

Queensland Clinical Guidelines

Translating evidence into best clinical practice

Maternity and Neonatal **Clinical Guideline**

Maternity care for mothers and babies during the COVID-19 pandemic

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Endorsed by:	Queensland Clinical Guidelines Steering Committee Statewide Maternity and Neonatal Clinical Network (Queensland)
Contact:	Email: Guidelines@health.qld.gov.au URL: www.health.qld.gov.au/qcg



Cultural acknowledgement

We acknowledge the Traditional Custodians of the land on which we work and pay our respect to the Aboriginal and Torres Strait Islander elders past, present and emerging.

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The guideline is not a substitute for clinical judgement, knowledge and expertise, or medical advice. Variation from the guideline, taking into account individual circumstances, may be appropriate.

This guideline does not address all elements of standard practice and accepts that individual clinicians are responsible for:

- Providing care within the context of locally available resources, expertise, and scope of practice
- Supporting consumer rights and informed decision making, including the right to decline intervention or ongoing management
- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary
- Ensuring informed consent is obtained prior to delivering care
- Meeting all legislative requirements and professional standards
- Applying standard precautions, and additional precautions as necessary, when delivering care
- Documenting all care in accordance with mandatory and local requirements

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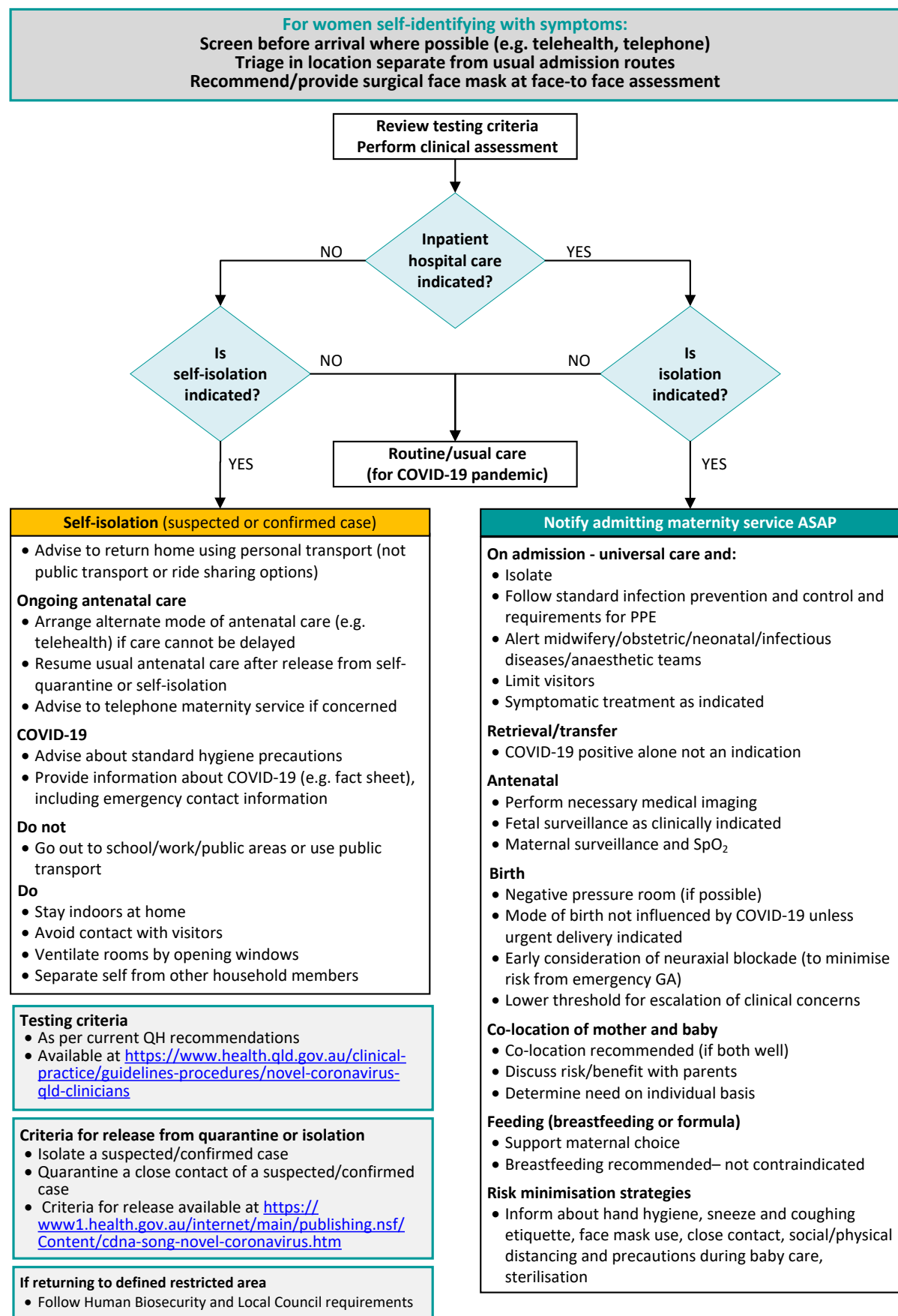
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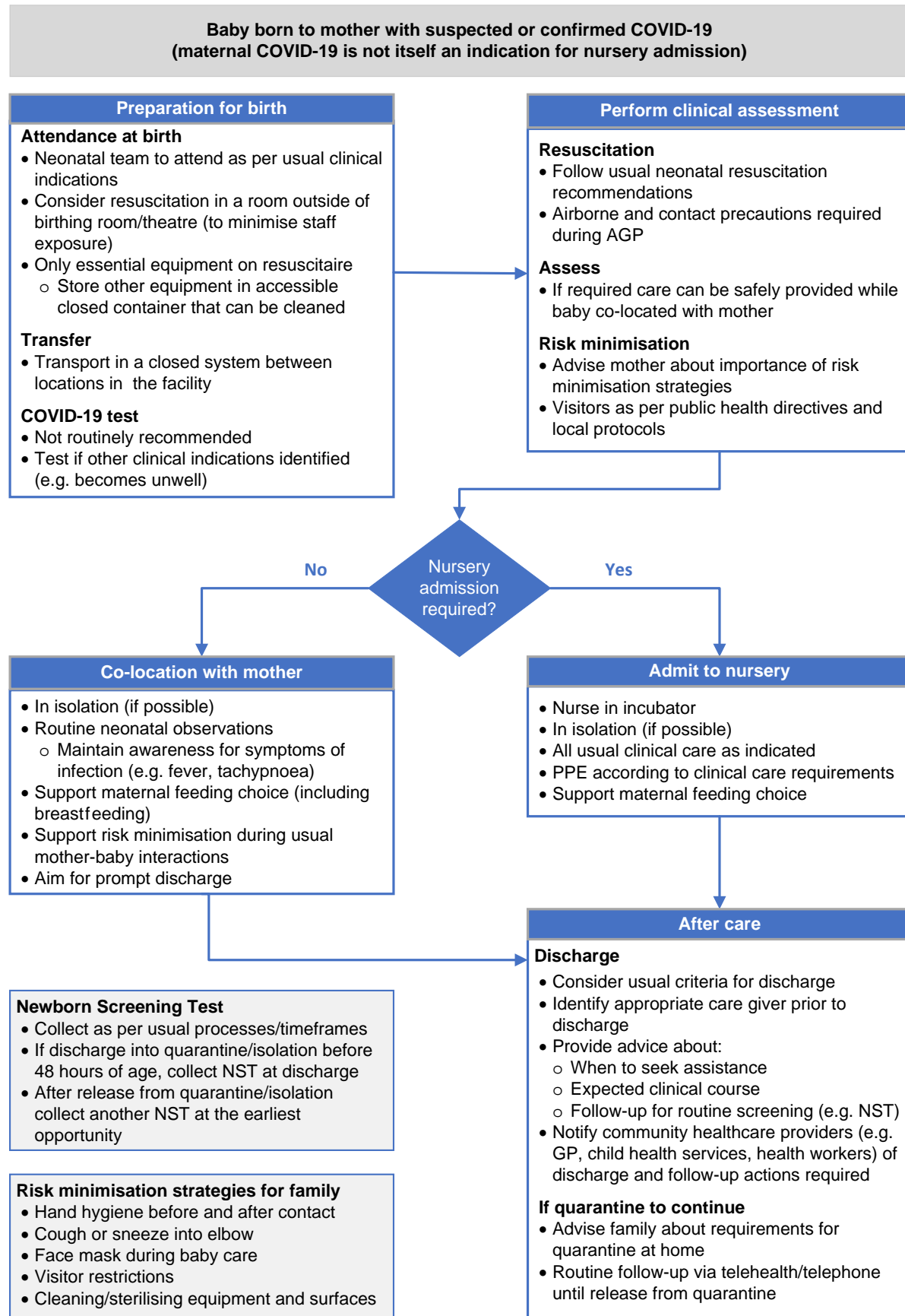


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Flowchart: Triage and risk assessment of suspected or confirmed COVID-19 pregnant woman

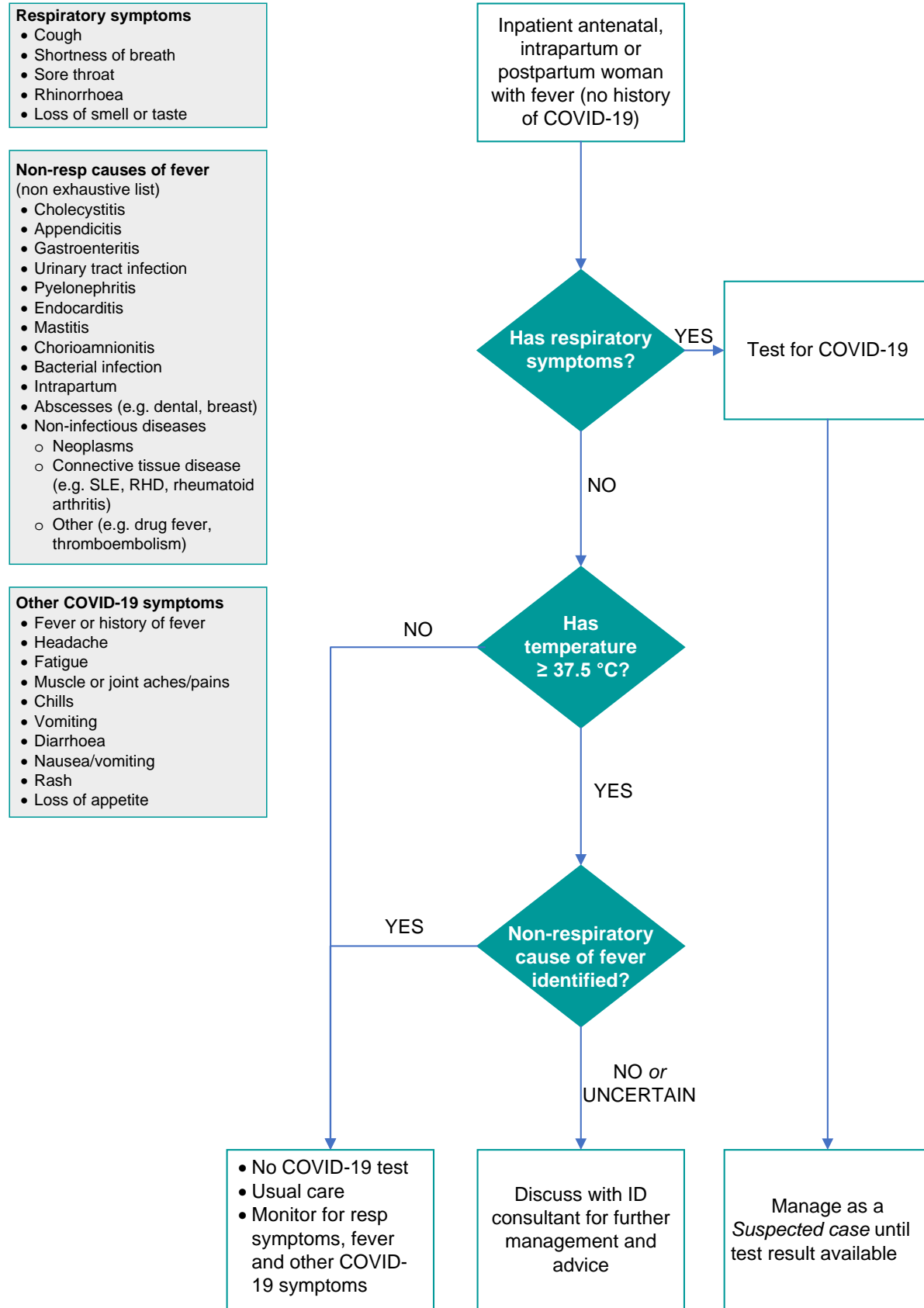


Flowchart: Neonate of suspected or confirmed COVID-19 mother



AGP: aerosol generating procedure, GP: general practitioner, NST: newborn screening test, PPE: personal protective equipment

Flowchart: Assessment of inpatient woman



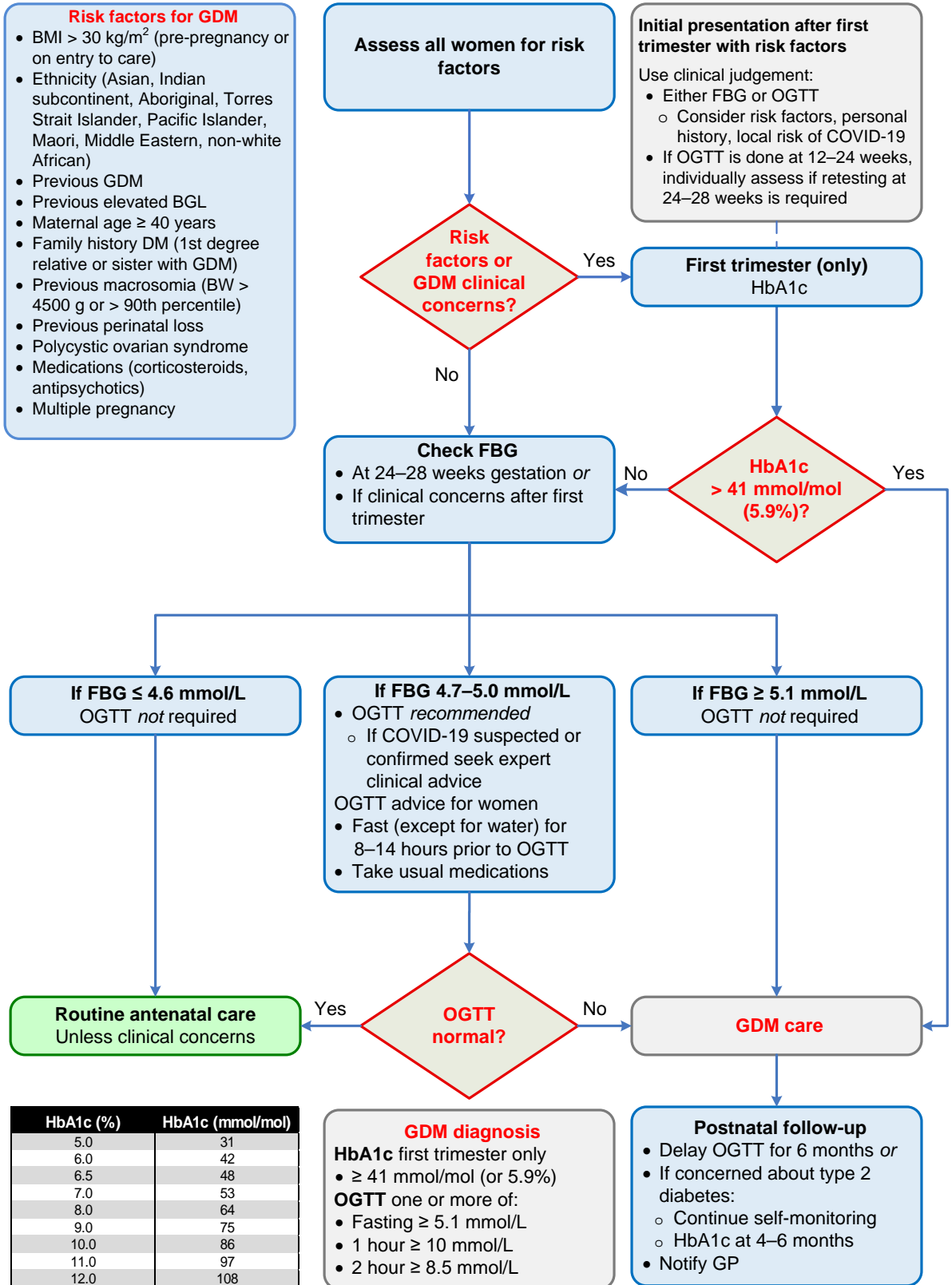
ID: infectious diseases, \geq : greater than or equal to, non-resp: non-respiratory, resp: respiratory

Flowchart: F20.63-5-V2-R25

Flowchart GDM screening and testing when local risk of COVID-19 is elevated

ELEVATED local risk of COVID-19

- **Applies to:** Pregnant women regardless of COVID-19 status
- **Rationale:** To support social distancing and minimise blood collection time (i.e. not based on new evidence)



HbA1c (%)	HbA1c (mmol/mol)
5.0	31
6.0	42
6.5	48
7.0	53
8.0	64
9.0	75
10.0	86
11.0	97
12.0	108

BGL: blood glucose level, BMI: body mass index, DM: diabetes mellitus, FBG: fasting blood glucose GDM: gestational diabetes mellitus, GP: general practitioner, HbA1c: glycated haemoglobin, OGTT: oral glucose tolerance test, greater than or equal to, >: greater than

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Abbreviations

AGP	Aerosol generating procedure
CPAP	Continuous positive airway pressure
DFV	Domestic and family violence
DNA	Deoxyribonucleic acid
GDM	Gestational diabetes mellitus
ICU	Intensive care unit
ieMR	Integrated electronic medical record
LISA	Less invasive surfactant administration
MERS	Middle Eastern respiratory syndrome
MSG	Message
NST	Newborn screening test (also known as newborn bloodspot screening)
OGTT	Oral glucose tolerance test
PCR	Polymerase chain reaction
PPE	Personal protective equipment
RESPCR	Full respiratory virus polymerase chain reaction (PCR)
SARS	Severe acute respiratory syndrome
SOMANZ	Society of Obstetric Medicine of Australia and New Zealand
SpO ₂	Peripheral capillary oxygen saturations
VTE	Venous thromboembolism
VTM	Viral transport medium

Definitions

Airborne versus droplet	In this document airborne is used to mean very small particles which, rather than falling to the ground (as larger droplets do), can flow through the air, remain suspended for long periods or evaporate before hitting the floor leaving the solid particulate free to float long distances, and spread more widely. Dispersion is affected by more than just particle size (e.g. also by air movement/flow, humidity, temperature)
Close contact	Refer to definition in current <i>Communicable Diseases Network Australia (CDNA) National Guidelines for Public Health Units Coronavirus Disease 2019 (COVID-19)</i> ¹
Cohorting	Placement of patients with similar/same condition in the same physical location. ²
Coronavirus	Broad name for a type of virus.
COVID-19	The disease caused by SARS-CoV-2.
Hotspot	Hotspots are where health officials have found a lot of people with COVID-19. Hotspots are legally listed so that people travelling from high-risk areas into Queensland can be identified. ³
Neonatal unit	In this guideline, used to refer to the admitted baby unit of the facility (i.e. neonatal intensive care unit and/or special care nursery).
SARS-CoV-2	Name of virus causing COVID-19 disease.
Self-isolation	Used to separate ill people from those who are healthy until they are declared recovered.
Self-quarantine	Used to restrict the movement of a well person who may have been exposed for the period when they could become unwell (duration 14 days for COVID-19).
Physical (social) distancing	Staying 1.5 metres from other people and avoiding close contact. Referred to as either physical distancing or social distancing.
Standard precautions ⁴	Follow standard precautions for infection prevention and control at all times. This is additional to other transmission precautions required during COVID-19 (e.g. contact, droplet, airborne precautions). Standard precautions consist of hand hygiene, appropriate use of personal protective equipment, safe use and disposal of sharps, routine environmental cleaning, reprocessing of re-usable medical equipment and instruments, respiratory hygiene and cough etiquette, aseptic technique, waste management, appropriate handling of linen.

1 Introduction

There is limited data and evidence about the effects of COVID-19 during pregnancy. Information is current at the time of publication, but new information is emerging daily, and this may affect recommendations. This guideline applies to women who do not require critical care.

1.1 Background

Table 1. COVID-19

Aspect	Consideration
Coronavirus	<ul style="list-style-type: none"> • COVID-19 is the disease caused by SARS-CoV-2 • SARS-CoV-2 is the name of the virus (a type of coronavirus) first identified in late 2019 • Coronavirus is the broad name for a type of virus. There are different kinds of coronaviruses (e.g. Severe Acute Respiratory Syndrome (SARS), Middle Eastern Respiratory Syndrome (MERS))
Onset	<ul style="list-style-type: none"> • Median time from onset to clinical recovery⁵ <ul style="list-style-type: none"> ○ Mild cases approximately 2 weeks ○ Severe or critical cases 3–6 weeks
Transmission of COVID-19	<ul style="list-style-type: none"> • Human to human transmission occurs predominately through respiratory droplets from close contact with an infected person; or after contact with a contaminated surface⁵ <ul style="list-style-type: none"> ○ Possibility of airborne transmission (as opposed to droplet–refer to Definitions) has not been completely excluded^{6,7} • SARS CoV-2 has been isolated from respiratory secretions⁵, serum⁸, urine⁹, faeces¹⁰⁻¹² and fomites (objects)⁵ • No detectable viral DNA found in amniotic fluid¹³, placenta¹³, breast milk⁹ or vaginal fluid¹⁴ (although few women have been tested) • Vertical transmission has not been convincingly demonstrated or excluded^{13,15,16} <ul style="list-style-type: none"> ○ Significant limitations in the quality of evidence¹³, reliability of tests¹⁷ and only a small number of cases • No evidence about the possibility of re-infection¹⁸
Physiology of pregnancy and COVID-19	<ul style="list-style-type: none"> • Pregnant women do not appear at greater risk of contracting COVID-19 than the general population^{19,20} • Physiological changes of pregnancy related to the immune system may be associated with more severe symptoms²¹, particularly in the third trimester • Data on outcomes for pregnant women affected by COVID-19 is limited and conflicting^{9,16,20,22-24} <ul style="list-style-type: none"> ○ Adverse outcomes reported include an increased incidence of fetal distress, pre-eclampsia, stillbirth and preterm birth

1.2 Vaccination

Vaccination against COVID-19 commenced in Australia in February 2021. There is very limited data on the safety of COVID-19 vaccines for pregnant and lactating women. Recommendations for vaccination of women who are pregnant, or lactating may change and evolve. Check [current government vaccination information](#)²⁵ before recommending/administering vaccination to this cohort of women.

1.3 Data collection

To help inform future care and understanding of the COVID-19 disease, data is needed. Specify COVID-19 related codes in the Perinatal Data Collection. Refer to [Statistical Services Branch website for details of agreed codes](#).²⁶

Table 2. Perinatal data collection

Aspect	Consideration
Perinatal online (PNO)	<ul style="list-style-type: none"> Codes to facilitate data collection have been added to the <i>Medical Conditions</i> and <i>Neonatal Morbidity</i> sections in the data collection form Select the most appropriate set of codes
Other electronic data collection systems	<ul style="list-style-type: none"> Facilitate modification to code sequence as per the Queensland Perinatal Data Collection COVID-19 requirements as soon as possible If system modification is delayed, manually add details to file extract where possible
Paper collection (MR63d)	<ul style="list-style-type: none"> Record maternal details at <i>Medical conditions viral infections</i> Record neonatal details at <i>Neonatal morbidities</i>

1.4 Responding to the evolving COVID-19 situation

A key principle for maternity and neonatal services is to meet the needs of the woman and her family in a manner that supports public health safety requirements and minimises the risk of community transmission. Vigilant adherence to infection prevention and control recommendations is essential for maintaining low risk of transmission in the community.

Consider the following when determining the most appropriate type, mode or model of care.

Table 3. Principles of determining care

Aspect	Considerations
Assumptions	<ul style="list-style-type: none"> Decisions about local service delivery (type, mode or model of care) in response to COVID-19 are best made at the local level and require consideration of more than just risk of contagion Definitions of “low risk” and “elevated risk” are not universal or agreed Risk occurs on a continuum Different aspects of maternity care may carry different levels of risk, so some care may be “old normal” and some care may be a “new normal”
Risk of community transmission	<ul style="list-style-type: none"> Alter care delivery in response to changing risk of community transmission National and state directives relevant to COVID-19 Visitor restrictions for inpatient care Public gatherings and social distancing requirements Border closures and travel restrictions Human biosecurity requirements/restricted access to remote communities HHS pandemic plans and associated declared pandemic tier status The presence of local clusters or known cases The characteristics of the local maternity population that may increase or decrease risk (e.g. high levels of obesity, smoking, co-morbidities, indigenous populations) Emerging evidence that affects recommended care delivery
Individual woman’s risk	<ul style="list-style-type: none"> The COVID-19 status of the woman (e.g. confirmed or suspected COVID-19 positive, symptomatic or a contact of a confirmed or suspected case) Obstetric clinical condition—women with high risk conditions may require more frequent encounters and be better suited to face-to-face encounters Language/cultural needs in relation to type, mode or model of care Woman’s tolerance/appetite for risk and individual preferences for type, mode or model of care Digital capability (ability to engage via technology) if this is the preferred type, mode or model of care
Community expectations	<ul style="list-style-type: none"> The need to offer certainty of care provision to women and their families <ul style="list-style-type: none"> Facilitates care planning and expectation management May assist to alleviate anxiety and fear around pregnancy and birth during the COVID-19 pandemic The emotional and physical wellbeing and safety of clinical staff^{27,28} <ul style="list-style-type: none"> Fear of transmission to self and family Emotional fatigue and exhaustion from heightened awareness and sustained exposure Personal risk factors influencing desire and ability to provide care Increased exposure to occupational violence and community fear
Model of care	<ul style="list-style-type: none"> Resourced appropriately for safe care delivery (human and technological) Physical infrastructure is appropriate (e.g. supports social/physical distancing requirements) Incorporates an ongoing assessment of clinical risk to promote safety for the woman and her baby Promotes continuity of care for the woman May include <ul style="list-style-type: none"> Hybrid and mixed modes of delivery and partnerships (e.g. shared care via private-public arrangements, use of telehealth in combination with face-to-face encounters) Hospital or community-based delivery of care Has potential to be scaled up or down in response to changing circumstances

2 Maternity care during COVID-19 pandemic

This section applies to all pregnant women irrespective of COVID-19 status.

2.1 Perinatal mental health (for all women)

Table 4. Perinatal mental health

Aspect	Consideration
Context	<ul style="list-style-type: none"> Pregnant women and their families are likely to experience heightened anxiety and stress related to the COVID-19 pandemic in the community^{17,18} which may be related to²⁹: <ul style="list-style-type: none"> Increased social isolation and reduced support from family and friends Financial impact of economic downturn (e.g. loss of income) Changes or uncertainty about expected healthcare delivery (e.g. less face-to-face encounters) Limitations in the evidence about the effects of the disease in pregnancy and on the newborn¹⁷ Effect can be assumed irrespective of personal COVID-19 status (negative, suspected, or confirmed) The long-term mental health implications for women may lead to a significant increase in the need for services in the future
Strategies	<ul style="list-style-type: none"> Provide consistent information to women and their families¹⁷ (as is current and known at the time) Adhere to usual/standard care recommendations (e.g. woman centred care, respectful communication, consent and informed decision making) <ul style="list-style-type: none"> Refer to Queensland Clinical Guideline: <i>Standard care</i>³⁰
Model of care	<ul style="list-style-type: none"> Support models of care that maximise continuity (e.g. midwifery continuity of care, case management, midwife navigator, general practitioner (GP), private practice midwives) Involve cultural supports such as health worker or community organisations as required
Follow-up	<ul style="list-style-type: none"> Offer referral to perinatal mental health support (e.g. social work, mental health teams, peer support groups, health worker or cultural supports) Liaise with community health practitioners (e.g. general practitioner, midwives, health worker) throughout the perinatal period Refer to perinatal mental health resources (e.g. Beyond Blue³¹, Centre of Perinatal Excellence (COPE)³²)

2.2 Domestic and family violence (for all women)

Table 5. Domestic and family violence

Aspect	Consideration
Context	<ul style="list-style-type: none"> Maintain awareness that domestic and family violence (DFV) may increase in association with social isolation Includes psychological, emotional and financial abuse and control as well as serious physical risk of harm and sexual abuse
Risk management	<ul style="list-style-type: none"> Refer to COVID-19: Domestic and family violence fact sheet³³ Conduct conversations in a manner that maximises safety for the woman, especially when utilising telehealth modes of care—for example ask: <ul style="list-style-type: none"> Is it a good time to talk or when would be a good time to call? What mode of communication is preferred by the woman (e.g. text, email, telephone) Provide an opportunity for women to identify any changed circumstances—for example ask: <ul style="list-style-type: none"> What has changed for you at home during COVID-19? How have the changes affected you and your family?
Screening and referral	<ul style="list-style-type: none"> Screen all pregnant women for DFV If concerns identified, refer to social work and/or specialist DFV services

2.3 Visiting in-patient mothers and babies

Table 6. Hospital visiting

Aspect	Consideration
Visitor restrictions	<ul style="list-style-type: none"> Refer to the most recent Queensland Health public health direction about hospital visiting³⁴ <ul style="list-style-type: none"> The Chief Health Officer (in accordance with emergency powers arising from a declared public health emergency)³⁵ has the authority to restrict visitors to hospitals
Information for women	<ul style="list-style-type: none"> Advise women about the need and rationale for visitor restrictions (if they are currently required) to facilitate advance planning and manage expectations for care Provide information to women, their partners and other visitors about infection prevention and control measures (e.g. hand-hygiene, mask and gown use (if these are required))
During labour and birth	<ul style="list-style-type: none"> Consistent with public health directions identified above, if visiting restrictions apply to the woman or her support people: <ul style="list-style-type: none"> Consider risk and benefit of individual circumstances Support the woman to identify an appropriate support person Requiring the woman to labour and birth without a support person not recommended

2.4 Home visiting during COVID-19 pandemic (for all women)

Table 7. Home visiting during COVID-19 pandemic

Aspect	Consideration
General principles	<ul style="list-style-type: none"> Use clinical judgement and consider individual circumstances when determining most appropriate model of healthcare delivery (i.e. is a home visit necessary) <ul style="list-style-type: none"> Hybrid models of care delivery (e.g. combination of telehealth, phone support and home visit) may assist in minimising contact duration Use advance planning to identify and: <ul style="list-style-type: none"> Prepare for the care likely to be required during the home visit Minimise equipment to be taken into the home Maintain infection prevention and control standards <ul style="list-style-type: none"> Hand hygiene Disposal of consumables Equipment cleaning Physical (social) distancing
Pre-visit assessment	<ul style="list-style-type: none"> Prior to entering the woman's home, assess the clinical status and social circumstances of the woman and other residents at the home (e.g. by phone, telehealth) Use standard home visiting risk assessment tools and additionally ask: <ul style="list-style-type: none"> Do any residents or visitors have symptoms of COVID-19? Are any residents or visitors in self-quarantine/isolation? Are there additional safety issues for the healthcare provider and/or the woman that may arise/be exacerbated by the COVID-19 pandemic or the home visit (e.g. domestic and family violence, alcohol or substance use, high mobility of household residents)? If risk of transmission or safety concerns identified, postpone home visit <ul style="list-style-type: none"> Reschedule/make alternative arrangements as required
During visit	<ul style="list-style-type: none"> If the woman and other home residents asymptomatic and not in self-isolation/quarantine, personal protective equipment (PPE) (related to COVID-19 transmission) is not required <ul style="list-style-type: none"> Refer to Section 3.4 Personal protective equipment Maintain physical (social) distancing (1.5 metre from the woman) during the visit where possible (e.g. ask other family members to leave the room during visit) Follow standard infection prevention and control recommendations as required for usual care Refer to Definitions: Standard precautions

2.5 Specific recommendations for maternity care (for all women)

Table 8. Specific considerations for maternity care

Aspect	Consideration
Antenatal education	<ul style="list-style-type: none"> • If local risk assessed as low, offer online, face-to-face or mixed mode antenatal education <ul style="list-style-type: none"> ○ Face-to-face sessions may be preferred and more appropriate for some women ○ Consider holding face-to-face sessions in community locations (rather than hospital settings) ○ Maintain physical distancing/consider reduction in participant numbers during face-to-face sessions • If local risk assessed as elevated, recommend online antenatal education and consider additional supports, (e.g. group/individual sessions via online platforms, static web resources, email contact, support groups, telehealth appointments or mobile phone that can receive MSG documents)
Antenatal schedule (including lactation services)	<ul style="list-style-type: none"> • Assess the individual circumstances of each woman and tailor the number, type and schedule of antenatal encounters • If local risk assessed as low, follow usual recommended schedule of antenatal care • If local risk assessed as elevated, reduce the number of face-to-face encounters <ul style="list-style-type: none"> ○ Refer to Appendix A: Modified schedules for low-risk women during COVID-19 • To avoid additional visitations, schedule/reschedule face-to-face encounters with multiple health care providers, to occur on the same day • Consider community-based locations (rather than hospital settings) for antenatal care services
Routine ultrasound	<ul style="list-style-type: none"> • If local risk assessed as low, follow usual recommended schedules according to clinical circumstances • If local risk assessed as elevated <ul style="list-style-type: none"> ○ Refer to Appendix A: Modified schedules for low-risk women during COVID-19³⁶ • If clinical concerns, use clinical judgement and seek expert advice
Vaccination	<ul style="list-style-type: none"> • Irrespective of local risk status, recommend routine vaccinations for whooping cough and influenza to pregnant women
Gestational diabetes mellitus (GDM)	<ul style="list-style-type: none"> • If local risk assessed as low, recommend oral glucose tolerance test (OGTT) as the gold standard for screening and diagnosis of GDM and for postnatal follow-up³⁷ • If local risk assessed as elevated, refer to Flowchart GDM screening and testing when local risk of COVID-19 is elevated <ul style="list-style-type: none"> ○ These recommendations are consistent with the Australian Diabetes in Pregnancy Society (ADIPS) for use when local risk assessed as elevated³⁷ ○ Refer to the Queensland Clinical Guideline: FAQ <i>GDM screening and testing during COVID-19 pandemic</i>³⁸
Maternal haemoglobin	<ul style="list-style-type: none"> • Optimise haemoglobin prior to birth to minimise morbidity associated with blood loss and the subsequent need for blood products (which may be in short supply during the pandemic) • Refer to Lifeblood (Australian Red Cross) <i>Maternity Blood Management</i> (link available from https://www.health.qld.gov.au/gcq)
Vulnerable women	<ul style="list-style-type: none"> • Women with co-morbidities (e.g. obesity, gestational diabetes, pre-eclampsia) may be at increased risk for severe COVID-19 disease³⁹ <ul style="list-style-type: none"> ○ Seek expert clinical advice early in the pregnancy to plan care ○ Refer to the Royal College of Obstetricians and Gynaecologists <i>Guidance for maternal medicine in the evolving coronavirus (COVID-19) pandemic</i>⁴⁰ • First Nations communities and other vulnerable groups may be more severely impacted <ul style="list-style-type: none"> ○ Involve appropriate cultural supports as required

3 Risk management (for all women)

3.1 Risk containment

Table 9. Containment and risk minimisation

Aspect	Consideration
Containment	<ul style="list-style-type: none"> • Aims to slow the spread of the virus, reduce peak demand on health care services and allow care to be provided to more women and their families during the outbreak⁴¹ • For women self-identifying with symptoms or confirmed COVID-19: <ul style="list-style-type: none"> ○ Screen before arrival (e.g. by phone, telehealth) ○ Use standardised assessment forms (e.g. COVID-19 screening assessment⁴²) ○ Triage in a location separate from usual admission/assessment routes ○ Provide and recommend use of surgical face mask to woman at face-to-face contact
Infection prevention and control	<ul style="list-style-type: none"> • Follow Queensland Health recommendations and public alerts⁴³ for infection prevention and control, isolation, specimen collection and use of personal protective equipment (PPE)
Risk minimisation strategies (for all women)	<ul style="list-style-type: none"> • Recommend and inform women and their families about: <ul style="list-style-type: none"> ○ Hand hygiene with soap and water for 20 seconds or with alcohol-based hand sanitiser/gel ○ Coughing and sneezing into elbow ○ Physical (social) distancing (stay 1.5 metres from other people) and avoid close contact ○ Using dedicated personal equipment and resources ○ Cleaning and sterilisation of surfaces and equipment ○ Rationale for visitor restrictions (to reduce potential for spread of virus) ○ Importance of risk minimisation strategies for postnatal baby care

3.2 Risk assessment

Table 10. Risk assessment

Aspect	Consideration																						
Risk factors	<ul style="list-style-type: none"> • Signs and symptoms of acute respiratory infection <ul style="list-style-type: none"> ○ After exposure: mean incubation 4–5 days, range 1–14 days⁵ ○ Asymptomatic to very severe manifestation reported^{18,19} • Close contact with a confirmed or suspected case • Interstate (particularly identified 'hotspots'³), international travel or cruise ship voyage within last 14 days • Disease severity increased (requiring hospital admission) if: <ul style="list-style-type: none"> ○ Pre-existing comorbidity (e.g. pre-existing diabetes or GDM⁴⁴ hypertension⁴⁵) ○ Current smoker⁴⁶ ○ Overweight or obese^{39,47} ○ Maternal age greater than 35 years²⁰ 																						
Frequency of reported symptoms in pregnant women¹⁹	<table border="1"> <thead> <tr> <th>Sign/Symptom</th> <th>Frequency (%) n=356</th> </tr> </thead> <tbody> <tr> <td>Fever</td> <td>67.3</td> </tr> <tr> <td>Dry cough</td> <td>65.7</td> </tr> <tr> <td>Shortness of breath</td> <td>7.3</td> </tr> <tr> <td>Diarrhoea</td> <td>7.3</td> </tr> <tr> <td>Fatigue</td> <td>7.0</td> </tr> <tr> <td>Sore throat</td> <td>7.0</td> </tr> <tr> <td>Muscle or joint pain</td> <td>6.2</td> </tr> <tr> <td>Chills</td> <td>5.5</td> </tr> <tr> <td>Other (sputum production, nasal congestion headache, loss of appetite, rash, nausea)</td> <td>< 5</td> </tr> <tr> <td>Loss of smell and/or taste</td> <td>Frequency not reported</td> </tr> </tbody> </table>	Sign/Symptom	Frequency (%) n=356	Fever	67.3	Dry cough	65.7	Shortness of breath	7.3	Diarrhoea	7.3	Fatigue	7.0	Sore throat	7.0	Muscle or joint pain	6.2	Chills	5.5	Other (sputum production, nasal congestion headache, loss of appetite, rash, nausea)	< 5	Loss of smell and/or taste	Frequency not reported
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3.3 Testing

Table 11. Testing

Aspect	Consideration
Indications	<ul style="list-style-type: none"> Follow current recommendations regarding criteria and indications for COVID-19 testing¹
Sample collection	<ul style="list-style-type: none"> Follow PPE recommendations for specimen collection⁴⁸ Collect a single nasopharyngeal and oropharyngeal swab (use same swab for both sites⁴⁹) If productive cough, collect sputum (contains highest viral loads)⁴⁹ SARS-CoV-2 (COVID-19) Serology IgG may be ordered via Pathology Queensland after consultation with a Public Health or Infectious Diseases Physician <ul style="list-style-type: none"> Not generally useful in acute setting
Request form	<ul style="list-style-type: none"> NCVPCR is the Queensland Pathology request code for COVID-19 naso and oral swab (including via ieMR)⁴⁹ If suspicion of other respiratory virus (e.g. rhinovirus, influenza) also request 'Respiratory Virus PCR, GeneXpert test–FluA/FluB/RSV SARS-CoV-2 (COVID-19) GeneXpert may be available in some locations <ul style="list-style-type: none"> May be useful where a timely result will significantly impact early management decisions Follow local protocols for approval to request (not directly orderable in ieMR)
Notifications	<ul style="list-style-type: none"> COVID-19 is a controlled notifiable condition² <ul style="list-style-type: none"> Notifiable to the chief executive (via the local public health unit) on provisional and clinical diagnosis, pathology request and pathological diagnosis Notify key healthcare providers of COVID-19 test result including infection control services and frontline staff² <ul style="list-style-type: none"> Include other health care providers as recipients of result on request form (e.g. GP) If no GP, recommend the woman contacts a local GP/medical centre to arrange follow-up
After test advice	<ul style="list-style-type: none"> If testing occurs in the outpatient setting and in-patient care is not required <ul style="list-style-type: none"> Inform the woman that the local public health unit will follow-up and make contact with her Advise to self-isolate until test results are available Refer to COVID-19 coronavirus information for Queenslanders²⁵ Refer to Section 3.5 Self-quarantine/isolation

3.4 Personal protective equipment

Table 12. Personal protective equipment

Aspect	Consideration
Standard precautions	<ul style="list-style-type: none"> • Follow standard precautions⁴ [refer to Definitions] in addition to other transmission precautions
Droplet and contact	<ul style="list-style-type: none"> • Droplet and contact precautions consist of²: <ul style="list-style-type: none"> ○ Surgical mask ○ Long-sleeved fluid resistant gown ○ Gloves ○ Eye protection (face shield or goggles)
Airborne and contact precautions	<ul style="list-style-type: none"> • Airborne and contact precautions consist of²: <ul style="list-style-type: none"> ○ Fit checked P2 or N95 face mask ○ Long sleeved fluid-resistant gown ○ Gloves ○ Eye protection (face shield or goggles)
Shoe/shoe cover	<ul style="list-style-type: none"> • Wear shoes that are impermeable to liquids⁵⁰ • Recurrent use of shoe covers is not recommended as repeated removal is likely to increase the risk of contamination⁵⁰
Head covers	<ul style="list-style-type: none"> • Not required²
Recommendation for PPE selection	<ul style="list-style-type: none"> • Follow recommended PPE escalation guidance⁵¹ during periods of low, moderate and high risk of community transmission of COVID-19 (as defined in the guidance) • As per Queensland Health recommendations² <ul style="list-style-type: none"> ○ <i>Undertake risk assessment considering the type of patient interaction, risk of transmission of the infectious agent and the risk of contamination of healthcare worker skin/mucous membranes by patients' blood, body substances, secretions or excretions and how long the PPE is likely to be worn</i>

3.5 Self-quarantine/isolation

Table 13. Self-quarantine/isolation

Aspect	Consideration
Definitions	<ul style="list-style-type: none"> • Self-quarantine <ul style="list-style-type: none"> ○ Used to restrict the movement of a well person who may have been exposed for the period when they could become unwell (duration 14 days for COVID-19) • Self-isolation <ul style="list-style-type: none"> ○ Used to separate ill people from those who are healthy until they are declared recovered
When to recommend	<ul style="list-style-type: none"> • Follow recommendations as specified in the current Communicable Diseases Network Australia (CDNA) National guidelines for public health units Coronavirus Disease 2019 (COVID-19)¹
Advice for self-quarantine/isolation	<ul style="list-style-type: none"> • Refer to Queensland Health COVID-19 self-isolation requirements⁵² • Do not <ul style="list-style-type: none"> ○ Go out (e.g. to school, work, public areas or use public transport) except to obtain essential medical care, medical supplies (where these cannot be delivered), or to avoid injury, illness or to escape a risk of harm ○ Do not have visitors to the home • Do <ul style="list-style-type: none"> ○ Return home using personal transport (not public transport or ride sharing options) ○ Stay indoors at home ○ Separate self from other household members (use own bed, bathroom, towels, crockery and utensils as is feasible) <ul style="list-style-type: none"> ▪ Self-quarantine: separation as much as possible ▪ Self-isolation: strictly avoid contact, or reside only with other positive cases ○ Ventilate rooms by opening windows ○ Avoid contact with all visitors to the home • If directed by a healthcare provider to leave the house (e.g. attend an appointment) wear a face mask • To contact health professional if any concerns <ul style="list-style-type: none"> ○ Provide contact details including 13HEALTH (13 43 25 84) and for local maternity service • To keep in touch with family and friends via non-direct contact methods (e.g. telephone, video telephony applications) to minimise feelings of isolation
Care provision in the home	<ul style="list-style-type: none"> • Avoid face-to-face contact until released from isolation/quarantine • Resume scheduled healthcare after self-quarantine/isolation complete • If healthcare cannot be delayed, individually assess the need for hospital admission²⁹ • Recommend mother and baby remain co-located in the home during self-quarantine/isolation
PPE	<ul style="list-style-type: none"> • If face-to-face contact with the woman during self-isolation/quarantine is essential, use droplet, contact and standard precautions² <ul style="list-style-type: none"> ○ Surgical mask, long-sleeved fluid resistant gown, gloves and eye protection (face shield or goggles)
Risk minimisation	<ul style="list-style-type: none"> • Provide information about infection prevention and control practices that can prevent transmission of COVID-19¹ <ul style="list-style-type: none"> ○ Refer to Table 9. Containment and risk minimisation • Refer to Queensland Clinical Guideline: Parent information: <ul style="list-style-type: none"> ○ COVID-19 in pregnancy⁵³ ○ COVID-19 and breastfeeding³⁵

4 In-hospital maternity care (if suspected or confirmed COVID-19)

For women with severe COVID-19 disease requiring Intensive Care Unit (ICU) admission or ventilation, consult with multi-disciplinary experts and individualise care.

Table 14. In hospital maternity care

Aspect	Consideration
Retrieval or transfer	<ul style="list-style-type: none"> • Suspected or confirmed COVID-19 alone is not an indication for retrieval or transfer • If transport or retrieval required, follow usual protocols/processes/criteria to arrange
On admission	<ul style="list-style-type: none"> • Follow Queensland Health recommendations⁴³ for inpatient infection prevention and control, isolation, specimen collection and PPE use • To the extent possible: use single rooms and negative pressure rooms • If cohorting of confirmed cases is required, follow Queensland Health guidance and recommendations for patient placement² • Alert obstetric/midwifery/neonatal/anaesthetic/infectious diseases teams of admission • Review the woman's psychological and emotional needs
Treatment	<ul style="list-style-type: none"> • A rapidly evolving area—refer to National COVID-19 Clinical Evidence Taskforce⁵⁴ for latest information/recommendations • Currently no proven antiviral treatment⁵ • Remdesivir for pregnant women with COVID-19 outside of a trial setting is not to be routinely considered⁵⁴
Management	<ul style="list-style-type: none"> • Directed by signs and symptoms, and severity of illness³⁶ <ul style="list-style-type: none"> ○ Anti-pyrexia medicines, anti-diarrheal medicines, intensive care unit admission • Minimise maternal hypoxia <ul style="list-style-type: none"> ○ Oxygen therapy as indicated⁵⁵ to maintain target SpO₂ of 92–95%⁵⁶ ○ Consider using dexamethasone 6 mg daily intravenously or orally for up to 10 days in pregnant or breastfeeding women with COVID-19 who are receiving oxygen⁵⁴ • Consult with infectious diseases/microbiology regarding empiric antibiotic therapy for superimposed bacterial pneumonia³⁶ • Monitor and maintain fluid and electrolyte balance³⁶ • In the current absence of specific treatment recommendations, refer to <i>SOMANZ guidelines for investigation and management of sepsis in pregnancy</i>⁶⁷ noting that aggressive fluid management is <u>not</u> recommended for COVID-19
Venous thromboembolism (VTE) risk	<ul style="list-style-type: none"> • For women with suspected or confirmed COVID-19, recommend VTE prophylaxis (antenatal and postpartum) unless there is a contraindication (e.g. risk of major bleeding)⁵⁴ • Data is limited, especially in pregnant/postpartum women⁵⁸ <ul style="list-style-type: none"> ○ Pregnancy is a state of increased risk for VTE⁵⁹ ○ Patients with COVID-19 reported to have an additional procoagulant state compared to other hospitalized patients, including activation of coagulation through various infectious and inflammatory mechanisms⁶⁰ ○ Reduced mobility resulting from self-isolation at home or from admission may also increase risk²⁹ • Refer to Queensland Clinical Guideline: <i>Venous thromboembolism prophylaxis (VTE) in pregnancy and the puerperium</i>⁵⁹

4.1 In-hospital antenatal care (if suspected or suspected COVID-19)

Table 15. Antenatal care while inpatient

Aspect	Consideration
Clinical surveillance	<ul style="list-style-type: none"> • In addition to usual maternal and fetal antenatal observations, monitor SpO₂ <ul style="list-style-type: none"> ○ Maintain index of suspicion for bacterial pneumonia • Fetal surveillance as clinically indicated • Delay investigations/procedures that require the woman to be transported out of isolation whenever it is clinically safe
Medical imaging	<ul style="list-style-type: none"> • Do not delay necessary medical imaging because of concerns about fetal exposure³⁶ <ul style="list-style-type: none"> ○ Apply radiation shield over the gravid uterus • Ultrasound scan for fetal wellbeing as indicated and after resolution of acute symptoms • If positive COVID-19 result occurs in first trimester, consider a detailed morphology scan at 18–24 weeks <ul style="list-style-type: none"> ○ Currently no data about the risk of congenital malformation with COVID-19 infection acquired in first or second trimester⁶¹ ○ In the setting of maternal fever in general, there is mixed data about the risk of congenital abnormalities during embryogenesis⁶²⁻⁶⁵
Antenatal corticosteroids	<ul style="list-style-type: none"> • Currently insufficient evidence to alter usual indications/recommendations when given for fetal lung maturity²⁹ <ul style="list-style-type: none"> ○ Mixed reports about outcomes, with design limitations affecting generalisability to administration for fetal lung maturity^{66,67} • For women with severe COVID-19 disease requiring ICU admission or ventilation, consider individual circumstances and consult with multi-disciplinary experts
Magnesium sulfate	<ul style="list-style-type: none"> • No evidence to alter usual indications/recommendations <ul style="list-style-type: none"> ○ Consider need for conservative fluid management with COVID-19
Tocolytics	<ul style="list-style-type: none"> • Nifedipine may be beneficial in COVID-19 due to similarities between efficacy in treatment of high altitude pulmonary oedema and lung manifestations of COVID-19⁶⁸ • Non-steroidal anti-inflammatory drugs (e.g. indomethacin) use in setting of COVID-19 has raised concern, however there is no current data to suggest use should be altered⁶⁹ • Avoid betamimetics in women with COVID-19 as may exacerbate maternal hypotension, tachycardia and pulmonary oedema⁶⁶

4.2 Labour and birth (if suspected or confirmed COVID-19)

Table 16. Labour and birth

Aspect	Consideration
Mode and setting	<ul style="list-style-type: none"> • A positive COVID-19 result <i>without other indications</i> is not an indication to expedite birth • Decision for mode of birth not influenced by positive COVID-19 result (unless urgent birth indicated)⁷⁰ • Support the principles of normal birth⁷¹ <ul style="list-style-type: none"> ○ Refer to Queensland Clinical Guideline: <i>Normal birth</i> ○ Discuss risks and benefits of care with the woman and her family • Use a negative pressure room (if possible) for labour and birth • Inform obstetric consultant and anaesthetic, theatre and neonatal teams of admission to birth suite
Caesarean section	<ul style="list-style-type: none"> • If elective caesarean has been planned, individually assess urgency • Avoid general anaesthetic unless necessary for standard indications as intubation is an AGP
Fetal monitoring	<ul style="list-style-type: none"> • No evidence linking asymptomatic COVID-19 infection to fetal compromise • Discuss the options for fetal monitoring in labour with women • If symptomatic, recommend continuous electronic fetal monitoring²⁹ • If asymptomatic, recommend continuous electronic fetal monitoring for usual indications (i.e. not indicated for COVID-19 alone)²⁹ • Apply fetal scalp electrode (FSE) and perform fetal blood sampling (FBS) for usual indications <ul style="list-style-type: none"> ○ If FBS or FSE is considered, weigh the possible (small but unquantifiable) risk of fetal transmission against known benefits of improved assessment of fetal wellbeing⁷²
Neuraxial blockade	<ul style="list-style-type: none"> • No evidence that neuraxial blockade is contraindicated in the presence of COVID-19 • Recommend neuraxial blockade before/early in labour to minimise need for general anaesthesia if urgent birth required²⁹ (intubation is considered an AGP)
Nitrous oxide	<ul style="list-style-type: none"> • Currently insufficient and conflicting information about cleaning, filtering and AGP potential in the setting of COVID-19^{29,73} • For reasons of healthcare provider protection, avoid use by women with suspected or confirmed COVID-19 • If nitrous oxide is offered, recommend face mask rather than mouthpiece (to reduce exhalation dispersion) and use the following circuits recommended by Queensland Health Biomedical Technology Services⁷⁴: <ul style="list-style-type: none"> ○ Where a scavenger system is available, the Equinox® Advantage Analgesia Circuit–MC/4003 ○ Where a scavenger system is not available, the Equinox® Advantage Analgesia Circuit–MC/4001 ○ Refer to Appendix B: Recommended nitrous oxide circuits
Second and third stage	<ul style="list-style-type: none"> • Advise the woman to wear a surgical mask (if tolerated) • Routine maternal observations including oxygen saturation²⁹ • No evidence that delayed cord clamping increases risk of infection to the newborn²⁹ • Manage placental tissue as per usual infectious human tissue protocols <ul style="list-style-type: none"> ○ Discuss restrictions with women prior to birth to assist management of expectation for care (e.g. if the woman was intending to bury/take the placenta home)
Clinical emergencies	<ul style="list-style-type: none"> • Donning of PPE takes time, therefore, to facilitate a rapid response to a clinical emergency, consider: <ul style="list-style-type: none"> ○ Neuraxial blockade early in labour (to avoid need for general anaesthetic) ○ Lowering the threshold for escalation of clinical concerns ○ Early notification to operating room team (e.g. if PPH)

4.2.1 Water immersion and waterbirth (if suspected or confirmed COVID-19)

Table 17. Water immersion and birth

Aspect	Consideration
Context	<ul style="list-style-type: none"> • SARS-COV-2 has been detected in faeces¹⁰⁻¹² but there is no evidence that this has resulted in faecal-oral spread • There is a small (but unquantifiable) risk that water contaminated with faeces could pose an infection risk to the baby and/or to staff⁷ caring for the woman²⁹ • Women who are symptomatic of COVID-19 require close surveillance (including vital signs and oxygenation levels) and this may be better provided on land²⁹ • The integrity of PPE can become compromised when wet⁷ • Follow usual protocols for individual risk assessment, infection prevention and control, and workplace health and safety procedures
Evidence summary	<ul style="list-style-type: none"> • There is insufficient evidence to make firm recommendations about water immersion/birth • Professional organisations have differing views and recommendations^{7,29,75,76} <ul style="list-style-type: none"> ○ Focus is on differing populations of pregnant women (e.g. all women, only if high risk of community transmission, symptomatic versus asymptomatic) ○ Have varying applicability/relevance to Queensland ○ All opinion based due to paucity of evidence
Asymptomatic women	<ul style="list-style-type: none"> • Queensland consensus recommendation <ul style="list-style-type: none"> ○ If waterbirth or water immersion is requested by a woman who is asymptomatic with suspected or confirmed COVID-19 <ul style="list-style-type: none"> ▪ Perform a risk assessment (for the woman and the staff) ▪ Take into account individual circumstances and the preferences of the woman and the staff providing care ○ If water immersion/birth is offered, waterproof PPE is required
Symptomatic women	<ul style="list-style-type: none"> • Queensland consensus recommendation (informed primarily by the need for close surveillance and the potential for rapid deterioration) <ul style="list-style-type: none"> ○ For women who are symptomatic with suspected or confirmed COVID-19 <ul style="list-style-type: none"> ▪ Water immersion is not recommended ▪ Waterbirth is not recommended

4.3 Postnatal care (if suspected or confirmed COVID-19)

Table 18. Postnatal care

Aspect	Consideration
Co-location of mother and baby	<ul style="list-style-type: none"> • Co-location (rooming in) of well mother and well baby is recommended <ul style="list-style-type: none"> ◦ Determine need on individual basis considering for example, disease severity, parental preferences, psychological wellbeing, other clinical criteria¹⁸ • Support vigilant risk minimisation strategies (e.g. hand hygiene, use of face mask) during feeding and other close mother-baby interactions
Risk minimisation	<ul style="list-style-type: none"> • Provide information and education on strategies to use during usual mother-baby interactions (e.g. skin to skin, holding, cuddling, nappy change, feeding) <ul style="list-style-type: none"> ◦ Refer to Table 9. Containment and risk minimisation • Discuss risks and benefits of close contact versus postnatal separation with parents¹⁸ (including discharge home of well baby if mother requires continued in-hospital care) • No evidence to support washing of maternal or baby skin before initial contact or breastfeeding as a risk minimisation strategy • Consult with clinical experts as required
Feeding choice	<ul style="list-style-type: none"> • Provide usual support for maternal feeding preferences • Breastfeeding is supported and is not contraindicated <ul style="list-style-type: none"> ◦ No detectable viral DNA found in breast milk⁹ • Provide dedicated equipment¹⁸ and follow usual sterilisation standards for both breastfeeding equipment (e.g. breast pump) and for infant formula preparation and feeding equipment
Expressed breast milk (EBM)	<ul style="list-style-type: none"> • Support and encourage mother to express breastmilk (if feeding preference) • Instruct and support adherence to infection prevention and control measures <ul style="list-style-type: none"> ◦ Hand hygiene ◦ Equipment cleaning and sterilisation (use dedicated breast pump) ◦ Wearing of face mask (as risk of transmission is unknown) ◦ Wipe outside of container with disinfectant wipe and allow to dry^{77,78} (evidence limited) • Milk bank: pasteurisation destroys other coronaviruses⁷⁹, but it is unknown if this applies to SARS-CoV-2
Discharge	<ul style="list-style-type: none"> • Consider usual discharge criteria • If requirements for self-isolation/quarantine are not complete at discharge <ul style="list-style-type: none"> ◦ Inform the woman about the requirements for completing self-isolation/quarantine at home ◦ Notify local public health unit of a discharge requiring ongoing quarantine/isolation • If women, their babies and/or support people are returning to defined restricted areas under the Human Biosecurity Act: <ul style="list-style-type: none"> ◦ Refer to Chief Health Officer public health directions⁸⁰ ◦ Involve local cultural supports (e.g. health worker, Aboriginal and Torres Strait Islander Medical Services) to facilitate delivery of clinical and psycho-social postpartum care during self-isolation/quarantine • Refer to Appendix A: Modified schedules for low-risk women during COVID-19

5 Newborn care

For babies born to mothers who are not suspected or confirmed COVID-19, provide usual recommended newborn care.

5.1 General principles (for all babies)

Table 19. General principles

Aspect	Consideration
Transmission	<ul style="list-style-type: none"> • Maintain high index of suspicion for signs of sepsis/unwell baby • No cases of vertical transmission have been confirmed^{9,81-83} but the possibility has not been excluded <ul style="list-style-type: none"> ○ Refer to Section 1.1 Background • Babies are at risk of infection from a mother's respiratory secretions after birth^{82,84} • Perinatal exposure may be possible via maternal stool¹⁰⁻¹²
Organisation of neonatal unit areas	<ul style="list-style-type: none"> • If possible, identify three separate areas within the neonatal unit • One each for babies: <ul style="list-style-type: none"> ○ With proven COVID-19 ○ Suspected COVID-19/close contact ○ No risk or suspicion of COVID-19 • If separate areas not possible, nurse babies who are contacts of a positive COVID-19 person, or who are suspected COVID-19 cases, or who are confirmed COVID-19 cases in a single room • Nurse babies suspected or confirmed COVID-19 in an incubator
Principles of visitor management	<ul style="list-style-type: none"> • Follow public health directives and local visiting protocols <ul style="list-style-type: none"> ○ Refer to Table 6. Hospital visiting • Facilitate use of video to mitigate loss of family contact⁸⁵
Newborn screening test (NST)	<ul style="list-style-type: none"> • Collect the newborn screening test according to usual processes and within usual timeframes whenever possible • If baby is discharged from hospital into quarantine or isolation before 48 hours of age, collect an NST at the time of discharge <ul style="list-style-type: none"> ○ After release from quarantine or isolation has occurred, collect another NST at the earliest opportunity • Notify GP if follow-up actions required

5.2 Risk management (baby of suspected or confirmed COVID-19 mother)

Table 20. Risk management

Aspect	Consideration
Risk assessment	<ul style="list-style-type: none"> • A baby born to a mother with suspected or confirmed COVID-19 is considered a close contact of the mother (even if separated from the mother at birth) and requires 14 days of quarantine and infection prevention and control precautions <ul style="list-style-type: none"> ○ This is irrespective of any subsequent negative test result for the baby within the 14 days of quarantine ○ Baby can be co-located with mother (who requires isolation) • When mother is no longer considered infectious for COVID-19 the baby can be released from quarantine if: <ul style="list-style-type: none"> ○ Mother is the only person to have cared for baby in the 14 days from last exposure <i>or</i> ○ Healthcare workers assisting the mother or providing direct care for the baby during the quarantine, have adhered to standard, contact and droplet precautions and ○ Father or another carer providing care during the quarantine, has worn a surgical mask, observed hand hygiene and promptly changed clothes that became soiled with baby bodily fluids
Well term baby and well mother	<ul style="list-style-type: none"> • Baby is well (term or near-term gestation) and mother is well <ul style="list-style-type: none"> ○ Co-locate with mother in a single room OR ○ Discharge home ○ PPE: Droplet and contact precautions
Unwell baby without respiratory support	<ul style="list-style-type: none"> • Baby requiring neonatal unit admission without respiratory support <ul style="list-style-type: none"> ○ Single room ○ Closed incubator/cot ○ PPE: Droplet and contact precautions
Unwell baby with respiratory support	<ul style="list-style-type: none"> • Baby requiring neonatal unit admission with respiratory support (or critically unwell and likely to require respiratory support) <ul style="list-style-type: none"> ○ Negative pressure room (if available) ○ Closed incubator/cot ○ PPE: Airborne and contact precautions
Baby with confirmed COVID-19	<ul style="list-style-type: none"> • Babies are known to be significant shedders of respiratory viruses⁸⁶ • A confirmed COVID-19 positive baby may or may not require care within neonatal unit • Follow PPE precautions appropriate to clinical situation as above

5.3 Initial care (baby of suspected or confirmed COVID-19 mother)

Table 21. Baby of suspected/positive COVID-19 mother

Aspect	Consideration
Neonatal team attendance at birth	<ul style="list-style-type: none"> • Assign a dedicated neonatal team member to attend the birth⁸⁷ according to usual clinical indications (i.e. not required for reason of suspected or confirmed COVID-19 mother alone) • To minimise healthcare provider exposure <ul style="list-style-type: none"> ○ Experienced/senior clinician to attend in the first instance ○ Don PPE in an adjacent area and wait outside birthing area until/if required ○ Consider if neonatal stabilisation/resuscitation in a room outside of the birthing room/theatre is appropriate
Resuscitation	<ul style="list-style-type: none"> • Minimise equipment on resuscitation cot to essential items <ul style="list-style-type: none"> ○ Place extra equipment anticipated to be required in sealed plastic bags • The use of additional barriers (e.g. placing baby under plastic sheet) for the purpose of COVID-19 infection control, is not currently supported by the Australian Society of Anaesthetists as may inadvertently increase the risk of transmission⁸⁸ <ul style="list-style-type: none"> ○ Follow usual indications for the use of plastic/polyethylene bags during neonatal resuscitation • Follow standard neonatal resuscitation recommendations <ul style="list-style-type: none"> ○ Refer to Queensland Clinical Guideline: <i>Neonatal resuscitation</i>⁸⁹ • Refer to Section 5.4 Neonatal respiratory support (if COVID-19 suspected or confirmed)
Admission to neonatal unit	<ul style="list-style-type: none"> • COVID-19 positive mother (i.e. no other neonatal criteria), is not itself an indication for admission to a neonatal unit^{53,83} • Perform clinical assessment after birth as per usual assessment protocols • Assess if required care can safely be provided during co-location with mother (preferred option⁵³) • Follow usual clinical criteria, processes and protocols relevant to admission • Refer to Table 20. Risk management
Transport	<ul style="list-style-type: none"> • Where feasible, transport baby in a closed system between locations in the facility • Plan the transport route in advance • Consider use of a: <ul style="list-style-type: none"> ○ Dedicated elevator ○ “Runner” to open doors and clear obstacles

5.4 Neonatal respiratory support (if COVID-19 suspected or confirmed)

Table 22. respiratory support management

Aspect	Consideration
Aerosol generating procedures (AGP)	<ul style="list-style-type: none"> • Evidence for risk of aerosol transmission arising from neonatal respiratory care is limited • To maximise healthcare provider protection, this guideline currently includes the following procedures as AGP⁸⁵ (but not necessarily limited to): <ul style="list-style-type: none"> ○ Intubation, extubation and related procedures (e.g. manual ventilation) ○ Open suctioning of respiratory tract (including upper respiratory tract) ○ Less invasive surfactant administration (LISA) ○ Non-invasive ventilation (e.g. continuous positive airway pressure (CPAP)) ○ Tracheotomy/tracheostomy procedures (insertion, open suctioning, or removal) ○ High frequency oscillatory ventilation (HFOV) ○ High flow nasal oxygen
Risk minimisation	<ul style="list-style-type: none"> • Nurse babies requiring respiratory support in an incubator • If available, in a negative pressure room • Use airborne and contact PPE • If used in current practice, use in-line suction with endotracheal tubes⁵⁰ • Avoid bubble CPAP • Avoid use of nebulised agents (salbutamol, saline)⁵⁰ although conflicting information about whether it is an AGP⁸⁵

5.4.1 Neonatal filters (if COVID-19 suspected or confirmed)

Table 23. Neonatal filters

Aspect	Consideration
Filter function	<ul style="list-style-type: none"> • On inspiration the filter membrane prevents microorganisms reaching the baby and causing cross infection • On expiration the filter membrane prevents contamination of the external environment and equipment
Risk assessment	<ul style="list-style-type: none"> • During initial resuscitation immediately after birth, the risk of COVID-19 transmission is considered very low, even if mother is positive COVID-19 • Fisher & Paykel (F&P)⁹⁰ recommend against filter use with F&P Neopuff™ • Familiarity with resuscitation equipment is an important component of safe and effective ventilation
Recommendation	<ul style="list-style-type: none"> • Initial resuscitation after birth <ul style="list-style-type: none"> ○ Continue to use usual/familiar devices for initial neonatal resuscitation ○ Preference familiar devices (e.g. Neopuff™) without a filter to unfamiliar equipment or methods with a filter • Resuscitation/ventilation beyond initial stabilisation <ul style="list-style-type: none"> ○ Follow local protocols ○ Use a viral/bacterial filter during resuscitation ○ Place a viral/bacterial filter in the expiratory line of the breathing circuit • Refer to • • Appendix C: Neonatal filter use

5.5 Newborn COVID-19 testing

Table 24. Newborn testing

Aspect	Consideration
Context	<ul style="list-style-type: none"> • Low sensitivity of the test (i.e. number of false negatives) may be of greater concern than low specificity of the test (i.e. number of false positives) therefore a positive result may be more clinically informative than a negative result
Routine testing	<ul style="list-style-type: none"> • Routine testing not recommended for asymptomatic baby born to mother with suspected or confirmed COVID-19 • Refer to indications for testing (below), use clinical judgement, and follow local protocols/expert advice
Indications for testing¹	<ul style="list-style-type: none"> • Symptomatic baby (e.g. fever, acute respiratory illness) not otherwise explained in a baby: <ul style="list-style-type: none"> ◦ With a COVID-19 positive caregiver (e.g. mother, household contact or healthcare provider) ◦ Where transmission is suspected due to environmental setting (e.g. ward cluster) • Suspected congenital infection or vertical transmission (e.g. congenital pneumonia) in baby born to mother with suspected/confirmed COVID-19
Timing of test (if indicated)	<ul style="list-style-type: none"> • If indicated (refer above), test 12–24 hours after birth (earlier is likely to reflect maternal infection) • Undertake subsequent testing as indicated
Sample collection	<ul style="list-style-type: none"> • Collect nasopharyngeal and oropharyngeal swab <ul style="list-style-type: none"> ◦ Single swab for both sites ◦ If intubated, collect endotracheal aspirate • Individually assess and seek expert advice as to whether other specimens (e.g. faeces, blood) should be collected and/or stored for later testing • Refer to Table 11. Testing

5.6 Discharge (following suspected or confirmed COVID-19)

This section applies to the baby born to a mother with suspected or confirmed COVID-19, and/or to the baby who is suspected or confirmed COVID-19 after birth.

Table 25. Discharge

Aspect	Consideration
Criteria for discharge	<ul style="list-style-type: none"> • Consider usual criteria for readiness for discharge (e.g. wellness, laboratory test results) • An appropriate caregiver has been identified • For discharge home, a negative test is not required prior to release from hospital isolation
Appropriate caregivers	<ul style="list-style-type: none"> • The mother who is well enough and meets criteria for discharge • Alternate caregiver determined on a case by case basis who <ul style="list-style-type: none"> ◦ Has no respiratory symptoms ◦ Is considered appropriate/safe care giver for baby
Discharge prior to 14 days	<ul style="list-style-type: none"> • If discharged prior to release from quarantine or isolation <ul style="list-style-type: none"> ◦ Continue clinical monitoring until released from quarantine or isolation • Consider local capacity when determining how clinical monitoring is to be undertaken after discharge (e.g. telehealth services, home visiting, GP) • Notify local public health unit of a discharge requiring ongoing quarantine/isolation
Post discharge	<ul style="list-style-type: none"> • Provide post discharge advice about indications for readmission and possible course of disease¹⁶ <ul style="list-style-type: none"> ◦ Most commonly reported are respiratory symptoms requiring readmission one to three weeks after discharge • If local risk assessed as low, advise routine follow-up • If local risk assessed as elevated, delay routine follow-up as required (e.g. hearing screen) • Advise GP of the follow-up actions required (e.g. NST) • Refer to Child Health Services as per usual process

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Appendix A: Modified schedules for low-risk women during COVID-19

Modification of peripartum care schedules

- If local risk assessed as low, follow usual face-to-face (F2F) schedule and incorporate/replace encounters with telehealth as indicated for the circumstances
 - Add more F2F in the third trimester
 - If local risk assessed as elevated reduce number/duration of face-to-face contacts (F2F)
 - Conduct F2F with minimum number of people (preferably woman only)
 - Minimise time in appointment waiting areas
 - Consider hybrid models (F2F and telehealth) (e.g. for booking in visit)
 - Schedule F2F around care that requires physical interaction/care (e.g. vaccination)
- **During every F2F contact**
 - Perform usual clinical assessments (e.g. blood pressure, fundal height, fetal heart, weight, urinalysis)
 - Ask about fetal movements, mental wellbeing, domestic violence

Gestation	Contact type	COVID-19 recommendations for low risk woman
<12 weeks (or first visit)	F2F	<ul style="list-style-type: none"> • Recommend influenza vaccination • Consider dating scan (6–8 weeks) for dates, viability, location • Recommend nuchal scan (11–13 weeks) +/- NIPT (≥ 10 weeks) • Give referral for routine antenatal blood tests <p>Elevated risk</p> <ul style="list-style-type: none"> • Request GDM testing with HbA1c • Request ferritin with Hb assessment (assume blood stock low)
12–18 weeks	F2F or telehealth	<ul style="list-style-type: none"> • Recommend morphology scan (18–20 weeks) • Plan for hospital booking-in • Discuss antenatal classes <p>Elevated risk</p> <ul style="list-style-type: none"> • Hospital booking-in via telehealth • Antenatal classes online/virtual
20–22 weeks	F2F	<ul style="list-style-type: none"> • Recommend pertussis vaccination • Give referral for routine 26–28 week blood tests <p>Elevated risk</p> <ul style="list-style-type: none"> • Request GDM testing (at 24–28 weeks) as per screening and diagnosis during COVID-19 • Request ferritin with Hb assessment (assume blood stock low)
24–26 weeks	F2F or telehealth	<ul style="list-style-type: none"> • Routine antenatal care
28 weeks	F2F	<ul style="list-style-type: none"> • If indicated, RhD immunoglobulin (anti-D) • Give referral for routine 36 week bloods <p>Elevated risk</p> <ul style="list-style-type: none"> • Request ferritin with Hb assessment (assume blood stock low)
31 weeks	F2F or telehealth	<ul style="list-style-type: none"> • Routine antenatal care
34–37 weeks	At least one F2F	<ul style="list-style-type: none"> • If indicated, RhD immunoglobulin (anti-D) • Consider USS for growth and position
	Remainder telehealth	<ul style="list-style-type: none"> • Routine antenatal care
38 weeks	F2F or telehealth	<ul style="list-style-type: none"> • Routine antenatal care
41 weeks	F2F	<ul style="list-style-type: none"> • Usual considerations for fetal well-being and birth planning

Postnatal schedule		
Gestation	Contact type	COVID-19 recommendations for low risk woman
0–6 weeks postpartum	F2F or Telehealth	<ul style="list-style-type: none"> Perinatal mental health check Ask about domestic violence Routine postnatal care Elevated risk <ul style="list-style-type: none"> Delay GDM follow-up <ul style="list-style-type: none"> Refer to updated GDM postnatal follow-up recommendations
6 weeks	F2F	<ul style="list-style-type: none"> Routine maternal and newborn assessment Newborn vaccinations Check completion of routine newborn follow-ups (e.g. NNST, hearing screen) Elevated risk <ul style="list-style-type: none"> Newborn assessment: prioritise growth, eyes, hips, heart

Antenatal and postnatal schedules adapted with permission: from an original by Dr Wendy Burton April 2020

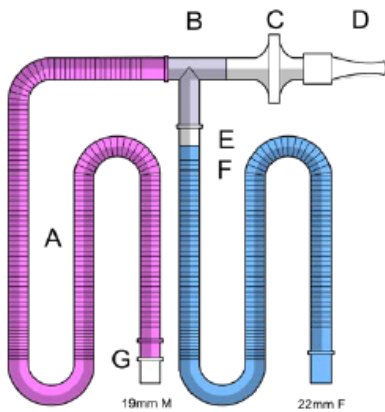
Ultrasound schedule if elevated risk		
Scan	Asymptomatic woman	Symptomatic woman
11+0–13+6 weeks*	<ul style="list-style-type: none"> Combined test Offer non-invasive prenatal testing (NIPT) 	<ul style="list-style-type: none"> Reschedule combined test in 2 weeks if still within gestational-age window Offer NIPT/serum screening and detailed scan 3–4 weeks after quarantine
18+0–23+0 weeks*	<ul style="list-style-type: none"> Anatomical scan 	<ul style="list-style-type: none"> Reschedule after quarantine in 2–3 weeks
Fetal growth scan in third trimester	<ul style="list-style-type: none"> Reduce numbers of scans as clinically appropriate <ul style="list-style-type: none"> Perform only for standard clinical indications If no clinical review in late pregnancy (no fundal height measurement; fetal heart rate auscultation), consider brief late gestation scan to confirm presentation and fetal wellbeing (biometrics and amniotic fluid volume measurement) 	

*Source: ISUOG Consensus Statement on organization of routine and specialist obstetric ultrasound services in the context of COVID-19. (2020)

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Appendix B: Recommended nitrous oxide circuits

Where a scavenger system is available, use Equinox® Advantage Analgesia Circuit–MC/4003
 Where a scavenger system is not available, use Equinox® Advantage Analgesia Circuit–MC/4001

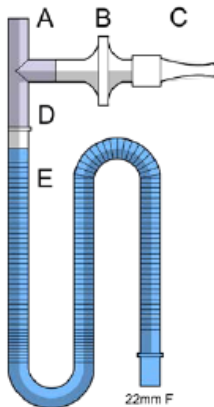


MC/4003 Equinox® Advantage with Scavenger Limb

3.0m Disposable Patient Circuit with Filter, Mouthpiece and 3.0m Pink Scavenger Tubing with 19mm M Connector

Consisting of:

- A. MP-EX22P120 22mm ID Pink Expandable Tubing PP
- B. M-HP Handpiece 22mm M/M/M with one-way valve (SY)(S)
- C. 55000104-500 In-line Filter 22mm M/F (PP)
- D. 56001 Mouthpiece 22mm F (HDPE)
- E. PH70018 One-way valve 22mm M/F (PP) (S)
- F. MP-EX22B120 22mm ID Blue Expanded Tubing (PP)
- G. PH3200(D) Adaptor 22mm M to 19 mm M(PP)

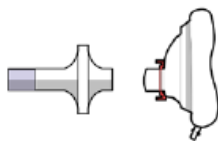


MC/4001 Equinox® Advantage Single Limb Circuit

3.0m Disposable Patient Circuit with Filter and Mouthpiece

Consisting of:

- A. MC-HP Handpiece 22mm M/M/M with one-way valve (SY) (S)
- B. 55000104-500 In-line Filter 22mm M/F (PP)
- C. 56001 Mouthpiece 22mm F (HDPE)
- D. PH70018 One-way valve 22mm M/F (PP) (S)
- E. MP-EX22B120 22mm ID Blue Expanded Tubing (PP)



Replace mouthpiece with mask

Recommended by Queensland Health, Biomedical Technology Services for use by suspected or confirmed COVID-19 women

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Appendix C: Neonatal filter use

Aspect	Recommendation
Filter use	<ul style="list-style-type: none"> • Viral/bacterial filter may be used with: <ul style="list-style-type: none"> ○ Self-inflating bags and flow inflating bags/circuits ○ T piece (F&P recommend against use with Neopuff™) ○ Ventilation circuits
HME filter type	<ul style="list-style-type: none"> • The viral/bacterial filter may or may not contain a heat and moisture exchanger (HME) • There are a range of filters suitable for use—consider: <ul style="list-style-type: none"> ○ Impact on tidal volume (number of mL added) ○ Connection fit to existing equipment ○ Need for humidification/suitability for humidification ○ Availability of stock <p><u>ONE Example:</u> (others may be suitable)</p> <ul style="list-style-type: none"> • Viral/bacterial filter with HME—humidifier is not required <ul style="list-style-type: none"> ○ Medtronic DAR™ PAEDIATRIC NEONATAL Electrostatic Filter HME SMALL (catalogue number 355/5427)
Filter placement	<ul style="list-style-type: none"> • Refer to Figure1 for circuit assembly
Disconnection from circuit	<ul style="list-style-type: none"> • Minimise disconnections (as far as possible) because this may increase aerosol dispersion • Refer to Figure 1 and disconnect at the recommended point to minimise transmission
Sourcing filters	<ul style="list-style-type: none"> • Order filters through usual procurement processes • Consider ordering one box (25) and sharing within Hospital and Health Service (to conserve supply) • Stocks may be out or low—check at the time of ordering
Humidification	<ul style="list-style-type: none"> • Refer to individual product information as humidification not recommended with some filters

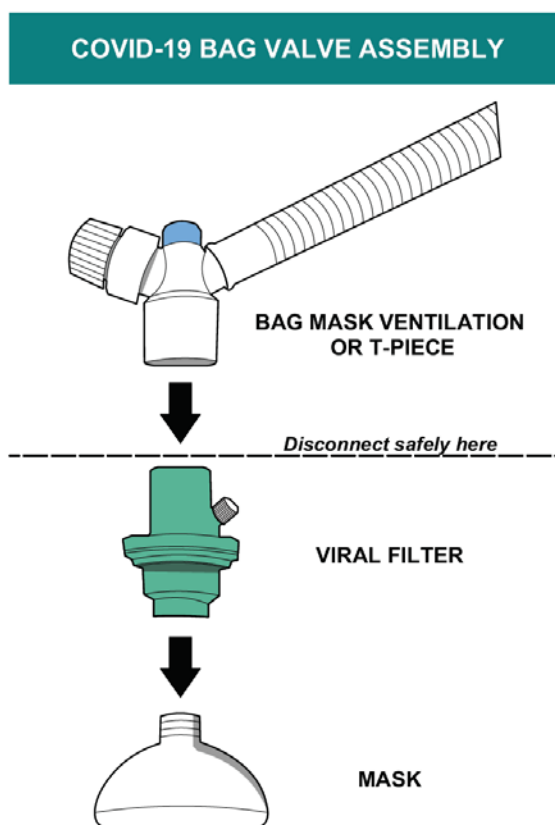


Figure 1: Set up for neonatal resuscitation using viral/bacterial filter

Source: Adapted with permission from Queensland Children’s Hospital: *Queensland paediatric consensus statement: paediatric intubation guideline during the COVID-19 outbreak* available at www.childrens.health.qld.gov.au (redrawn by Annabel Lee) F20.63-4-V2-R25

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Working Party Co-Clinical Leads

Professor Rebecca Kimble, Pre-eminent Specialist, Obstetrician and Gynaecologist, Royal Brisbane and Women's Hospital

Dr Pieter Koorts, Director of Neonatology, Royal Brisbane and Women's Hospital

QCG Program Officer

Jacinta Lee, Manager Queensland Clinical Guidelines

Consultation A working party was not formally convened. The following invited stakeholders provided feedback into this version and/or previous versions

Ms Rukhsana Aziz, Clinical Midwifery Consultant, Ipswich Hospital

Dr Pita Birch, Director of Neonatology, Mater Health, Brisbane

Ms Ann Bousfield, Clinical Midwifery Consultant, South West Hospital and Health Service

Dr Paul Bretz, Director of Obstetrics and Gynaecology, Mater Health, Brisbane

Dr Wendy Burton, General Practitioner, Morningside General Practice, Brisbane

Professor Leonie Callaway, Director of Research, Royal Brisbane and Women's Hospital

Dr Jeremy Chin, Obstetrician, Northern Territory Health Services

Dr Lindsay Cochrane, Obstetrician and Gynaecologist, Caboolture Hospital, Brisbane

Dr Candice Colbran, Public Health Physician, Aboriginal and Torres Strait Islander Health Division

Ms Li-an Collie, Nurse Educator, Neonatal Retrieval Emergency Service Southern Queensland (NeoRESQ)

Ms Eileen Cooke, Consumer Representative, Preterm Infant Parents' Association

Ms Collen Clur, Chief Strategy Officer, West Morton Hospital and Health Service

Ms Vanessa Curnow, Executive Director, Aboriginal and Torres Strait Islander Health, The Children's Hospital and Health Service

Mr Ashley Currie, Aboriginal and Torres Strait Islander District Co-ordinator, Metro South Hospital and Health Service

Ms Leah Hardiman, Consumer Representative

Dr Graeme Jackson, Director of Obstetrics and Gynaecology, Redcliffe Hospital, Brisbane

Ms Belinda Jennings, Senior Midwifery Advisor, Northern Territory Department of Health

Ms Catherine Marron, Acting Nursing Director, Central Queensland Hospital and Health Service

Ms Linda Medlin, Principal Advisor, Aboriginal and Torres Strait Island Community Health, Central Queensland Hospital and Health Service

Professor Michael Nicholl, Senior Clinical Advisor, Obstetrics, New South Wales Health

Dr Scott Petersen, Maternal Fetal Medicine Specialist, Mater Hospital, Brisbane

Ms Verity Powell, Registered Midwife, Northern Territory Department of Health

Ms Kate Reynolds, Coordinator of Midwifery, Western Australia Country Health

Dr Vijay Roach, President, Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG)

Ms Kelly Smith, Service Development Officer, Aboriginal and Torres Strait Islander, Chermside Community Health Centre, Brisbane

Ms Patricia Smith, Nursing and Midwifery Director, Royal Brisbane and Women's Hospital

Ms Rhonda Taylor, Clinical Midwife Consultant, The Townsville Hospital

Dr Jocelyn Toohill, Director of Midwifery, Officer of the Chief Nursing and Midwifery Office Queensland

Professor Ewan Wallace, Chief Executive Officer, Safer Care Victoria

Dr Jennifer Yan, Infectious Diseases Paediatrician, Northern Territory Health Services

Queensland Clinical Guidelines Team

Professor Rebecca Kimble, Director

Ms Jacinta Lee, Manager

Ms Cara Cox, Clinical Nurse Consultant

Ms Stephanie Sutherns, Clinical Nurse Consultant

Ms Emily Holmes, Clinical Nurse Consultant

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