# Response to Letter to the Editor: ''The Role of Occupational Risk Assessment and Health Surveillance in SARS-CoV-2 Antigen Testing of Unexposed Asymptomatic Workers in Selected Workplaces''

*To the Editor:*

We appreciate the comments of Chirico and Szarpak[1] and their efforts to elucidate several important issues related to antigen testing in the employment setting. We agree that screening testing is one part of a comprehensive approach to reducing transmission in workplaces, which also includes vaccination, risk assessments, contact tracing, physical distancing, and mask use.

Chirico and Szarpak reiterated the false negative issue in persons with low viral load but confirmed the utility of antigen testing in those with high viral load and no symptoms. They noted that the cost of antigen testing may be an issue in some countries, and this is true. However, in many countries the costs should be within the range of doing business and not constraining. In addition, it is important to consider the potential cost savings and other benefits associated with preventing workplace transmission of SARS-CoV-2. We agree with the point raised that there is more to the costs than the cost of the actual test and emphasize that there is also the need for contact tracing and trained personnel.

As we had discussed in our manuscript, Chirico and Szarpak also noted there are ethical and legal issues surrounding testing programs that require attention and resources. They highlight the role of occupational physicians in many activities surrounding COVID-19 precautions and control that we discussed, including education of workers, testing, contract tracing, promoting vaccinations, developing comprehensive prevention programs, and managing workers with symptoms and return to work issues. We agree that occupational safety and health professionals, including occupational physicians, can play an integral role in a workplace's COVID-19 preparedness, response, and control plan.

Chirico and Szarpak also point out a weakness to screening for SARS-CoV-2 infection with antigen tests is that workers with SARS-CoV-2 infection could have false-negative tests due to low viral load and those workers might still be able to transmit infection. A recent systematic review and meta-analysis found that sensitivity of SARS-CoV-2 antigen rapid diagnostic tests relative to reverse transcription polymerase chain reaction (RT-PCR) increases as the RT-PCR cycle threshold (Ct) value decreases (indicating increasing viral genetic material).[2] Sensitivity for $Ct < 20$ was 96.5%, and for $Ct < 25$ was 95.8%, while sensitivity for $Ct \geq 25$ was 50.7% and for $Ct \geq 30$ was 20.9%. Thus, although antigen tests are less sensitive than RT-PCR tests, they identify infected individuals with the highest amount of viral genetic material. A study by Marks et al. cited by Chirico and Szarpak suggests, based on evaluation of case clusters, that individuals with more viral generic material (such as those identified by antigen testing) are the ones most likely to transmit SARS-CoV-2 infection.[3] In addition, Bullard et al. found that respiratory samples with $Ct > 24$ did not demonstrate infectivity in culture.[4] Thus, by preferentially identifying individuals with the highest amount of viral genetic material, antigen tests may preferentially identify those with the greatest potential to transmit infection.

Finally, Chirico and Szarpak placed testing within the construct of risk assessment and surveillance and indicated that self-testing of workers at home should be informed by this construct. Ultimately, they believe all prevention strategies and contact tracing activities, including testing, should be planned and managed in collaboration with local health authorities. We encourage workplaces to collaborate with public health authorities in their jurisdictions, who may be able to provide assistance on any local context or guidance impacting the workplace. We appreciate Chirico and Szarpak augmenting our work with additional valuable information.

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