



**SNS COLLEGE OF ALLIED HEALTH SCIENCES**

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai



**DEPARTMENT OF RADIOGRAPHY AND IMAGING TECHNOLOGY**

**COURSE NAME : CONTRAST AND SPECIAL RADIOGRAPHY PROCEDURES**

**II YEAR**

**UNIT : 1**

**TOPIC : TRAUMA/EMERGENCY RADIOGRAPHY**



# INTRODUCTION



Trauma/Emergency is defined as sudden, accident or unexpected injury caused by an external force. A trauma patient is a person who has suffered from a physical injury. The injury may be minor, serious or life-threatening. Trauma radiography is a special challenge for the radiographer. The radiographer should prepare for trauma radiography procedures. Mobile units, C-arm may be used in trauma/emergency imaging.





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- After receiving the requisition form, the radiographer should ensure that the correct X-ray unit, immobilization devices such as sponges, sandbags and accessories should be available in the X-ray room.
- The trauma X-ray room should be equipped with vertical bucky, a sliding tabletop with bucky, grids, supporting devices, the adjustable X-ray tube (the adjustable X-ray tube can be positioned in vertical and horizontal directions) and other emergency apparatus.
- The radiographer should make conversation with the emergency staff and the patient; it will provide helpful information about the patient's condition to conduct the radiography procedures. The radiographers should consider the severity of the injury, the condition of the patient for planning the procedures.
- The radiographer should not touch the patient without gloves and should not move the patient in required radiography positions. The tube and it should be moved, instead of a patient.



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- A special trolley/strecher should be available in the emergency X-ray room. The trolley/strecher's top must be radio-lucent and have a movable tray. If the patient is not capable of standing, the radiograph should be carried on the trolley in a sitting or supine position or can be positioned against the vertical bucky to minimize the patient's movement.
- Trauma radiography requires quality images to diagnose serious injuries. The radiographers who perform these examinations should have special knowledge about the radiography procedures. The radiographer should have the ability to produce quality images in the shortest exposure time with minimum repeat exposure.



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- Suppose the patient is not capable of moving into the desired radiographic position, the X-ray tube and should be positioned rather than the patient or the part. For example, first, take the AP projections of the requested examinations, then perform all of the lateral projections of the requested examinations. If the patient is conscious, explain the procedure to the patient for his cooperation. If the patient is unconscious, to minimize the patient's movement during the procedure, the horizontal X-ray beam and the vertical grid are used for the lateral projections.
- Patient motion is always a consideration in trauma radiography. The shortest possible exposure should be used in every procedure. The unconscious patients are not able to suspend their respiration, and the conscious patients are often uncooperative. To reduce movement unsharpness and obtain a quality image, the kVp should be increased, and the mAs is reduced, or the tube mA is increased, and the exposure time is reduced.



# TRAUMA/EMERGENCY





# PAEDIATRIC TRAUMA





# RADIATION PROTECTION



- The radiographer must use a collimated beam during the procedure because close collimation of the X-ray beam to the area of interest reduces the scatter radiation and improves the image quality.
- All personnel that remains in the room should wear lead aprons during the procedure.
- The radio technologists should use correct exposure factors. The exposure factors should be recorded to avoid repeat exposure. The radio technologists must use high kv, low mAs shortest exposure time, and collimated radiation field size.
- High-speed screen-film combinations should be used to reduce the exposure and exposure time.
- The examination should be justified. The exposure should be as low as reasonably achievable (**ALARA**).





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- Three basic methods for reducing exposure
  - Minimize exposure time
  - Maximize distance from the X-ray tube
  - Use proper shielding
- The inverse square law should be applied. The inverse square law states that the dose gets reduced by increasing the distance.







**THANK YOU**