

Breathe Better Together

Phuong-Cac “PC” Nguyen
Design and Strategy Manager
Center for Health Care Innovation
Penn Medicine Lancaster General Health



Editor’s note: This is the third in a series of articles detailing the work of the Center for Health Care Innovation at Penn Medicine Lancaster General Health (CHCI-LG Health). The center works with providers and administrators to reimagine health care delivery to improve patient outcomes. One focus of CHCI-LG Health is to scale solutions that have already been piloted elsewhere in the Penn Medicine health system.

BACKGROUND

Chronic obstructive pulmonary disease (COPD) is the third most common cause of death in the United States, after heart disease and cancer. At Penn Medicine, 6,500 patients with COPD were admitted to hospitals throughout the system within a 12-month period in Fiscal Year 2019. Of every five patients hospitalized with COPD, one is readmitted within 30 days. Thus, innovations to decrease the risk for readmission would presumably improve patient health and save patients and the health care system time and resources.

Breathe Better Together (BBT) is one such initiative, first piloted at the Center for Health Care Innovation in Philadelphia, CHCI-LG Health’s sibling organization. BBT is a text-based remote monitoring program to decrease hospital readmissions in patients with COPD. The Philadelphia project team believed it could increase the number of days that COPD patients remain out of the hospital by helping patients identify their symptoms early and putting mechanisms in place to prevent hospitalization before they became necessary.

The Philadelphia program included the design and implementation of an urgent home nurse visit program component called Penn Cavalry. Among the innovations, patients were asked via text message to self-evaluate their breathing. The patient texting component was powered by Way to Health, a Penn Medicine platform that provides the tech infrastructure for sustainable behavior change interventions. The average patient engagement rate is 70% to 80% across its various texting programs.

Once texted, patients could respond by selecting from among three multiple-choice options. A patient’s

response of “C” – indicating they felt their breathing was worse than usual – initiated an escalation model, whereby a respiratory therapist, also known as a pulmonary navigator, would call the patient to further evaluate. After triaging the patient, the therapist would confirm a plan of care under the direct oversight of a BBT pulmonologist. This assessment could include sending a Penn Cavalry nurse to the patient’s home for a same-day urgent visit for further evaluation. Patients could also access their care team through a previously provided phone number; these calls would forward to the on-call pulmonologist after hours and on weekends.

The 30-day rehospitalization rate of the 178 high-acuity patients enrolled in BBT fell during the first calendar year from 30% to 17% – nearly reaching the 15% rehospitalization rate of all patients with COPD admitted to a Penn Medicine hospital. The team saw the same improvement the following year. It was clear these early interventions were having an impact on readmissions.

APPLICATION IN LANCASTER

Impressed by these outcomes, an LG Health project team integrated a similar tool into the Pulmonary Workgroup’s ongoing larger performance improvement project. This project’s mission is to achieve a “zero-hospitalization” rate for COPD patients by decreasing exacerbation-related admissions, as well as readmissions.

Patients were highly engaged (87.5%) in the CHCI-LG Health Way to Health texting component. As in Philadelphia, patients in the Lancaster program were asked to self-evaluate, and a response of “C” – or “Call” – again prompted an initiation model if they wanted a respiratory therapist to contact them. Calls could result in further assessment.

Different resource limitations and opportunities have given rise to a CHCI-LG Health model that is different from the Philadelphia design. In the CHCI-LG Health program, Christopher Addis, MD, provides direct physician support to pulmonary navigators during weekdays from 8:00 a.m. to 4:00 p.m. After hours,

patients are directed to their PCP's office or to call 911 for emergent issues.

If a situation is non-emergent but needs clinical help, the pulmonary navigator places a referral for a same-day visit by the community paramedics team, which sends a community paramedic to the patient's house for further evaluation. During the initial LG Health pilot, eight patients received visits from the community paramedics.

Patients may also need education or equipment support. For example, if patients are being seen in the home by ancillary services providers, pulmonary navigators may request home health nurses coordinate education or may reach out to equipment vendors to visit the patient at home to evaluate the issue. For patients with socioeconomic requirements, navigators can place a referral to the Ambulatory Collaborative Care Team for educational support and guidance. Identifying social determinants of health and matching them to external partners who might be able to help has been part of the project team's attempts at optimizing opportunities to standardize care and increase efficiencies. Certainly, if the pulmonary navigator determines the need is emergent, a 911 call can be placed.

Finally, patients in the LG Health program are enrolled for 45 days and then discharged from the program back to the exclusive care of their primary care team. This contrasts with the Philadelphia program, which transfers patients to the Lung Center for continued oversight and care.

RESULTS

During LG Health's initial BBT pilot, January through June 2021, the project team enrolled 46 unique patients out of 321 identified. At the end of the pilot, the team observed a 6% reduction in hospital visits and a 30-day readmission rate of 23.5%. There were also 21 readmission "saves" among 12 patients. Readmission is considered saved by the pulmonary navigator when the navigator feels the patient would have gone to the emergency department without the intervention. This translated to an estimated savings of \$10,000 to \$12,000 per save.

FUTURE DIRECTIONS

LG Health's BBT pilot program is currently in Phase II, with a goal to enroll 200 patients. To reach this goal, the team expanded parameters to include non-LGHP patients with providers at Union Community Care (Union). In addition, the team will attempt to reach non-English-speaking patients, thus CHCI-

LG Health BBT champions are focused on adapting education and outreach to Spanish speakers. To date, one Spanish-language patient has completed the 45-day program, and six Union patients are enrolled.

Phase II will also include an interactive voice phone component. This is the result of an insight in the first six months of the pilot that some patients opted out because they were not comfortable with texting or did not have a cell phone. The voice option will call the patient daily with the same check-in question they would receive through text and will allow the patient to use their phone's keypad to select a response.

To date in Phase II, text engagement remains high at 83.7%. The team has noted a 10.5% 30-day hospital readmission rate and three emergency department saves among 153 enrolled patients. The rate of patients called within 30 minutes of a call request or a text message indicating an intervention need has been 100% to date.

DISCUSSION

The BBT project team at LG Health believes one of the major contributing factors to the success of its program is the strong relationship the respiratory therapist begins to build with patients while they are still in the hospital. This relationship focuses on getting to know the patient, providing individualized education, often-times meeting with them more than once while they are still in the hospital, and understanding and anticipating the additional and possibly nonmedical factors that could become barriers to the patient's health.

The escalation pathway, built to provide support with the help of various partners after the pulmonary navigator first makes contact, provides reassurance to patients that they will get support around those barriers; in essence, it becomes a trust pathway between the patient and the health system that serves them. If successful, the BBT pilot may serve as a model for outreach programs directed at patients with other disease states and in other service lines.

ACKNOWLEDGEMENT

The author graciously acknowledges the contribution to this article by Cynthia "Frankie" Frankfort, RRT, champion of the LG Health BBT program.

Phuong-Cac "PC" Nguyen
CHCI-LG Health
100 N. Queen St.
Lancaster, PA 17603
717-544-5740
PC.Nguyen@pennmedicine.upenn.edu