Medical Services Advisory Committee (MSAC) Public Summary Document

Application No. 1747 – Permanent Medical Benefits Schedule (MBS) items for COVID-19 nucleic acid testing

Applicant: **Department of Health and Aged Care**

Date of MSAC consideration: **27 July 2023**

Context for decision: MSAC makes its advice in accordance with its Terms of Reference, visit the MSAC website

1. Purpose of application

This application sought the advice of the Medical Services Advisory Committee (MSAC) in relation to permanent Medicare Benefits Schedule (MBS) items for the use and public funding of nucleic acid testing for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), including the use and utility of multiplex testing for SARS-CoV-2 and other respiratory pathogens, on behalf of the Minister for Health and Aged Care.

2. MSAC's advice to the Minister

After considering the strength of the available evidence in relation to comparative safety, clinical effectiveness, cost-effectiveness and total cost, MSAC supported the creation of two new MBS items for nucleic acid testing for 4 and 5 or more respiratory pathogens, which may include SARS-CoV-2, in patients with suspected respiratory infection.

MSAC considered that upfront testing for multiple respiratory pathogens is best clinical practice for patients with suspected respiratory infection because various pathogens have a similar presentation, and despite limitations in the evidence base, advised that upfront multi-pathogen testing is likely to be associated with incremental clinical effectiveness through reducing the number of tests requested per patient to ascertain the diagnosis, allowing earlier changes in patient management, including allowing appropriate PBS-listed treatments and reducing inappropriate antibiotic prescribing, improving clinical management by enabling patient cohorting and/or quarantining, and also providing 'value of knowing' the cause of the patient's symptoms. MSAC considered respiratory pathogen testing was comparatively safe. Because of its qualitative judgement that respiratory pathogen testing had incremental effectiveness, and despite the limitations in the economic evaluation, MSAC advised that upfront testing for multiple respiratory pathogens was acceptably cost-effective compared with the generic permanent MBS items for pathogen nucleic acid testing. MSAC considered the cost to the MBS was high and uncertain because of the lack of long-term utilisation data, but that utilisation would more likely be about half that estimated by the assessment report, which would have an acceptable financial cost to the MBS. MSAC advised that utilisation should be reviewed after 3 years.

MSAC supported a two-item multi-pathogen testing ladder, with separate items for 4 pathogens and 5 or more pathogens to replace the current temporary items. MSAC advised the MBS items should state 'respiratory pathogens' rather than naming SARS-CoV-2 and other pathogens specifically, to future proof the items. MSAC considered that the patient's clinical signs and symptoms should be included in the referral request to allow the testing to be better targeted to

appropriate pathogens. MSAC advised that while prompt testing and treatment is important, a test for SARS-CoV-2 alone was not appropriate because the prior probability of a positive result is low outside an epidemic, and in a post-epidemic setting testing for SARS-CoV-2 alone is not best clinical practice. MSAC considered the fees proposed for testing 4 and 5 or more pathogens were reasonable and would cover the cost to provide this testing, but that the fees for the existing permanent generic items should be reviewed against bulk billing rates and for consistency with the supported fees.

MSAC supported the following MBS item descriptors (Table 1).

Table 1 MSAC's supported MBS item descriptors

Category 6 – PATHOLOGY SERVICES Group P3 - Microbiology
MBS item XXXX Detection of respiratory pathogen nucleic acid from a nasal swab, throat swab, nasopharyngeal aspirate and/or lower respiratory tract sample 4 pathogens Fee: $78.25 Benefit: 75% = $58.69 85% = $66.51
Category 6 – PATHOLOGY SERVICES Group P3 - Microbiology
MBS item YYYY Detection of respiratory pathogen nucleic acid from a nasal swab, throat swab, nasopharyngeal aspirate and/or lower respiratory tract sample including a service described in Item XXXX 5 or more pathogens Fee: $85.56 Benefit: 75% = $64.17 85% = $72.73

Consumer summary

For this application the Department of Health and Aged Care was seeking advice from MSAC on permanent MBS items for SARS-CoV-2 nucleic acid testing on behalf of the Minister for Health and Aged Care.

COVID-19 (coronavirus disease 2019) is an infectious disease that spread worldwide in the COVID-19 pandemic. It usually spreads when tiny, aerosolised virus particles breathed out by a person who is infectious are breathed in by someone else, and people who are infected do not always develop noticeable symptoms. Of those who get sick most illness is mild to moderate. Some people do develop severe symptoms, and a small proportion of people develop critical symptoms such as respiratory failure, shock or multiorgan failure, and some die. Some people's symptoms can last a long time or they can develop post-COVID syndrome ("long COVID"), which can present differently in different people and persist beyond 3 months, although not much is known about the long-term health consequences because COVID-19 is a new disease.

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the virus that causes COVID-19. Nucleic acids are an organism's genetic material. SARS-CoV-2 nucleic acid testing involves collecting a nasal swab, and then testing the nucleic acids in the sample. This method detects whether someone has genetic material from SARS-CoV-2 in their nose, to work out whether they are infected with COVID-19.

Viruses and other germs (such as bacteria and fungi) that can cause illness in humans are called pathogens. The MBS has included items that publicly fund testing for any pathogen since well before the COVID-19 pandemic. These MBS items are called "generic" items,

Consumer summary

because they do not specify which pathogen or pathogens must be tested. Early in the pandemic the Government created temporary MBS items to provide publicly funded COVID testing in Australia. The temporary MBS items for SARS-CoV-2 testing are currently scheduled to cease on 31 December 2023, and the Government asked the Minister to seek MSAC's advice on permanent public funding for SARS-CoV-2 testing.

MSAC considered whether to make the current temporary MBS items permanent, or to create new MBS items, or to let the temporary items expire without making any permanent MBS items (meaning COVID testing would use the old generic items again). MSAC considered that when a person has the symptoms of a respiratory virus, it is better to test them upfront for the most likely viruses that could be causing their illness, than to only test them for SARS-CoV-2 and if that test is negative potentially have to test again for other respiratory viruses. Testing for multiple respiratory pathogens in the first test is best clinical practice in a post-pandemic environment – these days a person with a respiratory infection could well have the flu or another illness rather than COVID-19. Testing for multiple pathogens in the first test means it will be quicker to work out what is causing a patient's illness, be it flu, COVID-19 or another respiratory infection, and potentially help them get appropriate treatment more quickly. It will also make it easier for hospitals, clinicians and patients to determine the appropriate infection control practices to use to avoid transmission from people who have a respiratory infection to people who don't have a respiratory infection. MSAC therefore advised an MBS item for SARS-CoV-2 alone was not appropriate, and supported permanent MBS items to fund testing for 4 pathogens, and 5 or more pathogens.

It was not necessary to name SARS-CoV-2 and other respiratory pathogens in the MBS item descriptors, because which respiratory pathogens are most common changes over time, and laboratories need to consider which pathogens are best to test for at the time. To help laboratories with this, MSAC considered it was important that the health professional requesting the respiratory pathogen test provide as much information as possible about the patient's signs and symptoms in the request.

MSAC considered that upfront testing for multiple respiratory pathogens is comparatively safe, effective and good value for money, and would have an acceptable financial cost to the MBS. MSAC supported funding this testing permanently on the MBS.

MSAC's advice to the Commonwealth Minister for Health and Aged Care

MSAC supported creating new permanent MBS items for testing for multiple respiratory pathogens, to replace the current temporary SARS-CoV-2 items when they expire. MSAC considered this testing to be comparatively safe, effective, good value for money, and to have an acceptable financial cost.

3. Summary of consideration and rationale for MSAC's advice

MSAC noted that the purpose of this application from the Department of Health and Aged Care was to seek its advice on permanent MBS items for SARS-CoV-2 testing on behalf of the Minister for Health and Aged Care.

MSAC noted that SARS-CoV-2 is the virus that causes COVID-19, an infectious and potentially severe respiratory illness. MSAC noted that following the onset of the COVID-19 pandemic, the Australian Government had created temporary MBS items to immediately publicly fund SARS-CoV-2 testing in response to the pandemic emergency. The temporary items were updated during the pandemic, and the current temporary MBS items at the time of MSAC consideration consisted of two 5-item ladders (for public and private sectors). The current temporary items fund one test for SARS-CoV-2 alone, as well as simultaneous testing for SARS-CoV-2 and 1–3, 4–7, 8–

11, and 12 or more additional tests for detection of a viral, fungal, atypical pneumonia pathogen or Bordetella species nucleic acid.

In the absence of a decision of Government, testing for SARS-CoV-2 and other respiratory pathogens after 31 December 2023 will revert to being claimed under pre-pandemic items. The pre-pandemic items comprise three permanent generic MBS items (69494, 69495 and 69496) for 1, 2 or 3+ tests for the detection of a virus or microbial antigen or microbial nucleic acid.

MSAC noted that on 5 May 2023, the World Health Organization (WHO) had declared that COVID-19 is no longer a global health emergency, but nonetheless incident infection is still occurring. MSAC agreed that the population receiving this testing would be individuals with symptoms and/or signs suggestive of infection with a respiratory pathogen, and that the comparator would be the generic permanent MBS items for nucleic acid testing, to which respiratory viral testing will revert in the absence of a decision of Government.

MSAC noted that the Department-contracted assessment report (DCAR) presented three options for MBS-funded SARS-CoV-2 testing after 2023:

1. Option 1: A two-item multi-pathogen testing ladder proposed by the assessment group: Item XXXX for 4 pathogens (SARS-CoV-2, influenza A and B, and respiratory syncytial virus (RSV)), and Item YYYY for ≥5 pathogens (SARS-CoV-2, influenza A and B, RSV, plus other viral or non-viral respiratory pathogens). This proposal also included two sub-options:
    a. Where testing for SARS-CoV-2 alone ceases (option 1a);
    b. Where testing for SARS-CoV-2 alone continues under 69494 (option 1b).
2. Option 2: Make the current temporary five-step ladder items permanent (with a minor amendment to replace 'tests' with 'pathogens')
3. Option 3 (comparator): allow SARS-CoV-2-specific MBS items to end when the temporary items expire. Pathogen testing would revert to using the generic MBS items.

MSAC considered that testing for 4 pathogens (item XXXX) or ≥5 pathogens (YYYY) in the first instance would reduce the time to diagnose a patient's illness, and that the diagnosis would provide 'value of knowing' to patients. MSAC considered that publicly funded testing for multiple respiratory pathogens may also provide information that is useful for public health benefits in terms of reportable results for notifiable pathogens. MSAC considered that a five-step ladder is too complex, and a two-step ladder containing 'big' and 'small' items would be simpler and an improvement. MSAC therefore considered that the most appropriate intervention was a two-step ladder of MBS items comprising 4 and ≥5 respiratory pathogen tests (option 1).

MSAC noted that the SARS-CoV-2-only test (items 69511 and 69506) comprised 44% of SARS-CoV-2 testing claimed under the current temporary items, from their implementation on 1 October 2022 to 31 December 2022 (the period for which MBS data were available for the DCAR). MSAC considered this was a high proportion, which suggested that ruling out or diagnosing COVID-19 infection was still important for patients and/or their treating clinicians. However, MSAC considered that testing for SARS-CoV-2 alone did not align with best clinical practice for patients with respiratory illness signs and/or symptoms. MSAC considered that patients approach their healthcare provider for testing only when they have tested negative on a rapid antigen test (RAT) but remain unwell, in which case testing for multiple pathogens in the first instance is best practice. MSAC considered that contemporary testing examines a minimum of three respiratory pathogens (SARS-CoV-2, influenza, and respiratory syncytial virus [RSV]) and often more than 10 pathogens, and that publicly funding multi-pathogen testing may increase the identification of notifiable diseases, with public health benefits. MSAC further considered that outside a pandemic (or epidemic), the pre-test probability of a positive test is low for any single pathogen, and so testing should be for multiple pathogens upfront. MSAC therefore advised that an MBS item for SARS-CoV-2 alone was not appropriate (i.e., it supported option 1a).

MSAC noted that the proposed item descriptors specified SARS-CoV-2, influenza A and B, and RSV as the pathogens to test under item XXXX. However, MSAC noted public health advice that while specifying pathogens could provide more useful data for public health purposes, prevalent pathogens will change over time, or novel pathogens may emerge, so specifying them in the item descriptor would make the items less futureproof. MSAC considered that futureproofing the item descriptors was important. MSAC also noted that the current temporary items additionally specify *Bordetella*, which is a notifiable pathogen (*B. pertussis* causes whooping cough), however public health advice was that as any notifiable infection must be reported, "respiratory pathogens" would be more appropriate wording. MSAC considered that while it would not set a precedent if one notifiable pathogen were specified and others were not, specifying *Bordetella* was not necessary. Overall, MSAC advised the items should provide nucleic acid testing for "respiratory pathogens". MSAC considered whether there would be a risk of leakage with testing claimable both under the generic items and these new items. MSAC noted policy advice that the generic items are for the detection of pathogens "not elsewhere specified", and that stating "respiratory pathogens" in XXXX and YYYY would count as specifying them. MSAC also noted that there are further restrictions that if a service is described in more general terms in one item and in more specific terms in another, the service can only be claimed under the item that describes it in more specific terms. MSAC therefore considered risk of leakage for its supported items would be low.

MSAC considered that with pathogens not being specified in the item descriptors, appropriate testing would rely on clinical acumen and local incidence data. MSAC therefore considered that it was important for the requesting clinician to include as much relevant detail about the patient's clinical signs and symptoms as possible on referral forms, to allow the laboratory to better target testing to relevant pathogens. MSAC noted the pathologist considers the pathogens requested, and may call the requestor (e.g. GP or specialist) to discuss appropriate testing for the patient. MSAC noted public health advice that multi-pathogen testing is already conducted routinely, and laboratories withhold results for pathogens not requested or relevant. MSAC noted that some in vitro devices (IVDs) detect specific relevant genetic sequences rather than seek to identify the pathogen precisely, because toxin genes can be horizontally transferred between different species of *Bordetella*, resulting in species other than *B. pertussis* causing whopping cough. MSAC considered this further emphasised the importance of requestors providing detailed clinical information in testing requests.

MSAC noted the consultation feedback received, and that ESC had raised concerns that limited input had been received from consumers or the general public, including diverse populations in the community. MSAC noted that the department therefore conducted further targeted consultation, and that the Lung Foundation provided feedback that it supported the application. MSAC noted that COVID-19 is still circulating and that patients may have variable access to testing.

In terms of comparative safety, MSAC noted that the DCAR stated the same laboratory-based NAATs would likely be performed when providing a service claimed under either the proposed items or the comparator items, and so there would be no difference in safety. MSAC agreed with ESC that no new safety issues were anticipated relating to sample collection and the testing process. Overall, MSAC advised respiratory pathogen testing was comparatively safe.

In terms of comparative effectiveness, MSAC noted the DCAR had also assumed that there was no difference between the intervention and comparator in terms of effectiveness. However, MSAC noted ESC had considered that multi-pathogen upfront testing likely would have incremental effectiveness in terms of allowing an earlier diagnosis, earlier treatment with PBS-listed treatments such as antivirals, and improved patient cohorting and quarantining – but this incremental effectiveness had not been quantified by the DCAR. MSAC considered that prompt

testing and early initiation of treatment were important, and would be better supported by upfront testing for multiple respiratory pathogens to avoid multiple sequential tests. MSAC agreed with ESC that upfront testing for multiple respiratory pathogens would have incremental effectiveness, and considered that outcomes beyond detecting COVID-19 were also important. MSAC also considered that this testing would provide improved 'value of knowing' the cause of the patient's symptoms. MSAC considered that public funding for respiratory pathogen testing may reduce barriers to access, with potential public health benefits. Despite limitations in the evidence base, MSAC therefore advised that overall it was confident that upfront testing for multiple respiratory pathogens (option 1a) had incremental clinical effectiveness.

MSAC considered that given the declining prevalence of COVID-19 and current testing practices, it would request the Pharmaceuticals Benefits Advisory Committee (PBAC) consider updating its criteria for eligibility to PBS-listed COVID-19 antiviral treatments.

MSAC noted that the MSAC Executive had advised the appropriate economic evaluation was a cost consequences analysis, but because the DCAR had assumed equal outcomes for the intervention and comparator, in practice the economic analysis had been reduced to a cost comparison. Because of its qualitative judgement that respiratory pathogen testing had incremental effectiveness, and despite the limitations in the economic evaluation, MSAC advised that upfront testing for multiple respiratory pathogens (option 1a) was acceptably cost-effective compared with the generic items for pathogen nucleic acid testing.

MSAC noted that the DCAR proposed fees of $78.25 for XXXX and $85.56 for YYYY based on costing the components of providing the professional service. MSAC noted that the comparator for both proposed items was MBS item 69496, giving incremental costs of $35.20 for XXXX and $42.51 for YYYY. MSAC noted the fees for the generic items were substantially lower than the fees for both the current temporary items and the MSAC-supported items proposed by the DCAR, although the testing they provided was similar, differing primarily only in scale. MSAC considered the DCAR's costings may have underestimated indirect costs, but that overall the proposed fees were likely reasonable and should cover the cost to provide this testing. MSAC noted public health advice that the temporary item fees had been higher in the context of the pandemic to support laboratories to ramp up testing, but that this burden has eased now. MSAC considered that to have a sustainable pathology system it is important not to have MBS fees below the cost to provide testing, so on balance supported the DCAR's proposed fees. However, MSAC considered these fees were incongruous with the fees for similar testing (for fewer pathogens) under the generic items. MSAC considered that the fees for the generic items may be too low, so also advised the fees for the existing permanent generic items should be reviewed against bulk billing rates and for consistency with the supported fees.

MSAC noted that utilisation had been extrapolated from service volumes of the temporary SARS-CoV-2 items during the first 3 months after listing, which were summer months, and that ESC had considered the estimated utilisation was uncertain as these data could not reliably be extrapolated for future disease incidence. MSAC considered that the estimated number of services and therefore the budget impact of those services was highly uncertain. MSAC noted that the DCAR estimated the net financial impact to MBS to be $172.8 -184.5 million per year for option 1a. MSAC considered the cost to the MBS was highly uncertain because long-term data do not yet exist for COVID-19. However, MSAC considered the DCAR had substantially overestimated utilisation: MSAC noted policy advice that the cost of option 1a to the MBS over four years would be $358.6 million, which was about half the DCAR's estimate ($705.3 million). MSAC considered that the policy-estimated cost aligned well with its own estimates, and so agreed with the policy-estimated cost of testing, which it advised would be an acceptable financial cost to the MBS. MSAC considered that although this was a more reasonable estimate utilisation remained uncertain, so advised that utilisation should be reviewed after 3 years.

MSAC noted that the MSAC Executive had also requested the assessment examine rapid NAAT, and policy advice was that accredited laboratory-based rapid NAAT could be claimed on the MBS (although it would not incur additional reimbursement above the rebate for a standard NAAT). However, MSAC considered that because rapid testing comprises such a small proportion of MBS-funded respiratory pathogen testing, it was not relevant to this application.

4. Background

Background to SARS-CoV-2 nucleic acid amplification testing (NAAT)

MSAC has not previously considered nucleic acid testing for the diagnosis of SARS-CoV-2. The current permanent generic MBS items have been listed on the MBS since May 1, 2007 or earlier. Currently, the test methodology used involves nucleic acid amplification (of which, polymerase chain reaction (PCR) is an example), although in future new methods may not require amplification. Thus, in this report, the term NAAT is used to describe the tests employed and the proposed item descriptors include the broader term to encompass future changes.

With the onset of the Coronavirus disease 2019 (COVID-19) pandemic in Australia in early 2020, the Australian Health Protection Principal Committee and National Cabinet recommended that temporary items be included in the MBS in addition to the existing permanent generic MBS items which can be used for the detection of respiratory pathogens, but are not limited to respiratory pathogens and do not specify SARS-CoV-2 testing.

Table 2 Permanent MBS items available for generic nucleic acid testing of respiratory pathogens and temporary MBS items for SARS-CoV-2 nucleic testing

<table>
<tr><th></th><th colspan="3">MBS Item(s)</th></tr>
<tr><th>Number of pathogens</th><th>Generic nucleic acid test (NAT) items – other than SARS-CoV-2</th><th>SARS-CoV-2 and respiratory pathogen Items (1 April 2020 to 30 September 2022)</th><th>Single SARS-CoV-2 and combined respiratory pathogen Items (1 October 2022 to 31 December 2023</th></tr>
<tr><td>1</td><td>69494</td><td>69479 or 69480</td><td>69506 or 69511</td></tr>
<tr><td>2</td><td>69495</td><td>69479 or 69480 and 69494</td><td rowspan="2">69507 or 69512</td></tr>
<tr><td>3</td><td rowspan="12">69496</td><td>69479 or 69480 and 69495</td></tr>
<tr><td>4</td><td rowspan="9">69479 or 69480 and 69496</td></tr>
<tr><td>5</td><td rowspan="3">69508 or 69513</td></tr>
<tr><td>6</td></tr>
<tr><td>7</td></tr>
<tr><td>8</td></tr>
<tr><td>9</td><td rowspan="4">69509 or 69514</td></tr>
<tr><td>10</td></tr>
<tr><td>11</td></tr>
<tr><td>12</td></tr>
<tr><td>13 or more</td><td>69510 or 69515</td></tr>
</table>

Source: DCAR Table 1

History of MBS items for NAAT for SARS-CoV-2 and other respiratory pathogen testing

The following is taken from the publicly available information on the MBS webpages. No additional information was available regarding the rationale behind the number of items or descriptor wording of the initial temporary MBS items, or the ladder structure of the current ten temporary items introduced on 1 October 2022. Furthermore, no documentation detailing the basis of the fees for any of the temporary MBS items was available, such as a breakdown of

costs or other parameters that were taken into consideration, nor for any adjustments made to the fees since 1 April 2020.

On 1 April 2020, following consultation on COVID-19 testing with the pathology sector and on the recommendation of and the State and Territory Governments through the Australian Health Protection Principal Committee and National Cabinet, the following temporary items for SARS-CoV-2 testing were included in the MBS.

- Item 69479: COVID-19 microbiology test undertaken for a private patient in a recognised (public) hospital or by a prescribed laboratory, with a schedule fee of $50.00.
- Item 69480: COVID-19 microbiology test for any other patient undertaken in a private laboratory, with a schedule fee of $100.00.

Nucleic acid testing of one or more respiratory pathogens other than SARS-CoV-2, in addition to COVID-19 testing, was funded under the existing permanent generic MBS items 69494, 69495 and 69496 which are for 1, 2 and 3 or more tests, respectively.

From 28 July 2020 – 31 December 2021 (with subsequent expansions on 3 August 2020 and 22 September 2020 defining eligible employment designations)

- Item 69501: COVID-19 microbiology test for asymptomatic essential worker, with a schedule fee of $110.00.

From January 1, 2022,[1]

- The schedule fees for MBS items 69479 and 69480 were reduced 'reflecting a reduction in the cost of providing COVID-19 tests'[1]
  - Item 69479: from $50.00 to $42.50.
  - Item 69480: from $100.00 to $85.00.
- All COVID-19 PCR tests undertaken for public health screening purposes, for example, asymptomatic screening, workplace testing, or testing for travel interstate, were to continue to be provided free-of-charge to the patient through state and territory public health testing sites.
- COVID-19 tests performed for patients admitted in-hospital with private health insurance coverage could be charged at a fee higher than the MBS rebate. To be eligible for an MBS rebate, pathology providers were only permitted to charge no more than 100 per cent of the MBS fee. Patients were not to incur out-of-pocket expenses, with private health insurers to cover the gap between the Medicare rebate and the fee charged.
- Out-of-hospital claims for MBS items 69479 and 69480 in any other settings were required to be directly billed to Medicare and were not to incur any additional cost over the MBS rebate (i.e. the services must be bulk-billed).
- Temporary item 69501 for COVID-19 PCR test screening of asymptomatic essential workers introduced on 28 July 2020 was ceased

From 1 October, 2022[2]

- Ten temporary items were included on the MBS for provision of pathology laboratory testing to Medicare-eligible patients for SARS-CoV-2 and other respiratory pathogens in situations where:

[1] http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Factsheet-Cov.LTI accessed 21 February 2023
[2] http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Pathology-SARS-CoV-2-items accessed 20 February 2023

    - SARS-CoV-2 testing is requested specifically, and
    - the request is made by a treating practitioner
- The services were to be provided by either:
    - a public pathology laboratory (Items 69506, 69507, 69508, 69509 and 69510), or
    - a private pathology laboratory (Items 69511, 69512, 69513, 69514 and 69515)

These 10 items superseded MBS items 69479 and 69480, which ceased on 30 September 2022 with the rationale

- to support pathology providers to use multiplex tests to diagnose and differentiate the cause of respiratory infections through a single sample and test, where clinically appropriate
- to reflect the increase in complexity of respiratory pathogen testing since the original listing of permanent MBS NAAT items in November 2005
- to support MBS claiming for such tests through single MBS items

Pathologists may claim:

- MBS item 69506 or 69511 only, where a treating practitioner has requested that their Medicare-eligible patient receives a test for COVID-19 only;
- MBS item 69507, 69508, 69509, 69510, 69512, 69513, 69514 or 69515 only, where a treating practitioner has requested that their Medicare-eligible patient receives a test for COVID-19 and other respiratory pathogen(s); or
- MBS item 69494, 69495 or 69496 only, where a treating practitioner has requested that their Medicare-eligible patient receives a test for respiratory pathogen(s) but has not specified a test for COVID-19.

From 1 January 2023[3]

The ten temporary Medicare Benefits Schedule (MBS) pathology items for pathology laboratory testing for SARS-CoV-2 and other respiratory pathogens were:

- Extended until December 31, 2023
- Amended to remove the requirement that in-hospital private patients cannot be charged more than the MBS fee. All other existing conditions and requirements to claim the items were retained.

Existing generic nucleic acid amplification test (NAAT) (the permanent MBS items 69494, 69495 and 69496) remain to support testing for non-respiratory pathogens and testing of respiratory pathogens where a treating practitioner has not requested their patient be tested for COVID-19.

In October 2022, the MSAC Executive provided advice on what information MSAC would require for it to provide advice to Government in relation to permanent MBS items for this testing, and the appropriate assessment pathway.

NAATs for SARS-CoV-2 and respiratory pathogens

NAATs detect nucleic acid sequences specific to the RNA or DNA of the pathogen from an upper or lower respiratory tract specimen, which is collected according to the manufacturer's IFU.

[3] http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Factsheet-Extension%20of%20temporary%20pathology%20items%20for%20SARS-CoV-2 accessed 22 February 2023

NAATs for respiratory pathogens may be performed as either rapid tests or standard tests. Rapid tests predominantly use cartridges which combine the nucleic acid extraction step with the amplification step to speed up and simplify the process making it suitable for either laboratories or specifically trained healthcare workers in the hospital or community, whereas a standard test uses sequential nucleic acid extraction and amplification steps and is only performed in an accredited laboratory.

Depending on the test kit used, a result is usually available in less than one hour for rapid tests, and a standard test in approximately 4-24 hours depending on workflow, demand and capacity of the laboratory in major cities, but up to 2-3 days in remote areas[4,5]. The clinical utility of rapid testing has expanded and it is used widely in metropolitan, remote and regional hospitals to provide a faster result to diagnose symptomatic patients for treatment decisions as well as to determine infection prevention and control (IPAC) measures. Rapid NAATs may be performed by specifically trained staff outside of the laboratory or the sample transported to the laboratory, depending on local hospital practice. In the quarter from 1 December 2022 to February 2023, 54% of all NAATs performed in NSW public laboratories were NAATs[6]. These are also used in remote and regional areas both as a laboratory test in regional hospitals or performed in the community where access to a timely result may be difficult for logistical reasons (patient's distance from laboratory performing standard NAATs, limited regional or rural hospital laboratory staff and capacity for testing). In metropolitan hospitals, it can be more efficient to use rapid NAATs for a timely result when testing numbers are low and high throughput platforms are not required[7]. Although when performed in a Medicare-eligible setting both rapid and standard NAATs would have the same rebate, the HTA costing indicated this may result in an out-of-pocket fee for rapid NAATs; in practice, most rapid NAATs are performed outside of a Medicare-eligible setting and thus are funded either by the states and territories or within a specific program (e.g. Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing Program).

MSAC has not previously considered an application for rapid testing for SARS-CoV-2 and/or other respiratory pathogens and has not received an application for MBS funding for this specific approach to testing. In its 28 October 2022 consideration of the information that MSAC would need to advise the Minister, the MSAC Executive advised that the assessment should also include 'point-of-care' testing (PoCT) for SARS-CoV-2. However, subsequent Department advice clarified that MBS-funded NAATs for respiratory pathogens would encompass laboratory-based testing only.

5. Prerequisites to implementation of any funding advice

The proposed technology includes a therapeutic good (diagnostic device) that requires Therapeutic Goods Administration (TGA) approval if it is a Class 3 *in vitro* diagnostic device prior to inclusion on the Australian Register of Therapeutic Goods (ARTG), or notification to the TGA if it is an in-house validated test as an initial (i.e., first) notification to use by 1 July of the next financial year (or within 20 working days of this date)[8].

The following is from the Revised Testing Framework for COVID-19 in Australia[9]

[4] Professor Mark Shephard, personal communication in meeting with HTA group, Department, February 17, 2023
[5] Australian Pathology, email to Department, 19 February 2023 in response to turnaround times
[6] Personal communication, Professor Dominic Dwyer, 28 February 2023
[7] Personal communication, Professor Rhonda Stuart, 9 March 2023.
[8] https://www.tga.gov.au/sites/default/files/regulatory-requirements-in-house-ivds.pdf accessed 13 April 2023
[9] https://www.health.gov.au/resources/publications/coronavirus-covid-19-testing-framework-for-covid-19-in-australia accessed 22 February 2023

> "All Australian pathology laboratories must comply with the specified standards in the *Health Insurance (Accredited Pathology Laboratories-Approval) Principles 2017* to be eligible to provide MBS-rebatable pathology services. The National Pathology Accreditation Advisory Council (NPAAC) develops and maintains accreditation standards. If an Australian pathology laboratory develops their own test, they must also meet relevant legal obligations under the *Therapeutic Goods (Medical Device) Regulations 2002.* This is administered by the TGA.
>
> To maintain testing accreditation, Australian laboratories must participate in a relevant quality assurance program, to monitor performance and ensure SARS-CoV-2 test results are accurate and reliable. The Australian Government supports the Royal College of Pathologists of Australasia Quality Assurance Program Pty Ltd (RCPA QAP) to provide a proficiency testing program (PTP) for SARS-CoV-2. The RCPAQAP develops and offers both RT-PCR, serology and genomics PTPs."

Participation in an external QAP is a prerequisite for provision of an MBS-rebatable pathology service. Laboratory testing must be undertaken in a National Association of Testing Authorities, Australia (NATA)-accredited laboratory.

The RCPA QAP provided the following information[10]:

> "The RCPAQAP have offered a molecular Coronavirus SARS-CoV-2 proficiency testing program since March 2020. In October 2020, the program was added to RCPAQAP's accreditation under ISO/IEC:17043:2010 General requirements for proficiency testing. The 2022 Molecular Coronavirus (SARS-CoV-2) Program consisted of four surveys, each containing two specimens, including Delta and Omicron variants at different concentrations, different influenza strains and negative specimens.
>
> A total of 369 Australian laboratories were enrolled in the Molecular Coronavirus (SARS-CoV-2) Program in 2022."

6. Proposal for public funding

The Parameters stated "The proposed permanent items could use the same structure and item descriptors as the temporary SARS-CoV-2 test MBS items", leaving latitude for the DCAR to make an alternative proposal if this was considered appropriate. Consequently, the DCAR examined two options for the intervention:

1. A two-step multi-pathogen testing ladder proposed by the HTA group based on best clinical practice. Includes two sub-scenarios:
    a. SARS-CoV-2 testing uses items XXXX, YYYY
    b. SARS-CoV-2 testing uses items XXXX, YYYY, and 69494
2. The current temporary items are made permanent (with minor modifications)

Option 1: Two-step multi-pathogen ladder (HTA group option)

The HTA group has included for consideration an alternative scenario of the intervention that takes into account advice from public health and infectious diseases experts on the optimal structure and laddering that would best reflect current clinical practice (both test requesting and provision), an analysis of the current utilisation of the temporary MBS items (which are the same as those proposed for permanent inclusion in the MBS) and costing of the various panels

[10] RCPA QAP email to Department, 8 February 2023

proposed. These integrate SARS-CoV-2 testing into a four-pathogen panel as one item, and a second item for broader respiratory pathogen testing (Table 3). These alternative tests proposed by the HTA group would complement the existing permanent generic MBS items rather than duplicate their scope of testing.

Table 3 Proposed MBS items for the two-step multi-pathogen ladder (option 1, HTA group option)

Category 6 – PATHOLOGY SERVICE	**Group P3 - Microbiology**
MBS item XXXX Detection of SARS-CoV-2, Influenza A and B, and respiratory syncytial virus nucleic acid from a nasal swab, throat swab, nasopharyngeal aspirate and/or lower respiratory tract sample 4 pathogens	
Fee: $78.25 Benefit: 75% = $58.69 85% = $66.51	
Category 6 – PATHOLOGY SERVICE	**Group P3 - Microbiology**
MBS item YYYY Detection of a viral, fungal, atypical pneumonia pathogen or Bordetella species nucleic acid from a nasal swab, throat swab, nasopharyngeal aspirate and/or lower respiratory tract sample including a service described in Item XXXX 5 or more pathogens	
Fee: $85.56 Benefit: 75% = $64.17 85% = $72.73	

Source: DCAR Table 3

The HTA group option item descriptor wording replaced the term 'test(s)' with 'pathogen(s)' after discussion with clinical experts, as this defined the scope of the test more clearly than the number of 'tests' required to provide the service. It was also more supportive of the Government's stated intention of encouraging multiplex testing[11] when introducing the current temporary item ladder structure on October 1, 2022.

Costing

Item XXXX

Costings for the HTA group's four-pathogen panel NAAT (Item XXXX) were based on the average of the actual reagent costs to laboratories for five commercially available assays (average $28.69) plus consumables, labour, report preparation, quality assurance measures and repeat tests where the initial test failed (Table 4).

Item YYYY

Item YYYY collates the three largest test panels from the current temporary items (and the proposed items) and makes this a single test panel option of five or more pathogens. No difference in the costing for provision of the '5-8 tests' and '9-12 tests' could be identified by the HTA group (or Australian Pathology), therefore an empirically derived fee was calculated for testing 5-12 pathogens (assuming a $5 increment on the costing of reagents for the 4-pathogen panel). Similarly, a separate costing for the reagents for testing 13 or more pathogens could not be established, so a $5 increment on the costing for the combined 5-12 tests was applied.

For YYYY, a weighted average of these costs based on current utilisation of the three largest panels from 1 October 2022 – 31 January 2023 was used to calculate the 85% benefit of $72.73. During that period, the current '5-8 pathogen' MBS item was used more often (36.3%)

[11] http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Factsheet-Cov.LTI accessed 20 February 2023

than either the '9-12 pathogen' item (8.4%) or the '≥13 pathogen' item (7.5%). The proposed fee of $85.56 and 85% benefit of $72.73 would be sufficient to cover the costs for a single panel test if these proportions were maintained (Table 4).

Table 4 Costing estimates per sample for laboratory-based standard NAAT for respiratory pathogens

Parameter	Single SARS-CoV-2 test	4 pathogens	5-12 pathogens	13 or more pathogens
Sample collection incl swab & collection media	$3.63	$3.63	$3.63	$3.63
Sample processing (incl accessioning, inspection, processing, etc)	$7.59	$7.59	$7.59	$7.59
Nucleic acid extraction reagents/consumables per sample	$13.40	$13.40	$13.40	$13.40
RT-PCR reagents/consumables per sample	$7.08	$28.69	*$33.69	*$38.69
Personal protective equipment (gloves, masks	$7.00	$7.00	$7.00	$7.00
Assay set up RT-PCR (Scientist)	$1.58	$1.58	$1.58	$1.58
Failed test rate due to non-operator and operator errors (3%)	$1.10	$1.75	$1.90	$2.05
QA, internal and external	$1.20	$1.87	$2.03	$2.19
Report production	$1.00	$1.00	$1.00	$2.00
Total (excluding repeat where test failed)	$42.63	$64.92	$70.07	$76.23
Cost of test failure per sample	$1.10	$1.75	$1.90	$2.05
Total cost (basis for 85% MBS rebate for items XXXX, YYYY) – option 1	**$43.58**	**$66.51**	**$71.82****	**$78.13****
85% MBS rebate for items AAAA-EEEE (based on items 69511-5) – option 2	**$58.55**	**$63.55 (2-4 tests)**	**$68.60 (5-8 tests); $73.60 (9-12 tests)**	**$78.60**

QA= quality assurance; RT-PCR = reverse transcriptase polymerase chain reaction.
* Cost estimated to be $5 increment compared with previous panel size due to lack of information regarding commercial cost.
** Costings used as basis for subsequent calculation of MBS fee and benefit for item YYYY (weighted according to utilisation of current temporary items 1 October 2022 – 31 January 2023).
Source: DCAR Table 23.

Margin

The HTA group's fee structure is based on the cost to deliver the service for the 85% rebate and currently does not incorporate any margin for increasing staff costs, reagent costs (many are sourced overseas) nor development of tests to accommodate any new genetic variants or pathogens. The HTA group expert undertaking the costings considered a margin to allow for such cost changes of 20% as standard, but the magnitude is referred for MSAC's consideration, noting the high throughput of the tests (except for rapid NAATs). Stakeholders provided data indicating margins of *Redacted*%[12] for the various items during consultation with the Government prior to commencement of the current temporary items and from feedback on their continuation beyond 1 January 2023.

[12] Australian Pathology letter to Department, 28 November 2022 and to Hon Ms Emma McBride MP, 19 August 2022

Both the proposed items and the HTA group option rely on the current generic MBS item, but without a fee increase, if testing is to be Medicare-funded then there would either be a loss to the provider or gap fees that would have to be met by other funding sources (Table 5).

Table 5 Difference between the estimated cost to provide the test and the 85% benefit for comparator, proposed, HTA group option without a margin (negative figure represents a gap fee)

Nucleic acid amplification test	Estimated cost to provide the test	Comparator 85% benefit less estimated cost to provide the test	Proposed 85% benefit less estimated costs	*HTA option with no margin less estimated costs
Option 1: Two-step multi-pathogen ladder (HTA group option)				
XXXX 4 pathogens	$66.51	-$30.06	-$2.96	$0
YYYY ≥5 pathogens	$72.73#	-$36.28	$68.60 to $78.60	$0.91 to -$5.40
Option 2: Make the current temporary items permanent				
AAAA SARS-CoV-2 only	$43.73	-$19.33	$14.97	N/A
BBBB 2-4 tests	$66.51	-$30.06	-$2.96	N/A
CCCC 5-8 tests	$71.97	-$35.37	-$3.37	$0.91#
DDDD 9-12 tests	$71.97	-$35.37	$1.63	$0.91#
EEEE ≥13 tests	$78.28	-$41.98	-$0.32	-$5.40#
Rapid NAATs				
Rapid NAAT 4 pathogens	$79.00	-$42.55	-$15.60	-$13.15
Rapid NAAT (BioFire 22 pathogens)	$144.89	-$108.29	-$81.49	-$66.29

NAAT=nucleic acid amplification test; N/A=not applicable.
*No margin included;
#85% benefit weighted based on the current proportions of MBS items 69513, 69514 and 69515 in utilisation data
Source: DCAR Table 4

Based on the HTA group's cost estimates, the current/proposed 85% benefit for the single SARS-CoV-2 testing yields a margin of $14.97 per test whereas, the 2-4 test panel results in a loss or gap fee of $2.96; this may have contributed, at least in part to the imbalance in provision between these tests despite the latter being recommended by clinical experts consulted in the preparation of this fit-for-purpose DCAR.

Rapid NAATs

No weighted fee for rapid NAATs could be determined so that the providers delivering these more expensive tests would receive sufficient reimbursement to also cover the cost of providing these more expensive tests. As costed by the HTA group, provision with the proposed 85% rebate would result in a $15.60 gap fee or $13.15 with the HTA option's 85% rebate. The gap fee would increase to $42.55 based on the current 85% rebate for the comparator (item 69496) (Table 5).

Option 2: Make the current temporary items permanent

The funding arrangement being proposed is a listing of permanent MBS items for "SARS-CoV-2 and/or other respiratory virus nucleic acids", to be considered from 1 January 2024 when the ten existing temporary MBS items for SARS-CoV-2 testing with or without additional respiratory pathogens would lapse without an extension or amendment. The Parameters state, "The proposed items could use the same structure and item descriptors as the temporary SARS-CoV-2

test MBS items" and should use the fees for private providers. These are presented in Table 6 based on the current temporary MBS items 69511, 69512, 69513, 69514 and 69515. The HTA group has made some suggested edits to the temporary item descriptors as currently implemented (shown in strikethrough and underline), replacing the wording 'tests' with pathogens for clarity of scope, and to encourage multiplex testing wherever possible. If these were to be the sole items (i.e., if there was no longer going to be a separate set of items for private and for public pathology laboratory testing), then the item descriptors would require further amendment.

Table 6 Proposed MBS items based on current temporary MBS items 69511, 69512, 69513, 69514 and 69515 with HTA group suggested edits (option 2)

Category 6 – PATHOLOGY SERVICE	**Group P3 - Microbiology**
MBS item AAAA (69511) Detection of a SARS-CoV-2 nucleic acid if: (a) the person is a private patient in a hospital other than a recognised hospital; or (b) the person receives a bulk-billed service not covered by Item 69506	
Fee: $68.85 Benefit: 75% = $51.65 85% = $58.55	
Category 6 – PATHOLOGY SERVICE	**Group P3 - Microbiology**
MBS item BBBB (69512) Detection of a viral, fungal, atypical pneumonia pathogen or Bordetella species nucleic acid from a nasal swab, throat swab, nasopharyngeal aspirate and/or lower respiratory tract sample, including a service described in Item AAAA, if: (a) the person is a private patient in a hospital other than a recognised hospital; or (b) the person receives a bulk-billed service not covered by item 69507 2 to 4 ~~tests~~ pathogens	
Fee: $74.75 Benefit: 75% = $56.10 85% = $63.55	
Category 6 – PATHOLOGY SERVICE	**Group P3 - Microbiology**
MBS item CCCC (69513) 5 to 8 ~~tests~~ pathogens described in Item BBBB	
Fee: $80.65 Benefit: 75% = $60.50 85% = $68.60	
Category 6 – PATHOLOGY SERVICE	**Group P3 - Microbiology**
MBS item DDDD (69514) 9 to 12 ~~tests~~ pathogens described in Item BBBB	
Fee: $86.55 Benefit: 75% = $64.95 85% = $73.60	
Category 6 – PATHOLOGY SERVICE	**Group P3 - Microbiology**
MBS item EEEE (69415) 13 or more ~~tests~~ pathogens described in Item BBBB	
Fee: $92.45 Benefit: 75% = $69.35 85% = $78.60	

The HTA group's suggested deletions are shown in strikethrough, and additions underlined.
Source: DCAR Table 2

Information was not available regarding how the current temporary item ladder structure was decided and the costings underlying the fees for these items, which form the proposed permanent items for this application.

Clinical experts consulted by the HTA group indicated that current clinical practice is to test vulnerable individuals with symptoms of an acute respiratory infection (ARI) for a range of pathogens, not just SARS-CoV-2 alone. This advice applies to both the emergency department setting and also to the community setting, such as residential aged care facilities, for which several states had developed guidelines that specified at a minimum, testing for SARS-CoV-2, Influenza A and B. Over the December 2022 – January 2023 period, both Tasmania and South Australia provided state-run clinics for respiratory pathogen testing in vulnerable individuals that included SARS-CoV-2, Influenza A and B (plus RSV in Tasmania)[13]. This broader testing in those at risk of severe disease would influence decisions about the need for treatment as well as the required duration of any isolation period. Whether a continued single SARS-CoV-2 item is warranted is referred for MSAC's consideration.

The temporary items ladder includes panels that are very similar in size and do not map clearly to the commercial test kits available (making costing differences difficult to determine) and may be provided as multiple individual tests, and/or laboratory-developed tests. Neither the HTA group nor Australian Pathology (private pathology providers) could provide separate costings for the '5-8 tests' and '9-12 tests', with the latter reported to be used uncommonly[14].

The apparently random utilisation pattern of the different items across the states and territories, and between public and private laboratories, may reflect the complexity of the current item structure and providers' choices rather than treating practitioners' requests.

Based on the average of the HTA group's cost estimates for a single SARS-CoV-2 test of $43.58, the proposed item 85% benefit would offer a margin of $14.97 per test while the 2-4 pathogen panel test was costed at $66.51 but has a proposed 85% benefit of $63.55 resulting in a gap fee of -$2.96.

7. Population

The HTA group has defined the population as individuals with symptoms and/or signs suggestive of infection with a respiratory pathogen who require a test for the diagnosis and management of their condition. This broader definition is intended to reflect:

- That patients may present with non-specific respiratory symptoms due to other medical conditions, still requiring exclusion of an infective cause
- That there are a range of respiratory pathogens, including but not limited to viruses
- That SARS-CoV-2 is just one of many respiratory pathogens for which there are effective treatments and which require infection and prevention control measures
    - For 2024 onwards (the timeframe for the predicted utilisation in this application), there are not yet any national public health advice, strategies and documents available regarding the approach to ARI in the community apart from high-risk settings. The statistics for hospital admissions with influenza indicate that other infections carry a high risk of severe outcomes, not just COVID-19:
        - In 2022, children aged 5–9 years had the highest influenza notification rates during the reporting period, followed by children younger than 5 years. The notification rate was lowest among adults aged 70–74 years. Of the 1,832 patients with confirmed influenza admitted to sentinel hospitals, 55.8% were

[13] https://www.health.tas.gov.au/publications/testing-covid-19-fact-sheet accessed 26 February 2023
[14] Australian Pathology letter to Department, 28 November 2022

children aged younger than 16 years, 24.3% were adults aged 16 to 64 years, and 19.9% were adults aged 65 years or older[15].

- The population and scope of testing required varies by scenario, only some of which are Medicare-rebatable e.g., for treatment and cohorting of care facility residents based on infection status (Medicare-rebatable), to detect a notifiable disease then screen the wider community with Medicare-rebatable testing. A key population requiring rapid testing are patients with respiratory symptoms in emergency departments requiring admission to hospital, but this is not a Medicare-rebatable service.

Testing that is primarily for broader public health purposes is not Medicare-rebatable (e.g., surveillance activities including whole genome sequencing for variant detection performed on a subset of the samples testing positive). This remains the responsibility of state and territory public health testing sites and therefore was out of scope for this assessment.

8. Comparator

If the temporary items for SARS-CoV-2 testing cease on 31 December 2023, then testing for suspected SARS-CoV-2, with or without other respiratory pathogens will be performed using the generic permanent MBS items for nucleic acid testing (Table 7). Therefore, these items are the comparator.

Table 7 Item descriptors for the comparator – current permanent generic nucleic acid amplification test (NAAT) items 69494-69496 (option 3)

Category 6 – PATHOLOGY SERVICE	**Group P3 - Microbiology**
69494 Detection of a virus or microbial antigen or microbial nucleic acid (not elsewhere specified). 1 test MBS Fee: $28.65 Benefit: 75% = $21.50 85% = $24.40	
69495 2 tests described in 69494 MBS fee: $35.85 Benefit: 75% = $26.90. 85% = $30.50	
69496 3 or more tests described in 69494 MBS Fee: $43.05 Benefit: 75% = $32.30 85% = $36.60	

Source: DCAR Table 5

[15] Australian Influenza Surveillance Report (AISR) 2022 National Influenza Season Summary, https://www.health.gov.au/resources/publications/aisr-2022-national-influenza-season-summary?language=en accessed 14 March 2023

Comments on the comparator

MSAC may wish to consider the following related to the item descriptor wording and fee for the comparator items:

- Within a single test multiple pathogens may now be tested using multiplex testing. There is ambiguity in the use of the term 'test'. Replacement of 'test' with 'pathogen' would reduce ambiguity if the intention is to test for a single pathogen; alternatively, if this is intended to allow for the detection of multiple pathogens in a single test then that also is not clear.
- The proposed and the HTA group's items both require utilisation of the generic MBS items for any single pathogen testing.
    - Based on the costing for single NAAT for SARS-CoV-2 ($43.58) which does not include any margin, there would be a gap fee of $19.53 at the current 85% rebate for Item 69494 ($24.20).
    - This would result in a gap fee and potentially out-of-pocket expenses for patients, particularly for rapid NAATs.
- The assessment has not considered the suitability or otherwise of the current fee or any future increase for microbial antigen testing also captured within the item descriptor. Whether these two very different technologies can still remain bracketed within a single item descriptor and fee is referred for MSAC's consideration.

9. Summary of public consultation input

Feedback from targeted consultation was received from four (4) organisations which included representation from pathology providers and industry:

- Australian Pathology
- Public Pathology Australia
- The Royal College of Pathologists of Australasia
- Roche Diagnostics Australia

In seeking targeted consultation, the department requested further information on testing such as turnaround times, actual costs and technology platforms used. Respondents were largely not supportive of the proposed service, except for industry.

In response to turnaround times, respondents described difficulty in providing an average since the time for testing will vary greatly depending on the jurisdiction, rurality and type of platform used. In the context of testing rural patients, transport time is added on where local laboratories are not available. Therefore, turnaround times are more likely to be faster in urban areas (e.g. few to 12 hours) and longer in rural areas (e.g. > 72 hours). It was noted that this presents an issue of equity in health provision to those living and working in rural, remote and regional communities. It was also noted that the surge capacity in resources to provide rapid testing during the COVID-19 pandemic is not currently operational so times will be longer based on reduced staffing due to lower demand.

All pathology respondents considered the current fee for the temporary items to be underfunded and not reflective of actual costs to deliver testing currently. It was also considered that the genetic MBS items are currently underfunded and therefore there was considerable risk if these items were used as the comparator to the proposed service in the application. In addition, it was noted that laboratory costs in regional areas are usually higher than in metropolitan areas and

that a rural incentive item could be implemented to alleviate this. In response to the proposed item descriptors, pathology respondents made a number of comments such as considering:

- The need to remove the distinction between pathology provider type.
- The need to remove the bulk billing requirement.
- Support for the bulk billing incentive to be increased.
- The MBS rebate should not be limited to the specific target but rather to the format of testing.

One respondent believed that the public would be better served if SARS-CoV-2 was included in the broader respiratory panel rather than a permanent MBS item for testing on its own. They considered there was a high risk of a gap fee for the test to patients if the fee wasn't appropriately set, which may lead to patients using rapid antigen tests (because it may be cheaper than the gap cost) or no test at all. They also noted that there was no discussion in the application of the clinical utility of early, accurate diagnosis of COVID-19 in high-risk individuals who are eligible and would benefit from oral antivirals under the PBS.

One respondent considered that the specific wording of the MBS Review recommendations by the Pathology Clinical Committee on Microbiology (2017) for NAATs should be referred to when drafting respiratory NAAT descriptors.

The department also sought further targeted consultation at ESC's request, regarding the views of the general public view and those at greater risk of infection about making MBS-funded COVID-19 testing permanent. A single consumer organisation, Lung Foundation Australia, provided response in support of the application. They considered that the current temporary arrangements should be extended as the prevalence of COVID-19 within the community is still high, and noted the lived experience of patients with the condition and advantages of the proposed testing to patients, and their families and carers.

The department also sought further targeted consultation from the public health perspective on permanent MBS-funded SARS-CoV-2 testing, and public health advice was received from the Chief Medical Officer (CMO) Group, Office of Health Protection Division, Commonwealth Department of Health and Aged Care. Key points from the public health advice were that multi-pathogen testing for respiratory pathogens is already done to a certain extent, and MBS service volume data are used for public health although this is not the purpose of the MBS. The main advantages of publicly funding multi-pathogen testing were that it could potentially increase the identification of notifiable diseases, and also could potentially detect more cases of infection with other pathogens – both of which would have public health benefits (contact tracing and reducing the spread of disease, and contributing to statistics and epidemiology). Other points were that the item descriptor should state "respiratory pathogen" rather than specified pathogens as per the current temporary MBS items, advised against specifying SARS-CoV-2 in the item descriptor, the methods for NAAT should not be restricted to PCR, fees for the temporary SARS-CoV-2 MBS items (69511-5) are too high in the post-pandemic setting, reimbursement for the proposed multi-pathogen testing should be per reportable result (laboratories withhold results for pathogens not requested/relevant), and making the MBS items for SARS-CoV-2 permanent might result in an increase in the number of services, especially for the services with a higher number of pathogens.

10. Characteristics of the evidence base

There is no central publicly available register that identifies all assays currently used in Australia. TGA registration does not necessarily mean they are marketed but sponsors are required to

supply the TGA with monthly reports of the number of units being supplied and any emerging concerns regarding the test performance. However, due to confidentiality issues, the TGA could not disclose whether these were being supplied, nor provide the Australian Instructions For Use (IFU), nor any assessment reports without obtaining the consent from each sponsor. The IFU, which details the evidence base supporting the TGA approval and instructions to ensure that the test is performed in a way that is compliant with the approved usage, are only publicly available if the sponsor chooses to make them so. Unlike the Product Information for medicine that the sponsors are required to upload to the PI and CMI repository on the TGA website within in a certain timeframe after approval, device manufacturers are not required to upload IFUs to a public repository. Those assays in current use and the number of analysers and laboratories were provided by the RCPA QAP based on their most recent survey conducted at the end of 2022. It is possible this list is not comprehensive as other QAPs may be used by sponsors.

Technologies utilised for the intervention and the comparator

As shown below in Table 8, the Parameters state, "The assessment should examine outcomes that could potentially differ between the intervention and comparator…" The same technologies are utilised to provide the services in the proposed items (which are the same current temporary MBS items 69510-69515) for SARS-CoV-2 and respiratory pathogen testing and the generic items for microbial nucleic acid testing. Therefore, there is no difference between the effectiveness and safety of the intervention and the comparator for any of the outcomes described in Table 8. The cost to conduct each test will not be different between the intervention and the comparator as the same tests would be performed. Notably, 'nucleic acid tests' (which could be either rapid or standard NAATs) have been MBS-funded for two years for SARS-CoV-2, but no documents describing the basis of the decision to include SARS-CoV-2 testing in the MBS were available.

Table 8 Parameters for comparison of the intervention and the comparator

Reference standard	Assessing the comparative analytical validity of different SARS-CoV-2 testing strategies comprised of the same tests is not required. The assessment of the effectiveness of the intervention should include the analytical validity of the in-scope test methods (e.g. sensitivity, specificity, false positive rate, false negative rate, positive predictive value, negative predictive value). For this comparison the reference standard is laboratory-based PCR testing.
Outcomes	The assessment should examine outcomes that could potentially differ between the intervention and comparator. This includes at least: • Diagnostic yield of SARS-CoV-2 testing and other relevant viruses, including in different settings with varying incidence, and according to testing strategy • Test turnaround time • Analytical validity of the in-scope test methods • Any changes in management following a positive SARS-CoV-2 result that may differ between the intervention and comparator, including in different settings • Cost of testing strategy and test sequence

Source: DCAR Table 6

Rapid and standard NAATs

No separate item was proposed for rapid NAATs and standard NAATs. Rapid NAATs use a modified approach (single cartridge) to simplify and speed up the test, making these suitable for use both within and outside of the laboratory setting. This has also made this type of testing

more expensive and there is potentially a difference between the clinical performance of the rapid NAATs and the standard NAATs.

Initially, the Parameters included point-of-care testing within the scope of the application but during the course of the fit-for-purpose DCAR preparation, the scope was restricted to laboratory-performed NAATs. This was to align the assessment with the requirement under the *Health Insurance Act 1973* that the MBS-funded test must be provided by an accredited pathology laboratory. Thus, point-of-care testing performed in communities and outside of hospital laboratories (e.g. within emergency departments) were excluded.

Laboratory-based PCR was designated in the Parameters as the reference test –this step is common to both rapid and standard NAATs for SARS-CoV-2 and respiratory pathogens. The only exception is the COVID-19 ID NOW assay (Abbott,) which uses loop-mediated isothermal amplification as an alternative to PCR and is in use in one analyser in a laboratory in Australia according to the RCPA QAP.

Thus, the only comparison where there may be a difference in the outcomes is not between the intervention and the comparator as these are comprised of the same tests, but between the rapid NAATs and the standard NAATs. Standard NAATs, with their separate steps for nucleic acid extraction and amplification are the reference standard against which the clinical performance of rapid NAATs are judged. The HTA group has reviewed evidence of the clinical performance of rapid NAATs for SARS-CoV-2 and other respiratory pathogens, when performed as a laboratory-based test per the scope of this fit-for-purpose DCAR. Rapid NAATs constitute a very small proportion of the MBS-rebatable NAATs performed overall due to most rapid NAATs being performed in a setting that is not Medicare-rebatable (e.g. in emergency departments, or outside of the laboratory e.g. in the community by specifically trained healthcare staff). As a result, most rapid NAATs are funded by the states and territories or other dedicated programs (e.g. the Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing Program).

Evidence base

The place of rapid NAATs as SARS-CoV-2 tests has previously been considered by the Government based on a review undertaken by the Doherty Institute in 2021[16]. This broad assessment was not restricted to those performed in laboratories as specified in the Parameters for this fit-for-purpose DCAR. The Cepheid Xpress Xpert SARS-CoV-2 assay was identified as having high sensitivity and specificity, and the lower performance of the Abbott COVID-19 ID Now assay was noted as requiring further investigation given some studies did not follow the IFU.

In this fit-for-purpose DCAR, the evidence base for assessment of the analytical validity of rapid NAATs performed in the laboratory (scope of this assessment) compared with standard NAATs was examined for each of the rapid NAATs that are registered in Australia. As the purpose of these tests is to allow testing outside of laboratory settings, many of the published studies were not performed in laboratories and any published meta-analyses included a combination done at the point of care and in laboratories. Early validation studies tend to be performed in laboratories but these have limited generalisability as many were enriched with samples with known infection status from prior testing. No studies were conducted specifically in Medicare-eligible settings, therefore, there are no data specifically addressing the outcomes within the scope listed in the Parameters.

[16] Graham M, Ballard SA, Pasricha S, Lin B, Hoang T, Stinear T, et al. Use of emerging testing technologies and approaches for SARS-CoV-2: review of literature and global experience in an Australian context. Pathology. 2021;53(6):689-99.

As different approaches were used by different manufacturers, there were differences in findings for different tests and the data have been considered without aggregation to make this clear. Some differences between the studies included:

- Design: most were retrospective, single-centre studies but none were conducted in a Medicare-eligible setting. Laboratories participating in multicentre studies often used local standard reference tests which will influence positive and negative percentage agreement outcomes.
- Endpoints: some reported positive and negative predictive agreement, and others sensitivity and specificity; agreement with the reference standard may have been affected by limited analytical validity of the reference standard. Other outcomes such as turnaround time investigated the test performance for its intended purpose in a non-laboratory setting, but introduced user-related variables not relevant to a laboratory setting that may have compromised the sensitivity and specificity of the test.
- The range of sample types: most laboratory-based studies used 'convenience' samples that had been stored or frozen (often more than once), and where viral load may have been previously assessed or the sample spiked (to assess limits of detection); less often, samples were freshly collected from patients and assessed in parallel with the comparator; for some the SARS-CoV-2 status was already known and it was often not clear if the investigators were blinded to the known outcome.
- Patient characteristics, clinical information: often little or no information was presented, samples may have been collected from asymptomatic individuals, or at different time courses of the disease; variable clinical information was available to support resolution of discrepant results.
- Lack of clarity about workflows: these were often not described in sufficient detail, and may not have complied with the IFU (e.g., type of sample including swab type and site of collection, time from collection to analysis, use of transport media not specified in the IFU), been tested at different times from the comparator, with uncertainty regarding blinding where test outcomes were already known.
- Low background prevalence of SARS-CoV-2 in the community being tested often limited ability to demonstrate sensitivity.
- Variable performance of the reference standard laboratory due to studies being conducted early in the pandemic when these, too, were still in development.

Overall, due to various combinations of the differences identified above, the evidence was of low quality with a high or unclear risk of bias. A summary of the quality of the evidence for the studies and meta-analyses identified in the targeted literature review are presented in Table 9.

Table 9 Key features of the included evidence

Rapid NAAT	Type of evidence supplied	Extent of evidence	Overall risk of bias in evidence base – QUADAS-2
Single SARS-CoV-2 only			
Accuracy and performance of the Cepheid Xpert Xpress SARS-CoV-2	Predominantly retrospective testing of convenience (archived) samples, often enriched with known positive or negative samples.	k=5 n=1028 samples	High or unclear risk of bias.
	2 Meta-analyses: pooled outcomes from 1734 samples and 100 samples. Only a proportion performed in laboratories.	k=2 n=1834 samples	Authors identified high or unclear risk of bias, generally low quality of evidence.
Accuracy and performance of the Abbott ID Now COVID-19	Two retrospective testing of convenience (archived) samples, often enriched with known positive or negative samples. Single prospective, paired sample study in emergency department setting, tested in laboratory per IFU	k=3 n=3149 samples	High or unclear risk of bias.
	3 meta-analyses (1493 patients/3 studies; 1778 patients/10 studies and 812 patients/4 studies)	k=3 n=4083 samples	Authors identified high or unclear risk of bias, generally low quality of evidence.
Simplexa™ COVID-19 Direct (DiaSorin)	Four retrospective studies using convenience samples: including one study with only known positive samples tested; one study in admitted patients, symptomatic or asymptomatic; one study in asymptomatic patients only with samples tested at different times with comparator (after freezing)	k=4 n=792 samples	High or unclear risk of bias in all studies.
GSD NovaPrime SARS-CoV-2 (COVID-19) RT-PCR Kit (1)	Single prospective study of 99 paired samples analysed by rapid assay or RT-PCR (2 methods); also checked cross-reactivity on 32 additional stored samples with other known infection status	k=1 n=131 samples	High or unclear risk of bias.
Multiple pathogen test			
Xpert Xpress SARS-CoV2/Flu/RSV	Three retrospective studies with convenience samples, enriched with samples with known outcomes One study from sponsor with archived specimens, testing for all 4 viruses	k=4 n=924 samples	High or unclear risk of bias.
Cobas Liat SARS-CoV-2 & Influenza A/B	Three independent studies (982 samples) comparing samples from screening clinics, and two sponsor validation studies (1929 samples) for IFU.	k=5 n=2911 samples	High or unclear risk of bias.
QIAstat-Dx respiratory SARS-CoV-2 panel (+ 21 other pathogens)	Four retrospective studies comparing convenience samples with reference standard or other rapid NAAT, assessing cross-reactivity.	k=4 n=584 samples	High or unclear risk of bias.
BioFire Respiratory Panel 2.1	Four retrospective studies enriched with samples with prior testing and known infection status, one prospective study evaluating assay versus range of other SARS-CoV-2 assays.	k=5 n=889 samples	High or unclear risk of bias.

NPA=negative percentage agreement, PPA=positive percentage agreement
Source: DCAR Table 7

11. Comparative safety

The same laboratory-based NAATs would be performed when providing a service funded either by the proposed items or the comparator. No new safety issues related to sample collection and the testing process were identified.

12. Comparative effectiveness

The following was the summary of the clinical safety and effectiveness from the targeted literature search for the thirteen rapid NAATs currently identified as TGA-approved and/or in use in Australia, and expanded upon the review of COVID-19 rapid NAATs presented by the Doherty Institute in 2021[17] (Table 10).

The technology used for the proposed intervention has been in place and MBS-funded since March 2020 for SARS-CoV-2 testing, and years earlier for other infective pathogen tests.

The same laboratory-based NAATs (rapid or standard) would be performed when providing a service funded either by the proposed items or the comparator. Therefore, there is no difference between the comparator and proposed items in terms of effectiveness. However, there is potentially a difference between the clinical performance of the rapid NAATs and the standard NAATs (which are the designated standard reference test in the Parameters for this comparison). This question was more important when the community point-of-care testing was within scope, as most rapid NAATs in Australia are performed in settings that are not Medicare eligible. Thus, the HTA group reviewed the evidence of the clinical performance of these rapid NAATs for SARS-CoV-2 and other respiratory pathogens.

In those assays with high sensitivity and specificity, the simpler method and faster turnaround ensure an accurate result to allow decisions regarding early treatment and appropriate infection prevention and control measures. However, lower sensitivity (<90% compared with the reference standard), increases the risk of a false negative which may lead to a misdiagnosis and a failure to treat an individual at high risk of a severe outcome, and/or a failure to instigate appropriate infection prevention and control measures.

[17] Graham M, Ballard SA, Pasricha S, Lin B, Hoang T, Stinear T, et al. Use of emerging testing technologies and approaches for SARS-CoV-2: review of literature and global experience in an Australian context. Pathology. 2021;53(6):689-99.

Table 10 Summary of key findings from the literature review for those TGA-registered rapid NAATs where Royal College of Pathologists of Australasia Quality Assurance Program indicates there is use on at least one laboratory platform in Australia

Assay	Number of pathogens	Number of analysers in Australian laboratories 2022	IFU or manufacturer website TAT (minutes)	Sensitivity	Specificity	PPA With RT-PCR	NPA With RT-PCR	Strength of available independent, peer-reviewed literature	Comments
Cepheid GeneXpert Xpert Xpress SARS-CoV-2	1	168	45	++++	++++	++++	++++	++++	Manufacturers and Australian laboratories are shifting away from single SARS-CoV-2 to multipathogen assay in hospital labs, community PoCT programs
Cepheid GeneXpert Xpert Xpress SARS-CoV-2/Flu/RSV	4	106	45	++++	++++	++++	++++	++++	Likely to be replaced by 'Xpert Xpress SARS-CoV-2/Flu/RSV plus' (additional SARS-CoV-2 target for specificity) but no users identified yet
Roche Diagnostics cobas LIAT SARS-CoV-2 & Influenza A/B	3	64	20	++++	++++	++++	++++	++++	
Roche Diagnostics cobas SARS-CoV-2	1	25	20	++++	++++	++++	++++	++++	Australian laboratories are shifting away from single SARS-CoV-2 to multipathogen assay in hospital laboratories
Qiagen QIAstat-Dx Respiratory SARS-COV-2 Panel	22	24	60	+++	++++	++++	++++	+++	Fewer publications supporting validity than for the assays above; lower sensitivity than comparable-sized rapid NAATs e.g., BioFire Respiratory Panel 2.1
bioMerieux (BioFire) FilmArray Respiratory Panel 2.1 with SARS-CoV-2	23	9	45	++++	++++	++++	++++	++++	
DiaSorin Molecular Simplexa COVID-19 Direct Assay Kit	1	3	90	++/+++	++/+++	+++	-	-	Very few studies, no PPA, NPA reported. False negative rates reported of 11.9%-16.7% Low quality studies Withdrawn from WHO EUL list 2023.
BGI Real-time fluorescent RT-PCR	1	2	90	?	?	?	?	-	No validation studies identified.

Assay	Number of pathogens	Number of analysers in Australian laboratories 2022	IFU or manufacturer website TAT (minutes)	Sensitivity	Specificity	PPA With RT-PCR	NPA With RT-PCR	Strength of available independent, peer-reviewed literature	Comments
Kit for detecting 2019-nCoV									
BGI Real-time fluorescent RT-PCR Kit for detecting SARS-CoV-2	1	2	90	?	?	?	?	-	No validation studies identified.
GSD NovaPrime SARS-CoV-2 (COVID-19) RT-PCR Kit	1	2	60	?	?	?	?	+	No entry in the ARTG located for "GSD NovaPrime SARS-CoV-2 (COVID-19) RT-PCR Kit"; only study is from early version of assay
Abbott ID NOW COVID-19	1	1	15	++/+++	++++	++/+++	++++	++++	Sensitivity <90% reported consistently
bioMerieux (BioFire) COVID-19 Test	19	1	45	?	?	?	?	-	Newer versions now test for 22 and 23 pathogens – likely to be superseded
Qiagen QIAstat-Dx Respiratory 2019-nCoV Panel	21	1	60	?	?	?	?	-	Appears to be superseded by QIAstat-Dx panel above

ARTG=Australian Register of Therapeutic Goods; IFU=Instructions for Use; NPA=negative percentage agreement; PoCT=point-of-care testing; PPA=positive percentage agreement; RT-PCR=reverse transcription and polymerase chain reaction; TAT=turnaround time; TGA=Therapeutic Goods Administration; WHO EUL=World Health Organization Emergency Use Licence.
Scale: + minimal; ++= low; +++=moderate; ++++=strong; ? = no evidence identified
Source: DCAR Table 8

Assessment of evidence supporting sensitivity and specificity

From the evidence available, most assays have sufficient sensitivity and specificity compared with the reference standard NAAT to support the proposed usage i.e, use in a Medicare-rebatable setting. Most rapid NAATs in Australia are performed in emergency departments and remote communities, and often outside of a laboratory setting.

Adequate sensitivity is important as currently, SARS-CoV-2 NAATs are recommended for those at risk of severe illness (or their close contacts) for early intervention to improve clinical outcomes. A false negative result may lead to a misdiagnosis, a missed opportunity for treatment and a failure to isolate an individual with a highly transmissible respiratory tract infection.

Adequate evidence

For the following rapid NAATs, there was evidence that their use results in noninferior effectiveness and noninferior safety compared with standard NAATs when performed in a laboratory:

1. Cepheid GeneXpert Xpert Xpress SARS-CoV-2
2. Cepheid GeneXpert Xpert Xpress SARS-CoV-2/Flu/RSV
3. Roche Diagnostics cobas LIAT SARS-CoV-2 & Influenza A/B
4. Roche Diagnostics cobas SARS-CoV-2
5. BioFire FilmArray Respiratory Panel 2.1 with SARS-CoV-2
6. Qiagen QIAstat-Dx Respiratory SARS-COV-2 Panel
    a. Studies reported a lower sensitivity and lower cycle threshold[18], and lower detection rates of both SARS-CoV-2 and other viruses compared with the same-sized BioFire Respiratory Panel 2.1 with SARS-CoV-2 assay[19].
    b. In one study, the findings were reported to be consistent with the cycle threshold and limit of detection in the IFU and these authors postulate interference within the assay limits its sensitivity[19].

However, there were issues with the other nine assays and these are referred for MSAC's consideration.

Substantial evidence to suggest inferior sensitivity

Two assays had lower sensitivity reported (<90%) compared with the reference standards in a number of published independent studies. There was an increased risk of a false negative result for both assays, especially at lower viral loads. Given the population at high-risk are encouraged to present early, including after exposure and prior to the onset of symptoms for early intervention, there is a clinical risk with any assay that has inferior sensitivity. A limited number of studies were identified for the DiaSorin assay and one was excluded due to significant methodological issues. Notably, the WHO Emergency Use Licence for this assay has been

[18] Lebourgeois S, Storto A, Gout B, Le Hingrat Q, Ardila Tjader G, Cerdan MDC, et al. Performance evaluation of the QIAstat-Dx® Respiratory SARS-CoV-2 Panel. Int J Infect Dis. 2021;107:179-81.

[19] Cassidy H, van Genne M, Lizarazo-Forero E, Niesters HGM, Gard L. Evaluation of the QIAstat-Dx RP2.0 and the BioFire FilmArray RP2.1 for the Rapid Detection of Respiratory Pathogens Including SARS-CoV-2. Frontiers in Microbiology. 2022;13.

withdrawn, citing the "Manufacturer did not express interest to extend the EUL for another period."[20]

1. Abbott ID Now COVID-19 assay

Many of the studies providing data are for testing outside of the laboratory and this requires a thorough review, not confined to testing in a laboratory setting to determine the suitability of the assay for the proposed usage. The manufacturer amended the IFU following publication of initial studies indicating a lower sensitivity (e.g., to require the swabs be of a certain type, that viral transport media not be used) therefore, those early studies may not be relevant in determining the sensitivity of the test now.

Three meta-analyses reported average sensitivities of 83% (95% confidence interval (CI): 67, 91)[21], 0.79 (95% CI, 0.69 to 0.86)[22] and 73.0% [95% (CI) 66.8–78.4%][23]. Some of the studies, including an Australian study[24], were underpowered to assess the sensitivity of the assay due to the low incidence limiting the proportion and absolute number of positive cases[21,24].

Lower test sensitivity of the Abbott ID Now COVID-19 assay was reported in patients early in the course of their disease when there are lower viral loads[25].

In a well-conducted, independent study in which the testing conformed to the manufacturer's IFU, patients with acute respiratory tract symptoms for fewer than seven days presenting to an emergency department (not a Medicare-rebatable setting) had paired samples taken testing using this assay and also a standard NAAT. Both tests were performed in the laboratory and the sensitivity of the ID Now assay was reported as 89.9% (95% CI, 85.0% to 93.3%)[26]; however, some of the high-risk patients currently indicated for testing in Australia will be asymptomatic or be presenting early in their disease course and it is not clear how generalisable these findings are to this population.

2. DiaSorin Simplex COVID-19 assay (false negative rates of 11.9%-20.6%)

The four studies identified were of very variable quality, and one study only tested samples that were known to be positive from prior testing[27]. In one study, the sensitivity was reported to be 79.4% (95% CI: 70.3, 86.8), with the assay detecting only 48% of infections in asymptomatic patients[28] compared with the reference standard resulting in a negative predictive value of 83% (95% CI: 76.8, 87.7)[28]. Others reported a positive percentage agreement of 89% (95% CI, 0.76 to

[20] https://extranet.who.int/pqweb/sites/default/files/documents/230419_List_IVDs_NotAccepted_EUL_SARS-CoV-2.pdf accessed 21 April 2023
[21] Tu Y-P, Iqbal J, O'Leary T. Sensitivity of ID NOW and RT–PCR for detection of SARS-CoV-2 in an ambulatory population. eLife. 2021;10:e65726.
[22] Lee J, Song J-U. Diagnostic accuracy of the Cepheid Xpert Xpress and the Abbott ID NOW assay for rapid detection of SARS-CoV-2: A systematic review and meta-analysis. Journal of Medical Virology. 2021;93(7):4523-31.
[23] Dinnes J, Deeks JJ, Berhane S, Taylor M, Adriano A, Davenport C, et al. Rapid, point-of-care antigen tests for diagnosis of SARS-CoV-2 infection. Cochrane Database of Systematic Reviews. 2021(3).
[24] Graham M, Muhi S, Hoang T, Ballard SA, McAuley J, Kwong JC, et al. Multi-site point of care assessment of Abbott ID NOW rapid molecular test for SARS-CoV-2 in a low-prevalence setting. Pathology. 2021;53(7):912-4.
[25] Procop GW, Brock JE, Reineks EZ, Shrestha NK, Demkowicz R, Cook E, et al. A Comparison of Five SARS-CoV-2 Molecular Assays With Clinical Correlations. Am J Clin Pathol. 2021;155(1):69-78.
[26] Barker KR, Small LN, Thai DV, Sohn KY, Rosella LC. Evaluating the Ability to ID (COVID-19) NOW: a Large Real-World Prospective Evaluation of the Abbott ID NOW COVID-19 Assay. Microbiol Spectr. 2022;10(3):e0051322.
[27] Rhoads DD, Cherian SS, Roman K, Stempak LM, Schmotzer CL, Sadri N. Comparison of Abbott ID Now, DiaSorin Simplexa, and CDC FDA Emergency Use Authorization Methods for the Detection of SARS-CoV-2 from Nasopharyngeal and Nasal Swabs from Individuals Diagnosed with COVID-19. J Clin Microbiol. 2020;58(8)
[28] Jerbi L, Azrad M, Peretz A. Evaluation of Factors that Affect the Performance of COVID-19 Molecular Assays Including Presence of Symptoms, Number of Detected Genes and RNA Extraction Type. Mol Diagn Ther. 2022;26(2):229-38.

0.96)[29], another reported the sensitivity as 88.1% and specificity as 98.6% with no 95% confidence intervals[30].

Recent documentation from the WHO indicated that this assay has been withdrawn as the manufacturer did not renew their existing Emergency Use Licence[31].

Insufficient information available to assess analytical validity

No information (IFU or validation studies) could be located for the following four TGA-registered assays to support their clinical effectiveness, although it appears the last two of these may have been superseded:

3. BGI Real-time fluorescent RT-PCR Kit for detecting 2019-nCoV
4. BGI Real-time fluorescent RT-PCR Kit for detecting SARS-CoV-2
5. bioMerieux (BioFire) COVID-19 Test
6. Qiagen QIAstat-Dx Respiratory 2019-nCoV Panel

Quality management issues

Quality Management issues precluding granting of an Emergency Use Licence were identified by the WHO for the TGA-approved Diagnostic Kit for Novel-Coronavirus (2019-nCoV) RNA (Isothermal Amplification-Real Time Fluorescence Assay) sponsored by Ustar Biotechnologies (Hangzhou) Ltd (China) in October 2020 (and this was registered by the TGA in November 2020). From the currently available information, these do not appear to have been resolved[31] – whether this device is being used in Australia is not clear as no information other than the WHO document could be located.

TGA registration status

The GSD NovaPrime SARS-CoV-2 (COVID-19) RT-PCR Kit was reported to be in use based on the most recent RCPA QAP enrolment data, but no information or ARTG entry could be identified on the TGA website. It was unclear whether this assay uses a combined extraction and amplification step but the manufacturer claims a result is available within 1 hour[32], and thus it has been included.

Summary and Conclusions

Rapid NAATs are in constant evolution with new targets or viruses being added. There has been a shift away from single SARS-CoV-2 testing, to production of assays with at least SARS-CoV-2, Influenza A and B, with or without RSV. Based on the RCPA QAP enrolments, the rapid NAATs used most widely in Australia are produced by four manufacturers: Cepheid (either one or four pathogens), Roche (one or three pathogens tested), and the larger assays from BioFire (22 or 23

[29] Antonara S, Ozbolt P, Landon L, Fatica L, Pleasant T, Swickard J, et al. Detection of SARS-CoV-2 infection in asymptomatic populations using the DiaSorin molecular Simplexa and Roche Cobas EUA assays. Diagn Microbiol Infect Dis. 2022;102(1):115513.
[30] Procop GW, Brock JE, Reineks EZ, Shrestha NK, Demkowicz R, Cook E, et al. A Comparison of Five SARS-CoV-2 Molecular Assays With Clinical Correlations. Am J Clin Pathol. 2021;155(1):69-78.
[31] https://extranet.who.int/pqweb/sites/default/files/documents/230419_List_IVDs_NotAccepted_EUL_SARS-CoV-2.pdf accessed 21 April 2022
[32] https://clinical.goldstandarddiagnostics.com/home/products/covid-19-pcr-assay/sars-cov-2-real-time-rt-pcr/gsd-novaprime-tsp-sars-cov-2-rt-pcr accessed 23 February 2023

pathogens, depending on which generation of assay is used) and Qiagen. For the first three manufacturer's assays, there was strong evidence supporting a noninferior analytical validity compared with the reference standard NAAT, although some are either already or will soon be superseded (Table 10). For the Qiagen assay, this appeared to have lower sensitivity compared with the BioFire assay or standard NAATs for a number of pathogens. However, for the Abbott ID Now COVID-19 assay and the Simplexa™ COVID-19 Direct assay, there were consistent reports of sensitivity levels below 90%. While there did not appear to be a cut-off reported for an acceptable concordance, a clinical expert has indicated that ≥90% would be a minimum for an acceptable diagnostic assay. One TGA-registered rapid NAAT appears to have had approval withheld by the World Health Organization in October 2020 due to quality systems issues that were not resolved (there were no reported users in the RCPA QAP) and another assay reported to have one user in the RCPA QAP but no information regarding its registration status could be located on the TGA website.

Issues relating to the safety of these rapid NAATs are mostly where inferior sensitivity results in a false negative result, which in the target population would lead to a delay in the diagnosis or missed diagnosis and lost opportunity for early intervention with an effective therapy which may increase the risk of severe illness, hospitalisation and death, depending on the pathogen. False positives were much less common.

The key limitations of the evidence were the generally low quality of many of the studies, the evolving IFUs addressing concerns so that earlier study findings and concerns may no longer be valid (e.g., Abbott ID Now COVID-19 assay) and a high risk of bias arising from the patient selection or the types of samples used and not following the IFU.

13. Economic evaluation

Intervention versus comparator

The MSAC Executive advised a cost-consequences analysis was the appropriate economic modelling to inform the value proposition of SARS-CoV-2 and respiratory pathogen testing. The results of the cost-consequences analysis are presented below (Table 11).

Intervention and comparator services would be comprised of the same tests, therefore there was no difference in outcomes. Caution should be exercised when considering any difference in the fees presented for the intervention or the comparator, because costings showed the current comparator fees are not sufficient to cover the costs of nucleic acid testing and some of the proposed services would not be able to be provided within the proposed fee.

Table 11 Cost consequences analysis for proposed laboratory-based rapid and standard NAATs for SARS-CoV-2 and respiratory pathogen testing

Parameter	Intervention	Comparator	Increment
Costs			
HTA group items (option 1)	Item XXXX (4-pathogen panel)	Item 69496 (≥3 tests)	
Fee	~~$51.45~~ *$78.25*	$43.05	~~$8.40~~ *$35.20*
	Item YYYY (≥5 pathogens)	Item 69496 (≥3 tests)	
Fee	~~$84.50~~ *$85.56*	$43.05	~~$41.45~~ *$42.51*
Current temporary items (option 2)	Item AAAA (SARS-CoV-2)	Item 69494 – 1 test	
Fee	$68.85	$28.65	$40.20
	Item BBBB (2-4 tests)	Item 69496 (≥3 tests)	
Fee	$74.75	$43.05	$31.70
	Item CCCC (5-8 tests)	Item 69496 (≥3 tests)	
Fee	$80.65	$43.05	$37.60
	Item DDDD (9-12 tests)	Item 69496 (≥3 tests)	
Fee	$86.55	$43.05	$43.50
	Item EEEE (13+ tests)	Item 69496 (≥3 tests)	
Fee	$92.45	$43.05	$49.40
Outcomes			
Diagnostic yield of SARS-CoV-2 testing and other relevant viruses, including in different settings with varying incidence, and according to testing strategy	No data – will vary depending on incidence of circulating pathogen(s)	No data – will vary depending on incidence of circulating pathogen(s)	Nil – same test
Test turnaround time – metropolitan areas (hospital, community)	4-24 hours standard NAAT	4-24 hours standard NAAT	Nil – same test
	*15-90 minutes rapid NAAT	*15-90 minutes rapid NAAT	Nil – same test
Turnaround time – regional areas	Up to 72 hours	Up to 72 hours	Nil – same test
	*15-90 minutes rapid NAAT	*15-90 minutes rapid NAAT	Nil – same test
Analytical validity of the in-scope test methods	Reference test (laboratory-based PCR)	Reference test (laboratory-based PCR)	Nil – same test
Change in management between intervention and comparator	Diagnosis to inform decisions regarding therapy, IPAC	Diagnosis to inform decisions regarding therapy, IPAC	Nil – same test
Earlier antiviral treatment	*Multi-pathogen testing (option 1) may potentially reduce the number of tests per patient to ascertain the diagnosis, and allow earlier PBS-listed antiviral treatment in high-risk patients.*		
Patient cohorting and quarantining	*It may be reasonable to assume some improved patient outcomes from patient cohorting and quarantining based on multi-pathogen testing (option 1).*		

N/A=not applicable; NAAT=nucleic acid amplification test

* turnaround time is for time taken to perform the test and does not allow for time from sample collection to laboratory as rapid NAATs are performed close to the patient

Source: DCAR Table 9. ESC's additions are in blue italics and deletions in strikethrough, including updating the fees proposed for XXXX and YYYY by the DCAR.

Rapid NAATs versus standard NAATs

Rapid NAATs are used in designated clinical situations where either a rapid test result is required and/or there is difficulty in accessing a standard NAAT for a timely result. There are different rapid NAATs, with some more sensitive and/or faster than others.

No publications could be located studying the differences in turnaround time for rapid versus standard NAATs in a Medicare-eligible setting. Most are performed in emergency departments and/or outside of a hospital laboratory, and are currently funded by states and territories or specific programs. It is possible that some tests from private providers could be performed in Medicare-eligible inpatients but until 1 January 2023, these more costly tests were required to be bulk-billed which would have resulted in a gap fee. As rapid NAATs are more costly, and used to perform only a very small proportion of all Medicare-rebatable respiratory pathogen tests, no weighted fee could be derived to ensure adequate compensation to those providing this and other tests in a Medicare-eligible setting. Thus, no separate fee is proposed and if claimed under Medicare then rapid tests would be likely to be performed at a loss or incur a gap fee, payable by a payer or the patient. Therefore, there are no cost-consequences from their use.

In the following cost consequences analysis, as there was no difference in the fee, there was no cost consequence of using a rapid NAAT compared with a standard NAAT. However, these fees are not sufficient to cover the costs of these more expensive tests and the results should be interpreted with caution.

Table 12 Cost consequences analysis for laboratory-based rapid NAAT versus standard NAAT for SARS-CoV-2 and respiratory pathogen testing

Parameter	Intervention – rapid NAAT	Comparator – standard NAAT	Increment
HTA group option items (option 1)	Item XXXX (4-pathogen panel)	Item XXXX (4-pathogen panel)	
Fee	~~$51.45~~ *$78.25*	~~$51.45~~ *$78.25*	$0
	Item YYYY (≥5 pathogens)	Item YYYY (≥5 pathogens)	
Fee	~~$84.50~~ *$85.56*	~~$84.50~~ *$85.56*	$0
Proposed items (option 2)	Item AAAA (SARS-CoV-2)	Item AAAA (SARS-CoV-2)	
Fee	$68.85	$68.85	$0
	Item BBBB (2-4 tests)	Item BBBB (2-4 tests)	
Fee	$74.75	$74.75	$0
	Item EEEE (13+ tests)	Item EEEE (13+ tests)	
Fee	$92.45	$92.45	$0
Outcomes			
Diagnostic yield of SARS-CoV-2 testing and other relevant viruses, including in different settings with varying incidence, and according to testing strategy	No data – will vary depending on incidence of circulating pathogen(s)	No data – will vary depending on incidence of circulating pathogen(s)	Nil
*Test turnaround time – metropolitan areas (hospital, community)	15-90 minutes, depending on assay, panel size	4-24 hours	3.75 – 23.75 hours faster for rapid NAAT
Test turnaround time – regional areas	15-90 minutes, depending on assay, panel size	Up to 72 hours standard NAAT	Up to 71.75 hours faster, depending on rapid NAAT
Analytical validity of the in-scope test methods (Standard NAAT as reference)	Varies according to rapid NAAT used. Most have high sensitivity (>90%), high specificity (>90%), high PPA, NPA but no data in Medicare-rebatable settings	Reference standard	Slightly lower sensitivity for some rapid NAATs, but in some studies, were superior to reference standard
Change in management between intervention and comparator	Diagnosis to inform decisions regarding therapy, IPAC – faster, but some have lower sensitivity. No data in Medicare-rebatable settings.	Diagnosis to inform decisions regarding therapy, IPAC	Value of a faster diagnosis, slightly higher risk of false negative result depends on clinical context (importance of early access to a result)
Clinical utility	*The longer turnaround time for standard NAAT in remote areas may mean rapid NAATs provide additional clinical utility for patients in those areas.*		

IPAC=infection prevention and control; N/A=not applicable; NAAT=nucleic acid amplification test; NPA=negative predictive agreement; PPA positive predictive agreement

* turnaround time is for time taken to perform the rapid NAAT and does not include time from sample transit after collection as rapid NAATs are performed in relatively close proximity to the patients, whereas for a standard NAAT, samples may have to travel large distances if a laboratory is not located nearby

Source: DCAR Table 10. ESC's additions are in blue italics and deletions in strikethrough, including updating the fees proposed for XXXX and YYYY by the DCAR.

14. Financial/budgetary impacts

Utilisation

The utilisation of each proposed item was estimated from the total number of tests performed in 2022 from the combined use of the single SARS-CoV-2 items plus the generic MBS items estimated as attributable to respiratory pathogen testing from 1 October 2021 - September 30, 2022, and the current temporary MBS items during the period 1 October 2022 – 31 December 2023. The proportions of each of the current temporary MBS items utilisation were used to predict the likely pattern of test requesting had the current temporary MBS items been available throughout 2022. The month-by-month 2023 testing rates were then predicted based on the utilisation rates incorporating the anticipated decrease in testing for 2023 evident from the utilisation in from 1 October 2021 – 30 September 2022 compared with the period 1 October 2022 – 31 January 2023, and thereafter extrapolated for the years commencing 1 January 2024 – 31 December 2029, with adjustments based on the anticipated population growth. There was a reduction in co-claiming of the permanent generic MBS items following the introduction of the current temporary items compared with the single SARS-CoV-2 test items, most likely due to the wider number of tests available within the ladder structure reducing the need for additional testing via the generic MBS items.

Financial implications

Option 1: Two-step multi-pathogen ladder (HTA group option)

The financial impact of the HTA group's proposed items (no single SARS-CoV-2 item) could result in SARS-CoV-2 testing being provided either:

- Option 1a: via the 4-pathogen panel (together with influenza A and B and RSV) and ≥5 pathogen panel
    - This would require a shift from current practice where 44% of SARS-CoV-2 testing is for just SARS-CoV-2 testing alone, but it is likely that providers would seek to use the proposed 4-pathogen panel, because its fee is higher.
- Option 1b: via utilisation of Item 69494 for any single pathogen being tested
    - This would result in a gap fee and potentially out-of-pocket expenses for patients as the current rebate is $24.40, which the HTA group's costings indicated is insufficient to meet the cost of single nucleic acid testing.

With either the proposed items or the HTA group's alternative strategy and items, nucleic acid testing for single respiratory pathogen using the generic MBS items will still be required (as well as being able to co-claim for testing for other non-respiratory pathogens). However, the fees for items 69494, 69495, 69496 would need to be increased or new items created as these items currently include two very different diagnostic test methodologies technologies with very different costs.

The following financial analyses estimated the net impact to the MBS of a four-pathogen panel and a ≥5-pathogen panel using an 85% rebate based on HTA cost estimates with no additional margin.

Table 13 Net financial impact of HTA Group option NAATs for respiratory pathogens: option 1a (SARS-CoV-2 testing performed using XXXX or YYYY)

Parameter	2024	2025	2026	2027	2028	2029
Item XXXX services	2,123,744	2,152,954	2,182,005	2,210,880	2,239,593	2,268,105
Cost of XXXX	$141,250,243	$143,192,983	$145,125,170	$147,045,616	$148,955,347	$150,851,662
Item YYYY services	2,359,540	2,391,993	2,424,270	2,456,351	2,488,253	2,519,931
Cost of YYYY	$171,601,514	$173,961,732	$176,309,133	$178,642,273	$180,962,392	$183,266,216
Total cost of the proposed items to the MBS	**$312,851,758**	**$317,154,715**	**$321,434,303**	**$325,687,889**	**$329,917,739**	**$334,117,879**
Change in use and cost of other technologies						
Change in use of Item 69494	-1,967,175	-1,994,231	-2,021,141	-2,047,886	-2,074,483	-2,100,893
Change in use of Item 69496	-2,516,109	-2,550,716	-2,585,135	-2,619,345	-2,653,363	-2,687,143
Net change in costs to the MBS (with appropriate copayments excluded)	-$140,088,674	-$142,015,453	-$143,931,769	-$145,836,441	-$147,730,484	-$149,611,224
Net financial impact to the MBS	**$172,763,083**	**$175,139,261**	**$177,502,534**	**$179,851,448**	**$182,187,255**	**$184,506,655**

Source: DCAR Table 12, with edits to incorporate ESC's advice.

Table 14 Net financial impact of HTA group option NAATs for respiratory pathogens: option 1b (SARS-CoV-2 testing performed using XXXX, YYYY or 69494)

Parameter	2024	2025	2026	2027	2028	2029
Item XXXX services	156,569	158,723	160,865	162,993	165,110	167,212
Cost of XXXX	$10,413,436	$10,556,663	$10,699,112	$10,840,696	$10,981,489	$11,121,294
Item YYYY services	2,359,540	2,391,993	2,424,270	2,456,351	2,488,253	2,519,931
Cost of YYYY	$171,601,514	$173,961,732	$176,309,133	$178,642,273	$180,962,392	$183,266,216
Total cost of the proposed items to the MBS	**$182,014,950**	**$184,518,395**	**$187,008,245**	**$189,482,969**	**$191,943,881**	**$194,387,510**
Change in use and cost of other technologies						
Change in use of Item 69494	0	0	0	0	0	0
Change in use of Item 69496	-2,516,109	-2,550,716	-2,585,135	-2,619,345	-2,653,363	-2,687,143
Net change in costs to the MBS (with appropriate copayments excluded)	-$92,089,605	-$93,356,211	-$94,615,940	-$95,868,014	-$97,113,101	-$98,349,444
Net financial impact to the MBS	**$89,925,345**	**$91,162,183**	**$92,392,306**	**$93,614,954**	**$94,830,780**	**$96,038,066**

Source: DCAR Table 13, with edits to incorporate ESC's advice.

Option 2: Make the current temporary items permanent

The financial implications to the MBS resulting from the proposed listing of permanent MBS items for SARS-CoV-2 and respiratory pathogen nucleic acid testing are summarised in Table 15.

Table 15 Net financial implications of proposed permanent NAATs for SARS-CoV-2 and respiratory pathogen testing to the MBS: option 2

Parameter	2024	2025	2026	2027	2028	2029
Estimated use and cost of the proposed permanent nucleic acid amplification testing for SARS-CoV-2 and respiratory pathogens						
Item AAAA services	1,967,175	1,994,231	2,021,141	2,047,886	2,074,483	2,100,893
Cost of AAAA	$115,178,095	$116,762,239	$118,337,779	$119,903,745	$121,460,974	$123,007,263
Item BBBB services	156,569	158,723	160,865	162,993	165,110	167,212
Cost of BBBB	$9,949,990	$10,086,843	$10,222,952	$10,358,235	$10,492,763	$10,626,346
Item CCCC services	1,641,294	1,663,868	1,686,320	1,708,636	1,730,827	1,752,862
Cost of CCCC	$112,592,768	$114,141,376	$115,681,575	$117,212,416	$118,734,714	$120,246,320
Item DDDD services	379,204	384,420	389,607	394,763	399,890	404,981
Cost of DDDD	$27,909,424	$28,293,292	$28,675,075	$29,054,539	$29,431,885	$29,806,581
Item EEEE services	339,042	343,705	348,343	352,953	357,537	362,088
Cost of EEEE	$26,648,689	$27,015,216	$27,379,754	$27,742,076	$28,102,377	$28,460,147
Total number of services of proposed items	4,483,284	4,544,947	4,606,276	4,667,231	4,727,846	4,788,036
Cost to MBS of proposed items (with copayments excluded)	**$292,278,966**	**$296,298,966**	**$300,297,135**	**$304,271,011**	**$308,222,712**	**$312,146,657**
Change in use and cost of other health technologies						
Change in use of Item 69494	-1,967,175	-1,994,231	-2,021,141	-2,047,886	-2,074,483	-2,100,893
Change in use of Item 69496	-2,516,109	-2,550,716	-2,585,135	-2,619,345	-2,653,363	-2,687,143
Total change in number of services of existing items	-4,483,284	-4,544,947	-4,606,276	-4,667,231	-4,727,846	-4,788,036
Net change in costs to the MBS (with appropriate copayments excluded)	-$140,088,675	-$142,015,454	-$143,931,769	-$145,836,441	-$147,730,484	-$149,611,224
Net financial impact to the MBS	**$152,190,291**	**$154,283,512**	**$156,365,366**	**$158,434,570**	**$160,492,228**	**$162,535,433**

Source: DCAR Table 11, with edits to incorporate ESC's advice.

Option 3: Revert to testing using the generic items (comparator)

The financial implications to the MBS resulting from SARS-CoV-2 testing reverting to using the generic items that were in place prior to the pandemic are summarised in Table 16.

Table 16 Net financial impact of the comparator: option 3

Parameter	2024	2025	2026	2027	2028	2029
Estimated use and cost of the current generic MBS items for respiratory pathogen testing						
Item 69494 (replacing AAAA)	1,967,175	1,994,231	2,021,141	2,047,886	2,074,483	2,100,893
Benefit paid	$47,999,069	$48,659,242	$49,315,829	$49,968,427	$50,617,383	$51,261,780
Item 69496 (replacing BBBB, CCCC, DDDD, EEEE)	2,516,109	2,550,716	2,585,135	2,619,345	2,653,363	2,687,143
Benefit paid	$92,089,605	$93,356,211	$94,615,940	$95,868,014	$97,113,101	$98,349,444
Total cost to MBS	**$140,088,675**	**$142,015,454**	**$143,931,769**	**$145,836,441**	**$147,730,484**	**$149,611,224**

Source: DCAR Table 67

15. Other relevant information

Nil.

16. Key issues from ESC to MSAC

Main issues for MSAC consideration

Clinical issues:

- The DCAR's assumption that comparative safety and effectiveness would be the same between the intervention and comparator may not be correct. The available evidence was limited, but because multi-pathogen testing (option 1) may drive best clinical practice it may be associated with some incremental clinical effectiveness. Multi-pathogen testing may potentially reduce the number of tests requested per patient to ascertain the diagnosis, allow earlier PBS-listed antiviral treatment in high-risk patients, and improve clinical management from patient cohorting and/or quarantining based on respiratory pathogen test results.
- The main safety issue was the risk of a false-negative result with rapid NAATs, however rapid NAATs currently comprise a very small proportion (<0.01%) of MBS-funded SARS-CoV-2 testing.
- Rapid NAATs are more expensive but have faster turnaround times than standard NAATs. MSAC may wish to consider whether a separate MBS item (or items) at a higher fee are warranted for rapid NAATs, for settings where the turnaround time of standard NAATs is likely to be longer than 24 hours (e.g. remote and regional areas), as rapid NAATs may be associated with additional clinical utility in remote areas. However, the MBS is typically method-agnostic and items for high-cost methodologies would need to be justified.
- A two-step ladder of MBS items comprised of 4 and ≥5 respiratory pathogen tests (option 1) appears to align with best clinical practice given the presentation and potential differential

diagnosis of the common notifiable viral respiratory diseases, so may be preferred over making the current temporary items permanent (option 2) or reverting to generic items (option 3).

- Wide variation in utilisation between different jurisdictions may imply that the current temporary item ladder is confusing, with requests not necessarily being based on clinical indication. The current five-step temporary item ladder also does not align well with the testing offered by laboratories.
- The inclusion of SARS-CoV-2 in a multi-pathogen test may not need to be mandatory in the long term, as the relevance of specific respiratory pathogens will change over time. However SARS-CoV-2 could still be included as a target in the revised MBS item descriptors due to its current relevance, alongside the other respiratory pathogens proposed for the 4-pathogen test: influenza A and B, and RSV.
- The proposal for two multiplex items makes clinical sense, but a standalone SARS-CoV-2 item (with an appropriate fee) may also continue to be needed in the short term. Appropriate reimbursement for multiplex items would be expected to incentivise best practice in testing for respiratory pathogens.
- There remains a need for comprehensive and current national respiratory pathogen testing guidelines.

Economic issues:

- The DCAR's assumption of no incremental effectiveness effectively reduced the cost-consequences analysis to a cost comparison and may have underestimated the clinical effectiveness of multi-pathogen testing.

Financial issues:

- The justification of the proposed fees was based on the HTA-group's consultations with stakeholders. The DCAR acknowledged the uncertainty in these fees.
- Estimated utilisation was uncertain given long-term data do not exist in relation to SARS-CoV-2 testing in a post-pandemic context.
- The financial implications for the MBS are high and uncertain. Allowing for a stand-alone item for SARS-CoV-2 testing, in addition to the proposed 4-pathogen and ≥5 pathogen panels (option 1b), would reduce the financial impact to the MBS compared to the 4-pathogen and ≥5 pathogen panels alone (option 1a).

Other relevant information:

- If rapid NAATs are to be funded then standards would be needed to ensure that only those tests with acceptable analytical validity are funded.
- It was noted that rapid NAAT product details on the TGA website are insufficient to allow independent risk-of-bias assessments on the performance of analytic validity of TGA-approved tests. This could be addressed for future assessments by requiring manufacturers to publish the Instructions for Use (IFU), as is currently mandated for the Product Information for medicines.

ESC discussion

ESC noted that this application sought MSAC's advice on permanent Medicare Benefits Schedule (MBS) items for the use and public funding of laboratory-based polymerase chain reaction (PCR) testing for SARS-CoV-2, including the use and utility of multiplex PCR testing for SARS-CoV-2 and other respiratory pathogens, on behalf of the Minister for Health and Aged Care.

ESC noted that three generic MBS items for generic pathogen testing (MBS items 69494-6 for 1, 2 and 3+ tests) have been available since May 2007. Following the onset of the COVID-19

pandemic temporary MBS items for nucleic acid amplification tests (NAATs) were listed on the MBS on 1 April 2020, which in combination with the generic items funded testing for SARS-CoV-2 and other respiratory pathogens (MBS item 69479 for the public setting and 69480 for the private setting). Since 1 October 2022, those temporary items were replaced with a five-step ladder of temporary MBS items for the detection of SARS-CoV-2 and other pathogens in the public setting (items 69506-10) and private setting (items 69511-15), for 1, 2-4, 5-8, 9-12, or 13+ tests. ESC noted that in the absence of a decision of Government to embed permanent items in the MBS the current temporary items will expire on 31 December 2023, and testing for SARS-CoV-2 will revert to using the generic items 69494-6. This application therefore sought MSAC's advice on behalf of the Minister on the public funding of SARS-CoV-2 NAAT after this date. ESC noted that on 5 May 2023, the World Health Organization (WHO) had declared that COVID-19 is no longer a global health emergency.

ESC noted that the DCAR presented three options for the future of MBS-funded SARS-CoV-2 testing:

1. Option 1: A two-item multi-pathogen testing ladder proposed by the assessment group: Item XXXX for 4 pathogens (SARS-CoV-2, influenza A and B, and respiratory syncytial virus (RSV)), and Item YYYY for ≥5 pathogens (SARS-CoV-2, influenza A and B, RSV, plus other viral or non-viral respiratory pathogens). This proposal also included two sub-options:
    a. Where testing for SARS-CoV-2 alone ceases (option 1a);
    b. Where testing for SARS-CoV-2 alone continues under 69494 (option 1b).
2. Option 2: Make the current temporary five-step ladder items permanent (with a minor amendment to replace 'tests' with 'pathogens')
3. Option 3 (comparator): allow SARS-CoV-2-specific MBS items to end when the temporary items expire. Pathogen testing would revert to using the generic MBS items.

ESC noted that the temporary MBS items include test panels that are similar in size, but which do not map clearly to the commercial test kits available. These panels may be provided as multiple individual tests and/or laboratory-developed tests. ESC noted that the DCAR was unable to separate the costings for the '5–8 tests' and '9–12 tests' options. ESC also noted that utilisation patterns of the different items appeared to be random across the states and territories and between public and private laboratories, and considered that this may reflect lack of clarity with the temporary item ladders.

ESC noted the DCAR had undertaken detailed costing analyses. Based on comparison of the DCAR's estimated costs to the 85% benefits of the temporary items, the cost to provide a single SARS-CoV-2 test was $43.58, which if provided under 69511 would offer providers a margin of $14.97 per test. A 2-4 test service was costed at $66.51 but 69512 has an 85% benefit of $63.55, resulting in a gap fee of –$2.96. Therefore, the DCAR proposed fees for XXXX and YYYY aiming to more accurately reflect the cost to provide these tests. ESC considered that the fees for the current temporary MBS items and the DCAR's proposed items were considerably higher than the fees for the generic MBS items, and noted that consultation input from pathology providers indicated that the fees for both the generic items and the current temporary items were insufficient to cover the cost of respiratory pathogen testing. ESC considered the fees for the generic items may be too low, and noted the DCAR stated this discrepancy was because they were intended to reflect the cost of antigen testing rather than nucleic acid testing. However ESC noted policy advice clarified that the generic items and their predecessor MBS items include testing of nucleic acids and date back over 20 years,

ESC noted that nucleic acid tests (NAATs) can be standard or rapid. Standard NAATs have a turnaround time of 2–24 hours in metropolitan areas or 2–3 days in regional/rural areas. Standard NAATs must be performed in an accredited laboratory, so transport times must be considered. Rapid NAATs are more expensive than standard NAATs, and results are available

within 1 hour because they use kits with cartridges to speed up the process and can be performed by laboratories or trained healthcare workers. However, ESC noted that currently, rapid NAATs comprise only a very small proportion of MBS-funded SARS-CoV-2 NAATs (the DCAR estimated <0.01%). ESC noted a separate MBS item was not proposed for rapid NAATs. ESC noted that 13 SARS-CoV-2 rapid assays currently have Therapeutic Goods Administration (TGA) approval.

ESC noted the current temporary MBS item ladders have lower fees for public (items 69506-10) than private (items 69511-15) pathology providers. ESC noted that for the purpose of assessing option 2 the private provider fees were assumed to more accurately represent the cost of the current temporary items, because the public provider fees include a fifty-fifty cost-sharing agreement between the Commonwealth and states and territories. ESC noted that MSAC was not requested to consider the fee differential, as the continuation of the cost-sharing agreement would be a decision for Government.

ESC noted that SARS-CoV-2 testing has been bulk-billed throughout the COVID-19 pandemic, and considered it may be inappropriate for any testing for infectious diseases to incur out-of-pocket costs to patients given the broader public health benefits that accrue from removing affordability barriers to such tests. ESC noted the MBS is intended to fund private services with benefit for the individual, and that public health is usually funded though the public health system or other funding sources.

ESC noted consumer issues included potential inequity of access if public funding were not continued, and that access to SARS-CoV-2 testing was a prerequisite to access PBS-listed COVID-19 antiviral therapy. ESC noted one respondent commented that the public may be better served by having SARS-CoV-2 in a broader panel rather than in a single pathogen test. ESC agreed with the DCAR that the current application could be an opportunity to re-examine pathogen testing on the MBS more broadly. ESC noted that no consultation feedback had been received from consumer groups to date (closed Friday, 9 June 2023) or the general public. In light of this, ESC was of the view that MSAC's consideration of this application could be better informed by additional targeted consultation with communities that may be most affected by changing MBS items for acute respiratory infection (ARI) testing because of increased mortality from ARIs, such as consumer organisations representing older people, culturally and linguistically diverse people, and representatives of the aged care sector and potentially other sectors with public facing positions such as education. ESC considered that respiratory pathogen test results may be used to encourage infected individuals to isolate, which can come at a financial cost to them.

ESC noted that current best clinical practice is to test vulnerable individuals with symptoms of acute respiratory infection (ARI) for a range of pathogens, rather than only SARS-CoV-2 alone. Several states have guidelines that specify, at a minimum, testing at initial presentation for SARS-CoV-2 and influenza A and B. This broader testing for those at risk of severe disease would influence decisions about the need for treatment, as well as the required duration of any isolation period.

ESC considered multi-pathogen testing (option 1) appeared to be the most appropriate option, as it reflects best clinical practice for patients suspected of respiratory infection. ESC did not consider it necessary to make SARS-CoV-2 a mandatory target in the listed pathogens, but considered it could still be listed as an optional target, as suggested by Public Pathology Australia.

In terms of comparative safety, ESC noted that DCAR proposed the same laboratory-based NAATs would be performed when providing a service under either the proposed items or the comparator items, and so there would be no difference in safety. ESC considered that there would likely be no new safety issues related to sample collection and the testing process. ESC considered the

main safety issue to be the risk of false negative results with rapid NAATs, which was considered as part of the comparative efficacy evaluation.

ESC noted the DCAR also assumed that there was no difference between the intervention and comparator in terms of comparative effectiveness. ESC questioned this assumption, and considered it may or may not be reasonable, and that the intervention may in fact offer improved effectiveness compared to comparator testing. ESC considered that multi-pathogen respiratory virus testing may allow earlier pathogen-specific antiviral treatment in high-risk patients, as well as patient cohorting and quarantining, which could plausibly be assumed to improve patient outcomes at a population level. ESC also considered that the DCAR assumed the same profile of pathogen testing would simply take place via different MBS items, however the testing profile may be influenced by factors such as:

- whether appropriate use of NAATs is being performed for other respiratory pathogens
- if a 4-pathogen NAAT item (item XXXX) will drive best clinical practice, this may be associated with more efficient diagnostic yield ascertainment by reducing the number of tests needed per population, and consequence for reduced rates of transmitted infection
- whether a 3-pathogen item for SARS-CoV-2 and influenza A and B is appropriate.

ESC considered that continuing to publicly fund SARS-CoV-2 testing may also reduce barriers to access NAATs for vulnerable people at high risk of adverse outcomes, who may benefit from PBS-listed antiviral therapy, although vulnerable people at high risk of adverse outcomes requiring access to PBS-listed antiviral therapy can currently gain access via a positive rapid antigen test and a telehealth consultation. Also, if a separate MBS item were considered for rapid NAAT, this may have additional clinical utility in remote areas given the longer turnaround time for standard NAATs.

ESC noted the DCAR had included an examination of the comparative effectiveness of rapid NAATs versus standard NAATs, rather than of the intervention versus the comparator. ESC considered this to be largely irrelevant to informing MSAC's consideration of either intervention option, given rapid NAATs are estimated to make up <0.01% of MBS-funded services, and a separate MBS item was not proposed for rapid NAATs.

ESC noted that the evaluation of commercial rapid NAATs was limited by the unavailability of instructions for use (IFU) from the manufacturers, due to confidentiality issues as IFUs are not required to be published for these assays. Therefore, the evidence for the assays in current use, and the number of analysers and laboratories, was based on Royal College of Pathologists of Australasia Quality Assurance Program (RCPA QAP) data. The DCAR included a targeted literature search to identify diagnostic accuracy studies for the 13 TGA-approved rapid NAATs in current use in Australia against a standard NAAT as the reference standard. ESC noted that the quality of evidence was generally low, with high risk of bias due to retrospective design, use of convenience samples, and use of samples often enriched with known positive or negative samples.

ESC noted that of the rapid NAATs, six assays were considered to have adequate evidence of non-inferior effectiveness and safety compared to standard NAATs. ESC noted that two assays had evidence suggesting inferior effectiveness compared to standard NAATs. ESC considered that this created an increased risk of a false negative result for both assays, especially at lower viral loads. Given that the population at high risk is encouraged to present early for early intervention, including after exposure and before the onset of symptoms, ESC considered there was a clinical risk with using any assay that has inferior sensitivity. ESC noted that for five rapid assays no evidence could be found to draw any conclusions about effectiveness.

Overall, ESC noted the limitations in the available evidence for effectiveness, but considered that multi-pathogen testing (option 1) may be preferred as it may incentivise best clinical practice, assuming the fees are set at levels that cover the costs of delivering the tests. ESC considered that it is reasonable to assume that multi-pathogen testing may have incremental effectiveness as a result of earlier commencement of pathogen-specific antiviral treatment and improved clinical management in terms of patient cohorting and/or quarantining based on SARS-CoV-2 test results, though evidence for this was not presented.

ESC noted that the MSAC Executive had advised the appropriate economic evaluation was a cost consequence analysis, but because the DCAR had assumed equal outcomes for the intervention and comparator, in practice the economic analysis had been reduced to a cost comparison. As above, ESC questioned this and considered that the intervention may in fact offer improved effectiveness compared to comparator testing.

ESC noted the fees proposed for XXXX and YYYY were partly based on the utilisation patterns of current temporary items, and considered that this was influenced by the current 44% of SARS-CoV-2 testing using the single tests (69506, 69511). ESC considered the method to derive the fee for the 4-pathogen panel NAAT (item XXXX) based on average laboratory costings was more robust than the method used for the ≥5-pathogen panel NAAT (item YYYY), based on a weighted approach of current utilisation of the three largest panels from 1 October 2022 – 31 January 2023. ESC also noted discrepancies in the stated proposed fees for XXXX and YYYY, and following the ESC meeting the HTA group clarified that the figures used in the financial analysis and in the proposed item descriptors at $78.25 (85% benefit $66.51) and $85.56 (85% benefit $72.73) were the DCAR's intended proposed fees.

ESC noted the DCAR based the cost of testing on standard NAATs only, and did not include a weighting for the proportion of rapid NAATs because they comprise <0.01% of MBS-funded SARS-CoV-2 testing. ESC noted that MSAC may want to consider whether a separate MBS item for rapid NAATs with a higher fee is appropriate in settings where turnaround time is likely to be longer than 24 hours (e.g. remote and regional areas). ESC noted the DCAR estimated the cost of providing a rapid NAAT to be $79.15 for 4 pathogens and $145.04 for ≥5 pathogens, and that calculations using those costs as the 85% benefit result in MBS fees of $93.12 and $170.64 respectively.

ESC noted that the DCAR also found that there was no difference in cost between standard and rapid NAATs, but ESC considered this to be a circular argument because the fees proposed by the DCAR (based on the number of pathogens) were set to be the same regardless of the testing method.

ESC noted that the DCAR used a market share approach to estimate utilisation, and considered this to be reasonable. ESC noted that the current temporary items were only implemented in October 2022 making only 3 months of data available for the DCAR, which covered testing over the summer months. ESC noted that utilisation data would also reflect policy changes since January 2022 regarding PCR testing requirements for COVID-19. Overall, ESC considered that the utilisation data available were very limited.

ESC noted that utilisation and financial estimates were provided for sub-scenario options 1a and 1b, which differed in that option 1b would retain testing for only SARS-CoV-2 under MBS item 69494, where option 1a replaced single testing with multi-pathogen testing using XXXX and YYYY. ESC considered it appropriate to assume that in the future SARS-CoV-2 testing will likely become part of multiplex testing, as covered in option 1. However, ESC also considered that there may be clinical scenarios where single testing (i.e. for only SARS-CoV-2) is appropriate, such as for contact testing and for differential diagnosis and treatment where previous respiratory viruses

have already been excluded. MSAC may wish to consider whether it is more appropriate to retain a single testing item.

ESC considered that both sub-scenarios reflect best clinical practice, and noted that retaining SARS-CoV-2-only testing under MBS item 69494 (option 1b) resulted in a lower cost of XXXX and YYYY services to the MBS than option 1a. ESC noted that the cost-offset from services not provided under generic items 69494-6 if other items are available (but that would otherwise be provided under comparator option 3) was $140.1-149.6 million per year in options 1a and 2 where SARS-CoV-2-only testing under 69494-6 was replaced, and this reduced to $92.1-98.3 million per year in option 1b where 69494 was retained. ESC noted the net financial cost to the MBS was therefore $172.8-184.5 million per year for option 1a, $89.9-96.0 million per year for option 1b, and $152.2-162.5 million per year for option 2. ESC considered that option 1b had a lower net financial impact than 1a because it retained services under the cheaper generic item 69494, and considered option 1b may be preferred out of the proposed options for its lower financial impact as well as it aligning with single testing being clinically appropriate in some cases. However, ESC considered that if option 1b were supported then the fee for SARS-CoV-2-only testing would need to be raised to better align with the cost of providing the service. ESC noted that SARS-CoV-2-only testing could be done without making MBS item 69511 permanent (AAAA) by billing it under generic item 69494, but that the fee for generic testing is too low and may result in out-of-pocket fees. ESC noted that the generic MBS items (69494-6) are also used for other indications, so de-listing the generic items from the MBS entirely was not proposed under any option.

ESC considered that option 3 (reverting back to the generic items) would likely result in out-of-pocket costs if the bulk-billing requirement for SARS-CoV-2 testing was removed, as patient co-payments were excluded from the financial analysis. ESC suggested that the government may want to consider its policy on bulk-billing testing for infectious diseases in light of this testing also having broader benefits for public health.

ESC noted the DCAR had proposed that MSAC consider whether fees should include a margin on the costs, as many kits and reagents are sourced from overseas and are therefore subject to fluctuating costs due to inflation and exchange rates. ESC also noted policy advice that MBS fees are intended to cover the cost to provide the professional service, and not to cover future price fluctuations, or to *Redacted*. ESC considered the detail of the DCAR's costing calculations (Table 4) may inform MSAC's consideration of the proposed fees.

ESC considered the possible need for co-claiming restrictions among the new MBS items and the MBS generic items, and noted the generic item descriptors currently provide for testing "not elsewhere specified", which may mitigate this risk.

17. Further information on MSAC

MSAC Terms of Reference and other information are available on the MSAC Website: visit the MSAC website