

---

# AMGA

*American Medical Group Association*<sup>®</sup>

---



HealthCare Partners.

Institute for Applied Research & Education

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

# HealthCare Partners Institute for Applied Research and Education, and HealthCare Partners Affiliates Medical Group

## Profile

The HealthCare Partners Institute for Applied Research and Education is an independent, nonprofit foundation whose mission is to design, implement, refine, and disseminate patient-centered innovations and best practices to improve healthcare within our communities. The Institute's practical evaluations are designed to improve the patient experience and clinical outcomes through delivery system redesign, healthcare policy, and education. The Institute partners with a wide range of healthcare organizations, including HealthCare Partners Affiliates Medical Group to evaluate, refine, and broadly disseminate health and wellness learning lessons.

HealthCare Partners Affiliates Medical Group is an accountable care organization (ACO) based in southern California. It is composed of 70 group/staff model sites that employ more than 600 full-time care physicians, the majority of whom are primary care providers (PCPs). Moreover, HealthCare Partners also has an Independent Physicians Association (IPA); a network of 4900 independent PCP and specialty physicians who extend HealthCare Partners group model sites to offer patients more care access and provider choice in their communities. HealthCare Partners' group model staff and IPA providers care for more than 1 million patients. The group provides healthcare services to both HMO enrollees and fee-for-service patients, and has contracts with most major health maintenance organizations and preferred provider organizations serving the greater Los Angeles area. HealthCare Partners is one of the largest single providers of prepaid healthcare for seniors in California.

## Program Summary

Building on an existing patient-centric program for COPD management that included traditional telephone outreach by nurses, in 2011 HealthCare Partners conducted a remote-monitoring pilot program using interactive voice response (IVR) technology. The goals of this telehealth initiative were to optimize healthcare resources with more efficient use of clinicians' time and detect exacerbations at an earlier stage to improve quality of life for patients with COPD and reduce rehospitalizations and emergency department (ED) visits. The program has been implemented in southern California, Florida, and Arizona, and soon will be implemented in Nevada.

## Program Goals and Success Measures

COPD—an escalating health problem for individuals, their caregivers, and the public—results in considerable morbidity and mortality. It is expected to be the third leading cause of death by 2030, according to the World Health Organization.<sup>1</sup> At HealthCare Partners, the COPD population was approximately 26,600 individuals in 2013. The economic burden of COPD is considerable, with inpatient hospitalizations accounting for approximately half of the per-member-per-month (PMPM) cost. COPD is consistently one of the top 10 diseases that results in hospital admissions and readmissions of HealthCare Partners patients (Table 1). Moreover, the toll of COPD extends beyond the physical; feelings of isolation, depression, and loss of independence can be present within our patient populations.

**Table 1—COPD Hospital Readmissions at HealthCare Partners**

Readmissions	7-day	30-day	60-day	90-day	180-day	365-day
Chronic Airway Obstructive	9%	18%	26%	31%	38%	59%

### Goals and objectives

Outcome data for the patients with COPD engaged in the IVR intervention indicated additional clinical improvements over the COPD health enhancement program alone (Table 2). It was determined that IVR would not replace the COPD program, but patients would receive initial education on symptoms and an action plan as part of their COPD program and would then be placed on IVR. This would allow the nurses to extend their services to a greater number of patients. IVR was also viewed as a long-term strategy with the hope of catching those patients readmitting at 180 days and at 365 days.

Patients would remain on IVR as long as they were being followed by the program (12+ months) and the IVR questions would be a continuing reminder to patients to monitor changes in their health.

**Table 2—IVR Pilot Results at HealthCare Partners**

Analysis Pilot: 90 Enrolled Patients in IVR	Disease Management Program Only	Disease Management Program Plus IVR
Hospital admissions	48	22
Hospital admission rate per thousand	69	31
Hospital costs (\$USD)	\$8529	\$3909
Outpatient clinic visits	446	581
Outpatient clinic costs (\$USD)	\$765	\$996
Return on investment (\$USD)	—	\$4388 (9:1)

To improve patient recruitment efforts by the health staff, HealthCare Partners developed a training module for IVR that includes step-by-step instructions for enrolling a new patient in the program. The process for enrolling patients was simplified and included in the care management system, a tool used by all staff engaged in the COPD program (Figure 1). This allowed for easy enrollment, and a simplified process for staff to set up a patient for IVR calls. HealthCare Partners also developed a new tool for patients for easier patient training. The new handout is a patient-friendly, colorful brochure that shows the COPD symptom zones in an engaging format (Figure 2). To date, and with our partners in Florida and Arizona, more than 1000 patients have been or are currently being followed by the COPD IVR program.

**Figure 1—Screen Shot of the Care Management System for Simplified IVR Enrollment**

The screenshot shows a software interface with a menu bar (Care Manager, Worklists, Reports, Actions, Options, Windows) and a patient information section. Below this is a table of surveys.

Patient name and date of birth		DOB		MRN		PCP		Primary ins. entity			
Full name CCMIS, TESTCASE9		03/12/1984		00-999991							
Meds, Pharm & DME	Assessments	HRA	Tasks	Pathways	Appointments	Referrals	Attachments	Facility visits	Claims	Report options & history	IVR Survey
SurveyType	Language	CallsPerWeek	Begin Date	End date	Status	Group	PhoneNumber	Care Manager	Call Handler		
1	COPD	English	2	01/21/2014		A	999-999-9999	JHOWE			
2											

**Figure 2—HealthCare Partners Patient Recruitment Brochure**

**COPD Symptom Phone Survey**  
Managing Your Chronic Obstructive Pulmonary Disease

To properly manage your COPD, your Care Coordinator will personally call you to monitor your general health. We also have free, automated phone survey monitoring. These weekly surveys help us to identify Red and Yellow Zone symptoms and stop a COPD flare-up before it starts.

- GREEN ZONE** You feel well
- YELLOW ZONE** You feel worse
- RED ZONE** You feel much worse or in danger!

**It's Easy! Here's How it Works:**

- Every Monday and/or Thursday, you will receive a phone call between noon - 3 pm. If we are unable to reach you, we will call you again between 6 - 7 pm.
- After you say "hello," the automated phone system will begin the COPD Symptom Survey.
- The survey has nine questions. To save time, you may press the response number that best fits your current symptoms at any point during the survey.
- It's free if you miss a survey call. We know that you may not always be available at the time we call.

Look on the other side of this flyer for a list of the COPD Symptom Phone Survey questions and response options.

**HealthCare Partners**  
Medical Group and Ambulatory Practice

**9 Symptoms to Monitor:**

- Breathing in general:**
  - Press 1 if you have no trouble breathing.
  - Press 2 if you have more coughing, phlegm or breathiness, or wheezing than usual.
  - Press 3 if you are having a lot of trouble breathing when at rest.
- Breathing while eating:**
  - Press 1 if you can eat without feeling out of breath.
  - Press 2 if you are slightly out of breath when eating.
  - Press 3 if you are breathless when eating.
- Feet and ankles:**
  - Press 1 if you have no foot or ankle swelling.
  - Press 2 if you have some swelling in your feet or ankles.
  - Press 3 if you have a lot of swelling in your feet or ankles.
- Weight:**
  - Press 1 if you have not gained weight this week.
  - Press 2 if you have gained 2 to 4 pounds over the last week.
  - Press 3 if you have gained 5 or more pounds over the last week.
- Sleep:**
  - Press 1 if you are sleeping through the night without problems.
  - Press 2 if you are waking up and unable to fall back to sleep 1 to 3 nights a week.
  - Press 3 if you are waking up and unable to fall back to sleep more than 3 nights a week, or wake up gasping for air.
- Sputum/mucus:**
  - Press 1 if your mucus is clear.
  - Press 2 if your mucus is thick or stickier than usual, or your mucus is turning yellow or green.
  - Press 3 if you are having a lot of trouble coughing up mucus, or you have blood in your sputum.
- Ability to focus:**
  - Press 1 if you can think clearly.
  - Press 2 if you are having trouble concentrating.
  - Press 3 if you are very confused or have slurred speech.
- Appetite:**
  - Press 1 if you are eating your normal amount.
  - Press 2 if you are eating a little less than usual.
  - Press 3 if you are eating much less than usual.
- Energy level:**
  - Press 1 if you are not tired doing your usual activities.
  - Press 2 if you are tired or cannot finish your usual activities without getting tired.
  - Press 3 if you are very tired and cannot do any activities.

Download Call and Care Coordinator at 888.333.3362 Press 9

Moreover, in 2013, HealthCare Partners launched a series of patient education video vignettes for patients with COPD that will be deployed on iPads at selected pilot care team sites (Figure 3). These vignettes allow patients to experience a visual and narrative program in the clinic before their provider office visit, emphasizing patient self-management skill sets. Patients and their caregivers will view these videos in the waiting room to learn more about their condition—what it is and what it is not—in an effort to enhance patient activation, and perhaps ask pertinent questions relating to their self-care. HealthCare Partners will have quantifiable results from these video vignettes within approximately 18 months and may use validated surveys (ie, Patient Activation Measure® [PAM]<sup>2</sup>) to quantify patient activation and help enhance their quality of life.

**Figure 3—COPD Educational Vignettes**



### **Clinical standards**

The remote monitoring program uses IVR survey responses based on COPD symptoms corresponding to green, yellow, and red zones, indicating increasing severity. Action plans are based on the National Jewish Health COPD self-management plan.<sup>3</sup> HealthCare Partners also follows the guidelines of the Global Initiative for Chronic Obstructive Lung Disease (GOLD).<sup>4</sup>

### **Data collection and measurement**

The IVR system collects survey data each week from patients with COPD. It generates 4 reports while avoiding timely and complicated setup, since patients use their own phone systems.

### **Population Identification**

HealthCare Partners uses ICD-9-CM diagnosis codes to identify patients with COPD. There are other triggers that may predict patients who may have the condition (to be confirmed via spirometry) based on certain risk factors (eg, a diagnosis of asthma in a senior population, recurrent acute bronchitis, frequent use of nebulizers or refills for inhalers, and long-term use of oxygen). As stated earlier, the current patient population comprises approximately 26,600 patients diagnosed with COPD through ICD-9-CM alone.

### **Demographics**

- Enrolled patients: n=200 (active patients [those individuals who participated in the IVR telehealth program for at least 6 months], n=399)
  - Gender: 251 female; 148 male
- Percentage: Variety of ethnicities, races, and socioeconomic classes in southern California

## COPD registry

- Disease registry of patients with COPD
  - 2010: 20,357
  - 2011: 23,108
  - 2012: 25,516
  - 2013: 26,656

## Disease severity

HealthCare Partners follows the GOLD staging system to determine COPD severity.<sup>4</sup>

## Intervention

### Background

HealthCare Partners wanted telehealth technology to be scalable and embraced by as many chronically ill adults as possible. Many patients have visual, auditory, and dexterity impairments. Therefore, it was important that the technology be easy to use, neither laborious nor another “box to tick.” Specifically, the goal was to avoid burdensome setup, require no battery changes, and use no monitor displays, auditory signals, voice prompts, or Internet connections with updating/upgrading that could be challenging to this patient population.

Additionally, the group had patients report COPD symptoms using their telephone keypads instead of speaking into the phone (ie, automated speech recognition [ASR] systems) because of potential speech impairment due to wheezing, which is common for patients with COPD, and could obscure symptom reporting. In late 2012, the IVR program was expanded to include a Spanish-language version incorporating a conversational script for easier patient comprehension.

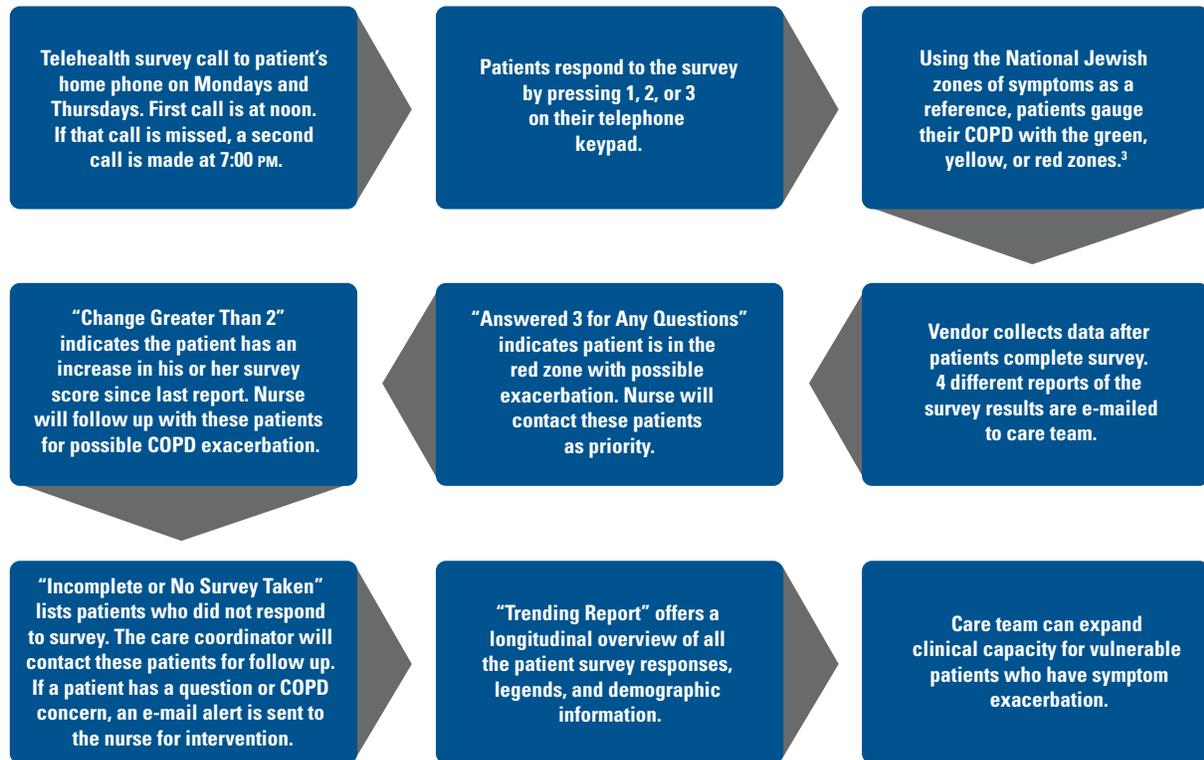
The IVR survey calls are based on COPD symptoms corresponding to green, yellow, and red zones (Figure 4). The red zone indicates an emergent situation requiring physician intervention, whereas the yellow zone indicates symptoms of lesser severity that necessitate case manager initiation of an action plan. The green zone is a baseline for the patient and does not require clinical involvement.

Patients complete the 9-question survey weekly by reporting their disease symptoms (patient-reported outcomes) based on categories of COPD exacerbations. Patients answer the questions by pressing 1, 2, or 3 on their telephone keypads, corresponding with the green, yellow, and red symptom zones, respectively. Calls occur at noon; if there is no response, follow-up calls occur at 7:00 PM. Patients and their care teams determine if a calling frequency of once or twice a week is required. This can be based on patient preference, history of disease exacerbation, or other factors. Within our population, patients preferred fewer calls per week as they felt it was less of an intrusion, yet were still able to record their symptoms and receive potential clinical feedback from their care team.

Reports from the IVR system are transmitted to the clinician in a format that facilitates specific clinician action. For example, if a patient presses a 2, signifying a yellow zone, the nurse will initiate a COPD action plan, which may involve increased use of an inhaler, pursed-lip breathing techniques, or proceeding to an urgent care center. Patients are provided with rescue medications, including steroids, to help facilitate action plans for periods of acute exacerbation.

The reports indicate each patient's total score (from 9 to 27 total points) and any change greater than 2 points from the previous call, provide longitudinal trending, and flag missing answers and incomplete surveys. Clinicians use these reports for evaluation and outreach to patients with symptoms in the yellow and red zones.

**Figure 4—Patient-Phased COPD Monitoring System**



The IVR program does not replace in-person or telephonic interactions with nurse care managers; instead, it is a value-added enhancement of COPD management. Before participating, each patient has an in-person meeting with his or her nurse care manager for assessment and education. When yellow or red zone symptoms or a change greater than 2 points is indicated by a survey, the nurse care manager initiates an appropriate action plan, which may include contacting the patient or notifying the primary care providers. However, the ability to focus their efforts on patients with flare-ups or exacerbations helps the nurses optimize their time and provide better care. Also, IVR surveys support administration of emergency prescriptions because patients are aware of their symptoms, can spot changes and exacerbations, and are prepared to take action.

IVR has encouraged patients to report exacerbation symptoms via the survey calls. Previously, a patient might have been hesitant to call his or her nurse; with IVR, the patients know the care team is actively following them via their reported symptoms. Moreover, there have been instances of patients requesting to continue IVR even after beginning hospice care, stating they felt more comfortable with the additional monitoring. Furthermore, the IVR questions continually serve as an education and reminder to patients with COPD about the symptoms they need to monitor.

Remote monitoring with IVR provides a consistent, regular data flow that indicates trends, and alerts the clinical team when a patient's symptoms worsen, enabling earlier intervention. IVR augments appropriate clinical support and an exacerbation protocol, and can help patients self-manage their condition and become more engaged in their healthcare. This system has the potential to reduce costly inpatient care and avoid relocation of the patient from his or her personal residence to a higher cost setting (eg, skilled nursing facility).<sup>5</sup>

### **Workflow and staffing changes**

Two part-time care coordinators were recently added to support the COPD telehealth program. The care coordinator serves as a liaison with clinicians, contacts patients who miss a survey or do not complete it, recruits eligible patients into the program, and conducts regularly scheduled training and meetings with care managers.

### **Information technology**

HealthCare Partners uses the TeleVox IVR system, which is cost-effective (approximately 8–10 cents per minute) and can be delivered in many different languages and dialects to meet the needs of the patients within our care delivery areas.

## **Leadership Involvement and Support**

The patient-centered health and wellness telehealth initiative is directed by the HealthCare Partners Institute for Applied Research and Education from a grant earned from the Center for Technology and Aging and the Gordon and Betty Moore Foundation. The leadership team includes the director of the applied research institute, the corporate medical director of the medical group, the director of health enhancement for the medical group, and a telehealth care coordinator. The Institute shares best practices with local, national, and international audiences to promote enhanced care for vulnerable, chronically ill patients.

## **Results**

- Expanded clinical capacity: Because nurse care managers receive alerts regarding their patient caseload (approximately 5% of surveys trigger nurse contact), they can focus clinical efforts on high-risk patients. Also, IVR relieves the nurses of making routine telephone calls for ongoing monitoring. The nursing capacity is approximately 100 patients per registered nurse
- Encourages patients to monitor their condition and recognize warning signals
- Empowers clinicians to intervene sooner, reducing avoidable hospitalization and/or ED visits for this patient population
- Eases the burden on caregivers of patients with chronic disease while enhancing patient satisfaction

## Lessons Learned

Patients and caregivers need to know how to monitor and treat symptom exacerbation to enable them to remain in their chosen residence.

- To succeed, the patient-centered program must select patients who are prepared to take charge of their condition, learn about symptoms, and take action when clinically appropriate
- Reducing the survey call frequency from 2 to 1 per week had 2 positive results: patients are more inclined to answer the survey, and they feel the calls are less of an intrusion
- Many patients and caregivers need more information on the disease state to empower them with skill sets for self-management, which may enable them to ask the right questions at the right time
- Video vignettes presenting chronic diseases such as COPD may reinforce care strategies, lead to improved self-care, and crystallize patient questions for their healthcare team. Data from these pilot tests may be available in 2014
- Clinical team members get answers and facilitate care delivery enhancement with the patient/caregiver at the helm for wellness decisions

## Additional Patient-Centered Programs

HealthCare Partners has built and launched e-learning modules for physicians in 2 key clinical areas: diabetes and dementia.

E-learning is a planned continuing strategy that allows for consistent education and training across targeted audiences and all regions where HealthCare Partners sees patients. It also allows busy professionals to learn when their schedules permit.

The group expects to expand its strategy by building additional e-learning modules for physicians, nurses, care coordinators, and medical assistants, totaling hundreds of employees across the organization.

Planned modules include

- *COPD*: Focus on symptom monitoring, emergency medications to manage exacerbations, action planning to prevent avoidable hospitalizations, self-management through breathing techniques, and lifestyle strategies for improved quality of life
- *Congestive heart failure*: Focus on medication adherence and supporting the physician treatment plan, symptom monitoring and action planning, lifestyle changes to prevent fluid retention, and other self-management strategies for improved quality of life

The group is planning to include ongoing education and to reinforce the training that was received by medical assistants with the use of flash cards built specifically to reinforce key concepts of health enhancement.

## References:

1. World Health Organization. Chronic respiratory disease: COPD predicted to be third leading cause of death in 2030. [http://www.who.int/respiratory/copd/World\\_Health\\_Statistics\\_2008/en/index.html](http://www.who.int/respiratory/copd/World_Health_Statistics_2008/en/index.html). Accessed December 4, 2013.
2. Hibbard JH, Mahoney ER, Stockard J, Tusler M. Development and testing of a short form of the patient activation measure. *Health Serv Res*. 2005;40(6 Pt 1):1918-1930.
3. National Jewish Health. COPD action plan. [http://www.nationaljewish.org/pdf/copd\\_action\\_plan.pdf](http://www.nationaljewish.org/pdf/copd_action_plan.pdf). Accessed December 4, 2013.
4. Global Initiative for Chronic Obstructive Lung Disease. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. Revised 2013. <http://www.goldcopd.org/guidelines-global-strategy-for-diagnosis-management.html>. Accessed December 4, 2013.
5. Rich J, Howe J, Larson L, Chuang C. Implementing interactive voice response technology to activate vulnerable patients. *J Int Soc Telemed E Health*. 2013;1(1):1-7.



*Provided as an educational resource by AMGA and Boehringer Ingelheim Pharmaceuticals, Inc.*

One Prince Street, Alexandria, VA 22314  
Tel: (703) 838-0033 Fax: (703) 548-1890 [www.AMGA.org](http://www.AMGA.org)

© 2014 American Medical Group Association and Boehringer Ingelheim Pharmaceuticals, Inc. All rights reserved.