

Women's & Children's Hospital  
**Paediatric Trauma Service**

# ***Paediatric Emergency Trauma Manual***

December 2016, 17th Edition

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Women's  
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Hospital



**Government of South Australia**  
SA Health

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The Committee gratefully acknowledges all of those who have contributed to this Document.

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## Paediatric Trauma Service

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The Paediatric Trauma Service was established in 1995, when the Women's and Children's Hospital was designated as the Paediatric Major Trauma Service for South Australia.

The WCH Trauma Management Committee meets bi-monthly with representation from all disciplines involved in the management of trauma. As a sub-committee, the Trauma Audit Group meets monthly.

The Women's and Children's Hospital Trauma Data Registry contributes data to the State Trauma Registry managed by SA Health and to the National Trauma Research Institute as part of the Australian Trauma Quality Improvement Program (AusTQIP).

As the only Paediatric Trauma Service for the state, the committee has a focus on education. Weekly educational forums are conducted in the form of mock scenarios or case review, radiology reviews and trauma tutorials. These sessions are held on Thursday afternoons in the Paediatric Emergency Department Seminar Room. Many committee members and trauma consultants have provided education sessions both by travelling to rural sites and via Telehealth links as well as within the hospital.

For further information regarding the Paediatric Trauma Service please contact Dr Rebecca Cooksey (Acting Director of Paediatric Trauma, [Rebecca.Cooksey@sa.gov.au](mailto:Rebecca.Cooksey@sa.gov.au)), Dr Nicole Williams (Director of Paediatric Trauma, [Nicole.Williams4@sa.gov.au](mailto:Nicole.Williams4@sa.gov.au)) or Jackie Winters (Trauma Nurse Consultant, [Jacqueline.Winters@sa.gov.au](mailto:Jacqueline.Winters@sa.gov.au)).

The Paediatric Emergency Trauma Manual, now in its seventeenth edition, is widely distributed to new staff, including medical, nursing and allied health.

### **Major Trauma Service**

The Women's and Children's Hospital is the Major Paediatric Service for the state and also services Northern Territory and Far Western New South Wales. As a Major Trauma Service (MTS) we follow specific standards/guidelines as set down by the South Australian Trauma Clinical Working Group (SATCWG). The Standards are derived from the Report of the Working Party of the National Road Transport Advisory Council (NRTAC; July 1993). These Standards have guided the formation of the following protocols as directed by the WCH Trauma Management Committee.

## Paediatric Trauma Service Clinical Indicators

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As a Major Trauma Service (MTS) the WCH Paediatric Trauma Service follows a set of Clinical Indicators. These indicators are benchmarks for the care of severely injured trauma patients.

1. Where the mode of transport is road ambulance, inter hospital retrievals are initiated  $\leq 15$  minutes following notification to MTS.
2. Where the mode of transport is helicopter, inter hospital retrievals are airborne  $\leq 30$  minutes following notification to MTS.
3. Where the mode of transport is fixed wing aircraft, inter hospital retrievals are airborne  $\leq 60$  minutes following notification to MTS.
4. A Level 1 Trauma page is initiated in **100%** of cases which meet Level 1 Trauma Team Activation Criteria\*.
5. A Level 2 Trauma page is initiated in **100%** of cases which meet Level 2 Trauma Team Activation Criteria\*.
6. All members of the trauma team (Level 1 or Level 2) are in attendance either before the patient's arrival or within 5 minutes of the patient's arrival at the MTS.
7. Patients with GCS  $\leq 8$  receive a head CT within 60 minutes of arrival at the MTS.
8. Patients with GCS  $\leq 8$  are intubated within 10 minutes of arrival at the MTS.
9. Urgent craniotomy is commenced within 1 hour of admission to the MTS.
10. Patients with relevant injury mechanism have cervical spine injury confirmed or excluded by radiological examination or immobilised prior to discharge from the Emergency Department.
11. Appropriate intravenous antibiotics are administered for open fractures as soon as possible and prior to discharge from the emergency department.
12. 100% of fractures are diagnosed within 24 hours of admission to MTS.
13. No patients re-present and require admission to the MTS due to missed or inadequately managed injuries.

***Note: These Clinical Indicators form an integral part of the monthly Paediatric Trauma Service Audit Group and bimonthly reports of the Paediatric Trauma Service Management Committee.***

## Triage of Referral Calls

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1. Ambulance Radio Calls:  
Calls to notify WCH    PED Nurse Co-ordinator  
Calls for advice (medical consult)                                  ICU Registrar
  
2. Medical Telephone Calls:  
Retrieval Request    MedSTAR  
Injuries of a non-emergent nature                                    PED and relevant Specialty Registrar

***Note: The transport of paediatric patients with an acute injury of an emergent nature to the WCH should only be initiated after consultation with MedSTAR.***

All transferred and retrieved patients meeting Trauma page criteria, should have a **trauma page** initiated irrespective of where the patient is first admitted.

The decision to activate the trauma team can be made by any staff member. The decision is conveyed to the PED Nurse Coordinator or Triage nurse or PICU Shift Coordinator who will contact switchboard.

**The trauma page criteria are not to be over-ridden.**

## Interhospital Transfers

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Interhospital transfers are arranged by the referring hospital after acceptance of the relevant WCH senior staff member. Any trauma patient that has been accepted by specialty units will notify the PED consultant via consultant phone 8161 8264 that the patient is expected to present to the PED.

MedSTAR retrievals should be directed to MedSTAR.

The MedSTAR retrieval team is responsible for management prior to WCH admission. If it is possible that surgical intervention will be required prior to transport, a surgeon may accompany the retrieval team. The surgical registrar should be notified as soon as possible and given the WCH ETA so that he/she can anticipate the patient's arrival.

Retrieved patients requiring resuscitation and or rapid investigation are assessed initially in the PED. Ventilated patients that are stable and that have been investigated elsewhere may be admitted directly to PICU. These decisions should be made on a case by case basis. No patients meeting level 1 or 2 trauma criteria are to be directly admitted to a general ward without first being assessed in PED.

***Note: All transferred and retrieved patients meeting trauma team activation criteria should have a trauma page initiated irrespective of where the patient is first admitted.***

# PAEDIATRIC Trauma Team Activation

## PAEDIATRIC (Patients less than 16 years)

### Level 1 Trauma Team Activation Criteria *Any of the following:*

- Physiological Profile:
  - o Abnormal vital signs (worst pre-hospital or on arrival status): (refer to table)
    - Abnormal respiratory function including:
      - Compromise of airway and/or breathing
      - Respiratory distress
      - Cyanosis
      - Low saturations ( $\leq 90\%$ )
    - Abnormal heart rate and blood pressure
    - GCS  $\leq 13$
- Injury Profile:
  - o Airway compromise (including intubation or attempted intubation)
  - o Flail chest or subcutaneous emphysema
  - o Ongoing uncontrolled significant haemorrhage
  - o Abdominal guarding or severe pain or distention
  - o Penetrating injury to head, neck or torso (including upper arm, upper leg and perineum)
  - o Severe maxillofacial injury
  - o Major pelvic fractures

NORMAL VITAL SIGN LIMITS				
Vital signs outside of these parameters should be considered abnormal				
Title	Age	Resp. Rate	Heart Rate	Systolic BP
Newborn	< 3 months	30 – 60	110 – 160	>60
Infants	3 – 12 months	30 – 45	100 – 160	70 – 100
Pre-school	1 – 4 years	20 – 35	90 – 140	70 – 100
School	5 – 11 years	15 – 30	70 – 120	90 – 110
Adolescents	$\geq 12$ years	11 – 20	60 – 100	90 – 130

- o Spinal injury with neurological signs
- o Femur fracture plus one other long bone fracture
- o Amputation or severe crush, proximal to the wrist or ankle or ischaemic limb/s
- o Burns > 20% BSA and/or inhalational burns
- o High voltage electrical injury (>1000volts)
- o MedSTAR primary trauma retrieval (retrieval direct from incident)

### Level 2 Trauma Team Activation Criteria *Any of the following and DO NOT meet Level 1 Criteria:*

- MVC  $\geq 60$ km/hr or vehicle severely damaged
- Ejection from a vehicle or death of an occupant
- Pedestrian struck at  $\geq 30$ km/hr
- Cyclist (pedal or motor) struck or fall from at  $\geq 30$ km/hr
- Prolonged extrication time ( $\geq 30$ mins)
- Fall > 2m (age < 2 years – fall from > 2 times the child's body height)
- Fall from or kicked by a horse (or other large animal)
- Handlebar (or other significant blunt injury) to the abdomen
- Hanging / Traumatic Asphyxiation
- Other significant mechanism of injury
- MedSTAR / other Retrieval Service secondary inter-facility trauma retrieval (except those who meet Level 1 criteria)

#### Important Notes:

- If the Assessing Nurse is unsure whether or not a trauma team activation is appropriate, the Emergency Department Consultant or Senior Doctor should rapidly assess the patient as per the criteria and facilitate the decision
- There are two levels of trauma team activation – Level 1 and Level 2
- A Level 2 trauma team activation can be upgraded to a Level 1 trauma team activation by either the Emergency Department Consultant / Registrar or senior Emergency Department Nurse
- Any patient who is subsequently found to meet the Level 1 criteria **MUST** be formally upgraded to a Level 1 response
- All trauma patients, including retrievals and trauma transfers, that meet activation criteria:
  - o **MUST** be re-assessed within the Emergency Department and
  - o **MUST NOT** be admitted directly to the general ward or ICU

#### For those patients requiring secondary transfer and /or the resources of a Major Trauma Service, the SA Trauma System outlines the following service designations:

- Patients who have had their 16th Birthday ( $\geq 16$  yrs) should be referred and transferred to the Adult Major Trauma Services (Royal Adelaide Hospital or Flinders Medical Centre)
- Patients who are under 16 years of age (<16 yrs) should be referred and transferred to the Paediatric Major Trauma Service (Women's and Children's Hospital).

#### For more information

South Australian State Trauma Committee  
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## Trauma Team Activation: Level 1

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### Criteria for “Level 1 Trauma” Page

Any Primary or Secondary Survey deficit as documented on Paediatric Trauma Activation Criteria (see page 5)

### “Level 1 Trauma” Team Response

Senior PED staff medical practitioner (consultant or senior registrar) Surgical Registrar  
Orthopaedic Registrar  
PICU Registrar  
PED Registrar  
Anaesthetic Registrar (after hours only)  
Medical Registrar (after hours only)  
PED Nurses  
PICU Nurse  
Trauma Nurse (In hours only)  
Radiographer  
PED Patient Service Attendant (will collect O negative blood from transfusion)  
Social Worker (in hours) or After Hours Nursing Management Facilitator (after hours)

### TRAUMA TEAM STRUCTURE

#### Team Structure Level 1

Trauma Team Leader  
Airway Doctor  
Circulation Doctor

R1, Nurse Team Leader  
R2, Airway Nurse  
R3, Circulation Nurse  
R4, Scribe Nurse

Radiographer

## Trauma Team Activation: Level 2

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### Criteria for “Level 2 Trauma” Page

Any Primary or Secondary Survey deficit as documented on Paediatric Trauma Activation Criteria (see page 5)

### “Level 2 Trauma” Team Response

Senior PED staff medical practitioner (consultant or senior registrar)

PED Registrar

PED Nurses

Trauma Nurse (in hours only)

Radiology (as requested)

PED Patient Service Attendant

Social Worker (in hours) or After Hours Nursing Management Facilitator (after hours)

**Note:** Patients that initially have a **Level 2** response that are subsequently found to meet **Level 1 Trauma** criteria should have the response upgraded by initiating a **Level 1 Trauma** page. The pager message should be preceded with “upgrade”.

If **cardiac arrest** occurs, a **code blue** page should be considered **if requested** by the PED Consultant, as well as the **Level 1 Trauma** page. If a PED Consultant is not present, a **code blue** page should occur as well as the **Level 1 Trauma** page.

	<b>Age</b>	<b>Hypotension SBP</b>	<b>Tachycardia HR</b>	<b>Tachypnoea RR</b>
<b>Infants</b>	<b>0 - 2</b>	<b>&lt; 80 or absent radial pulse</b>	<b>&gt; 160</b>	<b>&gt; 60</b>
<b>Preschool</b>	<b>2 - 5</b>	<b>&lt; 85 or absent radial pulse</b>	<b>&gt; 140</b>	<b>&gt; 40</b>
<b>School</b>	<b>5 - 12</b>	<b>&lt; 90</b>	<b>&gt; 130</b>	<b>&gt; 40</b>
<b>Adolescents</b>	<b>12 - 18</b>	<b>&lt; 100</b>	<b>&gt; 120</b>	<b>&gt; 40</b>



# Protocol for Initiating, Updating and Upgrading Trauma Pages

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## Trauma paging system

The PED or PICU Nurse Co-ordinator or Triage RN is responsible for initiating the Trauma pages. Where there is ambiguity, senior PED or PICU staff should provide guidance and clarification.

Only those staff required to attend (or otherwise respond) will receive the Trauma page with the exception of the PED consultant who will receive all Trauma pages, and Director of Trauma who will receive all Level 1 Trauma pages.

## The trauma team activation criteria must not be overridden

A Level 2 Trauma may be **upgraded** to a Level 1 Trauma, e.g. due to deterioration in the patient's status, or recognition Level 1 trauma team activation criteria have been overlooked.

However, a Level 1 Trauma **must not be downgraded**, irrespective of apparent improvement in patient's status, or assertion Level 1 trauma team activation criteria have been over-called.

## What message should go on the Trauma page?

The message on the Trauma page must contain (only) the following 4 items:

1. **Activation level:** "LEVEL 1 TRAUMA" or "LEVEL 2 TRAUMA"
2. **Admission area:** "PED" or "PICU"
3. **Age in years:** "XX YRS"
4. **ETA in minutes:** "ETA XX MINS" or "NOW"

Eg: "LEVEL 2 TRAUMA PED 15 YRS ETA 20 MINS". *Please do not vary from this format.*

If the original ETA was more than 10 minutes, a repeat Trauma page should be issued on arrival with the following 5 items.

1. **Additional page:** "UPDATE"
2. **Activation level:** "LEVEL 1 TRAUMA" or "LEVEL 2 TRAUMA"
3. **Admission area:** "PED" or "PICU"
4. **Age in years:** "XX YRS"
5. **ETA in minutes:** "HAS ARRIVED"

Eg: "UPDATE LEVEL 2 TRAUMA PED 15 YRS HAS ARRIVED". *Please do not vary from this format.*

If the original Trauma page was for a Level 2 Trauma, but the patient is found (or has deteriorated) to meet activated Level 1 criteria, a repeat Trauma page should be issued to indicate the upgrade with the following 5 items.

1. **Additional page:** "UPGRADE"
2. **Activation level:** "LEVEL 1 TRAUMA"
3. **Admission area:** "PED" or "PICU"
4. **Age in years:** "XX YRS"
5. **ETA in minutes:** "ETA XX MINS" or "NOW"

Eg: "UPGRAGE LEVEL 1 TRAUMA PED 15 YRS NOW". *Please do not vary from this format.*

# Trauma Team Structure: Key Medical Roles & Responsibilities

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## Medical Roles and Responsibilities – Level 1

### 1. Medical Team Leader

The overall co-ordination of the resuscitation should be performed by the PED registrar or fellow, under the supervision of the PED consultant. The person undertaking this role should identify themselves to the rest of the team before the patient arrives. They should also identify who has responsibility for the airway and the circulation.

### 2. Intensivist / Anaesthetist / PED Registrar

- Airway control and ventilation
- Care of patient during transfer within the hospital and during CT (see CT protocol)
- Identify patients requiring ICU admission
- Document findings, interventions and management plan on trauma management form

### 3. Surgeon

- Venous Access
- To perform Secondary Survey
- Surgical intervention (eg haemostasis, splint application etc)
- Identify patients requiring subspecialty surgical consultation and initiate referrals
- Plan investigations and definitive care
- Document findings, interventions and management plan on trauma management form

### 4. PED Physician(s)

- Medical co-ordination (see above)
- Venous access
- Co-ordinate blood tests, radiology and blood bank etc
- Obtain history / past history etc
- Communicate with and support family
- Ensure trauma forms are completed by relevant team members
- Document findings, interventions and management plan on trauma management form

### 5. Radiographer

- Perform portable Trauma Series X-rays (Chest, C-spine, and Pelvis)

### 6. Patient Service Attendant (PSA)

- Collect blood from transfusion
- Deliver blood specimens to laboratory

# Trauma Team Structure: Key Medical Roles & Responsibilities

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## Nursing Roles and Responsibilities for Paediatric Emergency Nursing Staff – Level 1

### 1. Nurse Team Leader

#### Prior to arrival of patient:

Prepare equipment and ensure your nursing team are present and aware of their respective roles.

*NB: Please see PED Resuscitation Roles Learning Package for more specific information*

### 2. Airway Nurse

Prepare your airway equipment and establish your Airway Doctor.

*NB: Please see PED Resuscitation Roles Learning Package for more specific information*

### 3. Circulation Nurse

Set up circulation equipment as required and establish your Circulation Doctor.

*NB: Please see PED Resuscitation Roles Learning Package for more specific information*

### 4. Scribe Nurse

Prepare paperwork and establish Team members.

*NB: Please see PED Resuscitation Roles Learning Package for more specific information*

## Nursing Roles and Responsibilities for PICU Nursing Staff

Bring Transport Ventilator from PICU to PED

Assist PED nursing staff if requested to do so by the Nursing Team Leader

If patient is ventilated and care has been handed over to PICU nurse only then do they accompany ventilated patients to Radiology

# Trauma Management

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## **PRIMARY SURVEY**

Primary Survey is a systematic assessment approach, to identify and treat life threatening conditions in Trauma that will reduce patient mortality and morbidity.

The Primary Survey should be brief and take a few minutes to complete:

**Airway** management including cervical spine immobilisation

**Breathing**

**Circulation** with Haemorrhage control

**Deficit-** assessing for Neurological Disability

**Exposure** and Environment

## **RESUSCITATION**

Occurs simultaneously within the Primary Survey and includes the actions, procedures performed to overcome life threatening conditions and to stabilise the patient.

## **SECONDARY SURVEY**

Secondary Survey is a detailed head to toe examination of the patient, to determine the extent of injuries. This occurs after life threatening situations have been controlled.

## **DEFINITIVE CARE**

Transfer of the patient to a ward, or another institution for ongoing, specific management.

Major trauma/poly trauma patients are admitted under Paediatric Surgery team.

All other trauma patients are admitted under injury specific medical team.

## **TERTIARY SURVEY**

Occurs 24 hours post injury and is performed by the home medical team. This is a comprehensive head to toe examination to determine any missed injuries at time of initial survey.

# Trauma Management

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## EMERGENCY BLOOD FOR LEVEL 1 TRAUMA

Immediately after the initiation of a **Level 1 Trauma** page:

1. The transfusion service will issue:
  - 3 units Group O neg blood for children <5 years
  - 6 units Group O neg blood for children >5 years
2. The PED PSA will proceed to the Transfusion Service to collect the O neg blood.

The Trauma Team will collect 2 EDTA (purple top) tubes and send to the Transfusion and Core Labs, ensuring that the specimens are correctly labelled and that both the tube and the form has been signed ensuring correct patient identity. The Transfusion Request form should be marked "URGENT".

Use of red bag/ROTEM® red bag:

The use of the red '**priority**' laboratory specimen bags are **ONLY** for patients with actual/potential **risk of critical bleeding** e.g. acute trauma, postpartum haemorrhage.

There are **two** red priority specimen bags available:

- For rotational thromboelastometry (ROTEM) testing
- For other critical bleeding laboratory tests

The ROTEM testing priority bag is distinguishable by the ROTEM sticker adhered to the reverse of the bag.

If ongoing transfusion is required:

**Immediately**, further units of **O neg blood** will be issued.

**Within 10–20 minutes** (from the receipt of the sample in the lab) **group specific blood** will be issued

**Within 30 minutes** (from the receipt of the sample in the lab) **cross matched blood** will be issued  
(Note: dispensing of blood will be delayed if antibody screen is positive).

Transfusion will notify when the blood is available.

Consider:

1. Enacting massive transfusion protocol by contacting on-call Haematologist
2. Use of ROTEM® thromboelastography to guide blood product requirements

In **ALL** circumstances telephone **18888** and

1. state the following:
  - The **reason** the blood is required
  - The **time** the blood is required
  - The **number** of units required
2. Patient identification
3. Send the PSA to collect the blood
4. Contact the Haematologist on call to co-ordinate ongoing blood product requirements.

**Note: If blood is not used within 30 minutes, please return to Transfusion Laboratory.**

# Trauma Management

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## DOCUMENTING THE MECHANISM OF INJURY

All children who present with injury require a detailed history of events leading to the child being injured.

The injury history questions in the trauma record must be completed within 24 hours of the child's presentation to the WCH by the responsible medical officer (usually the PED Registrar or the responsible unit medical staff).

The questions are critical to thinking about mechanism of injury with regard to injury prevention and the recognition of possible neglectful or inflicted injuries.

This is particularly relevant to infants and young children less than 18 months of age.

### Questions to be answered:

1. When did the injury occur?
2. Where did the injury occur?
3. How did the injury occur?
4. Was the incident witnessed and by whom?
5. On review of the medical record or history, has the child had any other previous injuries? Specify details.
6. What is the developmental level of the child (sitting / crawling / walking / running / climbing)?
7. Is enough known about the events leading to the injury that the injury mechanism is clearly understood?
8. Have witnesses been spoken to?
9. Do witnesses need to be spoken to?
10. Is the documentation regarding this injury adequate?
11. Conclusion about injury: clearly accidental / neglectful / inflicted / unclear?

### Recommended Action:

The following situations must be discussed with the PED consultant:

1. Any child <18 months
2. Any child with unclear, neglectful or inflicted injuries
3. Any child where there is a supervision issue
4. Where the developmental capabilities of the child do not fit the injury explanation

# Trauma Management

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## DEFINITIVE CARE OF TRAUMA PATIENT

### Hand-over of roles

After the patient's condition has been stabilised, the Intensivist / Anaesthetist and the ICU nurse will hand over their roles to the PED physician and the PED primary nurse respectively (Non-intubated patients only).

After completing his / her assessment the surgeon will hand over his / her role and management plan to PED Physician.

The social worker will remain with the parents outside the resuscitation room. However parents are permitted to be in the resuscitation room if they so desire. The Social Worker/Nursing Coordinator/Trauma CPC will remain with the parents during this period until, when time permits, they will be joined by a member of the trauma team to explain to the parents the progress of the child.

### Documentation

The appropriate hospital Trauma Management record is to be used for all Level 1 and Level 2 trauma patients. For Level 2 trauma's this record is completed by the PED registrar. For Level 1 trauma's the Primary Survey, Secondary Survey and History sections should be completed by the PED Registrar. All other medical team members should document their findings in the patient's medical record. The findings of a Tertiary Survey, performed the day after admission, should be documented in the patient medical record by the admitting team's registrar.

### Admission Protocol

Patients with severe or multi system injury **are to be admitted under Paediatric Surgery** with subspecialty surgical units consulting. Patients subsequently requiring predominantly subspecialty management may be transferred to subspecialty units at a later date (eg. 24 hrs after admission).

### Admission Ward

All patients with severe trauma (defined by meeting the trauma team page criteria) requiring hospital admission are admitted to Newland/Kate Hill Ward in the first instance, with the following exceptions:

1. The patient requires admission to either PICU or PHDU
2. The patient is less than twelve months of age
3. The patient has long standing chronic medical or social problems and is well known to Adolescent Ward.

## Guidelines for PAEDIATRIC SURGERY REGISTRARS

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1. Attend **Level 1 trauma** pages immediately. Arrive in PED before the patient. If unable to attend immediately, contact PED and discuss availability of Paediatric Surgical Team.
2. Attend **Level 2 trauma** patients as requested by PED Medical Officer.
3. For **Retrievals** with severe trauma - be in attendance (PED or PICU) when the patient arrives at WCH.
4. Document Secondary Survey and co-ordinated management plan in the medical records or trauma management record.
5. Ensure all severe or multi-system injuries are admitted initially under Paediatric Surgery.
6. Review all **Trauma Team** patients admitted the day after admission. Perform a Tertiary Survey and document result on the Tertiary Survey page of the hospital trauma management record.
7. When transferring patients to a sub-specialty surgical unit the Surgical Registrar should:
  - Discuss with Paediatric Surgery Consultant
  - Discuss and formally hand over to sub-specialty registrar / consultant
  - Document transfer with hand over summary in progress notes
8. When accepting referrals from outside the hospital, if the patient meets Trauma Team Criteria (Level 1 or 2) notify PED consultant. For rural patients, discuss transport options/retrieval with PICU/PED consultant/registrar or direct referring clinician to MedSTAR.



## Guidelines for PICU REGISTRARS

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1. Attend all **Level 1** pages immediately. Arrive in PED before the patient (if unable to attend immediately contact PED).
2. Document findings, interventions and management plan in the medical records.
3. For SAAS radio consults from metropolitan areas, ensure PED triage or Co-ordinator is aware of the patient.
4. For SAAS radio or telephone consults from rural areas (including all calls where rapid response retrieval is considered), call PICU consultant immediately even if clinical information is limited.
5. For referral calls from rural hospitals and other metropolitan hospitals, ensure the following team members are notified if the patient meets Trauma Team Criteria:
  - PED triage or Co-ordinator/PED Consultant
  - Surgical registrar
  - Orthopaedic Registrar
  - Radiographer on call
  - Relevant Surgical sub-specialists

For retrievals by MedSTAR, once the Retrieval Team has reported from the scene / rural hospital, use the Trauma Page to notify the team of the WCH ETA (see page 8 of example).

## **Guidelines for PAEDIATRIC EMERGENCY DEPARTMENT REGISTRARS**

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1. Attend all PED Trauma team pages immediately. Arrive in the Trauma room before the patient.
2. The PED Registrar or Fellow is the Trauma Team Leader, supported by the PED Consultant.
3. Document findings, interventions and management plan on the Trauma Form.
4. Ensure that the management in the PED is documented on the Trauma Form by the relevant Trauma Team members.
5. Ensure that other team members hand over to you before they leave PED.
6. If the patient remains in PED after completion of the Secondary Survey, ensure that the patient care is co-ordinated and that the stability of the patient is monitored.

## Guidelines for ORTHOPAEDIC REGISTRARS

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1. Attend **Level 1** pages immediately. Arrive in PED before the patient (if unable to attend immediately contact PED).
2. For **Retrievals** with severe trauma - be in attendance (PED or PICU) when the patient arrives at WCH.
3. Document Orthopaedic findings and management plan on the Trauma Form.
4. When accepting referrals from outside the hospital, if the patient meets Trauma Team Criteria (Level 1 or 2) notify PED Consultant. For rural patients discuss transport options/ retrieval with PICU/PED Consultant/Registrar or direct referring clinician to MedSTAR.
5. Complete the Spinal Injury Management Plan [Chart](#).

## Guidelines for ANAESTHETIC REGISTRARS

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1. Attend after hours **Level 1** pages immediately. Arrive in PED before the patient.
2. If unable to attend due to theatre commitments, notify PED triage immediately.
3. Document Primary Survey findings in medical record.

## Guidelines for RADIOGRAPHER

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1. Attend **Level 1** pages immediately. Arrive in the PED Resus Room before the patient (if unable to attend immediately contact PED)
2. Before the patient arrives, set up the trauma bed with the cassette for chest and x-rays.
3. It is not necessary to attend **Level 2** pages immediately. If x-rays are required in these patients, the team will contact the Radiographer after the initial assessment has been made.
4. If the PED medical staff determines that the patient is not stable to attend radiology for x-rays, the Radiographer will attend the PED resuscitation room to complete the necessary x-rays.

### Airway Trauma – Larynx and Trachea

#### Mechanisms

Fall onto sharp object  
Direct blow from assault  
Running / riding under hidden wire  
Penetrating injury to neck (stab / gunshot)  
Dashboard, back of front seat

#### Signs

Bruising or marking over the anterior neck  
Haematoma  
Stridor  
Haemoptysis  
Hoarse voice / aphonia  
Subcutaneous emphysema  
Respiratory distress / signs of upper airway obstruction

**NB: Signs may be minimal despite severe injury**

#### Notes:

Suspected airway trauma should be managed with extreme caution. Endotracheal intubation should be avoided if at all possible due to the risk of intubating a false tract or causing further trauma to the airway.

In all cases of suspected airway trauma call the ENT Registrar, Anaesthetic Registrar and ICU Registrar as early as possible. The relevant consultants should also be informed as soon as possible.

If possible, postpone any intervention until the full team has arrived.

#### Approach to Initial Management:

The following suggested approach is based on three categories of severity. The category will affect the place of intervention and the order in which procedures are done.

#### CATEGORY 1 - Suspected Airway Trauma without Stridor or Respiratory Distress:

##### Management Protocol

1. Manage associated life threatening injuries. Oxygen therapy. Monitor patient with at least pulse oximetry at all times. Other monitoring as indicated.
2. Transfer to theatre for EUA. Consultation by consultant staff is mandatory.

## Management Guidelines for AIRWAY INJURY

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### **CATEGORY 2 - Suspected Airway Trauma with Respiratory Distress - Stable - Patient not Hypoxic:**

#### **Management Protocol**

1. Manage associated life threatening injuries. Oxygen therapy. Monitoring at all times with at least pulse oximetry, ECG, NIBP.
2. Transfer to theatre for EUA by senior experienced staff. Consultation by consultant staff is mandatory.

### **CATEGORY 3 - Suspected Airway Trauma with Marked Respiratory Distress - Unstable or Hypoxic Patient:**

#### **Management Protocol**

The protocol consists of a stepwise progression of interventions. Before the full Surgical, Anaesthetic and ICU teams arrive, the goal should be to maintain  $SaO_2 > 85$  and prevent bradycardia.

**If the patient remains hypoxic or bradycardic, progress to the next step.**

**Prepare bronchoscopy equipment and tracheostomy set.**

1. Oxygen via face mask
2. Assist patient's own respiratory efforts with bag and mask ventilation.
3. If moribund and if surgical expertise is unavailable, attempt needle cricothyroidotomy as interim means of improving oxygenation while surgical team is assembled.
4. If patient remains hypoxic proceed to emergency surgical airway in the Emergency Department.
5. Once the airway is secured transfer to theatre for definitive assessment and repair.

#### **ENT Service:**

The ENT Registrar should be paged urgently for all cases of suspected airway trauma and penetrating neck injuries.

At any one time there is an On-call Registrar, a back-up Registrar and a Consultant available. Contact via switchboard. After hours, the On-call Registrar will not necessarily be the WCH ENT Registrar.

The ENT service should be consulted in cases of head trauma with evidence of CSF leak, facial nerve palsy or ear damage, and, in cases of facio-maxillary trauma with airway compromise.

#### **Retrievals:**

An ENT Registrar or Consultant should accompany the retrieval team in cases of suspected laryngeal or tracheal injury where the child exhibits symptoms or signs of upper airway obstruction on arrival at the referring hospital.

### Assessment of Head Injury:

#### Primary Survey

- A. Assess and secure airway
- B. Assess adequacy of breathing pattern and rate
- C. Assess adequacy of circulation  
Document Heart rate, blood pressure and oxygen saturation  
Establish IV access
- D. Assess disability  
Document conscious state (GCS)  
Document eyes signs & neurological signs
- E. Document core temperature  
Examine for other injuries and initiate therapy

#### Notes:

If abnormalities (in ABC) are detected during the Primary Survey lifesaving therapies should be commenced immediately.

If the circulation is inadequate, a fluid bolus should be given. Fluid restriction is inappropriate if the patient is hypovolaemic.

If time permits, conscious state, response to pain, limb posture / movement and eye signs should be formally assessed before administration of intubating drugs. (This usually takes less than 1 minute).

#### Secondary Survey

1. Document history - mechanism and time of injury, change in condition since injury etc.
2. Examine for associated injuries.
3. Re-evaluate ABC.
4. Arrange investigations.
5. Stabilise condition prior to transfer to other department.
6. Triage to CT, ICU, theatre, and ward.



## Management Guidelines for HEAD INJURY

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### Severity of Head Injury:

The best guide to the severity of head injury is the conscious state. The Glasgow Coma Scale (GCS) allows quantitation of conscious state.

GCS	3 – 8	Severe Head Injury
GCS	9 - 12	Moderate Head Injury
GCS	13 - 15	Mild Head Injury

### GLASCOW COMA SCALE

		INFANTS	CHILDREN & ADULTS
<b>Eye Opening</b>	4	spontaneous	spontaneous
	3	to shout	to verbal command
	2	to pain	to pain
	1	no response	no response
<b>Best Motor Response</b>	6	norm/spontaneous movement	follows commands
	5	withdraws to touch	localises pain
	4	withdraws to pain	withdraws to pain
	3	flexion to pain	flexion to pain
	2	extension to pain	extension to pain
	1	no response	no response
<b>Best Verbal Response</b>	5	coos and babbles	orientated
	4	irritable cry	confused
	3	cries to pain	inappropriate words
	2	moans to pain	sounds
	1	no response	no response

### Notes:

The GCS should be scored on the patient's **best** responses.

The GCS may be falsely low if one of the following is present - shock, hypoxia, hypothermia, intoxication, postictal state, sedative drug administration.

The GCS may be impossible to evaluate accurately if the patient is agitated, uncooperative, dysphasic, intubated or has significant facial or spinal cord injuries.

### Management of Severe Head Injury (GCS ≤ 8) - Aims:

1. Prevent secondary brain insults from hypotension, hypoxia, hypercarbia etc.
2. Evaluate for significant intracranial haematoma.
3. Monitor and control intracranial pressure.

## Management Guidelines for HEAD INJURY

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### Indications for Intubation in Emergency Department:

1. Airway obstruction not relieved by simple manoeuvres.
2. Apnoea or inadequate ventilation.
3. Coma ie GCS  $\leq$  8.
4. Rapid deterioration of conscious state (eg GCS deteriorating  $\geq$  3 points in  $<$  1 hr).
5. Associated injury indicating the need for IPPV eg chest injury.
6. Agitated child in whom urgent CT is required.

### Intubation technique in head injury:

1. Pre-oxygenate
2. Rapid sequence IV induction with cricoid pressure
3. Assistant to maintain in line, neutral position cervical immobilisation
4. Oral intubation where Cx spine injury and basal skull # cannot be excluded
5. Immobilise Cx spine after intubation

### Note:

1. Do not delay intubation for Cx spine x-ray
2. Abnormality on Cx spine x-ray does not influence intubation technique
3. Normal Cx spine x-ray does not imply stable Cx spine in children

**NB: Regard all unconscious children as having unstable Cx spine until proven otherwise**

### (Refer to Management Guidelines for cervical spine precautions in unconscious patients)

### Note:

1. After initial resuscitation, further therapeutic measures to reduce ICP should only be performed in conjunction with ICP monitoring.
2. For intubated children with head injury, sedation and/or paralysis should not be continued without ICP monitoring.

## Management Guidelines for HEAD INJURY

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### Indications for Urgent CT:

1. Children in Coma - GCS  $\leq$  8
2. Altered conscious state - GCS  $\leq$  12

The degree of urgency in this group is variable. If in doubt, discuss with Neurosurgeon or Trauma Consultant on call.

3. Rapid neurological deterioration ( $\geq$  3 points in GCS)
4. Focal neurological signs or eye signs
5. Full fontanelle and / or separating sutures
6. Bradycardia and hypertension associated with altered conscious state
7. Requirement for general anaesthesia and a history of prolonged LOC (>5min)

### Indications for CT after the phase of initial presentation and assessment: (Management directed by Consultant Neurosurgeon)

1. Deteriorating conscious state
2. Unresolving or worsening symptoms of concussion
3. Persistent nausea or vomiting

### Indication for Skull X-ray:

1. History of LOC
2. Palpable depression
3. Blood or CSF in ears or nose
4. Suspected neglectful or inflicted injury

### Note:

1. If CT is to be performed, this should include bone windows. A SXR will not generally be required (except for suspected neglectful or inflicted injury).
2. For children < 18 months, a SXR may be indicated as part of the assessment of mechanism of injury. The presence of a fracture may be an important finding in the assessment of mechanism of injury even though the presence of a fracture may not influence the head injury management. (See Guidelines for documenting the mechanism of injury).
3. If characterised by:
  - Unequivocal mechanism of injury
  - No suspicion of neglectful or inflicted injury
  - No history of LOC
  - Normal examination including normal conscious state
  - A SXR is generally not required. In this group the SXR is likely to be normal and the detection of an abnormality is unlikely to influence management.

## Management Guidelines for HEAD INJURY

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### Surgery for Other Injuries:

1. If due to ongoing bleeding, the patient's condition cannot be stabilised with maximal resuscitation, the patient should be transferred directly to theatre and CT scans postponed.
2. Children with GCS  $\leq 8$  should be considered for ICP monitoring during surgery.
3. Children with GCS 9-12 or a history of prolonged LOC ( $> 5$ min) require a CT scan before surgery for other injuries - consult Neurosurgery.
4. Non urgent surgery for other injuries may need to be deferred for 24-72 hours.

### Transfer of patients with known extra dural haematomas

Uncommonly patients are transferred from other hospitals with known extra dural haematomas. For cases that may require urgent neurosurgery, there should be a rapid primary assessment in the PED. The Trauma Consultant, Neurosurgeon, and Anaesthetic Consultant on call, should be present in the PED before the patient's arrival. The decision to expeditiously transfer the patient to theatre should be made in the PED after the patient has been rapidly assessed.

### ADMITTING WARDS:

#### NEUROSURGERY WARD

- Stable patients with GCS  $> 13$  at the time of admission

#### PICU

- Unstable patients
- Patients with GCS  $\leq 12$

***Note: In general, patients with head injury that require greater observation than that available on the neurosurgical ward should be admitted to PICU rather than PHDU. These patients benefit from increased medical as well as increased nursing observation.***

## Management Guidelines for CRANIOFACIAL TRAUMA

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### Emergency Department Assessment of Craniofacial Trauma

#### Primary Survey

#### Secondary Survey

##### Note:

- Cranial facial injury is often associated with head injury and airway injury.
- The priorities are indicated by the severity of these associated injuries - [see head injury and airway injury protocols].
- If abnormalities are detected in the Primary Survey, then appropriate therapies and interventions should be commenced immediately.
- Detailed inspection and palpation of the facial bones is part of the Secondary Survey and should be undertaken once the airway breathing and circulation are stable.

### Indications for Urgent Emergency Department Craniofacial Referral

#### A: Airway Control

Adequate posturing with suction and clearing of the pharynx has not been successful in controlling the airway, due to persistence of intra-oral or intra-nasal bleeding, due to loss of jaw integrity and swelling in the region of the tongue base and neck.

#### B: Bleeding Control

Persistence of bleeding from the nose and mouth as well as from associated facial lacerations.

#### C: Clinical Evidence of Facial Bone Fractures

Where this exists, the Craniofacial surgeon should be involved at the outset to allow integration of management planning with other departments, eg Neurosurgery. History, inspection and palpation of the facial bones may provide an accurate diagnosis of facial fracture but in small children, pain and swelling may be the only clinical signs.

**NB: Where there is doubt, consult the Craniofacial surgeon urgently.**

### Indications for Intubation in Severe Craniofacial Injury

The same as for head injury and in addition:

- Uncontrollable bleeding from nose and mouth.

### Indications for Urgent Radiology in Craniofacial Fractures

1. If suspicion exists that a foreign body has been inhaled, then a chest x-ray should be done urgently. Suspicion of an inhaled foreign body should be based on the presence of ongoing respiratory distress without obvious compromise of the upper airway plus a relevant history or evidence of gross dento-alveolar fractures with loss of fragments of bone or teeth.
2. Skull x-rays and CT scans as indicated for head injury.

**Note:** *Where skull x-rays or CT scans are to be performed for urgent neurosurgical considerations, representative facial views should be obtained where the clinical assessment indicates craniofacial fractures.*

### Indications for Urgent Surgical Treatment in Craniofacial Trauma

1. Inhaled foreign body is an indication for urgent ENT or thoracic surgery consultation.
2. Uncontrollable bleeding from mouth and nose. This is an indication for packing of the nose, mouth and pharynx.
3. Significant facial and oral mucosal lacerations. These require accurate debridement and suture and may be part of the management of bleeding control.
4. Treatment of facial fractures. This will rarely be carried out urgently except where management is facilitated through exposure of these fractures for other reasons, eg urgent neurosurgical intervention or management of facial lacerations.

## Management Guidelines for SPINAL INJURY

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### Immobilisation and Assessment of Spinal Injuries:

#### Risk of Injury:

The following groups of patients are at risk of sustaining spinal injury and require spinal immobilisation until injury is excluded.

#### Historical:

Fall > 5 metres  
Cyclist / Pedestrian - Struck by vehicle > 30 kph  
Ejected from MVA  
MVA - speed > 60 kph  
Lap belt only and high speed MVA  
Motor bike accident  
Fall from a horse  
Complains of neck pain or abnormal sensation

#### Examination:

Spinal tenderness or deformity  
Signs of cord injury (neurologic, reflex, autonomic)  
Associated H.I. with altered conscious state (GCS < 15)  
Associated multiple injuries  
Significant trauma above the clavicle

### Initial Assessment of Patients with Spinal Injuries:

Primary and Secondary Survey as for any patient with severe trauma with the following specific considerations:-

#### Primary Survey

- A.** Maintain cervical immobilisation throughout  
Cautious airway suction - may precipitate vagal reflex, bradycardia / sinus arrest  
If intubation is required, assistant should maintain cervical immobilisation.  
Suxamethonium is contra-indicated 7 days or later post injury. In the acute setting it provides the best intubating conditions.
- B.** High cervical spinal lesions cause respiratory failure secondary to respiratory muscle paralysis.  
Paradoxical chest / abdominal movement require intubation and ventilation.
- C.** Need to consider both hypovolaemia and neurogenic shock  
Initial fluid bolus of 20ml/kg is appropriate for either  
Attempts to restore normal BP in neurogenic shock may lead to over infusion  
Pressor agent (eg Noradrenaline) may be required.
- D.** Associated head injury is common. Consider hypotension, hypoxia, and CO<sup>2</sup> narcosis as possible causes for altered conscious state.

### Secondary Survey:

Spinal Deformity

Neck pain

Torticollis

Limitation of movement

Muscle spasm

Motor Level

Sensory Level:

- Light Touch      Anterior Spinothalamic
- Proprioception    Posterior Columns
- Pin Prick          Spinothalamic

Horner's Syndrome

Anal sphincter tone S2, 3, 4

Perianal sensation S4, S5

Anal cutaneous reflex

Bulbocavernosus reflex

Priapism

Urinary retention



## Management Guidelines for CERVICAL SPINE PRECAUTIONS IN UNCONSCIOUS PATIENTS

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It is often difficult to definitively exclude cervical spine injury in a child with a depressed conscious state. These children should be managed assuming they have a cervical spine injury until the cervical spine has been formally cleared. How spinal immobilisation is achieved will depend on the activity of the child.

### 1. In the Emergency Department

- immobilise with hard collar (consider ASPEN collar) and sandbags (or manually in uncooperative patients)
- do not tape the child's head to the bed

### 2. Ventilated and adequately sedated patients in PICU

- immobilise head and neck with sand bags
- remove hard collar, change to ASPEN if immobilisation is required i.e. transport to CT or OT
- spinal turns (commence immediately to prevent occipital pressure ulcers)
- re-apply a collar when sedation reduced and patient starts moving spontaneously

**Note: If the management plan at the time of PICU admission is to withhold sedation for neurological assessment, then do not remove the immobilisation collar.**

### CHOICE OF COLLARS

- Hard cervical collars (eg. Laerdal Extrication collars) are not suitable for prolonged use.
- Ideally hard collars should not be used continuously for more than 4 hours, beware of pressure areas).
- If prolonged use of a collar is required, an Aspen collar is to be fitted. (See algorithm page 36-37).
- Aspen collars are available in the Paediatric Emergency Department or the Paediatric Intensive Care Unit. These collars are to be fitted when it is determined that the child has a cervical spine injury or clearance of the cervical spine is not permitted.

### DECISION TO CLEAR THE SPINE

Clearing the cervical spine in a patient with a persistently abnormal conscious state is a challenging and sometimes controversial area. Occasionally different medical disciplines have conflicting opinions. It is usually the responsibility of the orthopaedic surgery department to assess the cervical spine.

**In all cases where the cervical spine cannot be cleared in the Emergency Department, it is recommended that:**

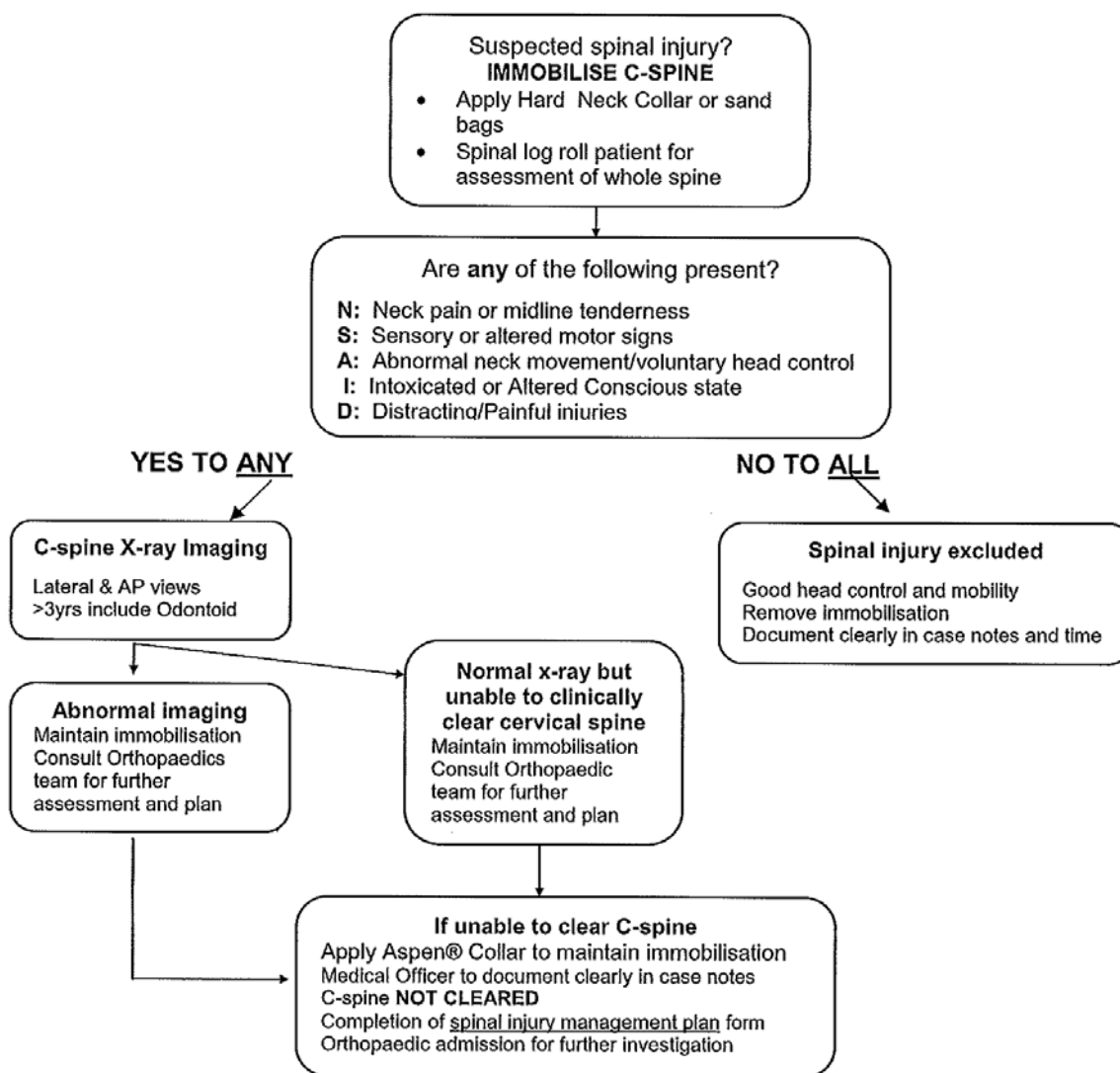
1. The Orthopaedic Registrar directs the investigation management of the cervical spine and decides when the cervical spine has been cleared and spinal precautions can be stopped.
2. The Orthopaedic Registrar documents the management plan and decisions to clear the spine in the medical record.

**WCHN Multidisciplinary Clinical Guideline**  
**Acute Suspected Spinal Injury Management**

**Patient Care Flow Charts**

**PAEDIATRIC EMERGENCY DEPARTMENT TRAUMA FLOW CHARTS**  
**Approach to Imaging & Clearing of Cervical Spine in the**  
**CONSCIOUS Patient**

NB: Perform hand hygiene before any direct patient care. See link



Date of issue: 11/02/2016  
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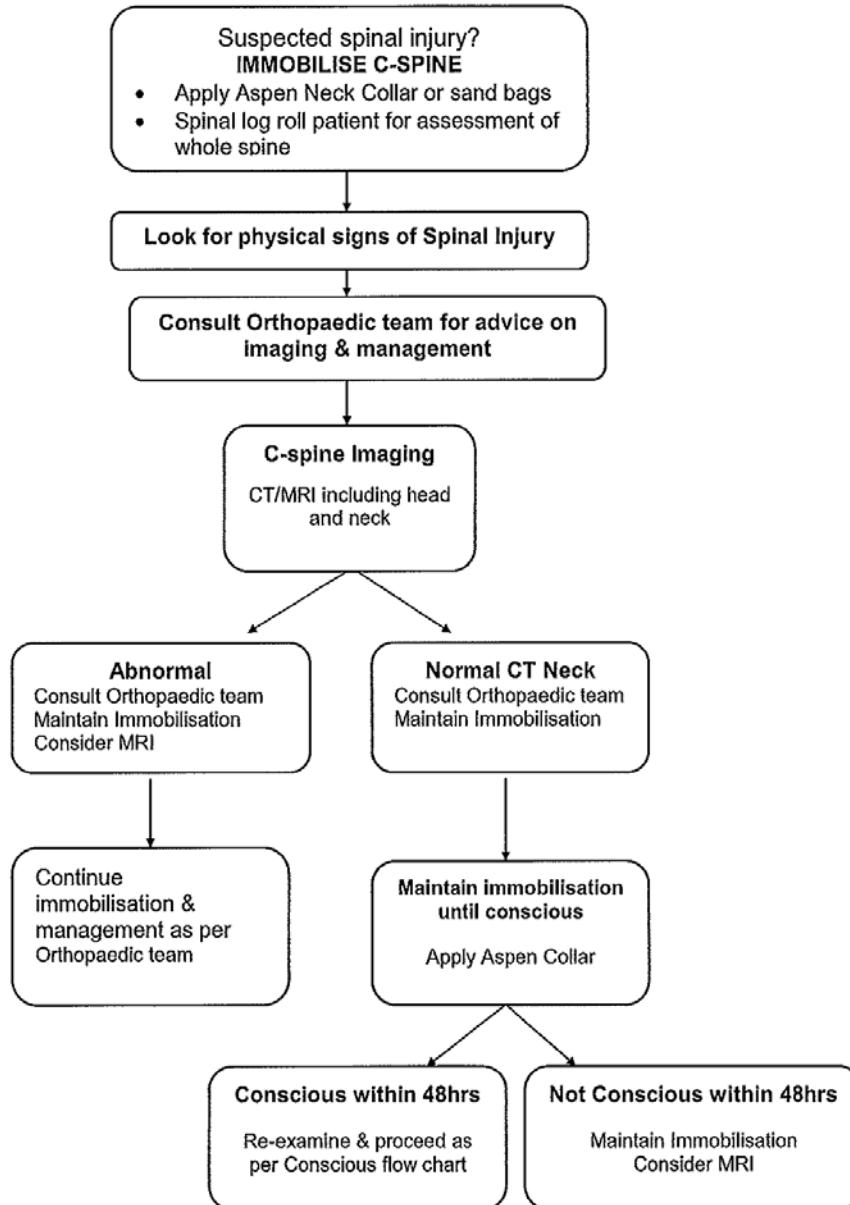
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# WCHN Multidisciplinary Clinical Guideline

## Acute Suspected Spinal Injury Management

### Approach to Imaging & Clearing of Cervical Spine in the UNCONSCIOUS Patient

NB: Perform hand hygiene before any direct patient care. See link



Note: 'Normal CT scan' does not rule out disco-ligamentous injuries. MRI Scans are necessary to do this.

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## Management Guidelines for SPINAL INJURY

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### Notes on C-Spine X-rays:

In the child with multi trauma, the lateral C-spine x-ray should be obtained as soon as possible before completing the Primary Survey. Other non-urgent views can be obtained after the first hour.

All seven cervical vertebrae must be identified. The shoulders should be pulled down by Paediatric Emergency Department medical officer as routine. If C7/T1 is not visualised a lateral swimmer's view of lower cervical and upper thoracic vertebrae should be obtained. Two obliques, including C7 and T1 may be used as an alternative to a swimmers view.

An open mouth odontoid view is not possible in young, unconscious or intubated children. Therefore unconscious children should have the cervical spine included during the head CT.

Flexion and extension views should only be performed under the direct supervision of the orthopaedic team.

### Criteria to be met Before Removing Spinal Precautions:

1. Conscious patient
2. Normal results from complete physical examination of spine and spinal cord function
3. No abnormality of neck movement, including pain
4. Cervical spine x-rays (if indicated) are normal

**When in doubt about integrity of cervical spine, assume unstable injury, maintain immobilisation and consult the Orthopaedic team.**

### Consider Thoracic Lumbar Sacral AP and Lateral X-rays if:

Complains of back pain or tenderness  
Pedestrian or cyclist - hit > 30 kph  
Fall > 2 metres  
Passenger ejected from car  
Unconscious  
Lap belt only and high speed MVA

## Management Guidelines for SPINAL INJURY

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### SCIWORA (Spinal Cord Injury without Radiologic Abnormality)

Diagnosed by presence of neurologic signs of spinal cord injury following trauma with normal plain x-rays.

There may be abnormalities on MRI.

Patient may present several days after fairly trivial trauma – particularly fall onto base of spine.

**When spinal cord injury is suspected based on mechanism of injury, symptoms or signs, the findings of a normal series of plain radiographs should not deter the diagnosis.**

### Steroid Management:

The place of high dose steroids is controversial. They may be of benefit in patients with incomplete lesions if commenced within 8 hours of injury.

The use of steroids should be individualised after discussion with Orthopaedic / Neurosurgical Consultants.

Loading dose Methylprednisolone 30 mg/kg IV, then 5.4 mg/kg/hr for 23 hours

If used, high dose steroids should be accompanied by antibiotic and gastrointestinal haemorrhage prophylaxis.

### Terminology:

#### **Complete Lesions -**

No perianal sensation.

No voluntary control of anal sphincter, toe flexion.

***Note: Sudden complete lesions due to trauma persisting > 24 hours will demonstrate no functional recovery.***

#### **Partial Lesions -**

Any evidence of sacral sparing implies potential for significant functional improvement.

### Principles of Transport of Patients with Spinal Injury:

1. Stabilisation of anatomical position - supine
2. Log roll at all times
3. Use Jordan frame or pat slide for lifts and transfers, minimise transfers
4. Urinary catheter, nasogastric tube
5. Consider pressure care
6. Maintain temperature control, blankets etc

## **Management Guidelines for SPINAL INJURY**

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### **Admitting Unit**

As per all children with severe trauma, patients with spinal injuries are initially admitted under Paediatric Surgery. Both Orthopaedic and Neurological consultation is appropriate for children with neurologic injury. Orthopaedic consultation only may be appropriate for children with bone injury without neurologic injury.

Paediatric Surgery will generally transfer to one or other sub-speciality clinic as appropriate after the initial phase of trauma assessment and management is complete.

The Spinal Injuries Unit at the Royal Adelaide Hospital is available for consultation. This will be arranged as appropriate by the Orthopaedic Unit.

### **Triage of Adolescents with Definite or Suspected Spinal Injury**

The policy of the hospital and the State Trauma System is that all children aged < 16 years with severe trauma should be referred to this hospital.

Young adolescents with definite or suspected spinal injury are a special case. The decision to transfer this group of patients to this hospital rather than the Royal Adelaide Hospital needs to take into account the potential benefits from specialist nursing in the RAH Spinal Unit, the presence of other injuries (actual or suspected) and the social needs of the child and family.

These decisions should be made on a case by case basis and involve the consultants on call for Orthopaedic Surgery and Trauma at WCH as well as their counterparts at the RAH.

A **Spinal Injury Management Plan** must be completed for all trauma patients prior to transfer to ward from PED.

## Management Guidelines for CHEST INJURY

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### INITIAL ASSESSMENT

#### PRIMARY SURVEY

- Ensure adequate **A**irway and **B**reathing
- **C**irculatory resuscitation is a major priority in chest trauma
- Urgent interventions may be required in chest trauma to assist with A, B or C
- Immediate IV access via 2 large bore cannulae placed above the diaphragm
- Take blood for cross match etc. during IV insertion
- Assess **D**isability
- Complete **E**xposure

#### SECONDARY SURVEY

- Chest examination is part of the Primary and Secondary Survey.
- A careful inspection of all skin for abrasions or penetrations, and assessment of all ribs, clavicles and auscultation is required.

### MECHANISM OF INJURY

#### Blunt Injuries

Chest trauma is rare in isolation. Be alert to chest trauma in the setting of the multiply injured child. The thoracic cage is much more pliable and elastic in children. Consequently lung contusion can occur in the absence of rib fractures. Furthermore a blunt compression of the chest may injure larger airways leading to pneumothorax that increases progressively with each breath. The progression leads to tension pneumothorax and a potentially life threatening obstructed venous return in the mediastinum, and reduced gas exchange in the compressed lungs.

#### Penetrating Injuries

Any injury (even if apparently superficial) that penetrates the skin from the neck to the umbilicus may enter the thoracic cavity. All penetrating injuries should be explored.

#### Potential of Injuries

##### Lung contusion

- May progress over 12-24 hours with worsening respiratory distress, oxygen requirement and CXR changes more apparent.
- Oxygen, analgesia and chest physiotherapy are key management strategies.

##### Rib fractures

- Where ribs have fractured an underlying contusion co-exists. In addition a risk of pneumothorax from fracture ends is present. The condition is very painful and opiate analgesia is required. A chest drain, if required, must be placed remote from the injury.

##### Flail chest

- Two adjacent ribs fractured each in two locations create a mobile segment of chest wall that moves paradoxically with respiration.
- Stabilisation of the segments is achieved quickly by placing the child injury side down.

## Management Guidelines for CHEST INJURY

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### Simple pneumothorax

- Air in the pleural cavity. This may be asymptomatic, and may not be readily visible on CXR.
- Chest drain insertion depends on size of pneumothorax, severity of symptoms, underlying injury and need for positive pressure ventilation.

### Tension pneumothorax

- This is a life threatening condition causing reduction in central venous return and reduced pulmonary gas exchange.
- Urgent decompression with needle thoracocentesis temporises the urgency, however must always be followed by formal chest drain insertion.
- Thoracocentesis is performed by placing a needle with a three-way tap into the second intercostal space in the mid-clavicular line.
- Please note this procedure may cause a pneumothorax if it did not exist previously.

### Open pneumothorax

- Caused by a penetrating injury.
- A three-sided dressing temporises the pneumothorax, and a chest drain is required. Consider formal exploration in theatre depending on mechanism.

### Haemothorax

- Rare occurrence in paediatrics, the most common cause being an intercostal vessel lacerated by a rib fracture.
- A chest drain is required in all but the most minor cases, and may require a thoracotomy.

### Haemo-pneumothorax

### Tracheo-bronchial injury

- This is a potentially life-threatening injury, where a major airway is involved. The airway may be partially obstructed. The large volume air leak may not be managed by a chest drain alone.

### Traumatic Asphyxia ("run over" injury)

- Massive oedema and extravasation secondary to prolonged blunt force (crush) to the chest. There may be underlying vascular and nerve damage.

### Diaphragm injury

- Secondary to blunt force to abdomen, causing rupture of the diaphragm and intra-abdominal viscera entering the thorax. This is a rare condition that requires surgical management.

### Oesophageal injury

- A rare injury usually secondary to penetrating trauma.
- CT chest may identify this injury however oral contrast study is usually required.

### Cardiac tamponade

- A blunt or penetrating trauma may cause bleeding into the pericardium. This is a life threatening condition requiring decompression of the pericardium in most circumstances.
- Urgent ultrasound may be used to assess the severity and impact on cardiac function. However this should not delay intervention when this is clearly indicated by clinical condition.

### Myocardial contusion

- May be associated with sternal fracture. It may result in impaired cardiac output, arrhythmias or pericardial effusion.
- Investigation with CK, troponin and ECG is required.
- Transfer to ICU for continuous monitoring is required due to possible arrhythmias.



## Management Guidelines for CHEST INJURY

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### Traumatic rupture of the aorta

- A rare and catastrophic complication of rapid deceleration. This injury has a high mortality rate with few surviving to reach hospital. Diagnosis requires CT angiogram and echocardiogram. Treatment is performed by a cardiac surgeon, coordinated by the surgical registrar and consultant.

### INVESTIGATION

- Blood for investigation should be withdrawn at the time of IV cannula insertion.  
Investigations include:  
Full Blood Examination  
Group and cross match  
Electrolytes and renal function, LFTs and amylase  
βhCG for all post-pubertal girls  
Blood Alcohol Level for all persons 10 years of age or over involved in a motor vehicle accident as either the driver, passenger, or pedestrian.  
All persons 10 years of age or over involved in a motorised boating accident as the driver or suspected driver.  
All persons 10 years of age or over, whom the police request a blood alcohol level. If this is the case, the police MUST be present in the room during the blood taking.  
And that these patients present to ED WITHIN 8 HOURS of the accident.
- Chest X-ray is a standard investigation in trauma series. This will provide evidence of most major intra-thoracic injuries including pneumothorax, lung contusion, and haemomediastinum.
- Where clinical evidence of chest trauma exists a CT chest should be strongly considered in consultation with the on-call surgical registrar.

### MANAGEMENT

1. **The Paediatric Surgery Team must be consulted in all cases of suspected chest trauma.** (In Level 1 trauma, the Surgical Registrar is a member of the Trauma Team).
2. The Surgical Registrar in consultation with the Medical Team Leader assesses the need for placement of a chest drain.  
The safest location for insertion of a chest drain is 4th or 5th intercostal space - mid-axillary line  
A large bore drain is essentially for blood, while a smaller caliber is appropriate for pneumothorax.  
When transporting a child with a chest drain ensure the drain is well secured, and a Heimlich or Portex valve is connected to reduce the chance of tension pneumothorax in flight.
3. Where suspicion of oesophageal injury, a cautious attempt at nasogastric tube placement is undertaken.
4. Pericardiocentesis may be required if the child is in extremis, and no urgent surgical facilities are available.  
A long needle is inserted at the left sub-xiphoid location, and directed posteriorly at a 45° angle (towards the left shoulder). Advance with negative pressure on the syringe. Once fluid is withdrawn, aspirate as much as possible. A cannula with 3-way may be used, and left for ongoing aspiration as required.  
If possible, open surgical drainage is preferred.

## Management Guidelines for ABDOMINAL INJURY

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### INITIAL ASSESSMENT

#### PRIMARY SURVEY

- Ensure adequate **A**irway and **B**reathing
- **C**irculatory resuscitation is a major priority in abdominal trauma
- Immediate IV access via 2 large bore cannulae placed above the diaphragm
- Take blood for cross match etc during IV insertion
- Assess **D**isability
- Complete **E**xposure

#### SECONDARY SURVEY

- Abdominal examination is part of the Secondary Survey.
- Physical signs are often subtle and unreliable with pain and tenderness difficult to assess especially in the presence of an associated head injury.
- Abdominal distension is usually a very late sign.
- Include examination of the back, perineum and urethra and perform PR (if appropriate).

### MECHANISM OF INJURY

#### Blunt Injuries

- In children, even minor blunt trauma to the abdominal wall can result in possible major intra-abdominal damage to hollow viscera, solid organs, blood vessels and pelvic bones.
- Decelerating injuries particularly associated with lap only seat belts are associated with mesenteric injury (including mesenteric vessels), duodenal injury and Chance vertebral fractures.
- While most injuries are apparent following initial examination and investigation, some injuries such as hollow visceral perforation may evolve over 24-72 hours following the injury. As such, a period of inpatient observation is often warranted.

#### Penetrating Injuries

- Any injury (even if apparently superficial) that penetrates the skin between the nipple and buttock regions may have penetrated the peritoneum and caused injury to organs or blood vessels.

### MANAGEMENT

1. **The Paediatric Surgery team must be consulted in all cases of suspected abdominal trauma.** (In Level 1 trauma, the Surgical Registrar is a member of the Trauma Team)
2. **Insert a nasogastric** (or oro-gastric tube if severe head injury, suspected facial or base of skull fracture) prior to performing x-rays or scans so that the position of the stomach and oesophagus can be assessed. (Note: acute gastric distension is a frequent cause of abdominal distension and distress in children with trauma).
3. **Insert a urinary catheter** if monitoring of urine output is required.

## Management Guidelines for ABDOMINAL INJURY

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**Note:** *The presence of scrotal or perineal haematoma, blood at the urethral meatus or suspicion of pelvic disruption is relative contraindications to urethral catheterisation. The surgical team must be consulted first.*

### INVESTIGATIONS

#### Blood test

1. Hb
2. Group and cross match
  - Assume large blood loss (eg 50% of blood volume or 40mls/kg)
3. Electrolytes and renal function
4. LFTs and amylase
5. BhCG for all post-pubertal girls
6. Blood Alcohol Level for all persons 10 years of age or over involved in a motor vehicle accident as the driver, passenger, or pedestrian.  
All persons 10 years of age or over involved in a motorised boating accident as the driver or suspected driver.  
All persons 10 years of age or over, whom the police request a blood alcohol level. If this is the case, the police MUST be present in the room during the blood taking.  
And that these patients present to ED WITHIN 8 HOURS of the accident.

#### Urine

Test for macroscopic and microscopic blood

#### Plain X-rays

Cx spine, chest, pelvis and possibly an abdominal x-ray

Perform in the Emergency department

Always exclude spinal and chest injuries in patients with abdominal trauma

### **DO NOT proceed to Medical Imaging without first consulting the Paediatric Surgery Team**

#### Abdominal/Pelvic CT

##### Indications for CT

1. Conscious patient: abdominal pain, tenderness or unexplained hypovolaemia
2. Altered consciousness

As above plus any patient receiving a head CT who has –

- Significant mechanism of injury
- Signs of hypovolaemia
- Significant multisystem injury

##### Contraindications for CT

1. Unstable patient

**Note:** *Abdominal/pelvic CT is the investigation of choice in suspected severe abdominal injury. IV contrast is standard for trauma CT allowing portal venous and arterial phase studies. If a renal tract injury is suspected consider a delayed phase to the contrast CT. NG contrast is not routinely used in the initial phase of management however may be considered at discretion of the surgeon at a later time as indicated. The urinary catheter should be clamped during the CT.*

## Management Guidelines for ABDOMINAL INJURY

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### EXCLUSION OF CHANCE FRACTURE:

A chance fracture is associated with a child restrained by lap belt alone. These fractures are easily missed.

**All** children with this **mechanism** of injury require –

1. Detailed examination of lumbar spine and spinal cord function
2. Orthopaedic referral
3. Abdominal and lateral thoracolumbar spine X-rays
4. Specific request to Radiologist to exclude diagnosis

### PERITONEAL LAVAGE

Peritoneal lavage or sampling is not indicated where CT facilities exist. DLP should only be done in consultation with the Paediatric Surgery team.

### DEFINITIVE SURGICAL MANAGEMENT

#### Conservative management

Most solid organ injury in children can be managed non-operatively.

1. Admit to ICU for haemodynamic monitoring for at least 24 hours post injury for solid visceral injuries AAST grade 3 and above (AAST – American Association for the Surgery of Trauma) or where clinical concern exists. Link: <http://www.aast.org/Library/TraumaTools/InjuryScoringScales.aspx>
2. Monitor haemoglobin.
3. Repeat physical examination excluding other injuries.
4. Immediate surgical notification if **any** haemodynamic instability occurs during this phase.
5. Consider operative management if:
  - Blood loss exceeds 50% total blood volume (40 ml/kg) in 24 hour period
  - Patient becomes unstable
  - Other injuries become apparent (e.g. duodenal haematoma or hollow visceral perforation)

#### Operative Management

##### Indications for Urgent Laparotomy:

1. Uncontrollable or unexplained bleeding
  - Inability to resuscitate to stable circulation.
  - Massive transfusion requirement: > 40ml/kg in first hour (colloid or blood).
2. Intraperitoneal air or other clinical indication of hollow visceral injury
3. Penetrating injuries (laparoscopy may be an alternative in selected cases).

**Note: Even apparently superficial penetrating injuries should be urgently explored in theatre under general anaesthesia with blood available.**

**Blood and the facility to resect/repair damaged organs and control haemorrhage must be available.**

## Management Guidelines for PELVIC FRACTURE

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Pelvic fractures are uncommon in children. Historical risk factors include a motor vehicle accident or a fall from a height or horse. The emphasis in management is:

- Diagnosis
- Early management including fluid resuscitation
- Definitive management.

### Diagnosis

The diagnosis is usually made on radiographs after clinical suspicion. An appropriate pelvic Xray as part of the 'trauma series' should identify most pelvic fractures. Some can be subtle particularly if there is fracturing through the sacrum. It is also important to look for soft tissue shadows representative of haematoma.

Pelvic X-ray Indications:

- children with signs or symptoms of pelvic injury
- haemodynamic instability
- Altered conscious state where pain and tenderness cannot be reliably assessed.

### Early Management

The trauma team will direct initial management. Clinicians must be aware of the potential for urethral or bladder damage and take appropriate measures with urinary catheterisation (see Management Guidelines for Urethral Trauma).

Pelvic fractures require special attention particularly in light of:

- Blood loss
- Visceral Damage
- Infection.

Blood loss is a priority and requires adequate resuscitation with wide bore intravenous lines. Blood loss can be high particularly with involvement of the sacral plexus of veins.

***Note: Open Fractures can have massive blood loss. Ensure adequate resuscitation.***

Management of these fracture patients should be in conjunction with the general paediatric surgeons particularly with the likelihood of associated hollow or solid organ damage. CT scanning of abdomen/pelvis and pelvic region will often help in diagnosis and management.

IV antibiotics are administered for open fractures. Appropriate cover for bowel organisms is required in certain cases.

### Definitive management of the bone injury

The orthopaedic team will delineate definitive management. The Orthopaedic Registrar should consult the orthopaedic consultant.

## **Management Guidelines for URETHRAL TRAUMA Clinical**

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1. Frank blood noted at urethral meatus.
2. Pelvic trauma either confirmed or suspected.
3. Fall astride injury with scrotal or perineal bruising.

### **DO NOT ATTEMPT INSERTION OF A URETHRAL CATHETER.**

1. Call Paediatric Surgical Registrar. The Paediatric Surgical Registrar may have a single attempt at placing a urethral catheter.
2. If patient has a distended bladder and x-ray facilities for urethrogram are unavailable then insert supra-pubic catheter under local anaesthesia and ultrasound guidance.
3. Urethrogram to be performed in consultation with the oncall Paediatric Urologist in the Medical Imaging Department to confirm the diagnosis of urethral or bladder trauma.

If an incomplete urethral tear, then a silastic catheter is to be inserted into the bladder across the incomplete urethral rupture under radiological control.

Complete urethral rupture then insert supra-pubic catheter.

Extraperitoneal bladder rupture may be managed conservatively with insertion of a urethral catheter.

Intraperitoneal bladder rupture requires urgent laparotomy for management.

## Management Guidelines for BURNS

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### Referral Criteria to Women's and Children's Hospital (WCH) Burns Service

The Women's and Children's Hospital provides an inpatient and outpatient service, including a Digital Referral Service for persons aged 0–16 years for:

- Any burn where the referring department/GP/clinic/ nurse/or health worker requires management or advice from the paediatric burns service
- Burns greater than 5% Total Body Surface Area (TBSA)
- Burns to face, hands, feet, genitalia, perineum, major joints
- Full thickness burns
- Electrical burns
- Chemical burns
- Inhalation injury
- Circumferential burns
- Burn injury inpatients with pre-existing medical disorders
- Burns with associated trauma
- Burn injury with suspicion of non-accidental injury – refer Mandatory Reporting.

This criterion is based on the Australian and New Zealand Burn Association Transfer Guidelines for Burns Service referrals (2015).

### First Aid

**DANGER:** Ensure own safety. **STOP** the burning process. **COOL** the burn wound

1. For flame burns instruct the person to “**Stop, Drop** to the ground, **Cover** face and **Roll** so fire is smothered” – extinguish flames with a blanket.
2. Remove the heat source: clothing, embers, chemicals, etc.
3. **Apply cool running water for 20 minutes**, **NO ICE**
4. Resuscitate if necessary
  - A – AIRWAY (Protecting cervical spine)
  - B – BREATHING (Give Oxygen)
  - C – CIRCULATION (With Haemorrhage control)
5. Remove anything tight: jewellery, non-adherent clothing.
6. Minor Burn – continue cool water irrigation for 20 minutes. Cover with non-adherent dressing (e.g. cling wrap). Warm the patient. Seek medical advice.
7. Major Burn – Resuscitation and Emergency management is the priority. If cooling is permitted then cool with water for 20 minutes and then cover with cling wrap (do not apply cling wrap to face or chemical burns). Keep warm with outer blanket and raise the ambient temperature to reduce the risk of hypothermia.

### Refer to Appendix A Major Burn Flow Chart

**Ice should never be used** – it causes vasoconstriction leading to further tissue damage and hypothermia.

**Gel Pads** (such as Hydrogel, Burnaid™) can be used ONLY as an alternative to running tap water where water is unavailable or not practical. Must be removed after 20 minutes; gel pads can lead to hypothermia in children.

# Management Guidelines for BURNS

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**Running tap water is still the best means of cooling the burn wound.**

## **FIRST AID – burn type specific**

### **Scalds**

1. Remove all soaked clothing
2. Immediately cool the burn with cool running water.
3. A scald is deepest
  - Where the clothing is thicker
  - Where the liquid is held in the natural creases of the body (eg toddlers - around their necks and folds of skin in their legs)
  - Where the clothing is compressed in the natural creases of the body

### **Electrical Burns**

1. Turn off mains/ switch off source (power point)
2. Remove patient from electricity source remembering your own safety
3. Spine Protection – This is of particular importance as fractures of the spine may occur following the violent muscular jactitation which occurs during the conduction of the electrical current through the body.
4. Cervical Spine Protection
5. ECG

### **Refer to Appendix B Electrical Injury Protocol**

### **Chemical Burns**

1. Personal Protective Equipment (PPE) for first aid givers - gown, gloves, mask and eye protection
2. Remove all contaminated clothing
3. Powdered agents should be brushed from the skin
4. Areas of contact should be irrigated with copious amounts of cool water
  - \*Irrigate to the floor. From the contaminated area to floor directly to avoid run off injury to other areas if possible.
5. Chemical eye injuries require continuous irrigation until ophthalmologic review. Always ensure that the unaffected eye is uppermost when irrigating to avoid contamination.
  - Acid: irrigate\* with water for up to 1 hour or until the pain stops
  - Alkali: irrigate\* with water for up to 2 hours or until the pain stops

### **Hydrofluoric acid**

#### **Refer to Appendix C & D Hydrofluoric Acid Treatment Protocol**

***Note: Calcium gluconate (1g/10mL) and 2.5% calcium gluconate burn gel is no longer stocked at the WCH but is available from the RAH Emergency Department if required.***

***2.5% calcium gluconate burn gel can also be sourced from the RAH Burns Unit***

### **Liquefied Petroleum Gas**

Due to the low boiling point of Liquefied Petroleum Gas (LPG), it is stored in a pressurized, cooled liquid form, which on exposure to the skin, can result in severe cold burns akin to frostbite due to the rapid drop in temperature.

- The initial wound appears hyperaemic and oedematous, without apparent tissue necrosis.
- The appearance of superficial tissue is quite often an inaccurate indicator of underlying tissue viability, with the injury being more severe than a thermal burn due to the rapid deep penetration of liquids and gases.



# Management Guidelines for BURNS

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## First aid at the scene

- Remove the person from danger and minimize the duration of exposure.
- Remove clothing that has been exposed to the agent.
- Rapid re-warming in a bath of water between 40 and 42°C for 15–30 minutes with the aim of minimizing tissue loss and reducing chemical irritation. It is important to achieve this temperature range, as lower temperatures are less beneficial to tissue survival, whilst higher temperatures may produce a burn wound and compound the injury.

**Note: the usual recommendations for burns first aid (20 minutes of cool running water) is contraindicated in contact LPG gas burns.**

- Active motion whilst rewarming is recommended.
- Massage during rewarming should be avoided.
- After rewarming, the injured area should be gently covered or draped with clean sterile material.
- Do not break any blisters.

## Emergency Management

### Level 1 Trauma Team Activation Criteria

- **Airway or Inhalation Burns**
- **Partial or Full thickness burns to > 20% TBSA**

Refer to Appendix A Major Burn Flow Chart

### 1. First Aid

### 2. Primary Survey – identifying and managing life threatening injuries

#### A. Airway Maintenance with Cervical Spine Control

- Ensure airway patent
- Apply hard collar

#### B. Breathing and ventilation

- Expose the chest and assess ventilation
- Administer oxygen to all patients with a major burn
- Be alert for any pre-existing airway obstruction, common in children eg:
  - Asthma
  - Enlarged adenoids
  - Tonsils and/or
  - Tracheomalacia

**The upper and lower airway is narrower in children than in adults; swelling of respiratory tract or accumulation of secretions may seriously impair respiratory function.**

- Assess for signs of inhalation injury:
  - Burns to face, mouth, neck, pharynx
  - Soot in the sputum
  - Tracheal tug, use of accessory muscles
  - Inspiratory stridor
  - Productive cough
  - Respiratory difficulty

**Consider early intubation if any concerns regarding airway or breathing.**

## Management Guidelines for BURNS

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**Beware circumferential chest burns as they may restrict chest expansion – consider need for escharotomy (see Escharotomy)**

### C. Circulation with Haemorrhage control

- Check the pulse, blood pressure, capillary blanch test
- Stop bleeding with direct pressure.
- Insert 2 large bore peripheral cannulas (preferably through unburned skin)
- Blood for CBE, EUC/LFTs/BGL, Coags, Group and save for >20%TBSA
- Commence formal intravenous resuscitation for burns >10% TBSA (See F: Fluid Resuscitation)

### D. Disability: Neurological Status

- Establish level of consciousness

**A – Alert**

**V – Response to Vocal Stimuli**

**P – Response to Painful Stimuli**

**U – Unresponsive**

- Examine the pupillary response to light. Response should be brisk and equal.

### E. Exposure with Environmental Control

- Remove all clothing and jewellery
- Keep the patient warm
- Calculate the burn size using the Paediatric Lund and Browder chart  
**Refer to [Paediatric Burns Assessment Form-2017.pdf](#)**
- Log roll to visualise posterior surfaces

### F. Fluid Resuscitation

- With Hartmann's Solution calculated using the Parkland Formula  
**4ml x weight (kg) x % burn TBSA**
- First half of the calculated fluid is given in the first eight hours from the time of injury
- Second half is given in the next sixteen hours
- The time of injury marks the start of fluid resuscitation
- Adjust fluids as indicated by urine output - aim for 1 ml/kg/hr

**Children also require maintenance fluids with 5% dextrose and 0.9% Normal Saline (4ml/kg/hour for the first 10kg + 2 ml/kg/hour for next 10kg + 1ml/kg thereafter).**

### Analgesia

0.05–0.1mg/kg Intravenous morphine titrated to effect

**Also refer to [Paediatric Burns Service Guidelines](#)**

### Tests and Tubes

- Trauma series x rays
- Urinary catheter if receiving fluid resuscitation
- Nasogastric tube for >15% TBSA

## Management Guidelines for BURNS

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### 3. Secondary Survey

- Head to toe examination
- History:
  - A = Allergies**
  - M = Medications**
  - P = Past Illnesses**
  - L = Last meal**
  - E = Events/Environments related to injury**

Tetanus status: If the child's tetanus status cannot be determined all admitted patients require referral to the Immunisation Clinical Practice Consultant.

### Continually re-evaluate Primary Survey

### Escharotomy

#### Limbs

When a limb is burned circumferentially the increase in pressure due to the accumulation of oedema under the rigid burned skin may interfere with circulation and cause death of tissue in the distal part of the extremity. Limb and digital escharotomies may be required if retrieval is delayed. These are usually performed under anaesthetic.

#### Chest

If deep burns involve the chest and abdomen, chest expansion and diaphragmatic movement may be restricted interfering with breathing. A chest escharotomy may be indicated.

### Electrical Burns

Exposure to electrical current may cause life threatening cardiac arrhythmias even at low voltage. These most often occur at the time of electrocution. Delayed arrhythmias are extremely rare even in the "high-risk" situations listed below. In general low voltage (<240V) electrical injuries do not cause significant morbidity or mortality.

High voltage injuries such as those sustained in lightning strikes or contact with overhead (Tension) electrical wires, may cause sudden death. Surviving patients often have extensive burns and tissue injury with a risk of compartment syndrome, myoglobinuria and renal failure.

A careful search for associated injuries is required during the secondary survey. Trauma may occur due to burns, severe tetanic muscle contraction or being thrown from the source. Burns are common and may be more severe at the contact site. Oral electrical contact may produce severe mouth burns.

High-risk criteria for delayed arrhythmias after electrocution

1. Abnormal ECG on presentation
2. Loss of consciousness at time of electrocution
3. Exposure to high voltage (>240 volts)
4. Past cardiac history
5. Unwitnessed event
6. Increased skin conduction e.g. wet skin, high humidity
7. Tetany at time of electrocution

Laboratory assessment of creatinine kinase and myoglobinuria should only be considered in those patients who require admission for monitoring.

**Refer to Appendix B Electrical Injuries Protocol.**

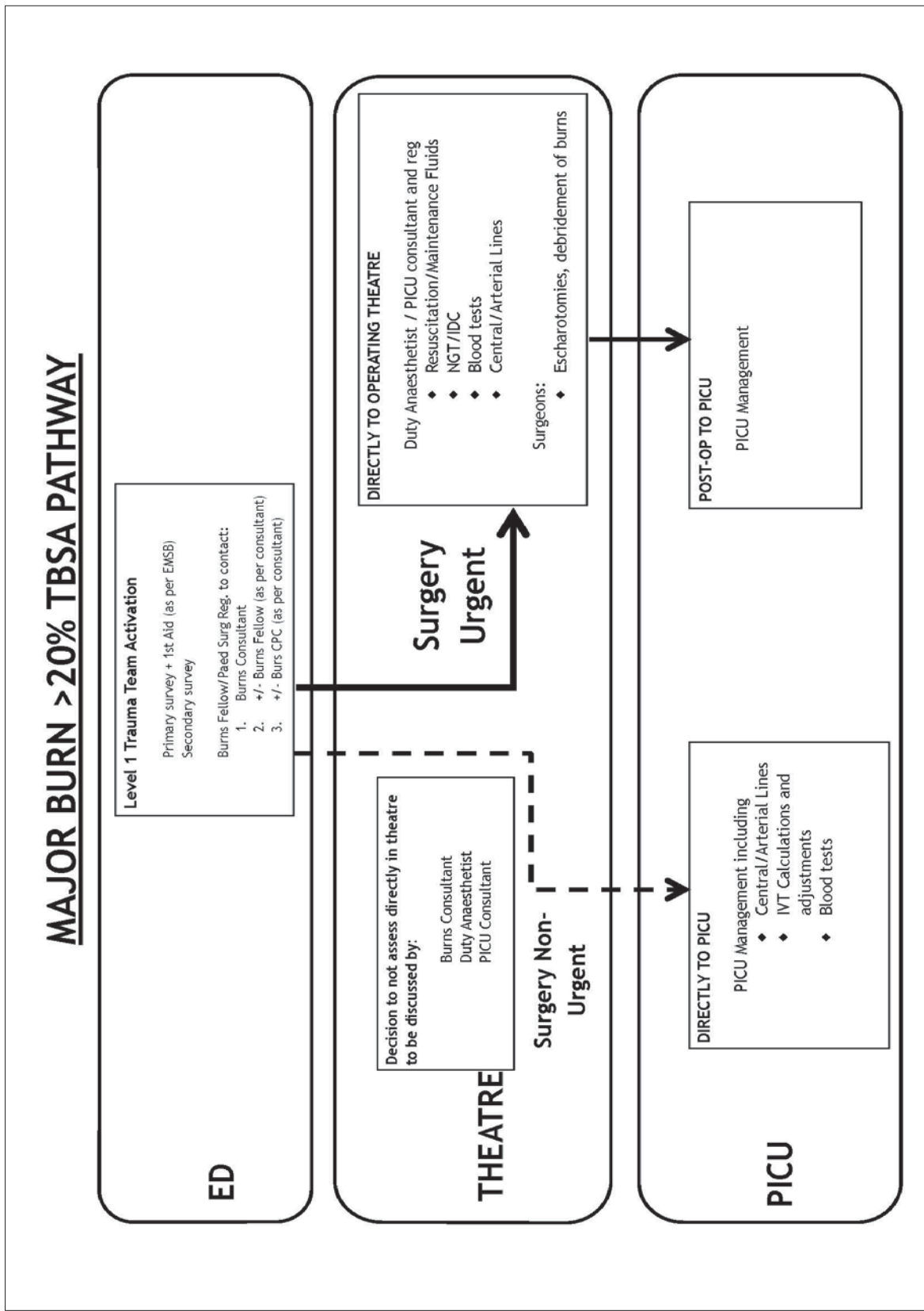
### **Psychosocial Issues**

When a child is burnt, the whole family is affected emotionally. There is little correlation between the size and depth of the burn and the amount of emotional distress suffered. Irrespective of the burn size and the circumstances of how the burn occurred, all parents experience shock, guilt and anxiety.

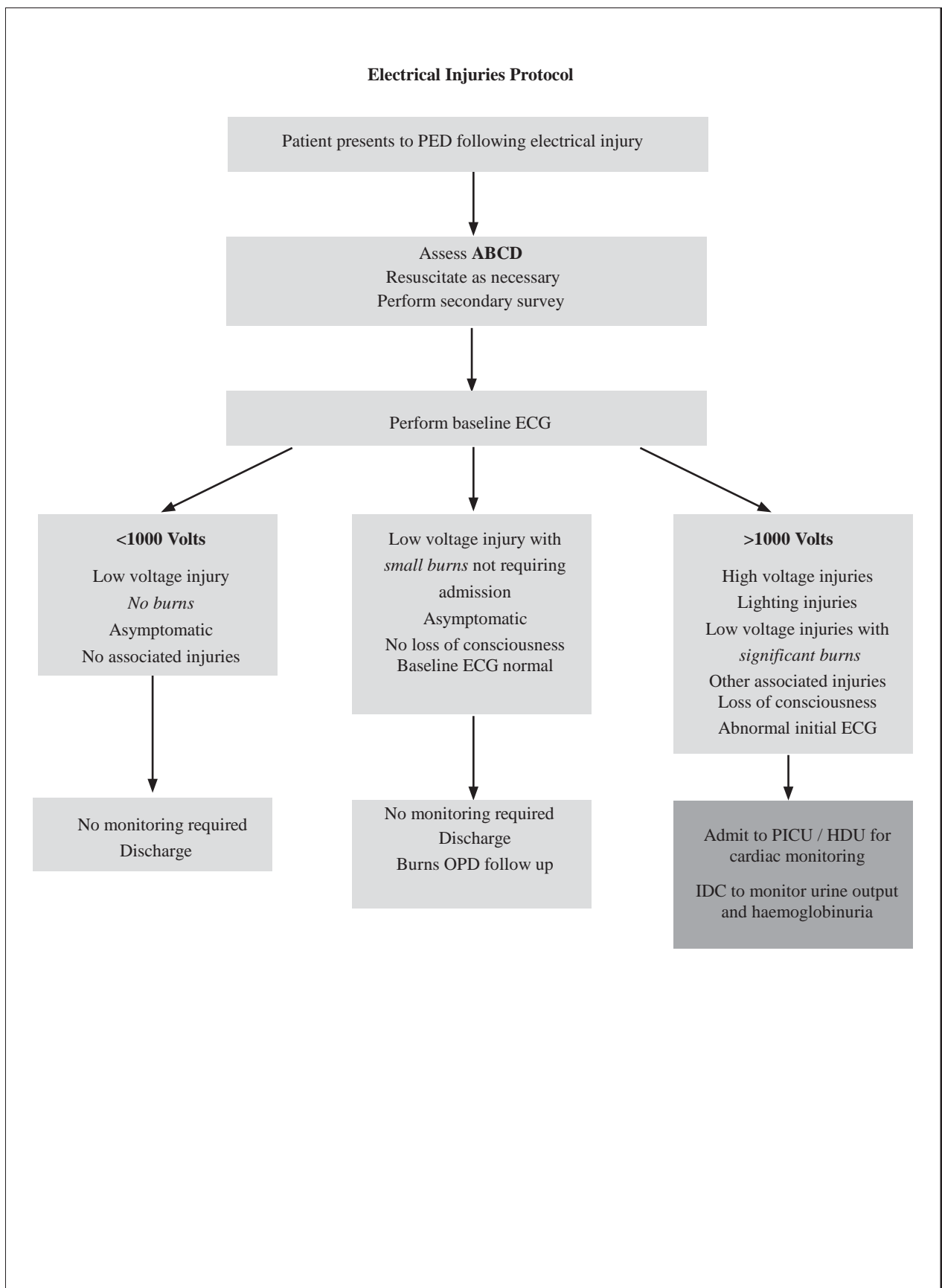
Because parents feel so guilty, they expect others to blame them. The hospital adopts a “non-blaming” policy. We aim to let parents know that, whilst we acknowledge their feelings of guilt, we understand the difficulties in watching children constantly and how hard parents have to work to keep them safe. We also use the opportunity to educate parents regarding accident prevention.

**Should there be a suspicion of a non-accidental injury; Child Abuse Report Line 131478 should be notified.**

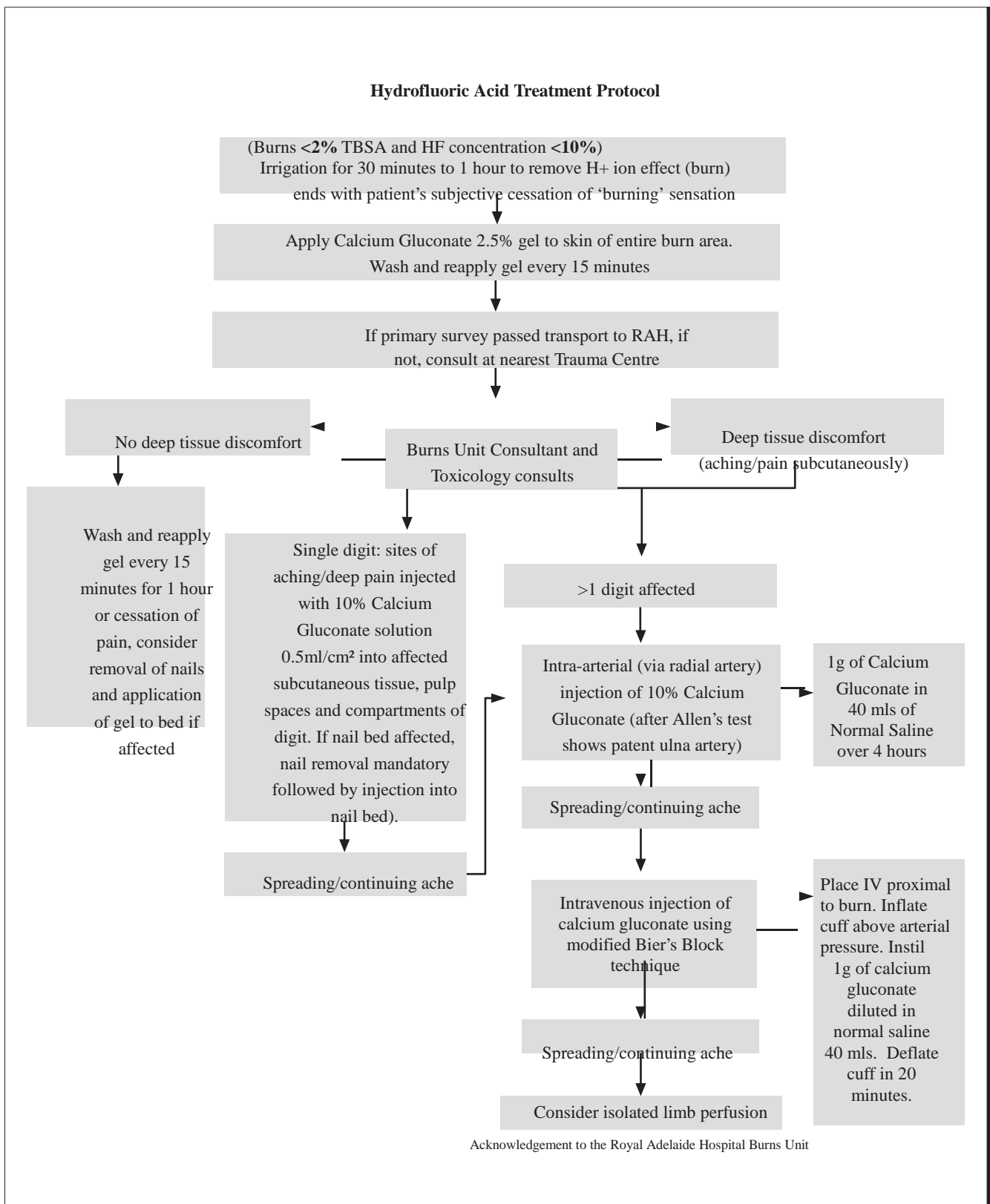
Appendix A Major Burn Flow Chart



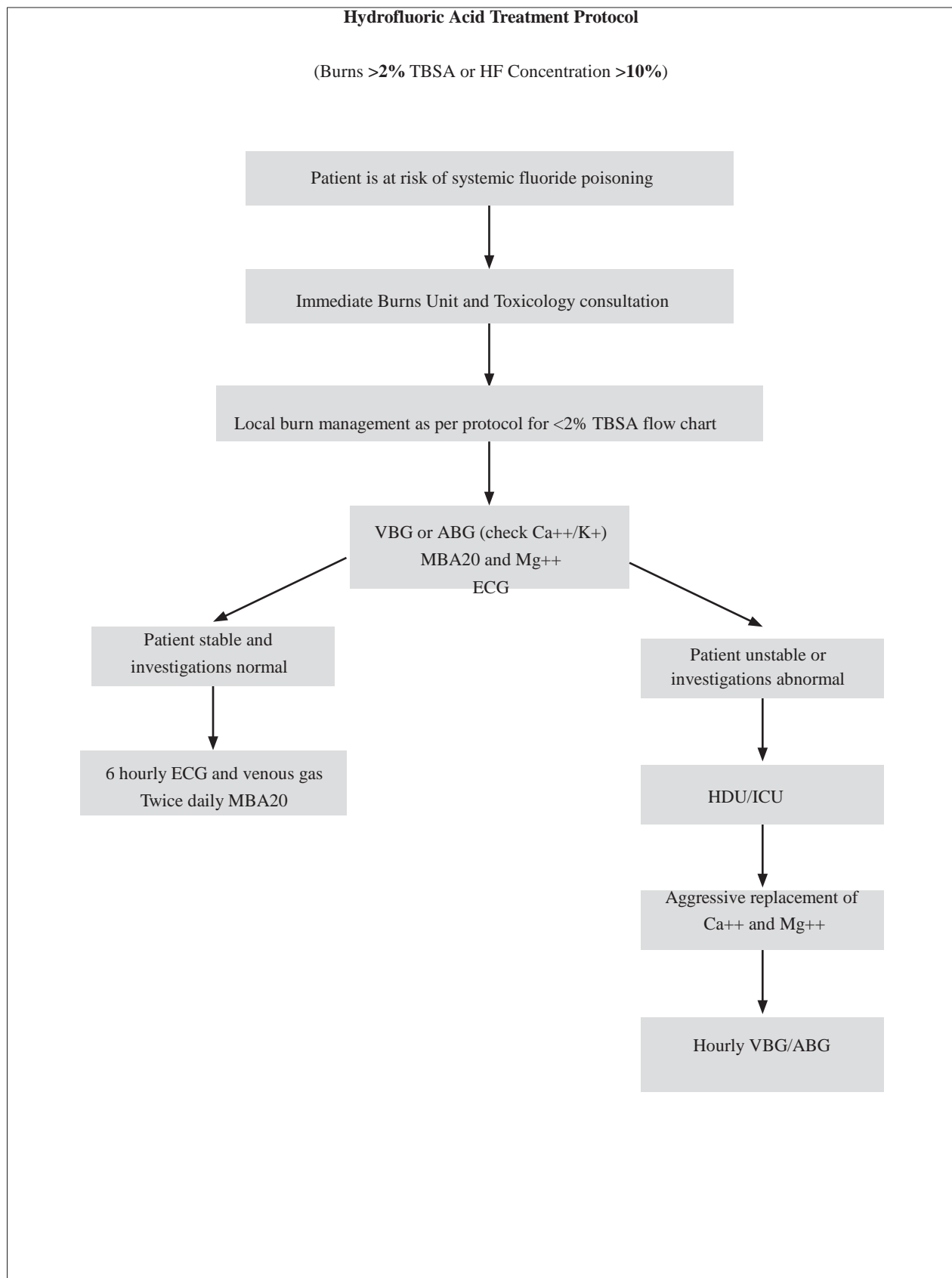
## Appendix B Electrical Injuries Protocol



Appendix C Hydrofluoric Acid Treatment Protocol (Burns <2% TBSA or HF Concentration <10%)



Appendix D Hydrofluoric Acid Treatment Protocol (Burns >2% TBSA and HF concentration >10%)





## **Management Guidelines for TRAUMA IN PREGNANCY**

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The WCH has established guidelines for the management of trauma patients. The State Trauma Committee Working Group has considered appropriate approach to the management of pregnant women following trauma. Consequently the Flinders Medical Centre has been designated as the Major Trauma Service with state responsibilities for women with trauma who are more than 20 weeks pregnant.

### **The South Australian Trauma System and the Perinatal Practice guidelines state:**

- If a woman who is more than 20 weeks pregnant fails the Primary Survey and is being managed by an intensive care paramedic, she will be taken to the nearest major trauma service. If no intensive care paramedic is available, the woman will be taken to the nearest public hospital.
- If the woman passes the Primary Survey but fails the Secondary Survey, she will be taken to FMC.
- If the woman has very minor or no injury but an assessment of the baby is required she will be taken to the nearest public hospital with an obstetric unit.
- For pregnant women failing a Primary Survey and taken to the RAH, there is an arrangement for WCH obstetric involvement.

### **These guidelines further stipulate the following general management principles:**

- The pregnant woman must be managed by the receiving hospital's usual trauma team and follow EMST principles. Initial emphasis must be on the assessment and resuscitation of the mother.
- Obstetric assistance is to be added to the trauma team.
- The woman should be treated in the usual location where all trauma is managed.
- EFM should be instituted as soon as practicable but must not interfere unduly with the treatment to the mother.

Therefore it is possible that the WCH will receive some women following trauma who are pregnant, although it is unlikely that these women will have severe trauma. The aim of this guideline is to ensure both the mother and foetus are cared for appropriately and in line with the State Trauma System guidelines.

All patients presenting to the WCH who meet the established trauma criteria are to be directed to the Trauma Room in the PED and have a Trauma Page initiated.

## Management Guidelines for TRAUMA IN PREGNANCY

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If a pregnant woman presents the primary and Secondary Survey of the woman will be conducted in the usual manner by the WCH trauma team.

PED will contact the Women's Assessment Service to arrange a midwife to attend, undertake a primary assessment of the pregnancy, implement External Foetal Monitoring as required and contact the obstetric registrar.

**In the event that the woman fails the Primary Survey, resuscitation will be continued and the obstetric anaesthetic registrar contacted. As per the state guidelines, the FMC Intensive Care Unit will be contacted for advice on transfer to an appropriate adult facility.**

In the event that the woman passes the Primary Survey but has significant injuries or is stable but requires further investigation from the trauma perspective, advice will be sought from the FMC and transfer or retrieval to an adult trauma service arranged as appropriate.

If the woman can be cleared from a trauma perspective (including cervical spine) care will be as directed by the obstetrician.

## Management Guidelines for PSYCHOSOCIAL

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### Rationale

A social work response, following the activation of a trauma page, is an integral part of the multidisciplinary, coordinated response at the Women's and Children's Hospital.

Psychological counselling and intervention are more readily acceptable at the time of crisis, or soon after, when provided alongside the emergency treatment.

The social work intervention should be of benefit to the child and family and also assist the trauma team with their management of the child.

The social work focus is on the child patient and their family, their reaction to the trauma, and the psychological impact of the event. Early assessment and intervention can reduce the impact of the trauma and assist recovery.

### Referral and Consultation

During business hours Monday – Friday 0900-1700, a Social Worker will respond to all trauma pages and generally make the initial psychosocial assessment.

After hours, the After Hours Nurse Management Facilitator (AHNMF) will respond to all trauma pages in particular Level 1 Trauma.

The After Hours Social Worker (SW) has now been added to the Level 1 activation pager. The rostered Social Worker must respond to the page and will phone the PED Nursing Shift Coordinator for details.

If the rostered Social Worker does not respond to the pager within 15 minutes the AHNMF should phone the After Hours Social Work Service mobile. If the Rostered Social Worker does not respond to this call within 10 minutes, the AHNMF should contact the rostered Social Worker on their personal contact number. If this fails then they should contact the Manager, Social Work Services (Social Work after hours Service Procedure PR2012\_076).

Consultation with the Department of Psychological Medicine's (DPM) designated trauma liaison person should occur when:

- An accidental fatality has occurred of a child or significant other
- A past history of psychiatric illness of the child or caregiver is established
- The prognosis is such that there may be long term effects from injury (eg permanent neurological sequelae)
- Actions of a family member precipitated the injury; this does not include non-accidental injuries as they are handled by staff of CARL and the Child Protection Unit (CPU)

## Management Guidelines for PSYCHOSOCIAL

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- On assessment the social worker identifies a situation for which consultation is indicated.

The social worker may make a direct referral to DPM or CPU. Both departments have an after-hours service.

***Note: For non-English speaking families, a translator service is available 24 hours a day. Contact is made via switchboard.***

## **Management Guidelines for SPIRITUAL CARE**

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### **Rationale**

Spiritual care response, following the activation of a trauma page, is an integral part of the multidisciplinary, coordinated response at the Women's and Children's Hospital which respects the spiritual and cultural needs of those affected by the trauma.

Traumatic events affect the physical, emotional, psychological and spiritual wellbeing of people and communities. The coping strategies, meaning structures and the constancies associated with normative functioning are disrupted by trauma. People can find it difficult to understand life meaning, purpose and direction having experienced a traumatic event. Spiritual Care is concerned with the ultimate search for meaning in times of crisis.

It is important to recognise that for some people, community, faith and culture are inextricably linked. To respond culturally but not religiously can be disrespectful. In times of crisis, many people rely on their faith, culture and community to support their emotional, psychological and spiritual recovery. WCH Chaplains respond to assist affected people regardless of race, culture or religion.

Spiritual Care intentionally creates a safe and calm space for people to slow down and begin to process the event and its meaning. The spiritual care intervention should be of benefit to the child and family and also assist the trauma team with their management of the incident. Spiritual care takes careful account of cultural and faith diversity.

While the Spiritual Care has its first focus on the child and their family, support is also available for staff members affected by the trauma.

### **Referral and Consultation**

During business hours a Chaplain will respond to trauma pages and make an initial assessment.

After hours, the After Hours Nurse Management Facilitator (AHNMF) or Trauma Team Leader will respond to all trauma pages in particular Level 1 Trauma and determine the need for a chaplain to be contacted – the switchboard has the after hour's roster.

Chaplains will consult and collaborate with the multi-disciplinary team attending the trauma.

The chaplain may make a direct referral to specific hospital and community services as appropriate.

## Management Guidelines for SPIRITUAL CARE

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### Spiritual care support

- The chaplain will provide spiritual care to the patient(s), families and carers.
- The chaplain will provide support to staff both during and following a trauma or incident including debriefing or individual support.
- Support for staff or families after the emergency presentation can be arranged by contacting pager #5851 during working hours if required.
- The chaplain will endeavour to contact the priest/minister of the families' religion or faith community if requested.
- Spiritual care will continue to be provided to the patient, family and carers following admission.
- Provision of other support as needed by the family or hospital team.

Spiritual support may include but not be limited to:

- Personal Support – emotional and spiritual
- Intentional creation of safe and calm spaces to aid in the emotional and spiritual processing of the event
- Listening to affected people's story
- Grief & Loss support
- Religious rituals on request (prayers, anointing)
- Memorial and funeral services

**Note: For non-English speaking families, a translator service is available 24 hours a day. Contact is made via switchboard.**

### A: Guidelines for Interventional Radiology

Interventional radiological procedures such as angioembolisation may be required rarely in paediatric trauma. The decision to use this is based on type of injury (eg haemorrhage from a pelvic fracture or splenic haemorrhage) and the skill-mix available. The decision to utilise interventional radiology management should be made by the appropriate surgeon involved in management of the injury - usually this is the orthopaedic or general paediatric surgeon.

The oncall interventionalist can only be accessed by triage and discussion with the oncall radiologist (or registrar).

Interventional radiology also plays an important role in management of delayed complications of trauma such as embolising pseudo-aneurysms and percutaneous stenting and drainage.

### B: Guidelines for Arranging Urgent CT Scans

- **0830 – 1700 Monday to Friday:** The trauma team member delegated the responsibility for arranging urgent CT scans should speak to both the CT radiographer (CT control room x 16116 or pager 4251) and responsible radiologist (reporting room x 16144).
- **After Hours / Public Holidays:** The trauma team member delegated the responsibility for arranging urgent CT scans should contact the oncall radiologist via Switchboard.

In the event of a request for urgent scanning occurring at a time elective cases are in progress or planned, the **trauma team leader** (or relevant consultant) **should communicate directly with the radiologist** (+/- the anaesthetist if the elective case involves an anaesthetic). The urgency of the trauma patient's scan should be balanced against the risks and inconvenience of interrupting or postponing the elective case.

After hours the scanner is powered down so where possible the CT radiographer should be given early notification. Ten minutes are required to prepare the scanner before it can be used. This needs to occur before the patient enters the scanning room.

### C: Guidelines for the Care of Trauma Patients in the Radiology Department

The following guidelines refer to patients with severe trauma (or suspected of having severe trauma) who move from the Emergency Department to the Radiology Department. Although this will usually be for the purpose of CT scan, the protocol should apply to all patients in the above category transferred to the Radiology Department.

## Management Guidelines for MEDICAL IMAGING

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### Staff Escorts

All patients should be escorted by a medical and a nursing member of the trauma team. These staff should remain with the patient until the radiology results are available and a definitive management plan is agreed to. There needs to be some flexibility with regards to which specific personnel fulfil these roles. For example:

#### Medical Escort

For patients expected to move from radiology to theatre, the anaesthetic registrar would usually be the most appropriate person to supervise the patient during the CT scan.

For patients expected to move from Radiology to ICU, the ICU registrar would usually be the most appropriate person to supervise the patient during the CT scan.

For patients not expected to require either theatre or ICU the PED Registrar/Consultant would usually be the most appropriate person to supervise the patient during the CT scan.

#### Nursing Escort

When the ICU nurse remains with the patient until the end of the PED phase if ventilated, it would usually be appropriate for this nurse to accompany the patient to Radiology. When the ICU nurse has not been required to stay with the patient until this point it would usually be appropriate for a PED nurse to accompany the patient to Radiology.

When there is difficulty allocating personnel to these roles due to conflicting clinical commitments it is the responsibility of the PED Consultant to liaise with the various departments and ensure that there is appropriate medical and nursing escort arranged before the patient leaves the PED.

#### Co-Ordination and Leadership

In complex cases, the team member coordinating the resuscitation decides the priorities, timing and sequence of investigations and patient movement. The surgical team members decide which investigations and procedures are indicated.

#### Monitoring

Patients should be continuously monitored with ECG, Pulse oximetry, NIBP (programmed to record 5 minutely) and for intubated patients, ETCO<sub>2</sub>.

#### Equipment

The team should take with them as minimum, portable oxygen and suction, a transport monitor, self-inflating bag and mask, a transport kit containing airway equipment and emergency drugs.



## Management Guidelines for MEDICAL IMAGING

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### Documentation

The PED flow sheet should accompany the patient. Documentation should be completed by the escorting nurse and should include 15 minutely vital signs, treatment and the commencement times for radiology procedures.

## Protocol for TRAUMA RETRIEVAL

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1. Trauma Patients requiring retrieval should be referred to MedSTAR Emergency Medical retrieval Service on phone 13 STAR (137827). These patients will be retrieved by MedSTAR teams in consultation with the Paediatric Intensive Care consultant.
2. If clinically indicated the PICU consultant, prior to MedSTAR retrieval team departure, will discuss with surgical units the possibility of a surgeon accompanying the retrieval team.
3. PICU registrar will notify relevant surgical clinics and notify PED consultant on ext.18264 PICU ward co-ordinator to notify the PED nursing coordinator (ext. 16110).
4. The MedSTAR retrieval team will liaise closely with the PICU consultant regarding in transit therapy and expected ETA prior to departing the peripheral hospital. The WCH destination (PED or PICU) will be decided at this time by the PICU consultant. If the patient's destination is likely to be PED, the PED will be notified by the PICU consultant of the ETA and admission plan.
5. Intubated retrieved patients will generally be admitted direct to PICU but these will all be assessed on a case by case basis particularly if they are stable.

Patients more appropriately admitted to the PED include:

Unstable patients - the MedSTAR retrieval team will notify the PED directly by GRN in these cases.

Patients who have not received initial investigations, including direct from scene and those patients who have not been seen at a Major Trauma Centre.

Patients who do not require ICU admission - MedSTAR teams will call the PED consultant (ext. 18264) to notify of these cases.

6. Whilst in transit the MedSTAR EOC will contact WCH PICU coordinator or PED coordinator and inform the ward of the updated ETA. If the call goes to the PICU ward co-ordinator they will communicate with the PED nursing coordinator (ext. 16110) as appropriate.
7. Whichever unit will receive the patient it is their responsibility to initiate the trauma page according to Paediatric Trauma Team Activation guidelines (refer to page 6).

**Note: The trauma team should assemble prior to the patient's arrival based on ETA. PED staff are generally not required to attend PICU.**

## Protocol for TRAUMA RETRIEVAL

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### **PICU ADMISSIONS: If patient is retrieved direct to PICU**

1. Ensure a Level 1 trauma is called for patients who fit criteria (refer to page 6 for criteria).

The message on the pager will contain 4 items:

1. ***Level 1 Trauma***
  2. ***Admission area (PICU)***
  3. ***ETA xx mins***
  4. ***AGE xx yrs***
2. Allocate a bed space with adequate room i.e. a bed with vacant space next to it.
  3. Ensure 3 RN's are available to accept the patient.
  4. Allocate RN roles. (1) RN to provide patient needs and documentation, (2) RN to provide assistance and obtain additional equipment, (3) a co-ordinator.
  5. Assess ABC, ensure all lines and tubes secure, and ventilation and monitoring is adequate.
  6. Facilitate assessment by the surgical team. Provide assistance as required.

## Management Guidelines for HOSPITAL BYPASS IN METROPOLITAN ADELAIDE

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Within metropolitan Adelaide the South Australian Ambulance Service (SAAS) use a triage tool to decide which hospital to take trauma patients to.

### Principles

Patients with severe trauma should be transported directly to a Major Trauma Service (MTS) - RAH or FMC for adults, WCH for children < 16 years.

This tool is applied if the patient is within 40 minutes driving time of a MTS. Patients outside this area are transported to the nearest hospital and the rural triage tool for retrieval activation applies.

Urban Trauma Service (UTS - LMHS, Modbury, and QEH) bypass only applies if the Ambulance crew is paramedic level.

In all bypass cases it is expected that a radio medical consultation will occur. The paramedic, SAAS communications, and the MTS will all be on line simultaneously. The main consultation occurs between the paramedic and the MTS doctor. If the possibility of transporting the patient to the UTS is considered, then this can be discussed with the UTS also on line. This is the minority of cases.

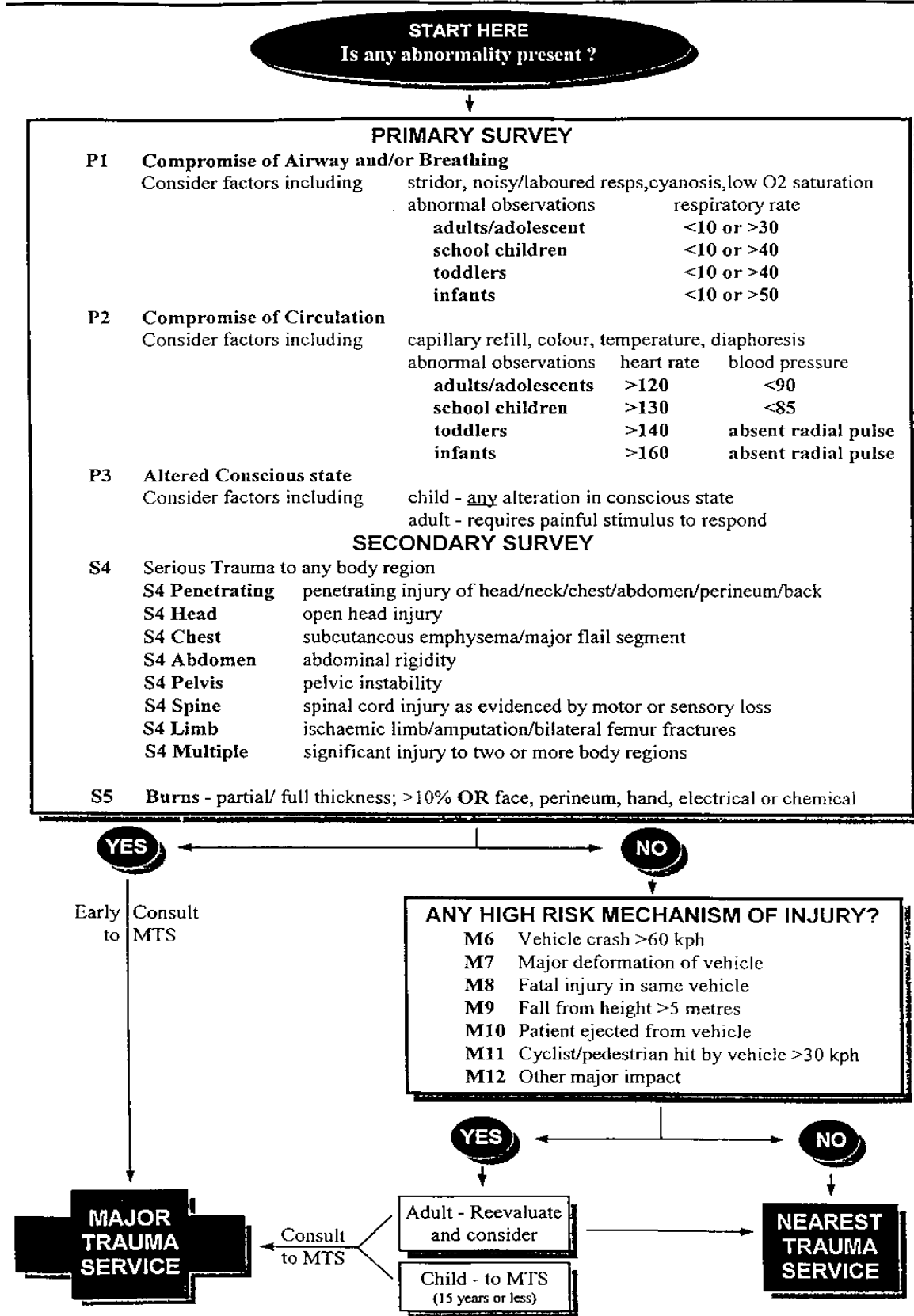
The role of the MTS is to answer questions and offer advice. The decision regarding which hospital receives the patient is made by the paramedic. The MTS may occasionally question and discuss this decision however the decision rests ultimately with the paramedic.

### WCH Response

- The radio call goes to ICU.
- The Ambulance service will ask for “*a senior doctor for a trauma bypass consultation*”.
- The ICU registrar or consultant should be summoned urgently and the Ambulance service asked to hold until that doctor comes to the radio.
- The ICU doctor should start by clearly identifying themselves.
- At the end of the consultation the ICU doctor must:  
Document the consultation on the forms by the radio  
**Confirm that the Emergency Department has heard the details of the consult** (phone ext. 16110)

**Note: The decision to activate the trauma page is made by the PED triage desk according to WCH protocol. (The criteria for SAAS bypass are the same as the WCH criteria for a trauma team call.)**

ADELAIDE TRAUMA SYSTEM - TRIAGE TOOL



## **SATCAC - POLICY**

### **Regionalisation of Paediatric Trauma Management**

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#### **1.0 Policy Aim**

All severely injured children < 16 years of age to be transferred for definitive care to the Paediatric Major Trauma Service at the Women's and Children's Hospital as early as possible after injury.

#### **2.0 Pre Hospital Triage**

When SAAS responds to an injured adolescent where the age is unknown it is unavoidable that the initial triage will sometimes be incorrect and that the adolescent is transferred to an adult MTS or an adult retrieval service is activated.

#### **2.1 Policy**

- 2.1.1 In circumstances where the age is first determined during the course of a retrieval to be < 16 years the retrieval team should transfer the patient directly from the scene to the WCH. This is to occur after direct radio communication from the team to the WCH Paediatric Intensive Care Unit.
- 2.1.2 In circumstances where the age is first determined in the emergency department of an adult MTS, transfer to the WCH should be facilitated after completing the Primary and Secondary Surveys, before undertaking definitive investigation or management.

#### **3.0 The role of FMC in the State Trauma System in respect to paediatric trauma**

The role of FMC in respect to paediatric trauma in the southern region is defined below:

#### **3.1 Policy**

- 3.1.1 All children with severe trauma in the metropolitan area south of FMC should be transferred to the FMC emergency department by SAAS. Children injured between FMC and WCH should generally be triaged to WCH unless there is a significant difference in transport time (location and traffic conditions dependent).
- 3.1.2 FMC should respond to retrieval requests for children from the area close to FMC where the response would be road rapid response. All helicopter and fixed wing trauma retrievals < 16 years should be referred to WCH.
- 3.1.3 Children with the following injuries presenting to FMC should receive definitive care at FMC:
  - Mild head injury (presenting GCS > 12)
  - Stable thoracic injuries without respiratory distress or haemodynamic instability
  - Solid organ abdominal injuries where haemodynamic stability is present and where at least high dependency nursing care and monitoring is available
  - Simple orthopaedic or musculo-skeletal injuries

## **SATCAC - POLICY**

### **Regionalisation of Paediatric Trauma Management**

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#### **4.0 Criteria for Transfer from an Adult MTS to the Paediatric MTS**

##### **RAH**

All children < 16 years presenting to the RAH with trauma that require hospital admission should be referred to the WCH. Transfer should be arranged as soon as this can be safely and appropriately achieved.

For children < 16 years of age, whose age initially is indeterminate, transfer should be arranged as soon as practical after the correct age becomes known.

##### **FMC**

The following groups of children < 16 years presenting to the FMC with trauma should be referred to WCH. Referral should occur as soon as practical after completion of the Primary and Secondary Surveys, before the commencement of definitive investigation or management.

- All intubated children
- All unstable children that require ongoing fluid or blood resuscitation after the first 30 – 60 minutes
- Head injury with any of the following:
  - Presenting GCS < 12
  - Brain abnormality on head CT
  - Requirement for inpatient rehabilitation services
- Abdominal injury requiring ongoing fluid resuscitation (see above)
- Thoracic injuries with respiratory distress or haemodynamic instability
- Complex orthopaedic injuries including amputation
- Facial or orbital fractures
- Renal, ureteric, vesicle or urethral injuries
- Burns
- Spinal injuries

#### **5.0 Unstable patients**

In general unstable patients should be stabilised prior to transfer, however, WCH specialist staff should be involved as early as possible in formulating a management plan.

##### **5.1 Policy**

Where a child is considered potentially too unstable for immediate transfer between an adult and paediatric MTS then a management plan should be discussed between the two institutions whilst the child is in the emergency department. Usually a WCH retrieval team will attend the adult MTS.

## **SATCAC - POLICY**

### **Regionalisation of Paediatric Trauma Management**

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#### **6.0 Inter-hospital communication for inter-hospital transfers**

##### **6.1 Policy**

The PICU specialist on call is the WCH point of contact for referral in all cases of severe trauma. Although other specialist units may also have a role in providing specialist advice, the PICU specialist should be the initial point of contact in all cases.

#### **7.0 Audit**

The regionalisation of paediatric trauma management within South Australia should be regularly audited by the SATCAC.

##### **7.1 Policy**

7.1.1 An inter-hospital audit of the regionalisation should occur annually.

7.1.2 The SA Trauma Registry quarterly report should be expanded to include a summary of the regionalisation of paediatric trauma management.





# CLINICAL PROCEDURE: Paediatric Emergency Trauma Manual

DOCUMENT MANAGEMENT	
Document Number	cp2017_012
Summary	The Women's and Children's Hospital is the Major Paediatric Service for the state and also services Northern Territory and Far Western New South Wales. As a Major Trauma Service (MTS) we follow specific standards/guidelines as set down by the South Australian Clinical Trauma Working Group (SACTWG). The Standards are derived from the Report of the Working Party of the National Road Transport Advisory Council (NRTAC; July 1993). These Standards have guided the formation of the following protocols as directed by the Trauma Management Committee.
Applies to:	WCH Campus
Exceptions	
Replaces	Trauma Management Manual, Edition 16
Lead Writer / Key Contact	Jackie Winters Trauma Clinical Practice Consultant, Paediatric Trauma Service, 8161 6654
Accountable Director / Oversight Committee	Trauma Management Committee
Review Date	30 March 2018
Risk Rating	High
Key Words	Paediatric Emergency Trauma Manual triage retrieval injury
Status	Active
Approved by	Procedure Governance Committee
Approval Date	27 March 2017

**Compliance with WCHN Procedures is mandatory.**

## Document History

Version	Date	Writer	Amendment/s	Status
v17.2	31/01/18	J Winter	Trauma Team Activation Paediatric November update	Active
v17.1	07/07/17	J Winter	Trauma Team Activation Paediatric June update	Active
v17	30/03/17	S&Q PGC	PGC approved 27/3, final upload 30/03/17	Active
v16.5	15/03/17	J Winters/TMC	Amendments incorporated into Final Draft document approved by Chair, Trauma Management Committee (following broad consultation phase).	Approved Final Draft
v16.2	Feb 2017	S&Q Unit	broad consultation	
v16.1	07/12/16	J Winter/TMC	final draft approved at Trauma Management Committee	Draft

**INFORMAL COPY WHEN PRINTED**



# CLINICAL PROCEDURE:

## Paediatric Emergency Trauma Manual

### CORE CLINICAL PRACTICE REQUIREMENTS:

#### Positive patient identification

Consumers should be positively identified using three core identifiers:

- full name,
- date of birth,
- medical record number/address, prior to implementation of this procedure.

Staff completing positive patient identification should be mindful of collecting or confirming consumer identification information in a respectful, non-shaming way. Aboriginal people may have a number of names. For example, a person may have a European first name and surname, a skin name and maybe even a nickname. An individual gains a 'skin name' upon birth based on the skin names of his or her parents and skin names are used in a manner similar to a surname.

As a mark of respect, many Aboriginal people will avoid referring to a deceased person by name where the avoidance period may last anywhere from 12 months to several years. Those of the same name as the deceased are referred to by a substitute name during the avoidance period.

#### Identifying Aboriginal and Torres Strait Islander Status

The collection of the Aboriginal and Torres Strait Islander status of patients/consumers by WCHN is important for improving Aboriginal and Torres Strait Islander health. Under-identification of Aboriginal status has serious implications for Aboriginal health in two ways.

- Firstly, it prevents delivery of targeted services to Aboriginal and Torres Strait Islander people. If clinicians do not know which of their patients/consumers are Aboriginal, they are unable to offer them health interventions that are specific to Aboriginal people.
- Secondly, incomplete and unreliable data on Aboriginal and Torres Strait Islander health impede effective responses to the higher burden of disease and death among Aboriginal people, and make accurate assessment of progress in 'closing the gap' difficult.

See [Identification of Patients / Clients prior to Delivery of Care/Service/Treatment](#) for additional information.

#### Consumer Safety Risks

Consideration of any patient safety risks eg [deterioration](#), [infection status](#), [fall](#), [pressure injury](#) or other safety risk (including social), must be considered in relation to this procedure.

For Aboriginal and Torres Strait Islander people, past policies and practices and have created unresolved trauma which has been passed down from generation to generation. Transgenerational trauma can manifest in many different ways and affect people differently. The social and health disadvantages experienced by Aboriginal and Torres Strait Islander people and the impact of unresolved trauma should be considered in relation to this procedure.

#### Person and Family Centred Care

WCHN staff operate in a framework of Person and Family Centred practice which involves; treating consumers and their family with dignity and respect, communicating information clearly and openly with the consumer, actively involving consumers in decision making and being positive and kind.

#### Diversity

WCHN will seek to ensure that this health service becomes more receptive and responsive to, and culturally safe for, Aboriginal and Torres Strait Islander people using their services and facilities in order to achieve equitable health outcomes. Aboriginal and Torres Strait Islander people should be recognised as having a special heritage and the WCHN will, in interacting with Aboriginal and Torres Strait Islander people, support values that respect their traditional and contemporary cultures.

WCHN services will be sensitive to the linguistic, physical, spiritual and cultural needs and requirements of consumers, and responsive as far as practicable to the particular circumstances of individuals and their families. Identification of linguistic, physical, spiritual and cultural needs is a responsibility of all staff.

#### Documentation

All aspects of care delivery must be documented in the health record, including documentation of discussions with the patient/care giver, in accordance with the WCHN Procedure: [Documentation in Patient/Client Health Records](#).

### MANAGER RESPONSIBILITIES:

Managers are responsible for:

- ensuring staff are aware of this procedure;
- have the skills and knowledge to undertake the actions described; and
- escalating any issues with the implementation of this procedure through the appropriate mechanism.



**CLINICAL PROCEDURE TITLE:**  
Paediatric Emergency Trauma Manual  
**RISK ASSESSMENT**

CATEGORY	Clinical	Financial	Workforce	Legislative	Organisation	Reputation
Likelihood	Possible	Possible	Possible	Possible	Possible	Possible
Consequence	Major	Medium	Minor	Minor	Medium	Medium
Risk Rating	<b>HIGH</b>	<b>MODERATE</b>	<b>LOW</b>	<b>LOW</b>	<b>MODERATE</b>	<b>MODERATE</b>
Description	Failure to conduct a patient assessment as described in the Paediatric Emergency Trauma Manual could result in serious and/or permanent harm					

<b>Overall Risk rating:</b>	HIGH
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**COMPLIANCE EVALUATION**

Compliance Measures
Annual review of SLS events

REFERENCING	
National Standard/s	
Definitions and Acronyms:	
Legislation:	
SA Health:	
References:	
Related Documents:	
Consumer Health Information	