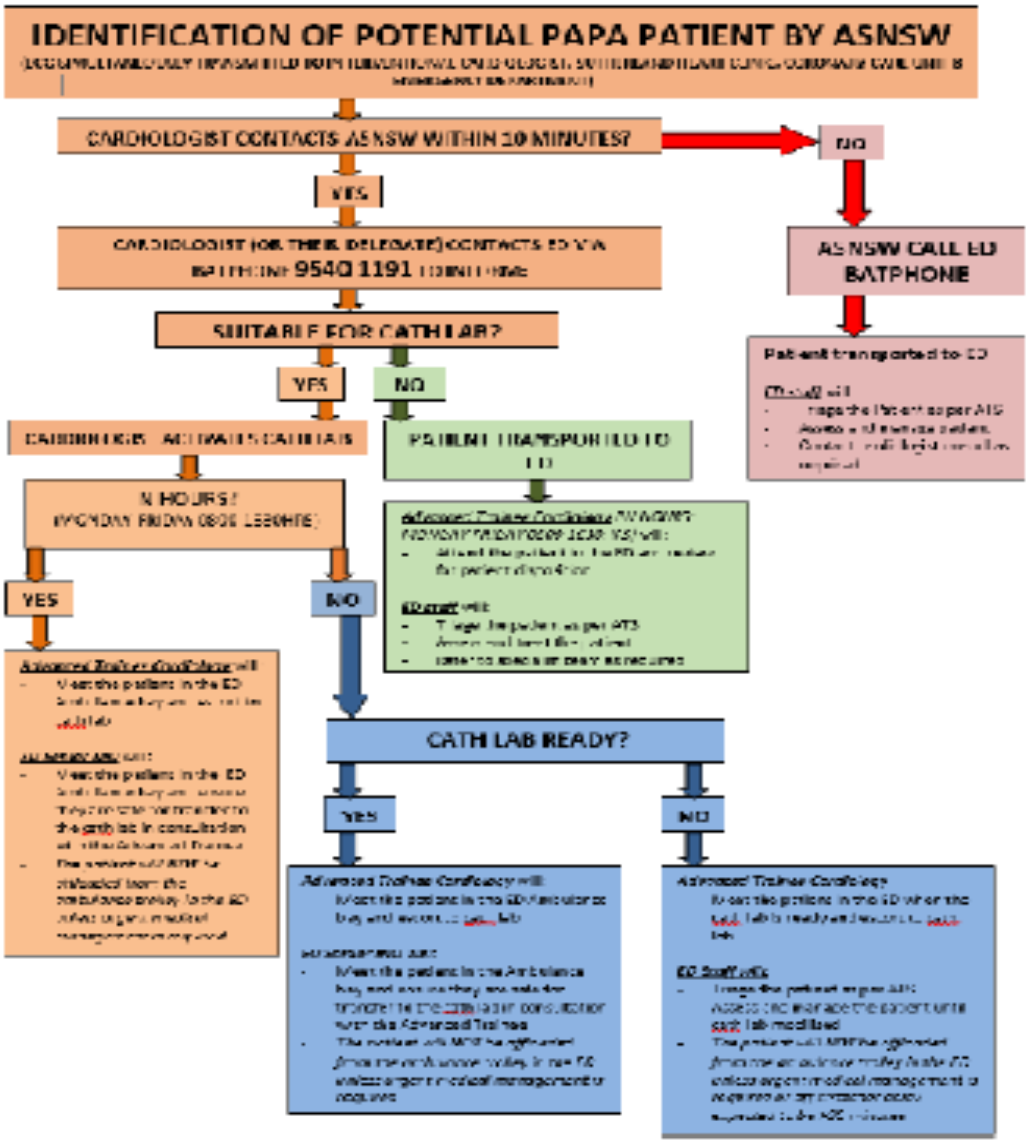
The Weekly Probe

10th March February 2017 **Volume 14 Issue 9**

Pre-hospital Assessment of Primary Angioplasty (PAPA) – sorry to repeat the message if you've already read this but from **next Wednesday, March 15th**, TSH will begin to accept PAPA patients.
This involves transmission of abnormal ECG's by ASNSW directly to the interventional cardiologist on call who is then able to determine suitability for angioplasty.
If the patient is deemed to require angioplasty, the cardiac cath lab is mobilised before the patient even arrives to the ED.
The aim of this early notification is to prevent delays in time to cath, the patient should spend as little time as possible in the ED and in almost all situations ***should not be offloaded from the ambulance stretcher*** (please refer to the CBR for further details).
With regards to ED involvement:

- A PAPA computer has been installed in the Acute hall and is now labelled. This computer is to be used only for ECG transmissions. When the ASNSW transmits an ECG, it is simultaneously transmitted to the cardiologist, TSH ED, TSH CCU and Sutherland Heart clinic. The computer will alarm that it is receiving and will continue to alarm until the transmission is acknowledged. To acknowledge the transmission, double click on the flashing orange line and the ECG will open.
- The interventional cardiologist will ring the BATPHONE to inform the ED wether the patient is for cath lab or not.
- ***ED SENIOR MEDICAL OFFICER*** will meet the patient in the ambulance bay to confirm they are stable for transfer to the cath lab (please refer to the CBR)
- ***ED CLERICAL STAFF*** will register the patient to eMR and iPM (this process should be expedited and should not cause delay in transfer to the cath lab)
- ***TRIAGE NURSE*** will triage the patient as per ATS and then discharge the patient from firstnet as 'transferred to Sutherland Heart Clinic' (this process should be expedited and should not cause delay in transfer to the cath lab)
- ***ED NUM/IC*** will contact the patient flow coordinator/AHSNM to inform them if the patient has been taken to the cath lab

The ambulance should take the route of the back corridor past fast track to get to the Sutherland Heart clinic. A swipe card has been provided with a map attached to be given to the ambulance officers on their arrival so they can access the Sutherland heart clinic and return through the ED. This swipe card is kept in the clerical office where the current swipe card for ambulance staff is kept. The clerical officer and triage nurse should ensure this is brought to the ambulance bay.



If you have any questions please speak with Andrew, Leanne, Liz or any of the education team.

THIS WEEK

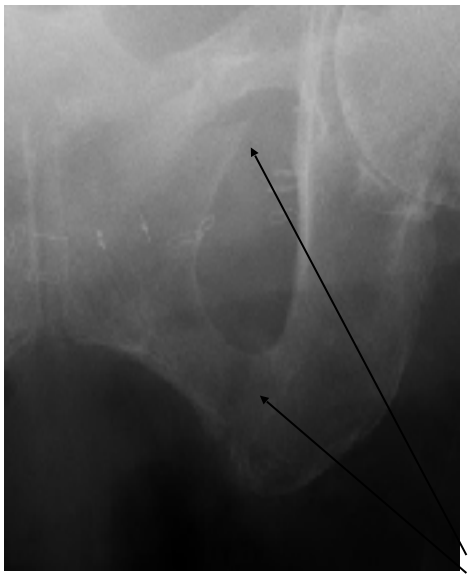
	Last week's case – Geriatric Trauma
	Next week's Case
	Joke / Quote of the Week
	The Week Ahead

LAST WEEK'S CASE – GERIATRIC TRAUMA

An 80yo lady presents with lower abdominal and pelvic / left groin pain post fall .
Below is her pelvic Xray film with magnified section below.

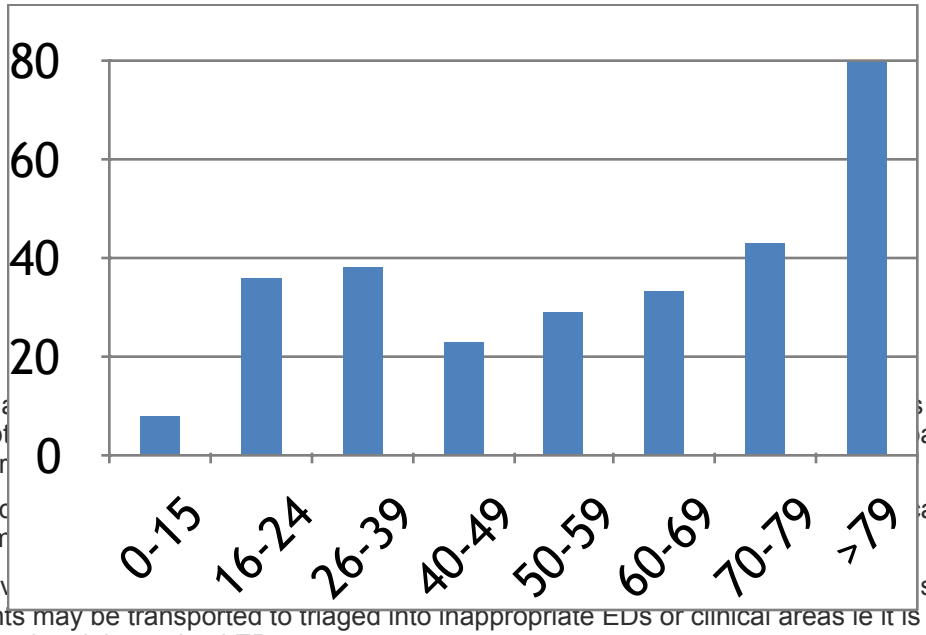
What are the issues that make your approach to the geriatric "trauma" patient such as this one different to that of the younger patient? Is this an injury which may potentially cause some problems?

Editor: Peter Wyllie



The age distribution of patient we see post trauma is largely bimodal – two humps with the young adult patients driving fast, fighting and taking risks , and the older patients having falls.

Below is a graph of the trauma deaths at Liverpool over the last 10 years. (age is on the x-axis)



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The yo ant clinical errors to com

Howev simple falls) and patients may be transported to triaged into inappropriate EDs or clinical areas ie it is relevant to us all working in adult or mixed EDs.

Patients then "fly under the radar" as this this starts the flow of cognitive biases such as triage cuing and diagnostic momentum which place the patient at higher risk. However we need to avoid this and many other "traps" as the geriatric trauma patient warrants even greater attention to detail to avoid potential mortality and morbidity.

Editor: Peter Wyllie

The strongest predictor of mortality is age. However, to quote a veterinary show on TV last week, and as Anna always tells me, **age is not a disease.**

What is the difference with geriatric patients?

CVS

- Physiologic reserve is minimal, and hemodynamic decompensation can occur quickly. Derangements of the normal chronotropic response (ie tachycardic response) may also lead to erroneous assumptions about the (normal) state of a patient's haemodynamics. This may be exacerbated by the use of negative chronotropes such as B-blockers, calcium antagonists or other antiarrhythmic drugs. As a result a normal heart rate is a poor indicator of the absence of a shock state and may be particularly misleading in an elderly patient.
- Profound, life-threatening hypovolemia may occur in the setting of “normal” blood pressure, particularly in the context of prior hypertensive states.
- When these vitals are abnormal then worry- tachy with a HR > 150 has a mortality of ~ 70% while SBP < 90 has a mortality of ~ 30%
- The therapeutic window for cardiac preload is narrow, and inadequate monitoring may lead to errors in volume resuscitation – aggressive yet cautious and frequent observant responsive resuscitation is the key.
- Blunt aortic injury may occur in the elderly in the absence of conventional signs or symptoms, and a low threshold for CT imaging should exist

Respiratory

- Especially in the context of underlying cardiorespiratory disease where pre-trauma respiratory function is borderline, elderly patients may rapidly decompensate with minor chest or abdominal injuries.
- This respiratory decline may be exacerbated by mechanical issues such as chest wall rigidity, kyphoscoliosis and diaphragmatic problems.
- Limited mouth opening, a lack of teeth, limited neck mobility and kyphoscioliosis may make airway management more difficult, while parenchymal / alveolar / perfusion issues may make intubation and ventilation more problematic.

Abdomen

- Clinical manifestations of serious abdominal injury in elderly patients are often minimal. Reliance on the abdominal examination often leads to missed abdominal injuries
- Underlying pathology increases the susceptibility of the liver, kidney and gut to ischaemic and reperfusion injuries and haemorrhage.
- Increased risk of contrast induced nephropathy esp with oral hypoglycaemics.
- Increased risk of gut ischaemia related to mesenteric vasoconstriction secondary to under resuscitation.

Bones and soft tissues

- The elderly patient is highly susceptible to noncavitary haemorrhage (ie not into the chest or abdominal cavities), because of the relative loss of connective tissue integrity and the loss of the normal ability to tamponade soft tissue haemorrhage.
- The presence of fragile blood vessels contributes to the potential for occult bleeding within subcutaneous, retroperitoneal, or intramuscular spaces. As a consequence blood loss into soft tissue spaces, including subcutaneous loss, may be excessive and is often overlooked. (see comment re massive transfusion in the elderly).
- Pelvic # - older patients with pelvic # are more likely to bleed, need angio, need transfusion and more likely to die from their injuries

Neuro:

Editor: Peter Wyllie

- Cerebral atrophy makes bridging veins more susceptible to relatively minor trauma. Cortical atrophy, may also act to delay the clinical manifestations of serious intracranial haemorrhage- this results in surprisingly large bleeds with minimal symptoms.
- With the increasing frequent of antiplatelet, NOACs and warfarin use this an increasingly common problem.

Neck:

- Significant risk of cervical spine injury especially in the context of osteoporosis.
- Note that the Canadian Cx spine rules exclude elderly patients due to the high risk of Cx spine # in this group.
- The NEXUS Criteria does not have age cut-offs and is theoretically applicable to all patients. However, there is literature to suggest caution applying NEXUS to patients > 65 years of age, as the sensitivity may only ~ 66-84%.
- If head Ct is considered due to force then have low threshold to include Cx spine – there is an argument for routinely scanning down to include the peg (C2) in such cases, as C1 -2 being a more common location for fractures secondary to falls in the elderly (one study note a 5% incidence of Cx spine injury in those elderly patients where a Ct head was ordered)

Complications- Myocardial ischaemia, CVA or seizures may complicate organ hypoperfusion related to hypovolaemia, anaemia, hypoxia or adrenergic activity (from pain etc) particularly in the context of underlying vascular pathology. Every potential complication is more common in the elderly.

Pharm

- Medications such as β-blockers and calcium channel blockers can blunt the normal tachycardic and vasoconstrictive response associated with many traumatic events and can mask early signs of shock.
- Adjust medication dosage, particularly sedative-hypnotics and analgesics, to avoid over sedation.
- Considering altering doses of intubation drugs considering poor perfusion – double dose of paralysing agents / halve sedation agents.
- Aggressive reversal of anticoagulation where possible esp warfarin , clexane, heparin, dabigatran and NOACs – consider early haem consultation

Which old patients bleed ++?

One Japanese study looked at 84 patients who required **> 10 units** of blood within 24 hours of admission (most massive transfusion protocols commence at 4 units within 4hrs) and they compared those > 65yo to those younger patients (< 65yo). They found:

- The % of cases of massive bleeding that was **not diagnosed at the primary survey** was 14% of younger patients c/w **40% of older pts**.
- In those older patients falls was the mechanism of injury in 27% of cases- motor vehicle accidents 73%
- The site of “non-diagnosable” massive bleeding in this elderly patient group (ie in the 40% of cases not diagnosed at the time of primary survey in older patients) was :
    - Multisite damage caused by bone # and contusion – 20%
    - Retroperitoneal haematoma without a pelvic ring #- 11%
    - Stable pelvic ring # - 7%
    - Mediastinal haematoma – 2%
- (Those bleeding sites identified at primary survey were those injuries you’d suspect – 23% unstable pelvic # / open # - 14% / abdominal haemorrhage – 11% / facial trauma – 7% / haemothorax 5%)
- In those with “non-diagnosable” causes on the primary survey, shock was noted initially in only 33%. This confirms the thought that it is difficult to rely purely on vital signs as a trigger for investigations and treatment.

Editor: Peter Wyllie

In this case- the patient had a stable inferior and superior pubic ramus # on the left with intact posterior pelvis ie a stable pelvic ring injury (7% of the group in the above study). However she had a significant bleed from the obturator artery which was not tamponaded by the surrounding tissues

Other issues

- Consider elder abuse
- Lower threshold to admit - Multidisciplinary assessment pre-discharge to ensure safe for discharge environment. Closer medical and nursing followup
- Consider ceiling of care appropriate for that patient – early patient and family involvement

Summary – Although not applicable to a small subset of patients (such as fully dependent NH patients with a poor quality of life), acknowledge the difficulties in assessing and treating elderly patients and consider early aggressive investigation and management for these trauma patients.

Refs Mackersie RC , High Risk Emergencies, Pitfalls in the Evaluation and Resuscitation of the Trauma Patient , *Emerg Med Clin N Am* 2010; 28 (1): 1-27

Ohmori T et al Bleeding sites in elderly trauma patients who required massive transfusion: a comparison with younger patients *Am J Emerg Med* 2016; 34: 123-127

Reske-Nielson C, Geriatric Trauma *Emerg Med Clin N Am* 2016; 34: 483-500

NEXT WEEK'S CASE

While we're on the issue of geriatrics…

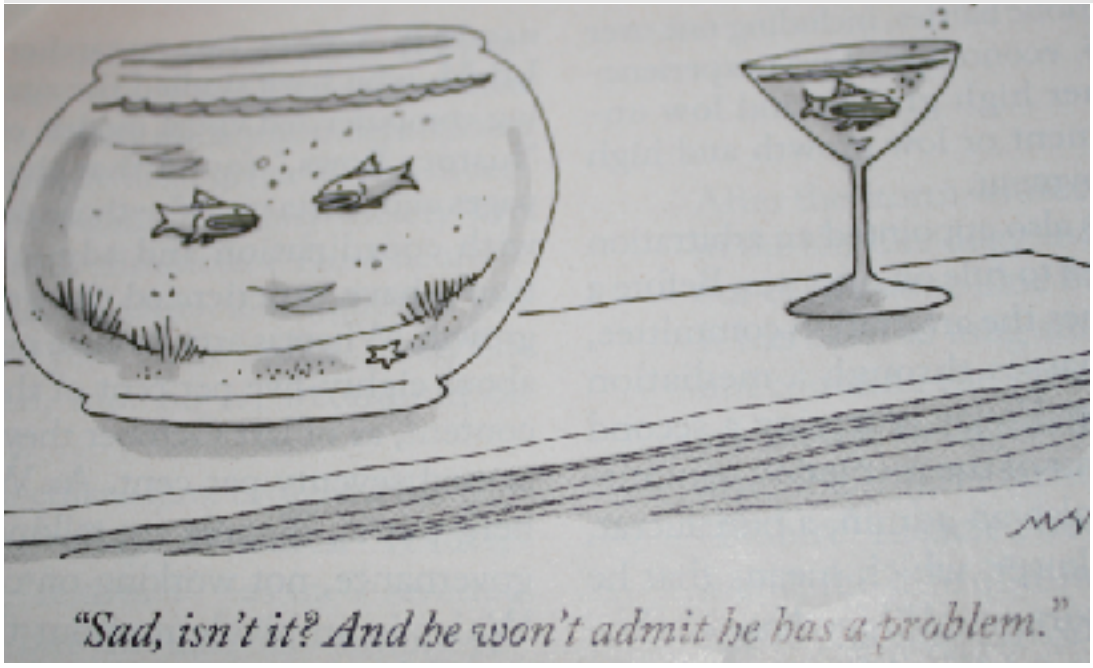
A 85yo patient presents for assessment of "gastro"- vomiting , diarrhoea and abdo pain. Hx of IHD on aspirin and metoprolol. O/E Thin elderly man PR 65 BP 140/65 T 37.5C – abdo soft mild diffuse

Editor: Peter Wyllie

tenderness on deep palpation only yet no rebound or guarding – no masses or organomegaly BS + .- WCC 8 – AXR " consistent with faecal loading"

What could be going on? What do we need to consider? Are they just big children?

JOKE / QUOTE OF THE WEEK



Please forward any funny and litigious quotes you may hear on the floor (happy to publish names if you want)

THE WEEK AHEAD

Tuesdays - 14:30 – 15:30 Intern & JMO teaching -Thomas & Rachel Moore
Wednesday- 0800-0900 Critical Care Journal Club. ICU Conf Room / 14:30 – 15:30 Intern & JMO teaching -Thomas & Rachel Moore
Thursday 0730-0800 Trauma Audit. Education Centre / 0800-0830 MET Review Education centre / 1300-1400 Medical Grand Rounds. Auditorium.

Editor: Peter Wyllie