

Trauma: How to Perform a Secondary Survey

Mr F Shivji (BM BS, BMedSci, MRCS)

Introduction

Traditionally, General Surgical and Orthopaedic trainees form part of the Trauma team. They, along with Anaesthetic and Emergency Department colleagues, are responsible for managing any trauma cases that present to the hospital. As these patients can be seriously ill, a systematic approach is needed so that the patients can be thoroughly reviewed and treated in the least time possible.

This systematic approach consists of an initial Primary Survey (ABCDEs) with simultaneous resuscitation. Junior doctors appear to be very accustomed to performing this Primary Survey. However, the Secondary Survey, which is just as important, is less well practiced.

What is a Secondary Survey?

A Secondary Survey is a complete review of a patient, including a history and physical examination from head to toe. It is necessary as more obvious injuries can distract clinicians away from those that are serious but concealed. After examining the whole patient, relevant investigations are ordered, such as plain radiographs or biochemistry.

When is a Secondary Survey conducted?

Once the Primary Survey has been completed and resuscitation shown to be effective, the Secondary Survey may start.

This article will provide an explanation of the Secondary Survey and a step-by-step guide as how to perform it.

The Secondary Survey

1. History
2. Head
3. C Spine & Neck
4. Chest
5. Abdomen & Pelvis
6. Perineum/Vagina
7. Arms & Legs
8. Spine & PR
+/- Investigations

1. History

Pertinent patient details can be garnered using the AMPLE mnemonic:

Allergies

Medications

Past medical history (& Pregnancy)

Last meal

Events related to accident

The mechanism of injury is very important in trauma as it can give an idea of what pattern of injury to expect. The events leading up to the injury must be ascertained from the patient if they are conscious. If the patient is unable to recall or incapacitated, witnesses such as Paramedics and others from the scene must be interviewed. Details are particularly important if the accident has occurred in a

potentially hazardous environment. Finally, the Glasgow Coma Score should be documented.

Once the history is complete, the physical examination should start. The easiest way to remember this process is to start from the head and work down. Essentially, every part of the patient's body should be examined to exclude hidden injuries. It is useful to have an assistant for this. The assistant has a role as a chaperone and must also meticulously document any injuries noticed and any future investigations that may be required dependent on the examination findings.

2. Head Examination:

- Examine the scalp for any cuts and bumps.
- Looks at the eyes: Pupils, Haemorrhages, Acuity, Remove contact lenses, Movements
- Look at the teeth, inside the mouth
- Palpate maxilla & mandible

3. Cervical Spine & Neck:

In the trauma situation, patients will likely still have their cervical spine immobilised using straps, blocks, and a collar. However, this should not deter the clinician from assessing the spine. The neck collar has deliberate openings to allow inspection and palpation of the spine.

- Inspect the neck for bruising or lacerations.
- Palpate the trachea & carotids.
- Palpate the cervical spine

Note, surgical trainees are not responsible for 'clearing the C spine'. This should be left to experienced Emergency doctors, or a CT should be awaited.

4. Chest Examination:

- Inspect the chest for bruises, lacerations, or flail segments
- Palpate the clavicles, ribs, and sternum
- Record the respiratory rate, saturations, pulse, blood pressure
- Auscultate the heart and lungs

5. Abdomen & Pelvis:

A FAST (Focussed Assessment Sonography for Trauma) scan may already have been performed on admission to the Emergency Department. However, a negative scan does not exclude abdominal pathology. Incorrectly worn seat belts can cause major damage to the pelvis and abdomen.

- Inspect for flank bruising, seat belt marks, abdominal distension
- Inspect for bruising over the iliac crests, perineum, and pubis.
- Palpate the abdomen
- Do not apply anterior-posterior pressure on the pelvis
- If a CT scan has already been performed with no pelvic fracture identified, the pelvic binder should be removed. Once removed, the patient's observations should be checked, and a Pelvic X-ray taken. A CT of the pelvis whilst wearing a binder can miss pelvic fractures, hence the importance of a post binder X-ray.

6. Perineum:

- Inspect for bruising, lacerations, urethral bleeding
- Inspect the urine colour if a catheter is inserted. Consider placing a

catheter if it is not.

- If indicated, perform a vaginal examination and assess for the presence of blood.
- Always perform a urine pregnancy test.

7. Arms & Legs:

- Inspect for bruising, lacerations, and deformities.
- Palpate along the entire length of each limb carefully, including digits.
- Test sensation and power

8. Spine:

- A log roll should be conducted at the end of the Secondary Survey. The lead clinician should take this opportunity to thoroughly inspect the posterior chest, pelvis and legs. The spine should be palpated at this stage. Finally, a digital rectal examination should be performed and the following assessed: the presence of blood, a high riding prostate, and sphincter tone.

9. Investigations:

- Investigations that may be considered after performing a Secondary Survey are usually radiographic. These include plain X-rays of any tender bony areas, CT scans of the head, chest, abdomen and pelvis, and ultrasound scanning.

After all the investigations have been performed and acted upon, a Tertiary survey should be conducted along similar lines to the Secondary survey.