Twitter Thread by Michael Mina



Michael Mina
@michaelmina_lab

NOTE:

If you see papers/media that show very low sensitivity for rapid Ag tests (i.e. 30%-60% sensitivity) the report is most likely making a common mistake:

Comparing a test meant to detect viable virus to a test that can detect minuscule amounts of RNA is a mistake.

1/x

PCR RNA stays around long after live virus is cleared

So if you see a paper that shows very low sensitivity, ask:

"Are they comparing rapid antigen tests to "anytime" PCR RNA positivity? (Especially studies asking about sensitivity among asymptomatics)

2/x

To interpret this, you should know that only 25%-40% of the time someone is PCR positive are they infectious w live virus.

So... even a test that is 100% sensitive for live virus should only show a 25%-40% sensitivity against PCR among asymptomatic people.

3/x

(For various more epidemiologically complicated reasons having to do with the growth or decay rate of the epidemic, the sensitivity range is actually more like 30% - 60%... but that's for another tweet sometime)...

But to interpret studies of rapid antigen tests...
4/x

Simply put... If you see reports of rapid antigen tests "only" 30% - 60% sensitivity in asymptomatics (vs PCR) - you should think:

"Great! That could well be an exceptional test with sensitivity as high ~905-100% sensitive for likely contagious virus - and its rapid!"

5/x

This is too important to allow yourself to be misguided.

So, unfortunately here, don't always believe scientific papers

You have to ask "Why is the test being done?"

If it is to detect asymptomatic contagious people, then know that comparing vs. PCR is misleading.

6/6

Also, PLEASE don't look only at Ct values against Rapid Ag tests. Need a way to understand what each Ct represents. Some platforms run ~8 Cts lower than CDC / WHO assays. This means that every platform needs to be considered individually. Can Not just say "Ct < 30" = "live virus"

We are finding that whole platforms consistently run low. TaqPath it seems runs low for instance.

So in that case, a Ct of 23 may be more like a Ct of 29/30. This was the case in Liverpool and I believe recently a JCM paper looking at BinaxNOW among asymptomatics in Utah.

Also this: https://t.co/KgmLcvVlS5

> Anyone seriously commenting on or writing scientific papers about rapid tests vs PCR should include impact of speed & frequency
>
> NOT just lowest limit of detection
>
> The latter is the least important for public health
>
> Access frequency & speed are each MUCH more important metrics
>
> — Michael Mina (@michaelmina_lab) February 1, 2021