

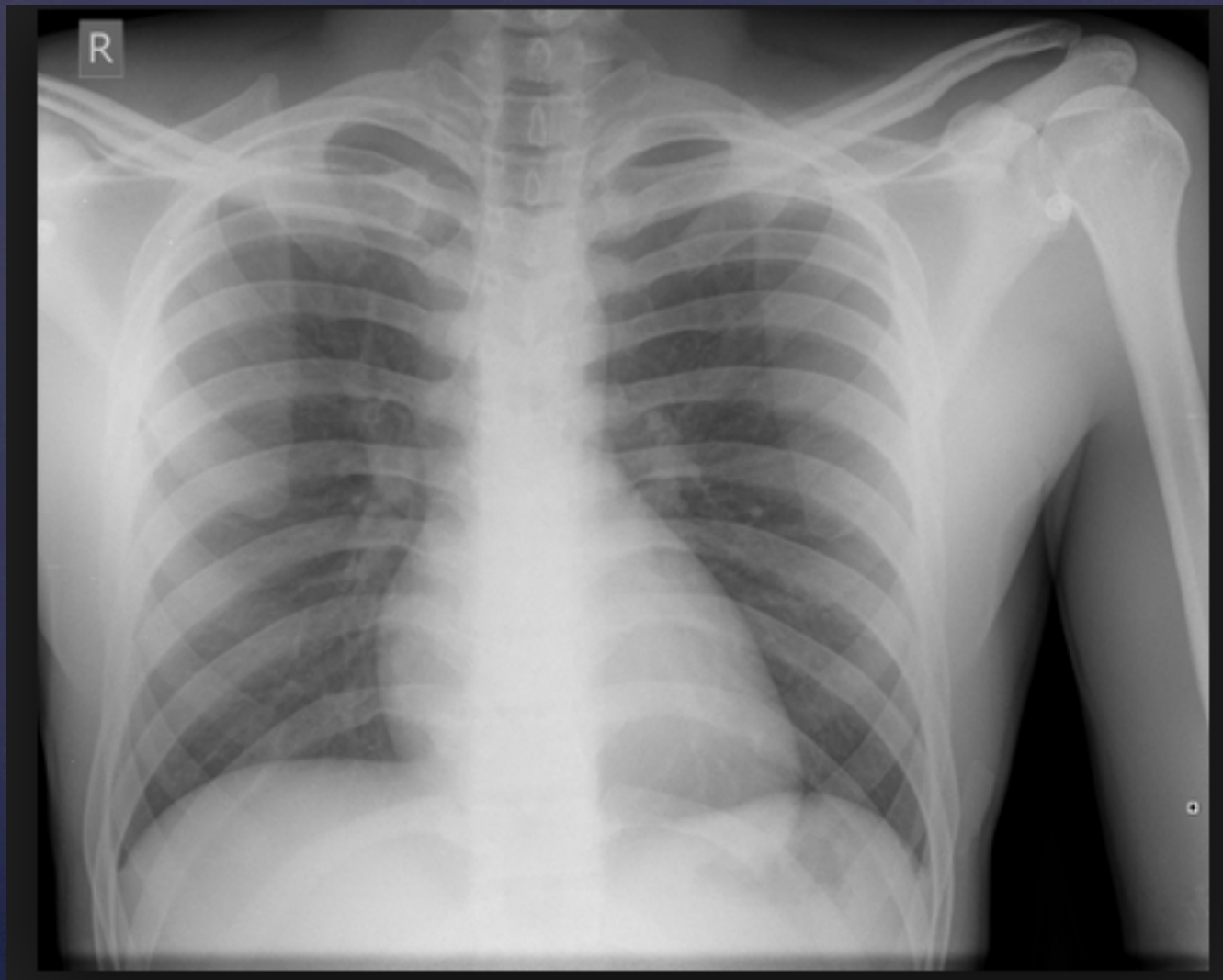
Imaging in Trauma

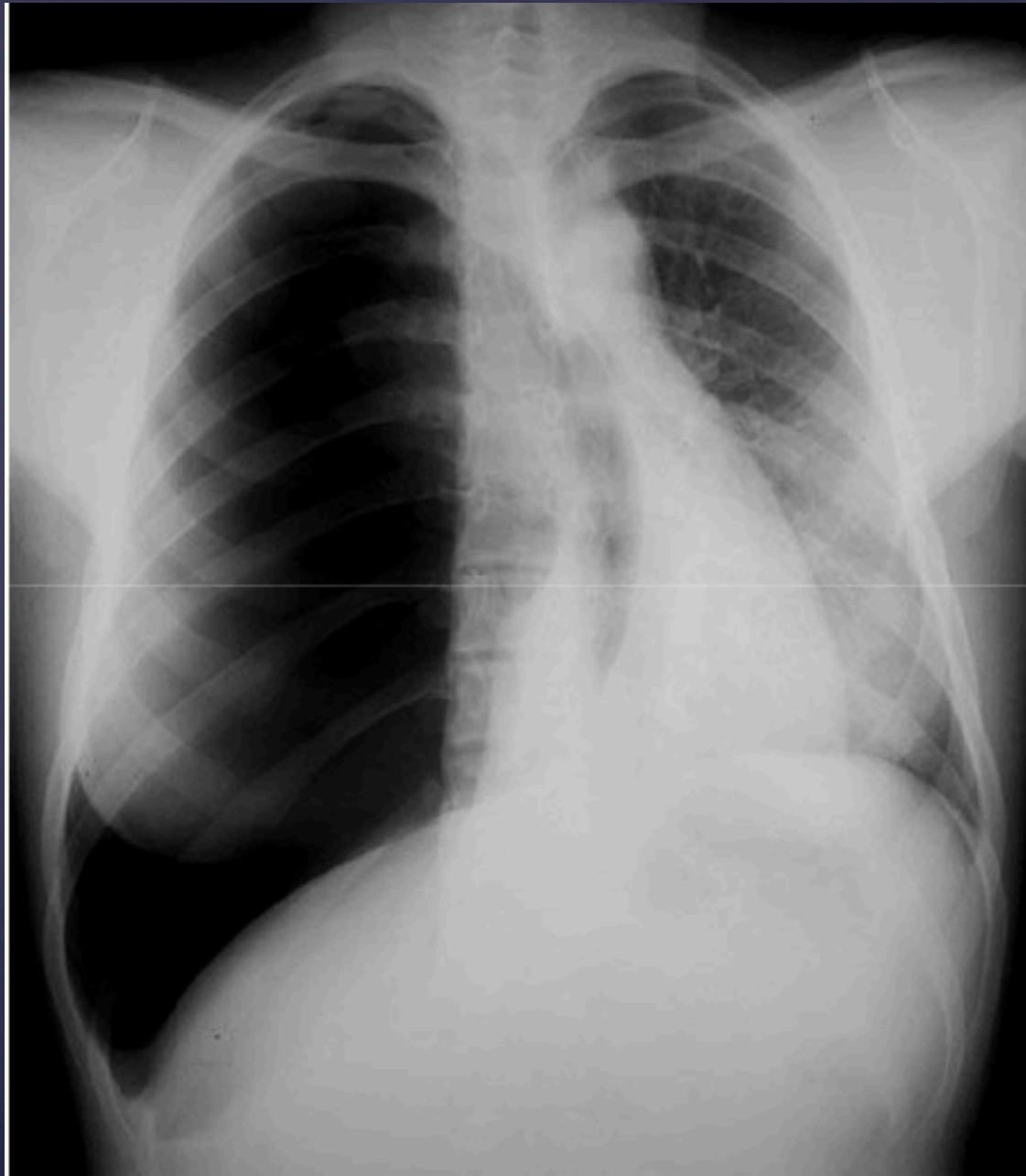
Rafael Gaszynski

Primary Survey

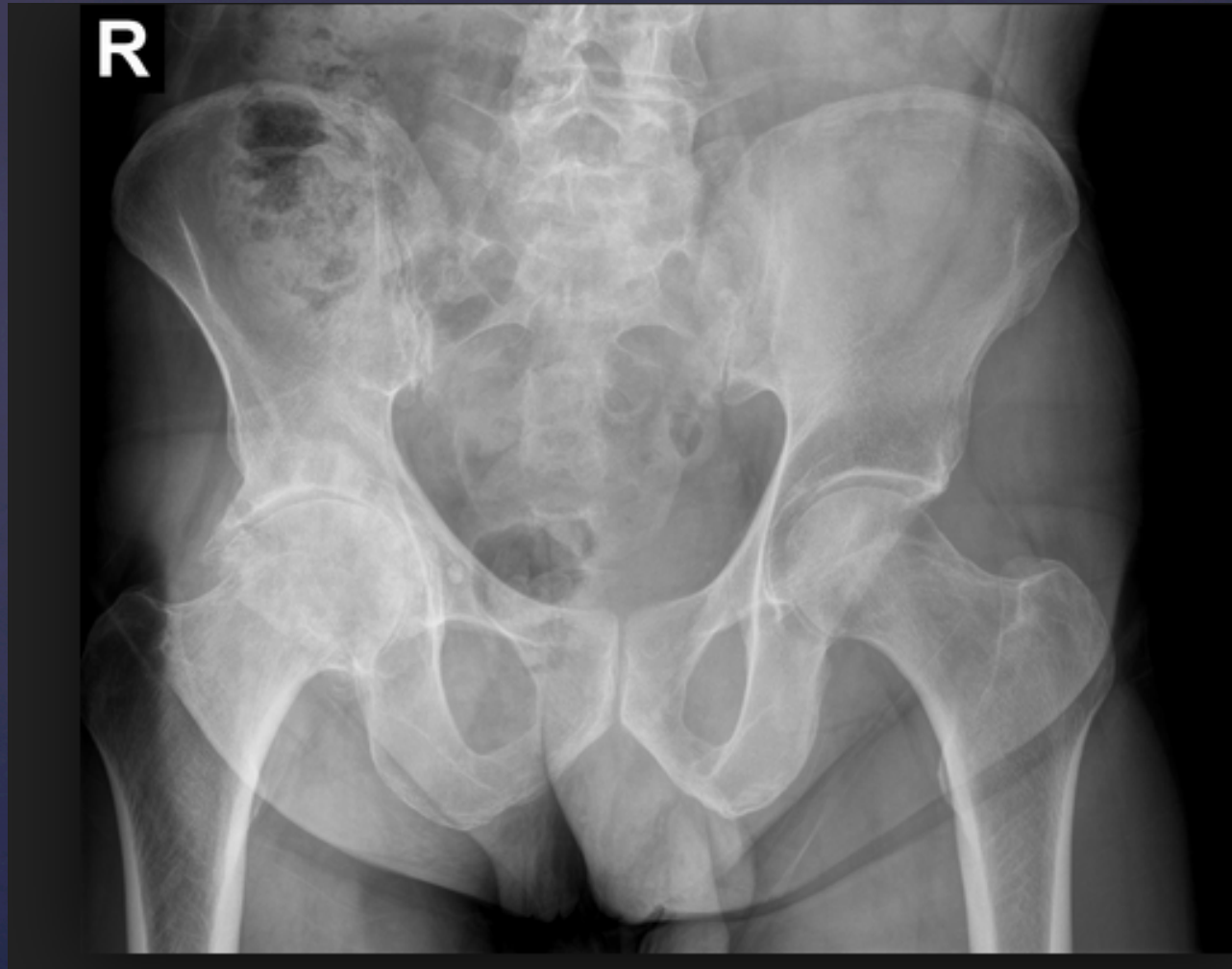
- A Primary survey and assessment of ABCDEs
 - 1 Airway with cervical spine protection
 - 2 Breathing
 - 3 Circulation with control of haemorrhage
 - 4 Disability: brief neurologic evaluation
 - 5 Exposure/Environment: undress patient and prevent hypothermia
- B Resuscitation
 - 1 Oxygenation and ventilation
 - 2 Shock management – IV fluids
 - 3 Management of life-threatening problems identified in the primary survey
- C Adjuncts to primary survey and resuscitation
 - 1 Monitoring
 - a Arterial blood gases
 - b Ventilation
 - c End tidal CO₂
 - d Electrocardiogram
 - e Pulse oximetry
 - f Blood pressure
 - 2 Urinary catheter and nasogastric tube placement
 - 3 Radiographic and other diagnostic studies
 - a Chest x-ray
 - b Pelvis x-ray
 - c Cervical spine x-ray (lateral)
 - d FAST or DPL

Chest xray





Pelvic Xray





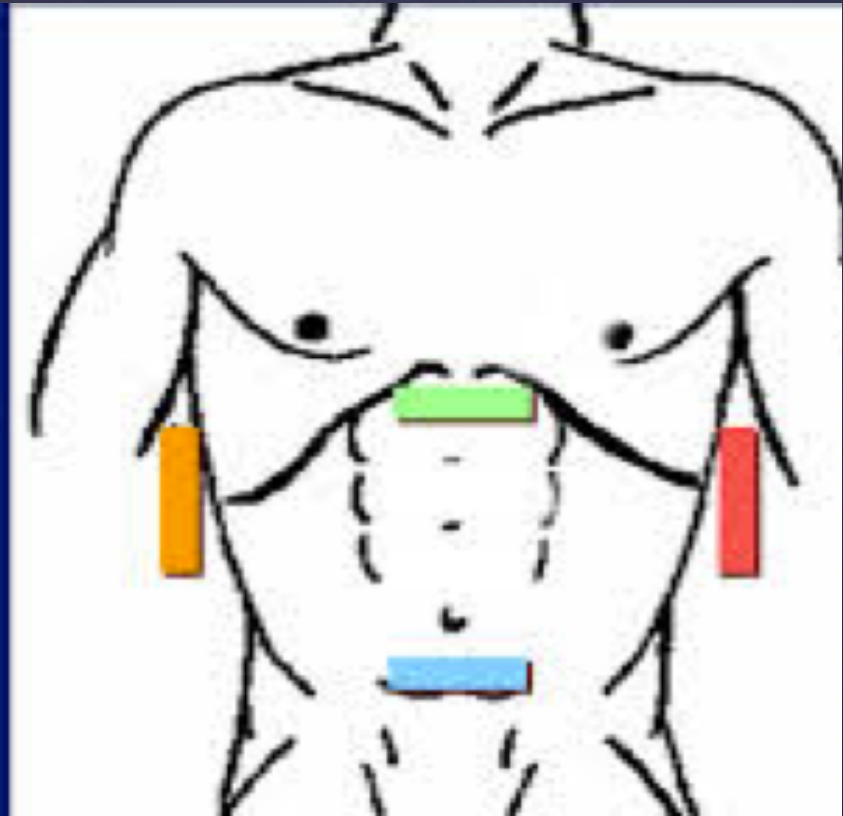
C-spine xray



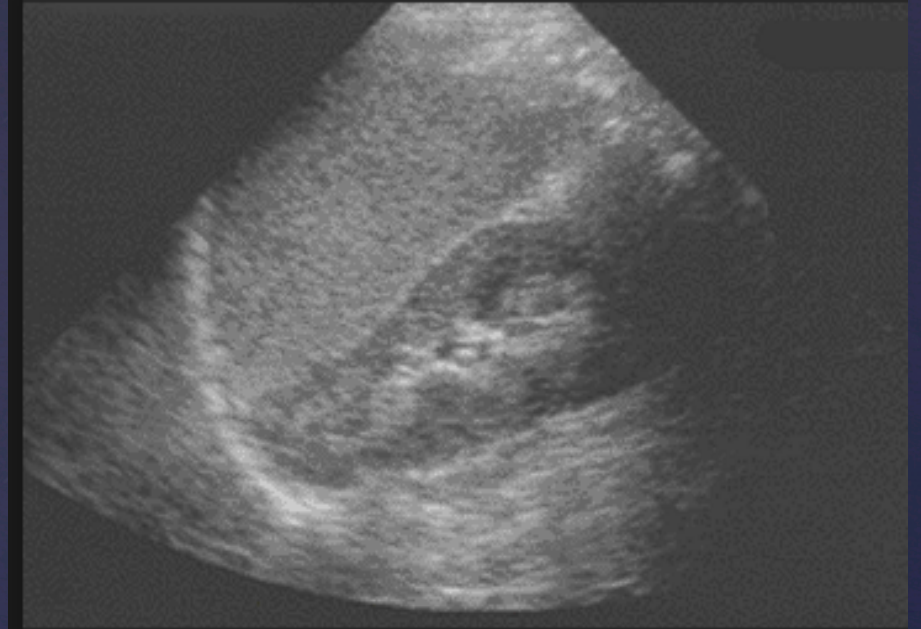


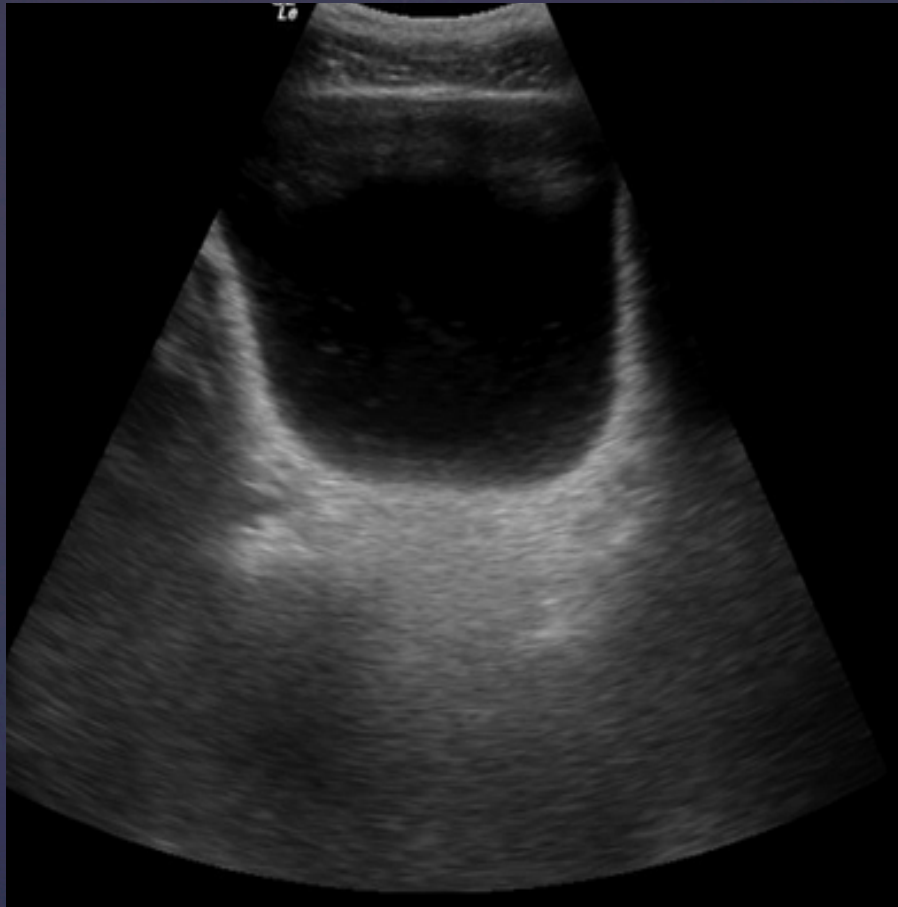
FAST

- Perihepatic
- Pericardial
- Perisplenic
- Pelvic



Normal FAST





Abnormal FAST



① Cardiac Tamponade



② Right Upper Abdominal Bleeding



③ Left Upper Abdominal Bleeding



④ Pelvic Bleeding

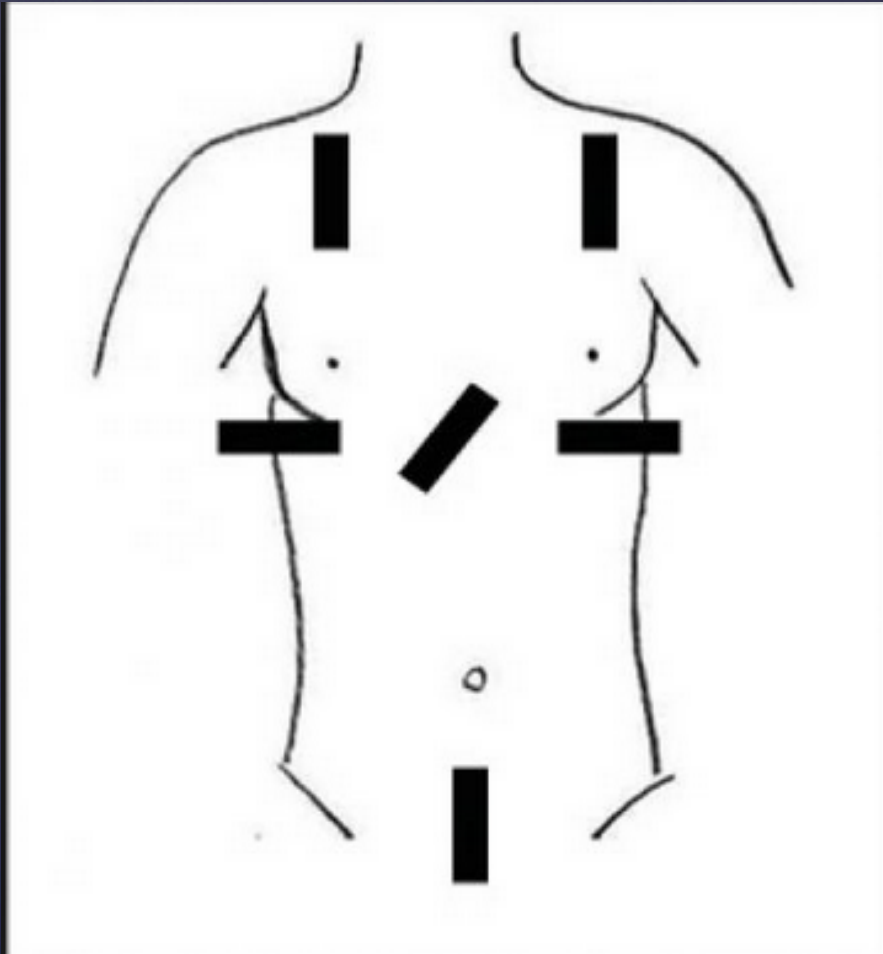


⑤ Pleural Bleeding



⑥ Peri-hepatic Bleeding

e-FAST



Secondary Survey

- D Secondary survey: total patient evaluation
 - 1 Head and skull
 - 2 Maxillofacial and intra-oral
 - 3 Neck
 - 4 Chest
 - 5 Abdomen (including back)
 - 6 Perineum/rectum/vagina
 - 7 Extremities
- E Adjuncts to the secondary survey (performed after life-threatening injuries have been identified and managed)
 - 1 Computed tomography
 - 2 Contrast studies
 - 3 Extremity radiographs
 - 4 Endoscopy and ultrasonography
- F Definitive care

CT scans

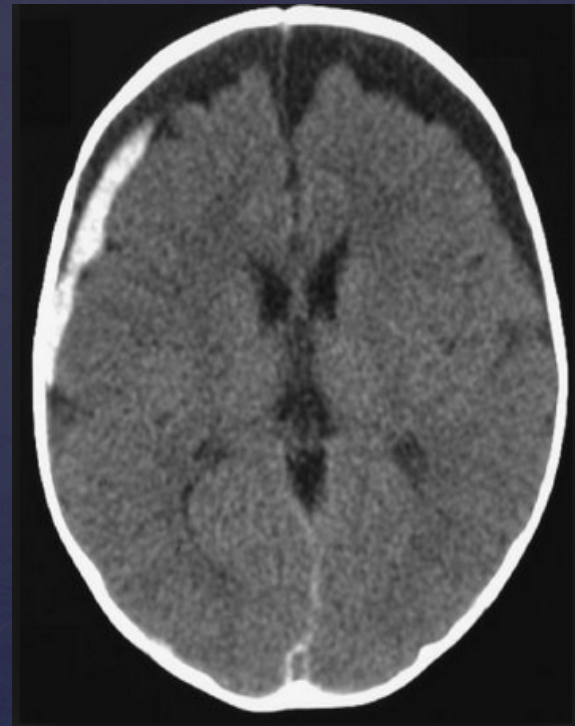
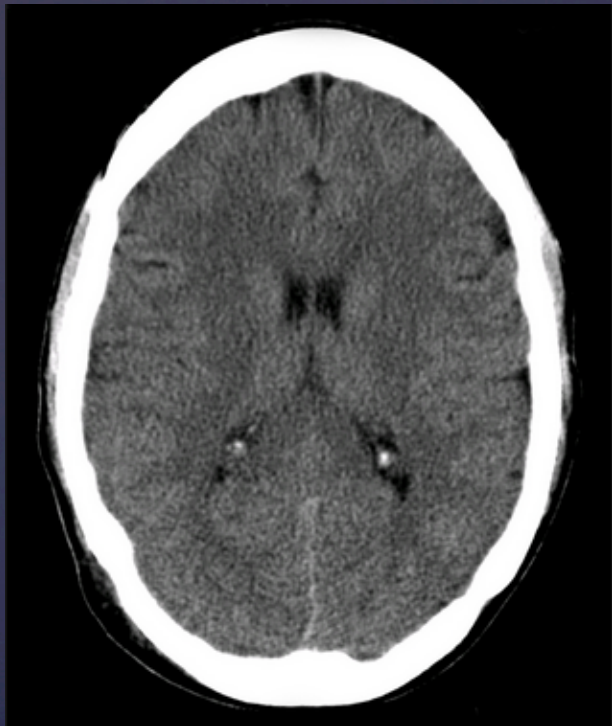
Immediate CT (within 1 hour of request)

- GCS <13 when assessed in Emergency Department
- GCS <15 two hours after Emergency Department assessment
- Suspected open or depressed fracture
- Signs of basal skull fracture
- Seizure
- Focal neurological deficit
- More than one episode of vomiting
- Anticoagulant therapy or coagulopathy, plus if any amnesia or loss of consciousness since the injury

CT within 8 hours

- Pre-traumatic amnesia >30 minutes
- Age >65 years if any amnesia or loss of consciousness since the injury
- Dangerous mechanism, plus if any amnesia or loss of consciousness since the injury (e.g. pedestrian or cyclist hit by

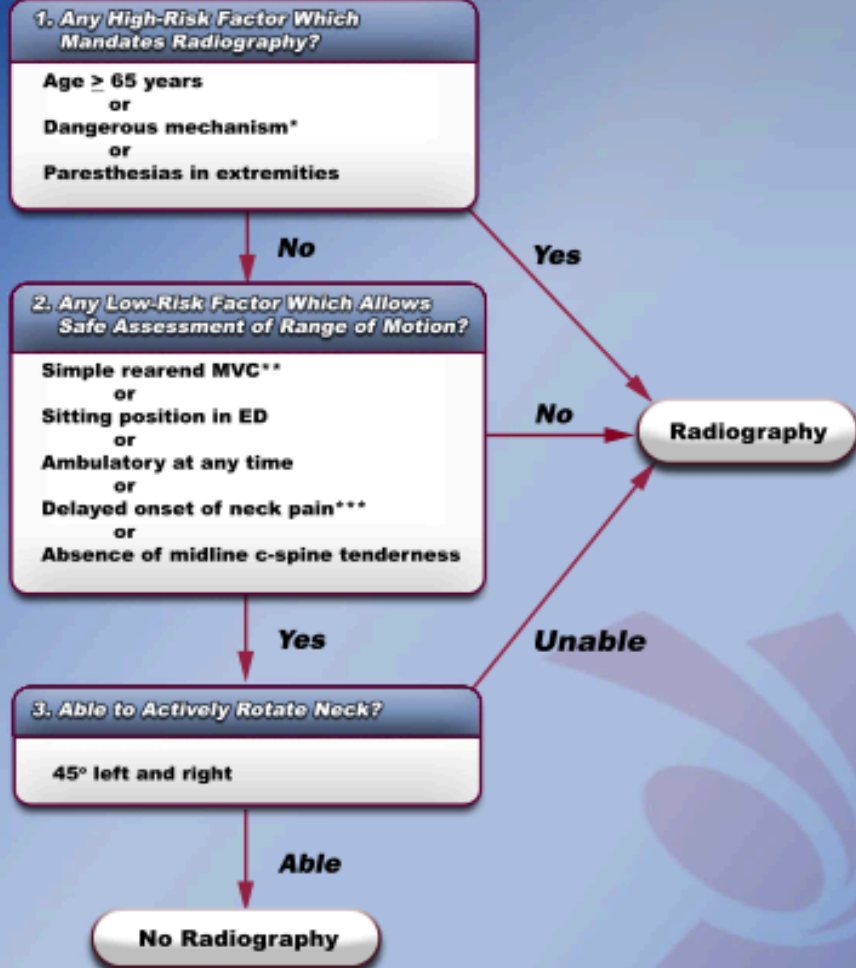
CT brain



CT C-spine

Canadian C-Spine Rule

For all alert (GCS =15) and stable trauma patients where cervical spine injury is a concern



*Dangerous Mechanism

- fall from elevation \geq 3 feet/5 stairs
- axial load to head, i.e. diving
- MVC high speed ($>$ 100 km/hr), rollover, ejection
- motorized recreational vehicles
- bicycle struck or collision

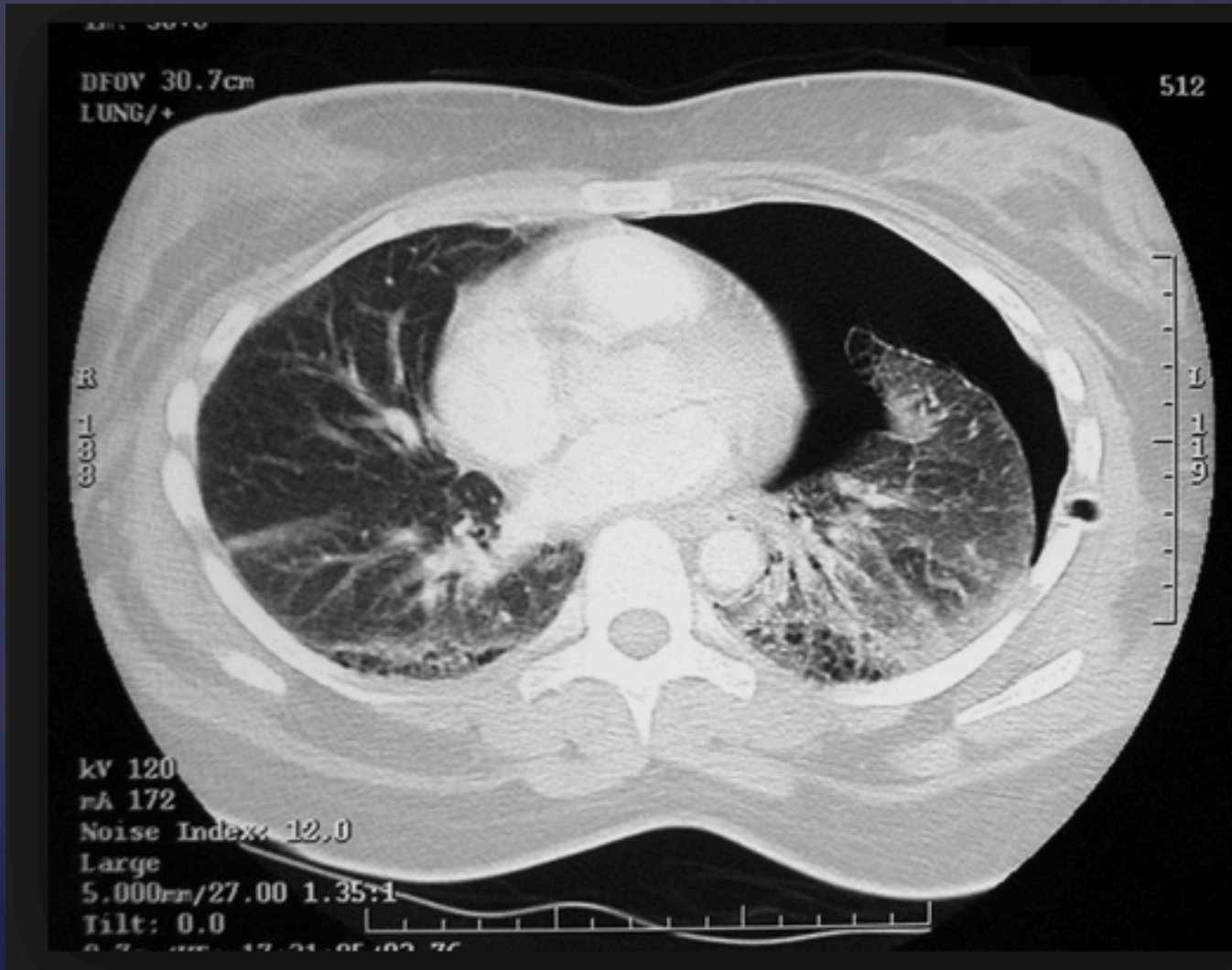
**Simple Rearend MVC Excludes

- pushed into oncoming traffic
- hit by bus/large truck
- rollover
- hit by high speed vehicle

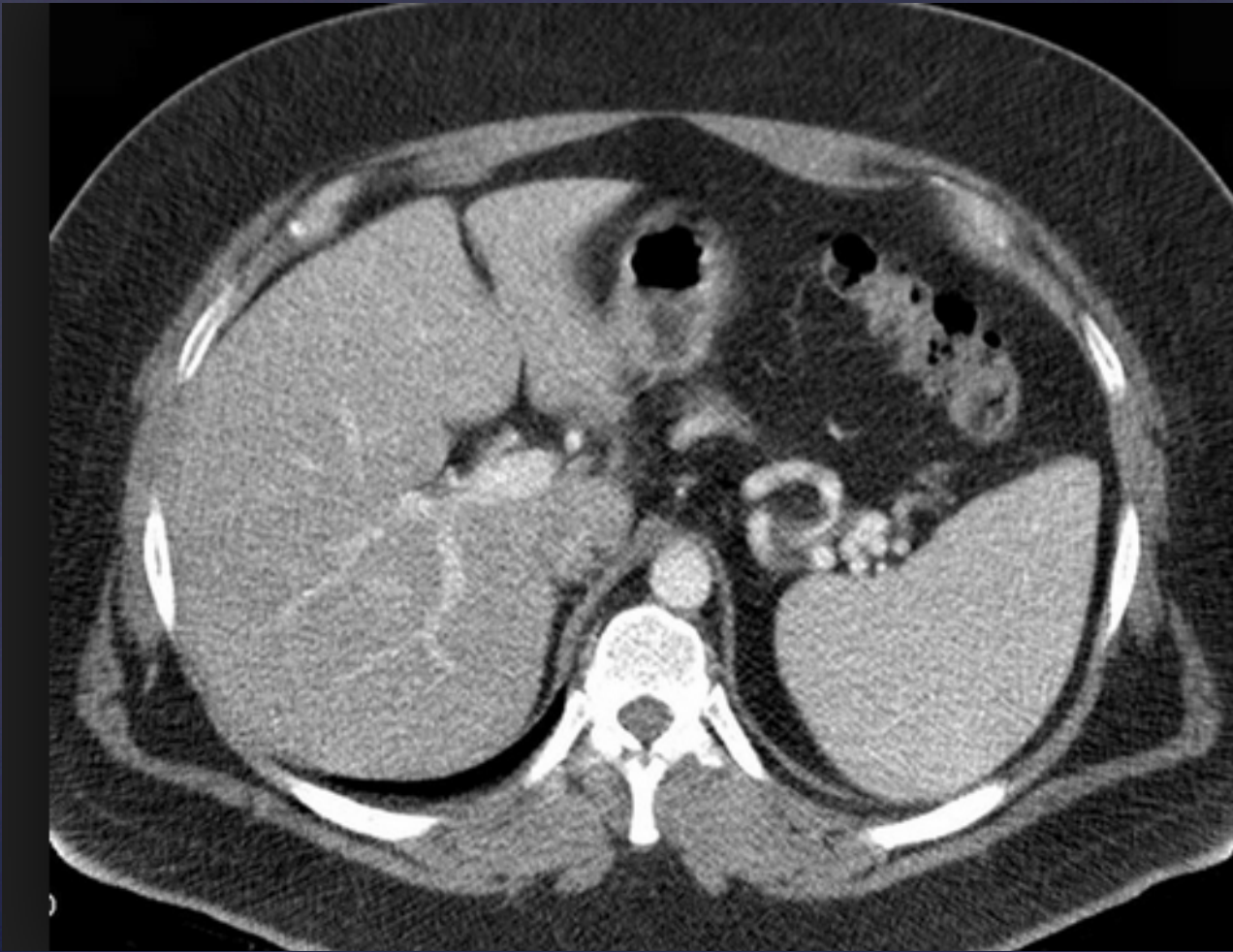
***Delayed

- i.e. not immediate onset of neck pain

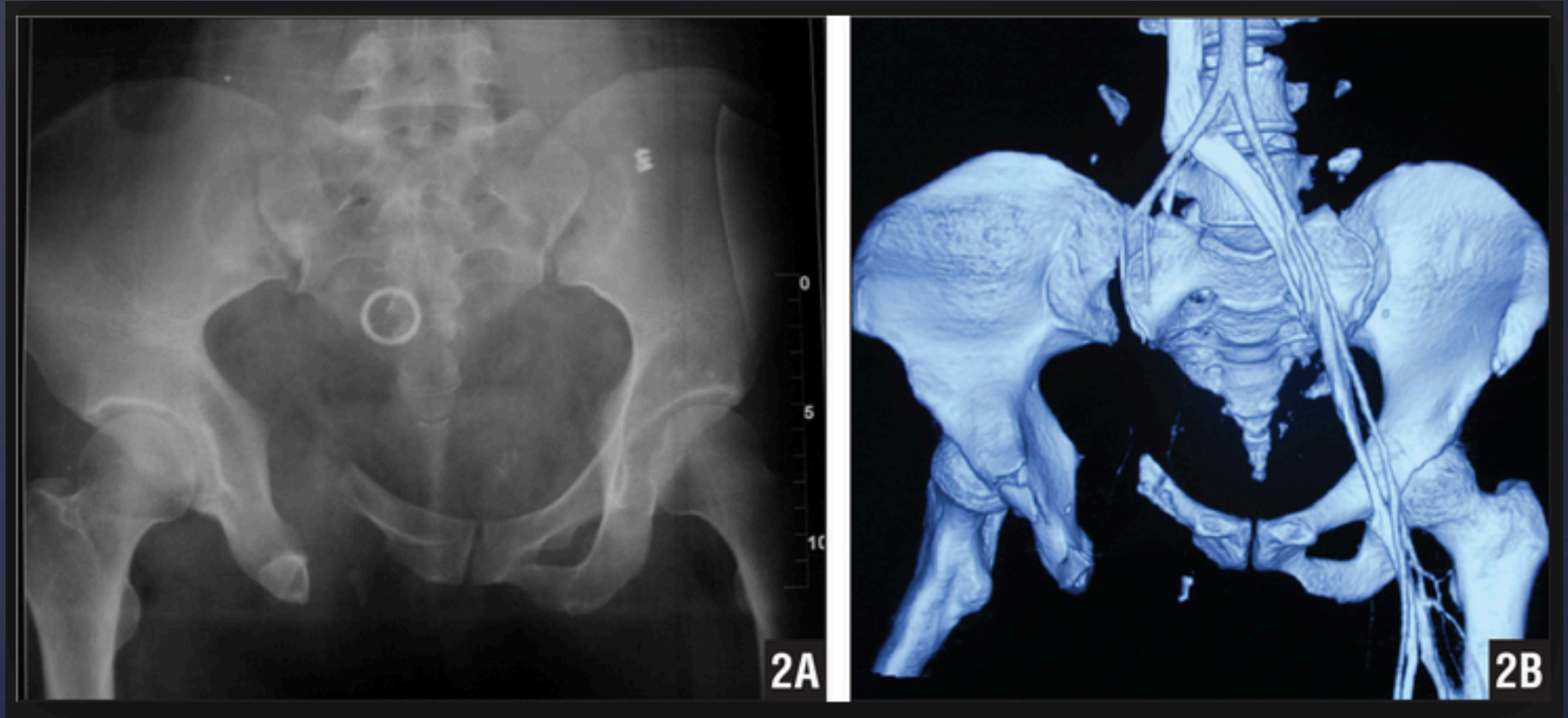
CT chest



CT Abdo



CT pelvis + angio



Extremity X-ray



Questions