Limited access to essential hygiene supplies and facilities, poor nutrition, lack of access to basic medical care, and difficulty complying with mask-wearing and social-distancing recommendations pose significant risks to the homeless community during the coronavirus pandemic. Health systems are experiencing challenges in safely discharging Covid-19 patients who are homeless. The goal of this project was to create a process by which our health system can identify Covid-19 patients who are at risk for inability to self-quarantine due to homelessness, assist in meeting their quarantine needs, and refer them to an appropriate and safe facility when appropriate. The Ability to Self-Quarantine Screener (ASQS) was created and integrated into the EMR and in the first 30 days; this screener and workflows resulted in avoiding 4 discharges to shelters, identifying 17 referrals to social work for specific quarantine needs, and designating 3 placements in a state quarantine facility designed for housing-insecure patients.

**KEY TAKEAWAYS**

The success of this project cannot be attributed to a single factor. Each of the following contributed to achieving the objectives on time:

» Make expectations clear at the outset regarding time and task commitment for all stakeholders

» Anchor the problem scope with an insight from a key informant interview
» Maintain a standard agenda for all meetings with stakeholder accountability

» Establish the *usual case* and *exception cases*

**The Challenge**

More than a half million people in the United States experience homelessness on any given night.¹ This vulnerable population is more likely to have chronic diseases (both mental and physical), substance abuse disorders, and higher mortality compared to the general population. Limited access to health care contributes to barriers for these individuals to attain and maintain health while experiencing homelessness.²⁴¹⁰ The majority of this population live in congregate areas in shelters, halfway houses, encampments, abandoned buildings, and other communal spaces. Lack of access to essential hygiene supplies and facilities to shower and hand-wash, poor nutrition, lack of access to basic medical care, and difficulty complying with mask-wearing and social-distancing recommendations pose significant risk to the homeless community during a pandemic like Covid-19. Health systems are experiencing challenges in safely discharging Covid-19 patients who are homeless from their testing triages, emergency departments, clinics, and hospitals. Even a single unsafe discharge of a Covid-19 patient who is unable to self-quarantine due to homelessness can result in threats to the patient’s and the public’s health.

**The Goal**

The goal of this project was to create a process by which our academic health system can 1) identify Covid-19 patients who are at risk for inability to self-quarantine due to homelessness and 2) refer them to an appropriate and safe facility post-discharge. The solution was intended to include a new tool in the electronic medical record (EMR), new customized workflows for clinical staff, and collaboration with local shelter networks and state agencies. Our goal was to stand up a new process while the state Department of Health established the first *Quarantine Facility (QF)* to accept these patients.

**The Execution**

UAMS Health’s Office of Population Health (OPH) was designated the project management lead in mid-March, one week following the Arkansas Governor’s March 11 declaration of a state of emergency due to the Covid-19 pandemic. The project was framed as a rapid-cycle intervention development initiative with a target timeline to completion of one week. OPH leadership used an adapted population health framework to drive solutions. Typical population health solutions involve defining/identifying the population, identifying care gaps/needs, stratifying risk, engaging providers and patients, managing care/implementing interventions, and measuring outcomes; however, OPH leadership adapted this process into a *population health emergency framework* to drive solutions. This framework included only the following: identify the population, prioritize the population’s health needs, develop and troubleshoot interventions in rapid cycle, implement interventions, and track outcomes.
OPH leadership adapted this process into a population health emergency framework to drive solutions. This framework included only the following: identify the population, prioritize the population’s health needs, develop and troubleshoot interventions in rapid cycle, implement interventions, and track outcomes.

OPH staff started with informal key informant interviews to establish the scope of the problem and priority issues that should be addressed. The following individuals were interviewed: the hospital director of nursing, a social worker, and the leader of a homeless shelter network. The interviews focused on the health problems that the Covid-19 pandemic is causing in homeless communities and which of those problems our health system should prioritize and address. All interviews were conducted over the phone in one day. A quote from the shelter community representative was written on the white board in the meeting room as an anchor point for all stakeholders: “Patients who are being tested for Covid-19 who can’t quarantine (not always homeless but often are), and are not likely to disclose (to the facility that’s caring for them) because it could harm their ability to meet their basic needs, have the ability to infect hundreds, not a few. Even one [case] could shut down the entire homeless provider network [or cities] soon. I have good reason to believe there are already possibly infected people in the system now, and providers don’t know. We can’t help if we don’t know.”

The first stakeholder meeting was conducted the day after the key informant interviews were complete. After the statement and scope of the problem were discussed, a usual case was developed in order to focus solutions on the patients who would most likely need the solution. The team achieved consensus that all cases that were raised throughout the project that did not fit the usual case description would be tabled and addressed as exceptions after the usual case solution was implemented. For example, the usual case was described as “a patient that is Covid-19–positive and needs to be discharged, but would normally be discharged to a homeless shelter or congregate facility in the community.” An exception case was “a Covid-19–suspected positive patient who arrives in drive-through testing triage in an Uber or taxi and whose housing is uncertain.”

In the first meeting it was decided that an instrument should be developed to screen patients for ability to self-quarantine. The team then reviewed the Covid-19 guidelines on self-quarantine from the CDC and our health system. The essential component for self-quarantine is to separate and restrict the movement of people who might have been exposed to Covid-19 to monitor if they become sick. Suspected persons should stay home (self-quarantine) and stay away from other family members for a minimum of 14 days. They are also advised to check their temperature twice a day and watch for Covid-19 symptoms (e.g., fever, cough, trouble breathing). To the best of our knowledge, there is no existing screener for ability to self-quarantine; therefore, we developed a brief draft Ability to Self-Quarantine Screener (ASQS) with the intent of integrating it into the Epic EMR clinical workflow. The draft ASQS was distributed to the team for review and comments via email over the first weekend of the project followed by a series of meetings the following week to finalize the screener.
After consultation with an infectious disease physician, the final version of the ASQS reduced the duration of ability to self-quarantine from 14 days to 7 days. This took into consideration the turnaround time of the SARS-CoV-2 PCR test and that patients are called with their results and for follow-up. This test was available for those admitted to the hospital if there was a concern for Covid, or for outpatients through the ED or a screening station. Those who screened positive on a questionnaire were tested with a nasopharyngeal swab and were called when the test resulted. This call provided a second touch point to re-evaluate isolation options and supplies if needed. When considering possible responses to the primary ASQS question: “ASQS1. Do you have a private room where you can stay alone for at least 7 days?,” the team realized that the most important factor to safely self-quarantine is whether a patient has food, medications, and other supplies to last for 7 days OR is able to get those necessary items. This discussion prompted the team to add two additional items to the final ASQS (Figure 1).

**FIGURE 1**

**Ability to Self-Quarantine Screener (ASQS)**

The ASQS assesses patients’ ability to isolate themselves and self-quarantine to reduce the spread of infectious diseases and to monitor themselves as they may become ill.

A social worker on the team shared that patients may list a shelter address as their home address during intake. In response, the team created an alert in the EMR so that when any of 18 known shelter addresses was entered either at registration or discharge, the alert would prompt a social worker to consider referral to a quarantine facility.
Workflows to implement the instrument and to facilitate necessary referrals were drafted on the white board each day and shared with frontline and administrative stakeholders to troubleshoot. Initially, separate workflows were drafted for drive-through Covid-19 testing triage, the Emergency Department (ED), and the hospital. Within the week, these were streamlined into a single workflow for the ED and hospital (as seen in Figure 1). Because an estimated 98% of patients utilizing our drive-through triage arrived by private car and listed home addresses, this patient population was not, in fact, the usual case, but rather an exception case. Furthermore, it became clear that adding another screening process would have impeded drive-through triage throughput, so, rather than using the initial workflows, the team decided to post the phone number to the social work department and provide triage staff education on when to use the phone number for patients who are suspected to be homeless.

The project concluded when the new screening tool was built and launched in the EMR, nursing leadership implemented workflows in the ED and hospital, and the state Department of Health opened the quarantine facility. While the EMR screener and workflow implementation were completed in one week and two days, the project was fully completed in three weeks when the first quarantine facility was opened by the state Department of Health in the local community. The Arkansas Department of Health has coordinated multiple lodging options as part of the quarantine facility including rooms in an adapted facility, hotel rooms, and other state/city-owned locations. Ongoing monitoring and reporting are being conducted using existing business intelligence tools with the EMR.

Hurdles

The project group experienced frequent mission creep into other vulnerable populations in need of resources to safely quarantine. The prisoner population and low-income/resource families were included in these populations that had to be tabled for discussion in this project, but that should be prioritized next. Defining the scope of the problem and the usual case assisted in keeping the mission narrow and effectively focused.

The workflow development process was iterative. Workflows frequently broke and were revised after troubleshooting by frontline and administrative stakeholders. While this process was necessary, it was important to frame these issues as progress and not failures, as well as to keep the rapid-cycle revision approach active. When the workflows were streamlined and finalized, the group celebrated the achievement and acknowledged their success with leadership.

“Workflows frequently broke and were revised after troubleshooting by frontline and administrative stakeholders. While this process was necessary, it was important to frame these issues as progress and not failures”

While our health system was creating the process to screen and refer patients, the Arkansas Department of Health was assigning medical directors, identifying physical space, creating
standard operating procedures, and creating capacity to accept referrals. Ultimately, our processes were completed before the facilities were ready to accept patients, but fortunately, no patients were in need of a referral to the quarantine facility in that time period.

The Team

The project team included the Interim Director of Population Health (project lead), Director of Nursing (hospital), Director of Nursing (ED), social workers, community advocate, Infectious Diseases Physician, Chief of Medicine, EMR programmer, instrument development expert/researcher, and Associate General Counsel.

Metrics

In the first week of full implementation, March 27 through April 2, one patient was successfully referred to and placed in the quarantine facility after screening and discharge. Since then, patient counts from EMR data for Covid-19–suspected and for Covid-19–confirmed who are screened using the ASQS have been reported through a business intelligence platform. In the first 30 days of implementation, 236 patients were screened using the ASQS. Of these, 38 patients answered “No” to ASQS1, 15 patients answered “No” to ASQS2, and 0 patients answered “No” to ASQS3, all combined resulting in 17 referrals to social work for assistance with various quarantine needs. Four potential discharges to shelters were avoided through the shelter address trigger; that is, a shelter address was entered at some point by the patient, an alert was triggered, and the patient was referred to social work to identify a safe quarantine discharge placement. In this timeframe, 3 patients have been successfully identified, referred, and placed in a state quarantine facility that is designed for housing-insecure Covid-19 patients.

Where to Start

Health systems can use the screening questions developed in this project and adapt their EMRs and workflows to identify patients who are unable to self-quarantine due to homelessness. It is recommended that relationships with state and community agencies be built and referral sites identified simultaneously or prior to implementation of this screener.

Next Steps

Efforts are ongoing to evaluate the effectiveness of the ASQS in our health system. Monthly metric reports will be shared with leadership and changes to processes, workflows, and/or the tool will be made according to need. The director of inpatient nursing has established a relationship with the medical directors of the quarantine facility and has assisted them in developing their standard operating procedures so that they are aligned with hospital discharge processes. A diverse stakeholder group has been formed to address the ongoing needs of vulnerable populations in our communities during this pandemic including prisoners, people experiencing homelessness who are not our patients, and marginalized ethnic communities.
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