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[COVID-19] IR Temperature Screening Lacks Supportive Evidence for Preventing COVID-19 Transmission [ECRI Exclusive Special Report]		

Summary

Please [CLICK HERE](#) for a brief ECRI Micro e-learning Module related to this Special Report. For more information regarding these modules, please contact hda@ecri.org.

Problem

1. Hospitals are spending financial resources on infrared (IR) cameras, kiosks, and thermal imaging systems for screening visitors, staff, and patients to identify COVID-19 and prevent its transmission.
2. However, the high cost and low evidence for the use of this type of system can make it a poor purchasing decision.
3. IR temperature screening, even with questionnaire strategies, produces a false sense of security and can use scarce resources that could be better used elsewhere.

ECRI Recommendations:

1. Implement preventive measures that do work, such as:
 1. Restrict access to high-risk care areas within the facility (e.g., ICU, ORs).
 2. Social distancing in places where people congregate.
 3. Aggressive hand hygiene.
 4. Use of protective face masks and other appropriate personal protective equipment (PPE) as necessary.
2. Confirm whether certain actions are required. Is temperature screening of patients, visitors, and staff still mandated by your state or local authorities? If yes:
 1. Use tools and measures that are already in place at your facility, such as oral or noncontact thermometers, adequate staff to implement scanning, and sufficient PPE (e.g., face shield, masks, gloves, access to frequent handwashing) to keep technicians safe while they briefly interact with screened persons.
3. Educate and train staff on the human and environmental factors affecting thermometer accuracy:
 1. Train staff on the proper technique for using the thermometers. For example, pointing a forehead thermometer at hair, headwear, or at an angle to the forehead can result in inaccurate results.
 2. Educate staff on the impact of environmental heat, cold, and humidity variations on the technology and individuals being screened. For example, extreme weather or high humidity can affect the performance of noncontact thermometers. Very cold weather constricts surface blood vessels, artificially lowering skin temperature and resulting in false negatives, and warm weather above body temperature may cause false-positive results.

Background:

1. IR cameras, kiosks, and thermal imaging systems, also known as IR thermography, claim to screen for fever in large numbers of people. These devices produce a thermal image on a video monitor and provide an estimate of surface skin temperature based on a vendor's proprietary algorithm. A threshold temperature, such as 100.0°F, is selected as a cutoff for denying entry to the facility.
2. [ECRI's evidence assessment](#) on temperature screening programs shows that mass temperature screening of the general population is ineffective for detecting and preventing transmission of SARS-CoV-2 (or other coronaviruses).
 1. Much of the population carrying the SARS-CoV-2 virus never develops measurable signs or symptoms of disease (e.g., fever) but can still infect others. Several recent publications have provided further evidence of the extent of asymptomatic individuals infected with the SARS-CoV-2 virus. One cohort

- study estimated that asymptomatic individuals account for approximately 40% to 45% of SARS-CoV-2 infections and may transmit the virus for up to 14 days.
2. People who do become ill with COVID-19 can infect others for several days before signs and symptoms appear and after temperature has normalized in the recovery phase. Therefore, fever detection is not equivalent to virus detection and asymptomatic people who pass screening may believe they are "safe" and relax their efforts to reduce potential transmission (e.g., social distancing, hand hygiene).
 3. Detailed information on ECRI's position on this subject can be found here: [Temperature Screening to Prevent COVID-19 Transmission: Creating False Security](#)
 4. Despite the lack of evidence to support mass temperature screening, ECRI recognizes that many states have mandated the use of temperature screening to reopen. In light of these requirements, ECRI provides the following guidance to health systems that are deploying noncontact thermometers to comply with mass screening mandates:
 1. ECRI guidance article: [Infrared/Noncontact Temperature Screening for COVID-19: Cost-Effective Ways to Fulfill State or Local Mandates](#)

References & Source Documents:

1. ECRI Resources:
 1. Clinical Evidence Assessment: [Infrared Temperature Screening to Identify Potentially Infected Staff or Visitors Presenting to Healthcare Facilities during Infectious Disease Outbreaks](#)
 2. Position Paper: [Temperature Screening to Prevent COVID-19 Transmission: Creating False Security](#)
 3. Webinar: [Infrared Temperature Screening to Reduce Infection Transmission by Visitors and Staff during Outbreaks: What Does the Evidence Support?](#)
 4. Device Overview: [Infrared Thermometers](#)
 5. Device Overview: [Electronic, Thermistor/Thermocouple based Thermometers](#)
 6. Clinical Evidence Assessment: [Noninvasive Methods for Temperature Measurement](#)
 7. Outbreak Preparedness and Response: [The Essentials](#)
 8. Evaluations & Guidance: [Infrared/Noncontact Temperature Screening for COVID-19: Cost-Effective Ways to Fulfill State or Local Mandates](#)
2. FDA Resources:
 1. United States. Food and Drug Administration. Medical device safety. Thermal imaging systems (infrared thermographic systems/thermal imaging cameras) [online]. 2020 May 13 [cited 2020 Sep 16]. Available from Internet: [Click here](#).
 2. United States. Food and Drug Administration. Medical device safety. Non-contact temperature assessment devices during the COVID-19 pandemic [online]. 2020 Jun 19 [cited 2020 Sep 16]. Available from Internet: [Click here](#).
3. Oran, DP, and Topol, EJ. Prevalence of Asymptomatic SARS-CoV-2 Infection: A Narrative Review. *Ann Intern Med*. 2020;173(5):362-367.

UMDNS Term(s)

Thermographs, Infrared, Patient [34712]
 Thermometers, Electronic, Infrared [14036]

Geographic Region(s)

Worldwide

Suggested Distribution

Clinical/Biomedical Engineering, Critical Care, Emergency/Outpatient Services, Infection Control, Risk Management/Continuous Quality Improvement, Staff Education

Comment

- This alert is a living document and may be updated when ECRI receives additional information.