The implementation of rapid point-of-care testing in non-traditional settings

A rapid review updated as of December 17, 2020

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Abbreviations

CDC	Centers for Disease Control
JAMA	Journal of the American Medical Association
LAMP	Loop mediated isothermal amplification
LFD	Lateral flow device
LTC	Long-term care
POC	Point-of-care
PCR	Polymerase chain reaction
RT-PCR	Reverse transcription polymerase chain reaction

EXECUTIVE SUMMARY

Purpose

Jurisdictions are looking for the best evidence on how to implement rapid POC testing in various non-traditional settings to reduce the spread of COVID-19. This rapid review was conducted by members of the SPOR Evidence Alliance in response to a request from the Health Canada's COVID-19 Testing and Screening Expert Advisory Panel. This report will outline the review objectives and methods, summarize the findings from the evidence identified and how it meets the review objectives, and discuss any implications of the findings. Summary tables will also be provided to aid in communicating these results.

Objectives

To summarize the evidence on the use of rapid POC testing (e.g., antigen, rapid POC PCR) in non-traditional testing environments (i.e., borders, schools, primary care centres). Of specific interest was evidence for the impact of rapid POC testing on transmission of COVID-19. As this was a rapid scoping review, we did not assess risk of bias in the publications.

Approach

A comprehensive literature search was conducted on **December 17, 2020** with the purpose of retrieving studies **published from January 1, 2019 until the search date**. The search was designed and executed by a library scientist in MEDLINE, Scopus, medRxiv, the Cochrane Databased of Systematic Reviews, and Epistemonikos. A targeted grey literature search (OECD; WHO; CDC; ECDC; CADTH; National Public Health websites (e.g., Australia, New Zealand, UK, and others); Coronavirus resource centers (i.e., John Hopkins, COVID-END, CANCOVID, CORD19) and Google) was also conducted to identify relevant media, technical and white paper reports related to the review area. Based on the rapid review approach, studies were screened independently for inclusion and data was extracted independently and reviewed by another team member for completeness.

Findings

We found 835 unique published articles; after screening for inclusion – 17 articles were included and 14 additional published articles were identified through reference chaining. Thirty-seven grey literature articles were included. The body of evidence on the implementation, use, and outcomes of rapid POC testing for COVID-19 in non-traditional settings is limited. Most of the published studies were cross-sectional in design. Few of the studies describe implementation process or outcomes. Research to date has focused primarily on sensitivity and specificity of rapid POC tests and prevalence of COVID-19 using rapid testing approaches. No high-quality evidence was identified that focused on the implementation of rapid POC tests for COVID-19 in non-traditional settings.

Implications

The costs and effectiveness of implementing rapid POC testing for COVID-19 is largely unstudied. The body of evidence on the implementation, use, and outcomes of rapid POC testing for COVID-19 in non-traditional settings is limited.

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SUMMARY OF RAPID REVIEW

Rationale for review

Testing is a critical component of the COVID-19 response to mitigate transmission of COVID-19. The implementation and impacts of the use of rapid POC tests are of interest, due to their potential to reduce spread of COVID-19 in various settings and to address myriad barriers to testing using traditional approaches. To this end, this rapid review was commissioned by Health Canada's Testing and Screening Expert Advisory Panel in December 2020 to identify the available evidence in this area. The aim of this rapid review was to identify and summarize the available evidence on the use of rapid POC testing of COVID-19 in non-traditional testing environments. This review was conducted at the end of December 2020. This is a relevant time period to note in the global advancement and progress of COVID-19 knowledge, evidence, and governance. At the time of review, traditional settings for infectious disease testing were considered a hospital or a formal laboratory setting, where specialized staff, equipment, and protocols are well developed and established. For the purposes of this review, non-traditional settings for rapid POC COVID-19 testing were considered any setting outside of a hospital or pre-existing laboratory/assessment center setting where testing, analysis, and/or diagnosis is taking place. These settings are evolving as global governments, councils and health authorities urgently mobilize to test and control the spread of COVID-19. Some examples of non-traditional settings include points of entry (e.g., land borders, airports), schools, and long-term care centres.

A secondary objective of this review was to identify and summarize evidence of any pilot projects, interventions or protocols where rapid POC testing was being used in a non-traditional setting. We were also interested in exploring if any studies identified associations between rapid POC COVID-19 testing and impacts on transmission in the affected community. Rapid POC testing for COVID-19 is an important testing and public health strategy to allow for timely results, ease the burden of resources, increase scale of testing, and reduce other barriers to COVID-19 testing that are evolving and not yet identified.

Review question(s)

What is the evidence on the use of rapid POC testing (e.g., antigen, rapid POC PCR) for screening in non-traditional testing environments (i.e., borders, schools and health care facilities such as, LTC, nursing homes, acute care, primary care clinics), specifically evidence on the impact of strategies for testing on transmission of COVID-19? The population, concept and context are as follows: 1) population: persons who are being tested for COVID-19 using a rapid test; 2) concept: rapid COVID-19 testing; and 3) context: non-traditional testing environments.

RAPID REVIEW METHOD

Our approach was informed by the steps outlined in Tricco and Straus[1].

Search strategy

An experienced information specialist designed comprehensive search strategies in MEDLINE (Ovid MEDLINE All), Scopus (Elsevier), medRxiv, and the Cochrane Database of Systematic Reviews (CDSR) (Cochrane Library, Wiley). This was followed by a manual search of the COVID-19 Living Overview of the Evidence in Epistemonikos[2]. All database searches were executed on December 17, 2020, and results were limited to January 1, 2019-current. The COVID-19 portion of the search was adapted for MEDLINE from the expert COVID-19 search strategy developed by expert searchers at Ovid for Ovid MEDLINE All[3], and subsequently translated to Scopus and CDSR. Keywords for the rapid testing portion of the search were informed by previous searches developed by the Canadian Agency for Drugs and Technology in Health[4]. The medRxiv search was a simplified version of the other database searches due to limitations in database search functionality. Results from the database searches were exported to Covidence[5] for de-duplication and screening. Grey literature was retrieved using a combination of targeted website searching and a series of Google queries. The full details of all searches are included in Appendix A. Database searching was followed by reference chaining of all included resources. Forward searching was conducted using Scopus, and backward searching was conducted manually by examining the reference lists of included studies. This process took place the week of December 28, 2020.

Screening & Data extraction

Covidence was used to review the titles and abstracts for inclusion/exclusion based on the criteria described in Appendix B. Because of the rapid turnaround of this request, abstracts were reviewed by single reviewers. Next, articles were screened in duplicate by full text using the same inclusion/exclusion criteria found in the Appendix B. Data extraction was completed using the following end-points: (1) country; (2) setting; (3) testing location; (4) study design; (5) date of study start/end; (6) purpose of study; (7) target population; (8) eligibility criteria for testing; (9) total number of participants; (10) COVID-19 symptom status; (11) type of test employed, (12) organization leading the implementation; (13) administrators of test; (14) testing protocols/processes; (15) impact of testing on COVID-19 transmission; (14) lessons learned and recommendations; and (15) other outcomes.

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[1]Tricco AC, Straus SE. Rapid review methods more challenging during COVID-19: commentary with a focus on 8 knowledge synthesis steps. Journal of Clinical Epidemiology 2020, 126: 177-183.
[2] Available at: https://app.iloveevidence.com/loves/5e6fdb9669c00e4ac072701d?utm=epdb_en
[3] Brewer MV, van der Houwen P. COVID-19 search on Ovid MEDLINE(R) All 1946 to Present [Internet]. 2020 Mar 24 [updated 2020 Apr 4; cited 2021 Jan 20]. Available from: https://tools.ovid.com/coronavirus/Covid-19%20search%20notes.pdf
[4] Rapid point-of-care testing for COVID-19 [Internet]. Ottawa: CADTH; 2020 Dec 18 [cited 2021 Jan 20]. Available from: https://cadth.ca/sites/default/files/covid-19/rb1536-eh0093-covid-poc-antigens-tests.pdf
[5] Covidence systematic review software. Melbourne: Veritas Health Innovation. Available from: www.covidence.org

FINDINGS

Overview of included studies

A total of 835 unique published articles were identified from the database search. After screening, 17 published articles were included, with 14 more identified through reference chaining. Thirty-seven grey literature articles were included, for a total of 68 articles with data-points extracted (see PRISMA – Appendix C). It should be noted that not all end-points were described/available for each extracted article. Upon completion of a secondary review of the completed extraction tables, and based on consensus of our team, we removed six articles as we determined they did not explicitly refer to implementation of rapid POC testing or they were merged references (already represented within our data).

A summary of findings for each non-traditional setting are described over the proceeding pages. A full annex with relevant data points and references for sources can be found in Appendix D.

Borders and points of entry

There is a paucity of published evidence regarding rapid POC testing at borders and points of entry, pertaining to implementation of strategies and impact of strategies on transmission. Six sources were assessed to meet our inclusion criteria; only one source was published in a journal as a correspondence letter (1) while the remaining sources were grey literature (2,3,4,5,42). It should be noted that in most cases, rapid POC tests were not used (times varied between test and receipt of results). Because it was determined that borders and points of entry was an area of interest for Health Canada's Expert Advisory Panel, we chose to extract relevant data from these sources.

Canada

- RT-PCR testing is currently being done for returning international travelers at Pearson International Airport (Toronto, ON) (42), in combination with quarantine measures. This is a voluntary study. Test results are not immediately available onsite (up to 48 hours). A full report is expected in 2021.
- RT-PCR testing is being done at Calgary International Airport (Calgary, AB) and Coutts Land Border (Alberta) (3); Edmonton International Airport was anticipated to join the pilot in December 2020. Test results are not immediately available onsite; however, unique to this voluntary pilot is the focus on reducing quarantine time with a negative test. Full report findings are anticipated in early spring 2021.
- Screening to-date suggests only a minority of passengers are positive for COVID-19 upon return to Canada from international travel (42,3).
- International travel between Pierre Elliott Trudeau International Airport (Montreal, PQ) and France (outbound international passengers) is undergoing a pilot project using rapid tests (4). Pilot details are not yet available.

- Vancouver International Airport (Vancouver, BC) is conducting rapid antigen tests onsite (results within 15-30 min) (2). This is restricted to self-volunteering, WestJet, domestic travel passengers only. A positive test requires rebooking and confirmatory PCR. No outcomes have been reported and the study is in active recruitment.

United Kingdom

- A "Test to Release" scheme (England, United Kingdom) (5) is designed to reduce quarantine time for international travelers. Participating travelers originating from non-travel corridor countries are required to undergo testing at a UK government-approved, private sector testing site five days after arrival (many providers cited). If negative, they can be released from quarantine but must use the mobile apps required by the UK government for contact tracing. Strict fines are levied for those who are found in violation of the scheme.

China

- One published article (letter of correspondence) describes the establishment of a temporary test centre at the Hong Kong International Airport for arriving passengers (March – April 2020) (1).
- The centre operated with extensive infection prevention and control measures and human resources.
- The authors describe using "rapid molecular diagnostic testing" using nasopharyngeal swabs with symptomatic individuals (n=1210); 7.3% tested positive – tests were sent to the laboratory q 2 hours. They reported that their approach (in totality) reduced hospital admissions by 36 patients per day over the 31 days of operation.

Implications

Evidence on rapid POC testing at borders (points of entry) is currently very limited. Except for a letter of correspondence, we were unable to find any published sources that examined the implementation of rapid POC testing at borders and related impacts or outcomes. Several pilot studies are underway which may provide further evidence in 2021. A major challenge of understanding the impact of POC testing at points of entry on COVID-19 transmission is that this does not occur independently of other public health measures such as hand hygiene, mask wearing, physical distancing and/or crowd control at points of entry, increased sanitation and restricted mobility of travelers (e.g., self-isolation and/or quarantine).

Long-term care

We found 9 sources: 4 from the published literature, and five from grey literature related to POC testing for long term care (LTC) facilities. Grey literature comprised of media and government announcements, and test guidelines, from the UK, USA, Canada, Belgium and Italy.

United Kingdom

- Clinical guidelines for testing using Lateral Flow Devices (LFD) (35); with related documents for visitors (34); and care home staff (33) were issued after pilot testing of the devices by Public Health England (PHE) (46). Tests were used for screening symptomatic adults, with several institutions in different settings. The pilot testing evaluated six LFDs, reporting mainly for the use of Innova SARS-CoV-2 Antigen Rapid Qualitative Test. Researchers proposed LFD for mass screening and surveillance in various settings, suggesting a "distributed community use" as it offered advantages in risk reduction.

- The guideline suggests testing all visitors on entrance every day to a LTC facility. The guidelines aim at active case finding, to ensure infected self-isolate, followed by contact tracing by the NHS. The testing protocol involves six steps: (1) initial order; (2) preparing visitors; (3) preparing testing area; (4) conducting testing; and (5) analyzing test sample and results. There is a detailed oversight, quality assurance and learning mechanism built within the implementation processes.

- An expert commentary published later in BMJ (37) pointed to the implications of lower sensitivity of the LFD test used in Liverpool. Liverpool later stopped using the test in LTC facilities. More data was expected to be released.

- One publication from a high dependency care home outlined a pilot study (longitudinal, prospective design; n=21 care home residents) on the use of RT-LAMP test (30), concluding that it had the potential to speed up the detection of infection, and could be used in various settings such as LTC and other such sites.

United States

- The CDC is continually updating information on the use of antigen testing (36). LTC facilities are advised to follow local or CDC guidelines which recommends repeat testing for screening, using BD Veritor and Quidel Sofia2, with the aim of limiting infection spread to providers. Symptomatic persons in the first five days are tested after symptom onset. After which viral load may drop leading to false negative results. In the latter case, either PCR or clinical discretion is advised, while a "time-based strategy" is advised for providers.

Italy

- One study (cross-sectional design; n=532 participants – 246 residents and 286 regular and shift workers) from Italy compared the use of RT-PCR, clinical history and rapid POC serology for residents and care providers in three Lombardy nursing homes during an outbreak (38). The "Core Tests (R) IgM/IgG Ab" antigen test helped identify asymptomatic LTC residents and workers, with few false negative tests, which were confirmed with follow-up tests. They concluded that antigen testing was cheap; easy to use in different settings; could prove useful in case of "less cooperative" patients; and use in combination

with molecular tests could be of value. An integrated approach that includes symptom monitoring, periodic rapid POC antigen and serology testing of LTC residents and staff was suggested.

Belgium

- A Belgian study (31) (cross-sectional design; n=119 residents and 93 staff) tested antibodies in a nursing home during an COVID-19 outbreak, using "SureScreen Diagnostics Covid-19 IgG/IgM Rapid test cassette" as an adjunct to RT-PCR. The study showed that using both antigen and molecular tests helped identify an additional 8% cases among 212 cases. Authors concluded that both tests should be considered, especially during an outbreak investigation.

Spain

- One study from Spain (40) (cross-sectional design; n= 676 staff) examined the use of the 2019-nCoV IgG/IgM Rapid Test Casette to determine the prevalence of COVID-19 in general practitioners and nurses from primary care centers and nursing homes. They found a higher prevalence of COVID-19 in staff in nursing homes (9.5%) compared to those working in health centers (5.5%). Findings emphasized the need for strict protective measures to continue to be implemented in nursing home settings.

Canada

- We found one grey literature item from Ontario (32), mentioning start of the use of POC testing using the Abbott Panbio test. Early findings suggested that the tests were well accepted by LTC staff and could be complemented with molecular tests. No data on implementation was available.

Implications

Data on the impact on limiting Covid-19 spread was not available from the LTC literature. UK's strategy for use of LFDs was not successful. More data is needed to learn about the reasons related to this. The US CDC's strategy seems to be a fallback approach, especially in states and counties where RT-PCR facilities are limited. Results from the nuanced use of different antigen tests will be beneficial in learning about the context of the implementation and relative success.

Schools and/or post-secondary institutions

We identified two studies that were relevant to the school and post-secondary setting – both were pre-print articles from the United Kingdom (54) and Germany (55), respectively.

- Both studies outline the use and convenience of at-home, self-administered rapid testing.
- Leightley and colleagues (54) (cross-sectional design; n=1882 participants returned valid tests) outlined the use of rapid immunoassay test with students and staff at King's College London. Tests were mailed to the home address of participants who self-administered the tests, took photos of the resulting cassette, and uploaded it via an internet-based server.
- Hoehl and colleagues' (55) protocol had teachers administer and interpret their own rapid antigen test. In this cross-sectional study, 711 teachers participated and 602 provided results. A true positive result was confirmed by RT-PCR in 5 teachers.

Additional sources from government or university websites and media were identified but no outcomes or impacts of these strategies are reported:

- High level details or announcements of rapid testing approaches at various schools and post-secondary institutions (e.g., types of tests employed, test locations, test protocols).
- The use of smartphones or email to retrieve test results (60,61).
- The practice of two negative tests for return to school (58,60) and confirmatory PCR for those who test positive or have symptoms but receive a negative rapid test (57,58,60,61).

Two guidance documents on testing in schools:

- CDC guidance (K-12 school-based testing) (62) suggests school-based testing may be appropriate for individuals who show signs or symptoms while in school and for testing in schools considered moderate to high-risk for COVID-19 infection.
- The State of Illinois (United States) has also provided guidance on rapid testing in community settings, including schools (48).

Implications

Both grey and published literature sources suggest that rapid testing schemes, using a variety of approaches, are underway for school and post-secondary populations. Most of the testing protocols and results from the mass-rapid testing campaigns announced for schools have not yet been made available in the published literature. The impacts on transmission in the community have also not yet been assessed or published. Based on the pre-print articles, at-home testing is acceptable. Guidance for testing protocols exists but there is still limited evidence on the implementation of these approaches. The impact of school-based testing strategies on COVID-19 transmission is yet unclear.

Primary Care

We identified four sources specific to rapid COVID-19 testing in primary care clinics or centres (49-52); three were publications (49-51) and one from the grey literature (52). Sources originated from the United States (52), Spain (50) (cross-sectional design; n=412 participants) (51) (cross-sectional design; n=600 participants), and Chile (49) (longitudinal, prospective design; n=552 participants). In one study, rapid testing was found to be effective for symptomatic and non-severe cases of COVID-19, not asymptomatic patients. The authors followed a specific testing protocol, with several test re-evaluation points at day 7 and 14 (49). Rapid antigen testing appears to be the most common type of rapid COVID-19 testing used in primary care.

Implications

There is a lack of detail provided across the sources that used rapid testing in primary care settings. There was limited detail describing the implementation and administration of rapid testing, and no details were provided in any studies about engagement or promotion of rapid testing in these settings.

Testing within other Health Care Facilities, including COVID-19 Test Centres

COVID-19 test centres

There were 6 sources identified that described testing in COVID-19 test centres, including 3 published articles (16,18,20) and 3 pre-prints (17,19,21). The impact of these testing centres was generally unreported, but two sources reported positive results (20, 21). Findings provide little insight into the practical considerations for implementing rapid testing in COVID-19 testing centres. Instead, they focus more on the effectiveness of various testing methods available for use. The publication from South Korea describes the processes and implementation of a COVID-19 testing centre in greater detail (20).

Germany

- One publication (16) (cross-sectional; n=39 participants) compared two types of COVID-19 testing in a community setting located in a high-prevalence area. A comparison of RT-PCR and rapid test results of symptomatic participants was conducted. Findings suggest that antigen tests are more appropriate for making decisions on public health measures than rapid antibody tests, which should not be used for individual risk assessment due to their demonstrated low sensitivity.

Switzerland

- A cross-sectional design was used to evaluate the performance of two antigen-detecting rapid diagnostic tests (Ag-RDT) in comparison to RT-PCR on nasopharyngeal swab (17) in symptomatic and asymptomatic individuals who visited a single COVID-19 testing centre (n=1064 participants). Findings indicate Ag-RDT tests may be best-suited

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for use in patients with defined clinical criteria or for rule-in purposes in infected individuals.

The Netherlands/Aruba

- Two studies included in the review were conducted in the Netherlands; one of these was conducted in both the Netherlands and Aruba.
- The first (18) (cross-sectional design; n=1367 participants from the Netherlands; n=208 participants from Aruba) examined the Abbott Panbio in comparison to RT-qPCR in community-dwelling mildly symptomatic subjects in a medium (the Netherlands) and high (Aruba) endemic area. Tests demonstrated effectiveness, low cost, user-friendliness, quick turnaround, and opportunities for testing decentralization, and therefore was highly recommended to help reduce transmission rates of COVID-19 in a community-based setting.
- The second study from the Netherlands (19) (cross-sectional design; n=123 participants) evaluated the specificity and sensitivity of the BD Veritor System for Rapid Detection of SARS- CoV-2 (VRD). The results show promise in both sensitivity and specificity, but clinical sensitivity is highest when the viral load is high, so it is most effective in community settings within 7 days of symptom onset.

South Korea

- The primary focus of this correspondence article (20) was to report the operational process of a screening clinic for COVID-19 in Daegu, Korea and its effectiveness in maintaining operation of tertiary hospitals. Patients completed a screening survey prior to visiting the hospital. Those flagged as at risk for transmission were sent to a screening clinic using RT-PCR tests that was set up outside the hospital (turnaround time for results unclear). This prevented transmission of COVID-19 within the facility. Over the 3-week test period, 42 patients with COVID-19 were prevented from entering the hospital, which reduced the need to close valuable beds.

Slovakia

- An observational study (21) was conducted to assess the impact of rapid antigen testing in community pop-up centres on infection prevalence. At three time points (pilot, round 1 and round 2), between 62% and 66% of the study's population were tested (n=5,276,832 tests). Those between the ages of 10-65 years and older adults in employment were eligible to participate in the mass testing (approximately 4 million people). There was between a 50-80% reduction in COVID-19 prevalence within a week between the two rounds of testing. Use of a microsimulation model shows that these results reflect the implementation of mass testing as well as other nationwide restrictions and quarantine rules. One limitation observed in this study was the high demand for medical personnel to perform nasopharyngeal testing. Nasal swabbing may be a more efficient alternative for testing in this setting.

Hospital Settings

While these studies relate to testing done in a more traditional clinical setting, they describe tests and approaches that may be applicable to more non-traditional settings. Results included 1 published article from Spain (23), 2 pre-prints from Italy and Spain (22, 25, respectively), and 1 highly accessed, JAMA-published research letter originating from Belgium (24). These articles describe testing protocols targeting both hospital staff and patients. Few describe the processes of planning and implementing rapid testing. They primarily pertain to analysing and comparing testing data for different testing methods as they relate to detection of COVID-19 and prevention of transmission.

Italy

- Asymptomatic hospital workers (cross-sectional design; n=606 in the initial phase; n=393 completed the monitoring component) were tested using Viva-Diag rapid IgG-IgM antibody test kit 2 times over a 15-day period to prevent transmission in the hospital. This serological testing method is recommended for individualizing SARS-CoV2 infected people in cohorts of subjects with high prevalence of infection.

Spain

- The two studies conducted in Spain evaluated the Abbott-Panbio COVID-19 Antigen Rapid Test Device in a hospital setting.
- The first was a comparison of the effectiveness of the Panbio test and the RT-qPCR for detecting the SARS-CoV-2 antigen (23) (cross-sectional design; n=255 patients). Patients attending primary care clinics and the emergency department who received testing were included. The Panbio antigen test was found to be a highly reliable tool for the rapid detection and isolation of SARS-CoV-2 due to its sensitivity, specificity, and feasibility within primary care during the early days of symptomatic infection and when viral load was high.
- The second study from Spain (25) assessed the effectiveness of the Panbio test for identification of SARS-CoV-2 in asymptomatic individuals who had close contact with COVID-19 positive patients (cross-sectional design; n=634 study participants). Statistical analyses demonstrated a low sensitivity for the Panbio test in this population, especially in non-household contacts.

Belgium

- This cross-sectional study included testing clinicians, staff, and volunteers (n=3056 participants) who worked at Hospital East-Limbur, which is located in an area of Belgium with a high-burden of COVID-19 (24). The purpose of the study was to monitor transmission dynamics and to evaluate existing infection control policies. The test employed was a COVID-19 IgG/IgM Rapid Test Cassette, which was shown by the manufacturer to have high sensitivity and specificity. As suspected, having a close contact with suspected or confirmed COVID-19 was associated with antibody positivity.

Indigenous and First Nations Communities

Limited evidence on rapid-testing in First Nations and Indigenous communities was identified. Four articles – all based in Australia and grey literature sources, were included that mentioned the use of rapid COVID-19 testing to assist in the public health response among Indigenous Communities (26-29).

- Among the stated benefits of deployment of a rapid POC program is to minimize unnecessary isolation for negative test results and facilitate timely isolation and treatment of people with positive test results (27).

- Other recommendations and lessons focus on addressing barriers to testing, storage of specimens and supports; ensuring adequate supplies ready to deploy to rural and remote communities; increasing capacity of clinics – including staff trained in culturally-safe and appropriate methods for Indigenous communities; training support within Indigenous communities to have their own staff administer tests; and the importance of Indigenous communities engaged in ongoing consultation for decision-making.

- An additional source from the Government of Alberta (14) outlines the development of a rapid, hand-held testing device (*Spartan Bioscience*) to be deployed in rural and remote settings, including First Nations communities. This device can provide test results in under one hour and is meant to augment existing testing strategies within the community.

Implications

Evidence is emerging for the deployment of rapid COVID-19 testing in Indigenous and First Nations communities; however, there is a lack of evidence on implementation and outcomes of these initiatives.

Other contexts

The remaining sources pertaining to COVID-19 rapid testing were identified across a variety of other contexts, including: 1) correctional facilities (53); 2) elite and professional sports (7); 3) workplaces (11); 4) Home (6,9,15); 5) Remote and low-resource communities (8,10,12,13,14); and 7) multiple settings (43, 44, 45, 47, 48). A wide range of rapid tests were reported, including rapid antigen (Abbott Panbio 7,11), Abbott ID NOW (13) and handheld device by Spartan Bioscience (14), rapid antibody, (6,15,53), PCR (12) and Fluidigm saliva test (15). Two articles reviewed multiple rapid testing methods (8,9).

- The purpose of rapid testing varied significantly, from determining the prevalence of SARS-CoV-2 in the population (6) (cross-sectional design; n=89,397 participants across

three time points), to screening in target populations (7,11,53), and supplementing other testing efforts in remote areas (14).

- Jacobs et al. (8) stated that rapid antibody tests have been successfully implemented in triage, contact tracing, and surveillance.

- One media release (53) reported on a screening effort, using a rapid antibody test cassette, at Essex County Correctional Facility, USA. A three-stage testing program was designed where new admissions and those who are quarantined due to COVID-19 symptoms were tested first, followed by vulnerable inmates and detainees with medical conditions. Asymptomatic individuals were tested last. The rapid test result will be used to guide decisions around housing within the facility.

- The Ontario Ministry of Health (11) white paper guides employers participating in the provincial rapid screening pilot. Organizations were provided testing kits at no cost. Organizations are responsible for other costs related to rapid testing. In addition, organizations are asked to develop their own testing policies and procedures to suit their unique circumstances. Minimum requirement on testing protocol was put forward in this document, other than: 1) only asymptomatic individuals are eligible for rapid testing; and 2) a positive rapid test result must be confirmed by a lab PCR in 24h.

- A UK study (15) selected a random sample of residents based on postal codes and sent invitation letters to participate in at-home, rapid testing (cross-sectional design; n=11,711 participants). After consent, rapid antibody testing kits were mailed to participants, who self-administered the tests and recorded results online.

    - Prior to implementation of the project, a pilot feasibility study was conducted to engage the public in an online forum with four discussion groups. While home self-testing is recommended by this study with high acceptability and usability among adults, the Public Health England (PHE) (9) cautioned the public from COVID-19 testing products that give very rapid results, citing a lack of reliability and evidence.
    - There was high acceptability for at home self-testing within the study population and there was also good agreement between the self-reported results of participants and the findings read by the clinicians. Participants also reported high confidence with having interpreted the results correctly.

- The only study in the setting of sports teams was led by Winkel et al. (7) who used Abbott Panbio to screen asymptomatic football players, staff and referees from 13 professional football clubs in the Netherlands (cross-sectional design; n=824 participants). The primary goal of the study was to validate Panbio in comparison to RT-PCR, and information related to implementation of the rapid test was limited. Since August 2020, football players and staff were routinely tested by RT-PCR two days before each match,

independent of presence of symptoms. During the study period, an additional swab was obtained from asymptomatic individuals for Panbio, and the sample was processed onsite. It is unclear where exactly the rapid testing occurred.

- Research in multiple settings includes work done in Canada (43,44,45,47) and the U.S (48). The cross-setting analysis includes LTC homes, homeless shelters, rural hospitals and rural communities. What each study found was that rapid tests are most suitable for individuals who suspect they have contracted COVID-19 within the last 5 days or have recently shown symptoms. Positive tests should be followed by traditional COVID-19 testing and proper quarantining and surveillance should be followed. Key messages from these studies suggest that rapid testing should be used to support individuals who are in early days of being symptomatic or have close contact to others with symptoms, to help them to isolate more quickly.

Implications

There is a lack of consensus in the purpose of rapid testing, and the COVID status of target population. Little evidence is available on rapid testing in the settings of prison and rotational workers. The Essex County Correctional Facility program is a good example of prioritizing high-risk and vulnerable groups for rapid testing, when supplies are limited. Based off the Ontario employer rapid screening pilot, it is possible that employers need additional support to individualize the testing procedure, estimate costs and prepare for other logistics. Future work may wish to focus on rapid testing in workers as it may allow for shorter isolation and quarantine periods. There are mixed messaged regarding self-administered rapid tests at home which should be clarified in future research.

Impact of rapid testing on COVID-19 Infection Spread

Only the published study in Slovakia, detailing mass rapid antigen testing in COVID-19 pop up sites (21), reported on impact on infection spread. The study found that mass rapid antigen testing in 45 counties reduced the prevalence of COVID-19 by 50-80% across 3 time points. Following a positive test, citizens were asked to quarantine with all household members for 10 days and case-and-contact tracing was completed to reduce secondary transmission.

GAPS IN EVIDENCE

The impact of implementing and using rapid POC tests on COVID-19 transmission are largely unknown. Very few sources provided details on the implementation of rapid POC tests. We found only one on the potential impact of rapid testing on transmission (but not independent of other public health measures). Outreach (as a component of testing implementation) is also a gap in evidence.

The literature included in this review came a range of sources – published (studies – peer reviewed and preprints, and correspondence letters) and grey literature. Also, there was variation in the definitions used for rapid COVID-19 testing which made the interpretation of findings challenging.

Findings across various settings (i.e., borders, schools, LTC, primary care) indicated that most of the rapid POC tests and results have not yet been made available in the published literature. Once made available, this data may help provide evidence on the impacts rapid testing may have on transmission of COVID-19. Understanding the impact of rapid POC tests is predicated upon understanding of the context of where and how they are implemented, and the purpose or motivation for testing within particular settings. For example, at points of entry and in school settings, testing may serve as an incentive to enter a jurisdiction and/or reduce quarantine, or a return to the school environment. Furthermore, as many tests are accompanied by isolation measures, more research needs to compare tests impact with and without these additional mitigating measures.

CONCLUSIONS

This review illustrates that rapid POC test being implemented in various settings across the world. However, perhaps due to the expediency that rapid POC tests have been developed and implemented, there is a paucity of evidence to determine both its effectiveness on reducing infection spread and its relation to other public health measures intended to reduce spread. It is important to note that a lack of documented evidence is not indicative of the extensive work being done in various settings. Instead, it may be an indication that the abundance of testing initiatives have prioritized the sensitivity and specificity of rapid tests, rather than evaluating and documenting outcomes of these same initiatives on disease spread. This review identified over 50 examples of rapid POC tests in more than ten settings, providing promising indications that research on these test settings will become available in the near future. Decision makers seeking evidence-based implementation of rapid POC test, will likely benefit from revisiting a similar rapid review sometime within the next 3-6 months after the present study was executed. Future work should ensure appropriate details and lessons learned are provided to support future implementation and administration of rapid POC COVID-19 test.

The implementation of rapid point-of-care testing in non-traditional settings

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Appendix A

All database searches were executed on December 17, 2020.

Ovid MEDLINE

COVID-19 filter: adapted from Ovid filter (https://tools.ovid.com/coronavirus/Covid-19%20search%20notes.pdf); SARS/MERS & HIV literature not expressly excluded

#	Query
1	exp Coronavirus/
2	exp Coronavirus Infections/
3	(coronavirus* or corona virus* or oc43 or nl63 or 229e or hku1 or hcov* or ncov* or covid* or sarscov* or sarscov* or sars-coronavirus* or severe acute respiratory syndrome coronavirus*).mp.
4	(or/1-3) and ((20191* or 202*).dp. or 20190101:20301231.(ep).)
5	((pneumonia or covid* or coronavirus* or corona virus* or ncov* or 2019-ncov or sars*).mp. or exp pneumonia/) and Wuhan.mp.
6	(2019-ncov or ncov19 or ncov-19 or sars-cov2 or sars-cov-2 or sarscov2 or sarscov-2 or sarscoronavirus2 or sars-coronavirus-2 or coronavirus-19 or covid19 or covid-19 or covid 2019 or "2019-novel cov" or ((novel or new or nouveau) adj2 (cov or ncov or covid or coronavirus* or corona virus or pandemi*2)) or (coronavirus* and pneumonia)).mp.
7	covid-19.rx,px,ox. or severe acute respiratory syndrome coronavirus 2.os.
8	or/5-7
9	4 not (camel* or dromedar* or equine or coronary or coronal or covidence* or covidien or influenza virus or bovine or calves or tgev or feline or porcine or erinaceus or bcov or ped or pedv or pdcov or fipv or fcov or canine or ccov or zoonotic or avian influenza or h1n1 or h5n1 or h5n6 or ibv or murine corona*).mp.
10	8 and (camel* or dromedar* or equine or coronary or coronal or covidence* or covidien or influenza virus or bovine or calves or tgev or feline or porcine or erinaceus or bcov or ped or pedv or pdcov or fipv or fcov or canine or ccov or zoonotic or avian influenza or h1n1 or h5n1 or h5n6 or ibv or murine corona*).mp.
11	or/8-10
12	11 and 20191201:20301231.(dt).
13	((rapid* or fast or quick* or "point of care" or poc or real time or antigen or molecular) adj3 (test* or diagnos* or detect* or screen* or assay? or triag* or identif* or pcr or rt pcr or lamp)).ti,ab.
14	(rt lamp or lamp pcr or (lamp adj3 test*) or lamp sequenc* or loop-mediated isothermal amplification).ti,ab.
15	(panbio or febridx or xpert or xpress or qiastat* or nucleic acid or mobidiag or novodiag or vitapcr or coris).ti,ab.
16	or/13-15
17	12 and 16
18	(border? or travel* or airport? or "port? of entry" or "port? of call" or immigra* or migrant? or tourist? or tourism or foreigner? or ((entry or enter or entrance) adj2 (country or countries or nation or nations))).ti,ab.
19	17 and 18 [borders, travel]
20	(school* or universit* or college* or student*).ti,ab.
21	17 and 20 [schools]
22	(long term care or care home* or nursing home* or residential facilit* or rehab* facilit*).ti,ab.
23	17 and 22 [LTC, residential facilities, rehab]
24	(prison* or jail? or correctional facilit* or correctional institution* or penitentiar*).ti,ab.
25	17 and 24 [prisons]
26	((rural* or remote or isolated or low resource? or impoverished or poor* or ((difficult or hard) adj2 reach)) adj2 (communit* or setting? or area? or place? or population?)).ti,ab.
27	17 and 26 [rural, low resource]
28	(indigenous or first nations or aboriginal? or native american? or maori).ti,ab.
29	17 and 28 [Indigenous]
30	((remote or rotational or essential or migrant) adj2 (worker? or employee? or staff or farmer?)).ti,ab.
31	17 and 30 [rotational workers]
32	(clinic? or inpatient? or acute care or acute health care or acute healthcare or primary care or primary health care or primary healthcare or community health*).ti,ab.

33	17 and 32 [clinics, acute care, PHC]
34	or/19,21,23,25,27,29,31,33 [all combined]

Scopus

MEDLINE results have been removed from Scopus results using *AND NOT INDEX(medline)*; alterations specific to each setting/population are highlighted

#	Query
1	(((((TITLE-ABS-KEY (coronavirus* OR "corona virus*" OR oc43 OR nl63 OR 229e OR hku1 OR hcov* OR ncov* OR covid* OR sarscov* OR sarscov* OR "sars-coronavirus*" OR "severe acute respiratory syndrome coronavirus*")) AND NOT (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*"))) OR ((TITLE-ABS-KEY ("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) W/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia))) AND (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*")))) AND (TITLE-ABS (((rapid* OR fast OR quick* OR "point of care" OR poc OR "real time" OR antigen OR molecular) W/3 (test* OR diagnos* OR detect* OR screen* OR assay* OR triag* OR identif* OR pcr OR "rt pcr" OR lamp)) OR "rt lamp" OR "lamp pcr" OR (lamp W/3 test*) OR "lamp sequenc*" OR "loop-mediated isothermal amplification" OR panbio OR febridx OR xpert OR xpress OR qiastat* OR "nucleic acid" OR mobidiag OR novodiag OR vitapcr OR coris))) AND (TITLE-ABS (border* OR travel* OR airport* OR "port* of entry" OR "port* of call" OR immigra* OR migrant* OR tourist* OR tourism OR foreigner* OR ((entry OR enter OR entrance) W/2 (country OR countries OR nation OR nations))))) AND NOT (INDEX (medline)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019))
2	(((((TITLE-ABS-KEY (coronavirus* OR "corona virus*" OR oc43 OR nl63 OR 229e OR hku1 OR hcov* OR ncov* OR covid* OR sarscov* OR sarscov* OR "sars-coronavirus*" OR "severe acute respiratory syndrome coronavirus*")) AND NOT (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*"))) OR ((TITLE-ABS-KEY ("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) W/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia))) AND (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*")))) AND (TITLE-ABS (((rapid* OR fast OR quick* OR "point of care" OR poc OR "real time" OR antigen OR molecular) W/3 (test* OR diagnos* OR detect* OR screen* OR assay* OR triag* OR identif* OR pcr OR "rt pcr" OR lamp)) OR "rt lamp" OR "lamp pcr" OR (lamp W/3 test*) OR "lamp sequenc*" OR "loop-mediated isothermal amplification" OR panbio OR febridx OR xpert OR xpress OR qiastat* OR "nucleic acid" OR mobidiag OR novodiag OR vitapcr OR coris))) AND (TITLE-ABS (school* OR universit* OR college* OR student*))) AND NOT (INDEX (medline)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019))
3	(((((TITLE-ABS-KEY (coronavirus* OR "corona virus*" OR oc43 OR nl63 OR 229e OR hku1 OR hcov* OR ncov* OR covid* OR sarscov* OR sarscov* OR "sars-coronavirus*" OR "severe acute respiratory syndrome coronavirus*")) AND NOT (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*"))) OR ((TITLE-ABS-KEY ("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) W/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia))) AND (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*")))) AND (TITLE-ABS (((rapid* OR fast OR quick* OR "point of care" OR poc OR "real time" OR antigen OR molecular) W/3 (test* OR diagnos* OR detect* OR screen* OR assay* OR

	triag* OR identif* OR pcr OR "rt pcr" OR lamp)) OR "rt lamp" OR "lamp pcr" OR (lamp W/3 test*) OR "lamp sequenc*" OR "loop-mediated isothermal amplification" OR panbio OR febridx OR xpert OR xpress OR qiastat* OR "nucleic acid" OR mobidiag OR novodiag OR vitapcr OR coris))) AND (TITLE-ABS ("long term care" OR "care home*" OR "nursing home*" OR "residential facilit*" OR "rehab* facilit*"))) AND NOT (INDEX (medline)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019))
4	(((((TITLE-ABS-KEY (coronavirus* OR "corona virus*" OR oc43 OR nl63 OR 229e OR hku1 OR hcov* OR ncov* OR covid* OR sarscov* OR sarscov* OR "sars-coronavirus*" OR "severe acute respiratory syndrome coronavirus*")) AND NOT (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*"))) OR ((TITLE-ABS-KEY ("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) W/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia))) AND (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*")))) AND (TITLE-ABS (((rapid* OR fast OR quick* OR "point of care" OR poc OR "real time" OR antigen OR molecular) W/3 (test* OR diagnos* OR detect* OR screen* OR assay* OR triag* OR identif* OR pcr OR "rt pcr" OR lamp)) OR "rt lamp" OR "lamp pcr" OR (lamp W/3 test*) OR "lamp sequenc*" OR "loop-mediated isothermal amplification" OR panbio OR febridx OR xpert OR xpress OR qiastat* OR "nucleic acid" OR mobidiag OR novodiag OR vitapcr OR coris))) AND (TITLE-ABS (prison* OR jail* OR "correctional facilit*" OR "correctional institution*" OR penitentiar*))) AND NOT (INDEX (medline)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019))
5	(((((TITLE-ABS-KEY (coronavirus* OR "corona virus*" OR oc43 OR nl63 OR 229e OR hku1 OR hcov* OR ncov* OR covid* OR sarscov* OR sarscov* OR "sars-coronavirus*" OR "severe acute respiratory syndrome coronavirus*")) AND NOT (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*"))) OR ((TITLE-ABS-KEY ("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) W/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia))) AND (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*")))) AND (TITLE-ABS (((rapid* OR fast OR quick* OR "point of care" OR poc OR "real time" OR antigen OR molecular) W/3 (test* OR diagnos* OR detect* OR screen* OR assay* OR triag* OR identif* OR pcr OR "rt pcr" OR lamp)) OR "rt lamp" OR "lamp pcr" OR (lamp W/3 test*) OR "lamp sequenc*" OR "loop-mediated isothermal amplification" OR panbio OR febridx OR xpert OR xpress OR qiastat* OR "nucleic acid" OR mobidiag OR novodiag OR vitapcr OR coris))) AND (TITLE-ABS (((rural* OR remote OR isolated OR "low resource*" OR impoverished OR poor* OR ((difficult OR hard) W/2 reach)) W/2 (communit* OR setting* OR area* OR place* OR population*))))) AND NOT (INDEX (medline)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019))
6	(((((TITLE-ABS-KEY (coronavirus* OR "corona virus*" OR oc43 OR nl63 OR 229e OR hku1 OR hcov* OR ncov* OR covid* OR sarscov* OR sarscov* OR "sars-coronavirus*" OR "severe acute respiratory syndrome coronavirus*")) AND NOT (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*"))) OR ((TITLE-ABS-KEY ("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) W/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia))) AND (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*")))) AND (TITLE-ABS (((rapid* OR fast OR quick* OR "point of care" OR poc OR "real time" OR antigen OR molecular) W/3 (test* OR diagnos* OR detect* OR screen* OR assay* OR triag* OR identif* OR pcr OR "rt pcr" OR lamp)) OR "rt lamp" OR "lamp pcr" OR (lamp W/3 test*) OR "lamp sequenc*" OR "loop-mediated isothermal amplification" OR panbio OR febridx OR xpert OR xpress OR qiastat* OR "nucleic acid" OR mobidiag OR novodiag OR vitapcr OR coris))) AND (TITLE-ABS (indigenous OR "first nations" OR aboriginal* OR "native

	american*" OR maori))) AND NOT (INDEX (medline)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019))
7	(((((TITLE-ABS-KEY (coronavirus* OR "corona virus*" OR oc43 OR nl63 OR 229e OR hku1 OR hcov* OR ncov* OR covid* OR sarscov* OR sarscov* OR "sars-coronavirus*" OR "severe acute respiratory syndrome coronavirus*")) AND NOT (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*"))) OR ((TITLE-ABS-KEY ("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) W/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia))) AND (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*")))) AND (TITLE-ABS (((rapid* OR fast OR quick* OR "point of care" OR poc OR "real time" OR antigen OR molecular) W/3 (test* OR diagnos* OR detect* OR screen* OR assay* OR triag* OR identif* OR pcr OR "rt pcr" OR lamp)) OR "rt lamp" OR "lamp pcr" OR (lamp W/3 test*) OR "lamp sequenc*" OR "loop-mediated isothermal amplification" OR panbio OR febridx OR xpert OR xpress OR qiastat* OR "nucleic acid" OR mobidiag OR novodiag OR vitapcr OR coris))) AND (TITLE-ABS ((remote OR rotational OR essential OR migrant) W/2 (worker* OR employee* OR staff OR farmer*)))) AND NOT (INDEX (medline)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019))
8	(((((TITLE-ABS-KEY (coronavirus* OR "corona virus*" OR oc43 OR nl63 OR 229e OR hku1 OR hcov* OR ncov* OR covid* OR sarscov* OR sarscov* OR "sars-coronavirus*" OR "severe acute respiratory syndrome coronavirus*")) AND NOT (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*"))) OR ((TITLE-ABS-KEY ("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) W/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia))) AND (TITLE-ABS-KEY (camel* OR dromedar* OR equine OR coronary OR coronal OR covidence* OR covidien OR "influenza virus" OR bovine OR calves OR tgev OR feline OR porcine OR erinaceus OR bcov OR ped OR pedv OR pdcov OR fipv OR fcov OR canine OR ccov OR zoonotic OR "avian influenza" OR h1n1 OR h5n1 OR h5n6 OR ibv OR "murine corona*")))) AND (TITLE-ABS (((rapid* OR fast OR quick* OR "point of care" OR poc OR "real time" OR antigen OR molecular) W/3 (test* OR diagnos* OR detect* OR screen* OR assay* OR triag* OR identif* OR pcr OR "rt pcr" OR lamp)) OR "rt lamp" OR "lamp pcr" OR (lamp W/3 test*) OR "lamp sequenc*" OR "loop-mediated isothermal amplification" OR panbio OR febridx OR xpert OR xpress OR qiastat* OR "nucleic acid" OR mobidiag OR novodiag OR vitapcr OR coris))) AND (TITLE-ABS (clinic OR clinics OR inpatient* OR "acute care" OR "acute health care" OR "acute healthcare" OR "primary care" OR "primary health care" OR "primary healthcare" OR "community health*"))) AND NOT (INDEX (medline)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019))

medRxiv and bioRxiv

Advanced search; medRxiv and bioRxiv; Abstract or Title field; select "any"; 50 per page; Best Match; export top 250 results as of December 17, 2020

Search: (coronavirus OR "covid-19" OR "sars-cov-2") AND ("rapid test")

Cochrane Database of Systematic Reviews (CDSR)

Alterations specific to each setting/population are highlighted

#	Query
1	(("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) near/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia)) AND (border* OR travel* OR airport* OR "port* of entry" OR "port* of call" OR immigra* OR migrant* OR tourist* OR tourism OR foreigner* OR ((entry OR enter OR entrance) near/2 (country OR countries OR nation OR nations))):ti,ab
2	(("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) near/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia)) AND (school* OR universit* OR college* OR student*)):ti,ab

3	(("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) near/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia)) AND ("long term care" OR "care home*" OR "nursing home*" OR "residential facilit*" OR "rehab* facilit*")):ti,ab
4	(("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) near/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia)) AND (prison* OR jail* OR "correctional facilit*" OR "correctional institution*" OR penitentiar*)):ti,ab
5	(("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) near/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia)) AND (((rural* OR remote OR isolated OR "low resource*" OR impoverished OR poor* OR ((difficult OR hard) near/2 reach)) near/2 (communit* OR setting* OR area* OR place* OR population*))):ti,ab
6	(("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) near/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia)) AND (indigenous OR "first nations" OR aboriginal* OR "native american*" OR maori)):ti,ab
7	(("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) near/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia)) AND ((remote OR rotational OR essential OR migrant) near/2 (worker* OR employee* OR staff OR farmer*)):ti,ab
8	(("2019-ncov" OR ncov19 OR "ncov-19" OR "sars-cov2" OR "sars-cov-2" OR sarscov2 OR "sarscov-2" OR sarscoronavirus2 OR "sars-coronavirus-2" OR "coronavirus-19" OR covid19 OR "covid-19" OR "covid 2019" OR "2019-novel cov" OR ((novel OR new OR nouveau) near/2 (cov OR ncov OR covid OR coronavirus* OR "corona virus" OR pandemic*)) OR (coronavirus* AND pneumonia)) AND (clinic OR clinics OR inpatient* OR "acute care" OR "acute health care" OR "acute healthcare" OR "primary care" OR "primary health care" OR "primary healthcare" OR "community health*")):ti,ab

Epistemonikos

Manual, broad search only

Diagnostic > Laboratory tests > Molecular, antigen and antibody tests > Rapid tests

6 systematic reviews exported

Google

Screening protocol: Go 2 pages (20 results) beyond the last result clicked

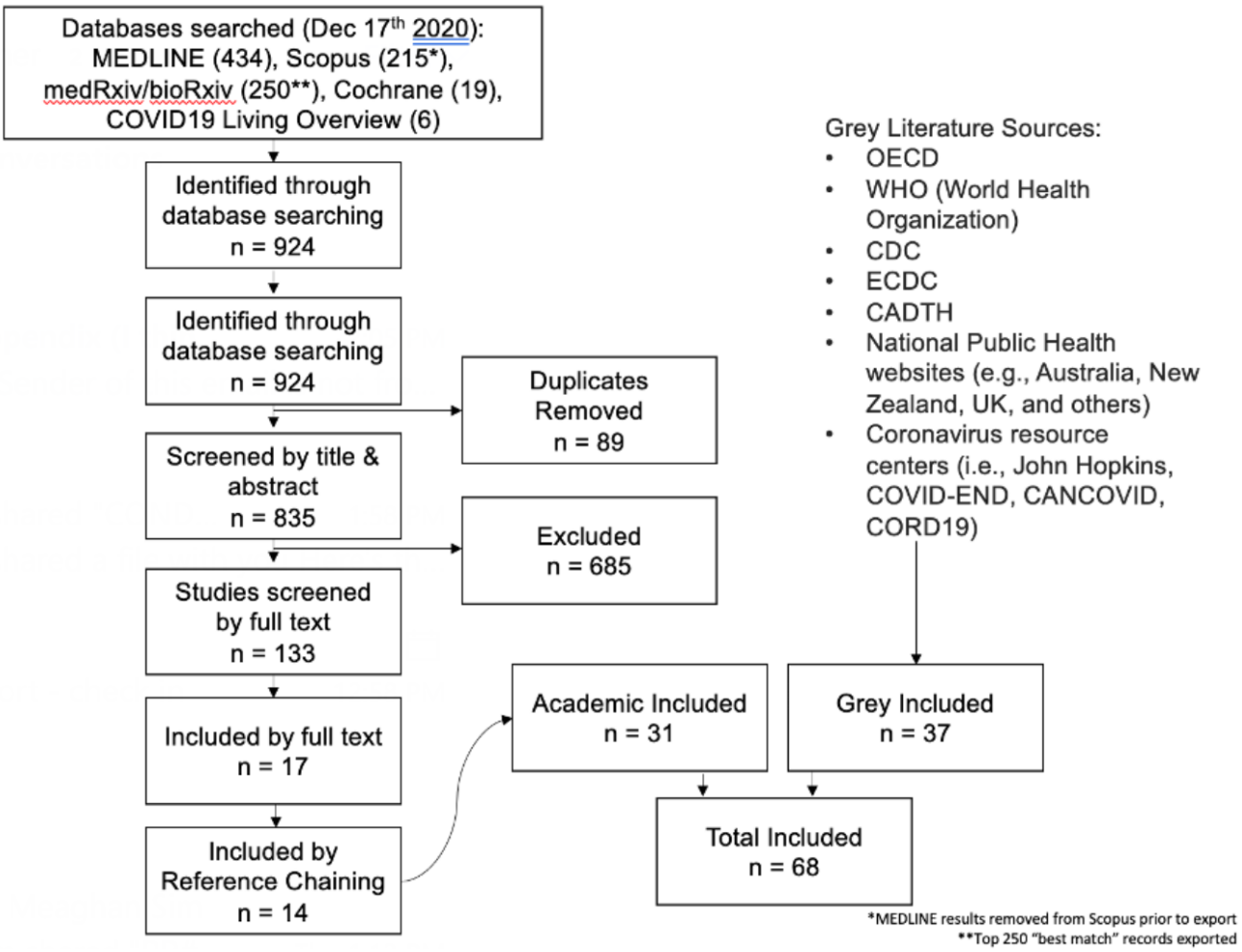
Query
" "covid-19" | coronavirus | "sars-cov-2" " " rapid test " " border | travel | airport | "port of entry" | "port of call" | immigration | migrants | tourists | foreigners "
" "covid-19" | coronavirus | "sars-cov-2" " " rapid test " " schools | universities | colleges | students "
" "covid-19" | coronavirus | "sars-cov-2" " " rapid test " " "long term care" | "care home" | "nursing home" | "residential facility" | "rehab* facility" "
" "covid-19" | coronavirus | "sars-cov-2" " " rapid test " " prison | jail | "correctional facility" | "correctional institution" | penitentiary "
" "covid-19" | coronavirus | "sars-cov-2" " " rapid test " " rural | remote | isolated | "low resource" | impoverished "
" "covid-19" | coronavirus | "sars-cov-2" " " rapid test " " indigenous OR "first nations" OR aboriginal OR "native american" OR maori "
" "covid-19" | coronavirus | "sars-cov-2" " " rapid test " " "remote worker" | "rotational worker" | "essential worker" | "migrant worker" "

" "covid-19" | coronavirus | "sars-cov-2" " " rapid test " " clinic | inpatient | acute care | primary care | "community health" "

Other Grey Literature Sources

The following list of websites were searched for grey literature: OECD, WHO, CDC, ECDC, CADTH, National public health websites (e.g., Australia, UK, New Zealand, United States), Coronavirus resources (e.g., Johns Hopkins, COVID-END, CAN-COVID, CORD19).

Appendix B


Databases searched (Dec 17th 2020): MEDLINE (434), Scopus (215*), medRxiv/bioRxiv (250**), Cochrane (19), COVID19 Living Overview (6)
Identified through database searching n = 924
Identified through database searching n = 924
Duplicates Removed n = 89
Screened by title & abstract n = 835
Excluded n = 685
Studies screened by full text n = 133
Included by full text n = 17
Included by Reference Chaining n = 14
Grey Literature Sources:
OECD
WHO (World Health Organization)
CDC
ECDC
CADTH
National Public Health websites (e.g., Australia, New Zealand, UK, and others)
Coronavirus resource centers (i.e., John Hopkins, COVID-END, CANCOVID, CORD19)
Academic Included n = 31
Grey Included n = 37
Total Included n = 68
*MEDLINE results removed from Scopus prior to export
**Top 250 "best match" records exported

Appendix C

Inclusion/exclusion criteria

Include/Exclude	Criteria
Include	COVID-19
	Rapid testing focus (or assays, diagnosis, screening, other synonyms) [includes: Rapid antigen tests; Rapid molecular tests; Rapid PCR tests; Rapid RT-PCR tests; Nucleic acid tests; RT-LAMP tests; RAPID Molecular Xpert; Xpress tests QIAstat-Dx Respiratory SASR-CoV2 Panel; Cepheid Xpert R Xpress SARS-CoV-2; Mobidiag Novodiag R COVID-19; FebriDX; Panbio COVID-19 Ag Rapid Test; VitaPCR RT-PCR Coris COVID-19 Ag Respi-Strip]
Include	Non-traditional rapid testing sites [includes: Travel/borders; Schools; Long term care/ residential/rehab; Prisons; Rural; Indigenous; Rotational workers; Acute care clinics/primary care clinics/ community health centres]
Include	Screening/testing led by government or government-led agency Evaluation of the implementation of rapid testing approach Empirical research
Exclude	non-COVID-19
Exclude	"Regular" (PCR, diagnostic, laboratory confirmed), non-rapid testing Acute care, hospital or primary assessment centres
Exclude	Commentary, perspective where approach (implementation and outcomes of rapid testing) is not described

Appendix D

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
	Border											
1.	Wong 2020 (1)	The Journal of hospital infection	China	Airport	Cross-sectional	To describe the testing and infection control procedures set up at the Hong Kong International Airport for arriving passengers	Travellers	Symptomatic	Rapid molecular diagnostic testing of nasopharyngeal swab (not specified in this letter)	Eighty-eight (7.3%) of 1210 patients tested positive	The temporary test centre reduced the number of hospital admissions by 36 patients per day during its 31 days of operation.	The model of testing that was described was mentioned by the authors as an example of a strategy to avoid transmission of the virus among incoming passengers
2.	CBC News-27-11-2020 (2)	Media	Canada	Vancouver International Airport	N/A (grey lit)	To describe the roll out of a rapid test for domestic travellers.	Domestic travellers	Unknown	Two samples: nasopharyngeal & oral rinse (not specific beyond this)	Unknown	None	1) Volunteers can register for testing ahead of time and/or on site for flight. 2) Partnership among university, health authority and industry. 3) Information booklet provided regarding rebooking or cancelling flight free of charge, which may increase participation.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
3.	Government of Alberta 2020 (3)	Government website	Canada	Point of entry (participating sites)	N/A (grey lit)	To introduce the pilot program to travellers.	International travellers at select Alberta points of entry (Calgary International Airport and Coutts land border).	Asymptomatic	Presumably traditional PCR based on turnaround time of 48 hours	Positive test rates (as of December 27, 2020) are 1.14% of participating travellers.	None	1) Participans with negative test allowed to end quarantine after 1 week. 2) Participants are prohibited from certain settings during the pilot (schools, healthcare settings, high risk workplaces, gatherings, group living arrangements) 3) All participants must download the contact tracing app (ABTraceTogether) and must ensure it is operational (phone on) when in public settings.
4.	CTV News Montreal 07-12-2020 (4)	Media	Canada	Trudeau Airport	N/A (grey lit)	To describe a soon-to-be rolled out rapid test for eligible passengers at Trudeau Airport.	International passengers traveling between Trudeau Airport and France.	Unknown	Rapid Antigen	Unknown	None	None provided.
5.	**Department for Transport-27-11-2020** (5)	Government website	UK	Home and other assessment centres	N/A (grey lit)	To introduce the "Test to Release" scheme to reduce self-isolation require	Open to all travellers who are required to self-isolate upon return to England,	Symptomatic and asymptomatic	Unclear - multiple private sector providers approved.	Unclear	Unknown	1) Should a test be negative, the traveller can reduce their time in mandatory self-isolation. 2) Use of government approved private sector providers who have met minimum testing standards. There are fines if you do not self-isolate (1000 GBP for first offence, up to 10,000 GBP for further offences).

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						ments upon return to the England from international travel.	including children.					
	Community											
6.	Horta 2020 (6)	Revista Panamericana de Salud Publica/Pan American Journal of Public Health	Brazil	Home	Cross-sectional	To determine the prevalence of SARS-cov-2 antibodies in 133 Brazilian cities and assess any socioeconomic or ethnic group differences.	Citizens in 133 Brazilian sentinel cities	Unknown	WONDFO SARS-CoV-2 Antibody Test	Unknown	Lowest risks among white, educated and wealthy individuals	This serological antibody survey found that individuals who had a lower socio-economic status or were members of disadvantaged groups had a greater prevalence of COVID.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
7.	Winkel 2020 (7)	mexRxiv	Netherlands	Football club	Cross-sectional	To validate the Panbio COVID-19 Ag rapid test in a cohort of asymptomatic football players and staff of football clubs.	Football players, staff and referees	Asymptomatic	Abbott Panbio COVID-19 Antigen Rapid Test Device	Unknown	82% -90.91% sensitivity and > 90% specificity for identifying pre-symptomatic and early SARS-CoV-2 infection.	Panbio COVID-19 Ag rapid test can be used in targeted screening strategies for early detection of SARS-CoV-2 infection in asymptomatic individuals.
8.	Jacobs 2020 (8)	Frontiers in Medicine	Sub-Dash Saharan Africa	Low-resource settings including remote communities	Literature review	To review published studies on rapid diagnostic tests for COVID-19 in Sub-Saharan Africa.	low-income countries, and remote and under-served areas in middle-income countries in Sub-Saharan Africa.	Unknown	Various antigen and antibody tests reviewed	Unknown	Ease of use of rapid tests	Successful implementation models in triage, contact tracing, and surveillance have been proposed, in particular for antibody rapid tests.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
9.	Public Health England 11-05-2020 (9)	Government website	UK	Home and pharmacies	N/A (grey lit)	To discourage use of rapid tests at home or in community	General population	Unknown	Various testing kits that allow a swab or other type of sample (including serum, plasma or finger-prick whole blood)	Unknown	None	Does not recommend products that give very rapid result in community settings, due to lack of reliability and evidence.
10.	OASH Press Office 16-10-2020 (10)	Government website	USA	Federal community-based testing site	N/A (grey lit)	To describe the deployment and testing of a rapid saliva test in Waco community settings	General population	Symptomatic and asymptomatic	Fluidigm saliva test	Unknown	None	N/A
11.	Ontario Ministry of Health 10-11-2020 (11)	White paper	Canada	Various workplace settings	N/A (grey lit)	To guide individuals or organizations that choose to participate in the employer rapid antigen	Asymptomatic workers	Asymptomatic	Abbott Panbio	Unknown	Unknown	1) Rapid test not a replacement for existing public health measures. 2) Employers responsible for seeking legal advice, implementation, and all costs related to testing (except kits)

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						screening pilot in Ontario.						
12.	City News 23-10-2020 (12)	Media	Canada	Remote communities	N/A (grey lit)	To outline rapid testing roll out in Ontario	general population, those in the remote communities and high-outbreak areas	Unknown	PCR	Unknown	None	All rapid tests will be confirmed by regular lab-based test.
13.	Rennova Health 14-09-2020 (13)	Media	USA	Rural clinic and hospitals	N/A (grey lit)	To describe new accessible rapid tests in Kentucky	general population	Unknown	Abbott ID NOW	Unknown	None	None
14.	Alberta Health Services 30-03-2020 (14)	Government website	Canada	Rural, remote and Indigenous communities	N/A (grey lit)	To provide details on new rapid testing device developed by Canadian	general population	Unknown	handheld device by Spartan Bioscience (result <1 h)	Unknown	None	This new technology will supplement current testing efforts, guide appropriate care and isolation, speed up our contact tracing, and reduce the risk of further spread

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						company to be used in AB						
15.	Atchison 2020 (15)	Clinical Infectious Diseases	UK	Home	Cross-sectional	To assess acceptability and usability of home-based self-testing for SARS-CoV-2 antibodies using lateral flow immunoassays (LFIA).	Adults	Unknown	Antibody test using 2 different LFIAs. LFIA1: Guangzhou Wondfo Biotech Co Ltd. LFIA2: Fortress Orient Gene Biotech Co Ltd.	Unknown	High acceptability, limitations with usability of the kits	1) Began the project with an iterative public involvement and a pilot usability study including an online forum with 4 discussion groups. 2) Suggested a need for clearer instructions and more guidance on interpretation of results.
	COVID testing centres											

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16.	Dohla 2020 (16)	Public Health	Germany	COVID-19 testing centre	Cross-sectional	To determine the effectiveness of a rapid antibody testing system at identifying SARS-Cov-2 infections in a community setting.	A high prevalence area (300 confirmed cases among 12,000 inhabitants).	Symptomatic	Rapid antibody IgG/IgM-based testing system (brand unknown)	Unknown	Specificity: 88.9%	Rapid antibody test should not be used for individual risk assessment or for decisions on public health measures. Antigen tests may be more appropriate.
17.	Berger 2020 (17)	medRxiv	Switzerland	COVID-19 testing centre	cross-sectional	To evaluate the performance of two antigen-detecting rapid diagnostic tests (Ag-RDT) in comparison to RT-PCR on nasopharyngeal swabs.	All individuals presenting to the testing centre	Symptomatic and asymptomatic	Abbott Abbott Panbio COVID-19 Antigen Rapid Test Device	Unknown	Combined sensitivity >95% for individuals presenting with fever 1-5 days post symptom onset	1) Good diagnostic accuracy of both Ag-RDTs, especially for rule-in purposes of infected individuals and in testing patients with defined clinical criteria. 2) Testing criteria focusing on patients with typical symptoms in their early symptomatic period onset could further increase diagnostic value.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
18.	Gremmels 2020 (18)	EClinicalMedicine	Netherlands & Aruba	COVID-19 testing centers (located at hospitals)	Cross-sectional	To evaluate the Abbott Panbio in comparison to RT-qPCR in community-dwelling mildly symptomatic subjects in a medium and high endemic area.	All individuals visiting COVID-19 community testing centres	Symptomatic	Abbott Abbott Panbio COVID-19 Antigen Rapid Test Device	Unknown	100% specificity, and a sensitivity above 95%	This LFA can reliably identify patients at symptomatic onset and is recommended for ommunity-based surveillance.
19.	Van der Moeren 2020 (19)	medRxiv	Netherlands	COVID-19 test centres	Cross-sectional	To determine the clinical specificity and sensitivity of the BD Veritor System for Rapid Detection of SARS-CoV-2 compare	Adults	Symptomatic and asymptomatic	BD Veritor System for Rapid Detection of SARS-CoV-2 (VRD)	Unknown	The clinical sensitivity was highest when viral load was high, which correlated with the duration of symptoms.	The VRD is a promising diagnostic test for COVID-19 community screening for symptomatic individuals within 7 days after symptom onset in function of disease control.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						d to qRT-PCR.						
20.	Kwon 2020 (20)	Journal of Korean medical science	South Korea	COVID-19 testing centre (pop-up)	Descriptionn of screening clinic	To report the operational process of screening clinic for COVID-19 and its effectiveness in maintaining operation of tertiary hospitals.	People entering hospital	Symptomatic	RT-PCR	Prevented 42 cases from entering hospital in 3 weeks.	Drastically reduced the need to close beds due to unrecognized patients entering.	Planning and using pop up clinics near healthcare facilities are recommended to prevent nosocomial transmission.
21.	Pavelka 2020 (21)	medRxiv	Slovakia	COVID-19 testing centre (pop-up)	Observational	To evaluate the impact of mass testing in Slovakia	Whole population in the country	Symptomatic and asymptomatic	Rapid Antigen	Reported reduction in prevalence of over 50% achieved within a	None	1) The combination of nationwide restrictions and mass testing with quarantining of household contacts of test positives rapidly reduced the prevalence. 2) Mobilizing sufficient medical personnel to conduct the

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						by comparing infection prevalence.				week between two rounds of testing.		nasopharyngeal swabs could be a major obstacle.
	Hospital											
22.	Paradiso 2020 (22)	medRxiv	Italy	presumably in hospital (National Cancer Research Center)	Cross-sectional	To understand the Viva-Diag rapid serological test in the context of asymptomatic healthcare workers in a cancer clinic.	Asymptomatic healthcare workers working at a cancer clinic in Italy	Asymptomatic	Viva-Diag rapid IgG-IgM antibody test kit	Unknown	None	Viva-Diag assay recommended for individualizing SARS-CoV2 infected people first of all in cohorts of subjetcs with high prevalence of infection.
23.	Linares 2020 (23)	Journal of Clinical Virology	Spain	Emergency department	Cross-sectional	To compare the performance of the Panbio COVID-19 AG Rapid Test Device for the detectio	Patients at emergency department and in two primary care centres	Symptomatic and asymptomatic	Abbott Panbio COVID-19 Antigen Rapid Test Device	Unknown	Patients with less than seven days onset of symptoms showed a higher viral load, and sensitivity for rapid antigen test (86.5 %)	Panbio recommended for rapid identi cation and isolation of SARS-CoV-2 infected patients.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						n of SARS-CoV-2 antigen compared to RT-qPCR						
24.	Steensels 2020 (24)	JAMA Research Letter	Belgium	Tertiary care centre	Cross-sectional	To investigate the prevalence of antibodies against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) among hospital staff	All persons who worked at Hospital East-Limburg (including clinical and nonclinical staff and volunteers)	Asymptomatic	COVID-19 IgG/IgM Rapid Test Cassette	Unknown	Having a household contact with suspected or con- firmed COVID-19 was associated with antibody positivity	Hospital-wide antibody screening for SARS-CoV-2 can help monitor transmission dynamics and evaluate infection control policies.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
25.	Torres 2020 (25)	MedRxiv	Spain	Hospital	Cross-sectional	To evaluate the performance of the Panbio COVID-19 Ag Rapid Test Device to identify SARS-CoV-2-infected asymptomatic individuals.	Asymptomatic patients	Asymptomatic	Abbott Panbio COVID-19 Antigen Rapid Test Device	Unknown	Sensitivity was higher in household than in non-household ontacts. Individuals testing positive by RAD test were more likely (P<0.001) to become symptomatic than their negative counterparts.	The Panbio test displays low sensitivity in asymptomatic close contacts of COVID-19 patients, particularly in non-household contacts.
	Indigenous populations											
26.	Australian National COVID-19 Health and Research Advisory Committee 28-05-2020 (26)	White paper	Australia	Within Indigenous communities	N/A (grey lit)	To review current covid testing protocols and strategies in Indigenous people in Australia and the capacity to respond	Aboriginal and Torres Strait Islander Population	Unknown	Presumably Cepheid Xpert Xpress (mentioned GeneXpert platform)	Unknown	None	1) A national pre-positioned stockpile of GeneXpert machines and cartridges for deployment is strongly recommended. 2) Suggested more GP respiratory clinics specific for Indigenous people and in drive-through testing.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						to positive test results.						
27.	UNSW Newsroom 16-04-2020 (27)	Media	Australia	Within Indigenous communities	N/A (grey lit)	To introduce a new rapid covid-19 test program for remote Aboriginal and Torres Strait Islander communities.	Remote Aboriginal and Torres Strait Islander communities	Unknown	Presumably Xpert SARS-CoV-2 test based on another source reporting on the same project	Intended impact would be minimize unnecessary isolation for negative test results and lead to quick isolation & treatment for positives.	None	1) An existing network with successful experience in rapid STIs testing will be utilized to service Aboriginal and Torres Strait Islander people in other remote sites. 2) Aboriginal and Torres Strait Islander peoples are vulnerable to pandemic and equitable access to testing is critical.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
28.	Australian Ministers Department of Health 16-04-2020 (28)	Government website	Australia	Remote rural Indigenous communities	N/A (grey lit)	To introduce rapid point-of-care testing program for remote rural Indigenous communities.	Aboriginal and Torres Strait Islander	Unknown	Xpert Xpress SARS-CoV-2 test	Unknown	None	1) This rapid testing program complements other government initiatives such as 260+ respiratory clinics and telehealth 2) Close consultation with Aboriginal Community Controlled Health Services and states and territories in site selection, to ensure no community is more than 2-3 hours' drive away from a testing facility.
29.	Queensland Health (29)	Guideline	Australia	Hospitals, Primary Health Care Centres (PHCCs) and Aboriginal and Islander Community Controlled Health Services (AICCHSs)	N/A (grey lit)	To guide primary health care staff on the management of POC testing using the Cepheid GeneXpert platform	The Aboriginal and Torres Strait Islander in remote communities	Symptomatic and asymptomatic	Xpert Xpress SARS-CoV-2 test	Unknown	Unknown	1) Oversight measures: All specimens (regardless results) must be transferred to Queensland Forensic and Scientific Services (QFSS) for storage and/or validation.
	Long term care											
30.	Osterdahl 2020 (30)	BMC infectious diseases	UK	High dependency care home	Longitudinal, prospective	To pilot test the use of the RT-LAMP test in a long-	LTC residents	Symptomatic and asymptomatic	LAMP	Unknown	None	RT-LAMP test had the potential to speed up the detection of infection and could be used in numerous setting like in mobile units, LTC and heath care facilities.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						term care setting						
31.	Buntinx 2020 (31)	Acta Clinica Belgica	Belgium	Nursing home	Cross-sectional	To describe anti-SARS-CoV-2 antibody testing in a nursing home during an acute COVID-19 outbreak.	Nursing home residents and staff members	Symptomatic and asymptomatic	SureScreen Diagnostics Covid-19 IgG/IgM Rapid Test Cassette	Unknown	26% of residents and staff were PCR-positive. An additional 8% was diagnosed using IgM/IgG antibody testing.	1) RT- PCR alone as the sole diagnostic method for surveillance during an acute outbreak is insufficient. 2) For residents, presence of IgG in association with absence of signs and symptoms and a period of at least 2 weeks after the first positive PCR result, could be considered a criterion for discharge from the COVID-19 ward to the normal rooms.
32.	Ottawa Citizen 12-12-20 (32)	Media	Canada	LTC home	N/A (grey lit)	To introduce rapid test in Ontario long-term care	LTC residents and potentially essential caregivers	Unknown	Abbott Panbio (does not require a lab) and ID NOW (processed quickly in lab)	Unknown	Early findings from surveillance tests indicate that the tests are "well accepted by (LTC) staff, the purported benefits are as expected and that the tests are feasible"	Rapid tests are intended to complement and not replace lab-based PCR.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
33.	Department of Health and Social Care N/A (33)	Guideline	UK	Care homes	N/A (grey lit)	To provide guidance for care homes receiving g Lateral Flow Devices (LFD) test kits in UK.	Visitors at care homes	Asymptomatic	Innova SARS-CoV-2 Antigen Rapid Qualitative Test Kits	Unknown	None	Long term care home visitors are being proactively screened, and their contacts traced by the NHS. This could prove useful in containing the spread to care homes.
34.	NHS N/A (34)	Information for public			N/A (grey lit)							
35.	Department of Health and Social Care (35)	White paper	UK	Long term care	N/A (grey lit)							
36.	CDC (36)	Government website	USA	Nursing homes	N/A (grey lit)	To offer guidance on rapid antigen testing for COVID-19, particularly elements that impact long-term care	Symtomatic long term care residents	Symptomatic	Two rapid antigen tests: BD Veritor and Quidel Sofia2	unknown	Not mentioend	1) Intended for use in diagnostic testing of symptomatic patients within five days of symptom onset. 2) CDC expands use of these rapid antigen tests to include use as screening tool in congregate settings (such as a nursing home) for staff and residents.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						providers						
37.	BMJ 15-12-2020 (37)	Media	UK	Long term care homes	N/A (grey lit)	T Discuss findings and implications of lower sensitivity of the Innova Lateral Flow SAS-Cov2 Antigen test	Visitors and residents at long term care homes	Symptomatic and asymptomatic	Innova Lateral Flow SARS-CoV-2 antigen test	Unknown	Detect 48.89% of covid-19 infections in asymptomatic people when compared with PCR	1) Over a million kits distributed to care homes, secondary schools, and most universities. 2) Use in addition to PCR, PPE and infection control measures.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
38.	Savio 2020 (38)	Lancet preprints	Italy	Nursing home	Cross-sectional	To screen for Covid-19 among long term care residents and care providers sing a combination of rapid and routine testing.	Long term care residents and care providers	Symptomatic and asymptomatic	Core Tests IgM/IgG Ab	Helped screen and identify asymptomatic residents and workers, with few false negative tests, as confirmed with follow-up tests.	None	POC testing is cheap and easy to use in different settings, and is useful in the case of less cooperative elderly patients. Results require nuanced interpretation, and combining it with gold standard tests can be beneficial. Interpretation of IgM only results is challenging.
	Multiple settings											
39.	Masiá 2020 (39)	medRxiv	Spain	Primary care centres and emergency department	Cross-sectional	To evaluate the performance of the nasopharyngeal Panbio COVID-19 antigen Rapid Test Device in real-life conditions in	Primary care and ED patients	Symptomatic and asymptomatic	Abbott Panbio COVID-19 Antigen Rapid Test Device	Unknown	The sensitivity of the antigen test was highest (reaching 100%) in symptomatic patients older than 50 years and with Ct values associated with an increased risk of infectivity.	1) The nasopharyngeal Panbio COVID-19 antigen test performed at point-of-care is highly sensitive in symptomatic patients of older age. 2) Use of saliva as alternate sample NOT recommeded due to low sensitivity of the antigen in this specimen.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						different clinical scenarios.						
40.	Martin 2020 (40)	Semergen	Spain	Primary care centres and nursing homes	Cross-sectional	To determine the prevalence of SARS-cov-2 in general practitioners and nurses from primary care centers and nursing homes in the Healthcare Area of León (Spain).	General practitioners and nurses.	Asymptomatic	All Test 2019-nCoV IgG/IgM Rapid Test Casette	Unknown	A higher infection rate among workers in nursing homes (9.5%) com- pared to those working in health centers (5.5%).	Strict protective measures should continue to be taken in healthcare and nursing home settings.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
41.	Bulilete 2020 (41)	medRxiv	Spain	4 primary healthcare centres and 2 COVID-19 testing sites	Cross-sectional	To evaluate the performance of the Panbio Ag-RDT at primary health centres and test sites in symptomatic patients and close contacts, using the RT-PCR as the gold standard.	Symptomatic patients and close contacts	Symptomatic and asymptomatic	Abbott Abbott Panbio COVID-19 Antigen Rapid Test Device	Unknown	Sensitivity was higher in symptomatic patients, in those arriving within 5 days since symptom onset and in those with high viral load.	1) Ag-RDT had relatively good performance characteristics in suspected symptomatic patients within five days since the onset of symptoms. 2) A negative Ag-RDT must be considered as presumptive.
42.	McMaster HealthLabs 2020 (42)	Published report	Canada	Pearson International Airport (day 1) and home (day 7&14)	N/A (grey lit)	To assess the proportion of international passengers arriving to Pearson International	Arriving international passengers, aged 18 years and older	Asymptomatic	self-collect a nasal/cheek swab, analyzed using PCR at the Research Institute of St. Joe's in Hamilton, Ontario	1% of study participants tested positive. Almost 70% of positive COVID-19 cases were detected on day 1	Full publication of study findings coming in January 2021	1) Suggest for a reduced quarantine approach for international travellers arriving back to Canada. 2) Demonstrated the feasibility for airport-based testing, combined with self-collected and at-home nasal/oral swabs data collected during a required quarantine.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						Airport who have COVID-19 infection.				and the remaining majority of positive cases would be detected by day 7.		
43.	Ontario Government 20-11-2020 (43)	Guideline	Canada	Long term care, essential workers, hospitals	N/A (grey lit)	To describe new provincial testing strategy in ON.	Essentials workers at hospitals, LTC, remote and rural community members	Asymptomatic	Rapid molecular and rapid antigen	Unknown	None	1) Rapid molecular is for diagnostic testing purposes and rapid antigen should NOT be used for diagnosis of acute COVID-19 infection. 2) Asymptomatic individuals who are part of a workplace that are participating in a rapid antigen screening pilot are eligible for testing.
44.	CBC News 17-12-2020 (44)	Media	Canada	long-term care facilities, rural hospitals, urban homeless shelters	N/A (grey lit)	To describe latest rapid testing pilot program in Alberta.	Vulnerable population	Symptomatic and asymptomatic	Abbott Panbio and ID NOW	1000 tests conducted at time of publication with 76 positive cases identified	1000 tests and 76 positive cases to date	1) The rapid tests will be used on patients who are within the first week of showing symptoms. 2) Rapid testing used to better support clients who are symptomatic or close contacts, and help them to isolate more quickly.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
45.	Saskatchewan Health Authority 16-06-2020 (45)	Government website	Canada	19 rural communities in SK	N/A (grey lit)	To describe new rapid testing available in SK.	remote communities	Unknown	GeneXpert molecular testing platform	Unknown	None	Rapid tests potentially useful for LTC in outbreak, patients needing immediate triaging, public-facing services (RCMP, firefighters, food stores)
46.	Public Health England 08-11-2020 (46)	White paper	UK	hospitals, military establishments, schools, universities and COVID-19 testing centres	N/A (grey lit)	To pilot implementation of point of care testing in community and institutional settings.	Mass testing at population level	Symptomatic and asymptomatic	Innova SARS-CoV-2 Antigen Rapid Qualitative Test	Unknown	overall false positive rate of 0.32%	1) Delivery of appropriate training important for test performance. 2) LFD may offer advantages in risk reduction and warrant further testing in mass-testing scenarios. 3) Further understanding needed on: batch to batch variation, acceptance of the tests by the general public and the effect of operator/training effects upon performance characteristics.
47.	Manitoba Government 03-11-2020 (47)	Government website	Canada	Remote communities, hospital	N/A (grey lit)	To describe new rapid test available in the province	general population, but those in vulnerable groups and remote areas	Unknown	Abbott ID NOW and Panbio	Unknown	None	1) All rapid tests still must be confirmed by traditional testing. 2) Used as screening not diagnosis. Can only be used if a person has symptoms.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
48.	State of Illinois Department of Public Health 21-10-2020 (48)	White paper	USA	Schools and other community settings	N/A (grey lit)	Guidance addresses use of rapid point of care testing in schools and other community settings	General population	Symptomatic and asymptomatic	BinaxNOW and other rapid antigen	Unknown	None	1) rapid POC tests may be useful diagnostic tools for testing persons in the early stages of infection when viral load is generally highest. 2) Results may be used to expedite isolation and quarantine requirements and to inform infection prevention and control measures 3) Can allow students to return to school and community members to work more quickly if their test results are negative.
	Primary care											
49.	Puschel 2020 (49)	BJGP open	Chile	Primary health care clinics	Longitudina, prospective	To determine efficacy of rapid serologic testing in attendees of a primary care clinic	Primary care patients	Symptomatic and asymptomatic	Rapid serologic test by Acro-Biotec Inc.	Unknown	None	Rapid serologic testing is ineffective for detecting asymptomatic or non-severe cases of COVID-19 at early stages of the disease but can be of value for surveillance of immunity response in primary care.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
50.	Albert 2020 (50)	Clinical microbiology and infection	Spain	Primary healthcare centres	Cross-sectional	To evaluate the Panbio COVID-19 Ag Rapid Test Device for the diagnosis of COVID-19 in symptomatic patients attending primary healthcare centres.	Patients with clinical suspicion of COVID-19, adults and children, attending primary care centres of the Clinico-Malvarrosa Health Department in Valencia (Spain)	Symptomatic	Abbott Abbott Panbio COVID-19 Antigen Rapid Test Device	Unknown	Overall specificity and sensitivity of rapid antigen detection was 100% and 79.6% respectively, taking RT-PCR as the reference.	The PanbioTM COVID-19 Ag Rapid Test Device performed well as a POC test for early diagnosis of COVID-19 in primary healthcare centres.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
51.	Brotons 2020 (51)	medRxiv	Spain	Patients referred to rapid test through primary care. Rapid test implemented at a municipality center for the elderly (close down during the pandemic) located near-by the primary health care center.	Cross-sectional (study 1) and observational prospective (study 2)	1) To measure the seroprevalence of antibodies against SARS-CoV-2 infection in a community sample of asymptomatic individuals and among symptomatic patients (without confirmed diagnosis) followed in a primary care setting. 2) To estimate the proportions of	Community members with no prior positive COVID-19 diagnostic test	Symptomatic and asymptomatic	Rapid antibody test, lateral flow assay (brand of device unknown)	Unknown	Approximately 40% of symptomatic patients followed by primary care during peak months of pandemic in Barcelona were positive for antibodies for COVID-19, 30% of which attended ED, 13% hospitalized, 2% died.	Effective management of COVID-19 from a primary care perspective requires estimation of seroprevalence in each region and community area, as well as follow up on suspected and confirmed cases.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
						symptomatic patients seeing at an emergency department (ED).						

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
52.	Nova Health N/A (52)	Health care facility update	USA	All urgent care locations under the Nova Health brand	N/A (grey lit)	To update patients on the COVID-19 testing guidelines in Nova urgent care clinics.	Nova Health patients	Symptomatic and asymptomatic	Rapid Antigen	Unknown	None	Offers a virtual COVID-19 screening for patients and then direct them to a drive-through site or to a clinic near them.
	Prison											
53.	CFG Health Systems N/A (53)	Media	USA	Essex County Correctional Facility	N/A (grey lit)	To report rapid screening of all Essex County Correctional Facility inmates and detainees	inmates and detainees	Symptomatic and asymptomatic	COVID-19 IgG/IgM rapid test cassette	None, stated the test will enable inmates and detainees to be housed based on whether they have been exposed to the virus or not.	None	1) Prioritize high-risk and vulnerable groups for testing when supply is limited 2) Release inmates/detainees who are more susceptible to the virus based on age and underlying medical conditions.
	School											

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
54.	Leightley 2020 (54)	medRxiv	UK	University (testing site is at home)	Cross-sectional	To investigate the feasibility of remote at-home antibody testing as part of a large-scale study of COVID-19 among school-members (staff and students).	Postgraduate students and staff	Unknown	SureScreen Diagnostics IgG/IgM Rapid Test Casette	Unknown	High sensitivity and specificity. Antibodies were detectable for at least 33 days after first symptoms appeared.	Home testing with cassettes is convenient, rapid, deployable via mail service, low cost.
55.	Hoehl 2020 (55)	medRxiv	Germany	School (test site is home)	Cross-sectional	To assess the use of self-performed rapid antigen tests among teachers.	Primary/ secondary school teachers	Unknown	RIDA Quick SARS-CoV-2 Antigen test (lateral flow assay)	Five teachers tested positive with a high viral load and virus transmission was prevented	Ease of use of self-performed test	High frequency, self-performed antigen tests by teachers can detect individuals who are probably infectious.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
56.	US Dept of Health and Human Services 31-10-2020 (56)	Government website	USA	Colleges and Universities	N/A (grey lit)	Media release to announce that rapid testing is occuring at HBCUs in USA	Students at Historically Black Universities and Colleges	Symptomatic and asymptomatic	Abbott BinaxNOW COVID-19 rapid test	Unknown	None	BinaxNOW ideally suited for the screening and ongoingsurveillance of underserved demographic groups and in congregate settings such as group homes,nursing homes, K-12 schools and institutions of higher learning.
57.	UK Department of Education 31-10-2020 (57)	Government website	UK	Schools and colleges	N/A (grey lit)	Announcement of approach for rapid testing in schools for the new year	teaching workforce, staff, and pupils in schools and colleges	Symptomatic and asymptomatic	Lateral flow tests (30 min, no need for lab)	Unknown	None	Schools will be provided testing kits, PPE. comprehensive guidance and training materials
58.	BBC News 15-12-2020 (58)	Media	Ireland	Queen's University in Belfast	N/A (grey lit)	Announce mass testing of students	University students	Asymptomatic	Lateral flow devices	Unknown	None	Rapid testing would allow students who had remained on campus for the first term to return home for Christmas.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
59.	South Carolina Department of Health and Environmental Control and Dept of Education 31-11-2020 (59)	Government website	USA	public school	N/A (grey lit)	To announce rapid tests in schools	School-aged children	Symptomatic	BinaxNOW COVID-19 Ag Cards	Unknown	Schools may choose to test symptomatic students and staff in the parking lot if they developed symptoms while at home.	This testing will help to quickly identify and diagnose COVID-positive individuals who develop and present symptoms during the school day on campus.
60.	Robert Gordon University 25-11-2020 (60)	University website	UK	University	N/A (grey lit)	Testing announcement for university students	University students	Asymptomatic	Lateral flow	Unknown	None	The testing centre has a separate entrance to avoid the main thoroughfare of the building. Can test up to 12 students at a time.
61.	University of Wisconsin - Milwaukee N/A (61)	University website	USA	University	N/A (grey lit)	Announcement of rapid testing locations on university campus	Community members, university employees and students	Unknown	Abbott BinaxNOW antigen test	Unknown	None	1) Confirmatory PCR offered on-site 2) Campus dashboard that records positive results of employee & students. 3) Bi-weekly testing required for students in residence and essential employees.

	Author-year and reference	Journal/ source	Country	Testing location	Study Design	Purpose	Target population	COVID-19 status	Type of test	Impact on COVID-19 transmission	Other outcomes	Lessons learned and recommendations
62.	CDC (62)	White paper	USA	K-12 schools	N/A (grey lit)	Guidance for school districts on developing testing protocols for K-12 schools	School-aged children K-12, teachers and staff	Symptomatic and asymptomatic	Molecular test and antigen test	Unknown	None	1) School-based testing may be considered for: People show signs or symptoms while at school, and schools in moderate to high-risk areas. 2) Unethical and illegal to test someone who does not want to be tested, including students whose parents or guardians do not want them to be tested. 3) It is not recommended to retest individuals who have tested positive and do not have symptoms for COVID-19 for up to 3 months from their last positive test.