WCH CWP
INDIGENOUS HEALTH

WCH
WOMEN'S COLLEGE HOSPITAL
Health care for women | REVOLUTIONIZED

Presented by:

WCH Community Response Team

Clinical Leads:
Dr Suvendrini Lena – Medical Lead
Vanessa Wright NP - Community Lead
Jessie Bawden – Operational Lead

In partnership with The Centre for Wise Practices at WCH.

Community Rounds Co Lead: Selena Mills

COVID Prevention in Communities Rounds

Land acknowledgement

I wish to acknowledge this land on which we meet. For thousands of years it has been the traditional land of the Huron-Wendat and Petun First Nations, the Seneca, and most recently, the Mississaugas of the Credit River. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and I am grateful to have the opportunity to work in the community, on this land.

- I am a settler on this land. I recognize the broken treaties, attempted genocide and injustices against Indigenous peoples in Canada span centuries, and the impacts and oppression are still prevalent today.

- This statement is meaningless unless I am committed to be on a personal path of truth and reconciliation; which I do commit to.

A bit about the WCH Mobile team

WCH Mobile COVID-19 Assessment Team (MCAT) – Community Sites

Purpose of the Mobile COVID-19 Assessment Team:

In response to the growing impact of the COVID-19 pandemic within congregate living facilities throughout Ontario, Women's College Hospital (WCH) has identified a need to provide expanded support to the most vulnerable individuals. The WCH Mobile COVID-19 Assessment Team (MCAT) was created to efficiently address urgent testing requirements of vulnerable populations including residents living in homeless shelters, and other congregate settings. Herein, the MCAT provides onsite universal COVID-19 testing for individuals living in congregate settings, when a COVID-19 outbreak has been identified by Toronto Public Health.

MCAT reports to Darryl Yates, VP of Patient Care and Ambulatory Care Innovation, and Dr. Sacha Bhatia, Chief Medical Innovation Officer.

MCAT Workflow:

WCH MCAT includes the following personnel:

Located at WCH:

1 medical secretary (from ACCESS Centre)
Assessment Center (AC) Medical Director/Deputy

Onsite testing personnel:

2 MDs/NPs
2 Administrative Supports: labeling and bagging specimens

Provided by requesting institution:

1 Liaison staff for all communication
1-2 Staff to assist with resident flow

Draft: V.Wright
05/06/20

IN WAVE 1

- Delivered a wrap around testing service to shelters
- WCH partners or assigned by TPH
- Prepare for testing
- Testing day
- Handling the test results
- Following weeks IPAC support

IN WAVE 2

- Work in schools in highly impacted communities
- Support relationships created in wave 1

The Centre for wise practices in Indigenous health (CWP)

HISTORY | HEALTH | HEALING

Our Diversity Is Sophisticated & Sacred

Vision: committed to the health and well-being of all First Nations, Inuit and Métis individuals, families and communities. We believe in a health system that acknowledges and respects Indigenous identity, trauma and resilience while providing meaningful, culturally safe care, free of racism and discrimination—where Indigenous worldview(s) are recognized and valued.

Pillars/Goals:

1. Indigenous Health Education and System Change
2. Indigenous Knowledge Translation and Health Equity Research
3. Public Health Policy and Advocacy

WCIHI CWP
INDIGENOUS HEALTH

Reclamation of Indigenous Knowledges & Governance

Access To Culturally Safe & Trauma Informed Care

About these Rounds

We hope to create a forum to exchange ideas and strategies as we work together to keep our communities safe

- COVID impacts low income indigenous, black and communities of color much more severely.
- We need for strong, responsive and respectful partnerships between hospitals and community partners and activitists.
- We are all stronger when we come together with integrity
- We are reaching for a silver lining – responses to COVID can lay the ground work for permanent, transformative, liberating changes for our communities.

Rapid Testing: How does it work and where can it be used in community settings?

Agenda

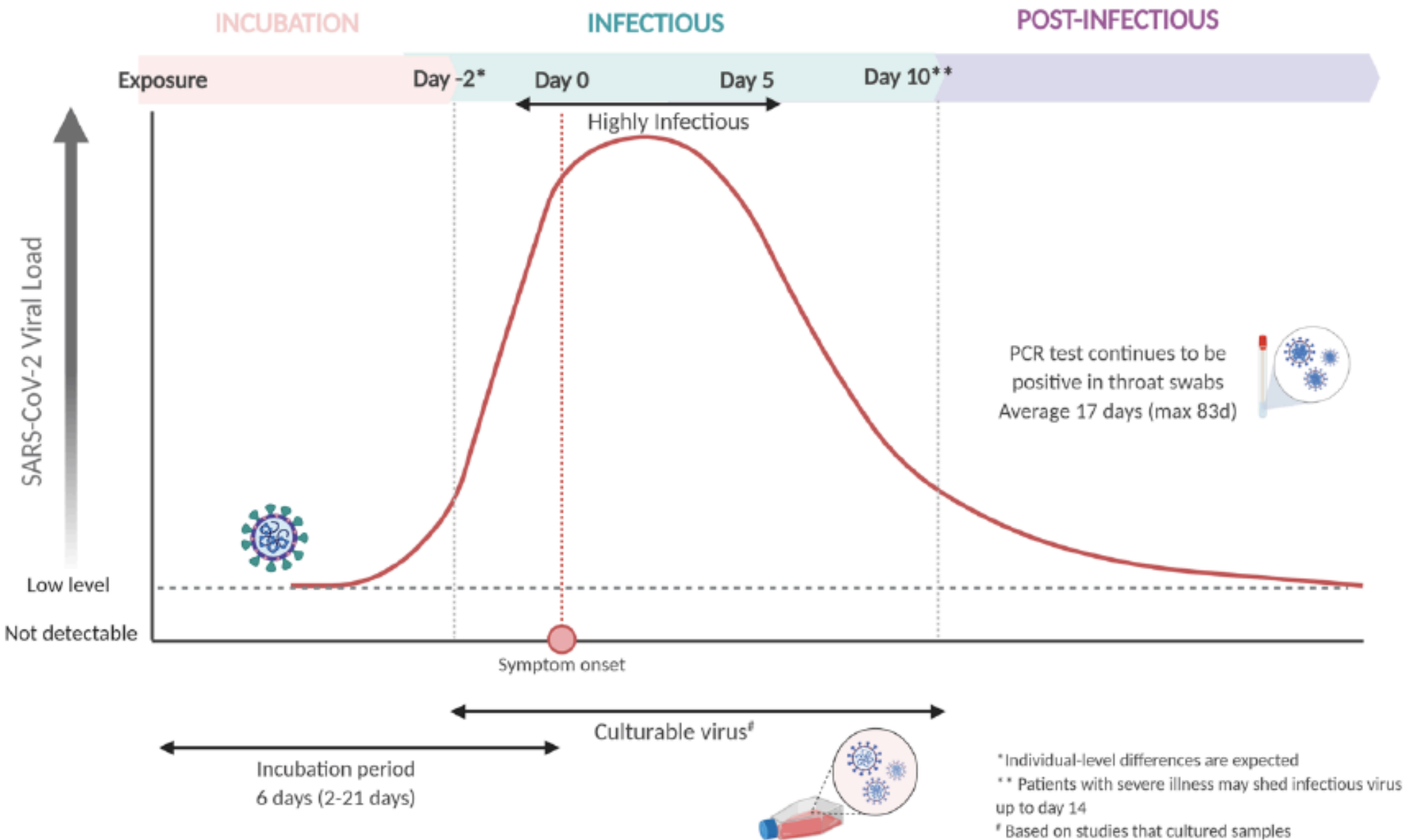
- Introductions 5 mins
- Overview of some data on rapid testing 20 mins
  - Presentation Suvendrini Lena
  - Thoughts Mona Loutfy, Vanessa Wright, Selena Mills
- Discussion & Sharing Perspectives 20 mins
- Topics of interest/needs for future rounds 10 mins
- Housekeeping 5 mins
  - Timing of future rounds & feedback

Rapid Testing

- Rapid accurate accessible & cost-effective testing is essential to controlling the spread of COVID-19

SARS-CoV-2 viral load and period of infectiousness

Cevik M et al. https://doi.org/10.1101/2020.07.25.20162107



The Current Testing Process

Specimen Collection

Specimen Transport

Specimen Analysis:

- RNA extraction
- RT PCR (amplification and quantification of viral RNA envelope and capsid proteins)

Resulting Process/ Follow-up

The process may typically take 1 – 4 days from start to finish.

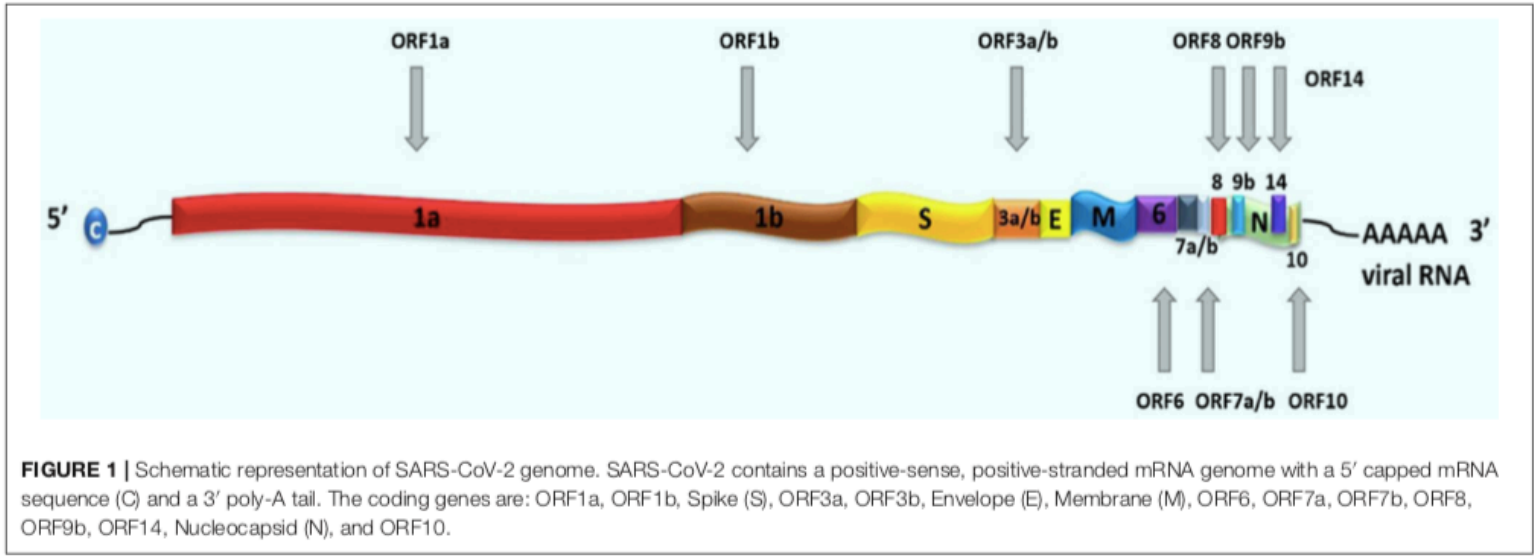


FIGURE 1 | Schematic representation of SARS-CoV-2 genome. SARS-CoV-2 contains a positive-sense, positive-stranded mRNA genome with a 5′ capped mRNA sequence (C) and a 3′ poly-A tail. The coding genes are: ORF1a, ORF1b, Spike (S), ORF3a, ORF3b, Envelope (E), Membrane (M), ORF6, ORF7a, ORF7b, ORF8, ORF9b, ORF14, Nucleocapsid (N), and ORF10.

Rapid Testing

Point of Care Testing and Resulting – 15 to 20 mins
Use outside of a laboratory environment

Some technologies require a portable digital reader and
Others have an optical readout format similar to a pregnancy test strip.

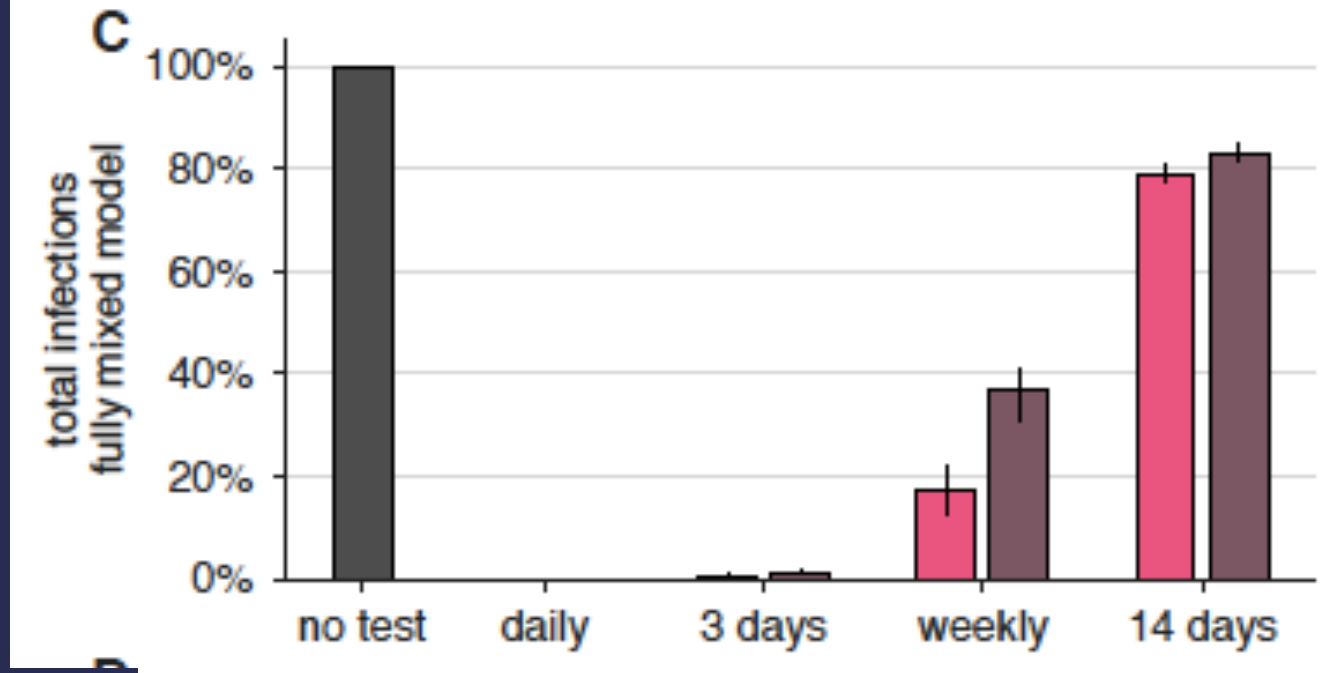
Lower sensitivity relative to NP swab/PCR test

Faster turnaround time, lower per-test cost
Ability to do the test in a setting by non-professionals on a more frequent basis

Why Consider Rapid Testing?

- Increased accessibility of testing
- Fast turnaround time
- Simplicity and transparency of process
- Repeating Testing
- Reduced cost per test

FREQUENCY OF TESTING IS IMPORTANT



medRxiv preprint doi: https://doi.org/10.1101/2020.06.22.20136309.this version posted June 27, 2020.

What is available in Ontario?

- MSH Lab has received 10,000 Abbott Panbio test casettes (antigen test)

- They are awaiting delivery of Abbott ID NOW (molecular tests)
  - Ontario:
    - October 23: 110 instruments and 99,924 tests
    - Later: +70 instruments and +79,056 tests

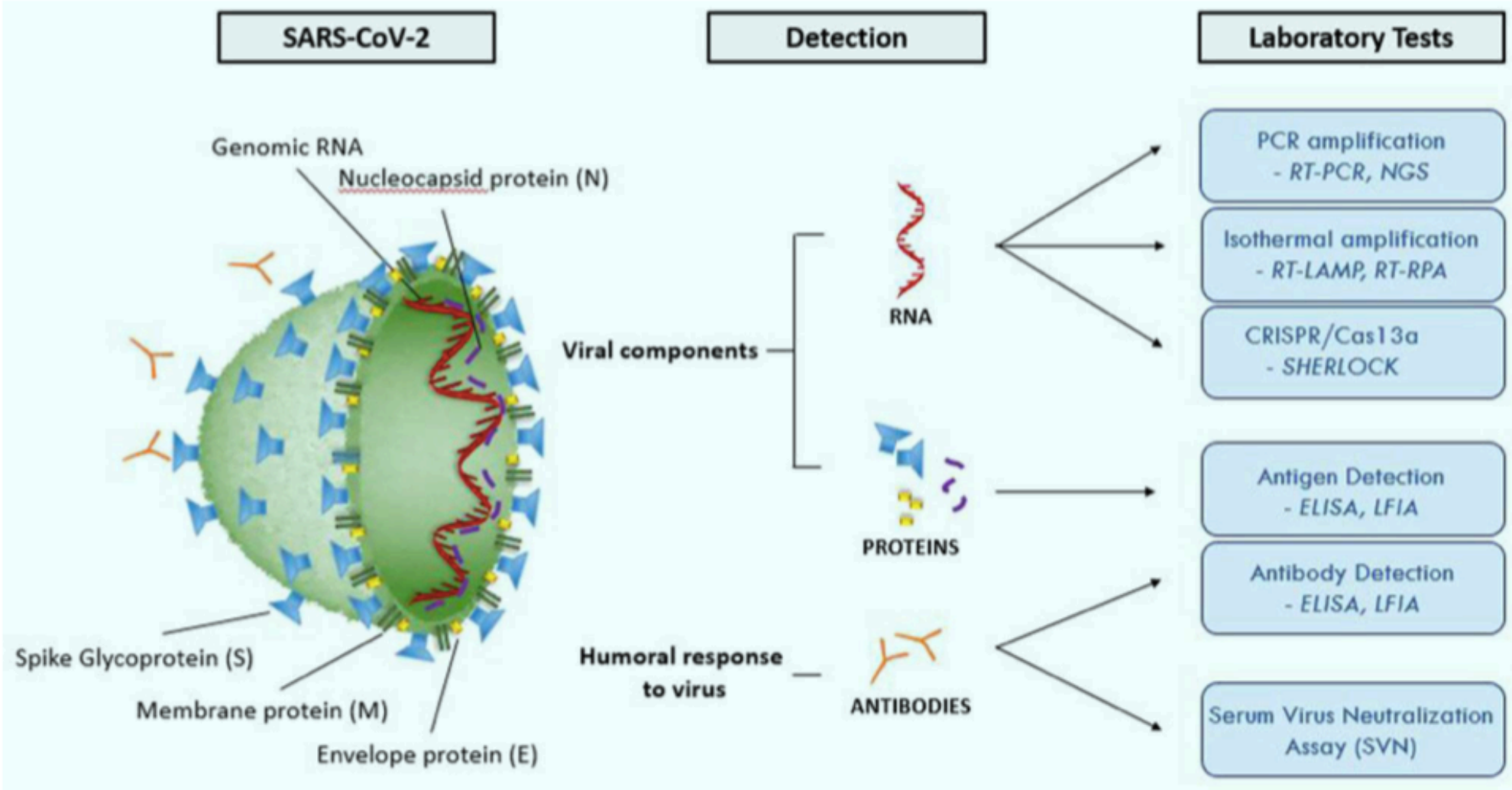
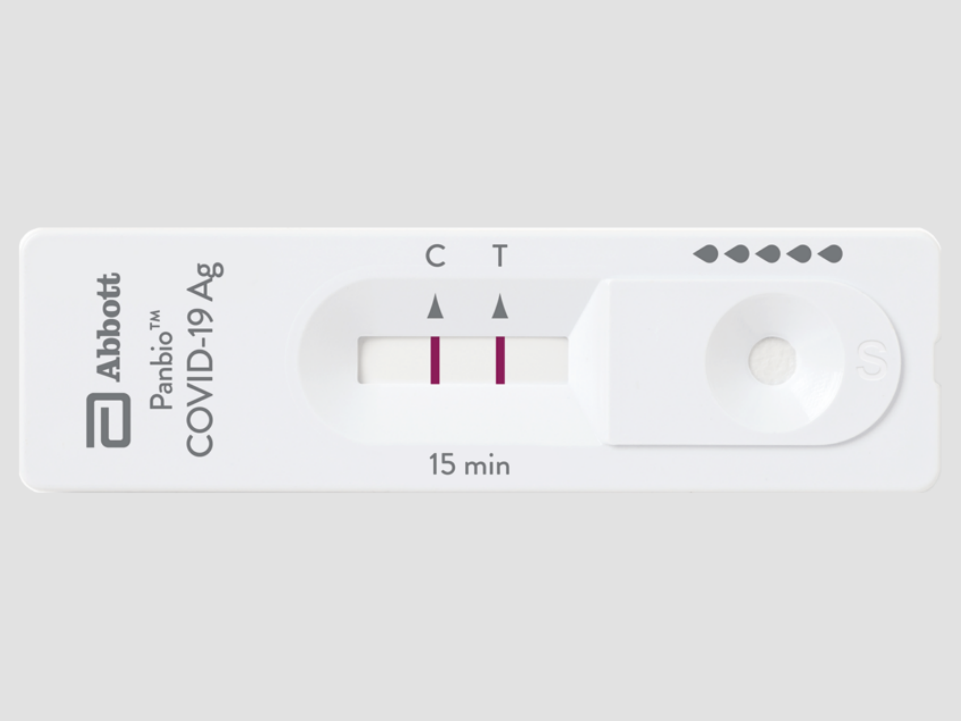


FIGURE 2 | Molecular structure of SARS-CoV-2 and summary of the available laboratory tests and their target molecules. SARS-CoV-2 has a lipid bilayer membrane that contains Envelope (E) and Membrane (M) proteins that make up the envelope. Spike (S) glycoproteins project from the surface of the virion. Nucleocapsid protein (N) is composed of the protein that is associated with the viral genetic material. RT-PCR, reverse transcriptase polymerase chain reaction; EIA, enzyme immunoassay; LFIA, lateral flow immunoassay; SVNA, serum virus neutralization assay; INAA, isothermal nucleic acid amplification; CRISPR, clustered regularly interspaced short palindromic repeats; NGS, next generation sequencing; RT-LAMP, reverse transcriptase loop-mediated isothermal amplification; RPA, recombinase polymerase amplification.

How Does Rapid Testing Work?



Panbio™ COVID-19 Ag Rapid Test Device Detects the presence an viral antigens in a sample.

The cassette contains a membrane strip which is pre-coated with immobilized anti-SARS-CoV-2 antibody on the test line and mouse monoclonal anti-chicken IgY on the control line.

How Does Rapid Testing Work?

The ID Now assay uses proprietary isothermal nucleic acid amplification technology for qualitative detection of SARS-CoV-2 RdRp gene using fluorescent reporter probes.

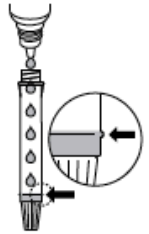
How Does Rapid Testing Work?

(WHAT DOES it look like?)

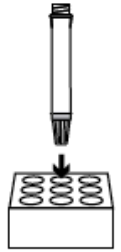
TEST PROCEDURE

1 Hold the buffer bottle vertically and fill the extraction tube with buffer fluid until it flows up to the Fill-line of the extraction tube (300µl).

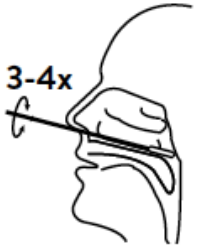
⚠ **Caution:** If the amount of buffer is excessive or insufficient, an improper test result may occur.



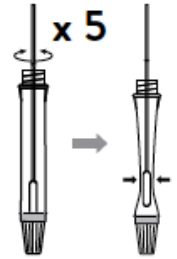
2 Place the extraction tube in the tube rack.



3 Tilt the patient's head back. Insert the swab through the nostril. Gently rub and roll the swab, 3-4 times. Leave the swab in place for several seconds. Slowly remove swab.



4 Insert the swab specimen in the extraction tube. Swirl the swab tip in the buffer fluid inside the extraction tube, pushing into the wall of the extraction tube at least five times and then squeeze out the swab by squeezing the extraction tube with your fingers.



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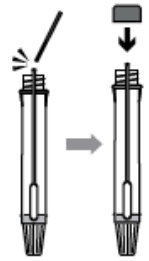
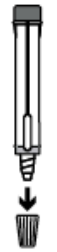
TEST PROCEDURE

5 Break the swab at the breakpoint and close the cap of extraction tube.

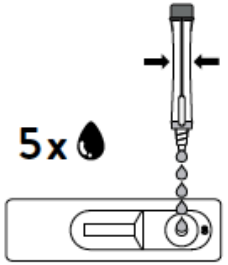


6 Open the dropping nozzle cap at the bottom of the extraction tube.



7 Dispense 5 drops of extracted specimens vertically into the specimen well (S) on the device. Do not handle or move the test device until the test is complete and ready for reading.

⚠ **Caution:** Bubbles that occur in the extraction tube can lead to inaccurate results. If you are unable to create sufficient drops, this may be caused by clogging in the dispensing nozzle. Shake the tube gently to release the blockage until you observe free drop formation.



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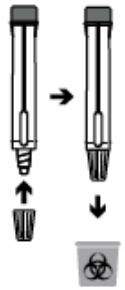
How Does Rapid Testing Work?

(WHAT DOES it look like?)

TEST PROCEDURE

8 Close the nozzle and dispose of the extraction tube containing the used swab according to your local regulations and biohazard waste disposal protocol.



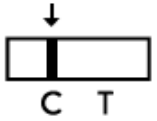
9 Start timer. Read result at 15 minutes. Do not read results after 20 minutes.

10 Dispose of the used device according to your local regulations and biohazard waste disposal protocol.

TEST INTERPRETATION

NEGATIVE

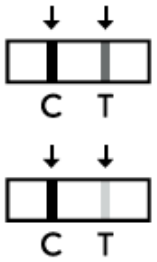
The presence of only the control line (C) and no test line (T) within the result window indicates a negative result.



POSITIVE

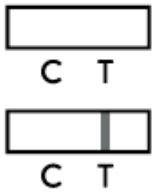
The presence of the test line (T) and the control line (C) within the result window, regardless of which line appears first, indicates a positive result.

⚠ **Caution**: The presence of any test line (T), no matter how faint, indicates a positive result.



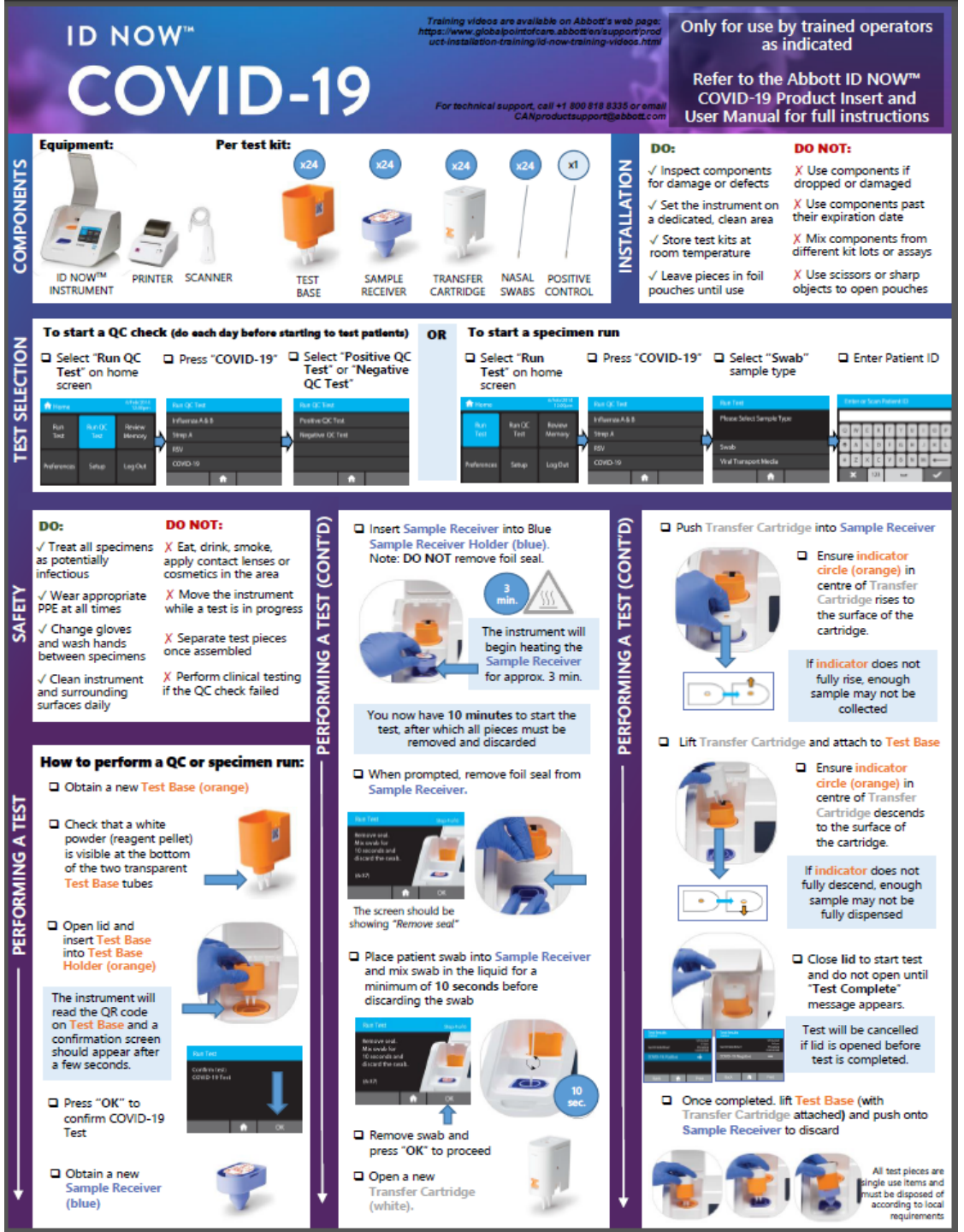
INVALID

If the control line (C) is not visible within the result window after performing the test, the result is considered invalid. Instructions may not have been followed correctly. It is recommended to read the IFU again before re-testing the specimen with a new test device.



How Does Rapid Testing Work? (WHAT DOES it look like?)

FDA Initially approved in March 2020
FDA Revision on September 24, 2020
Indicated only for symptomatic patients
≤ 7 days of symptom onset
Sensitivity 91-98% when limited to indication



Potential Applications of Rapid Testing in the Community

- Schools
- Shelters
- Community based health care workers, such as ACT team workers, CHC workers
- LTC workers, hospital workers who require repeated testing
- Other ‘frontline’ settings, TTC, factories
- High density housing settings?

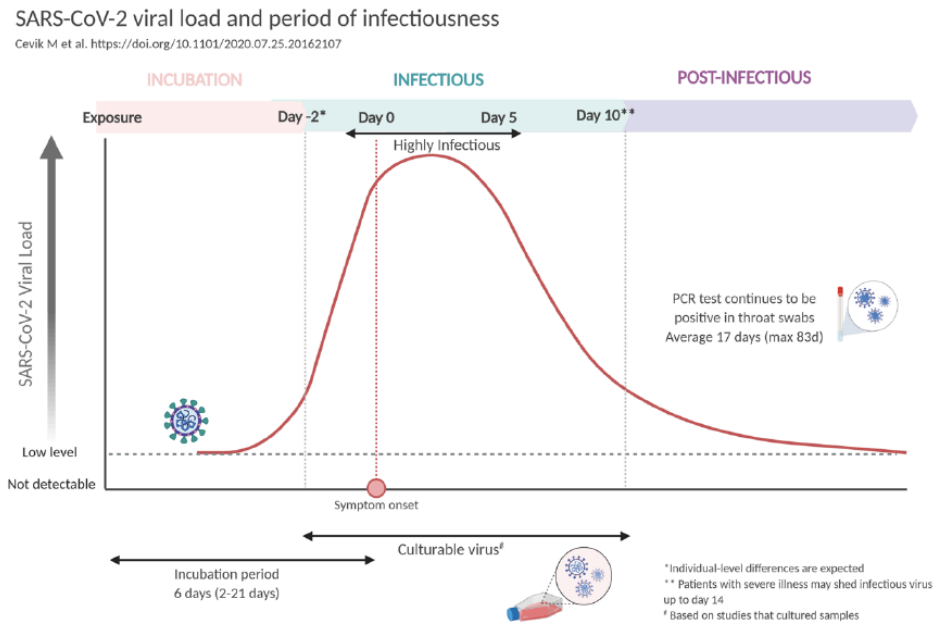
Potential Applications of Rapid Testing in the Community

Are these tests ideal for people with symptoms of COVID -19?

- With higher levels of virus?

Are these tests good for screening or surveillance testing in people without symptoms.

- With lower levels of virus?



Sensitivity

- **Sensitivity:**
  - Measures the proportion of true positives that are correctly identified by a test

    In other words,
  - The proportion of those who are disease positive who are also test positive.
- **Test +ve/ Disease +ve**
- NP + / COVID-19 +ve
- in most studies the NP swab is used as the gold standard
  - the test = the diagnosis in this case

Fenollar et al., J Clinical Microbiology (Nov. 2020) Evaluation of the PANBIO RADT for COVID 19 Screening

- Compares sensitivity of NP and PANBIO COVID 19 RATD
- Lab study to determine relative detection thresholds for these tests
  - Cannot use clinical samples to do this
  - Instead use serial dilutions of cell cultured virus

- Prospective clinical study of 341 patients
  - 182 were symptomatic cases
    - All were PCR positive
  - 159 asymptomatic contacts of each patient
    - 22 were PCR positive

Fenollar et al., J Clinical Microbiology (Nov. 2020) Evaluation of the PANBIO RADT for COVID 19 Screening

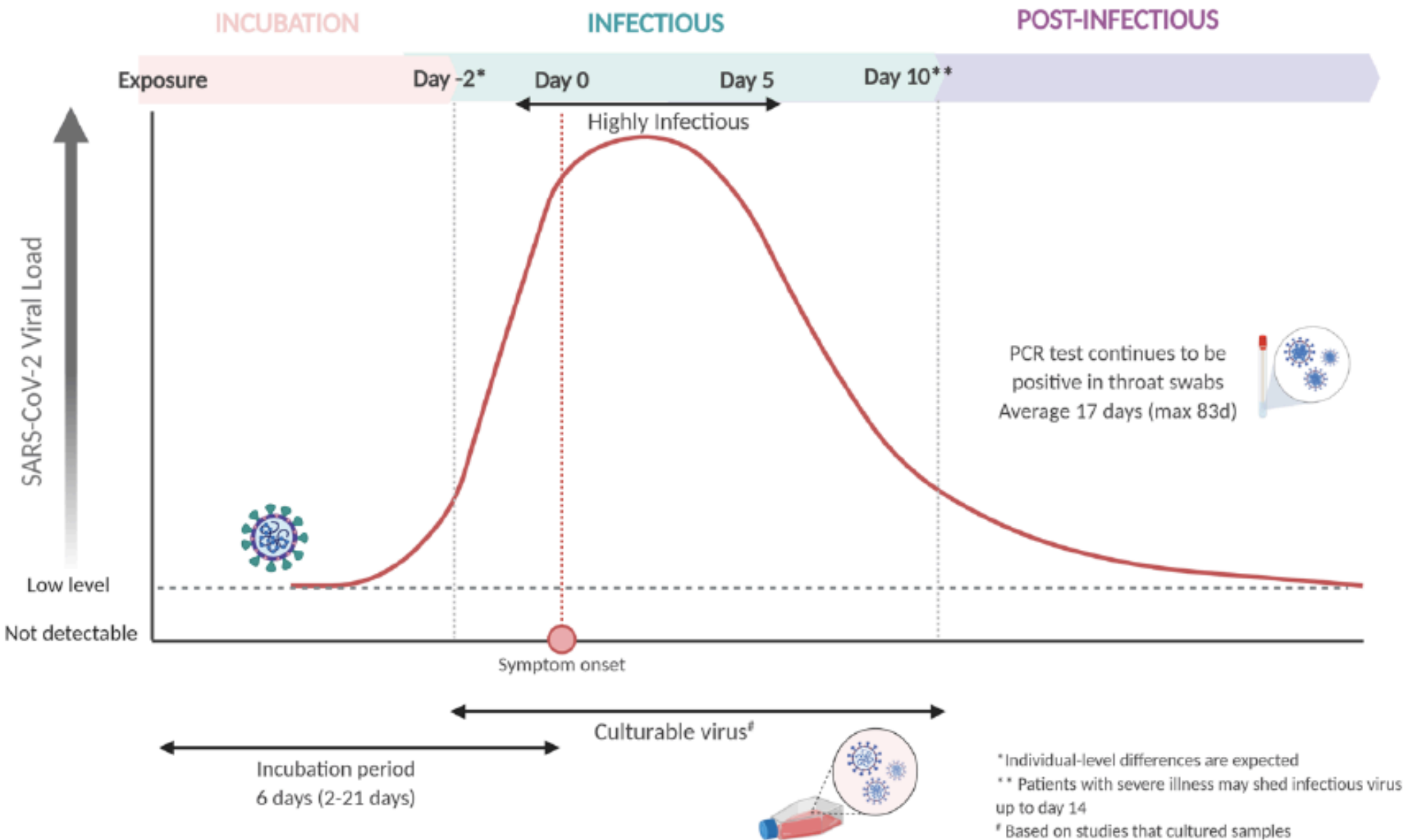
- Results:
- 204 PCR positive samples - RADT detected 154

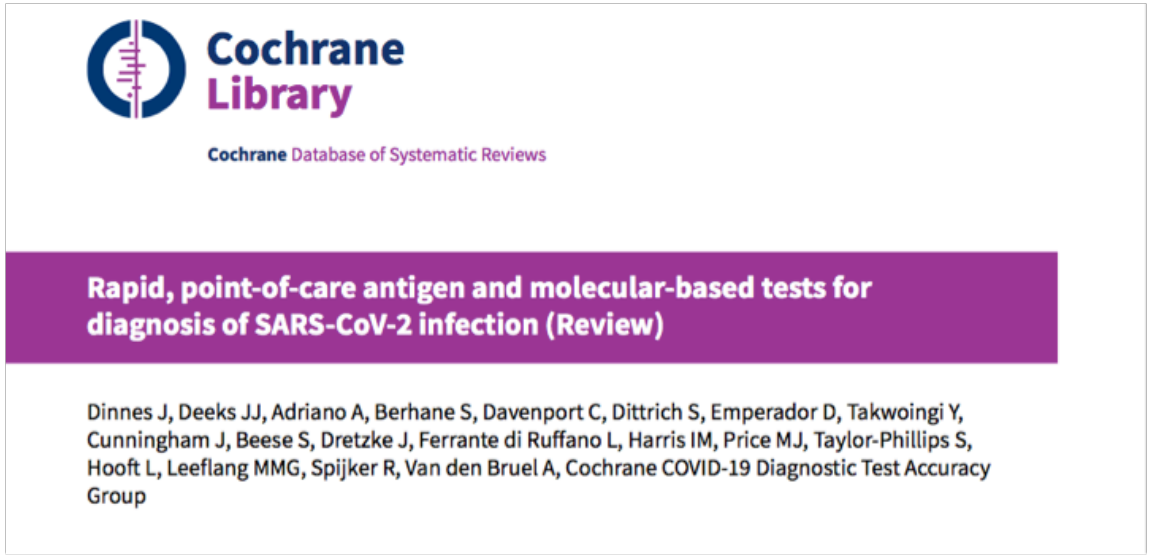
- Sensitivity 75.5% [95% CI 69.5-81.5]
  - 144/182 symptomatic (79.1 %)
  - 10/22 asymptomatic (45.4%)

- Threshold for detection for the assay in symptomatic and asymptomatic patients was 10^6 viral copies/ml
- (Ct value > 25).
- This value has also been proposed as a threshold for transmissibility

SARS-CoV-2 viral load and period of infectiousness

Cevik M et al. https://doi.org/10.1101/2020.07.25.20162107



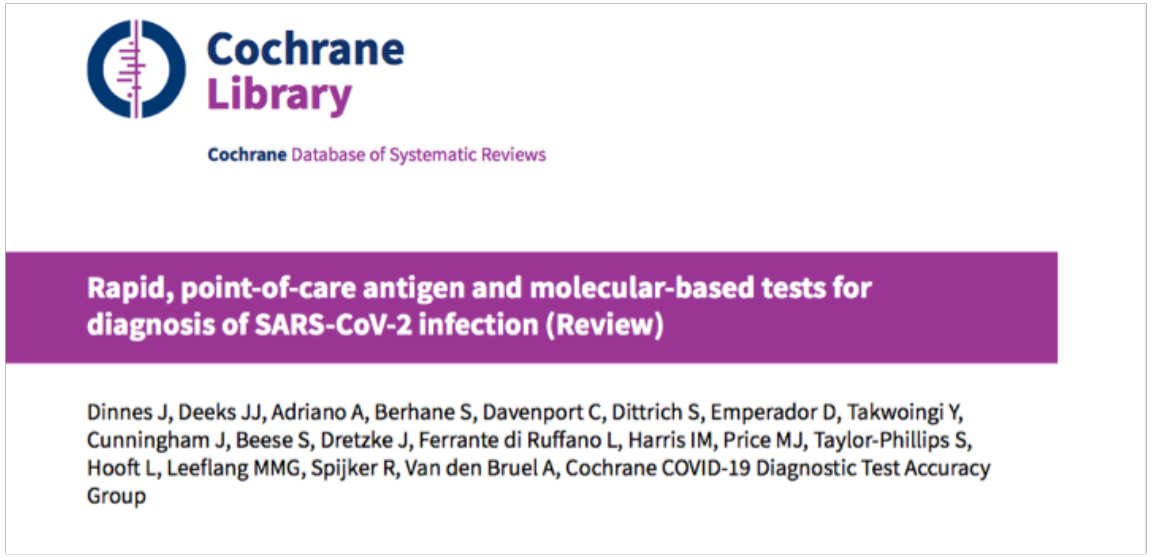


Sensitivity measures the proportion of positives that are correctly identified (e.g., the percentage of sick people who are correctly identified as having some illness).

Specificity measures the proportion of negatives that are correctly identified (e.g., the percentage of healthy people who are correctly identified as not having some illness).

Antigen tests

- Sensitivity varied considerably across studies
- Average sensitivity was 56.2% (95% CI 29.5 to 79.8%)
- Average specificity was 99.5% (95% CI 98.1% to 99.9%;
- Based on 5 studies on 943 samples.

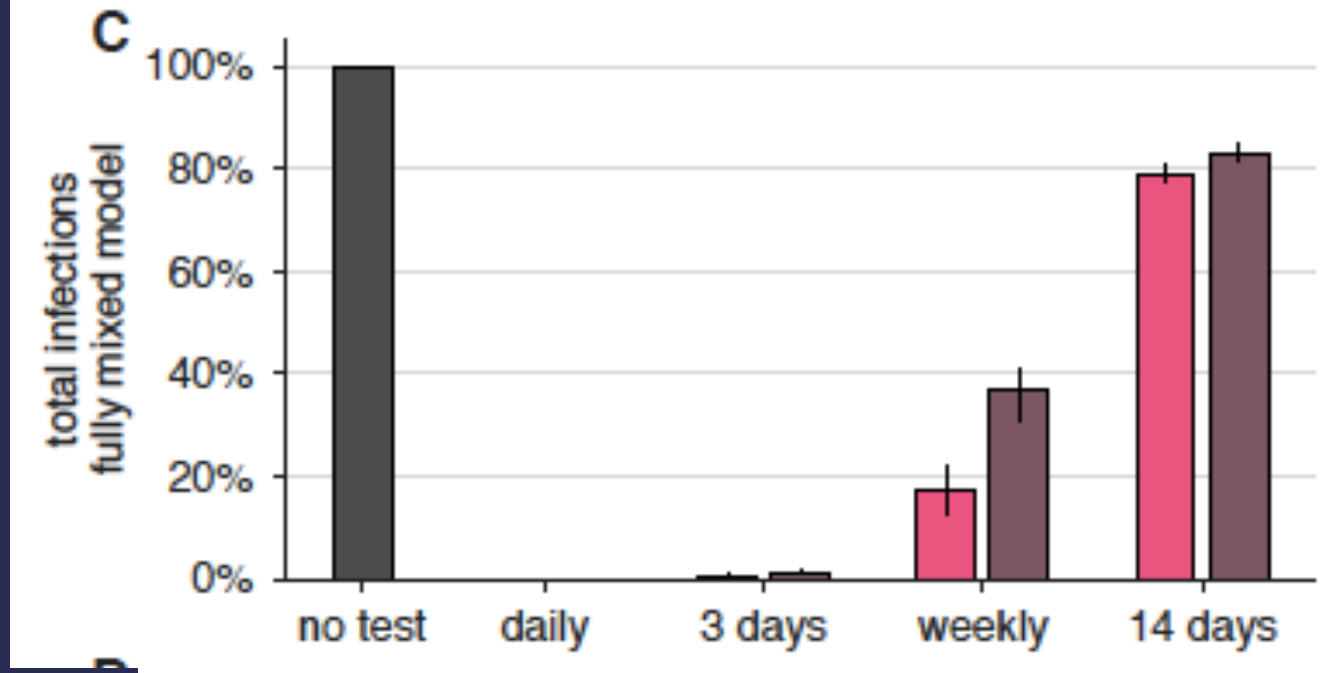


Rapid molecular assays

- Sensitivity showed less variation compared to antigen tests (from 68% to 100%), average sensitivity was 95.2% (95% CI 86.7% to 98.3%)
- specificity 98.9% (95% CI 97.3% to 99.5%) based on 13 evaluations in 11 studies of on 2255 samples.
  - 10 false positives (positive predictive value 90%), and 895 negative results including 5 false negatives (negative predictive value 99%).
- pooled results of individual tests for ID NOW (Abbott Laboratories) (5 evaluations) ID NOW (76.8%, (95% CI 72.9% to 80.3%), whilst the specificity ID NOW (99.6%, 95% CI 98.4% to 99.9%)

PPV = number of true positives/number of positive tests
NPV = number of false positives/number of positive tests

FREQUENCY OF TESTING IS IMPORTANT



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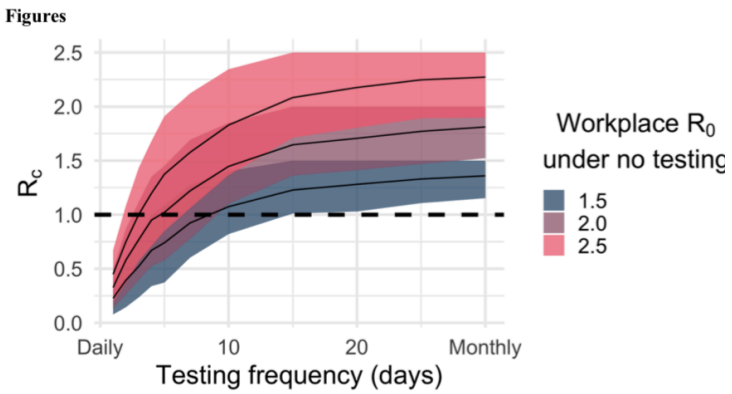
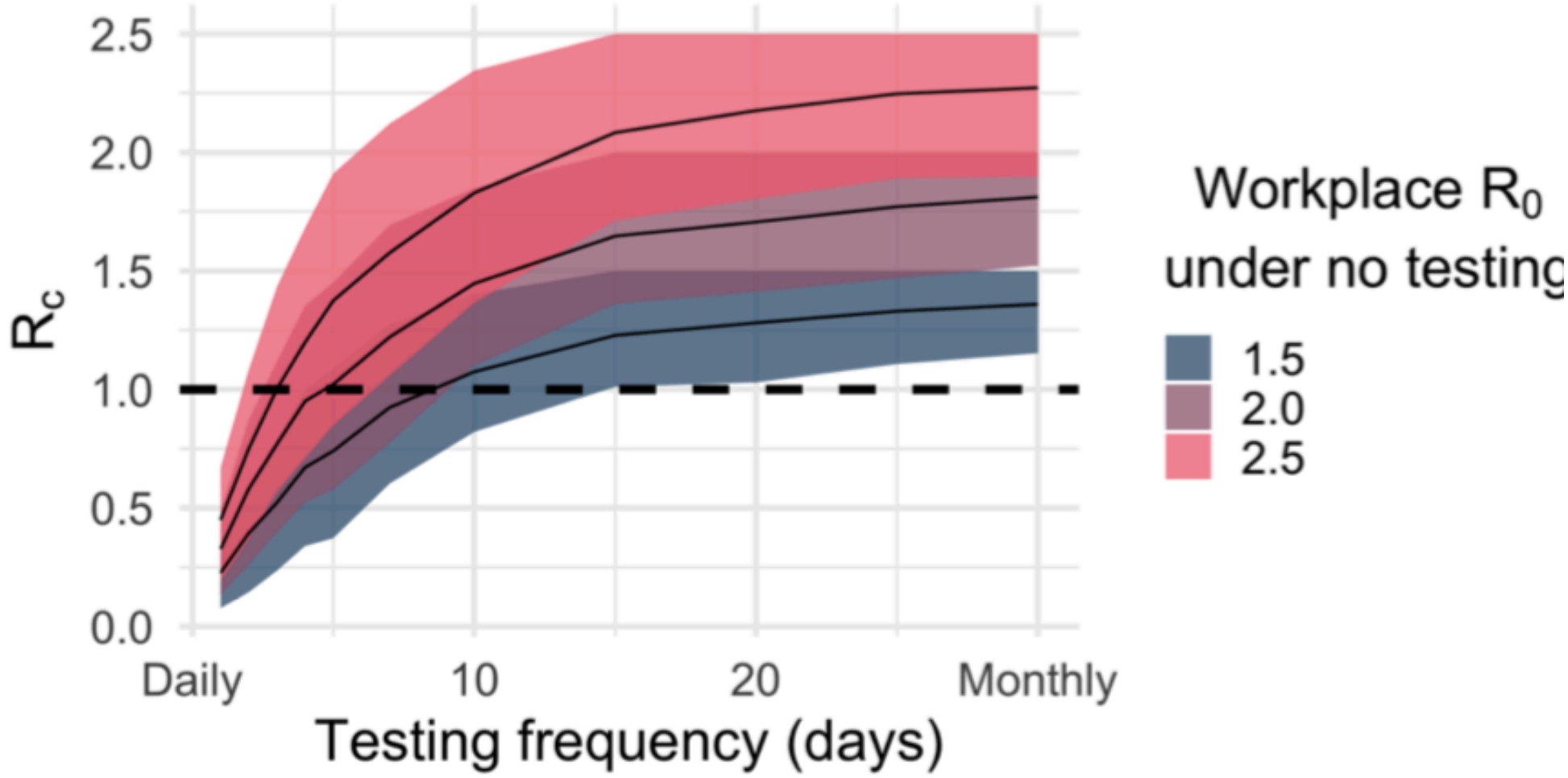


STUDY OF WORKERS

- Model of impact of testing frequency in a high risk health care work place
- individuals assigned a health state that included being susceptible to infection (non-immune), early infectious, late infectious, or recovered and immune
- population of 100 people within a healthcare environment interacting with a community with daily incidence of 0.5%, over 10 months,
- estimated 5-day incubation period and 9-day infectious period.
- 40% sub-clinical proportion, with 50% relative infectiousness of sub-clinical infections to clinically apparent cases.
- Cases self isolated after 1 day

medRxiv preprint doi: https://doi.org/10.1101/2020.04.30.20087015;

Figures



We modeled the **sensitivity of PCR testing as a function of day of infection based** on data of time-varying sensitivity of this test modality (**50-80% during first two weeks)** and PCR specificity as 98-100%.

Chin et al., medRxiv preprint doi: https://doi.org/10.1101/2020.04.30.20087015;

Possible PHO Guidelines for ID NOW use

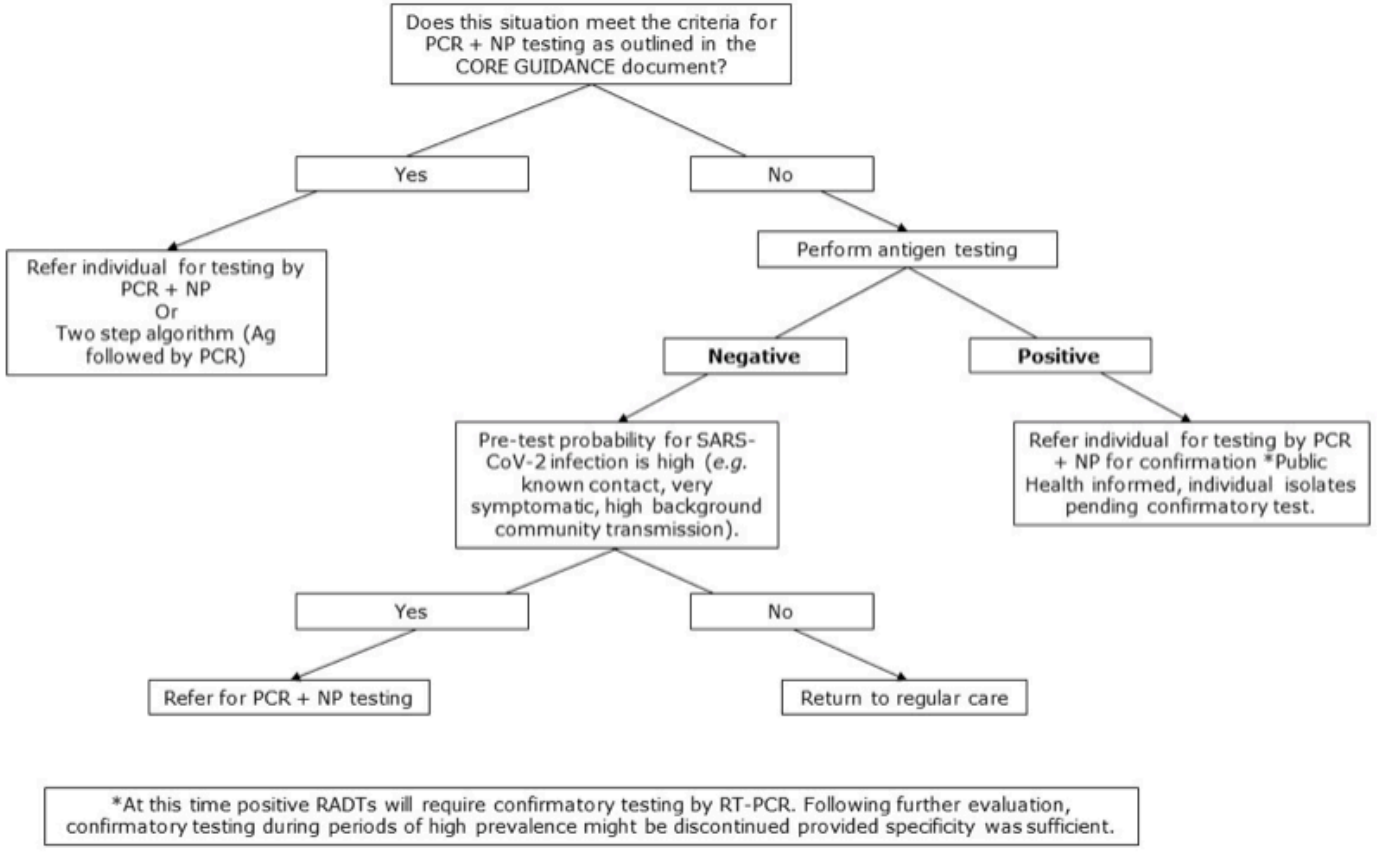
PATIENT POPULATIONS

- Symptomatic patients **≤ 7 days of symptom onset**
- Asymptomatic **contacts** of confirmed COVID-19 case
- As directed by Health Units for **outbreak management**

OTHER SETTINGS:

- Assessment centres/clinics
- Institution/congregate settings
- Remote communities
- Hospitals

Public Health Agency of Canada RADT Flow



TARGET POPULATIONS

- Testing in selected, symptomatic individuals within 5 days of symptom onset (followed by confirmatory testing if positive).
- Repeated testing of workers in remote work areas to prevent introduction or minimize the chance of spread within a work site.
- Prospective testing of workers in high risk settings including those in large processing plants (e.g., meat plant workers), long-term care (LTC) facility workers, offshore/marine workers.
- In an outbreak situation where multiple symptomatic patients can be tested rapidly on site if faster presumptive results will help inform public health action.
- Repeated testing of inmates entering a correctional facility who have been out on visits or who are new to the facility.

https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/guidance-documents/use-rapid-antigen-detection-tests.html **2020/10/07**

Summary

- Rapid Antigen and Molecular Testing will soon be deployed in LTC and remote settings

- Tests are less sensitive compared to NP PCR gold standard test (~75% sensitivity, good specificity)
- Sensitivity is higher in symptomatic people

- Tests are rapid and cost effective
  - Results available in 15 mins.
  - Cost of 5.00 per test.

- Tests are invasive (in contrast to saliva testing) – NP swabs are still required.

Discussion

- How do we optimize testing in community settings?
- Could RAPID ANTIGEN testing be useful in mobile and community settings?
- What barriers may exist for testing?

What do we think about surveillance testing?

Thank you!

Next Steps:

1) Thoughts from partners
2) Feedback
3) Topics for future sessions

COVID PREVENTION IN COMMUNITIES ROUNDS

NEXT ROUNDS:

December 18th : MOBILE TESTING AND POP UP MODELS W/ BLACK CREEK CHC AND ANISHAWBE HEALTH

RESOURCES:

CWP Website: Past rounds slides and talks