

# Simulation Package: Burns

An open access resource for clinical educators



**Optimus**  
**BONUS**



# Optimus

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# BONUS

## Bank Of iNdependently Useful Simulations

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

### Optimus BONUS : Burns in Kids

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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](mailto:stork@health.qld.gov.au), phone .

An electronic version of this document is available at <https://www.childrens.health.qld.gov.au/research/education/queensland-paediatric-emergency-care-education/optimus-bonus/>

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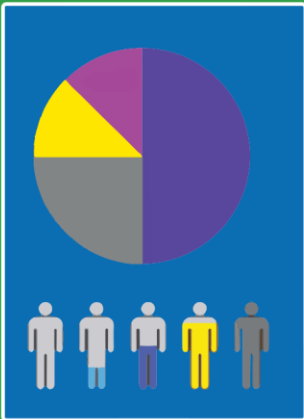
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## Contents of this educational package:



### Simulation

- Burns assessment and referrals
- Fluid resuscitation in serious burns
- Complex resuscitation including intubation



### Infographic

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



### Further Reading

Podcasts and Blog Posts  
Online Videos  
Journal Articles

Fill out our participant survey  
to receive a training certificate

(Select Optimus BONUS as course)



# Simulation

## Introduction by

### Kristen Storey, Nurse Practitioner Burns, Queensland Children's Hospital



*Kirsten has been a member of the Queensland Children's Hospital Burns team for the past 16 years. She is currently the only Nurse Practitioner within Queensland that holds an approved medical laser license.*

*Throughout her time within the burns field, she has seen technology change to greatly improve outcomes of children with burn injuries. Kirsten is dedicated to continually improving her patients' and families' outcomes with minimal interventions where possible. She is committed to providing holistic patient care and is proactive in improving pain management, developing laser and micro needling services, and educating nursing and medical staff.*

The Pegg Leditschke Children's Burns Centre (PLCBC) located at the Queensland Children's Hospital is the main specialist paediatric burns centre in Queensland. Directed by Professor Roy Kimble, our multidisciplinary team consists of Surgical Consultants, Medical, Nursing, Social workers, Occupational therapist, Physiotherapist, and Psychologists.

Our aim is to improve to provide optimal care for paediatric burns by reducing time to wound re-epithelialisation, resulting in less scar formation and long term physical and psychological trauma for paediatric burn patients. Ensuring patients receive appropriate care within the first 24 hours after sustaining a burn injury is critical to improving the overall health outcomes of the patient. Our service treats about 1000 new burns per year. Our referral process and early burn assessment pathway has allowed our unit to decrease the overall skin grafting rates to less than 5% over the last 3 years.

The PLCBC offers inpatient services, outpatients clinics Monday- Friday and a 24hr referral service.

Acute treatment, scar management and surgical reconstruction is offered to all children that have sustained a burns injury irrespective of size or depth.

The PLCBC also provides care for other conditions in collaboration with other services including:

- Extravasation injuries: chemical burns that can occur due to the extravasation of vesicants.
- Meningococcal sepsis
- Steven Johnson Syndrome/ TENS
- Staphylococcal Scalded Skin Syndrome
- Vascular anomalies including ulcerated haemangiomas.

Two other smaller burns units are located throughout Queensland. One at the Townsville University Hospital that services the community from Mackay north. The other located at the Gold Coast University Hospital treats patients from Gold Coast area and south to Grafton.



## Section I: Scenario Demographics

Scenario Title:	Burns in Kids
Date of Development:	July 2024
Target Learning Group:	Multidisciplinary Teams that look after Paediatric Patients

## Section II: Scenario Developers

Scenario Developers:	Dr Alexandra St-Onge-St-Hilaire, Dr Ben Symon
Reviewed by:	Dr Roy Kimble, Ms Kristen Storey

## Section III: Curriculum

Learning Goals & Objectives	
Educational Goal:	<ul style="list-style-type: none"><li>Manage paediatric burn patients according to evidence-based guidelines</li></ul>
Skills Rehearsal:	<ul style="list-style-type: none"><li>Structured assessment of the paediatric burn patient</li><li>Calculating fluid requirements in extensive burns</li></ul>
Systems Assessment:	<ul style="list-style-type: none"><li>Local pathways for retrieval and referrals to burn services</li></ul>
Systems Intervention:	<ul style="list-style-type: none"><li>Embedding burn clinical pathway assessment into clinical practice</li></ul>

### Cases Summary: Brief Summary of Case Progression and Major Events

#### Case 1: First aid, management and referral of minor burns

- A 3-year-old boy with a contact burn injury from a hot plate.
- He has superficial partial thickness burn to his hand.
- He requires a structured assessment, analgesia, burns referral and dressings.

#### Case 2: Assessment of TBSA burns, sedation, fluid resuscitation, referral and transfer

- A 6-year-old girl arrives by ambulance after a scald injury with 19% TBSA burns.
- She has a mix of superficial and partial thickness burns, covering her chin, torso, abdomen, and thighs.
- Her management will require fluid resuscitation, sedation, and liaison with burn clinic for transfer and ongoing management.

#### Case 3: Life-threatening complications including compartment syndrome and inhalational injury

- A 9-year-old boy found in a house fire with inhalational injury and severe burns
- Requires intubation, fluid resuscitation, evaluation for escharotomy and liaison with burn's team for transfer and ongoing management.
- The case has the *option* of rehearsing escharotomy, guided over the phone by a surgeon. Candidates rehearse marking escharotomy landmarks on the patient laminate.

## Section IV: Equipment and Staffing

VEMS can be run with a single educator if necessary, and these simulations can often be run in a 'pause and discuss' format.

This simulation pack contains an expansion set to our existing VEMS pack.

As such you will need:

- Printed laminates from the original [CHQ VEMS simulation pack](#).
- Printed laminates from the end of *this* document
- Multiple whiteboard markers

If you are unfamiliar with VEMS as a simulation format, [our original pack](#) contains a guide and demonstration videos.

Scenario Cast							
Patient:	Laminated child X 3						
Required Monitors							
Physical equipment:		Hospital paperwork:			Printed resources:		
Table		CEWT: 1-4 years (X1) 5-9 years (X2)			Laminated burn images (Case 1, Case 2 & Case 3)		
Whiteboard and fine marker		CREDD Book (paeds drug calculator)			Blank laminated page for notes		
Computer access to QPEC		Drug / Infusion order chart			Laminated pieces of equipment		
Role stickers							
Approximate Timing							
Set-Up:	5m	Prebrief:	10m	Scenario:	15m per scenario	Debriefing:	Pause & discuss

## Orientation for facilitator



Welcome everyone. Our simulation today is focused on paediatric burns.

*Invite the group to gather around the patient and equipment on the table.*

Over the next 60 minutes, we will run a *X amount* tabletop exercises.

There are 3 main goals common to the 3 tabletop exercises.

1. To practice and rehearse the assessment of a paediatric burn patient.
2. To explore our available resources and guidelines.
3. To identify interventions that may optimise efficient care and disposition of patients.

*Orientate the participants to the laminates of the patient, equipment and other resources on the table.*

## Section VI: Scenario 1

### SCENARIO 1

#### Pre-briefing tip:

- The goal of this scenario is to focus on the initial management priorities in a burn patient and to explore our resources.
- Suggested team size: 1 nursing + 1 medical to start

#### State 0: Triage handover and primary assessment



Hi. I'm ... from triage.  
I've just placed Arlo, a 3-year-old boy with a burn to the hand, in one of the acute rooms.  
He was playing in the kitchen this morning. He reached up to the countertop and his hand touched a hot plate. His father immediately brought him here.  
He has burns and he needs an assessment.

#### State 1: Assessment

Patient State	Patient Status	Expected Actions	Facilitation Tips
<b>Rhythm:</b> SR <b>HR:</b> 130 <b>BP:</b> 75/50 <b>Cap refill</b> 2 sec <b>RR:</b> 22 <b>O<sub>2</sub> SAT:</b> 99 <b>T:</b> 37.2 <b>AVPU</b> = A	Alert, crying.  <b>Airway:</b> patent <b>Breathing:</b> fast but not laboured <b>Circulation:</b> warm, well perfused, pulses present <b>Skin:</b> laminate for case 1	<input checked="" type="checkbox"/> Introduction and role allocation. <input checked="" type="checkbox"/> Complete a primary survey (Patient has no other injuries) <input checked="" type="checkbox"/> Identify burn <input checked="" type="checkbox"/> Access QCH burn guideline & liaise with Burn services	<u>Suggested pause &amp; discuss moments:</u> <ul style="list-style-type: none"><li>- Review how to access clinical guideline on QPEC website as needed</li></ul>



## State 2: Burn treatment

**Rhythm:** SR  
**HR:** 130  
**BP:** 75/50  
**Cap refill** 2 sec  
**RR:** 22  
**O<sub>2</sub> SAT:** 99  
**T:** 37.2  
**AVPU =** A

**Skin:** ½% TBSA – superficial partial thickness burns to the hand, with surrounding superficial thickness burns.

- ☒ Provide burn first aid (20 min cool water)
- ☒ Provide analgesia
- ☒ Assess burn size & depth
- ☒ Liaise with burn services
- ☒ Review Tetanus vaccination status

### Suggested pause & discuss moments:

- Explore where first aid would occur.
- Discuss clinical reasoning for burn depth assessment (See facilitator resource: burn depth chart & “Burn’s first 24hrs”)
- Review how to clean burns.
- Discuss burn dressing choices (See facilitator resource: burn dressing decision algorithm)






Hi, I’m Alex, the burn registrar. How can I help? ....

Here are my recommendations:

- Given this is a significant burn to the hand with areas of partial thickness burn, the best course of action is to transport her to our tertiary facility for cleaning and debridement in theatre.
- Can you dress clean her burn with cling wrap, ensure her tetanus immunization is up to date and organize for transport to our facility as soon as possible? I will alert our team of her arrival.

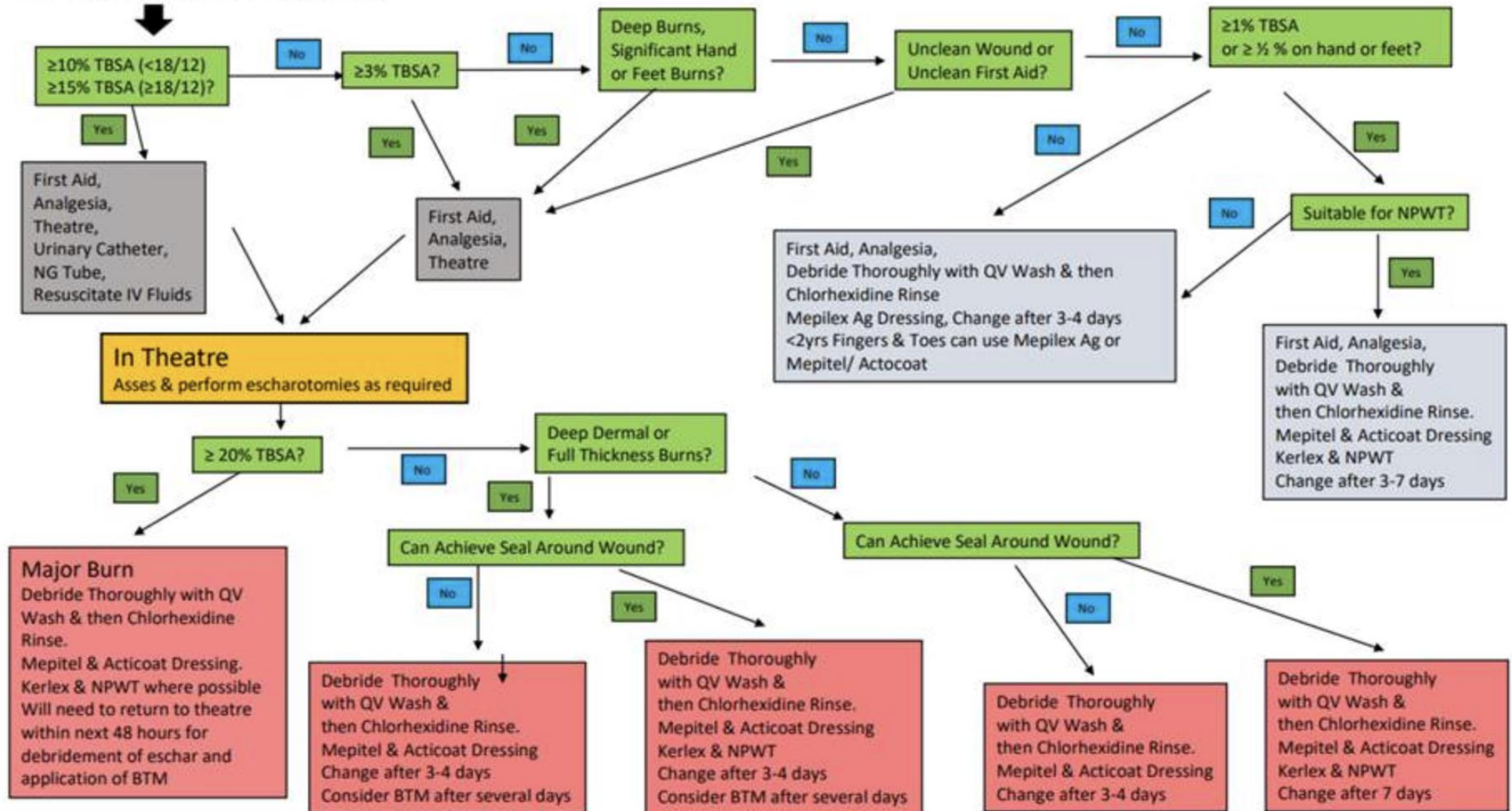
## Section VII: Scenario 1 Facilitator resources

Depth	Epidermal burn (Erythema)	Superficial dermal burn	Mid dermal burn	Deep dermal burn	Full thickness burn
					
<b>Assessment</b>	Damage to epidermis only. Skin intact, no blisters present Erythema. Red Brisk capillary refill	Damage to upper layer of dermis Pink. Blisters present or absent Brisk capillary refill (under blister)	Damage into mid dermis Dark pink to red Sluggish capillary refill	Burns extend into deeper layers of dermis but not through entire dermis Blotchy red/white Very sluggish/absent capillary refill	Destruction of entire dermis, sometimes with underlying tissue White, waxy, brown, black or yellow Nil capillary refill
<b>Healing</b>	Heal spontaneously within 3-7 days	Should heal within 7- 10 days with minimal dressing requirements	Should heal within 14 days. Deeper areas may need surgical intervention and referral	Generally needs surgical intervention. Refer to specialist unit.	Generally needs surgical intervention. Refer to specialist unit.

### Burn Depth Assessment and Classification System

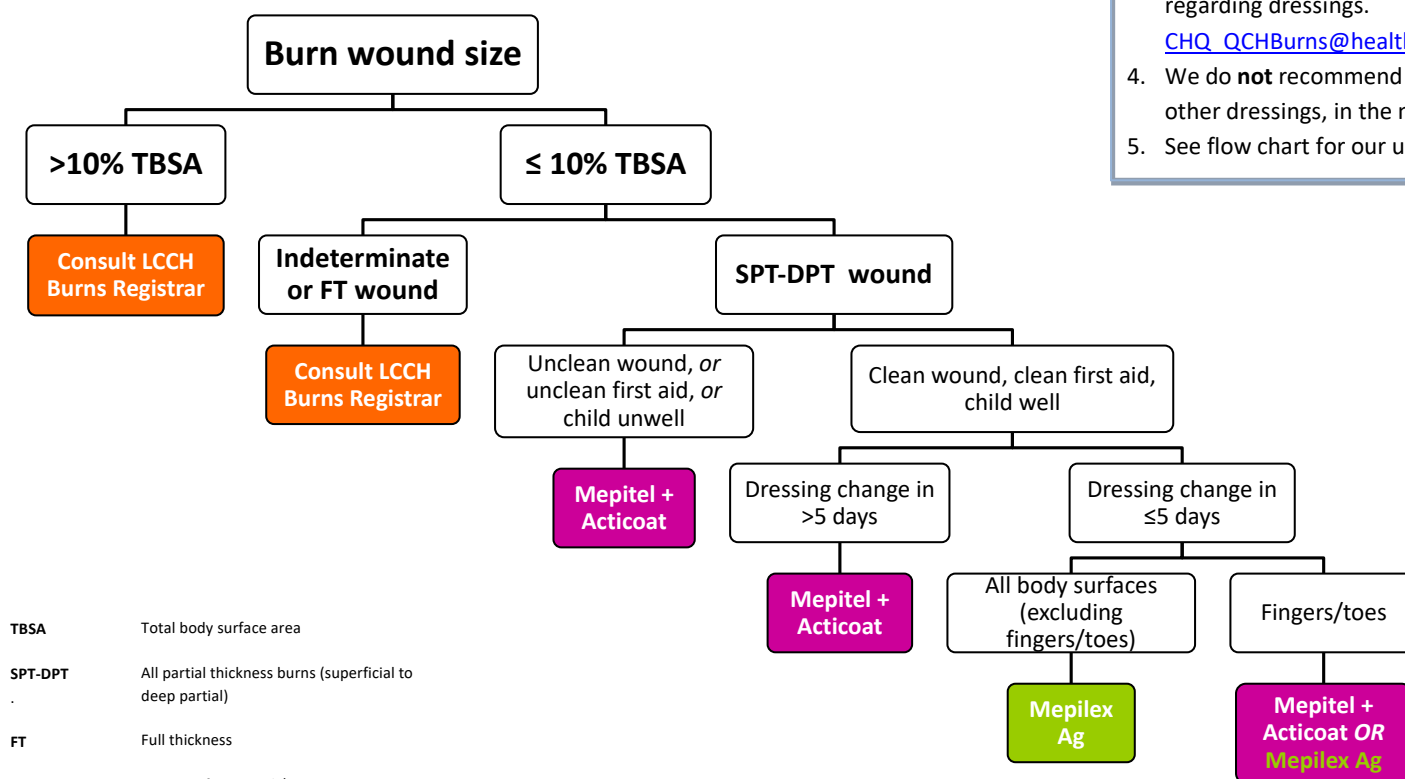
Source: The Australian & New Zealand Burn Association. Minor burns. Accessible at: <https://anzba.org.au/assets/ANZBA-Minor-Burn-v2.pdf>

## Paediatric Burns 1<sup>st</sup> 24 hours



QCH Pediatric Burn Management “first 24hrs” Flowchart

1. Contact the QCH Burns Registrar (07) 3068 1111
2. Complete online referral. [Specialist online advice | Children's Health Queensland](#)
3. Email referral with photos. We will advise regarding dressings.  
[CHQ\\_QCHBurns@health.qld.gov.au](mailto:CHQ_QCHBurns@health.qld.gov.au)
4. We do **not** recommend the use of Flamazine, or other dressings, in the majority of our patients.
5. See flow chart for our usual advice.



<b>TBSA</b>	Total body surface area
<b>SPT-DPT</b>	All partial thickness burns (superficial to deep partial)
<b>FT</b>	Full thickness
<b>Unclean first aid</b>	eg water from creek/river, bore/untreated/tank water, dirty water
<b>Child unwell</b>	URTI, viral illness, etc

## QCH Burn Dressing Decision Algorithm

## Section VIII: Scenario 2

### SCENARIO 2

#### Pre-briefing tip:

- The goal of this scenario is to focus the specific management of burns until retrieval arrives.
- Suggested team size: 2-3 nursing + 1-2 medical

#### State 0: QAS Pre-arrival



Hi, I'm ... from QAS.  
We are 5 minutes away with a 6-year-old girl with scalding burns from a pot of boiling water.  
Estimated weight is 24kg.

Her current vital signs are HR 175, BP 90/60, RR 28, sat 99% on room air, T 37.2 axillary.  
She has large burns involving her chin, torso, abdomen, and upper thigh.  
We are applying cool water to her burns. We will attempt to insert a cannula.

#### State 1: Team preparation

Patient State	Patient Status	Expected Actions	Facilitator Tips
N/A	N/A	<ul style="list-style-type: none"><li><input checked="" type="checkbox"/> Introduction and role allocation.</li><li><input checked="" type="checkbox"/> Access QCH burn guideline</li></ul>	<p><u>Suggested pause &amp; discuss moments:</u></p> <ul style="list-style-type: none"><li>- Review how to access clinical guideline on QPEC website as needed</li></ul>

#### State 2: Patient arrival & QAS Handover



Hi, this is Maxime, a 6-year-old girl who has burns from a pot of boiling water. **[Place laminate of burns on top of patient laminate]**

She sustained burns to her chin, chest, and abdomen about 40 minutes ago. We've been flushing cool water onto her burns using saline during transport, for about 25 minutes. She has a cannula to her left AC and received one dose of Fentanyl IV for analgesia 10 minutes ago.

- Her latest vitals are HR 175, BP 90/60, Sat 99% on room air, RR 28, T 37.2.

She was more comfortable after the Fentanyl but has started to cry from pain since arriving to ED.  
Maxime is otherwise healthy. She has no allergies, and her immunizations are up to date.



### State 3: Patient Burn assessment

**Rhythm:** sinus tach.  
**HR:** 175  
**BP:** 100/70  
**Cap refill** 2 sec  
**RR:** 28  
**O<sub>2</sub> SAT:** 99  
**T:** 37.2  
**AVPU** = A

Alert, crying.

**Airway:** patent

**Breathing:** fast but not laboured

**Circulation:** warm, well perfused, pulses present

**Skin:** laminate for case 2

- ☒ Complete a primary survey (Patient has no other injuries)
- ☒ Obtain a second IV/IO access
- ☒ Provide analgesia (multimodal preferred)
- ☒ Assess burn depth and TBSA

#### Suggested pause & discuss moments:

- Discuss burn depth assessment.
- Explore resources for TBSA calculation (See facilitator resource for scenario 2).
  - o Options: Lund Brower charts, NSW Trauma app, Palm technique.

### State 4: Burn treatment

**Modify if pain treated:**

**Rhythm:** SR  
**HR:** 130  
**BP:** 90/65  
**Cap refill** 2 sec  
**RR:** 22  
**O<sub>2</sub> SAT:** 99  
**T:** 37.2  
**AVPU** = A

**Skin :**

1. +/- 19% TBSA involving torso and abdomen.
2. Mostly mixed of superficial and deep partial thickness burns (whiter areas)
3. Large areas with deroofed blister (chin, upper torso).

- ☒ Identify need for fluid resuscitation
- ☒ Liaise with Burn Services & RSQ for management and transfer [advice script below]
- ☒ Insert a urinary catheter

#### Suggested pause & discuss moments:

- Explore resources to calculate fluid requirement.
  - o Options: Modified Parkland formula, NSW Trauma app.
  - o Burn fluids and maintenance fluids should be running in separate IV lines.
- Discuss plan for ½ fluids within first 8hrs from time of injury and remaining ½ in the following 16hrs.
- Discuss need for IDC to ensure urine output is monitored. The goal urinary output is 1 mL/kg/hour and consider early discussion with Burns Services if not meeting target.



Hi, I'm Alex, the on-call Burns Registrar. How can I help? ... here are my recommendations:

1. Continue the first 8h fluid replacement and ensure he also receives maintenance fluids.
2. I would recommend to simply cover the burns with cling wrap as this patient will require substantial cleaning and debridement in the operating theater.
3. This patient is at risk of heat loss; can you make sure they remain warm while waiting for retrieval.

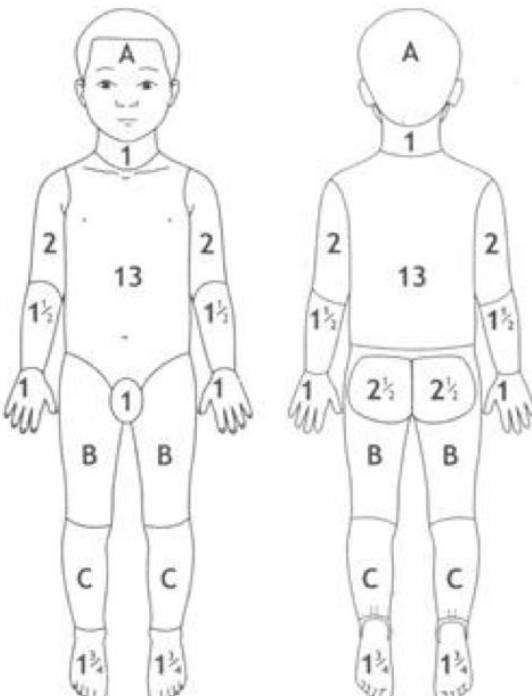


## Section VIII: Scenario 2 Facilitator resources

### Appendix 1: Lund and Browder

**ASSESS THE EXTENT AND DEPTH OF THE BURN**

SHADE AREA • INDICATE DEPTH • IGNORE SIMPLE ERYTHEMA



REGION	%
Head	
Neck	
Anterior Trunk	
Posterior Trunk	
Right Arm	
Left Arm	
Buttocks	
Genitalia	
Right Leg	
Left Leg	
<b>Total Burn</b>	

**Superficial**  
(brisk capillary refill, painful, pink, blisters, moist)

**Deep or Indeterminate**  
(nil or sluggish capillary refill, less sensation, white, mottled, dark red, brown or black, dry, leathery)

Relative percentage of body surface area affected by growth.

Age (years)	0	1	5	10	15	Adult
<b>A</b> 1/2 of head	9 1/2	8 1/2	6 1/2	5 1/2	4 1/2	3 1/2
<b>B</b> 1/2 of one thigh	2 3/4	3 1/4	4	4 1/2	4 1/2	4 3/4
<b>C</b> 1/2 of one leg	2 1/2	2 1/2	2 3/4	3	3 1/4	3 1/2

Small burns - Palm of hand (including fingers together) approximates 1% of body surface area.

<b>RIGHT SIDE</b>					
<b>LEFT SIDE</b>					

## Section IX: Scenario 3

### SCENARIO 3

#### Pre-briefing tip:

- Acknowledge this will be a challenging scenario with multiple competing demands and injuries rarely seen in daily practice.
- The goal is to work around a case as a segue to talk about severe burns and associated injuries. This will be a high-level discussion.
- Suggested team size: 3 - 5 nursing + 2 - 3 medical

#### State 0: QAS Pre-arrival



Hi, I'm ... from the paramedic service.  
We are 10 minutes away with a 9-year-old boy found in a house fire.  
He is in a critical state with signs of inhalation injury and severe burns.

His vital signs are HR 190, BP 100/75, sat 91% on NRM, RR 30, T 37.8, AVPU, BSL 9  
He has large burns to the torso and arm. Some look circumferential. We have 1 cannula in situ.  
We will give him a fluid bolus of 20 ml/kg of normal saline.

#### State 1: Team preparation

Patient State	Patient Status	Expected Actions	Facilitator Tips
N/A	N/A	<ul style="list-style-type: none"><li>☑ Introduction and role allocation<ul style="list-style-type: none"><li>- Call for help</li><li>- "Trauma call activation"</li></ul></li><li>☑ Access QCH burn guideline</li><li>☑ Establish priorities:<ul style="list-style-type: none"><li>- Airway assessment and management</li><li>- Prepare for difficult intubation</li><li>- Obtain a second IV access</li><li>- Fluid resuscitation</li></ul></li><li>☑ Early notification to RSQ and Burn Services</li></ul>	<p><u>Suggested pause &amp; discuss moments:</u></p> <ul style="list-style-type: none"><li>- Discuss priorities and anticipated injuries</li><li>- Consider discussing role allocation within your hospital resources when multiple complex tasks are anticipated<ul style="list-style-type: none"><li>○ Creating mini teams (airway team, burn team, fluid resuscitation team) vs traditional role allocation</li></ul></li></ul>

## State 2: Patient arrival & Paramedic Handover



Hi, this is Kevin, a 9-year-old boy who sustained severe burns in a house fire. [place scenario 3 burn laminate over patient laminate]

We are using a working weight of 35kg.

Kevin was extracted from a house fire where he was extracted from the garage.

He has severe burns to his torso as you can see.

We have removed his clothes at the scene and kept him warm in dry blankets since.

His vital signs are HR 190, BP 100/75, sat 91% on NRM, RR 30, T 37.8, AVPU, BSL 9.

He has 1 cannula to the left AC, and we have given him 720 ml of normal saline, which is 20ml/kg.

He has just received 35 mcg of Fentanyl IV, 5 minutes ago for pain.

Kevin is unaccompanied, his parents are being transported to the nearest adult trauma hospital as they were also found in critical conditions at the scene.

## State 3: Patient Burn assessment & Initial management

**Rhythm:** sinus tach.  
**HR:** 175  
**BP:** 100/70  
**Cap refill** 3 sec on healthy skin

**RR:** 30  
**O<sub>2</sub> SAT:** 91 on NRM  
**T:** 37.9  
**AVPU = V**

**BSL** 8

### Airway:

- Soot to nares/lips.
- Carbonaceous sputum
- Blisters to oropharynx

### Breathing:

- Visible IC retractions
- Auscultation: wheezing

### Circulation:

- Cold extremities

**Skin:** laminate for case 3

- ☒ Complete a primary survey
  - A/B: Identify inhalation injury.
  - C: Identify near circumferential burns to chest.
  - D: Conscious and distressed
  - E: Assess extent of burns (TBSA)
- ☒ Establish team plan for difficult airway management & gather equipment.
- ☒ Obtain a second IV/IO access
- ☒ Calculate fluid requirements using the modified Parkland formula.
- ☒ Send i-STAT or VBG, CK
- ☒ Initiate warming measures:
  - Cover burns with plastic wrap.
  - Cover patient with warm dry blankets/ bair hugger.
- ☒ Escalate care within department
- ☒ Obtain senior advice from RSQ and Burn Services

Suggested pause & discuss after participants have completed their primary survey.

### 1) Inhalation injury management

- Discuss signs of inhalation injuries and management of difficult airway at your centre
- Emphasize this airway is at risk of decompensation and requires most skilled physician available plus a plan for possible front of neck access.
- Explore the Who? Where? How? for your own department.
- If appropriate for level of team, encourage rehearsal of patient intubation

**OPTIONAL CASE PROGRESSION:** Kevin is requiring increasingly tachycardia and the team is needing to increase his analgesia.

**State 4: Recognize signs of compartment syndrome & initial management**

<p><b>Rhythm:</b> sinus tach.  <b>HR:</b> 190  <b>BP:</b> 100/70  <b>Cap refill</b> 3 sec on healthy skin</p> <p><b>RR:</b> as per ventilator setting chosen  <b>O<sub>2</sub> SAT:</b> 92%  <b>T:</b> 37.9  <b>AVPU</b> = intubated</p>	<p><b>Airway:</b></p> <ul style="list-style-type: none"> <li>- Intubated</li> </ul> <p><b>Breathing:</b></p> <ul style="list-style-type: none"> <li>- Requiring increased pressure for chest rise.</li> <li>- Difficult to bag when disconnected from ventilator (if available)</li> <li>- Poor chest rise on inspection</li> </ul> <p><b>Circulation:</b></p> <p>Cold extremities.</p>	<ul style="list-style-type: none"> <li>☑ Recognize sign of compartment syndrome</li> <li>☑ Elevate head of the bed to 30°</li> <li>☑ Obtain senior advice from Burn Services for ongoing management</li> <li>☑ Formulate a plan for analgesia</li> <li>☑ Assemble equipment necessary for escharotomy (surgical pen, sterile skin preparation, sterile drapes, surgical tray, scalpel)</li> <li>☑ Burns consultant guides participant through marking the escharotomy lines on the patient's laminate using whiteboard marker.</li> </ul>	<p><u>Signs of compartment syndrome</u></p> <ul style="list-style-type: none"> <li>- Related to near-circumferential burn causing restriction to underlying tissue from tight eschar.</li> <li>- Signs include difficulty ventilating from a chest eschar, poor distal pulses, new neurological deficits.</li> <li>- Treatment is an escharotomy (cutting the eschar to release the built-up pressure). This is usually done by surgeons. Discuss with burn team early for guidance.</li> </ul> <p>(See facilitator resource for scenario 3).</p>
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Hi, I'm Rory, the Burn team consultant. I've been briefed about Kevin's condition up to intubation, can you give me an update to help me understand how to help best? ... Here are my recommendations:

- **We will need to proceed with an emergency escharotomy.** If possible, he should be transported immediately to our center, as this would preferably be done in the operating theater. However, **I'm afraid Kevin needs this procedure now** and waiting for the transport team will be detrimental to his condition. Let's try to video connect so I can walk you through the steps.
- **First, you will need to gather your equipment.** I recommend you obtain a scalpel, a surgical marking pen, a large amount of gauze, sterile drapes to place under Kevin and around his sides.
- **Second, you will draw with the surgical pen where the incision will be.** You need to cut from healthy skin to healthy skin. Draw a line from the anterior axillary line to below the margin of the rib cage on either side of the chest. Now connect these two lines by following the lower margin of the rib cage inferiorly, across the chest.
- **Now make a cut that follows these lines.** Be prepared that the incisions will bleed. I'll guide you on the depth of your incision, but the goal is to decompress the pressure from the burn restricting the chest.



## Section X: Scenario 3 Facilitator resources

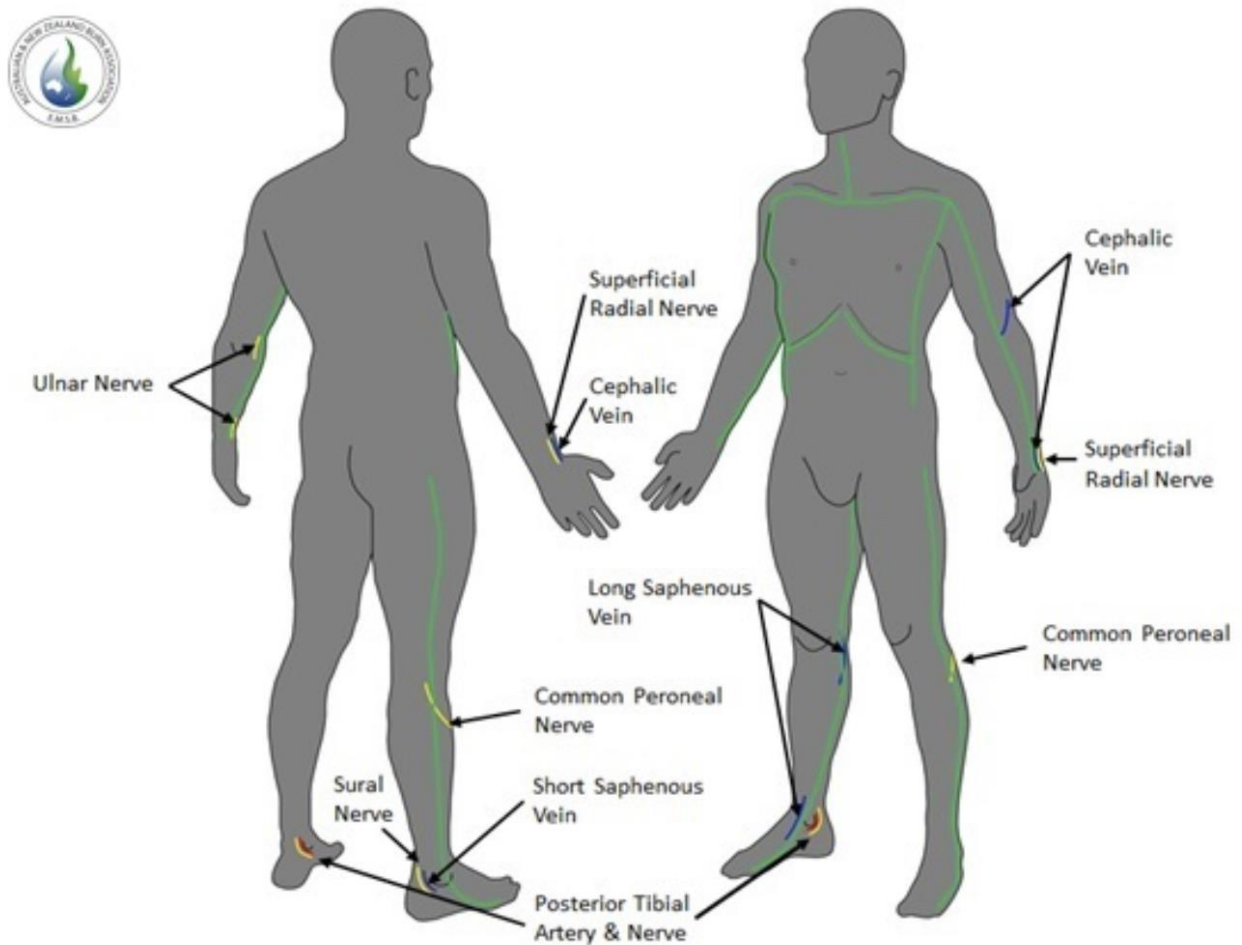


Fig 2. Escharotomy overview (posterior and anterior body). Illustration by Dr Cath Francis.

### Escharotomy incision placement guideline

Source: Nahab F, Wong She R. Evaluation of updated National Burn Service escharotomy guidelines—where do we cut now? *AJOPS*. 2023;6(1):1-5. [doi:10.34239/ajops.70955](https://doi.org/10.34239/ajops.70955)

## Section XI: Closure Guide

Objectives	
Educational Goal:	<ul style="list-style-type: none"><li>• Manage paediatric burn patients according to evidence based guidelines.</li></ul>
Skills Rehearsal:	<ul style="list-style-type: none"><li>• Structured assessment of the paediatric burn patient.</li><li>• Calculating fluid requirements in extensive burns.</li></ul>
Systems Assessment:	<ul style="list-style-type: none"><li>• Access to burn clinical guidelines and retrieval services</li></ul>
Key Moments	
<ul style="list-style-type: none"><li>• Assess all burns for severity, then calculate TBSA if necessary.</li><li>• Ensure analgesia for all patients.</li><li>• Clean and debride burns prior to applying adequate dressings.</li><li>• Calculate fluid requirement for severe burns.</li><li>• Maintain normothermia.</li><li>• Identify burn related injuries.</li><li>• Liaise with burns services for all burns and retrieval services early if needed.</li></ul>	

Fill out our participant survey  
to receive a training certificate

(Select Optimus BONUS as course)





# BURNS in KIDS

## ASSESS BURN SEVERITY

1

### Estimate Burn Depth

- Superficial thickness
- Partial thickness
- Deep thickness

2

### Determine % TBSA

- Lund Brower Charts
- NSW Trauma App

3

### Calculate Fluid Req.

- Parkland Formula:  $3-4 \text{ ml/kg} \times \% \text{ TBSA} \times \text{Wt (kg)}$
- NSW Trauma App

## FIRST AID & INITIAL MANAGEMENT

- |                                    |                      |
|------------------------------------|----------------------|
| ✓ Cool running water for 20 min    | ✓ If advised:        |
| ✓ Cover burns to prevent heat loss | Clean & debride burn |
| ✓ Early multimodal analgesia       | Dress burn           |

## Liaise with the Pediatric Burn Center early

Send photos with caregiver consent to [CHQ\\_QCHBurns@health.qld.gov.au](mailto:CHQ_QCHBurns@health.qld.gov.au)

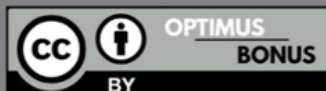
Complete the Burns online referral form (available on CHQ website)

Contact team 24/7 via switch (07) 3068 1111.



For detailed management, consult your guideline

Children's Health Qld Clinical guideline on Burns



## Resources



### Children's Health Queensland Burn Clinical Guideline



### QCH Video: How to apply burn dressings. (Fingers, toes & ears)



### Explore: NSW Trauma app section on paediatric burns



### iLearn module: Management of paediatric burns



### British Burn Association “how-to” guide on deroofing burn blisters.

## Laminate – Case 1 (Contact burn)



## Laminate – Case 2 (Scald burn)





### Laminate - Case 3 (House fire burn)









Laminate – Case 3 (House fire burn) [for use in debrief to demonstrate actual lines used on patient]

Escharotomy Incision Tracing



Post Escharotomy





## ACTICOAT



## MEPITEL



## BAIR HUGGER



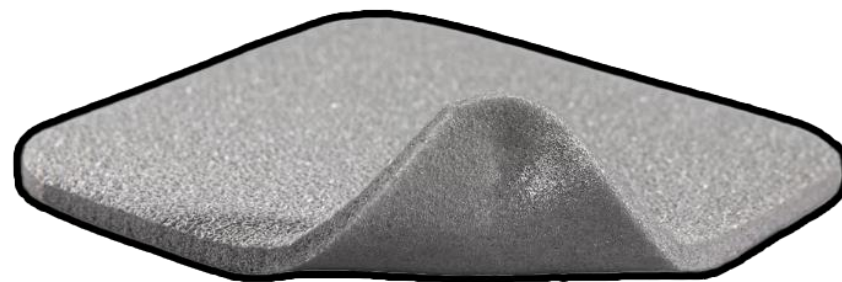
**MEPILEX Ag**



**SURGICAL TRAY**



**SURGICAL PEN**



**STERILE DRAPE**

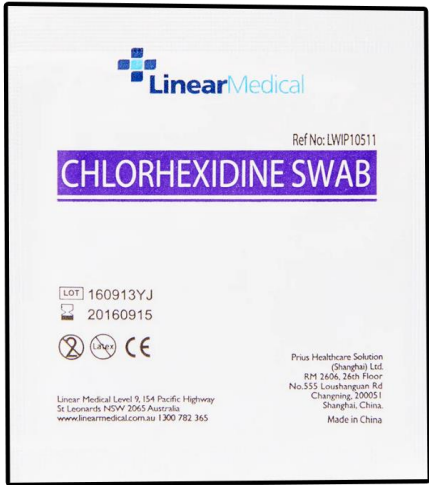


**CLING WRAP**





# CHLORHEXIDINE SWAB



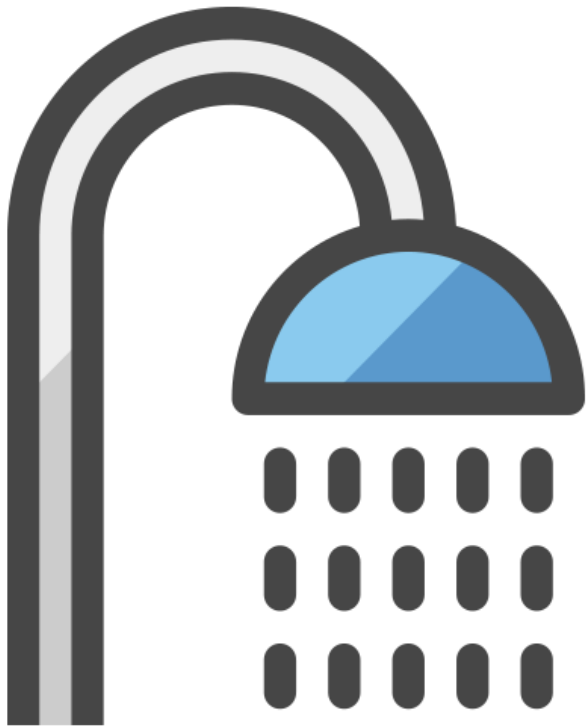
# GAUZE



# HYPAFIX



# RUNNING WATER



# NITROUS OXIDE SEDATION



# QV WASH



**Chlorhexidine Gluconate**  
**5%**



(Dilute 10mL in 500mL water)

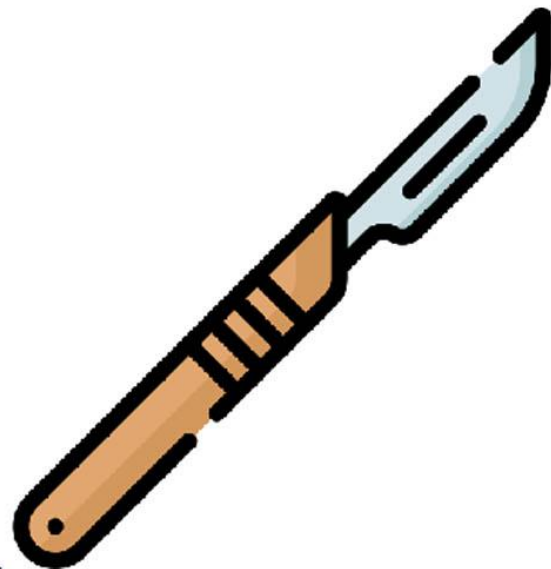
**Tetanus Booster**



**Parents**



**Scalpel**



## 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 specific conditions.

<b>Optimus</b> <b>CORE</b>	<b>Optimus</b> <b>PRIME</b>	<b>Optimus</b> <b>BONUS</b>
Assess the deteriorating child	Escalating care	Management paediatric burns
Fluid resuscitation	Airway management	Burns complications
	Preparedness for retrieval	

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

Access to paediatric resources on: <ul style="list-style-type: none"> <li>• Management of paediatric burns</li> <li>• Assessment of complications related to severe burns</li> <li>• Paediatric retrieval checklist</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Equipment Check: <ul style="list-style-type: none"> <li>• Adequate supply of burn specific dressing</li> <li>• Access to material required for escharotomy</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>
Departmental Protocols for: <ul style="list-style-type: none"> <li>• Clinical guideline for Paediatric Burns</li> <li>• Trigger points for escalation of care in your department</li> <li>• Protocol for paediatric retrieval activation</li> </ul>	<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](mailto:stork@health.qld.gov.au)*



## About the Creators :

### Dr Alexandra St-Onge-St-Hilaire: Primary author



MDCM, FRCPC Paediatrics & PEM  
Fellow, STORK (Simulation Training Optimising Resuscitation for Kids)  
Queensland Children's Hospital

Alexandra is a Pediatric Emergency Medicine physician from Canada (MDCM FRCPC) and current Simulation Fellow at STORK, a state-wide simulation program based at the Queensland Children Hospital. Alexandra has a special interest in paediatric outreach medicine, and she flew across the globe to learn about simulation outreach in Queensland through her fellowship.

In 2024, Alexandra began leading faculty development for paediatric simulation fellows in her home country of Canada.

### Dr Ben Symon : Consultant Supervisor and Editor



@symon\_ben

RACP PEM, MBBS, BAnim

Simulation Consultant and Paediatric Emergency Physician

Queensland Children's Hospital and The Prince Charles Hospital

Director of Clinical Simulation, Mater Education

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 and has recently been invited to join as international faculty for the Master Debriefing Course by [the Debriefing Academy](#). His original degree in Animation has proved surprisingly useful in his career in medical education.

## 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, PRIME and PULSE.
- 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](mailto:stork@health.qld.gov.au) .

## References

This educational package has been reviewed by content experts on behalf of Children's Health Queensland.

This Simulation Template has been adapted from the template from [emsimcases.com](https://emsimcases.com), available at : <https://emsimcases.com/template/>

1. The Australian & New Zealand Burn Association. Minor burns. June 2024. Available at: <https://anzba.org.au/assets/ANZBA-Minor-Burn-v2.pdf>
2. Management of a pediatric burn patient. Children's Health Queensland Pediatric Emergency Guidelines. April 2024. Available at: [https://www.childrens.health.qld.gov.au/\\_data/assets/pdf\\_file/0018/180216/gdl-paediatric-burns.pdf](https://www.childrens.health.qld.gov.au/_data/assets/pdf_file/0018/180216/gdl-paediatric-burns.pdf).
3. Henry Murphy. Burns Module, Don't forget the Bubbles, 2022. Available at: <https://doi.org/10.31440/DFTB.46611>
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