Flu testings: ICT versus PCR

Rapid influenza diagnostic tests (RIDTs) are antigen detection tests that detect influenza viral nucleoprotein antigen. The commercially available RIDTs can provide results within 30 minutes or less. Thus, results are available in a clinically relevant time period to inform clinical decisions. These assays may be referred to as “point-of care” tests. None of the currently FDA approved RIDTs can distinguish between influenza A virus subtypes (e.g. seasonal influenza A (H3N2) versus seasonal influenza A (H1N1) viruses or the current swine H1N1 strain). For detection of seasonal influenza A virus infection in respiratory specimens, RIDTs have low to moderate sensitivity compared to viral culture or RT-PCR. The sensitivities of RIDTs appear to be higher for specimens collected from children than specimens collected from adults.

Few comparisons of RIDTs with RT-PCR for the detection of novel influenza A (swine H1N1) virus or seasonal influenza viruses have been published. Three recent analytical studies indicate that commercially available RIDTs are reactive with the nucleoprotein of swine H1N1 virus. However, only limited data have been published on the performance of RIDTs compared with RT-PCR for detecting the presence of swine H1N1 virus in clinical specimens. Compared to RT-PCR, the sensitivity of RIDTs for detecting swine H1N1 virus infections ranged from 10-70%. Therefore, a negative RIDT result does not rule out swine H1N1 virus infection. While limited by small numbers, currently published side-by-side comparisons of RIDTs to detect swine H1N1 and seasonal influenza A viruses suggest the sensitivity of RIDTs to detect swine H1N1 virus is equal to or lower than the sensitivity to detect seasonal influenza viruses. Factors that might contribute to a lower sensitivity for influenza laboratory tests to detect swine H1N1 virus infection include the type of respiratory specimen (i.e., nasal vs. nasopharyngeal swab), quality of the specimen, time from illness onset to specimen collection, the age of the patient, time from specimen collection to testing, and the storage and processing of the specimen prior to testing.

Nevertheless, although sensitivity of the rapid tests for detecting Influenza virus in respiratory samples is low, the high specificity of near-patient assays, together with the advantage of results being available within 30 min, may provide important information for the clinical evaluation of patients with an acute respiratory illness, provided that the result of the near-patient assay is positive. One has also to consider the well-documented higher sensitivity of the rapid tests in the pediatric population since the viral load is higher in children than in adults. And CDC clearly shown that RIDT sensitivity was related to the viral load The sensitivity of the test is better than on adults but it is not of 100%. This is true if we look at one individual patient. But if we look at a population, as it has to be during an outbreak event, a test with a 80% or even 60% will be helpfull. Indeed, with the next school year coming soon, there is a need for a rapid test to detect the presence of infected children at school. As soon as some children show flu-like symptoms, they need to be tested to know if the Influenza virus, and particularly the new swine-like A/H1N1 is there or not. In the case of positive children in a school, all children with flu-like symptoms could be given antivirals.

CDC does not claim to ban RIDT tests.

The rapid antigen test can be performed very rapidly and the result be available soon enough for providing the patient with antivirals. In the case of PCR, the sample has to be sent to a lab performing PCR, so the result will come at least one day later which is too much to set up an appropriate treatment since the Tamiflu efficacy decreases rapidly if given 48 hours after onset of symptoms.
Finally, cost of each test should be an issue as well, for both end-users and social security.

	Sensitivity	**Specificity**	**Rapidity / bed-side**	**Usefulness during outbreak**	**Cost**
RIDT	No	Yes	Yes	Yes	Yes
PCR	Yes	Yes	No	Yes/No	No