Mobile radiography

By

Dr. Mohsen Dashti

357 Radiologic Imaging & Processing
Lecture notes # 4
Lecture outline

- Special patient considerations.
- Special radiation protection considerations.
- Types of equipment.
- Special technical factor selection considerations.
Special patient considerations

• Mobile radiography is considered far more difficult than stationary radiography since the pleasure of the complete x-ray room no longer exists.

• Achieving an optimal quality image in mobile radiography on the most difficult patients is a prime objective.
Special patient considerations

- Mobile radiography examinations are more difficult to accomplish because there are so many additional variables including tube manipulation, patient positioning and equipment positioning.

- Special adaptation of routine projections, imaginative equipment manipulation and innovative technical factor considerations are often required and add to the difficulty of the examination.

- In surgery or emergency departments, the stress of performing mobile radiography is higher due to a high tension environment.
Special patient considerations

- Special considerations:
  1. **Communication**: establishing good communication entry is always recommended prior to entering the patient’s room with the mobile equipment.
    - Patient permission must be obtained before proceeding with the examination.
    - Some equipment and room rearrangement should be done before the examination as well as explanation of the procedure to be performed.
    - These steps should be considered for both conscious and unconscious patients.
Special patient considerations

2. **Manipulating equipment**: intensive care unit, surgery department and emergency unit require extra attention when mobile radiography equipment is manipulated.

- Power supply, oxygen tanks or tubes, catheters, intravenous lines must have enough space to permit movement.

- Manipulating the mobile radiography equipment in a small room could cause damage to patient or surrounding equipments so additional care must always be considered.
3. **Positioning and pathology:** standard patient position is often difficult to achieve with patients requested for mobile examinations.

- AP projection of the chest, distal knee joint projection, mid-shaft and proximal hip exposure of the femur are just few examples of the special projections that might be taken due to patient’s lack of routine ROI position.
- Chest examination should be performed to the nearest routine position. *Why?*

-- To demonstrate air-fluid level.
Special patient considerations

- Special attention for patient history must be considered for patients requested for mobile examinations.
- Patients with cardiac problems, chest infections, post surgery patients and fractures should be dealt with conscious even if the patient seemed fine.
- The possibility of radiographic artifact increases with mobile radiography. How?
  -- Personal items (clothing, hair pins, watch, jewelry, etc), layers of coverings (blanket, extra sheets, etc), medical equipments (nasogastric tubes, intravenous lines, catheters, clamps, etc).
- Registered nurse or the physician must be consulted before moving any medical line.
Special radiation protection

- Mobile examination maybe considered hazards to the public or medical personnel since the examination is carried in an environment not built for x-ray procedures.
- Ensuring radiation protection becomes a major priority by the radiographer before any procedure is carried out.
- Shielding, distant and time are the three most important protection rules that must be considered in any mobile examination for the patient, the radiographer and general public of health personnel present at the examination site.
Types of equipment

- There are two major classifications of mobile equipment: **portable light duty units** and **full power institutional units**.
- Light duty units and some full power units obtain power from the wall outlets.
- The more advanced full power units use batteries for a power supply and are capable of greater voltages.
- The battery operated units empower the mobile units to be driven without the need of power supply.
- Automatic exposure control is available in most mobile units.
Special technical factor selection considerations

- Technical factors for mobile examinations differ from factors used in the x-ray room. **Why and how?**
  -- Use of filtration, grid and patient criteria may decide the technical factors that should be used to complete an examination.
- It is advisable to establish an individual technical chart for each mobile unit.
- Factors that should be considered when establishing mobile technique charts include **kilovoltage, milliampere, distance, grids and film/screen combinations**.
Reminder

The midterm exam will be on Sunday 27-3-11 from 09-11 am in HIA3-122....
Good luck...