

Letter to the Editor: Implementation of Patient Screening in Ambulatory Settings During the COVID-19 Pandemic

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CORONAVIRUS DISEASE-2019 (COVID-19) is caused by the severe acute respiratory syndrome coronavirus 2 and is a highly infectious illness spread by droplet transmission (Wiersinga et al., 2020). The COVID-19 pandemic changed the health care delivery process in ambulatory settings in the United States (Murphy, 2020). Operating ambulatory settings with high community prevalence rates of COVID-19 infection presented unique challenges to the ambulatory clinical leadership. Both patients and health care staff need to feel safe coming to the clinics, and precautions such as masking and social distancing need to be followed strictly. Patients with possible COVID-19 infection

need to be identified for a proper triage to minimize the exposure to other patients and health care staff. Therefore, patient screening was implemented in various ambulatory settings during the pandemic.

We report our 1-year experience of setting up a patient screening process in large multispecialty ambulatory settings in our organization. We also describe changes made to improve the process with evolving knowledge of COVID-19.

METHODS

Background

Yale Medicine is a practice plan of physician faculty employed by the Yale School of Medicine and oversees ambulatory operations in various settings in Connecticut. We observed the first COVID-19 wave in Connecticut from approximately March to May 2020 and the second wave from November 2020 to February 2021 based on a number of new cases (Ct Data, 2021). In March 2020, the Yale Medicine ambulatory operations group began several initiatives including modification in scheduling templates, rearrangement of patient seating in the

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We thank all Yale Medicine staff for their contribution to the screening process in ambulatory settings.

The authors have disclosed that they have no significant relationships with, or financial interest in, any commercial companies pertaining to this article.

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DOI: 10.1097/JAC.0000000000000387

waiting room, and setting up the screening process. We initiated the screening process in 1 large multistoried clinic building in New Haven, Connecticut, and in 15 multispecialty clinics offering comprehensive care to adult patients throughout Connecticut.

Perrival patient communication

Before the clinic visit, we communicated with patients to inform them about the screening process and to avoid coming to clinics if they had fever or respiratory symptoms or a history of travel or COVID-19 exposure. A video was posted on our organization's website to explain the process of screening. Patients were informed at the time of scheduling clinic visits and also with an automatic appointment reminder message 3 days before the clinic appointment. Initially patients in some clinics were called by telephone to do previsit screening and later patients were offered to do COVID arrival screening on a mobile phone app of the electronic medical record (EMR) patient portal on the day of visit. If patients failed screening, they were asked to contact the provider rather than coming to the clinic.

Initial screening process

1. *Screeener setup.* Initially, all screeners were front-desk check-in staff who set up the screening process in the lobby or at the entrance door before patients entered the waiting room. Screeners wore surgical masks and had computer workstations with access to the EMR. Patients lined up at a safe distance guided by decals on the floor.
2. *EMR screening.* Screeners confirmed the patient appointment in the EMR before initiating other process of screening.
3. *Temperature check.* Temporal temperature check was performed with a handheld thermometer and 100°F was considered as a fever and failed screening.
4. *Mask education.* It was ensured that patients were wearing face coverings.
5. *Symptom questions.* Patients were asked whether they had fever or respira-

tory symptoms suggestive of COVID-19 (Centers for Disease Control and Prevention [CDC], 2021). They were also asked whether they had COVID-19 recently or they were exposed to someone with COVID-19 in the last 2 weeks.

6. *Travel questions.* Patients were asked about international travel initially and then from the states with higher COVID-19 positivity rate in the last 2 weeks.

Following successful screening, patients were given a sticker and were asked to wear it during the clinic visit. We implemented a visitor restriction policy and allowed visitors only when medically necessary or with the provider's approval. The number of people screened was recorded daily, and the screening time was estimated by random observations.

Triage for patients with failed screening

When patient failed screening with an answer "yes" to travel or symptom or exposure questions or with fever, a nurse manager asked the patient to stay away from other patients and obtained the patient's cellular phone number. Then, the patient's medical provider was contacted for advice. In most cases, the patient was asked to leave and was rescheduled as a telehealth visit or a clinic visit at a later date. In rare circumstances, if the visit was deemed clinically necessary, the patient was brought in the clinic in a special designated room, and care was provided by the staff in full personal protective equipment designated for COVID-19-positive patients. The number of patients who failed screening was recorded daily.

Improvisation of the screening process

Over the span of a year, we modified the screening process and included additional measures in clinics, as described in Figure 1. We modified the symptom and travel questions per evolving guidance from the CDC and the state of Connecticut over time. We added EMR notification if a patient was recently positive for COVID-19 or had a test

Screeners	Surgical masks and gloves		Plexiglass barriers		Eye protection	
EMR	Appointment confirmation	COVID Test banner in EMR	Visitor allowance note			
Temperature	Hand-held thermometers			Contactless temperature readers		
Masking for Patients	Ensuring face coverings	Checking mask appropriateness				Requiring surgical masks
Symptoms	Symptom screening per CDC guidelines					
Travel	Travel screening as per weekly guidelines from CT state					
	Mar-20	May-20	Jun-20	Aug-20	Dec-20	Feb-21

Figure 1. Screening process.

result pending. We asked providers to put a note in the EMR to allow visitors and, in such cases, allowed visitors to accompany the patient after screening them. We added extra safety measures such as plexiglass barriers and later eye protection for our screeners (Coroneo & Collignon, 2021). Screeners assessed appropriateness (covering of nose and mouth and fitting) of face coverings initially and then asked all patients to wear surgical masks due to better protection than cloth masks (Whiley et al., 2020). In our large multistoried clinic building, we installed noncontact temperature readers Richtech, which read the temperature in 2 seconds when patients faced the screen.

RESULTS

We screened a total of 282 669 patients over the year from March 2020 to March 2021. In our large multistoried clinic building we screened 146 845 patients (52%) and 135 824 patients (48%) in other 15 clinics. Figure 2 shows the weekly number of screened patients over 1 year with fluctuations related to the first and second wave of COVID-19 in the state of Connecticut. The patient volume increased after the first wave and then decreased slightly during the second wave with 3 dips related to winter holidays (Thanksgiving and Christmas) and a snow-storm in February 2021.

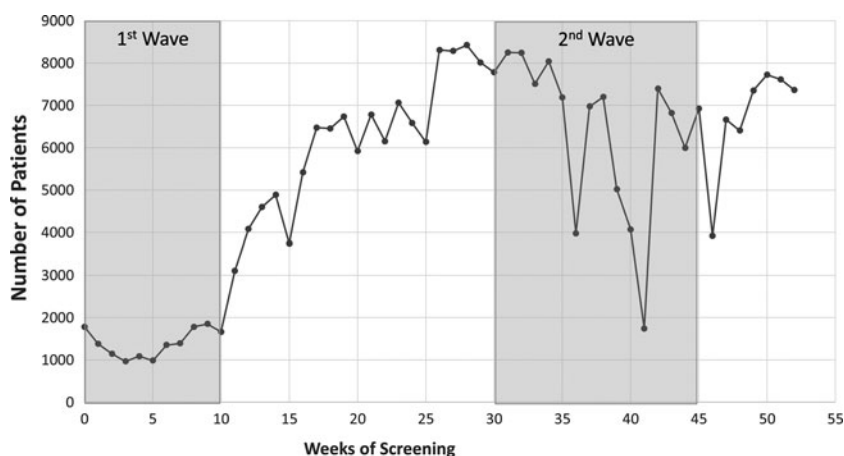


Figure 2. Number of patients screened each week over a year including the first and second wave of COVID-19 pandemic.

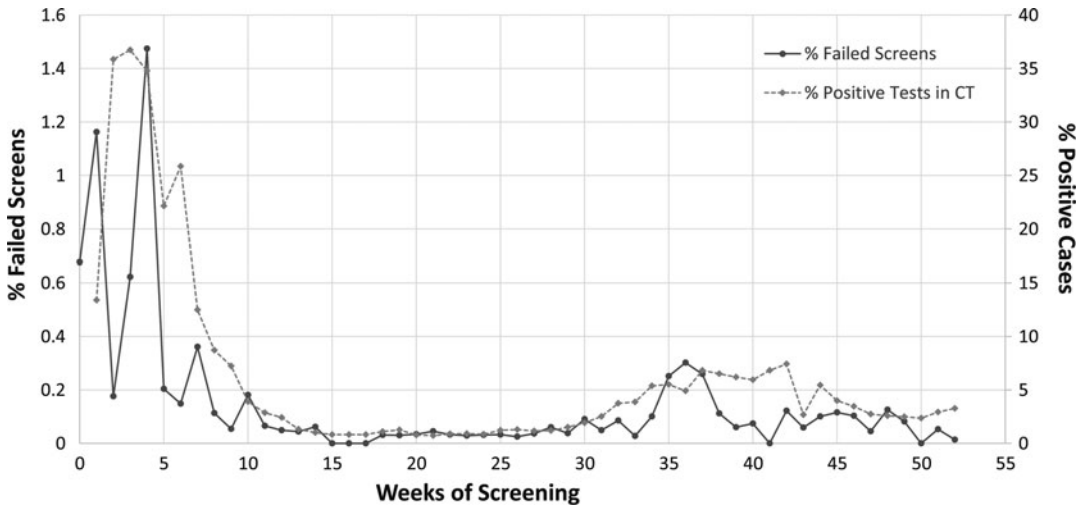


Figure 3. Percentage of patients who failed screening along with the percentage of patients with COVID-19-positive tests in Connecticut per week.

Of 282 669 screened patients, 249 patients (0.1%) failed screening. Figure 3 shows the percentage of patients who failed screening along with the percentage of patients with COVID-19-positive tests in the state of Connecticut on a weekly basis (Ct data 2021). The average screening time in first 6 months was 90 seconds per patient. During last 2 months, the mean time of screening was 55 seconds per patient.

DISCUSSION

We report our experience of setting up a screening process for a large number of patients entering ambulatory sites during the COVID-19 pandemic. We had to improvise the screening process keeping up with evolving knowledge of COVID-19. We rescheduled 0.1% of 282 669 patients due to failed screening to decrease the risk of exposure to patients and health care staff.

Over the period of a year, we made changes in our screening process as more information about COVID-19 become available and patient volume slowly climbed up after the first wave in our state. We modified our questions per recent CDC or state guidance to screen patients for possible COVID infection. We added more safety precautions such as plexiglass barriers and eye protec-

tion for screeners and made surgical masks mandatory for patients. Noncontact temperature readers helped patient flow, saving few seconds and avoiding the risk of exposure related to using a hand-held thermometer. As both screeners and patients got used to the screening process, we were able to achieve effective and safe screening within a minute and reduce patient queues.

As expected, initial patient flow to the clinic was slow during the first wave, as there was anxiety and concern about coming to clinics. Then, our patient volume increased progressively from May to November 2020 when the community prevalence of COVID-19 was low. The decrease in patient volume during the second wave was much less than that during the first wave. We believe that this was because patients felt comfortable coming to clinics due to our modifications in ambulatory settings including patient screening.

In our screening process, average of 0.1% of patients failed screening over the year, with a peak of 1.5% during the first wave. We noticed a trend in failure of screening, which was similar to the trend of community prevalence reflected by a percentage of COVID-19-positive cases in our state. Our prevalence of failed screening was low probably due to our patient communication efforts before patients arrived at the clinics. Still,

249 patients failed screening in the clinics and we rescheduled them after explaining the rationale. During the clinic visit in the examination room, patients are often in close proximity (<6 ft) for more than 15 minutes with the provider, and this type of exposure is considered a high risk for COVID-19 transmission (Wiersinga et al., 2020). Additionally due to clinical need, patients may need to take off the mask for the physical or endoscopic examination of nose, mouth, or throat, thus increasing the risk of transmission to providers. Therefore, we feel that we decreased the risk of exposure to our patients and staff by rescheduling the patients who failed screening.

Our study has few limitations. First, this was not a process with planned interventions from the beginning and we made changes over the time as we learned. Second, our screening process was not completely uniform in all clinics and we had to modify the process depending on the space and resources available in individual locations. However, the core principles of screening

remained same throughout all our clinics. Finally, the patient screening process needs resources, and we do not have all the expense details as our process kept evolving. It is also difficult to estimate the exact benefit of this process, as we cannot estimate how much COVID-19 transmission was reduced. We are aware that it is not possible to detect asymptomatic COVID-19 patients with the screening process, although recent studies indicate these patients are less infectious than symptomatic patients (Sayampanathan et al., 2021).

In summary, we report 1-year experience of screening 282 669 patients entering our ambulatory facilities and provide a practical approach to set up a screening process. In our population, 0.1% of patients failed screening and were rescheduled. The trend of failed screening in our patient population mirrored the trend of COVID-19 test positivity in the community. Patient screening can help reduce risk of exposure of COVID-19 in the ambulatory settings and can be a useful tool in the “playbook” during the pandemic.

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