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Management of stable acute respiratory infections during increased peak activity periods in NSW

May 2023

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Contents

Introduction

Purpose and scope

This document is intended to support the management of people with stable differentiated and undifferentiated acute respiratory infections during winter surge periods.

It has been developed to assist health services to advise patients; assess the risk of serious complications; and to provide clinical guidance on the early acute management of these conditions with antiviral therapies, where appropriate.

This guide provides high-level advice and support to local health districts (LHDs) and specialty health networks (SHNs) to step-up and operationalise an acute respiratory infection (ARI) diversion clinic when the need arises due to increased peak activity periods. This model is distinct from the pandemic response flu clinics.

This is a living document. It will continue to evolve and be updated through an iterative process of multispecialty consultations.

Potential triggers for setting up a rapid ARI clinic

System-wide surge pressures across NSW Health will be the trigger for LHDs to step-up an ARI diversion clinic. This will differ for each LHD/SHN, with varying capacity limitations and pressures specific to the local context. ARI monitoring should be established through the local public health unit.

Most of these patients should continue to be managed in primary care. The ARI clinics should be considered as an addition to the LHD's short-term escalation plans (STEP) and associated strategies.

Examples of scenarios that may trigger an LHD/SHN to establish an ARI diversion clinic may include:[1]

- where modelling projections or epidemiological data suggest an increase in ARI presentations that are likely to result in system pressures (including pressures on patient flow and bed capacity)
- significant ARI community prevalence in the local population that impacts the emergency department (ED) through increased presentations.

Methodology

The development of the original 2022 version of this guide was informed by a review of available evidence undertaken by the NSW Critical Intelligence Unit (CIU) which was considered by an expert group of NSW clinicians.[1-3] A further review of current and emerging evidence occurred in early 2023, led by the ACI Evidence Directorate in consultation with expert NSW clinicians, to inform the development of this updated version.

The evidence in regard to COVID-19 and its early treatment is based on the recommendations of the National COVID-19 Clinical Evidence Taskforce (NCCET), which specifies recommendations for the use of anti-SARS-CoV-2 monoclonal antibodies and antivirals in adults and adolescents in Australia. The evidence regarding the early treatment of influenza is based on systematic reviews of the literature.[4-7]

Historical documents produced by NSW Health in relation to infectious disease clinics were reviewed to inform the operational considerations outlined in this document.[8, 9]

This document should be read in conjunction with medication safety guidance[10] and infection prevention and control guidance[11] developed by the Clinical Excellence Commission (CEC).

Acute respiratory infection

Causes

An acute respiratory infection (ARI) may be caused by several viruses, including:

- SARS-CoV-2 (responsible for COVID-19)
- influenza A and B
- respiratory syncytial virus (RSV)
- parainfluenza
- metapneumovirus
- rhinoviruses
- seasonal coronaviruses
- adenovirus.

Symptoms

Symptoms of ARI are similar for influenza, COVID-19 and RSV. These include, new onset fever, sore throat, nasal congestion, runny nose, cough, fatigue or malaise, along with body aches. More serious infection can lead to breathlessness on exertion or, in severe cases, at rest.

Most people with an ARI will only experience a brief self-limiting illness. They will be able to manage with rest, analgesia and fluids at home.

ARIs can lead to lower respiratory complications, such as pneumonia and, in young children, bronchiolitis. ARIs often trigger acute exacerbations of asthma and chronic obstructive pulmonary disease (COPD) and may worsen existing cardiac failure. These conditions will also require treatment.

Rarely, both influenza and COVID-19 may lead to a severe inflammatory syndrome, known as multisystem inflammatory syndrome. This is characterised by a severe illness with systemic inflammation and shock. This phenomenon may occur in adults and children.[12, 13]

Isolation guidance

People with ARI symptoms should generally not return to work or school until their acute symptoms have resolved (noting that some symptoms, such as post viral cough, may persist for weeks). The infection can be transmitted to other people, so those working with susceptible populations should not return to work until asymptomatic and the recommended timeframe is reached for the specific respiratory infection (pathogen). Where this is not identified, this should be for seven days.

People with COVID-19 are recommended to follow the current NSW public health guidance on isolation following confirmation of a positive test result.

- Stay home until acute symptoms resolved.
- Do not visit people at high risk of severe illness, anyone in a hospital, aged care or disability care for at least seven days.
- Wear a mask when indoors or on public transport – if you must leave home.
- Avoid large gatherings and indoor crowded places.[14]

The CEC recommends people (including health workers) with ARIs, including but not limited to RSV, human parainfluenza virus (HPIV) or influenza, are considered no longer infectious if 24 hours have elapsed since the resolution of fever, provided either:

- they have received 72 hours of anti-influenza medication; or
- five days have elapsed since onset of respiratory symptoms.

Children and younger adults may shed influenza virus for 10 or more days, and immunosuppressed persons may shed all viruses for weeks. However, the ability to transmit infection is likely to be higher when respiratory symptoms are present.[15, 16]

Testing

Managing ARI depends on clinical recognition of the syndrome, **not** laboratory diagnosis of a specific virus.

Patients who are managed via an ARI diversion clinic should be tested based on clinical assessment, rather than surveillance.

Testing should be undertaken for those:

- who are at high risk of severe illness
- who may require admission to hospital
- who would be eligible for a disease modifying treatment.

If there are likely to be delays receiving the test result, treatment should not be delayed.

For a formal diagnosis, the standard NSW ARI PCR (triplex) will test for influenza, RSV and SARS-CoV-2 (including rapid and urgent PCR tests). Rapid antigen tests (RATs) for COVID-19 will only identify SARS-CoV-2.[17]

More detailed testing recommendations are outlined in the current IPAC/CEC guidelines: *Winter strategy: Testing and IPAC for acute respiratory infection*.[17]

Testing recommendations for an ARI diversion clinic are outlined in Figure 1.

Infection prevention and control

All patients presenting with any ARI symptoms should be wearing a surgical mask as able and age appropriate. Staff should be wearing a surgical mask with the addition of eyewear for care of any patient presenting with an ARI. A P2/N95 respirator is required for COVID-19 and any ARI where an aerosol generating procedure or behaviour is encountered.

Patients with ARI symptoms, or confirmed influenza, COVID-19 or RSV, should be isolated or managed in cohorts with other cases according to IPAC/CEC guidelines: *Winter strategy: Testing and IPAC for acute respiratory infection*.[17]

Information supporting bed allocation and patient flow can be found in the 2018 *NSW Health Influenza Control Guideline*.[15] Specific infection control guidance for COVID-19 is available in the *CEC COVID-19 Infection Prevention and Control Manual.*[18]

Susceptibility to complications

Certain groups are more susceptible to complications from ARIs and should be considered for closer monitoring and early use of antiviral therapies against influenza and/or COVID-19.

In adults (>16 years), the following groups may be susceptible:

- Those aged 75 years or older (people of Aboriginal or Torres Strait islander background >35 years).
- Residents living in aged care or disability care facilities.
- People with:
  - a disability who also have impaired cardiac or respiratory function
  - severe chronic lung disease, asthma, COPD, pulmonary fibrosis or bronchiectasis
  - a significant impairment from a chronic neurological condition
  - congestive heart failure (NYHA class to or greater)
  - obesity (BMI greater than or equal 30)
  - chronic kidney disease (eGFR less than 60 ml/min)
  - diabetes requiring medication for glycaemic control
  - liver cirrhosis.
- People who are moderately or severely immunocompromised.
- Pregnant women, particularly those in the second and third trimester, who are at risk from influenza.

Children with the following conditions may be susceptible:

- Severe chronic or complex illness

- Significant cardiac or respiratory problems
- Immunosuppression
- Other risk factors for severe influenza as per: *List. Specified medical conditions associated with increased risk of influenza disease and severe outcomes*.[19]

Further advice on risk factors, supportive care and antiviral therapy for children with COVID is available from the National COVID-19 Clinical Evidence Taskforce.[3]

Opportunistic vaccination

There is evidence for success in the hospital setting for opportunistic vaccination. In particular for susceptible adults and children, along with vulnerable and socially disadvantaged populations not meeting recommended targets.[20-23]

Guiding principles that should be considered in operationalising opportunistic vaccination locally include:[19, 21-23]

- a process for identification of appropriate patients for vaccination
- staff with ability to check Australian Immunisation Register (AIR) for current vaccination history and adverse event reporting
- a process for adhering to and maintaining the cold chain
- timely access to appropriate vaccinations and wastage control
- recording and obtaining consent
- a process for post vaccination observation
- recording and maintaining relevant documentation (batch, expiry, product, etc.)
- provision of consumer vaccination information.

Patient cohort and management strategies

Patients suitable for management in an ARI diversion clinic include adults and children presenting with mild to moderate, stable differentiated and undifferentiated ARI.

Tables 1 and 2 outline ARI severity definitions and suggested management approaches. The severe and critical presentation definitions have been included in the tables to assist local services to identify the patient presentations that are *not* suitable for management via ARI diversion clinics.

People presenting with severe or critical ARI who are not suitable for diversion and management should follow usual emergency department (ED) escalation and admission protocols.

Table 1. Severity definitions of ARI in adults (>16 years), with suggested management approach

Presentation of illness	Definition	Management approach
Mild ARI	An individual with no or mild clinical features, suggestive of mild illness (with consideration for 'between-the-flags' criteria): • No OR mild symptoms and signs (fever, cough, sore throat, malaise, headache, muscle pain, nausea, vomiting, diarrhoea, loss of taste and smell) • No new shortness of breath or difficulty breathing on exertion • No evidence of lower respiratory tract disease during clinical assessment, or on imaging (if performed) • Pulse <100bpm, SpO2 >94% on room air	• **Suitable** for review in ARI diversion clinic and/or refer to primary care provider • Home with advice. In susceptible or high-risk groups, consider the use of an antiviral regime for influenza or COVID-19. Notify general practitioner • For those with COVID-19, assessment and management can be supported by *Flowchart - Management of Mild COVID-19*[24] • Consider opportunistic vaccination if clinically well enough and/or provide education for when well[21]
Moderate ARI	A stable patient with evidence of lower respiratory tract disease (with consideration for 'between-the-flags' criteria): • During clinical assessment, such as: - oxygen saturation 92–94% on room air at rest - desaturation or breathlessness with mild exertion • May have evidence of pneumonia on chest x-ray	• **May be suitable** for review in ARI diversion clinic, and/or refer to primary care provider • Consider admission to hospital for high-risk people. Refer to ED for further assessment or direct admission from clinic if possible • Those unwell enough and requiring hospitalisation with confirmed influenza, consider the use of oseltamavir • For those with COVID-19, refer to *Care of adult patients with COVID-19 in acute inpatient wards – a model of care for NSW Health clinicians*[25]

Presentation of illness	Definition	Management approach
Severe ARI	A patient with signs of moderate disease who is deteriorating OR A patient meeting any of the following criteria (with consideration for 'between the flags' criteria): • Respiratory rate ≥30 breaths/min • Oxygen saturation <92% on room air at rest or requiring oxygen • Lung infiltrates >50%	• **Not suitable** for review in ARI diversion clinic • Follow usual ED escalation protocols for admission • Admission to respiratory ward or ICU for management. For COVID-19, refer to *Care of adult patients with COVID-19 in acute inpatient wards – a model of care for NSW Health clinicians*[25]
Critical ARI	A patient meeting any of the following criteria (with consideration for 'between-the-flags' criteria): • Respiratory failure, defined as any of the following: - Severe respiratory failure (PaO2/FiO2 <200) - Respiratory distress or acute respiratory distress syndrome (ARDS) - Deteriorating, despite non-invasive forms of respiratory support (i.e. non-invasive ventilation [NIV], or high-flow nasal oxygen [HFNO]) - Requiring mechanical ventilation - hypotension or shock - Impairment of consciousness • Other organ failure	• **Not suitable** for review in ARI diversion clinic • Follow usual ED escalation protocols for admission • Admission to ICU

Table 2. Severity definitions of ARI in children (<16 years), with suggested management approach

Presentation of illness	Definition	Management approach
Mild ARI	An individual with clinical features suggestive of mild illness (with consideration for age-appropriate 'between-the-flags' criteria): • Runny nose, cough, sore throat, fever, chills	• **Suitable** for review in ARI diversion clinic, and or refer to primary care provider • Home with advice • Notify general practitioner

Presentation of illness	Definition	Management approach
	• Breathing normally • Fluid intake and urine output mildly reduced • Feeling unwell • Mild headache; body ache • Less active; fatigue	• Consider the use of an antiviral agent for high-risk children with influenza • For high-risk children with COVID-19, consult with child's usual paediatric care or specialty team and/or paediatric infectious disease (ID) • Consider opportunistic vaccination if clinically well enough and or provide education for when well[21]
Moderate ARI	An individual with clinical features suggestive of moderate illness (with consideration for age-appropriate 'between-the-flags' criteria): • Fever over 39 degrees for days • Mild difficulty breathing when active • Fluid intake half normal; passing urine more than 3 times per day • Concern they are getting more unwell	• **Suitable** for review in ARI diversion clinic, and/or refer to primary care provider • Home with advice • Notify general practitioner. Offer local home support, such as telephone advice lines; virtual care • Consider the use of an antiviral agent for high-risk children with influenza • For high-risk children with COVID-19, consult with paediatric ID
Severe ARI	An individual with clinical features suggestive of severe illness (with consideration for age-appropriate 'between-the-flags' criteria): • Baby under 1 month with fever over 38 degrees • Moderate or severe difficulty breathing • Fluid intake less than half normal; passing urine less than 4 times per day • Any other severe symptom, including severe pain, drowsiness, confusion, unable to stand	• **Not suitable** for review in ARI clinic • Follow usual ED escalation protocols for admission • Consider the use of an antiviral agent for all children with influenza if within the first 48 hours. If >48 hours, consult with paediatric ID • For high-risk children with COVID-19, consult with paediatric ID
Critical ARI	An individual meeting the red zone 'between-the-flags' criteria (excluding temperature) and/or the following: • Requiring ventilation • Experiencing multiorgan failure or shock	• **Not suitable** for review in ARI diversion clinic • Follow usual ED resuscitation and escalation protocols for admission (likely to ICU)

Acute treatment for ARI

The anticipated high volume of presentations of ARI means that treatment of diagnosed influenza and COVID-19 must be initiated early.

Influenza

There are three medications available for the treatment of symptomatic influenza:

- Oseltamivir (Tamiflu)
- Peramivir (Rapivab)
- Zanamivir (Relenza)

These medications have been shown to modestly reduce the time required to alleviate symptoms in people with influenza.[4] These medications should be commenced early in the disease to be most effective; within the **first 48 hours** of symptoms.

For those who are immunocompromised and experience persistent viral replication:

- these treatments may still be of value, even when commenced later (e.g., within four days of symptom onset)
- extending the treatment course to 10 days and/or use of a high dose oseltamivir regime (i.e. 150 mg twice daily) may be considered. This may shorten time to symptom alleviation and viral shedding but does increase side effects.[26]

Oseltamivir and zanamivir are considered **safe to use in pregnancy and breastfeeding women**.

In terms of prophylaxis, oseltamivir and zanamivir have been shown to prevent influenza infection in susceptible patients with a high level of exposure when given prophylactically within two days of exposure. This medication should be considered for close contacts of known cases in an outbreak setting within a residential aged care or health facility.

An overview of these medications, including patient population, formulation, dose and administration for influenza treatment and prophylaxis, is outlined in tables 1 and 2 in Appendix 1.[27-29]

See also *NSW Health policy directive – Statewide Standing Orders for the Supply or Administration of Medication for Public Health Response (2016)*.[30]

COVID-19

Generally, COVID-19 medicines are for use early in the course of the disease, before significant symptoms or severe disease have developed, and within a window of five to seven days from the onset of infection.The current recommended medications are:

- nirmatrelvir plus ritonavir
- remdesivir
- molnupiravir.

Although the indications for these medications are similar, they are not identical. Eligibility in NSW aligns to either the National COVID-19 Clinical Evidence Taskforce (NCCET) recommendations or the Pharmaceutical Benefits Scheme (PBS) criteria.[31]

Individual medicine eligibility criteria should be reviewed with consideration to which COVID-19 variants are likely to be circulating in the community.

Refer to *Guidance for the use of anti-SARS-CoV-2 monoclonal antibodies and antiviral agents as prophylaxis or to prevent severe infection from COVID-19 in NSW.*[31]

Principles of operationalising models of care

There are several key principles that should be considered in operationalising this model locally. Delivery may vary between LHDs. This document will evolve based on the experiences of LHDs in the implementation of local delivery models.

Site selection and layout

The location or layout of an ARI diversion clinic should be in an area of the hospital or health facility that is easily accessible for patients; and where there is reduced risk of patients with an ARI coming into contact with other patients, visitors and healthcare workers.[18]

Where possible, there should be a separate entry and exit to other patient-care areas.

The layout should be able to support:

- a waiting area, consultation areas and have suitable ventilation
- access to amenities, such as bathrooms within the location
- a plan to separate vulnerable or high-risk patients from others in the clinic to avoid cross infection
- a requirement for support services and cleaning
- an allocated location for staff amenities and meal breaks.

Access and referral

This model is not intended to operate as a walk-in model. It is recommended that there is a screening point before patients enter the ED to divert people to the clinic and avoid patients having multiple assessment/triage points.

Access to the clinic should be from the:

- ED screening or triage point
- hospital or LHD specialty services
- local primary care practitioners.

Requirements for access should be locally determined, including whether appointments need to be booked and whether a verbal referral is sufficient from any of the above areas.

If at review the patient is found to be too unwell to return home (especially those with respiratory distress or on room air SpO2 <92%), refer to the person to ED or directly admit to wards, if possible. Ensure receiving staff are aware the patient has an ARI, and they should continue to wear a N95/P2 mask.

A brief letter of attendance, result of testing and action/s taken should be sent back to the referrer and general practitioner.

LHDs may also consider access for staff who are referred for management and treatment of ARI.

Setting and delivery modes

The clinic should support face-to-face and virtual care delivery. Patients may be screened and directed home for a virtual follow-up appointment, if appropriate.

Consideration could be given to a mechanism for virtual screening or clinic appointments. Virtual care services will require access to technology in consultation rooms, as well as a system to book and manage virtual care appointments.

Staffing

The clinic is intended to be predominantly staffed by the nursing workforce. It will require medical oversight, either in person or via virtual care. Specialty and skill mix of clinic staff will be locally determined but should comprise:

- a medical or nurse practitioner to prescribe medications outside existing standing orders
- clinical staff with sufficient experience to undertake initial assessment, identify severity and initiate care

- a role to support triage and screening
- medical oversight for referral and escalation of care
- critical non-clinical roles, including administrative, cleaning and security staff.

To manage paediatric presentations, the hospital must have paediatric role delineation and suitable staff capability / skill mix.

Policy and procedures

Procedures should be agreed and implemented for the management of the clinic that suits local needs, including:

- clinical escalation for patients within the clinic, including clinical emergency response and processes for admission to ED or direct admission to wards
- clinical governance, including executive sponsorship
- prescription for antivirals should occur through an NSW Health pharmacy to support timely access to treatment
- mechanisms to follow up results and patients, if required
- direct hospital admission from the clinic, if required.

Patients attending the ARI clinic should have an outpatient visit created in the electronic medical record or patient administration system. This needs to be used to record attendance and any clinical documentation as an outpatient. Patients should also be provided with standardised advice on managing their symptoms and treatment, and what to do if their condition deteriorates.

Equipment

Equipment must be suitable for adults and children, depending on the local delivery model being operationalised. Minimum clinical requirements include:

- surgical masks for patients
- personal protective equipment for staff
- tympanic thermometers (axillary thermometers for children), pulse oximeters (with adult and paediatric sensor probes), sphygmomanometers (including paediatric-sized blood pressure cuffs)
- examination tables and privacy curtains
- hand hygiene products
- general clinical waste bags/bins; sharps containers
- tissues
- surface cleaning products
- signage and information sheets
- swabs for taking patient specimens and pathology collection process
- resuscitation equipment (adult and paediatric)
- medication standing orders for all appropriate medications
- protocol for clinical emergency response
- oxygen and the means for delivering it to patients.

Minimum communication requirements include:

- telephones
- computers/workstations with access to the hospital network, electronic medical record, email and the NSW Health intranet (and/or internet)
- virtual care capable cameras.

ARI diversion clinics should be able to offer COVID-19 Rapid antigen tests (RAT) and triplex polymerase chain reaction (PCR) testing.

This list is based on the *Guideline for the Establishment and Operation of COVID-19 Assessment Clinics*.[9]

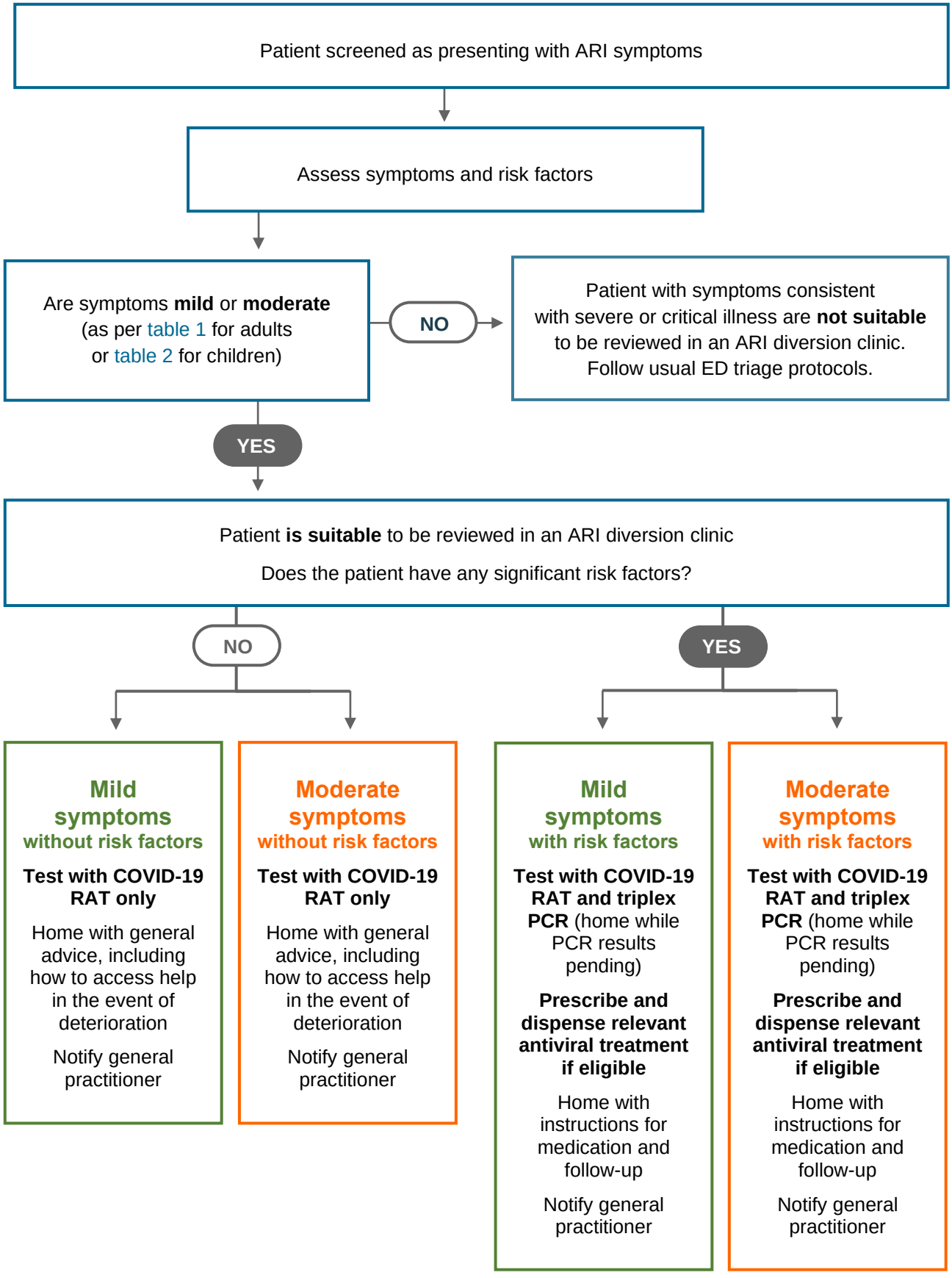
Stakeholders and partnerships

Key local partnerships are essential for the successful establishment of a winter surge

ARI diversion clinic. Local teams involved by LHDs/SHNs in stepping-up an ARI clinic may include:

- infection prevention and control teams
- pharmacy departments
- community care teams
- general practitioners and general practice teams
- pathology services
- infrastructure and support services
- patient flow
- information technology support (particularly if delivering virtual care options).

Figure 1. Decision pathway: suitability for management in ARI diversion clinic



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Appendix 1. Pharmacological treatment for influenza

The medication information outlined in Table 1 (treatment) and Table 2 (prophylaxis) are, as per the TGA-approved Product Information and the Australian Medicines Handbook.[32] This appendix should be viewed in conjunction with those resources. The availability of medications may differ between facilities.

Table 3. Medications for influenza treatment in adults and children

	Patient population	Formulation	Treatment: dose and administration	Prophylaxis
Oseltamivir (Tamiflu®)	Suitable in children from birth, adults, pregnant and breastfeeding women	Capsule (30, 45 and 75mg) and oral suspension (6mg/mL)	Treatment course is **5 days**. **Adults**: 75mg twice daily CrCl 30 – 60mL/min: 30mg twice daily CrCl 10 – 30mL/min: 30mg once daily **Child >1 year**: <15kg: 30mg twice daily 15-23kg: 45mg twice daily 23-40kg: 60mg twice daily >40 kg: 75mg twice daily **Birth (at term) – 1 year**: 3mg/kg twice daily	Yes – see **Table 2**
Zanamavir (Relenza®)	Suitable in children ≥5 years, adults, pregnant and breastfeeding women	Powder for insufflation	Treatment course is **5 days**. 2 inhalations (= 10mg) twice daily. No dose adjustment required in renal impairment	Yes – see **Table 2**
Peramavir (Rapivab®)	Suitable in children ≥2 years and adults. Avoid in pregnant and breastfeeding women	Intravenous injection	**Adults**: 600mg single dose CrCl 30 – 50mL/min: 200mg single dose CrCl 10 – 30mL/min: 100mg single dose **Children 2-13 years**: 12mg/kg single dose	No

Table 4. Medications for influenza prophylaxis in adults and children

	Patient population	Formulation	Dose and administration for prophylaxis
Oseltamivir (Tamiflu®)	Suitable in children from birth, adults, pregnant and breastfeeding women	Capsule (30, 45 and 75mg) and oral suspension (6mg/mL)	Treatment course is **10 days**. **Adults**: 75mg once daily CrCl 30 – 60mL/min: 30mg once daily CrCl 10 – 30mL/min: 30mg once daily **Child >1 year**: <15kg: 30mg once daily 15-23kg: 45mg once daily 23-40kg: 60mg once daily

	Patient population	Formulation	Dose and administration for prophylaxis
			>40kg: 75mg once daily **Birth (at term) – 1 year**: 3mg/kg once daily
Zanamavir (Relenza®)	Suitable in children ≥5 years, adults, pregnant and breastfeeding women	Powder for insufflation	Treatment course is **10 days** 2 inhalations (= 10mg) once daily. No dose adjustment required in renal impairment