

Reducing COPD Readmission Rates: Using a COPD Care Service During Care Transitions

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A chronic obstructive pulmonary disease care service improves timely access to follow-up care and patient education at the time of transition from hospital to home.

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Chronic obstructive pulmonary disease (COPD) is the third leading cause of death worldwide and has an associated treatment cost of \$9,800 per patient per year in the US.¹⁻³ Within 5 years of hospital discharge for a COPD exacerbation, the rehospitalization risk is 44%, and the mortality rate is 55%.⁴ COPD affects more than 11 million Americans, and the disease prevalence among US veterans is 3-fold higher.^{5,6}

Patients hospitalized for COPD have a 30-day readmission rate of 22.6%.⁷ Given the high patient burden, COPD was added to the Medicare Hospital Readmission Reductions Program in 2015, resulting in financial penalties for COPD readmissions within 30 days of hospital discharge.⁸ Ensuring timely access to follow-up care has been shown to significantly reduce risk for hospital readmissions.⁹ However, in a national review of Medicare claims, only 50% of patients readmitted to the hospital had a primary care provider (PCP) follow-up visit within 30 days of their hospital discharge.¹⁰ Despite the need to provide prompt patient follow-up during the transition from hospital to home, gaps within the health care system create barriers to providing timely postdischarge care.¹⁰⁻¹² These gaps include breakdowns in practitioner and patient communication, lengthy time to follow-up, and incomplete medication reconciliation.¹³ To address this unmet need, clinics and hospitals require solutions that can be

implemented quickly, using the resources of their current clinical models.

Pharmacists and registered nurses (RNs) within the US federal health care system are well positioned for involvement in the postdischarge care of high-risk patients with COPD. Ambulatory care practitioners within the US Department of Veterans Affairs (VA) health care system are integrated into patient aligned care teams (PACT). Each team consists of a PCP, pharmacist, RN, social worker, dietitian, licensed practical nurse, and medical scheduling support assistant.¹⁴ Each PACT team works together to provide patient education, chronic disease management, and medication optimization, and each team member contributes their unique training and expertise.

Interprofessional care is considered an integral method to improve health outcomes through effective teamwork and communication.¹⁵ Although interprofessional interventions are cited extensively in the literature highlighting medicine and nursing, a gap exists in the exploration of pharmacist contributions within interprofessional teams.¹⁶ The incorporation of clinical pharmacists in the literature is especially limited when considering transitions of care and the patient medical home.¹⁷ Given the critical and collaborative role pharmacists play within the PACT medical home, the COPD CARE (Chronic Obstructive Pulmonary Disease Coordinated Access to Reduce Exacerbations) service

provides an opportunity to leverage pharmacists as prescribers with a scope of practice who coordinate transitions of care for patients with COPD.¹⁸ The service was designed to be collaborative within the PACT model and with the intent of reducing 30-day readmissions to the hospital or emergency department (ED) due to a COPD exacerbation.

This evaluation involved the identifying patients recently hospitalized for COPD; clinic follow-up, coordinated by a clinical pharmacist and nurse, within 30 days of hospital or ED discharge; the use of a COPD action plan; and timely triage of patients at high risk for COPD reexacerbation or with comorbid symptoms to PCPs. The COPD CARE service, leveraged the patient-centered medical home (PCMH) model for transitions of care after COPD exacerbations. The PCMH is a primary care model focused on the following functions: (1) comprehensive care; (2) patient-centered care; (3) coordinated care; (4) accessible service; and (5) quality and safety.¹⁹ The COPD CARE service uniquely positions clinical pharmacists and nurses to collaborate with PCPs within the medical home model to serve patients with COPD postdischarge. This interprofessional collaboration is intended to provide timely and high-quality postdischarge care, including the triage of high-risk patients to primary care, referral services, and specialty care providers (eAppendix 1, available at mdedge.com/fedprac).

METHODS

The COPD CARE service was implemented on October 1, 2015, and evaluated through March 1, 2016 (Figure 1). All veterans receiving primary care through the pilot clinic site with a hospital admission or ED visit for COPD exacerbation were offered this intervention. Patients were identified by discharge visit ICD-10 codes specific for COPD. The clinic nurse care manager spoke with patients on the phone and offered the COPD CARE service.

Patient Eligibility and Recruitment

Patients were excluded from the service if COPD or COPD-related diagnoses were not listed in their electronic health record (EHR) problem list. Patients who had previously

received components of the intervention through consultation with specialty services were excluded. If a patient declined the service, they received the standard of care. This project was undertaken for programmatic evaluation and qualified for quality improvement (QI) exemption; as such an internal review board approval was not required.

Intervention

Participants enrolled in the COPD CARE service were scheduled for an interprofessional postdischarge follow-up visit with a pharmacist and nurse at the pilot outpatient clinic site, and this visit was termed the *COPD CARE health visit*. Participants ideally were seen within 30 days of discharge. The goal was to improve access to care while preventing a 30-day readmission. Within this 30-day window, the target follow-up period was 2 to 3 weeks postdischarge for the face-to-face visit. Patients who required postdischarge care for additional medical conditions received a clinic appointment with their PCP on the same day as their COPD CARE health visit. The COPD CARE health visit focused on 3 objectives: (1) COPD disease management and referrals; (2) COPD plan development; and (3) inhaler technique review and teaching.^{20,21}

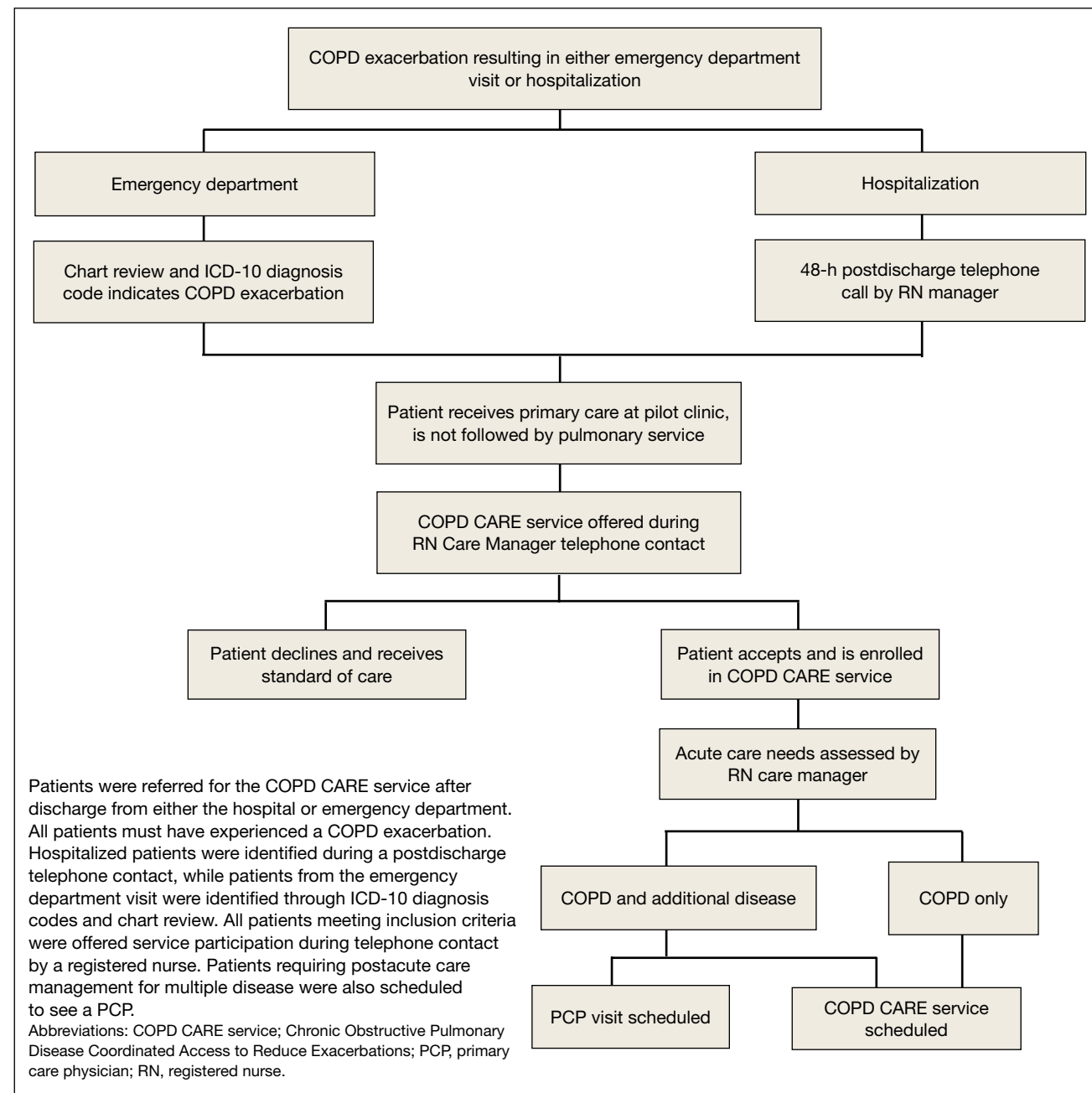
COPD Monitoring

During the 45-minute COPD CARE health visit, the pharmacist provided extensive disease management based on the GOLD guideline recommendation.²² In addition, the pharmacist administered the COPD Assessment Test (CAT) and reviewed patient COPD exacerbation history to guide prescribing.²² The patient and pharmacist also reviewed previous spirometry results if obtained within the past 2 years. COPD triggers and symptoms were assessed along with opportunities for therapeutic and lifestyle modifications.

Plan Development

Patients in the COPD CARE service also were given a COPD plan to improve health outcomes. (Figure 2). The plan included patient instructions to initiate steroid and antibiotic therapy if the patient experienced symptoms of increased cough, mucus

FIGURE 1 COPD CARE Service Referral Process



production, and purulence, thereby reaching the high-yellow zone. The pharmacist prescribed the antibiotic and steroid therapy for the COPD plan within the PACT model and consulted the PCP to ensure effective, team-based decision making. The RN educated the patient on the plan with specific emphasis on how to use the plan to

self-manage COPD symptoms. Patients were instructed to contact the clinic before starting plan medications so that a thorough assessment of symptoms could be performed. Patients who were noted to have decompensated COPD or with worsening symptoms were triaged to urgent medical care or to urgent appointments with the PCP.

Patient Referrals

Patient referrals also were a critical component of the COPD CARE service. Pharmacists placed referrals for tobacco treatment services, pulmonary rehabilitation, a COPD group education class, and referral to specialty care if needed.

Inhaler Technique Review

Either the pharmacist or RN review the inhaler technique, and corrections and teach-back methods used to ensure patient understanding.²³ Patients were encouraged to bring home inhalers into clinic for technique assessment. Demonstration inhalers also were available and used by pharmacists and nurses for inhaler teaching as needed. The pharmacist indicated through chart documentation whether the patient’s inhaler technique was correct or whether modifications were made to improve medication delivery. Medication reconciliation also was performed for inhaled devices to insure patients were using medications as prescribed.

OUTCOMES

The primary outcome of this evaluation was an assessment of interventions made by the interprofessional care team during the COPD CARE health visit. Secondary outcomes included assessment of 30-day readmission rates as well as patient access to the primary care team using this interprofessional care model.

Data were collected after study completion through review of the EHR at baseline and at the end of the evaluation period. Baseline demographic information was collected through a retrospective chart review. Readmission rates were calculated as a composite of ED visits and rehospitalization within 30 days of discharge due to a COPD exacerbation.

Patients’ spirometry results were used in composite with clinical symptoms and risk of exacerbations to calculate GOLD staging.²⁴

RESULTS

A total of 19 patients admitted to the hospital or ED received follow-up through the COPD CARE service. Patients included

in this analysis were primarily older adult white males.

Referrals were placed for 53% of patients in the COPD CARE service, with 21% of patients accepting referral to tobacco treatment clinic, and 32% of patients accepting referral to pulmonary rehabilitation. COPD plans were issued to all of patients in this service. Pharmacists modified therapy 58% of the time, with a review of medications prescribed by the clinical pharmacist (eAppendixes 1 and 2, available at mdedge.com/fedprac).

Patients had a 0% composite readmission rate to the ED or hospital for a COPD exacerbation within 30-days of discharge. Access to care, defined as a visit with the primary care PACT team within 30 days of discharge, was achieved in 14 of the 19 patients (73.7%). Additionally, 12 of 19 patients (63.2%) in the COPD CARE service no longer needed to see their PCP following discharge, saving their provider a visit.

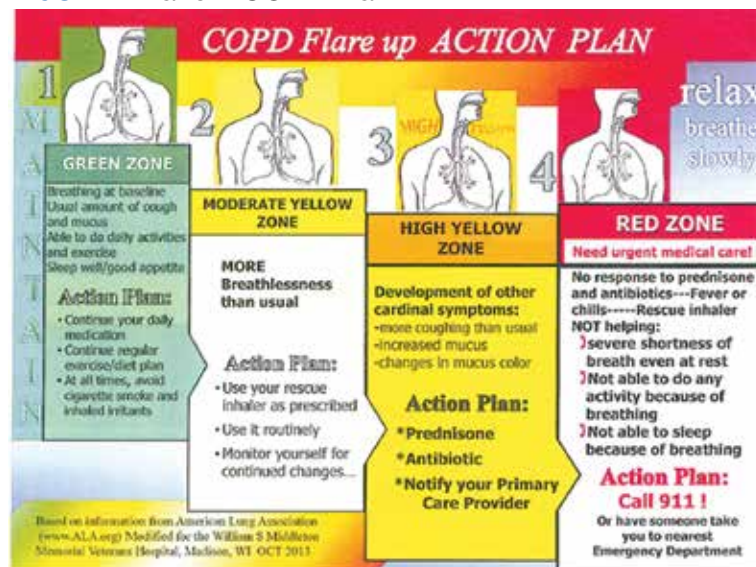
The pharmacist corrected patient inhaler technique in 52.6% of the patients participating in the service.

DISCUSSION

The intent of this QI initiative was to assess a novel clinic intervention for a high-risk patient population during COPD care transitions. The strengths of this intervention involved a rapid cycle implementation using the existing medical home model and its multiprong approach to coordinating care. This approach involved coordinating self-direction COPD plans, timely hospital follow-up, and the innovative use of the interprofessional primary care team.

The COPD CARE service improved patient access to follow-up with no COPD readmissions in the intervention group. The COPD CARE service also validated the use of a coordinated medical home consisting of clinical pharmacists and nurses who provided the initial COPD disease monitoring and plan development. This intervention also resulted in patients receiving greater access to their PACT teams within 30 days of discharge and a higher rate of referrals to tobacco cessation clinics within the COPD CARE group. In addition, use of tools that enabled patients to self-manage their care, such as the COPD plan, was greater in the COPD CARE group.

FIGURE 2 Patient COPD Plan



Chronic obstructive pulmonary disease (COPD) plan includes 4 zones: (1) green; (2) moderate yellow; (3) high yellow; and (4) red, including detailed patient instructions for each zone. The clinical pharmacist selected the antibiotic and steroid with input from the primary care provider during team-based discussions. The registered nurse provided thorough patient education during the COPD Coordinated Access to Reduce Exacerbations service visit.

The interventions made in-clinic likely contributed to service results (eAppendix 3, available at mdedge.com/fedprac). Key interventions included the correction of inhaler technique and prescribing rescue and/or maintenance inhaler therapy as recommended by the GOLD guidelines.

In addition, the COPD CARE service provided necessary referrals to pulmonary rehabilitation, nutrition, and tobacco treatment clinics at a higher rate than those patients in the standard of care group. The high percentage of referrals placed to tobacco treatment clinic and pulmonary rehabilitation contributes to improvements in COPD disease control long-term.²⁵ In addition, the high percentage of patients who received care within 30 days of discharge provided additional opportunities to improve disease control and triage high-risk patients (eAppendix 4, available at mdedge.com/fedprac).

The COPD CARE service may best be described as a model for application of the interprofessional team in clinical practice, with the clinical pharmacist uniquely positioned for chronic disease management in the post-acute care setting.²⁶ Previously, literature has

documented pharmacists as integral members of the team during patient care transitions. Pharmacist completion of medication reconciliation compared with usual care has shown a 28% relative risk (RR) reduction in ED visits and a 67% RR reduction in adverse drug event-related hospital revisits.²⁷ Findings of the COPD CARE service are consistent with the literature and advance the role of pharmacists within the medical home model as prescribers for disease management.²⁷

The interprofessional, team-based design of the COPD CARE service also is supported by recent recommendations from the COPD Foundation, as detailed in the 2nd National COPD Readmission Summit.²⁸ Use of a proactive, team-based care model is emphasized as a central element to coordinating care transitions, with an expectation of 360 degree accountability by all team members for the patients care both during and after hospitalization. The clearly defined roles of each team member within the COPD CARE service, coupled with the expectation that each team member practices with autonomy and accountability, exemplifies the COPD Foundation vision for enhancing COPD care. In addition, the COPD CARE service uses many of the best practices detailed by the COPD Foundation, including the use of spirometry, referrals to pulmonary rehabilitation, and use of motivational interviewing for tobacco treatment clinic referral.

Limitations

This QI initiative has several limitations. By virtue of the study being designed as a practice improvement intervention with rapid implementation, the existing clinic referral structures were used to offer the service to eligible patients. This standard of care included routine telephone contact by a nurse case manager following hospital discharge. Although all patients in the COPD CARE service received the intervention, 5 patients were not seen within the 30-day window, resulting in an implementation rate of 73%. Of the 5 patients that were not seen, 4 were discharged from the ED. Timely follow-up in primary care clinic from the ED required the use of a time-intensive chart review for referral and subsequent delay in intervention delivery.

A streamlined clinic referral process from the ED likely would further improve patient scheduling and result in a greater number of patients who would receive the intervention within 30 days of discharge. Despite this limitation, the COPD CARE service was able to see a large percentage of patients within the 30-day time frame postdischarge.

Future Directions

Although a major objective of this service was to reduce readmissions 30 days post-discharge, it is possible interventions made in clinic may have long-term beneficial effects.^{25,29} Future research should evaluate the impact of this interprofessional service on long-term disease outcomes, thereby determining whether the promising readmission results are sustained beyond 30 days post-discharge.³⁰ In addition, incorporation of respiratory therapy and inpatient pharmacists during hospital discharge could provide a more effective and sustainable transition from hospital to home before the COPD CARE clinic visit.

Future implementations and evaluations of this COPD CARE service will in turn benefit from a key component of our intervention, which includes the collection of timely CAT scores, spirometry data, and adherence rates for COPD patients.³¹ Furthermore, the intervention was successfully delivered to a population recently hospitalized or seen in the ED, and therefore, at high risk for future COPD exacerbations. This initiative provides positive proof of a concept QI project using the existing PACT team model to reduce 30-day readmission rates in patients with COPD at high risk for exacerbation. Future efforts will focus on delivering this intervention to patients with mild, moderate, and severe COPD within a wide range of primary clinics.

CONCLUSION

The COPD CARE service involved the coordinated postdischarge care facilitated by an interprofessional team of clinical pharmacists, nurses and PCPs. The COPD CARE service leveraged an interprofessional team, centered on the PACT medical home, to make clinic interventions resulting in a 0% readmission rate and 63.2% increase in PCP access. The COPD CARE service further demonstrated

the impact of coordinated efforts by interprofessional teams to optimize care for COPD management.

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