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**University of Michigan
Health System**

Best Practices in Managing Patients With Chronic Obstructive Pulmonary Disease (COPD)

University of Michigan Faculty Group Practice Case Study

Profile

The University of Michigan Faculty Group Practice (FGP) was established in 1996 to combine the practice plans of 15 University of Michigan clinical departments into 1 integrated, multispecialty physician group. Today, FGP includes more than 1700 physicians and 1100 house officer members working in 62 specialties. In fiscal year 2012, more than 1.9 million outpatient visits were made to the practice's 120 clinical locations within the southeastern Michigan area. The University of Michigan Health System (UMHS) includes 2 hospitals and has more than 47,000 admissions annually.

Program Summary

The COPD Quality Improvement Project aims to improve quality of care, maximize quality of life, and reduce hospitalizations and emergency department (ED) visits. The template for FGP chronic disease programs, including COPD, includes developing an institutional guideline for care, measuring performance, and initiating changes in care based on observed problems and root cause analysis. The COPD project began in the fall of 2010.

The COPD Quality Improvement Steering Committee is co-led by a pulmonary physician and a quality improvement nurse, and includes 2 primary care providers (PCPs), a clinic nurse, a second quality improvement nurse, a respiratory therapist, a hospitalist, the director of quality for the FGP, a data analyst, and a certified asthma nurse educator.

The COPD project is supported through many institutional programs. The primary source of funding is FGP. The group allocates more than \$3 million annually to primary care and targeted specialty clinics caring for patients in its chronic disease registries. The physician practice explicitly decided not to pay money directly to physicians because these efforts often focus on team-based care, and aggregating cases across multiple physicians at each health center provides a more stable population than trying to assess care for a single provider who may have a limited number of patients with a condition.

Program Goals and Success Measures

Goals and objectives

FGP expanded its chronic disease program to include COPD for several reasons

- High readmission rates for patients with COPD (second only to congestive heart failure)
- Regional insurer measurement of COPD indicators
- National (Medicare) assessment of readmissions associated with COPD and other quality indicators
- Significant interest on the part of both PCPs and pulmonologists to improve the care of patients with COPD

The original goals of the project were

- Accurate identification of patients with COPD
- Adherence to national standards of COPD care by frontline staff
- Active engagement of patients in disease self-management

These goals have been augmented with the following measures, many specific to COPD

- Prescribing bronchodilators for patients with COPD
- Providing influenza and pneumococcal immunizations
- Documenting patient tobacco use status
- Improving the quality of spirometry offered in primary care clinics
- Increasing the number of patients diagnosed with COPD via spirometry
- Standardizing COPD education materials across the health system
- Increasing collaboration among clinicians caring for patients with COPD
- Using validated registry data to measure the quality of patient care and give focus to improvement efforts

Clinical standards

FGP follows the UMHS COPD Clinical Care Guidelines, which are based on evidence from the following national guidelines

- The US Preventive Services Task Force recommendation statement for COPD screening using spirometry published in *Annals of Internal Medicine* in 2008¹
- The Clinical Efficacy Subcommittee of the American College of Physicians' 2007 publication on the diagnosis and management of stable COPD from the *Annals of Internal Medicine*²
- The 2004 Standards for the Diagnosis and Management of Patients With COPD from the American Thoracic Society and European Respiratory Society³
- The 2007 Global Strategy for the Diagnosis, Management, and Prevention of COPD, Executive Summary from the Global Initiative for Chronic Obstructive Lung Disease (GOLD), published in the *American Journal of Respiratory and Critical Care Medicine*.⁴ (Note: Although there are updated GOLD guidelines, they have not yet been incorporated into the UMHS Clinical Care Guidelines. The UMHS COPD Clinical Care Guideline group intends to complete an update once the latest COPD updates from the 2012 American Thoracic Society are available)

Data collection and measurement

FGP uses its COPD registry as the source of patient data.

Population Identification

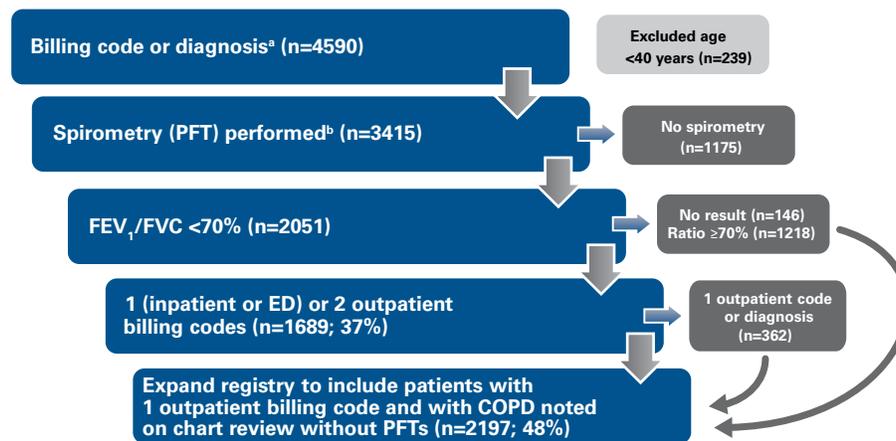
Demographics (as of March 2013)

- Enrolled patients: n=1631
- Managed in primary care: n=643
- Managed in specialty care: n=509
- Jointly managed: n=479

COPD registry

As part of the UMHS, FGP has access to billing data (physician and hospital/clinic) and clinical data (problem summary list; dictated notes; test results such as spirometry if performed in central labs; facilities utilization; and medications). The billing data are used to create the COPD registry. The eligible population consists of established patients defined in Figure 1. The figure shows the demographics at the time of registry establishment in 2011.

Figure 1–Population Identification for COPD Registry From FGP Billing Data (2011).



PFT=pulmonary function test; FEV₁=forced expiratory volume in 1 second; FVC=forced vital capacity.
^aLimited to patients seen twice in past 2 years with 1 visit in past 395 days to PCP or specialist.
^bOffice test or PFT within past 10 years.

The COPD Quality Improvement Project uses administrative billing data and clinical data to identify this cohort. Billing data include a combination of COPD ICD-9-CM diagnoses and CPT-4 procedure codes documented on an inpatient admission, ED visit, and/or an outpatient evaluation and management visit. Clinical data include a diagnosis entered in a problem summary list based on transcribed clinical notes (string text search) for COPD, chronic obstruct, emphysema, and/or chronic bronchitis. The record is electronically examined to see if the patient has a documented spirometry test and FEV₁/FVC ratio.

FGP’s electronic outpatient data warehouse receives data feeds from the laboratory system, billing/claims data, medications, vital signs, registration/visit information, demographics, and insurance information. Also validated automated processes are used for string text searching for pertinent clinical information, such as diagnoses from the electronic medical records (EMRs) problem summary list, which are entered in free text and not as a codified data element. The warehouse also includes preventive services data (eg, breast cancer, cervical cancer, and colon cancer screening; and vaccinations, including influenza, pneumonia, and shingles).

Intervention

Background

To address the care of patients with COPD across the care spectrum, an additional multidisciplinary group, the COPD Hospital Multidisciplinary Team, was formed to address COPD care in the inpatient, ED, and home settings. The team meets monthly and includes some members from the COPD Quality Improvement Steering Committee as well as a home care nurse manager, an ED physician and nurse, a floor nurse, an inpatient case manager, and a respiratory therapist.

The team's primary focus is to prevent readmissions of patients with COPD. It completed a chart review in the spring of 2012 of readmitted patients with COPD in order to better understand the contributing factors and focused on the following items:

- Admission source
- Discharge disposition
- Completion of discharge planning while hospitalized
- Scheduling of follow-up appointments in pulmonary and primary care
- Chronic problems from comorbidities
- Home oxygen or BiPAP
- Psychosocial and psychiatric issues
- Noncompliance with treatment

Program modifications

The chart review did not show any clear gaps in care processes or readily apparent patient issues to address. The findings led the team to explore using an assessment tool that compares a patient's baseline status to his or her present status to determine if the patient is ready for discharge. There is no clear-cut tool for this purpose available in current literature; therefore, the team plans to work in conjunction with the COPD Quality Improvement Steering Committee to pilot the development of an assessment tool.

Education

To help healthcare providers educate patients with COPD, system-wide health education materials were selected and distributed. The American College of Physicians' *Living with COPD* book and the COPD Foundation's *Slim Skinny Reference Guide*[®] series and the *Big Fat Reference Guide*[®], and clinician pocket cards were selected. Inpatient units and primary care clinics received a supply of each of the educational materials and an in-service on the educational materials, disease management, and inhaler device training. Most patient education materials are also available electronically on the internal patient education clearinghouse.

Workflow and staffing changes/modifications

The COPD Quality Improvement Steering Committee has directed a primary care spirometry improvement project with goals of improving access to spirometry in primary care clinics, standardizing spirometry testing, and educating clinicians on spirometry performance and interpretation. Initially, this project received a grant from the National Asthma Control Initiative *Spirometry 360* train-the-trainer program,⁵ which provided spirometry education material, pulmonary function test overreading services, and logistical support for spirometry education at UMHS. Six pilot primary care clinics completed the University of Washington's *Spirometry 360* education program, and then participated in the program using a model in which medical assistants and nurses performed the spirometry test and a provider made the initial interpretation. Unfortunately, over time these pilot sites were unable to complete an adequate volume or quality of spirometry tests to maintain competency. UMHS is now looking at a new spirometry model where a primary care clinic will host a spirometry clinic with tests performed by a traveling experienced pulmonary function technician.

Information technology

UMHS is currently in the process of implementing an Epic EMR system known as MiChart. The MiChart ambulatory care, ED, admissions/patient registration, ophthalmology, research and billing, and coding portions were all functional mid-2013. The inpatient, oncology, and obstetrics applications will be implemented in June 2014, and other UMHS legacy systems will be replaced by 2016. The previous UMHS-created EMR, CareWeb, will continue to be functional until the MiChart implementation is complete. Any paper documentation completed within UMHS is scanned into MiChart and available for viewing throughout the health system.

Leadership Involvement and Support

UMHS devotes substantial resources and programs to advance quality improvement training in chronic disease for the FGP. Quality improvement is a joint function of Ambulatory Care Services (which has responsibility for oversight of clinical sites and functions within the FGP) and the Quality Management Program (QMP), which is responsible for developing registries, measuring performance, and facilitating changes in clinical operations. The director of the QMP reports to the executive director and the board of directors of the FGP and works with operational leaders in ambulatory care. There are several multidisciplinary quality improvement steering committees that guide the development and execution of interventions to improve care for specific medical conditions (eg, asthma, diabetes, coronary artery disease, chronic kidney disease, pediatric obesity). Each steering committee has 1 or 2 leaders who report to the director of the program. In addition, a nurse from the health system's department of quality improvement, or project manager from ambulatory care services, works with some of these committees. These individuals perform such functions as chart review support, project management work, and feedback to the steering committee.

The FGP's board oversees priorities for quality improvement, including endorsing annual process improvement goals, reviewing progress on institutional improvement objectives at designated intervals, approving the list of quality indicators annually, and reviewing quality indicators and patient satisfaction data.

Results

The data that FGP gleaned from its registry are used in 2 ways. One is for internal quality improvement and the other is for incentive work. Performance metrics for the patients in the registry are reported to FGP leadership and providers twice yearly. As of March 2013, the practice reported the following metrics compared with the March 2011 report

- Patients with an FEV₁/FVC ratio <70%: 92% (increase of 3%)
- Patients on a bronchodilator (anticholinergic, short- or long-acting beta-agonist, or methylxanthine): 88% (increase of 2%)
- Patients receiving the influenza vaccine: reported at the end of each flu season (and thus incomplete data at the time of this report)
- Patients receiving the pneumococcal vaccine: 75% (increase of 1%)
- Patients with documentation of tobacco status: 81% (increase of 5%)
- Patients who are current tobacco users: 25% (decrease of 2%)

Lessons Learned

Challenges

The COPD Quality Improvement Steering Committee found it challenging to meet regularly and move forward with quality initiatives. The struggle is attributed to busy schedules of the various clinicians. Currently, meetings are held on a regular, monthly basis, and initiatives to improve care are progressing at a steady pace.

Lessons

There was difficulty in obtaining registry data for many months due to the implementation of the Epic EMR in ambulatory care. A lack of data made it difficult to determine the appropriate course of action to address gaps in COPD care. Assuring the validity of the data pulled from the Epic system required a significant amount of time and periodic chart reviews.

Next steps

Continuing alignment with champions in the clinical setting remains key to moving quality initiatives forward and improving performance on clinical metrics.

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