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Clinical Experience

Chronic Obstructive Pulmonary Disease in Post-acute/Long-term Care Settings: Seizing Opportunities to Individualize Treatment and Device Selection

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A B S T R A C T

Introduction: The burden of chronic obstructive pulmonary disease (COPD) in post-acute/long-term care (PA/LTC) settings is high, and many patients do not receive guideline-recommended care.
Methods: An interprofessional expert panel of PA/LTC professionals convened to discuss the unmet medical needs in patients with COPD in PA/LTC settings, and to make recommendations for the assessment of COPD patients to individualize the selection of maintenance treatment.
Results: Unmet needs observed in patients with COPD are described in addition to new tools for assessing individual patient abilities and appropriate device selection for maintenance treatment.
Conclusion: COPD management in PA/LTC settings needs to be reevaluated and updated to help reduce exacerbations, hospitalizations, and readmissions.

Chronic obstructive pulmonary disease (COPD)-related exacerbations, hospitalizations, and mortality are a troubling health care burden in the United States.[1,2] COPD is often underdiagnosed and undertreated,[3–6] and medication adherence is poor.[7] Physical and cognitive functions required to effectively self-administer medications decline with age,[8–11] and this is particularly evident in COPD patients in post-acute/long-term care (PA/LTC) settings, who have a high prevalence of dementia. Importantly, the assessment of physical and cognitive functioning to individualize treatment of COPD is not routinely performed in practice.[12]

Two studies highlight the burden of COPD in LTC settings.[13,14] The first was a retrospective analysis of a large data source of 126,121 residents in skilled nursing facilities (data from October 2009 through September 2010). This first study found that nearly 1 in 5 of the more than 27,000 patients with a diagnosis of COPD received no respiratory medications.[13] The second analyzed 8094 residents in assisted living and other regulated adult care facilities from the 2010 National Survey of Residential Care Facilities. The second study found that COPD was associated with an increase in emergency department visits, hospital stays, and comorbidities.[14]

This article summarizes an expert consensus on current unmet medical needs in patients with COPD in PA/LTC settings, particularly the needs for individualized treatment and the reduction of hospital readmissions. The authors agreed that a paradigm shift is necessary to prevent negative outcomes in PA/LTC settings. Recommendations are made to align current practice with emerging value-based, person-centered, accountable care models.

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Methods

An interdisciplinary roundtable meeting was convened with a panel of expert PA/LTC professionals to discuss the unmet medical needs in patients with COPD and recommendations for the assessment of COPD patients to individualize the selection of maintenance treatment. Select literature was retrieved by keyword search in PubMed and summarized to support unmet medical needs identified by the panel. Clinical experience and available COPD clinical practice guidelines were used to support the authors' recommendations.

Results

Unmet Medical Needs for COPD Patients in PA/LTC Settings

Unmet needs identified by the authors are summarized in Appendix 1. Two major unmet needs were given focus: (1) the underuse of long-acting bronchodilator maintenance therapy, including individualized device selection, and (2) to decrease hospitalizations and readmissions from exacerbations of COPD. To address these needs, the authors asked the following questions: What evidence can we use to support changes in care that may address these needs? When in a COPD patient's journey should changes in care be made? How can we implement changes in practice to address these needs?

Long-Acting Bronchodilator Maintenance Therapy for COPD

The first issue is the underutilization of long-acting bronchodilator maintenance therapy. A 2012 study found that more than 69% of high-complexity COPD patients (those with more severe disease and comorbid conditions) in a Medicare population failed to receive maintenance medication despite Global Initiative for Chronic Obstructive Lung Disease (GOLD) recommendations.[5,15] In real-world practice, many health care providers do not use guidelines to inform decision making. In addition to physician-related factors, other concerns may play into the failure of patients to receive these medications for maintenance therapy, including psychosocial and socioeconomic factors.

Long-acting bronchodilators are strongly recommended as daily maintenance therapy for COPD symptoms; however, choosing a specific therapy and delivery device can be challenging.[16–18] Short-acting bronchodilators are generally effective for 4 to 6 hours and are often used on an as-needed basis to improve breathing quality following an escalation of symptoms or for an exacerbation. They are not recommended as daily around-the-clock maintenance therapy.[17] Currently, there are several long-acting bronchodilators approved for use in the United States as monotherapy or in combination with other agents. These include the long-acting β_2-adrenergic receptor agonists (LABAs) formoterol [dry powder inhaler (DPI) and by nebulizer], salmeterol (DPI), arformoterol (by nebulizer), indacaterol (DPI), and olodaterol (soft mist inhaler). LABAs are effective at reducing exacerbations, improving exercise performance, and enhancing the benefits obtained from a structured exercise rehabilitation program.[19–21] LABAs also may improve health-related quality of life in patients with COPD.[22] There are also the long-acting muscarinic (anticholinergic) antagonists (LAMAs) tiotropium bromide (DPI and soft mist inhaler), aclidinium bromide (DPI), and glycopyrronium bromide (DPI). Clinical studies have shown these inhaled therapies to be both effective and well-tolerated when used alone. However, the LABA/LAMA combinations (glycopyrronium/indacaterol or aclidinium/formoterol) have been shown to provide an even greater bronchodilatory effect, most likely because of the additive impact of their actions on two different pathways, compared with either agent alone or the combination of a LABA with an inhaled corticosteroid (eg, salmeterol/fluticasone).[23,24] LABA/LAMA combinations have similar efficacy and safety by indirect comparison. Direct head-to-head comparison data are not available to definitively show which may be the most effective for patients with COPD.[25]

Hospitalizations From Exacerbations of COPD

The second issue is the need to reduce hospitalizations from exacerbations of COPD. Although there are limited prospective data on this issue, some evidence has shown that long-acting bronchodilator therapy alone or in combination with an inhaled corticosteroid steroid can prevent these events.

In a 2013 post hoc study of pooled data from 6 randomized, double-blind, placebo-controlled trials (6 to $\geq$12 months' duration) of handheld tiotropium in patients with COPD, time to first exacerbation or hospitalization and exacerbation rates were analyzed at 6 months and 1 year.[26] In total, 4355 patients were analyzed at 6 months and 2455 at 1 year (tiotropium 1317, placebo 1138). Tiotropium delayed time to first hospitalized exacerbation at 6 months and 1 year ($P < .001$ vs placebo).

In a 2011 retrospective observational cohort study of commercially insured patients receiving maintenance treatment with handheld fluticasone propionate/salmeterol or tiotropium bromide, the risk of COPD exacerbation (moderate, severe, and any), COPD-related health care utilization, and COPD-related costs (overall and by service setting) was assessed over 12 months after the initiation of treatment.[27] Treatment with the LABA/inhaled corticosteroid combination was associated with a 14% reduction in risk of COPD-related hospitalization ($P = .0406$) and lower health care utilization and medical costs ($P < .0001$) over a 12-month follow-up period.[27]

In a 2013 assessment of 3017 patients with COPD who were enrolled in Medicare from 2006 to 2008 and had no COPD therapy for at least 6 months prior, initiating long-acting β_2-agonist therapy increased the time to all-cause hospitalization and reduced the risk of hospitalization versus initiating short-acting β_2-agonist (SABA) therapy ($P < .05$).[28] In a 2013 retrospective study comparing 812 nebulized LABA patients and 1651 nebulized SABA patients who were discharged from their initial COPD hospital admission, all-cause 30-day readmission rates were 8.7% for nebulized LABA patients and 11.9% for nebulized SABA patients (31% reduction; $P = .017$).[29] In a 2016 retrospective study of 417 COPD patients using nebulized LABA therapy, PharMetrics Plus health plan claims data were used to compare exacerbations, health services utilization, and costs.[30] In this study, use of nebulized arformoterol was associated with fewer exacerbations, lower inpatient costs, lower risk for exacerbations, and lower COPD-related costs (primarily related to hospital readmissions) than in patients using nebulized formoterol, suggesting that medication choice even within the same class may affect outcomes and costs.[30]

The authors acknowledged that the prevention of hospitalizations cannot be accomplished with prescribed agents alone, and a comprehensive COPD action plan is needed to help patients stay out of the hospital to the extent possible.

Opportunities to Individualize Treatment for Patients With COPD in PA/LTC Settings

Disease severity should be assessed by objective measures when feasible, including pulmonary function testing (spirometry), stratification of risk for exacerbations, and subjective measures, such as patient-reported breathlessness and symptoms that impact functional ability.[31] Treatment should be guided by the results of the following assessments.

1. How severe is the patient's COPD? (using pulmonary function tests when available)