

# Australian National Surveillance Plan for COVID-19, Influenza, and RSV

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## Version History

Version	Date	Reason/Key changes
Version 1.0	17 April 2024	Initial release

## Background

The Australian National Surveillance Plan for COVID-19, influenza, and respiratory syncytial virus (RSV) (the Plan) is a national framework for the collection, analysis, and reporting of health-related data to inform public health decision making and national policy responses to these viral respiratory diseases in Australia. The COVID-19 pandemic highlighted the importance of developing novel, cost-effective and scalable surveillance systems that are readily adaptable. Integrating respiratory virus surveillance for COVID-19, influenza, RSV, and other non-notifiable viral respiratory infections will further enhance Australia's ability to understand, manage, and mitigate the impact of viral respiratory diseases on Australia's population and healthcare system.

Integrated disease surveillance relies on a range of systems that are managed in partnerships involving the Australian Government, state and territory governments, health research institutions, clinicians, public and private laboratories, other health sector stakeholders, and the community. Accordingly, the Plan recognises and builds on established systems for communicable disease surveillance in Australia. The Plan (version 1.0) outlines the current surveillance indicators and data sources used to monitor disease activity, severe disease, health service impact, and effectiveness of interventions. The Plan will enable the interim Australian Centre for Disease Control (CDC) to undertake coordinated and comprehensive national surveillance of, and reporting on, the epidemiology of COVID-19, influenza, RSV, and other non-notifiable acute respiratory infections in Australia.

The Plan is directly linked to, and informs, surveillance reporting. Previously, reporting for COVID-19 and influenza were separated, and these reports existed on their own schedules and in their own format. In line with the combined approach of the Plan, the [Australian Respiratory Surveillance Report \(ARSR\)](#) will replace discontinued disease-specific viral respiratory reports and will report jointly on the surveillance and epidemiology of COVID-19, Influenza, RSV, and other non-notifiable acute viral respiratory infections in Australia.

The Plan, and the linked outputs including the ARSR, are living documents and will be adjusted and updated in line with changes to the characteristics of these three pathogens, new technologies and approaches for disease control and surveillance, and Australia's policy responses. In addition, as detailed in Appendix 3 comprehensive review of national viral respiratory disease surveillance in Australia is currently being undertaken by the interim Australian CDC, and the Plan will be updated to reflect the findings of this review once completed.

## Scope

The overarching goals of the Plan are to:

- monitor trends in diagnosed COVID-19, influenza, and RSV cases;
- monitor trends in community respiratory illness activity;
- monitor morbidity and mortality associated with these three acute respiratory diseases;
- monitor the impact of these three acute respiratory diseases on the health system; and
- monitor the uptake and effectiveness of interventions, with the aim of informing public health decision making.

The national surveillance of these acute viral respiratory diseases is informed by a number of different surveillance systems based in the community, primary care, hospitals, and laboratories, as well as notifiable diseases data and data received from provisional death registries. A summary of respiratory disease surveillance and national data sources in Australia is provided in Appendix 1. All approaches and data sources have strengths and limitations, so they need to be used in combination to provide optimal information for public health decision-making.

Reporting against the indicators in the Plan relies on data sources and analysis methods which are funded through a range of mechanisms at the national and state and territory levels. The interim Australian CDC works closely with state and territory health authorities and contracted surveillance system providers to

ensure a consistent approach to the surveillance of COVID-19, influenza, and RSV. The Plan recognises that disease transmission and impact, and therefore surveillance requirements, may vary across the country, between population groups, over time, and by disease.

## **Governance and implementation**

The Interim Australian Centre for Disease Control (Australian CDC) in collaboration with the Communicable Diseases Network Australia (CDNA) and its subcommittee the National Influenza Surveillance Committee (NISC) are responsible for the strategic direction and national coordination of combined acute viral respiratory disease surveillance in Australia, including developing and maintaining the Plan. Each new iteration of the Plan will be developed by the Interim Australian CDC in collaboration with CDNA, NISC, and the Public Health Laboratory Network (PHLN), taking into account the technical feasibility and sustainability of the data sources needed to report against the indicators, the future development of additional indicators and identification of associated data sources, and any changes in the epidemiological context of COVID-19, influenza, and RSV in Australia. As the parent committee of CDNA and PHLN, the Australian Health Protection Principal Committee (AHPPC) will review and contribute to the strategic direction of each new iteration of the Plan.

## **Specific populations**

The Plan recognises the need to continue to enhance our understanding of the impact of COVID-19, influenza, and RSV on specific populations, including Aboriginal and Torres Strait Islander people, infants and young children, older Australians and aged care facility residents, people with serious health conditions, people from culturally and linguistically diverse (CALD) backgrounds, and people with a disability. These groups are a priority for surveillance and response as they may be at higher risk of COVID-19, influenza, and RSV infection and/or serious outcomes. As outlined in Appendix 3, enhancing the monitoring of COVID-19, influenza, and RSV infection and severe disease in these populations is recommended for consideration as a high priority.

Considerations for Aboriginal and Torres Strait Islander populations have been incorporated into the Plan to ensure relevant data is collected; analysis and reporting are carried out; and that these data are reviewed, reported, and interpreted with an appropriate cultural lens. More detail on data considerations for Aboriginal and Torres Strait Islander populations is at Appendix 2.









## Surveillance goals, objectives, and indicators

Each surveillance goal covers a set of related objectives, each of which is achieved through the calculation of one or more indicators. The indicators can in turn be disaggregated to allow finer-grained interpretation. Considerations of COVID-19, influenza, and RSV data collection and interpretation with regards to Aboriginal and Torres Strait Islander peoples are provided at Appendix 2.

Regarding reporting outputs, the National COVID-19 Monthly Surveillance Report published in the *Communicable Diseases Intelligence* Journal, and the Australian Influenza Surveillance Report (AISR) published on the Australian Government Department of Health and Aged Care website during the influenza season, have been discontinued. In their place, the Australian Respiratory Surveillance Report (ARSR) will be produced from April 2024, reporting on the surveillance and epidemiology of COVID-19, Influenza, RSV, and other non-notifiable acute respiratory infections in Australia.

### GOAL 1: Monitor cases diagnosed in Australia

COVID-19 ; Influenza ; RSV 

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
Track incidence and characteristics of diagnosed cases to inform risk mitigation strategies	1.1	Counts and rate (per 100,000/week) of notifications	<ul style="list-style-type: none"> <li>Age and sex</li> <li>Jurisdiction</li> <li>Test type</li> <li>Symptom profile</li> <li>Test positivity</li> </ul>	<ul style="list-style-type: none"> <li>National Notifiable Diseases Surveillance System (NNDSS)   </li> <li>FluTracking  </li> <li>Australian Sentinel Practices Research Network (ASPREN)   </li> <li>National Influenza</li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>Australian Respiratory Surveillance Report (ARSR)</li> <li>Department of Health and Aged Care website: NNDSS dashboard</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR</li> <li>Department of Health and Aged Care website: NNDSS dashboard</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>ARSR</li> <li>Department of Health and Aged Care website: NNDSS dashboard</li> </ul>
		Proportion of 'fever/acute respiratory infection' cases testing positive for SARS-CoV-2, influenza, and RSV through systematic and/or targeted sampling			
		Proportion of clinical samples tested that are positive for SARS-CoV-2, influenza, and RSV			

**GOAL 1: Monitor cases diagnosed in Australia**

COVID-19 ; Influenza ; RSV

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
Centres 					
Monitor sequencing and typing of viruses in diagnosed cases to inform risk mitigation strategies	1.2	Number and proportion of sequenced SARS-CoV-2 variants/ influenza types and subtypes/lineages	<ul style="list-style-type: none"> <li>- Characterisation of virus by:</li> <li>- Variant (COVID-19 only - including date new variant identified)</li> <li>- Lineage/Sub-lineage (COVID-19 only)</li> <li>- Type and subtype or lineage</li> <li>- Characterisation of host:</li> <li>- Jurisdiction</li> </ul>	<ul style="list-style-type: none"> <li>• AusTrakka </li> <li>• National Influenza Centres </li> <li>• World Health Organization Collaborating Centre for Reference and Research on Influenza (WHO CCRI) </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>• ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>• ARSR</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>• No current outputs</li> </ul>
Monitor outbreaks in Residential Aged Care Facilities (RACF)	1.3	Counts of COVID-19, influenza, and RSV outbreaks in RACF	<ul style="list-style-type: none"> <li>• Characterisation of outbreak by active, previous 7 days and cumulative total by:                             <ul style="list-style-type: none"> <li>- Resident cases</li> <li>- Staff cases</li> </ul> </li> <li>• Jurisdiction</li> </ul>	<ul style="list-style-type: none"> <li>• My Aged Care service and support portal </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>• Department of Health and Aged Care website: COVID-19 reporting</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>• No current outputs</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>• No current outputs</li> </ul>

## Why is this important?

Goal 1 is important because it provides direct tracking of the cases of COVID-19, influenza, and RSV diagnosed in the community. Its objectives are met by case-reporting methods.











Indicator 1.1 tracks and describes diagnosed infections (i.e., cases) of COVID-19, influenza, and RSV to provide a direct measure of cases in the community, and their demographic and other characteristics. This indicator achieves this objective, while recognising that the infections that are diagnosed and reported are only a subset of the total number of infections occurring in the community.

Indicator 1.2 tracks the appearance of new variants of SARS-CoV-2 or influenza and RSV types/subtypes/lineages in the community through typing and genetic sequencing and provides information on potential changes in the viruses that might affect their infectiousness, disease-causing severity, and ability to evade vaccine and/or infection acquired immunity. Indicator 1.2 also reports on the proportions of specific viruses that are circulating.

Indicator 1.3 monitors outbreaks in residential aged care facilities, as an indicator to track infections in aged care residents, recognising that residents of these facilities are at the highest risk of severe disease. This is due to the nature and duration of contact with other residents, visitors, and carer staff, as well as the elevated risk of poor outcome if infected due to age and underlying illness.

## GOAL 2: Monitor trends in community respiratory illness activity


COVID-19 ; Influenza ; RSV 

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
Monitor trends in community respiratory illness activity through community-based approaches and sentinel primary care surveillance networks	2.1	Proportion of 'fever and cough' incidence in the community	<ul style="list-style-type: none"> <li>Age and sex</li> <li>Jurisdiction</li> <li>Healthcare worker status</li> </ul>	<ul style="list-style-type: none"> <li>FluTracking  </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul>
	2.2	Number and rate of 'influenza like illness' (ILI) consultations in primary care	<ul style="list-style-type: none"> <li>Age and sex</li> <li>Jurisdiction</li> <li>Metropolitan vs non-metropolitan area of residence</li> </ul>	<ul style="list-style-type: none"> <li>ASPREN   </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul>
	2.3	Proportion of people with 'ILI'/'fever and cough' symptoms who report being tested for SARS-CoV-2, influenza, and RSV	<ul style="list-style-type: none"> <li>Age</li> <li>Sex</li> <li>Jurisdiction</li> <li>Metropolitan vs non-metropolitan area of residence</li> <li>Healthcare worker status</li> <li>Test type</li> </ul>	<ul style="list-style-type: none"> <li>FluTracking  </li> <li>ASPREN   </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul>



## GOAL 2: Monitor trends in community respiratory illness activity

COVID-19 ; Influenza ; RSV 

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
Contribute to understanding the spread of and trends in concentrations of respiratory viruses across each participating state and territory.	2.4	Report for sentinel sites, trends over time in concentrations	<ul style="list-style-type: none"> <li>Jurisdiction</li> </ul>	<ul style="list-style-type: none"> <li>Wastewater surveillance (Victoria and Western Australia only) </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>

### Why is this important?









Goal 2 is important because it provides information on the amount of broader respiratory illness activity occurring in the community, and in which population groups this activity is occurring, recognising that the indicators reported under Goal 1 will inevitably be substantial under-counts.

Indicators 2.1, 2.2, and 2.3 are monitored through primary care sentinel surveillance sites and population surveys that provide information on the number of people reporting respiratory symptoms, the proportion of people with respiratory symptoms who are being tested, and what testing method they are using.

Indicator 2.4 contributes to understanding the spread of and trends in concentrations of respiratory viruses across each participating state and territory.








### GOAL 3: Monitor morbidity and mortality

COVID-19 ; Influenza ; RSV 

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
Monitor the dispensing of Pharmaceutical Benefits Scheme (PBS) oral antiviral treatments	3.1	Count of PBS scripts for oral antiviral treatments dispensed	<ul style="list-style-type: none"> <li>Age</li> <li>Sex</li> <li>Jurisdiction</li> <li>Brand</li> <li>Scripts supplied to – RACF</li> </ul>	<ul style="list-style-type: none"> <li>PBS dispensing data </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>Department of Health and Aged Care website: COVID-19 reporting</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>
Monitor the characteristics and outcomes of severe acute respiratory infections to identify at-risk groups	3.2	Counts and characteristics including median duration of stay among COVID-19, influenza, and RSV cases admitted to hospital	<ul style="list-style-type: none"> <li>Age and sex</li> <li>Aboriginal and Torres Strait Islander status</li> <li>Jurisdiction</li> <li>Metropolitan vs non-metropolitan area of residence</li> <li>Vaccination/immunisation status</li> <li>Presence of a risk factor (Y/N)</li> <li>Virus typing</li> </ul>	<ul style="list-style-type: none"> <li>Influenza Complications Alert Network (FluCAN)   </li> <li>NNDSS </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> <li>Department of Health and Aged Care website: COVID-19 reporting</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul>
	3.3	Proportion of hospitalised cases requiring admission to intensive care units (ICU)	<ul style="list-style-type: none"> <li>As per 3.2</li> </ul>	<ul style="list-style-type: none"> <li>FluCAN   </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>RSV</b></p>








### GOAL 3: Monitor morbidity and mortality

COVID-19 ; Influenza ; RSV 

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
					<ul style="list-style-type: none"> <li>ARSR</li> </ul>
Monitor the characteristics and outcomes of cases in ICU to identify at-risk groups for severe disease	3.4	Counts and characteristics of COVID-19, influenza, and RSV patients in ICU	<ul style="list-style-type: none"> <li>Age and sex</li> <li>Aboriginal and Torres Strait Islander status</li> <li>Jurisdiction</li> <li>Metropolitan vs non-metropolitan area of residence</li> <li>Vaccination/immunisation Status</li> <li>Comorbidities</li> <li>Length of stay</li> <li>Ventilated Y/N</li> <li>Outcome (including death)</li> <li>Virus typing</li> </ul>	<ul style="list-style-type: none"> <li>Short Period Incidence Study of Severe Acute Respiratory Infection (SPRINT-SARI)                             <ul style="list-style-type: none"> <li></li> <li></li> <li></li> </ul> </li> <li>FluCAN                             <ul style="list-style-type: none"> <li></li> <li></li> <li></li> </ul> </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>
Monitor the incidence, risk factors and outcomes of paediatric inflammatory multisystem syndrome	3.5	Counts of paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-TS)	<ul style="list-style-type: none"> <li>Age</li> <li>Sex</li> <li>Aboriginal and Torres Strait Islander status</li> <li>Jurisdiction</li> <li>Vaccination Status</li> <li>ICU admission and outcome status</li> </ul>	<ul style="list-style-type: none"> <li>Paediatric Active Enhanced Disease Surveillance Network (PAEDS)                             <ul style="list-style-type: none"> <li></li> </ul> </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>Not applicable</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>Not applicable</li> </ul>

### GOAL 3: Monitor morbidity and mortality

COVID-19 ; Influenza ; RSV 

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
	3.6	Proportion of PIMS-TS admitted to ICU	<ul style="list-style-type: none"> <li>As per 3.5</li> </ul>	<ul style="list-style-type: none"> <li>PAEDS </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>Not applicable</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>Not applicable</li> </ul>
Monitor mortality related to COVID-19, influenza, and RSV	3.7	Count of mortality	<ul style="list-style-type: none"> <li>Age</li> <li>Sex</li> <li>Jurisdiction</li> <li>Vaccination/immunisation status</li> <li>Aboriginal and Torres Strait Islander status (COVID-19 only)</li> </ul>	<ul style="list-style-type: none"> <li>NNDSS   </li> <li>Provisional death registrations, Australian Bureau of Statistics (ABS)  </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> <li>Department of Health and Aged Care website: COVID-19 reporting</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul>
	3.8	Count and proportion of cases in RACF where COVID-19, influenza, or RSV was recorded as the cause of death	<ul style="list-style-type: none"> <li>Resident deaths by previous 7 days and cumulative total</li> <li>RACF service name</li> <li>Jurisdiction</li> </ul>	<ul style="list-style-type: none"> <li>My Aged Care service and support portal </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>Department of Health and Aged Care website: COVID-19 outbreaks in Australian residential aged care facilities</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>

## Why is this important?

Goal 3 is important because it quantifies the most significant health impacts of COVID-19, influenza, and RSV – severe disease and mortality. With widespread distribution of infection, and high case numbers, it is important to distinguish health outcomes that are coincidental with SARS-CoV-2, influenza, and RSV infection from those that are due to infection.




Indicator 3.1 tracks the dispensing of PBS subsidised oral antiviral treatments. The number of scripts dispensed is an indicator of disease activity in the community. Demographic disaggregation of this indicator shows which parts of the community are most affected.

Indicators 3.2, 3.3, and 3.4 track the characteristics (including vaccination/immunisation status and SARS-CoV-2 variant type/influenza or RSV subtype) and outcomes of hospitalised COVID-19, influenza, and RSV cases, including those admitted to an intensive care unit. Indicators 3.5 and 3.6 relate to paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (abbreviated to PIMS-TS), also known as multisystem inflammatory syndrome in children (MIS-C). PIMS-TS is a rare, severe, delayed immune response to SARS-CoV-2 infection in children.

Indicators 3.7 and 3.8 track COVID-19, influenza, and RSV related deaths. The population rate of COVID-19, influenza, and RSV related deaths is an indication of both the scale and severity of disease. Demographic disaggregation of these indicators show which parts of the community are most affected. Indicator 3.7 measures total COVID-19, influenza, and RSV mortality and fatality among diagnosed cases, and indicator 3.8 measures mortality and fatality among diagnosed cases in residential aged care facilities providing an overall summary of the impact on public health.

## GOAL 4: Monitor impact on the health system

COVID-19 ; Influenza ; RSV 

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
Monitor critical care facility capacity to provide early warning of the impact on public hospitals	4.1	Proportion of staffed intensive care and high dependency beds occupied by COVID-19, influenza, and RSV patients	<ul style="list-style-type: none"> <li>Jurisdiction</li> </ul>	<ul style="list-style-type: none"> <li>CHRIS </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>
	4.2	Counts of COVID-19, influenza, and RSV patients in intensive care and high dependency beds	<ul style="list-style-type: none"> <li>Jurisdiction</li> <li>Active and cleared cases</li> </ul>	<ul style="list-style-type: none"> <li>CHRIS </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>
Monitor aged care workforce absenteeism due to viral respiratory infection exposure	4.3	Counts of RACF staff cases associated with current active outbreaks	<ul style="list-style-type: none"> <li>Jurisdiction</li> <li>Workforce surge staff</li> </ul>	<ul style="list-style-type: none"> <li>My Aged Care service and support portal </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>Department of Health and Aged Care website: COVID-19 outbreaks in Australian residential aged care facilities</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>

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**GOAL 4: Monitor impact on the health system**COVID-19 ; Influenza ; RSV 

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Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
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RSV

- No current outputs
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**Why is this important?**




Goal 4 is important because it measures the ability of the health system to cope with the number of COVID-19, influenza, and RSV patients.

Indicators 4.1 and 4.2 monitor current activity in hospitals related to intensive care. These indicators can be used to assess and plan resourcing to ensure delivery of safe, timely and quality health care.

Indicator 4.3 tracks aged care workforce absenteeism and furloughing to inform workforce capacity. It provides information on the current state of the aged care workforce and allows a determination to be made on weaknesses in the ability to provide the required care to residents and triggers necessary responses.

## GOAL 5: Monitor intervention uptake and effectiveness











COVID-19 ; Influenza ; RSV 

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
Monitor vaccination uptake and coverage	5.1	Proportion of eligible population up to date with vaccination	<ul style="list-style-type: none"> <li>Jurisdiction</li> <li>Age group</li> <li>Sex</li> <li>Aboriginal and Torres Strait Islander status</li> </ul>	<ul style="list-style-type: none"> <li>Australian Immunisation Register (AIR)  </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>Department of Health and Aged Care website: COVID-19 vaccination – Full data and analysis</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>Department of Health and Aged Care website: Influenza (flu) immunisation data</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>
Identify population groups where vaccination coverage may be suboptimal	5.2	Proportion of eligible population up to date with vaccination within specific groups	<ul style="list-style-type: none"> <li>Jurisdiction</li> <li>RACF residents</li> <li>National Disability Insurance Scheme (NDIS) recipients</li> <li>NDIS screened workers</li> <li>RACF workers</li> </ul>	<ul style="list-style-type: none"> <li>PLIDA linkage for investigative purposes to be explored. </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>Department of Health and Aged Care website: COVID-19 vaccination rollout update</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>



## GOAL 5: Monitor intervention uptake and effectiveness

COVID-19 ; Influenza ; RSV 

Objective	No.	Indicator	Disaggregation	Data Source	Reporting outputs
Estimate vaccine effectiveness	5.3	Vaccine effectiveness against medical presentation (including presentation to general practice or hospital), hospitalisation, and death	<ul style="list-style-type: none"> <li>Age group</li> <li>Virus subtype/lineage</li> <li>People with comorbidities</li> </ul>	<ul style="list-style-type: none"> <li>AIR  </li> <li>PLIDA </li> <li>FluCAN   </li> <li>ASPREN   </li> </ul>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>ARSR End of Season Summary</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR End of Season Summary</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>
Monitor resistance to antivirals and monoclonal antibody therapy	5.4	Identify occurrences of antiviral resistance, reduced susceptibility, or inhibition to antivirals or monoclonal antibody therapy	<ul style="list-style-type: none"> <li>Jurisdiction</li> <li>Drug and/or therapy</li> <li>Virus type/subtype/lineage</li> </ul>	<p>WHO CCRRRI </p>	<p><b>COVID-19</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul> <hr/> <p><b>Influenza</b></p> <ul style="list-style-type: none"> <li>ARSR</li> </ul> <hr/> <p><b>RSV</b></p> <ul style="list-style-type: none"> <li>No current outputs</li> </ul>

### Why is this important?

This goal is important because it provides information about the effectiveness of public health interventions and where there are gaps which require additional or modified interventions.

Indicators 5.1 and 5.2 measure the uptake, coverage, and impact of vaccines.

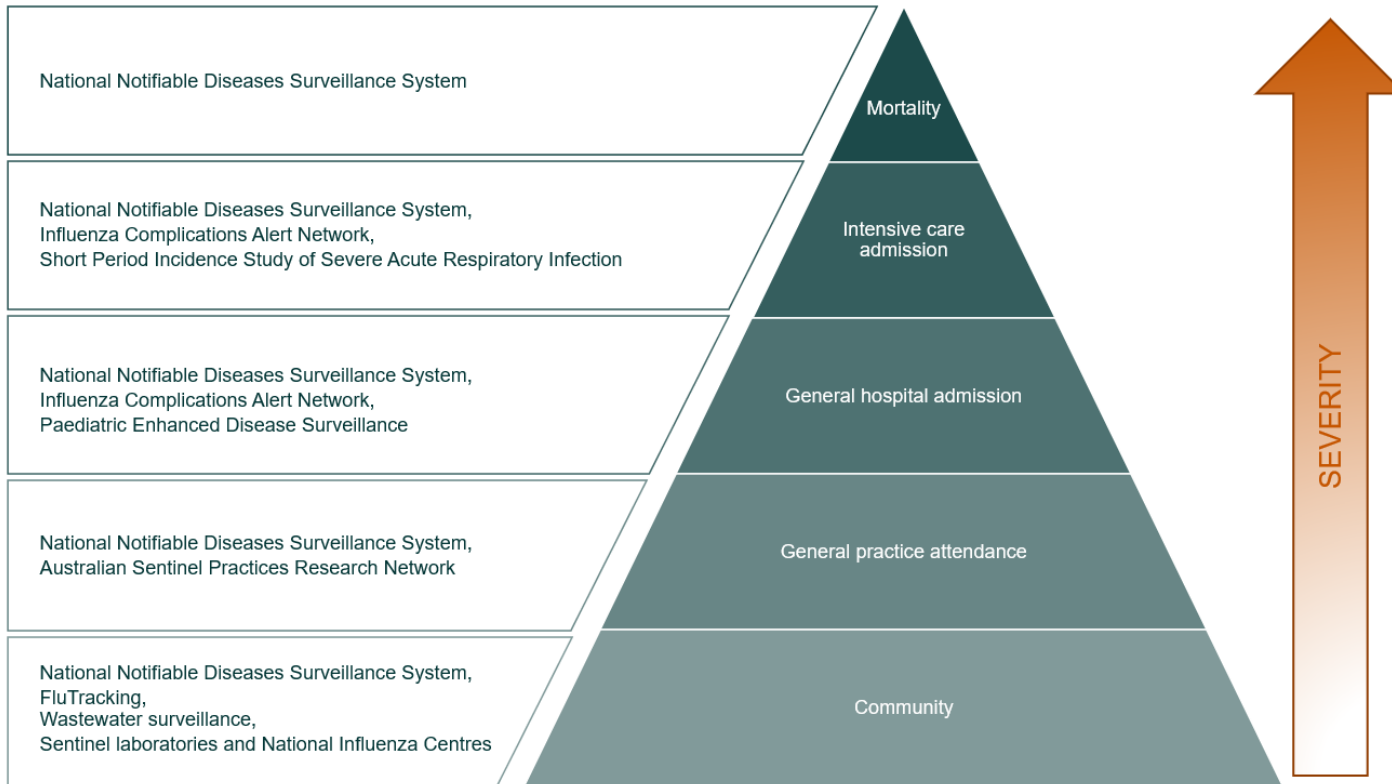
Indicator 5.3 monitors changes in vaccine effectiveness, including effectiveness of passive immunisation, at the population level.

Indicator 5.4 monitors occurrences of antiviral resistance, reduced susceptibility, and inhibition to drugs and/or therapies used to treat COVID-19, influenza, or RSV.

# Appendix 1: A summary of respiratory disease surveillance and national data sources in Australia

No one single system provides the full picture on the epidemiology of COVID-19, influenza, or RSV in Australia. The epidemiology of these acute respiratory infections is informed by a number of different systems based in the community, primary care, hospitals and laboratories, as well as notifiable diseases data, which includes officially reported deaths. All data sources have strengths and limitations, so they need to be used in combination to provide comprehensive information for public health decision-making. A visual depiction of the severity spectrum for acute respiratory infections, and the data sources that are used in Australia to measure aspects of activity, severity, and at-risk populations, are provided in Figure 1. Descriptions of the surveillance systems and data sources that inform this plan are provided in Table 1.

**Figure 1. Severity spectrum of acute respiratory infections and data sources used to measure severity in Australia**



**Table 1. Surveillance systems and data sources**

Data source	Description	Coverage or representativeness	Data custodian
<b>The Australian Sentinel Practices Research Network (ASPREN)</b>	<p>ASPREN is a network of sentinel general practitioners and nurse practitioners who report de-identified information on influenza-like-illness presentations and other conditions seen in general practice. ASPREN conducts virological swab surveillance on patients presenting with ILI, and contributes to influenza vaccine effectiveness estimates used by the Australian Government Department of Health and Aged Care and the WHO to inform seasonal influenza vaccine strain selections.</p> <p><a href="https://aspren.dmac.adelaide.edu.au/">https://aspren.dmac.adelaide.edu.au/</a></p>	<p>National</p>	<p>University of Adelaide</p>
<b>AusTrakka</b>	<p>Australia’s national pathogen genomic surveillance system. AusTrakka is a secure platform for nationally agreed data sharing, analysis, and visualisation. It performs continuous analysis of COVID-19 lineages, clusters and transmission patterns across all jurisdictions and New Zealand, to inform and support public health response activities. It provides monthly reports on circulating lineages and genomic analyses.</p> <p><a href="https://www.cdgn.org.au/austrakka">https://www.cdgn.org.au/austrakka</a></p>	<p>National, and New Zealand. COVID-19 samples successfully sequenced at Communicable Diseases Genomics Network (CDGN) affiliated public health laboratories are uploaded to the platform and analysed together with CDNA endorsed metadata.</p>	<p>Public health laboratories affiliated with the Communicable Diseases Genomics Network (CDGN)</p>
<b>Australian Immunisation Register (AIR)</b>	<p>The Australian Immunisation Register (AIR) is a national register that records vaccines given to all people in Australia. The AIR is administered by Services Australia on the Department of Health’s behalf. It is mandatory for vaccination providers to report COVID-19, influenza, and other vaccines on the National Immunisation Program (NIP) schedule to the AIR. Reporting of other vaccinations is optional. Through Services Australia, The Department of Health and Aged Care receives a daily extract from the AIR, which is stored in the Department’s Enterprise Data Warehouse (EDW). The AIR is governed under the Australian Immunisation Register Act 2015, and the associated Australian Immunisation Register Rule 2015.</p> <p><a href="https://www.servicesaustralia.gov.au/australian-immunisation-register">https://www.servicesaustralia.gov.au/australian-immunisation-register</a></p>	<p>National</p> <p>The AIR includes all people who are on the Medicare Consumer Directory, as well as other non-Medicare eligible people who have received a vaccination in Australia that has been reported to the AIR.</p>	<p>Services Australia</p>

Data source	Description	Coverage or representativeness	Data custodian
<b>Critical Health Resource Information System (CHRIS)</b>	CHRIS provides a national, jurisdictional, and individual hospital-level picture of COVID-19 patients in intensive care, those patients requiring ventilation, as well as overall intensive care bed and ventilator availability and utilisation.	National  All public and private hospitals with Intensive Care Units.	Australian and New Zealand Intensive Care Society (ANZICS)
<b>FluTracking*</b>	An online syndromic surveillance system for community acute respiratory illness involving weekly surveys. All information, including symptoms, health care access, testing, and results, and influenza and COVID-19 vaccination status is self-reported by participants. Participation in the surveillance system is voluntary and open to all Australians. The system was historically operational each year during the influenza season but was activated early in 2020 to support the COVID-19 response and has continued operating year-round since. FluTracking was expanded to include COVID-19-specific information including symptom information, SARS-CoV-2 testing and results. FluTracking provides community level attack rates that are not biased by health-seeking behaviour, clinician testing practices or differences in jurisdictional surveillance methods. FluTracking participant health seeking and testing behaviours are useful for adjusting for changes in baseline availability of testing and is used by modellers to adjust laboratory-based surveillance data. <a href="https://info.flutracking.net">https://info.flutracking.net</a>	More than 75,000 participants from across Australia report each week to FluTracking.  Children, people in rural areas and Aboriginal and Torres Strait Islander peoples are less represented than others in FluTracking data. Those with higher education levels are overrepresented.	Hunter New England Local Health District
<b>Influenza Complications Alert Network (FluCAN)*</b>	A real-time hospital sentinel surveillance system for acute respiratory disease requiring hospitalisation. Established to monitor for seasonal influenza, FluCAN has been modified to include surveillance for COVID-19 and RSV. Participating sites collect detailed clinical and laboratory information from all hospitalised patients with a confirmed diagnosis of COVID-19, influenza, and RSV. FluCAN contributes to influenza vaccine effectiveness estimates used by the Australian Government Department of Health and Aged Care and the WHO to inform seasonal influenza vaccine strain selections <a href="https://monashhealth.org/services/monash-infectious-diseases/research/influenza-research/flucan-influenza-surveillance-2/">https://monashhealth.org/services/monash-infectious-diseases/research/influenza-research/flucan-influenza-surveillance-2/</a>	Includes 21 hospital sites across Australia (ACT 2, NSW 3, NT 2, QLD 4, SA, 1, TAS 1, VIC 6, WA 2). The hospital sites include 6 paediatric specific sites. Note for one of the hospital sites, only the paediatric ward is represented.	Monash University
<b>Person level Integrated Data Asset (PLIDA) formerly MADIP</b>	A secure data asset combining information on health, education, government payments, income and taxation, employment, and population demographics (including the Census) over time.	National	Australian Bureau of Statistics (ABS)

Data source	Description	Coverage or representativeness	Data custodian
<b>My Aged Care service and support portal</b>	Approved aged care service providers use the portal to manage information about their services and clients. Case managers within Residential Aged Care services provide COVID-19 vaccination doses, case counts, death counts, and outbreak management through the provider portal.	National	Australian Government Department of Health and Aged Care
<b>National Influenza Centres (NICs)</b>	National Influenza Centres are laboratories that provide data on diagnostic respiratory pathogen testing. This includes the number of tests undertaken, the number of positive results, and the detected viruses. NICs are not intended to capture all diagnostic testing occurring, but to provide a representative sample of those at risk of infection in Australia, and an indication of circulating respiratory virus activity. NICs are also part of the World Health Organisation (WHO) Global Influenza Surveillance and Response System (GISRS), contributing testing data and sending representative clinical specimens and isolated viruses to the World Health Organization Collaborating Centre for Reference and Research on Influenza (WHO CCRI) for advanced antigenic and genetic analysis. The results form the basis for WHO recommendations on the composition of influenza vaccine each year, as well as relevant risk assessment activities of WHO.	In Australia, the National Influenza Centres are: Institute of Clinical Pathology and Medical Research in New South Wales, PathWest Laboratory Medicine in Western Australia, and Victorian Infectious Diseases Reference Laboratory in Victoria.	National Influenza Centres
<b>National Notifiable Diseases Surveillance System (NNDSS)</b>	The NNDSS co-ordinates the national surveillance of more than 70 communicable diseases or disease groups. Under the notifiable diseases system, notifications are made to the State or Territory health authorities under the provisions of the public health legislation in their jurisdiction. De-identified unit records of these notifications, including for COVID-19, influenza, and RSV, are supplied to the Australian Government Department of Health and Aged Care daily, for collation in the NNDSS, analysis, and publication. <a href="https://www.health.gov.au/our-work/nndss">https://www.health.gov.au/our-work/nndss</a>	National  Notified cases of COVID-19, influenza, and RSV must meet the national surveillance case definitions to be reported to the NNDSS. The case definitions are documented in the CDNA National Guidelines for Public Health Units. Changes in notifications over time may reflect testing policies; screening programs (including the preferential testing of high-risk populations); the use of less invasive and more	CDNA

Data source	Description	Coverage or representativeness	Data custodian
<b>Paediatric Active Enhanced Disease Surveillance (PAEDS)</b>	The PAEDS network is a hospital-based active surveillance system employing prospective case ascertainment for selected serious childhood diseases of public health importance and adverse events following immunisation to inform health. Specific to COVID-19, PAEDS undertakes active surveillance of children hospitalised at participating sites with Kawasaki Disease and PIMS-TS. From 2024, the PAEDS network contributes to COVID-19, influenza, and RSV surveillance in collaboration with FluCAN. <a href="http://www.paeds.org.au">www.paeds.org.au</a>	sensitive diagnostic tests; and periodic awareness campaigns.  Some jurisdictions are collecting information on the characteristics of cases by regular surveys of a random sample of cases.	National Centre for Immunisation Research and Surveillance (NCIRS)
<b>Pharmaceutical Benefits Scheme</b>	The Pharmaceutical Benefits Scheme (PBS) data contains information on prescription medicines that qualify for a benefit under the National Health Act 1953 and for which a claim has been processed.	National	Australian Government Department of Health and Aged Care
<b>Provisional Death Registrations</b>	The registration of deaths is the responsibility of the eight individual state and territory Registrars of Births, Deaths and Marriages. When a death occurs, the cause of that death is either certified by a doctor using a Medical Certificate of Cause of Death (MCCD), or the death is referred to a coroner for further investigation. These deaths are provided to the ABS via the National Coronial Information System. Information is provided to the ABS by individual Registrars for processing, coding, and compilation into aggregate statistics. Registrars report all deaths that were registered in a month at the start of the following month. This data has been integrated with AIR-PLIDA (AIR integrated with the Person level Integrated Data Asset).	National	ABS

Data source	Description	Coverage or representativeness	Data custodian
<b>Provisional mortality statistics</b>	Deaths are compared to an average number of deaths recorded over the previous 5 years. These average or baseline counts serve as a proxy for the expected number of deaths, so comparisons against baseline counts can provide an indication of excess mortality. <a href="http://www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0.55.004">www.abs.gov.au/ausstats/abs@.nsf/mf/3303.0.55.004</a>	National These data are provisional and relate to doctor certified deaths only. Coroner referred deaths are not included.	ABS
<b>Short Period Incidence Study of Severe Acute Respiratory Infection (SPRINT-SARI)</b>	A sentinel system that collects detailed data on the characteristics and outcomes of interventions for patients admitted to ICUs or High Dependency Units with COVID-19 at participating sites across Australia. <a href="https://www.monash.edu/medicine/sphpm/anziarc/research/sprint-sari">https://www.monash.edu/medicine/sphpm/anziarc/research/sprint-sari</a>	79 ICU sites that have been part of the study since late February 2020. The participating ICUs cover all jurisdictions (ACT 1, NSW 16, NT 2, QLD 15, SA 8, TAS 2, VIC 26, WA 9) and include metropolitan and regional ICU sites.	Monash University
<b>Wastewater</b>	Wastewater surveillance involves the sampling and testing of wastewater to detect respiratory viruses. Wastewater (or sewage) includes blackwater from toilets plus greywater from baths, showers, sinks and washing machines. Wastewater samples provide pooled samples from the community. Analysis of the amount of viral load in wastewater catchment areas are used to indicate changes in the prevalence of respiratory viruses within communities. Wastewater surveillance can be used to detect the virus types or variants circulating in Australia, as well as estimate the relative abundance (or distribution) and spread of specific types or variants within communities. Wastewater surveillance is independent of differences in health-seeking behaviours, testing, and access to healthcare that may introduce biases in other surveillance systems. Wastewater surveillance data for SARS-CoV-2 are currently only received from Victoria and Western Australia, and therefore, wastewater surveillance data are not nationally representative. At present, there are no wastewater surveillance data for influenza or RSV.	Two jurisdictions: Victoria and Western Australia	State and territory governments
<b>World Health Organization Collaborating Centre for Reference and</b>	In Australia, the WHO CCRI hosted by the Victorian Infectious Diseases Reference Laboratory. The WHO CCRI is part of the WHO Global Influenza Surveillance and Response System (GISRS), that was established to monitor the changes in influenza and reduce the impact of influenza	National	WHO CCRI

Data source	Description	Coverage or representativeness	Data custodian
<b>Research on Influenza (WHO CCRI)</b>	viruses. Together with other WHOCCs, the Centre is responsible for analysing influenza viruses currently circulating in the human population. These data are used by the WHO to make recommendations on appropriate influenza subtypes to be included in annual seasonal influenza vaccines for the northern and southern hemispheres. <a href="http://www.influenzacentre.org/">http://www.influenzacentre.org/</a>		



## Appendix 2: Data considerations for Aboriginal and Torres Strait Islander populations

Aboriginal and Torres Strait Islander peoples reserve the right to determine culturally appropriate forms for data reporting, and therefore the right to grant or withhold permission from other agencies or organisations for its use. All Aboriginal and Torres Strait Islander data should undergo a cultural review by Aboriginal and Torres Strait Islander peoples within a culturally appropriate governance model.

The National Aboriginal and Torres Strait Islander Health Protection (NATSIHP) Sub-committee of the Australian Health Protection Principal Committee has endorsed the following considerations in relation to the Plan:

- A strength-based approach to health and wellbeing for Aboriginal and Torres Strait Islander peoples is the focus, and deficits which can have a negative impact on health outcomes, are not emphasised<sup>1</sup>.
- The public health context for Aboriginal and Torres Strait Islander peoples are taken into account, for example:
  - Aboriginal and Torres Strait Islander peoples live in many different settings across Australia, including urban, regional, remote, and very remote locations;
  - special considerations are needed for Aboriginal and Torres Strait Islander peoples living in hostels; detention centres; aged care and other residential facilities; town camps; and homeless populations;
  - many communities experience shortages of housing, and/or inadequate housing infrastructure;
  - the strength and leadership of the Aboriginal and Torres Strait Islander community-controlled health sector means that locally-led holistic, comprehensive, and culturally appropriate and safe primary health care can be delivered to communities. However, many Aboriginal and Torres Strait Islander peoples still experience reduced access to acute and primary health care (including testing) and other health services. This can be due to factors such as location, lack of workforce, lack of available transport and differing health care literacy. This can also occur because of concerns of racism; feelings of shame; fear of separation from loved ones and family or mistrust of mainstream health services. These factors could lead to reduced COVID-19, influenza, and RSV presentations or unwell people presenting later in the disease progression.
  - Aboriginal and Torres Strait Islander peoples experience a disproportionately high burden of chronic disease and are therefore more susceptible to severe outcomes arising from COVID-19, influenza, and RSV.
- Data quality and completeness for Aboriginal and Torres Strait Islander status influences the representativeness of the data. Factors contributing to the level of data completeness include:
  - the structure of the data collection systems
  - the influence of systemic racism on the willingness of Aboriginal and Torres Strait Islander peoples to identify based on the perceived consequences
  - that Aboriginal and Torres Strait Islander peoples may also wish to identify retrospectively, which may require historical data to be revised
- It is important to note limitations of data sources, particularly those that do not have complete population ascertainment and may not be representative of Aboriginal and Torres Strait Islander peoples (e.g. some sentinel systems). Therefore, it is particularly important that for the relevant datasets, the proportion of people without a known Aboriginal and Torres Strait Islander status is reported where possible.
- Data on Aboriginal and Torres Strait Islander status should be interpreted with caution where completeness is low:
  - In earlier stages of the COVID-19 pandemic, Aboriginal and Torres Strait Islander status in national COVID-19 case-based notification data had a high level of completeness. However, Aboriginal and Torres Strait Islander status data completeness has since decreased following a reduction in case ascertainment and follow-up in all jurisdictions, changes in testing and reporting requirements, and jurisdictional-level changes to ongoing data linkage from other health datasets.

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<sup>1</sup> Fogarty, W., Lovell, M., Langenberg, J. & Heron, M-J. 2018, Deficit Discourse and Strengths-based Approaches: Changing the Narrative of Aboriginal and Torres Strait Islander Health and Wellbeing, The Lowitja Institute, Melbourne.

- Influenza and RSV notifications are largely reported directly to jurisdictions by laboratories, with very limited case follow-up. The absence of an Aboriginal and Torres Strait Islander status data field on many laboratory pathology request forms results in notification data on Aboriginal and Torres Strait Islander status having low completeness nationally.
- Data collection and analysis methods may require adaptation, including:
  - using mixed methods (such as case studies to understand the social and cultural contexts of quantitative data);
  - including other data to help understand the public health context;
  - reviewing data alongside that for non-Indigenous people in order to assess equity of access rather than to highlight disparities. Examples where comparisons could be particularly useful include number and rate of cases, tests, hospitalisations and deaths. Given the differences in population structures, age-standardised rates using an appropriate standard population should be used where possible (for example, for hospitalisations and deaths data).

Where possible, data are to be made available to Aboriginal and Torres Strait Islander communities and organisations. The *National Agreement on Closing the Gap* highlights the importance of sharing disaggregated data and information so Aboriginal and Torres Strait Islander organisations and communities can make informed decisions while meeting privacy requirements and ensuring data security and integrity.

The decision to report on small numbers requires that the benefits of, and the need for information to inform decision-making and responses in communities be balanced against the potential privacy implications for individuals and communities.

Further surveillance and epidemiological considerations for Aboriginal and Torres Strait Islander populations are located in other documents such as *the National Aboriginal and Torres Strait Islander Health Plan 2021–2031*, *the Management Plan for Aboriginal and Torres Strait Islander populations* and the *CDNA National Guidance for remote Aboriginal and Torres Strait Islander communities for COVID-19*.

## Appendix 3: Indicators recommended for future development

A comprehensive review of national viral respiratory infection surveillance in Australia is currently being undertaken by the interim Australian CDC, and the Plan will be updated to reflect the findings of this review once completed. Key priority areas for this review include:

- Enhancing understanding of COVID-19, influenza, and RSV cases and severe disease in specific populations, including Aboriginal and Torres Strait Islander people, infants and young children, older Australians and aged care facility residents, people with serious health conditions, people from culturally and linguistically diverse (CALD) backgrounds, and people with a disability;
- Evaluating uptake, equity of access to, and effectiveness of treatments, including through sentinel systems;
- Better monitoring of co-infections with COVID-19, influenza, RSV, and other respiratory pathogens, as well as re-infections;
- Characterisation of SARS-CoV-2, influenza, and RSV by antiviral susceptibility and antigenic properties;
- Enhanced characterisation of the occurrence and impact of SARS-CoV-2 variants and influenza and RSV subtypes on disease severity and transmission;
- Better monitoring of the prevalence of post-viral conditions (e.g. long COVID);
- Nationally representative wastewater surveillance to monitor population viral concentrations and variants/subtypes;
- Systems and methodologies to estimate the prevalence and incidence of disease and infection; including the changing transmission dynamics of each disease at a population-level; and
- Comprehensive SARI surveillance to contribute to assessments of the burden and impact of COVID-19, influenza, and RSV in the context of other circulating respiratory infections causing severe disease in the population.

Appendix 3 will be updated to reflect the findings of this comprehensive review upon completion.

