Intensive Intervention to Improve Outcomes for Patients With COPD
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Chronic obstructive pulmonary disease (COPD) is one of the most common chronic conditions contributing to morbidity and mortality. In 2016, it was the third leading cause of years of life lost and disability-adjusted life-years in the United States, with an estimated 164,000 deaths.1 Even with aggressive inpatient management, patients who are hospitalized for COPD often experience a recurrent cycle of readmissions, resulting in reductions in overall health and quality of life (QOL).2 To help interrupt this cycle, the Centers for Medicare & Medicaid Services incorporated COPD into the Hospital Readmission Reduction Program, which financially penalizes hospitals with high risk-adjusted readmissions.3 The ensuing interest in COPD readmissions has generated numerous clinical trials that have examined different readmission reduction strategies, although this research has often produced conflicting results, and many studies have failed to demonstrate benefit of transitional care or chronic disease self-management programs.4 Clinicians and health systems are left with limited guidance for how to manage this common disease.

In this issue of JAMA, Aboumatar and colleagues5 report findings from a single-site randomized clinical trial of a tailored 3-month intervention that integrated transitional care support and chronic disease self-management. Compared with patients who received usual care (n = 120), patients who received the intervention (n = 120) had a robust reduction in subsequent COPD-related acute care events (hospitalization and emergency department visits at 6 months: mean of 1.4 events vs 0.72 events per patient in the usual care and intervention groups, respectively) and mitigation of declining health-related QOL (worsening of 5.44 points in the usual care group vs improvement of 1.53 points in the intervention group). One explanation for the improvement in QOL outcomes was that these were mediated through prevention of acute care events. The secondary outcome of all-cause acute care events was also significantly lower among patients in the intervention group compared with patients in the control group at longer follow-up periods (mean of 2.43 events vs 1.94 events per patient), although the differences in 30-day all-cause readmission (a common focus for hospital readmission reduction efforts) were not statistically significant.

Given these encouraging results, clinical and administrative leaders may wonder whether the intervention should be adopted in their hospitals. Several relevant questions may inform this decision, including: “Why was this intervention so effective, when other COPD trials have inconsistently shown benefit, and some have even increased the risk of harm?” “How similar are the patient population and clinical setting of this study to local contexts?” “Do the costs associated with the intervention provide sufficient value in terms of future health care resource utilization and quality of life?”

Unique characteristics of the study by Aboumatar et al6 may have contributed to the success of the intervention. The study combined COPD transitional care support and long-term self-management. Hospitalizations represent a vulnerable event for patients and caregivers, who may be more receptive to educational and behavioral interventions. In this sense, transitional care support may be an important factor that engages patients as they develop lifestyle changes that reinforce appropriate disease management. For instance, study nurses with special training in supporting patients delivered the intervention, which emphasized essential elements of COPD care, such as inhaler education, smoking cessation, breathing techniques, and developing an action plan to address signs and symptoms of exacerbations. However, the self-management intervention did not include provision of antibiotics or steroids for self-medication of exacerbations, a practice that in one prior study increased the risk for mortality.6 Rather, patients were instructed to contact clinicians when they developed respiratory symptoms.

The authors attribute the success of the intervention to intensive features that differentiate this study from other studies, including engaging patients during hospitalization, providing continuity with the nurse across the continuum of care, and offering home or telephone outreach. These characteristics may have helped the intervention succeed, but the result can be time and resource intensive. Patients in the intervention group had a mean of 6 sessions with a study nurse that lasted more than 20 minutes each. No cost-effectiveness analysis accompanied this study, although a less-intensive COPD intervention was estimated to cost $250,000 per hospital to pay for nurse staffing, physician support, and patient outreach materials.7 Existing financial incentives from the Hospital Readmission Reduction Program are focused on addressing all-cause 30-day readmissions, an outcome that was not significantly affected by the study intervention.3 A shift from fee-for-service to value-based care payment models, such as those integrated into accountable care organizations and risk-based commercial contracts, may encourage some health systems to adopt costly interventions that prevent health care utilization, although administrators will need to consider the specific cost-benefit trade-offs for their system.
This article has been retracted

Part of the success of the intervention in this study also may relate to the creation of a team, partnering patients, caregivers, and clinicians, which was a central theme in the study design. In an earlier report, the authors described in detail the collaborative process of developing the intervention with input from diverse groups, including patients and caregivers. During the intervention, the study nurses were also able to individualize the intervention to meet specific patient needs. Strong evidence supports collaborating with patients and clinicians to develop and implement more effective interventions. Studies of surgical safety checklists demonstrate less effectiveness at sites that were not involved in developing checklist items, implying that working with participants to develop an intervention is a part of its success. Yet, the process of developing tailored interventions can make their dissemination more difficult.

The Consolidated Framework for Implementation Research suggests that successful implementation of clinical interventions depends on multiple factors, including specific characteristics of the intervention, the inner setting (clinical context), the outer setting (external and environmental influences), the individuals involved, and the implementation process. In highly tailored interventions, these factors may differ substantially from one site to another. For example, the personality and perspectives of participating individuals could influence the implementation of an intervention in a way that is impossible to encapsulate and deliver. In this study, a particularly motivating nurse may have encouraged patients to adopt more principles of appropriate disease management and address more challenging lifestyle changes. Multisite hybrid effectiveness-implementation studies are needed to address the complex implementation characteristics that are inherent to COPD management interventions.

The effect of the intervention in the study by Aboumatar et al could be specific to the health system and patient population studied. As the authors noted, the high proportion of low-income and less-educated patients in this study may derive greater benefit from intensive education and patient support than other populations. These patients also may have a greater opportunity to improve clinical care. Based on the patient characteristics listed in the study, there is a concern that some patients may not have had appropriate COPD management at baseline, with a higher proportion of patients receiving treatment with inhaled corticosteroids than long-acting bronchodilators (a practice that is explicitly discouraged for patients with COPD). This clinical practice may also be a marker of other opportunities to improve transitional care and chronic disease management. It is unclear whether the same benefit would apply to a system in which patients had stronger existing COPD management efforts.

Prediction models could help identify patients at risk for COPD readmission. Previous research has focused on describing risk factors for readmission but has not yet developed working tools that accurately identify high-risk patients during their hospitalization. Hospitals are left broadly applying one-size-fits-all interventions that are administered indiscriminately to all hospitalized patients with COPD (as was done in this study). Resulting interventions are often ineffective and costly. Future research should help hospitals direct intensive COPD management to patients who are expected to derive the greatest benefit from such programs.

The narrow focus of the intervention on COPD-specific management may also miss the opportunity for more comprehensive patient-centered care. Inclusion criteria for the study focused on COPD diagnostic codes and in-hospital inhaler therapies, which raises the possibility for diagnostic uncertainty. Misdiagnosis of COPD is common, and inhaler therapy during hospitalization (eg, nebulizers) is often overprescribed. Patients who were included in the study without confirmed COPD may not have received important posthospital care for other conditions. Even among patients with confirmed COPD, multimorbidity is common, and most rehospitalizations are due to conditions other than COPD. While the COPD-specific focus of the study intervention did reduce all-cause readmission, future interventions should consider frequent comorbidities that could benefit from more comprehensive care.

In summary, the study by Aboumatar and colleagues represents an important contribution, demonstrating that the combination of transitional care support and long-term self-management can improve diverse COPD outcomes. The approach of engaging patients and caregivers in the development and implementation of the intervention was well thought out, although there are some concerns about how readily this intervention and these outcomes might be replicated and the feasibility of disseminating such an intensive and tailored intervention. Given these factors, and the question of whether the findings from this single-site trial are generalizable to other patient populations and health care settings, additional research is needed before adopting these findings into clinical practice.

ARTICLE INFORMATION

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