**June 23, 2020**

**Cambridge COVID-19 Expert Advisory Panel notes**

**Attendees:**

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| Anna Kaplan | CPHD |
| Claude Jacob | CPHD/Cambridge COVID-19 EAP |
| Sam Lipson | CPHD/Cambridge COVID-19 EAP |
| Dr Eric Lander | Broad Institute |
| Kristen Zarelli | Broad Institute |
| Bill Hanage | Cambridge COVID EAP-19/Harvard and community |
| Jill Crittenden | Cambridge COVID EAP-19/MIT and community |
| Lou Ann Bruno-Murtha | Cambridge COVID EAP-19/Cambridge Health Alliance |

**Convened at 2:00 pm**

**8 questions from the panel in preparation for this discussion:**

1) **Review of testing strategy from April and May. Lessons learned. Plans for follow-up testing.** Claude summarized deployment of hybrid teams to all 7 Cambridge long-term care or skilled nursing facilities in April: Weekly testing of all residents/patients and staff was conducted by EMTs from Professional Ambulance (ProAm), Broad staff and Nancy Riham-Porter from CPHD. There was not 100% testing of all residents and staff, but nearly so.

2) **Based on CHA observations and publications showing high rates of household transmission, serological and/or viral testing of households of COVID-19+ cases could be valuable. Would this be a feasible with Broad support?**

3) **Has Broad compared fidelity of viral assays from nasopharyngeal vs. less invasive (anterior nasal, tongue) swabs?**

4) **Comparison of RT-PCR assays vs. antigen assays- will antigen assays be a better strategy for home-testing because of their low cost and easy-to-read features?**

5) **Advice for Cambridge Public School reopening and possible Broad involvement in helping to test adults and teens in schools?**

6) **What is the impact of false negatives, particularly for asymptomatic people, and how we can use that information to appropriately guide testing for the Fall.**

7) **Can home-tests for influenza be developed to help with false-negative issue?**

8) **What are the plans for the expected increase in transmission rates as we go forward?--**

**Jill Crittenden:** It seems like nasopharyngeal swabs have been a deterrent for many people who haven't been tested. Is the Broad now using anterior nares swabs?

**Eric Lander:** Yes, and our collection method also uses dry swabs (no liquid needed). These are transported dry with later suspension in 1/20$^{th}$ liquid volume previously used. With this method we have 95% detection of the SARS-Cov-2 RNA at 60 molecules and 905 detection at 40 molecules. Our false positive rate is very low [1/100,000$^{th}$ of viral load of a typical patient]. We conducted a study on our staff.

We have discussed the potential use of self-administered swab collection with direct observation. We have submitted for FDA approval of a non-observed version of this test collection kit. With the shorter swab observers may or may not need enhanced PPE, depending on setting.

Some issues with this method include uncertainty about the "window period" during which patient is infected but not yet shedding, whether shedding by nares is less likely to occur early in shedding phase, and the ensuring correct swabbing method used for self-administered collection.

**Jill Crittenden:** What frequency do you think is appropriate for high assurance that groups are uninfected?

**Eric Lander:** At the Broad we were testing twice a week and are going to once-per-three days. One of the other areas of progress is the reduced cost of the test. With volume we can now get cost down to $25 per test. We're quoting $20 per test to partners.

**Jill Crittenden:** What do you think about pooling sample collection?

**Eric Lander:** It depends what you're trying to find out. You would still have to pay for the cost of the individual swabs and tubes. You would save money on PCR analysis, so you might save 50% overall on cost. IF you want to look at pooled samples you would need to have a system to store older specimens and then go back to test each one. I'm not sure pooling is worth it or that it would save enough cost. This is still an open question at the Broad and how this would be received at FDA. With a $20 individual sample cost it might not be worth it.

**Jill Crittenden:** Can you see possibly using pooling in high schools?

**Eric Lander:** It might be feasible to collect pooled samples taken at random. With a positive test results all students in that cohort would then be tested.

**Claude Jacob:** It could be that random pooled samples play a role. This is something that could be taken up with the School Reopening Task Force that Jill sits on.

**Sam Lipson:** We've previously discussed the need to prioritize household contacts of those who test positive. Does that seem like it could be useful?

**Eric Lander:** We would need to answer several questions, like the frequency of testing to make sure the household remains free of infection. And how would the results be used during follow up? Does it help with the overall containment strategy?

**Bill Hanage:** We need to make sure that we don't simply become "stenographers for the pandemic". If we test these household contacts then we need to be able to indicate what they should do with the results.

Note: The EAP has previously discussed the need for household cohorting to prevent the spread of the virus. This would require establishing "isolation hotels" for COVID-positive individuals and/or "safe-havens" for COVID-negative income earners who need to be protected for the sake of the rest of the household.

**Jill Crittenden:** What about the delay in getting test results? How much risk does that add?

**Eric Lander:** We have gotten our analysis down to about a 6-hour turnaround time. We currently have a capacity to conduct 35,000 tests per day and are prepared to ramp up to 100,000 per day by the end of July.

**Anna Kaplan:** I think it's important to explain our current efforts to reach all household contacts when we have a positive case reported. Household contacts are prioritized for testing and we spend a great dea of time and effort following up with all household contact as part of our contact tracing protocols. So we are doing pretty well in that respect.

**Bill Hanage:** One issue is that sensitivity can lead to problems of overestimating infectivity, since many positive results will fall below the level need to be infectious.

**Eric Lander:** Indeed. If we only knew the actual infectious dose (or figured out a way to model it) we could avoid this problem.

**Bill Hanage:** What is the feasibility of saving excess RNA from collected specimens in order to conduct sequencing studies? This could be valuable information.

**Eric Lander:** This wserolould require prior permission and proper storage and cataloging system for samples. This could be a powerful tool.

**Lou Ann Bruno-Murtha:** One idea we've discussed on this panel is the establishment of "safe havens" to isolate healthy income-earning householders from positive cases in the household. This would involve bringing those uninfected individuals to a "safe" facility after testing and a quarantine period. Once all infected members are isolated the household could be carefully disinfected and uninfected members could return.

**Claude Jacob:** On Friday (June 26th) the COVID Equity task force will release a report that includes a similar strategy.

**Anna Kaplan:** As part of our contact tracing efforts we do provide guidance to householders living with a COVID-positive person. We encourage them to get tested after 5 days and then attempt to get them retested within a 6-week window after last known exposure due to lingering positivity of low-level shedding. Householders are automatically asked to quarantine for 14 days in any case.

**Claude Jacob:** It seems that we really need a plan for a ramp-up in positive cases. Sufficient testing only pushes the need for such an isolation and quarantine plan that is properly resourced.

**Jill Crittenden:** What about the risks posed by fecal droplets? And I wonder if we should we be spending more effort to increase ventilation rates wherever possible?

**Bill Hanage:** Recent studies suggest that there is more limited viral shedding in feces. Al though viral RNA has been found in air borne particles these are not generally viable (capable of causing an infection).

**Lou Ann Bruno-Murtha:** In hospitals the protocols often forbid the use of toilet lids, like in other institutions. I'm not sure why, but this would be in conflict with the use of lids to contain particles from being transported out of the toilet bowl.

**Jill Crittenden:** What are the prospects for use of home-administered antigen tests?

**Eric Lander:** There are many antigen tests, but none validated {FDA approved?] for home use as yet.

**Bill Hanage:** I wonder what kind of follow-up would be appropriate after getting results of a serological test that was administered at home (or anywhere)?

**Eric Lander:** Well at the Broad we begin the process of contact tracing within the building right away. This gives the contact tracers from public health a head start.

**Jill Crittenden:** Going back to the schools, it seems like some sort of selective testing plan in schools would lead to some positive results and wider testing within the class cohort (in addition to standard contact tracing)

**Claude Jacob:** Can the panel share their thoughts on how to message where we are right now in the pandemic as it relates to reopening?

**Eric Lander:** It's important to peg any rationale for reopening on relevant data. At the Broad we set the testing regime (frequency) and explain the reasoning for this. Cambridge could put a very clear statement together that explains <u>why</u> specific policies are being imposed (not just because the State has mandated certain things). It's also important to explain what we <u>don't know</u> at the same time. This transparency of purpose can win over a lot of people who might be skeptical otherwise.

**Claude Jacob:** COVID Community Ambassadors could help to span this "explanation gap". We're still working on this proposal, so we don't have more specifics yet.

**Bill Hanage:** How should we propose to use data to tighten up on mitigation policies?

**Eric Lander:** I think this linkage is most successful when the overall plan is developed with several community organizations/partners on board. As far as the State plan for resuming restrictions on commerce and use of public spaces, there is a need for significant run-time to have such a proposal vetted and adopted.

Cambridge could put together a list of the 5-6 highest community priorities, for example:

1) Everyone gets tested when they need or want to get tested. [We could set up a drop-off and delivery system using Uber drivers who would bring a test kit, wait for the resident to take the specimen and bottled it, then it could be returned to the lab]
2) All schools will have surveillance testing taken using specimen pooling. Follow up testing of individuals would then be conducted if the pooling sample is found to be positive.

… and a few more in order of importance to the community.

Such a plan for Cambridge, if ready by the end of July, could have an outsized influence on the Governor's advisory panel and eventual State plan.

**Bill Hanage:** Such a plan should be written to address various contingencies (if…/then…). At very least a surveillance plans needs to be established.

**Claude Jacob:** One City Councilor made a request for use of a real-time R0/Rt for Cambridge.

**Bill Hanage:** These values are modeled and there are several different methods. The popular RT.live site uses a somewhat unusual method in calculating the Rt value for each state. The best method is probably the one developed by **Anne Cori** (Imperial College London).

**Adjourned at 3:05 pm**