Reply to Mouliou *et al*

Dear Editor,

We read the response by Mouliou *et al* to our article entitled 'COVID-19 Rapid diagnostics: practice review'[1] with interest. The authors of the response note that we have labelled PCR and nucleic acid tests as 'molecular' and state that lateral flow antigen testing devices should also be given that label. However, we would encourage readers to read the original manuscript, in which we have articulated the difference between molecular and antigen assays.

The authors were concerned that we were equating 'rapid diagnostics tests' in the introduction section with antigen tests We indeed pointed out that a limitation of reverse transcriptase PCR assays is their relatively long turnaround time. However, by going on to state: 'Rapid diagnostic tests could aid decision making in the emergency department', we were referring to tests with a shorter turnaround time, regardless of type of test.

The authors point out that interferences could explain false negative results and that therefore it was invalid for us to compare different assays. The authors also suggest that the Hook effect could cause false negative results with lateral flow antigen testing devices, although it appears that direct evidence has been cited for this phenomenon. While noting that the possibility of a Hook effect is important, we should note that a false negative result is still a false negative result even if it has been caused by the Hook effect. The fact that assays may be subject to different interferences certainly does not invalidate a discussion of the relative merits of the different tests.

Similarly, we think there is a suggestion from the authors that we should not have reported on test sensitivity but rather attempted to understand reasons for false negative diagnoses. However, test sensitivity is a fundamental measure of diagnostic test accuracy, whatever the reasons for false negative diagnoses. The suggestion to retest using different assays may help to reduce false negative diagnoses. Readers may, however, wish to have more clarification about whether every patient sample ought to be retested with another assay or only selected samples as the definition of 'ambiguous cases' itself is not clear.

Further, it appears that the authors did not welcome our discussion of the use of lateral flow antigen testing devices for mass population testing because it is far removed from the emergency department. Nonetheless, this is a fundamental component of testing strategy. Emergency physicians, in our experience, remain keen to understand aspects of the wider testing strategy.

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1 Reynard C, Allen JA, Shinkins B, *et al*. COVID-19 rapid diagnostics: practice review. *Emerg Med J* 2022;39:70–6.