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# perspectives brief

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**title** **Victoria's response to COVID-19 laboratory testing: A public pathology perspective.**

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## executive summary

The COVID-19 pandemic is unprecedented in our lifetime. Governments and services involved in the COVID-19 response have faced numerous challenges in testing and managing infections from the novel SARS-CoV-2 virus that causes COVID-19. In the context of 112.5 million cases and 2.5 million deaths globally, Australia has fared better than other nations with 28,939 cases and 909 deaths. The majority of these have been in Victoria, with 20,479 cases and 820 deaths.

This paper reviews the response to the COVID-19 pandemic in Victoria from the lens of government owned and operated public pathology services.

Public pathology displayed exemplary leadership during the COVID-19 pandemic, demonstrating how public health testing as part of core business protected and supported the community during the COVID-19 pandemic.

The response by public pathology providers during the pandemic was innovative and agile. Endeavours included:

- establishing new laboratory assays and work processes,
- collecting and testing specimens from a multitude of locations, and
- establishing new ways to engage and report results.

Having public sector COVID-19 testing laboratories located within hospitals enabled fast turnaround times for testing results.

In Victoria, the scientific leadership of the public sector was exemplified by the success of the team at the Victorian Infectious Diseases Reference Laboratory who, in January 2020, diagnosed the first case of COVID-19 in Australia and was the first outside of China to grow the virus (Doherty, 2020).

To best protect the community in the face of a public health crisis such as COVID-19, attention must be given to Victoria's underlying pandemic response capability and its ongoing maintenance. There should be a focus on technical and scientific leadership, engagement models, information storage and reporting requirements, laboratory and workforce capacity building and workflows.

Ongoing investment in public pathology services is required. The following recommendations, which are focused on the Victorian Department of Health, are aimed at improving the ability to respond to a subsequent COVID-19 wave or other public health crisis. Some will also be relevant for other state and territory health departments.

| Recommendations | |
|---|---|
| **Capacity building** | • State coordinated collective bargaining with suppliers following advice from laboratories<br>• Funding for early acquisition and verification of platforms and assays<br>• Funding for additional staff for public pathology services<br>• More open and faster dissemination of research and validation studies |
| **Referral laboratory links** | • Formalising referral processes and charging arrangements between reference laboratory and diagnostics laboratories |
| **Management of testing volumes** | • Better direction of overflow testing by pairing laboratories with joint oversight |
| **Tracking and reporting** | • Boosting local pathology IT teams<br>• Adopting a state-wide public pathology laboratory system<br>• Reporting available via SMS and hotlines<br>• Adopting real time test tracking across collection sites and laboratories |
| **Non-hospital collections** | • Broader utilisation of public pathology services outside hospital settings |
| **Hospital employee infections** | • Measured and appropriate surveillance of high-risk workers |
| **Funding** | • Removing the distinction between public and private pathology provider MBS fees |
| **Supporting telehealth and Hospital in the Home** | • Developing an electronic pathology referral system<br>• Greater use of (non-COVID) point of care testing governed by pathology providers |
| **Communication and coordination** | • Enhancing consultation, communication and coordination between the Victorian Department of Health and laboratories |
| **Pandemic preparedness** | • Ongoing investment in public pathology for pandemic preparedness |

The COVID-19 pandemic is unprecedented in our lifetime.

Governments and services involved in the COVID-19 response have faced numerous challenges in testing and managing infections from the novel SARS-CoV-2 virus that causes COVID-19.

In the context of 112,553,318 cases and 2,497,419 deaths globally, Australia has fared better than other nations with 28,939 cases and 909 deaths (Johns Hopkins University nd; Australian Government 2021). The majority of these have been in Victoria, with 20,479 cases and 820 deaths (Australian Government 2021).

This paper reviews the response to the COVID-19 in Victoria from the lens of government owned and operated public pathology services.

## public pathology is critical infrastructure

Public pathology displayed exemplary leadership during the COVID-19 pandemic, demonstrating how public health testing as part of its core business, protected and supported the community during the COVID-19 pandemic.

Pathology testing for SARS-CoV-2 is essential in the diagnosis and management of patients with COVID-19; while genomic analysis of SARS-CoV-2 enables contract tracing to better understand and control community transmission of the virus.

In Australia, the public pathology response to the pandemic has been both innovative and agile. Endeavours have included establishing new assays and work processes, collecting and testing specimens from a multitude of locations, and establishing new ways to engage and report results. More specifically this has included:

- Rapid, innovative development of a new polymerase chain reaction (PCR) assay to detect SARS-CoV-2
- Active contribution to incident control centres, Government and WHO COVID committees, advisory panels, reviews and hospital planning structures
- Establishment of widespread testing and an evolving dissemination of technologies across laboratories. Rapidly developing methodologies and boosting laboratory testing capacity, including new locally manufactured devices for extraction and analysis
- Isolation and growth of SARS-CoV-2 in PC3/4 State Biosecurity Units
- Independent assay validation processes, e.g. for rapid antibody tests and other novel methodologies

- Active, rapid and timely Whole Genome Sequencing for cluster investigation, outbreak resolution and objective epidemiological alignment
- Pathogen genomics studies for international databases, such as the Global Initiative on Sharing All Influenza Data (GSAID) website
- Delivering or supporting extra COVID-19 collection options such as domiciliary services, in aged care facilities, hotels, airports, via mobile testing vans and specialised collection centres such as those for immuno-compromised patients
- Establishment of Australia's first drive through COVID testing clinic in South Australia (the second in the world)
- Establishing and managing rapid COVID testing for critically ill patients and patients in regional areas where logistics impede reporting timeframes
- Assisting with the rollout of rapid testing for Aboriginal and Torres Strait Islander communities
- Supporting point of care testing in isolated island communities
- Providing access to internet registration and resulting services for national and international testing regimes
- Building the first effective, large scale, secure, direct to patient, SMS result service for COVID-19
- Developing and providing active QR code registration for COVID patients and subsequent SMS results delivery direct to patients as well as establishing or expanding call centres
- Sourcing large volumes of scarce reagents and novel platforms for clinical care
- Conducting confirmatory testing for other laboratories
- Supporting and provisioning public COVID-19 clinics with swabs, nursing staff, couriers and testing of specimens
- Providing independent advice about personal, protective equipment (PPE) use, infection control services, aged care testing services, testing methodologies and protocols
- Management of COVID-19 deceased with State-wide mortuary management protocols

- Provision of business continuity plans for public and private sector laboratories during COVID-19 threats
- Exploring and resolving COVID-19 laboratory contamination issues in external laboratory services
- Industry collaboration and testing for critical infrastructure such as mining, fisheries, shipping, police and the defence force
- Developing new reporting dashboards and processes that contribute significantly to clinical analytics.

Public pathology services in most jurisdictions across Australia undertook all, or most, of the endeavours above.

In addition, having public sector COVID-19 testing laboratories located within hospitals enabled fast turnaround times for testing results. This provided reassurance to members of the community, enabled hospitals to better manage patients and contact tracers to commence their work faster.

In Victoria, however, there were many different pathology providers involved in the response to COVID-19 and heavy reliance was placed on the private sector to conduct COVID-19 laboratory tests. As a result, such a comprehensive response to the pandemic could not be coordinated primarily by the public pathology sector, as is generally the case in a public health emergency.

## case studies

The following case studies are examples of how public pathology services in Victoria responded to the pandemic.

**Monash Health Pathology**

In Melbourne, Monash Health Pathology performed the highest volume of SARS-CoV-2 tests of all public pathology providers, with over 210,000 tests reported from March 2020 to February 2021. Monash Health Pathology was responsible for testing swabs collected at three COVID-19 clinics which were co-located with health services and three drive-through testing centres. Monash Health Pathology also supported the testing response in South Gippsland.

**The Alfred Pathology Service**

The Alfred Pathology Service set up PCR testing for SARS-CoV-2 in the second half of March 2020. Numbers increased rapidly and peaked at over 1,000 samples per day in early May. In late June, another peak was reached with over 1,100 tests in 24 hours. This exceeded the available reagent and the service had to utilise pooling of multiple samples to provide services to patients. At the Alfred there have been over 100,000 patient samples collected, of which more than 90,000 swabs were tested in-house. The Alfred Pathology Service achieved a monthly testing record of 24,890 tests in January 2021. Median turnaround times to reporting have been exemplary at between 7 and 10 hours since August 2020 - the best performance of any of the Victorian pathology services.

**Northern Pathology Victoria**

The pathology service at Northern Health, Northern Pathology Victoria, was in the middle of the major outbreaks in Victoria. This service quickly installed a number of platforms from April 2020 to test for SARS-CoV-2, increasing testing capacity to about 700 results per day with median turnaround time to report of 8-10 hours. At the height of the second wave, Northern Pathology Victoria was processing up to 1,500 samples per day. As in other public pathology services, Northern Pathology Victoria used rapid testing technology for critically ill and emergency patients, while higher capacity testing was used for patients attending fever clinics and nursing home residents.

**Eastern Health Pathology**

Eastern Health has a unique profile, with a very large community catchment and several peripheral sites of varying complexity. At the outset of the COVID-19 pandemic, Eastern Health Pathology was initially reliant on central referral laboratories for COVID-19 testing – with the attendant delays of referring specimens. However, by working closely with the clinicians, operational leads and the Eastern Health Executive, Eastern Health Pathology rapidly procured and implemented several platforms for COVID-19 testing.

Eastern Health became entirely self-sufficient for COVID-19 swab testing, with sufficient reserve capacity to support a major surge in testing activity of up to 300% above the November 2020 average. Multiple platforms also provide business continuity in the event of technical or supplier failure.

Eastern Health identified a key role for near-patient GeneXpert testing, which has the capacity to deliver accurate test results within one hour.

As well as testing the most acutely unwell patients, the GeneXpert platform proved to be a game-changer for the health service with its wide community catchment and peripheral hospitals.

The rapid turnaround times associated with GeneXpert test dramatically reduced the requirements for isolation and PPE in peripheral hospitals; allowed rapid patient flow through the Emergency Department to home wards for specialist care; reduced dependency on dedicated "suspected COVID-19" wards; and reduced inter-hospital transfers thereby accelerating care, improving patient experience and reducing demand on Ambulance Victoria and other transport services. Eastern Health fully met the turnaround time key performance indicator (100% within 24hrs) with a median turnaround time to report of 7 hours.

The agility of Eastern Health Pathology has allowed a highly tailored response to the COVID-19 pandemic that meets the local clinical and operational needs of Eastern Health clinicians, sites and patients.

**Goulburn Valley Health Pathology**
Goulburn Valley Health has a small team based at the Shepparton Hospital laboratory which is dedicated to supporting its community. It was able to do so during the pandemic by forward planning and securing access to rapid GeneXpert COVID-19 testing kits.

Since March 2020, the Shepparton laboratory has managed over 37,000 COVID-19 swabs for testing, with 4,500 performed on-site. During the Shepparton outbreak the laboratory tested 650 or 15% of COVID-19 swabs onsite and managed 5,145 swabs to public referral laboratories in Melbourne. 95% of tests were reported within 24 hours.

The responsiveness of Goulburn Valley Health Pathology demonstrates the importance of having a public pathology laboratory with appropriate technology onsite in a regional hospital.

## issues of policy and practice

Public pathology providers can be directed by state governments to provide services in a particular manner. In the context of a public health emergency, the community trusts and depends on the public sector to be focussed solely on their wellbeing and not influenced by commercial and other competing priorities.

Maximising the use of public pathology services improves control and responsiveness by government, particularly during a crisis.

The COVID-19 pandemic is unparalleled in our lifetime and due to the level of outsourcing of pathology services in Victoria, additional effort from the Victorian Department of Health[1] was required to coordinate pathology providers during the pandemic.

In this regard, greater focus on the public pathology response with faster engagement, capacity building, resourcing and coordination from the Victorian Department of Health would have further assisted the state's response to the COVID-19 pandemic.

Some of the policy and practice issues relating to pathology testing which arose during the pandemic in Victoria have included the need:

- for faster capacity building and planning;
- to formalise relationships between referral and other laboratories;
- to improve management of testing volumes;
- to improve tracking and reporting;
- to utilise public pathology more broadly in non-hospital environments (e.g. hotels, aged care);
- for a considered approach to healthcare worker testing;
- to resolve funding issues;
- to support new modalities of healthcare;
- to improve communication between the Victorian Department of Health and pathology providers; and
- to invest in public pathology for pandemic preparedness.

[1] As of 1 February 2021, the Department of Health and Human Services separated into two new departments: the Department of Health (DH) and the Department of Families, Fairness and Housing (DFFH).

## capacity planning and building

Timely, enhanced and coordinated capacity building efforts for public pathology laboratories within the state are crucial for facilitating Victoria's pandemic response. Ideally, this capacity should have been developed prior to the pandemic, as part of pandemic preparedness planning, rather than reactively in response to the crisis.

Public pathology laboratories have demonstrated their importance in the current pandemic, with high-capacity molecular platforms capable of serving the daily need of their communities; and reference laboratories, such as the Victorian Infectious Diseases Reference Laboratory (VIDRL), were critical for establishing initial in-house assays that allow rapid commencement of testing during the pandemic.

However, relying predominantly on one laboratory leads to significant reporting delays as testing volumes rise. There needs to be more timely capacity building for non-reference public laboratories so they can test at the volume predicted for pandemics and other outbreaks, as they did during the 2009 influenza epidemic. They also need to be signalled to assist at an early stage in the pandemic.

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As the pandemic progressed and Victoria entered its second wave, coordination improved. Capacity audits were conducted, and planning undertaken to boost laboratory testing capacity across different laboratory testing platforms. Diversification of instruments and reagents proved valuable as supply chains were challenged during COVID-19. While there would have been significant benefit had this process started earlier, Victoria is to be commended for undertaking these steps.

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Over the course of the pandemic, the Victorian Department of Health improved its understanding of laboratory capacity and public pathology providers commissioned additional analysers to cope with testing numbers. In February 2021, five new analysers were installed at Royal Melbourne Hospital and Monash Health Pathology Services. However, Victoria's public pathology COVID-19 testing capacity remains lower than that in other jurisdictions, such as Queensland (see Table 1).

**Table 1.** Public Pathology COVID-19 Testing Capacity

| | October 2020 | | March 2021 | |
|---|---|---|---|---|
| **Jurisdiction** | VIC | QLD | VIC | QLD |
| **Public pathology COVID testing laboratories** | 8 | 7 | 8 | 12 |
| **Public pathology daily COVID testing capacity (> 80% tests turned around in under 24 hours)** | 4,000 | 9,000 | 14,000 | 21,300 |
| **Public pathology daily COVID testing capacity per 100,000 head of population** | 60 | 174 | 209 | 412 |

*Source: Victorian Government, Pathology Queensland, ABS*

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While public pathology services routinely monitor and prepare for pandemics through internal horizon scanning processes and resource management, the state government can support these preparatory efforts. This could include state coordinated collective bargaining with the major international assay manufacturers for detection kits and sampling devices; funding for early acquisition and verification of appropriate testing assays and platforms; funding support for additional staff; and dissemination of experience of comparative commercial assay performances from the state reference laboratory to frontline laboratories.

It is imperative that the government liaises with pathology providers before mass purchasing test kits and consumables from suppliers for state or national stockpiles to ensure they are fit for purpose. Test kits listed on the Therapeutic Goods Administration (TGA) Register are not necessarily suitable for local epidemiological conditions and they need to be validated by pathology laboratories before use.

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During the pandemic, research has been released before formal peer review for publication. However, some pathology laboratories have not been willing to share their findings about assay performance with other laboratories ahead of

formal publication. This slowed uptake of fit-for-purpose laboratory testing technologies, which could have been avoided by more open and faster dissemination of research and validation studies.

## referral laboratory links

Formalising the relationships between VIDRL and other laboratories will assist with future responses to COVID-19 and subsequent pandemics in Victoria. During the Victorian COVID-19 outbreaks, referral processes and charging arrangements between referral laboratories and other laboratories were not clear. Addressing these issues and formalising the link between laboratories and Victoria's Public Health Units will ensure that appropriate communication and reporting processes will be able to be quickly activated in the event of a subsequent COVID-19 wave or other public health crisis.

## management of testing volumes

Improving referral processes for better management of testing volume and reporting is essential. During the pandemic there was some confusion about which laboratories specimens should be sent to. It was particularly unclear which laboratories swabs were sent to when multiple pathology providers were involved in responding to a localised outbreak or testing blitz. This led to collection specimen handling issues and difficulty locating results for members of the community.

As a rule, outbreak testing should be done by the public laboratory in the geographic area of the outbreak and overflow directed to the nearest public pathology laboratory and then depending on the surge capacity required, to a range of other approved pathology providers. Laboratories should be teamed up for the purpose of overflow management with joint oversight to manage specimens.

There must be more timely guidance from the Victorian Department of Health to pathology services on managing testing overflows and notification of when laboratories are reaching capacity.

## tracking and reporting

Pathology services in Victoria have different laboratory information systems and there is a need to expedite test tracking and reporting mechanisms across Victoria. During the pandemic, Pathology Queensland was able to quickly

establish an identification and reporting dashboard for Hospital and Health Services (local health networks) across Queensland.

This enabled close to real time visualisation of when and where tests were being conducted and fast reporting back to Public Health and Hospital and Health Services. Reporting requires resourcing for the development of reports and for the provision of advice as to interpretation and actions. While some hospital sites in Victoria developed this locally, a coordinated state-wide approach would be beneficial.

Public pathology providers are adept at establishing new tests and managing testing. However, bottlenecks arise outside pathology services which should be addressed. For example, when onboarding or making changes to existing analysers to accommodate new tests, interfaces must be established between the instrumentation and the laboratory information system. Ensuring new codes are established, orders can be received, pathology reports issued to electronic medical records and My Health Record, and Public Health is notified are essential steps. National experience has demonstrated the dedicated IT teams located within pathology services improve timeliness of these laboratory information system changes. Boosting local IT teams in pathology services in the short term and operating a state-wide public pathology laboratory information system in the future would improve responsiveness in Victoria.

During COVID-19, Pathology Queensland, NSW Health Pathology, SA Pathology and PathWest in Western Australia established new processes to communicate and report directly to patients. While Victorian pathology services also issued SMS text results to patients, in other states, public pathology services established call centres to provide test results to patients. These were well utilised and the advice provided enabled patients to take appropriate steps, such as to continue or cease isolation.

In Victoria, patients had to follow up results with the pathology providers who analysed the samples. This was difficult as people did not know which pathology provider to contact. Having timely results available through the Victorian Department of Health COVID-19 hotline would have provided faster and easier assistance to patients, in addition to the SMS results service.

Streamlining the notification process within pathology services during the pandemic has been helpful. In the early stages of the pandemic, all positive results had to be phoned through manually by laboratory staff to the Victorian

Department of Health. This process was highly inefficient and the change to an electronic notification process was a very welcome initiative.

Test Tracker, an automated tool for collecting and tracking COVID-19 test data, is currently being interfaced in some laboratories in Victoria. This will enable tracing specimens from collection to report. One of the clear benefits of the Test Tracker system is the time saved by reducing paper tracking sheets and data entry errors. The Test Tracker system negates the need for busy specimen collection and reception staff to enter in patient and specimen details into laboratory information systems. This is important when laboratories are under pressure to maintain 24-hour turnaround times of reporting COVID-19 results.

The Test Tracker system should be expedited across Victoria. It should capture time and date of specimen collection, receipt in the laboratory and reporting of results. It should be enhanced to track send away tests, that is, those tests which are received by a laboratory and referred to another laboratory. This is important in managing testing overflows and specialised tests that must be conducted by a referral laboratory in the future.

## non-hospital collections: contracted services

In some states such as South Australia, public pathology services were broadly and effectively utilised across hospital, community, industry and aged care sectors. However, in Victoria this was not the case. In aged care, two factors provided financial incentives to use private pathology providers over the local public provider who may have turned around test results faster. These were the Australian Government's selective tender to a national private pathology provider for COVID-19 testing and a pathology MBS item limited to private pathology providers for testing aged care staff.

## hospital employee infections

Hospital workers are at high risk of infection when caring for patients with COVID-19. This is despite extensive PPE training in hospitals. There were around 3,573 healthcare workers infected with COVID-19 in Victoria, with 72.9% of these infections known to be acquired in the workplace (DHHS Victoria, 2020).

Pathology staff are trained in dealing with infectious agents. However, it was necessary to segregate the hospital pathology laboratory workforce in the hope of preventing entire departments being furloughed. Physical distancing and contact tracing are at the extreme ends of a preventative strategy.

The missing middle section is asymptomatic/pre-symptomatic surveillance of staff. This needs to be considered in the context of caseload and risk. A resourced surveillance strategy for high-risk workers could be considered as a line of defence.

To achieve appropriate surveillance, significant planning, assay development, resource implementation and a thorough understanding of the epidemiology of the disease is required. Point prevalence surveillance projects, symptomatic and asymptomatic seroconversion projects and assay development for less invasive sample collection are, or are in the process of, being undertaken locally. The results of these initiatives should be assessed in light of a potential third wave. There must be a plan for surveillance testing of high-risk groups.

## funding

Under the National Partnership on COVID-19 Response (NPA) (COAG, 2020), States and Territories equally share COVID-19 related costs with the Commonwealth for activities defined under the National Health Reform Agreement (NHRA).

Activity under the Medicare Benefits Schedule (MBS) sits outside the NHRA and is a Commonwealth expense. However in the case of SARS-CoV-2 (COVID-19) tests, the MBS fee reflects the NPA, being: $50 for public pathology providers and $100 for private pathology providers (MBS Items 69479 and 69480 respectively). The funding shortfall for COVID-19 tests by public pathology providers under the MBS must be paid for by the state government. In addition, private pathology providers can charge the MBS $110 for each COVID-19 test of aged care workers in Victoria and interstate freight workers, while public pathology providers are excluded from claiming this item (Item 69501).

The differential MBS COVID-19 fees have unintended consequences. For instance, public pathology providers who perform COVID-19 tests for private hospitals can only charge $50 per test, whereas private pathology providers charge $100 per test, even if they are done for public hospitals.

In addition to lower COVID-19 fees, there are differences in MBS fees for pathology collection services, with private pathology providers receiving at least 2-3 times the amount that public pathology providers can claim from the MBS for every episode. These lower MBS Patient Episode Initiation Fees and Bulk Billing Incentives impact on the ability of public pathology providers to provide Medicare funded pathology services, particularly in areas of need.

## supporting telehealth and hospital in the home

During the pandemic, hospitals increased out of hospital and telehealth appointments. This should be supported into the future where appropriate – especially in rural and regional areas. Pathology also needs to adapt to support new modalities of healthcare – both in the way pathology tests are requested and in the way they are provided.

There should be a national, or at the very least a centralised, state-wide pathology electronic referral system. This would comprise a portal and repository where pathology requests are housed and accessed by a patient's public pathology provider of choice.

Point of care testing for non-COVID-19 tests performed close to the patient at the time of encounter can support services such as hospital in the home. While point of care testing is not a replacement for the full suite of laboratory tests, and not all point of care devices are fit for purpose, with proper governance and administration they can improve access to pathology services. Public pathology services have expertise in implementing and governing large point of care networks and should be resourced to do so where clinically appropriate.

## communication and coordination

Continued efforts are needed to improve communication from the Victorian Department of Health to the frontline laboratories to facilitate the pandemic response. Specifically, improved communication prior to and during a testing blitz will allow better planning and logistics during times of significantly increased testing activities. Improved coordination between various laboratories can also streamline the testing approach by better allocating resources to testing demands.

Victorian Department of Health recommended testing processes can be improved by widening the consultative process before implementation, to include those working in frontline laboratories with intimate knowledge of the national quality framework. This would ensure adherence to accreditation requirements and minimisation of risk.

## pandemic preparedness

The COVID-19 pandemic highlights the need for ongoing pandemic preparedness. Some jurisdictions were better placed to act quickly when COVID-19 first presented. These jurisdictions had public pathology services with up-to-date pandemic plans, strong links between reference laboratories, diagnostic

laboratories and public health departments, breadth of technical expertise, redundancy in equipment capacity and stock levels, and support to recruit additional staff.

There will be other pandemics in the future. Public pathology services can be directed by state and territory governments to respond in a crisis, but they need to be maintained in a state of readiness in order to do so. All jurisdictions need to maintain a state of pandemic preparedness into the future. In a post-pandemic environment, there must be ongoing investment in the expertise, infrastructure and capacity of public pathology services by governments.

For ongoing pandemic preparedness, technical skills, institutional relationships, and specialised equipment must be developed and maintained. Investments made during COVID-19 should be retained. COVID-19 testing analysers can be used to meet the growing demand for genomic tests. Microbiology practice is changing, with increasing use of Nucleic Acid Amplification Techniques (NAAT) over traditional plating methods. Other respiratory viruses and STIs can be tested on the instruments acquired to test for the COVID-19 virus. Recurrent funding for staff resources, instrumentation support costs and reagents is required to keep this equipment operational for day to day use and ready for a subsequent health crisis.

Given the expertise demonstrated by public pathology during COVID-19, public pathology representatives must be included in an identified response team to plan and deliver capability and manage surge and other public health responses going forward.

Long term investment in public pathology is critical to ensure an effective response to public health crises in the future.

## conclusion

Public pathology has been responsive to the demands of the COVID-19 pandemic. However, this response was reactive and exposed gaps in coordination and capacity that needed to be filled by the private sector – at significant financial cost and leading to fragmentation of Victoria's response.

Public pathology providers are a critical healthcare service and infrastructure of the state government, its public health services and its population. They can be, directed and coordinated to provide services in a way that the private sector cannot. The community also expects government responses to a public health emergency to be coordinated and led by the public sector.

This requires adequate, proactive, capacity building as part of a comprehensive pandemic readiness plan.

Faster engagement, capacity building, resourcing and utilisation of the public pathology sector in Victoria would have been beneficial during COVID-19. There must be ongoing investment in public pathology services to maintain pandemic preparedness for any subsequent public health crises.

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