybutyrate, phosphorus
- Medications: FDA approved therapies for diabetes and associated diagnoses which include hypertension and hyperlipidemia including oral, injectable and IV therapies up to a 6-month supply between provider visits utilizing guidelines from the American Diabetes Association and the American Association of Clinical Endocrinologists
 - Medications for treatment of hypoglycemia, oral, injectable and IV
 - Self-diagnostic testing equipment including blood glucose meters and supplies
 - Insulin pumps, sensors and pump supplies
 - Referral to podiatry, dietitian and social worker
- Anticoagulation associated diagnoses
 - Laboratory tests: protime/INR including fingerstick tests and home INR monitors, hemoglobin, platelets, anti-factor Xa, and other laboratory tests used in the management of anticoagulation medications.

- Medications: FDA approved therapies for anticoagulation or reversal of anticoagulation including oral, injectable and IV therapies up to a 6-month supply between provider visits utilizing current guidelines developed by the American Heart Association and the American College of Chest Physicians.
- Smoking cessation
 - Medications: FDA approved therapies for smoking cessation including oral, transdermal and inhaled therapies
- Hypertension and hyperlipidemia
 - Laboratory tests: Lipid panels including individual values, Chem 8 including individual values
 - Medications: FDA approved therapies for hypertension and hyperlipidemia including oral and transdermal therapies up to a 6 month supply between provider visits utilizing guidelines from the National Cholesterol Education Program and the Joint National Committee on the prevention, detection, evaluation and treatment of high blood pressure
 - Medication management services: upon referral for general medications review
 - Laboratory tests related to monitoring of patient's medications and conditions.
 - Refills of medications for up to 6 months until next provider visit.
 - Modification to medication regimens to optimize the patient's therapy.

- Physical examination components
- Performing physical examinations of relevant organ systems for the purpose of monitoring drug therapy (examples blood pressure, foot exams, edema assessments)
- Vaccinations
 - During the course of provision of medication management services, the pharmacist may assess and order vaccinations for patients over the age of six for influenza and patients over the age of 13 for pneumococcal, tetanus, hepatitis and zoster vaccines per current CDC immunization guidelines.
- Pharmacy Consultations
 - Upon receiving an order for a pharmacy consult that pharmacist may:
 - Order laboratory tests to assess the reason for consultation
 - Assist in medication management per the consultation which may include initiating, modifying or discontinuing medications, referral for outpatient follow-up after hospital discharge.

Provider signature

Date

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Tables/Figures

Figure 1. Advertising Materials



Do you feel you are on too many medications?

Come meet with our pharmacist!

Our Pharmacist assesses each medication for:

- Indication
- Effectiveness
- Safety
- Patient convenience

Our goal is to have you on the least amount of medications that are right for YOU!

NEW

CONTACT

P 320.255.7891
E kendra.babcock@centracare.com
W www.centracare.com



Kendra Babcock
Pharm.D.

Table 1. Drug Therapy Problems Identified

Drug Therapy Problem Identifier	# of Instances Event Occurred
Unnecessary Drug Therapy	65
Dosage Too High	28
Dosage Too Low	14
Adverse Drug Reaction	9
Needs Additional Therapy	9
Therapeutic Duplication	3
Ineffective Drug	2
Adherence	2
Drug-Drug Interaction	1

Footnote: A total of 36 patient medication lists at a congregate living facility were assessed from September 2018 - April 2019. A total of 127 drug therapy problems were identified.