## Trauma

## *Executive summary*

## Introduction

Traumatic injuries can range from minor isolated wounds to complex injuries involving multiple organ systems. All trauma patients require a systematic approach to management to maximize outcomes and reduce the risk of undiscovered injuries and death.

Relatively few patients die after the first 24 hours following injury. Rather, the majority of deaths occur either at the scene or within the first four hours after the patient reaches a trauma centre.

The "golden hour" concept, which emphasises the increased risk of death and the need for rapid intervention during the first hour of care following major trauma should guide our practice locally.

Most trauma cases should be referred on to the EFSTH, where a multi-disciplinary team is on call 24 hrs. However in some cases a minor trauma case like RTA without fracture or bleeding may be managed conservatively and discharged.

## Target users

* Nurses
* Doctors

## Target area of use

* Outpatient department
* Ward

### Key areas of focus / New additions / Changes

This guideline outlines the initial stabilization of trauma cases within CSD. Most patients will then need to be transferred elsewhere for definitive care.

When more than 1 major trauma case is received out-of-hours or 2 or more are received at any time, then a major incident must be declared and SOP-CLS-015 should be followed to guide management of the department.

### Limitations

There are no surgeons or anaesthetists at the unit, so our involvement is limited to the initial resuscitation and stabilization of patients.

**Presenting symptoms and signs**

Mechanism — Particular mechanisms predispose patients to specific injuries. Common blunt trauma mechanisms and their most frequently associated injuries are described in the accompanying table (Table 1 below). In addition, certain high-risk blunt mechanisms, including pedestrians struck by automobiles, motorcycle accidents, severe motor vehicle accidents (e.g., extensive damage leading to prolonged extrication time), and falls greater than 20 feet, have been associated with greater morbidity and mortality.

Table 1: Blunt trauma mechanisms and associated injuries

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| **Mechanism of injury** | **Potential associated injuries** |
| Motor vehicle collision: Head-on collision, Windshield damage, Steering wheel damage | Facial injuries, Lower extremity injuries, Aortic injuries, Thoracic injuries, Abdominal injuries: spleen, liver etc. |
| Pedestrian versus automobile: Low or high speed (braking automobile, | Tibia and fibula fractures, knee injuries |
| Falls: | Calcaneal and lower extremity fractures, Pelvic fractures  Closed head injuries, Cervical spine fractures, Hand and wrist fractures |

**Preparation**

Whenever possible, the ward should be notified that a trauma patient is *en route*. This provides the receiving nurses and doctors with information and time that can be crucial to the management of the severely injured patient.

When trauma cases, do however present to the ward. Efforts should be made to assess, stabilise and refer to the appropriate centre where necessary.

### Primary evaluation and management

A clear, simple, and organized approach is needed when managing a severely injured patient prior to referral for a definitive treatment.

The primary survey consists of the following steps:

* Airway assessment and protection (maintain cervical spine stabilization when appropriate)
* Breathing and ventilation assessment (maintain adequate oxygenation, usually oxygen saturation above 96%)
* Circulation assessment (control haemorrhage and maintain adequate end-organ perfusion)
* Disability assessment (perform basic neurologic evaluation)
* Exposure, with environmental control (undress patient and search everywhere for possible injury, while preventing hypothermia)

While performing the primary survey, keep the following points in mind **:**

* Airway obstruction is a major cause of death immediately following trauma. The airway may be obstructed by the tongue, a foreign body, aspirated material, tissue oedema, or expanding haematoma.
* Haemorrhage is the most common preventable cause of mortality in trauma. Be alert for subtle signs of haemorrhagic shock, particularly in the elderly, who may be on cardiovascular medications that blunt such signs, and young, healthy adults who may not present with obvious manifestations. Hypotension generally does not manifest until at least 30 percent of the patient's blood volume has been lost. Such patients are at high risk of death. Elderly patients may be hypotensive relative to their baseline blood pressure but still have blood pressure measurements in the "normal" range.
* Brain injuries are common in patients who have sustained severe blunt trauma and even a single episode of hypotension increases their risk of death

## Management

Patients should be managed on the ward – the endoscopy room or the emergency bed are best as there is plenty of room to access the patient. The aim is to stabilise and refer, especially in a major case.

### Airway Assessment

In a conscious patient, initial airway assessment can be performed as follows

* Begin by asking the patient a simple question (e.g., "What is your name?" especially in adults). A clear accurate response verifies the patient's ability to mentate, phonate, and to protect their airway, at least temporarily.
* Observe the face, neck, chest, and abdomen for signs of respiratory difficulty, including tachypnea, accessory or asymmetric muscle use, abnormal patterns of respiration, and stridor.
* Inspect the oropharyngeal cavity for disruption; injuries to the teeth or tongue; blood, vomitus, or pooling secretions.
* Inspect and palpate the anterior neck for lacerations, hemorrhage, crepitus, swelling, or other signs of injury.

### Breathing and ventilation

Once airway patency is ensured, assess the adequacy of oxygenation and ventilation. Inspect the chest wall looking for signs of injury, including asymmetric or paradoxical movement (e.g., flail chest), auscultate breath sounds at the apices and axillae, and palpate for crepitus and deformity. Where necessary provide supplemental oxygen to keep saturation >96%.

Presumptively treat patients with signs of tension pneumothorax, including hypotension, dyspnoea, and ipsilateral decreased breath sounds, with needle decompression before obtaining imaging or referring to the EFSTH. Needle decompression is performed with a large bore (14 gauge or larger), either in the second intercostal space in the midclavicular line or in the fifth intercostal space in the midaxillary line.

### Circulation: Recognition and management of haemorrhage

Once the airway and breathing are stabilized, perform an initial evaluation of the patient's circulatory status by palpating central pulses. If a carotid or femoral pulse is verified and no obvious exsanguinating external injury is noted, circulation may be assumed to be intact. While circulation is assessed, one or two large-bore (16 gauge or larger) intravenous (IV) catheters are placed, most often in the antecubital fossa of each arm.

*Life-threatening haemorrhage must be controlled*. A combination of manual pressure, proximal compression with either a tourniquet or a manual blood pressure cuff, and elevation is typically sufficient to control external arterial haemorrhage. Venous bleeding is controlled with direct pressure. Bleeding from severe pelvic injuries may require the application of a pelvic binder. Most trauma patients with hypotension or signs of shock (eg, pale, cool, moist skin) could be bleeding internally, initial fluid resuscitation for these patients may consist of a bolus of intravenous crystalloid (eg, 20 mL/kg isotonic saline) while arrangement is being made to transfer to the EFSTH for definitive treatment

### Disability and neurologic evaluation

Once problems related to the airway, breathing, and circulation are addressed, perform a focused neurologic examination. This should include a description of the patient's level of consciousness using the Glasgow Coma Scale (GCS) score or the paediatric GCS, a validated scale for children ≤2 year old and assessments of pupillary size and reactivity, gross motor function, and sensation. Trauma patients with a GCS ≤8 or who are unresponsive or only respond to pain have severe altered mental status and require rapid resuscitative efforts.

### Exposure and environmental control

Be certain that the trauma patient is completely undressed and that his or her entire body is examined for signs of injury during the primary survey. Missed injuries pose a grave threat. Regions often neglected include the scalp, axillary folds, perineum, and in obese patients, abdominal folds.

Patients should be stabilized as well as possible without delaying transfer; delays are associated with increased mortality. Criteria for transfer are based upon the patient's demographics, mechanism of injury, and clinical findings.

### Secondary Survey

* AMPLE History: **A**llergies, **m**edications, **p**ast medical history/**p**regnancy, **l**ast meal, **e**vents and **e**nvironment surrounding injury.
* Physical examination from head to toe including a rectal examination (major trauma)
* Decide on definitive management (is emergency referral needed?)
* Use MIST template when writing a referral to have a patient transferred to EFSTH for further care. This includes: **m**echanism of injury plus sex and age of patient, **i**njuries, **s**igns and and symptoms and **t**reatment so far

**Laboratory investigations.**

It cannot be overemphasized that a complete workup is not a requirement for transfer or referral to the EFSTH, Banjul; postponing transfer to obtain laboratory results or imaging studies only delays definitive treatment. Often such studies must be repeated at the receiving facility.

However some laboratory and radiological studies that may be done are

1. Portable radiographs
2. Ultrasound scan
3. Blood sugar
4. HCG - especially in women of child-bearing age .
5. Haemoglobin.

## Key Issues for Nursing care

Always call the attention of the Doctor when you are presented with a case of a major trauma.

Check vital sign on arrival and attempt to start resuscitation management as outlined above if required until the doctor arrives.

The decision to refer should be made by the doctor or the senior nurse on duty upon initial assessment.

## References

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