

Simulation Package: Bronchiolitis

An open access resource for clinical educators



Optimus
BONUS

Optimus

BONUS

Bank Of iNdependently Useful Simulations

Part of the Children's Health Queensland 'Optimus' curriculum.

Optimus BONUS: Bronchiolitis

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For more information contact : Simulation Training Optimising Resuscitation for Kids (STORK) Unit, Queensland Children's Hospital, 501 Stanley St, South Brisbane QLD 4101, stork@health.qld.gov.au

A copy of this file is available online at : <https://www.childrens.health.qld.gov.au/research/education/queensland-paediatric-emergency-care-education/optimus-bonus/>

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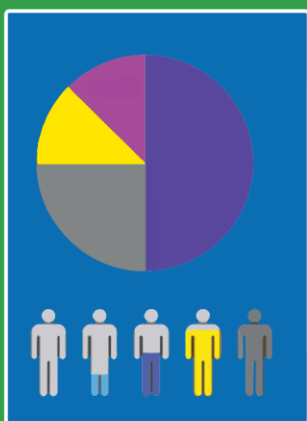
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Contents of this educational package:



Simulation

Management of bronchiolitis
Administration of High Flow Nasal O₂



Infographic

For sharing in the weeks before
or after your simulation via email
or in poster format.



Further Reading

Podcasts and Blog Posts
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Journal Articles

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Simulation

Introduction by

Donna Franklin, Paediatric Research Fellow, CCCRG, GCUH, GU and JCU.



Donna Franklin has a nursing career spanning more than 30 years in Paediatric Intensive Care at Mater Children's Hospital (MCH) Brisbane and Gold Coast University Hospital (GCUH) Southport, Australia and The Hospital for Sick Children, Toronto, Canada. Donna was the Nurse Unit Manager of the MCH Paediatric Intensive Care Unit for greater than 10 years. Highlights of her career have included the integration of the new paediatric cardiac service into the MCH, performing and leading the paediatric retrieval service in Queensland and co-authoring minimal standards for paediatrics services across the State of Queensland. She has completed various postgraduate studies, including a Paediatric Critical Care Certificate, Graduate Diploma in Aviation Physiology, Graduate Certificate in Management and a Masters in Business Administration, in which she was awarded both the coveted Statewide and National Outstanding Alumnus of the Year awards at the Southern Cross University.

Donna completed her PhD in 2018 through the School of Medicine at The University of Queensland which is focused on Nasal High Flow therapy in infants with bronchiolitis. She published her findings of her PhD question in The New England Journal of Medicine in 2018. Donna currently leads several studies relating to Nasal High Flow therapy in paediatrics (~\$10M in funding) and is the Chair on the Research Committee of the World Federation of Pediatric Intensive and Critical Care Societies (WFPICCS). Donna has been successful in three Fellowships (NHMRC and 2 x QACRF) in recent years and is the lead CI of a large RCT across numerous rural and remote health care sectors of Qld, aiming to improve the lives of children with respiratory illnesses (MRFF Funded project).

“Bronchiolitis is a common viral disease that significantly affects infants less than 12 months of age. Many of these infants require hospitalisation with their severity of respiratory function dictating the modality of respiratory support applied. Furthermore, infants with bronchiolitis has shown increasing hospital admission rates worldwide, which subsequently place a high economic burden on the health care system.

This cohort of infants has been comprehensively studied in terms of management and use of both pharmaceutical and non-pharmaceutical methods and unfortunately no single intervention has shown to reduce the hospital length of stay. The major change that has been observed over the last 2 decades is a decrease in the proportion of infants with bronchiolitis receiving invasive mechanical ventilation, replaced by non-invasive modalities such as CPAP or nasal high-flow. High-flow has superseded CPAP, not necessarily because of its higher efficacy but ease of use.

High-grade evidence (mostly obtained in Australian and New Zealand settings) in the management of this cohort of patients is now ample in respect to what oxygen therapy to apply. Data suggests high-flow as the method of treatment choice for the bronchiolitis infant earlier in the progression of the disease process to avoid escalation and avoid intensive care admission. However, before widespread application occurs, further studies to identify risk groups and distinct selection criteria for use of high-flow needs to be performed to avoid ‘over use’ of high-flow. The current evidence shows that not all bronchiolitis infants with an oxygen requirement need high-flow therapy. Based on the current evidence, high-flow therapy has a very high safety profile when used outside intensive care. Emergency departments and general paediatric wards are now safely, efficiently and effectively using high-flow therapy using the existing framework of guidelines. The use of high-flow therapy in children is now being used more widely in the rural and remote regions of Queensland hospitals. A guideline specifically designed for these health care sectors provides boundaries/parameters for escalation of care to higher level services.

A significant component to ensure effective application of High Flow Nasal Cannula Oxygen Therapy is matching the inspiratory demand with flows applied. Matching the inspiratory demand will offload the diaphragm and thus reduce the work of breathing effort by the infant. It is recommended in the moderately unwell to severe infant with bronchiolitis to apply 2L/kg/min with an inspired oxygen fraction up to 40%. If further increase of respiratory support is required, transfer to a higher level of care needs to be considered. Weaning of flows when the infants is improving is physiologically contra intuitive and should be avoided.”

Section I: Scenario Demographics

Scenario Title:	BONUS – Bronchiolitis
Date of Development:	June 2019
Review Date:	September 2024
Target Learning Group:	Multidisciplinary Teams that look after Paediatric Patients

Section II: Scenario Developers

Scenario Developers:	Dr Sonia Twigg, Dr Benjamin Symon, Dr Ben Lawton, Ms Louise Dodson, Mrs Tricia Pilotto
Reviewed by :	Dr Donna Franklin, Dr Fiona Brown

Section III: Curriculum

Learning Goals & Objectives	
Educational Goal:	<ul style="list-style-type: none"> Manage infant with severe Bronchiolitis according to evidence-based guidelines
Skills Rehearsal:	<ul style="list-style-type: none"> Setting up High Flow Nasal Cannula Oxygen Therapy
Systems Assessment:	<ul style="list-style-type: none"> Availability of an evidence based guideline for management of Bronchiolitis Departmental Protocol for escalation of care for an infant in respiratory distress

Case Summary: Brief Summary of Case Progression and Major Events

10 month old girl with severe Bronchiolitis – Day 2 with increased work of breathing.

- She was seen in the ED, diagnosed with bronchiolitis and started on nasal prong oxygen due to marginal SaO₂ of 90%.
- Initially she improved with oxygen but her work of breathing is increasing
- She is grunting and her oxygen requirement rising – she is now on nasal prong oxygen at 2L/min.
- She requires suctioning, escalation of oxygen therapy, and nasogastric tube insertion for decompression of stomach and for feeding.

Simulation Adaptations

Adapting to your clinical environment

Please adapt this scenario for use in your clinical area.

For example, if you are a ward based paediatric educator:

- Patient was admitted to paediatrics for observation overnight after looking quite well in ED
- She has deteriorated in the early hours of the morning and requires return to resus

If you are running a simulation in an emergency department:

- Patient is being observed in ED.
- She has deteriorated in the early hours of the morning and this has been picked up on routine observations.

Simulation and debrief vs. Pause and discuss

This simulation can be **run from start to finish** with facilitators moving through different stages depending upon learner's actions, with a group **debrief at the end**. Example debriefing questions are outlined at the [end of this package](#).

This simulation can also be run as a '**pause and discuss**' sim, whereby the facilitators pause the sim at specified points (at the end of each phase) and discuss learning points or highlight examples of good communication and appropriate clinical management. If learners are struggling, this is also an opportunity to scaffold their learning and offer advice as to next steps for when the sim is recommenced.

Section IV: Equipment and Staffing

Scenario Cast			
Patient:	<input type="checkbox"/> Mannequin		
Clinical Expert	Senior Doctor or Nurse.		
Confederate:	Optional Parent : Appropriately caring and cooperative. If not enough faculty for this confederate then triage nurse at handover explains parent has gone to move the car.		
Confederate 2:	Triage nurse: Hands over patient to Emergency Department Staff.		
Required Monitors			
<input type="checkbox"/> ECG leads	<input type="checkbox"/> Temperature Probe		
<input type="checkbox"/> NIBP cuff			
<input type="checkbox"/> Pulse oximetry			
Required Equipment			
<input type="checkbox"/> Gloves	<input type="checkbox"/> High flow nasal prongs		
<input type="checkbox"/> Stethoscope	<input type="checkbox"/> Non-rebreather mask		
<input type="checkbox"/> Nasal prongs	<input type="checkbox"/> Humidified High Flow Nasal Cannula Oxygen Unit, Consumables and water bag		
<input type="checkbox"/> Nasogastric tube and purple syringe	<input type="checkbox"/> Soft Suction Catheters		
<input type="checkbox"/> pH testing strips	<input type="checkbox"/> Yankeur suction		
<input type="checkbox"/> CEWT chart	<input type="checkbox"/> IV bags and lines		
Moulage			
None			
Approximate Timing			
Set-Up: 15 mins	Pre-brief: 10 mins	Scenario: 20 mins	Debriefing: 20 mins

A. Patient Profile and History			
Patient Name: Sam		Age: 10 months	Weight: 10kg
Gender: Female			
Chief Complaint: Increased work of breathing			
History of Presenting Illness: Rhinorrhoea for one day, Cough for 2 days, Fever for 2 days, Increased WOB since yesterday and worse today, decreased solid food intake but still drinking formula.			
Past Medical History:	<ul style="list-style-type: none"> Born at 36/40, required CPAP in NICU for 2 days. Admission at age one week for apnoeas. 	Medications: Nil regular	Immunisations: Up to date
Allergies : NKDA			
Social History : Lives with parents and big brother. Attends day care two days per week. Mother smokes cigarettes.			
Family History : Mother has Asthma.			

Section V : Scripts

Handover by treating Nurse - At start of simulation

I: Hi, I am the nurse who has been looking after Sam, our 10 month old patient and her parent.

S: I have brought Sam through to the resuscitation area because she is tachypnoeic, working hard to breathe, grunting and SaO₂ was 87% on oxygen via nasal prongs 2L/min.

B: Her mother tells me she has had a runny nose, cough and fever for a few days. She has had increased work of breathing since yesterday. Her brother has a cold. Sam is usually well with no other medical problems, no allergies and is fully immunized.

A: She has been seen here in ED, diagnosed with Bronchiolitis and overnight observation arranged. She initially seemed to improve with nasal suctioning and a bit of oxygen via nasal prongs at 1L/min. But after a couple of hours of observation she seems to be deteriorating.

R: I thought we needed to escalate our management so I brought her through to resus.



Parent's Information about Child

Sam has had a runny nose for 3 days, a cough and fever for 2 days and has been working hard to breathe since yesterday morning.

Sam has gone off her solid food but is still having a bottle of formula in the morning and night and sometimes during the day.

Yesterday afternoon we went to see our GP who reassured us that she probably had Bronchiolitis but advised us to come to hospital if Sam got worse.

Today she got worse so we came to ED.

She seemed a bit better in ED after suctioning out her nose and having a bit of oxygen. But over the last hour seems to be getting worse again – working harder to breathe and making a grunting noise with breathing.

Sam was born at 36 weeks and spent a couple of days in NICU on CPAP. She did have one admission at one week of age due to apnoeas – but these resolved.

She is fully immunized and has no allergies.

Her mother suffers from Asthma and is a smoker.

She lives with her parents, her brother, and attends day care 2 days per week. Her big brother has a cold at the moment.



Section VI: Scenario Progression

Scenario States

State 1: Administration of Oxygen

Patient State	Patient Status	Learner Actions	Facilitator tips
Rhythm: NSR HR: 170 BP: 95/60 Cap refill: 3s RR: 65 O₂ SAT: 87% on 2L nasal prongs T: 38°C BSL: 4.6 AVPU = A	Airway: Patent, nasal congestion Breathing: Increased work of breathing - Tracheal tug, moderate recession. Diffuse crackles and wheeze bilaterally Circulation: Pale, pulses palpable Normal tone	<input type="checkbox"/> Apply cardiac and respiratory monitoring <input type="checkbox"/> Full set of vital signs including BP, temp, BSL. <input type="checkbox"/> Initiate ABCDE assessment <input type="checkbox"/> Escalate oxygen therapy <input type="checkbox"/> Nasopharyngeal suction <input type="checkbox"/> Obtain further history if parent available <input type="checkbox"/> Identifies patient has Moderate to Severe Bronchiolitis	<u>Modifiers</u> If oxygen applied via Non-rebreather mask, SaO ₂ improves to 89% If salbutamol given, no improvement in symptoms and HR increases to 180. <u>Triggers to move on to next state:</u> 5 minutes learner actions completed

Optional Pause and Discuss Moments



Let's pause the scenario for a moment, as I'd like to explore:

- Assessment of work of breathing in infants
- Escalation of oxygen therapy
- Importance of positioning

State 2: Diagnosis and Consideration of Respiratory Support

Rhythm: NSR
HR: 170
BP: 95/60
Cap refill: 3s
SaO₂: 87% if NP
SaO₂: 89% if NRBM
RR: 65
T: 38°C
BSL: 4.6
AVPU = A

Airway: Remains patent

Breathing: Increased work of breathing, now grunting

Circulation: Pale, cool peripheries

- ☐ Obtain guidelines/cognitive aids
- ☐ Consider nutrition and hydration
- ☐ Set up High Flow
- ☐ Call for help – discuss with Senior Medical Officer or call Retrieval Service for advice.

Triggers

5 minutes or completed tasks.

Pause and discuss moments:

- Education – how to set up high flow
- Orientation to QPEC site and bronchiolitis guideline



Hello, I'm from the Retrieval service (or Senior medical officer working today). How can I help?
 (Listen to phone call and provide supportive advice)

Advise to treat severe bronchiolitis as per your service's recommendation, e.g:

- High Flow Nasal Prongs started at 2L/kg. (Advise how to set up high flow if required)
- Titrate FiO₂ to effect, aim for sats >90%.
- Would advise NG tube insertion for gastric decompression and feeding.
- Consider starting continuous feeds at 2/3rds maintenance rate

If asked:

- Advise against salbutamol
- Team may consider CXR or antibiotics - explore differential diagnoses considered but suggest that bronchiolitis is a viral lower respiratory tract infection and medication beyond simple analgesia is not indicated. The priority currently would be to optimise respiratory management.

State 3: Administration of Humidified High Flow O2

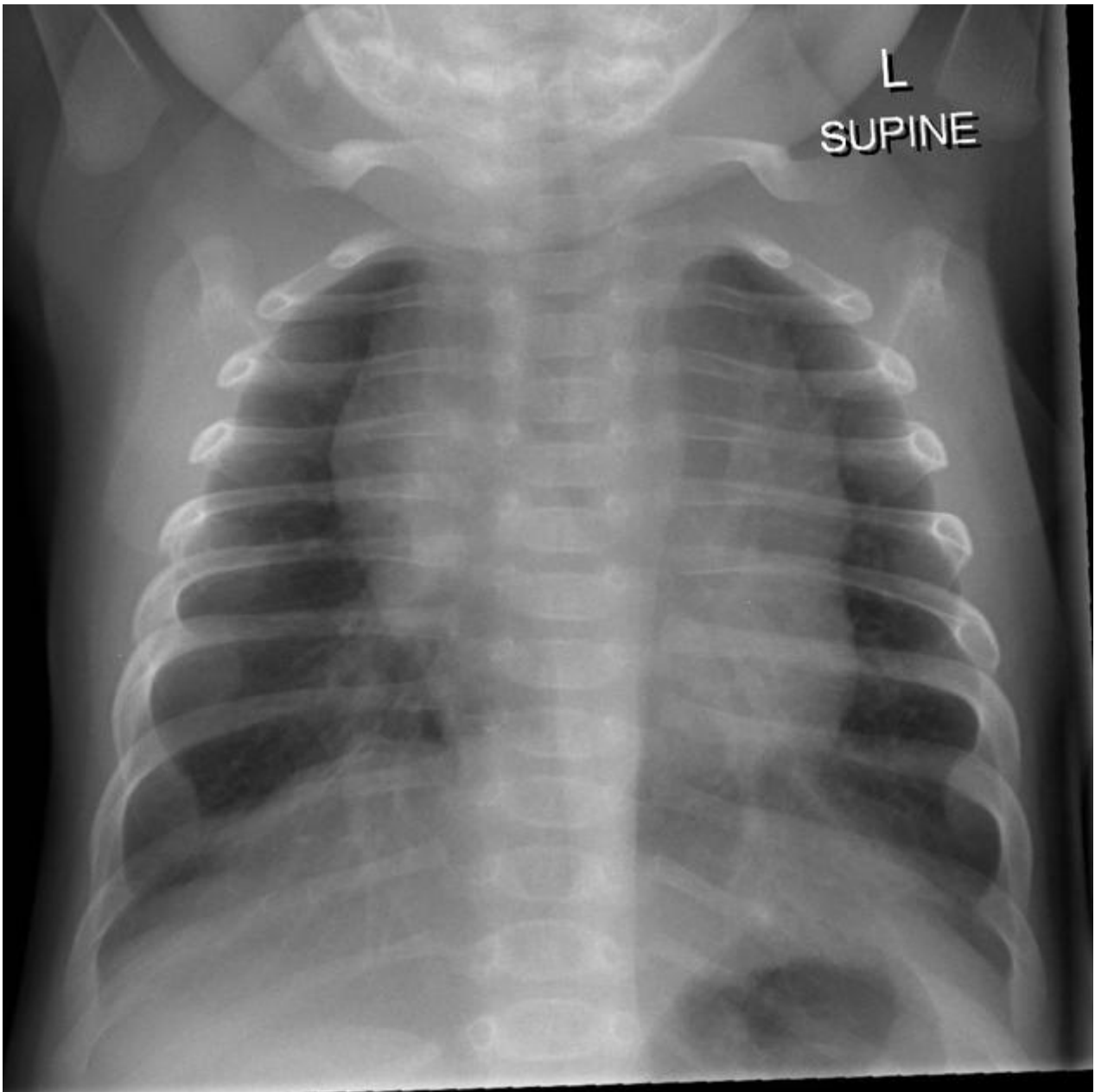
Patient State	Patient Status	Learner Actions	Facilitator tips
Rhythm: NSR HR: 170 BP: 95/60 Cap refill: 3s SaO2: 87% if NP SaO2: 89% if NRBM RR: 65 T: 38°C BSL: 4.6 AVPU = A	Airway: Remains patent Breathing: Increased work of breathing – Grunting, moderate recession, TT, nasal flare Circulation: Pale, cool peripheries	<input type="checkbox"/> Start High Flow Nasal Cannula Oxygen Therapy <input type="checkbox"/> Insert NG tube to decompress stomach	<u>Modifiers</u> If HFNC not available at site, encourage use of nasal prongs with NRB over the top for maximal oxygen delivery – sats 90% <u>Pause and discuss moments:</u> Education - NGT as an airway adjunct. How to measure and insert NGT
State 4 : Titrate FiO2 & Disposition Planning			
Rhythm: NSR HR: 155 BP: 95/60 Cap refill: 3s RR: 55 Grunt ceased O₂ SAT: 89% on mask, grades up to 94% on 2L/kg HFNP once FiO2 35% or higher. AVPU = A	Airway: Remains patent Breathing: Tachypnoea and work of breathing improves with HFNC Circulation: Pale, cool peripheries	<input type="checkbox"/> Prescribe continuous 2/3 maintenance formula via NGT <input type="checkbox"/> Recognise child improving with HFNC <input type="checkbox"/> Escalate to PICU/ arrange retrieval	<u>Modifiers:</u> Hypoxia persists until O2 increased above 35% If hospital does not usually care for children on High Flow Nasal Cannula Oxygen Therapy, senior doctor prompts discussion regarding safe disposition within network <u>Triggers</u> 5 minutes or completed tasks <u>Pause and discuss moments:</u> Observation of teamwork and communication within scenario

Section VII: Supporting Documents, Laboratory Results, & Multimedia

Venous Gas (if taken)

VBG	Results	Units	Normal Range
pH	7.28		7.32 – 7.42
pCO ₂	60	mmHg	41 - 51
pO ₂	35	mmHg	25 - 40
O ₂ Saturations	50%	%	40 - 70
Bicarb	21	mmol/L	22 - 33
BE		mmol/L	-3 - +3
HCT			0.3 - 0.42
Hb	110	g/L	105 - 135
Na ⁺	132	mmol/L	135 - 145
K ⁺	4.5	mmol/L	3.2 - 4.5
Ca ⁺⁺ (ionised)	1.2	mmol/L	1.15 – 1.35
Glucose	5.0	mmol/L	3.0 – 7.8
Lactate	1.8	mmol/L	0.7 – 2.5

CXR is not clinically indicated if team confident in clinical diagnosis of Bronchiolitis



Preliminary report: Generalised prominence of bronchovascular markings in a perihilar distribution but no confluence consolidation or collapse. Large anterior mediastinal mass is normal (thymus).

Image courtesy of radiopaedia.org:

Jones J Bronchiolitis. Case study, Radiopaedia.org (Accessed on 18 Feb 2025) <https://doi.org/10.53347/rID-35357>

Section VIII: Debriefing Guide

Objectives

Educational Goal:	Manage infant with severe Bronchiolitis according to evidence-based guidelines
Skills Rehearsal:	Setting up High Flow Nasal Cannula Oxygen Therapy
Systems Assessment:	Availability of an evidence based guideline for management of Bronchiolitis Departmental Protocol for escalation of care for an infant in respiratory distress

Sample Questions for Debriefing

This case was an infant with severe bronchiolitis. We used this case to highlight recognising and responding to an acutely unwell patient, the use of our guidelines and rehearsing how to set up high flow oxygen therapy.

I'd like to explore the team's assessment and decision making:

- Do you feel that further investigations (eg, CXR, Bloods, resp swab) are beneficial in infants with bronchiolitis? Can I explore why.....
- Did you utilise any cognitive aids or guidelines to help you identify the severity of illness or guide your management?
- What resources do you have in your hospital to guide you to set up and use HFNC oxygen therapy?
- When does a child with Bronchiolitis need retrieval or transfer to PICU?

What is your experience in managing similar patients in your ED?

Let's take a moment to reflect on our teamwork:

- Were there any examples of good team working you would like to highlight?
- Are there any ways we could improve our communication and replicate in clinical practice? (closed loop communication, using names, leadership and followership)
- Were there any behaviours or skills highlighted during this scenario today that you will reflect upon and consider a change in your clinical practice?

Key Moments

- Diagnosing Bronchiolitis
- Implementing supportive care for Bronchiolitis
- Hydration strategy : IV vs NG
- O₂ delivery

Escalation to High Flow Nasal Cannula Oxygen Therapy.

- Disposition planning

**Complete our online survey and
receive a training certificate!**
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BRONCHIOLITIS

Treatment is supportive :



O₂

Target Sats 90% or above
Nasal High flow is indicated if persistently hypoxic and moderate to severe recessions.



Fluid

NG hydration or IV Isotonic Fluid is appropriate. Ideal volume is unproven. Consider nutrition as well as hydration.

These interventions won't change outcomes :

Salbutamol Corticosteroids Adrenaline Hypertonic Saline Antibiotics
Chest Physiotherapy Antivirals Viral PCR testing

Risk factors for more serious illness :

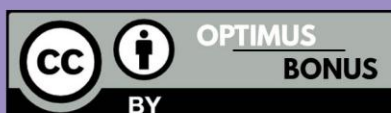
Gestation < 37 weeks
Chronological age < 10 weeks
Post natal smoking exposure
Breast fed < 2 months

Failure to thrive
Chronic Lung Disease
Congenital Heart Disease
Chronic neurological conditions
Indigenous ethnicity



To learn more scan this :

Check out the Children's Health Queensland online bronchiolitis guidelines



Bronchiolitis Learning Resources for Sim (Pre or Post Reading)



[Children's Health Queensland
Bronchiolitis Guideline](#)



[PREDICT Bronchiolitis guideline](#)



[Airvo2 Simulator App](#)
[For guide and video on how to set up
high flow](#)



[CHQ Nasal High Flow Therapy Skills
Sheet using the Airvo2](#)

Curriculum

This package is designed for **individuals** to refresh and retain the following skills learned in previous OPTIMUS courses as well as add new knowledge on Bronchiolitis.

Optimus CORE	Optimus PRIME	Optimus BONUS
Assessment of a deteriorating child	Escalating Care	Setting up High Flow Nasal Cannula Oxygen Therapy
Respiratory Assessment	Airway management	Evidence based management for Bronchiolitis

This package is designed to offer your **department** a systems level check regarding :

Access to paediatric resources on: <ul style="list-style-type: none"> • Bronchiolitis • Assessing a child in respiratory distress 	<input type="checkbox"/> <input type="checkbox"/>
Equipment Check: <ul style="list-style-type: none"> • Access to and Use of High Flow Nasal Cannula Oxygen Therapy 	<input type="checkbox"/>
Departmental Protocols for: <ul style="list-style-type: none"> • Clinical Guidelines for Bronchiolitis • Care of children requiring High Flow Nasal Cannula Oxygen Therapy in your hospital. • Trigger points for escalation of care in your hospital. 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

If you would like any assistance obtaining access or advice for any of the above issues, please contact stork@health.qld.gov.au

About the Creators :



Dr Sonia Twigg: Primary Author

@LankyTwig

FACEM, MBBS, BA, BSc

Fellow, STORK (Simulation Training Optimising Resuscitation for Kids)

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Dr Sonia from STORK is an emergency physician doing subspecialty training in Paediatric Emergency Medicine and works at the Queensland Children's Hospital as a fellow in the emergency department and for the STORK simulation team.

She is part of the ALIEM faculty incubator program for 2019-2020 and facilitated the 2019 Health Workforce Queensland workshops for GPs on Paediatric Emergency Medicine. Sonia is interested in critical care, medical education and ultrasound. She is passionate about fun, creativity and innovation in education.



Dr Ben Symon: Consultant Supervisor, Infographics and Editor

@symon_ben

RACP PEM, MBBS, BAnim

Simulation Consultant and Paediatric Emergency Physician

Queensland Children's Hospital and The Prince Charles Hospital

Dr Symon is a PEM Physician and Simulation enthusiast with a passion for translating clinical and educational research to front line health care workers. He is co-producer of the podcast '[Simulcast](#)' and facilitates the Simulcast Online Journal Club, an online journal club for simulation educators throughout the world. He is faculty on the APLS Educational Skills Development Course & international faculty for the Master Debrief Course by [the Debriefing Academy](#). His original degree in Animation has proved surprisingly useful in his career in medical education.



Dr Fiona Brown: Simulation Fellow, 2025 Update

Fiona is a doctor who has a keen interest in medical education and simulation. After starting her educational career as a simulation fellow in the UK, she swapped rainy England for a warmer climate and has been very grateful to work with the STORK team, delivering paediatric education around Queensland. She is continuing her training in Australia with the Australian College of Emergency Medicine.

About the BONUS Project :

The [OPTIMUS BONUS project](#) is a bank of useful scenarios that are open access and available for free use. It has been designed by the Simulation Training Optimising Resuscitation for Kids team for Children's Health Queensland.

We aim to use the packages to provide :

- Spaced repetition to reinforce learning objectives from CORE and PRIME
- Connections to high quality, up to date paediatric resources for health professionals
- Quality and Safety checks for local hospitals regarding paediatric clinical guidelines, resources and equipment

The scenarios have been designed in response to :

- Paediatric coronial investigations in Queensland, Australia.
- Clinical skills issues revealed through In Situ Translational simulations in hospitals throughout Queensland.
- Quality and Safety Initiatives

About STORK

In 2014, Children's Health Queensland funded the 'Simulation Training Optimising Resuscitation for Kids' service. STORK is a paediatric education team focused on improving healthcare outcomes for children throughout the state.

STORK has developed a number of courses aimed at different phases of paediatric critical care :

- [CORE](#) is a course for first responders to a paediatric emergency, and teaches recognition of the deteriorating patient, Children's Early Warning Tools, and resuscitation competencies.
- [PRIME](#) is a course for mid phase responders who look after unwell patients while awaiting for retrieval or escalation to an Intensive Care. It aims at contextualising Seizure Management, Intubation and Inotrope Administration within host hospital's real clinical environments in order for healthcare teams to generate their own practice improvement strategies as well as link peripheral hospitals with high quality resources.
- [PULSE](#) is a CPR refresher course based on the principles of Rapid Cycle Deliberate Practice.
- [BONUS](#) was proposed as a solution to skill and knowledge decay after these courses are run.

If you would like to know more information about STORK or acquire copies of our resources, please contact us at stork@health.qld.gov.au .

Resources for Participants:

- Bronchiolitis - Emergency management in children. Queensland Paediatric Guideline. Children's Health Queensland Hospital and Health Service, June 2019. Available at: <https://www.childrens.health.qld.gov.au/guideline-bronchiolitis-emergency-management-in-children/>
- Bronchiolitis Guideline. Paediatric Research in Emergency Departments International Collaborative. June 2024. Available at www.predict.org.au/bronchiolitis-guideline/
- Airvo 2 Simulator App. Fisher & Paykel Healthcare. Available at: <https://www.fphcare.com/au/hospital/adult-respiratory/optiflow/airvo-2-system/>

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