Anaesthetic Challenges in Elderly Polytrauma Patients

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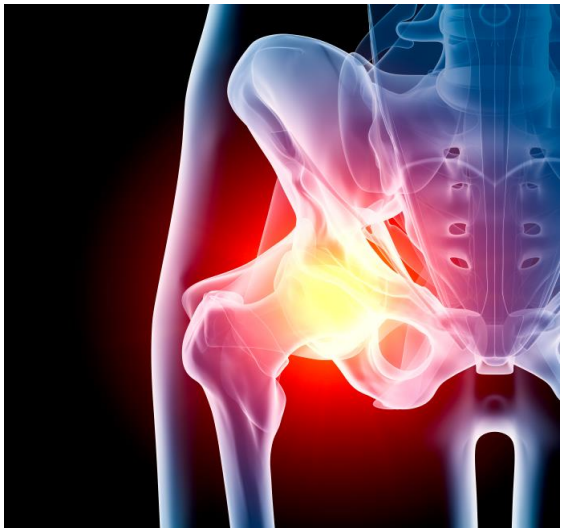

How to ensure elderly trauma patients get to theatre

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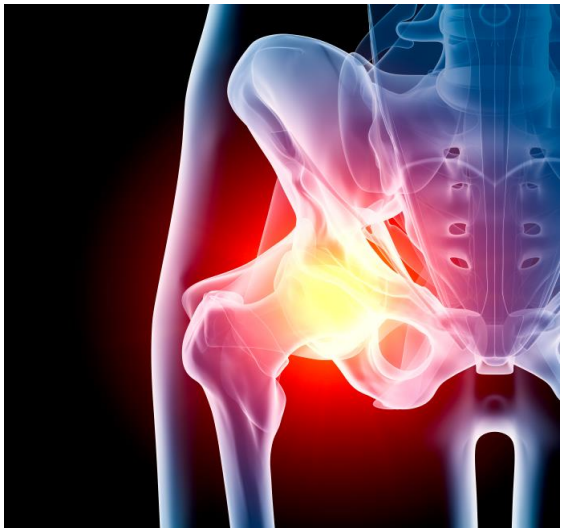


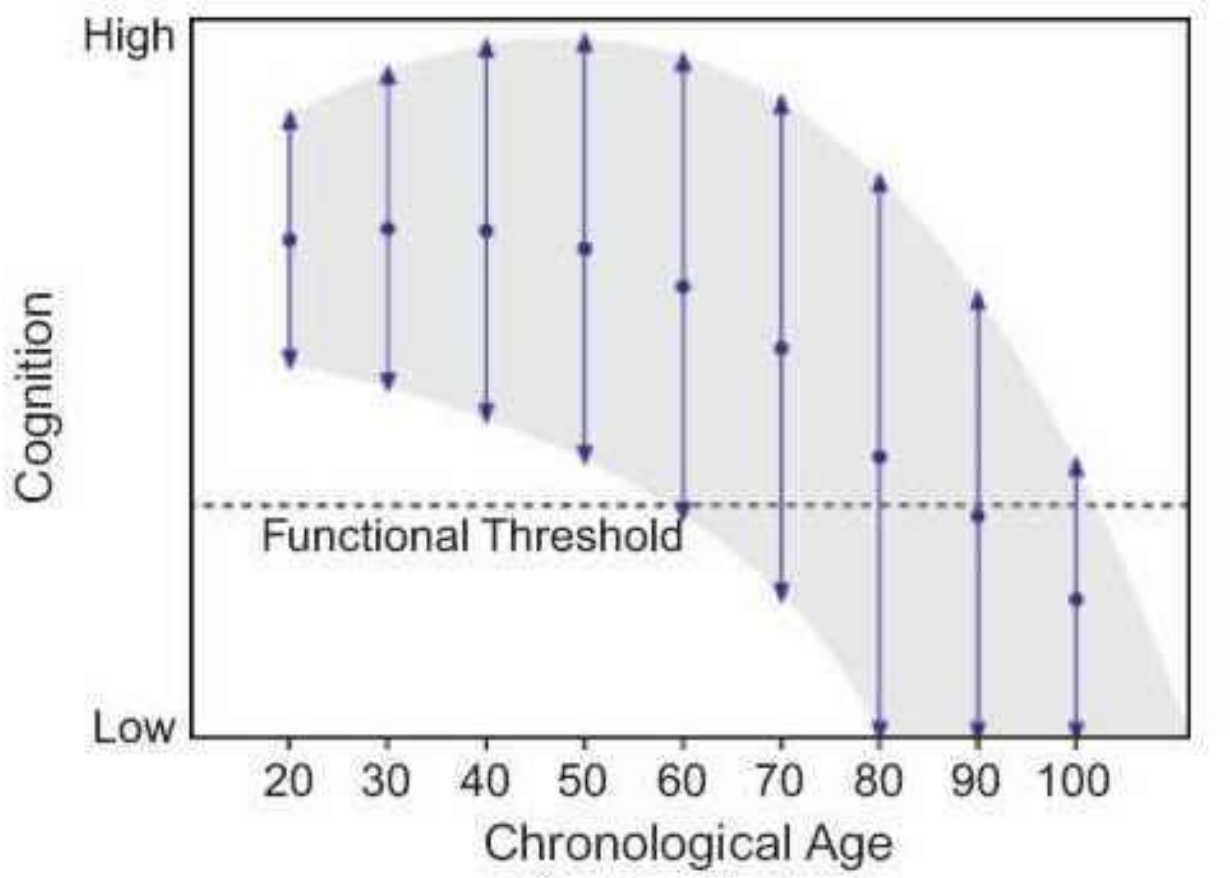
Overview

- Ageing & Elderly Physiology
- Injury Patterns
- Pre-operative work-up
- A-Z

Ageing

- Inevitable decline
- Decreased physiological reserve:
  - Cardiac
  - Kidneys
  - Lungs
  - Osteoporosis
  - Immune Response
  - Brain

Brain - Delirium



Elderly Physiology

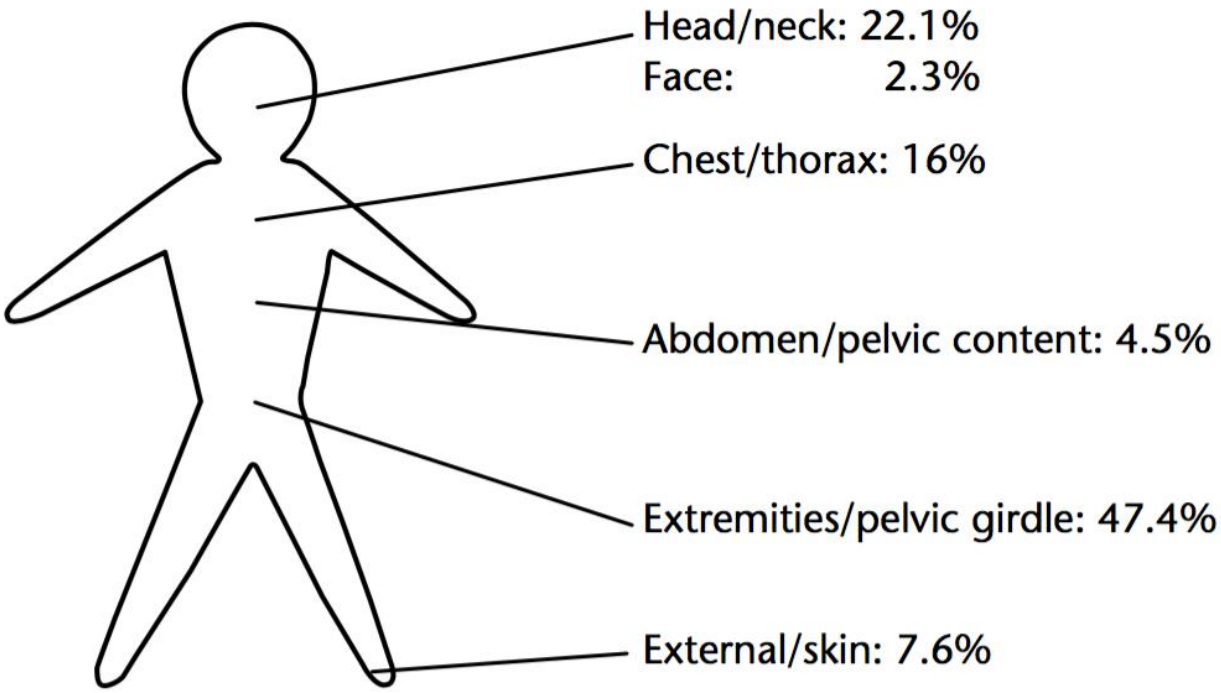
- Chronic multiple organ failure
- Polypharmacy
- Frailty
- Malnutrition
- Comorbidity
- Culminate in Fractures

- Tolerate changes poorly

Mechanisms of Injury

- Fall
  - Over 60%
- Motor Vehicle Accident
  - Over 20%
- Pedestrian
  - ~5%
- Low-energy trauma
  - 50% of traumatic deaths in over 65s
- High-energy trauma
  - MVAs
- Abuse / Assault
  - Inconsistent injuries

Injury Patterns



- Dimitriou et al Eur J Trauma Emerg Surg 2011
- Abdelfattah et al Geriatric Orthopaedic Surgery & Rehab 2014
- Braun et al EFORT Open Rev 2016

Initial Management

- Severity of injuries often underestimated
- Vital signs within “normal” range are not always reassuring:
  - β-blockade
  - Renin/Angiotensin system
- Limit organ hypoperfusion:
  - Base deficit & lactate

Anaesthetic “Challenges”

- Our challenges are your challenges too
- How do we:
  - Manage co-morbidities?
  - Maintain homeostasis?
  - Promote re-enablement?
  - Modify frailty?
- A-Z

Anaemia

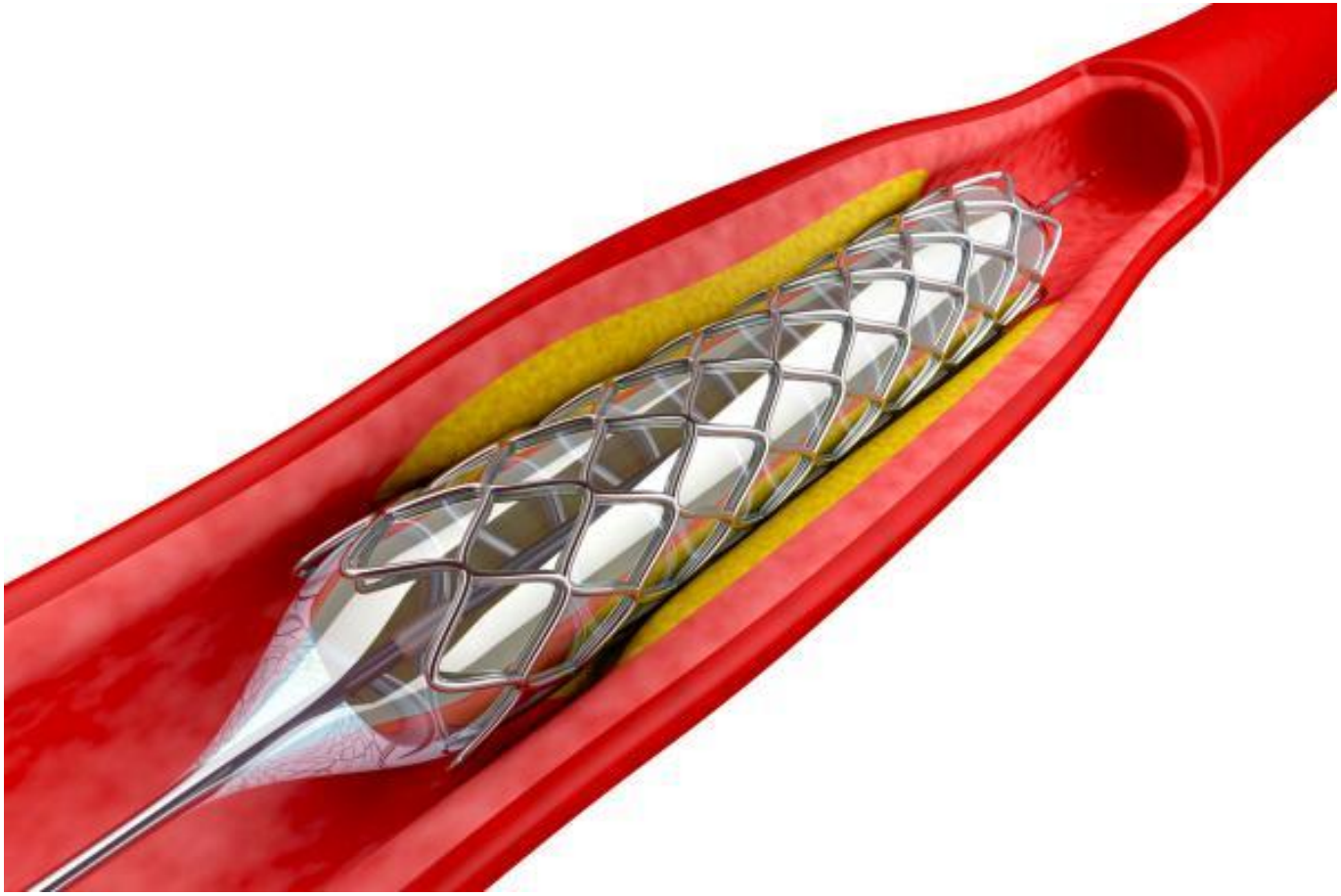
- Transfuse to aim for Hb 100 g/L
  - Contrary to guidance, but probably better
  - Frail patients tend to need a higher Hb to mobilise
  - Restrictive studies show increased mortality at 30 days

- FOCUS trial not applicable
- Recent systematic review & meta-analysis
  - Docherty et al, BMJ 2016

Antiplatelets & Anticoagulants

- Surgeons:
  - Stop all antiplatelets and anticoagulants
- Anaesthetists:
  - Caution, may do more harm
- Medics:
  - Don’t stop!

Antiplatelets (Dual)



Stents

Bare Metal

- Lower
- Lifelong Aspirin
- DAPT
  - 4/52 minimum

Drug Eluting

- High
  - Especially first 6 weeks
- Lifelong Aspirin
- DAPT
  - 6-12 months

Antihypetensives & Cardiac Meds

- Beta-blockers
  - DON'T STOP!
- ACEi
  - STOP
- ARBs
  - STOP
- Statins
  - DON'T STOP

- ***Consider History***

Atrial Fibrillation

- New or old?
- Electrolytes
  - K ~5
  - Mg ~1
- Fluid status?
- Hb?
- Pain?
- Is tachycardia reasonable, i.e. a response, not simply “fast AF”?

Delirium – Does it matter?

- Medical Emergency
  - 30-day mortality of 5%
- Causes of delirium in trauma patients:
  - Pre-fracture illness
  - Fracture
  - Surgery
  - Anaesthetic
  - Infections
    - UTI
    - Pneumonia
  - Hyponatraemia
  - AKI
  - Heart Failure
  - Constipation
  - Urinary Retention
  - Psychological Stress
  - Drugs
    - ?NSAIDs
    - Withdrawal

Reducing Delirium – Optimise the Brain

- Oxygen
- Blood Pressure
- Glucose
- Hydration
- Nutrition
- Metabolic Factors
  - Sodium
  - Acidosis
- Minimise urinary catheterisation
- Constipation
- Minimise deleriogenic drugs
  - E.g. antimuscarinics, ketamine, cyclizine
- Minimise psychological stress
- Pain control
- Address visual & hearing impairments
- Mobilise

Analgesia

- Consider pharmacokinetics & pharmacodynamics
- Weight of patient
- Paracetamol (IV)
- Oxycodone Good
- Morphine Bad

- Prescribe regular laxatives

- Regional Blocks
- Epidurals
- Pneumonia

- Tramadol

Drugs

- Don’t stop unless caused the fall, or other indication to stop
- NBM – tablets can be taken with a small amount of water
  - Great harm can come from stopping medications such as PPIs and beta-blockers (unless caused the fall / heart block)
- Parkinson’s

Echocardiography in ELECTIVE

- Echo NOT needed if murmur, but:
  - Asymptomatic with ADLs, >4 METS, SR, no LVH
  - Prior satisfactory echo within one year, and no new symptoms

- Echo needed if murmur and:
  - Symptoms – angina, dyspnoea, pre-syncope
  - Signs – heart failure
  - AF or LVH
  - Prior echo showing moderate or severe disease

Echocardiography in EMERGENCYS

- Are they going to have a valvular intervention beforehand?
  - NO!
- Echo NOT needed if murmur, but:
  - Asymptomatic
  - No significant blunt chest trauma
- Echo MAY be needed if murmur and:
  - Symptomatic
- Significant chest trauma plus other features

DO NOT DELAY AWAITING ECHOCARDIOGRAPHY

Fluid Management

- Most patients are…

Fluid Management

- Most patients are…

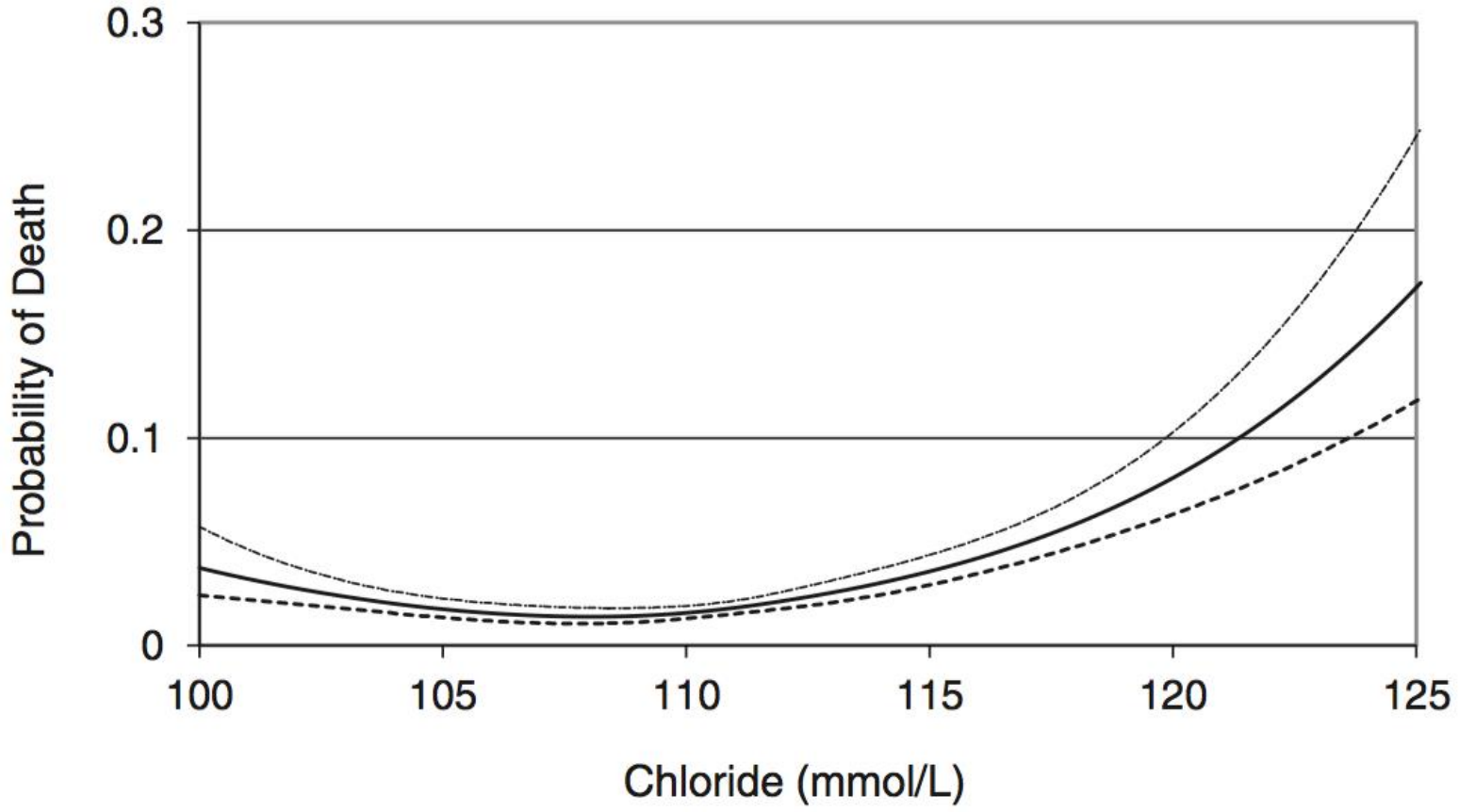
Fluid Management

- Most patients are…

CRISPY DRY!

- Give balanced solution, e.g. HARTMANNS, not saline
- Unless…
  - Actively & carefully replacing Na+, K+, Glucose
- 80-100ml/hr in; 0.5-1ml/kg/hr out

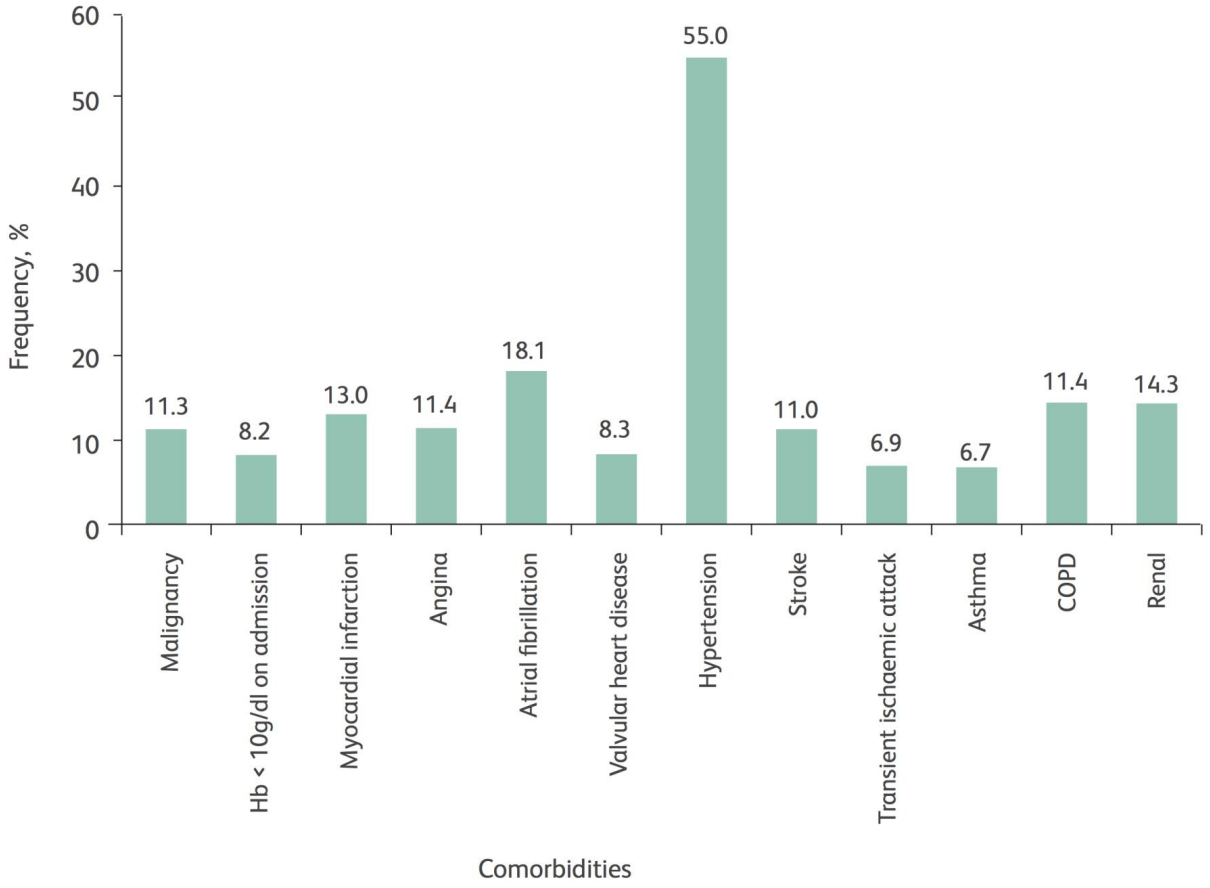
Hyperchloraemia McCluskey et al Anaesth Analg 2013



Daily Requirements

Component	Amount
• Water	• 25-35 ml/kg
• Sodium	• 1 mmol/kg
• Potassium	• 1 mmol/kg
• Calories	• Minimum 400 calories ▫ 100g dextrose

Hypotension




Frequency, %
60
50
40
30
20
10
0
11.3
8.2
13.0
11.4
18.1
55.0
6.9
6.7
11.4
14.3
Malignancy
Hb < 10g/dl on admission
Myocardial infarction
Angina
Atrial fibrillation
Hypertension
Transient ischaemic attack
Asthma
COPD
Renal
Comorbidities

Hypotension - Evidence

- MAP <55mmHg associated with:
  - AKI
  - Myocardial Injury
  - Cardiac Complications

Relationship between Intraoperative Mean Arterial Pressure and Clinical Outcomes after Noncardiac Surgery

Toward an Empirical Definition of Hypotension

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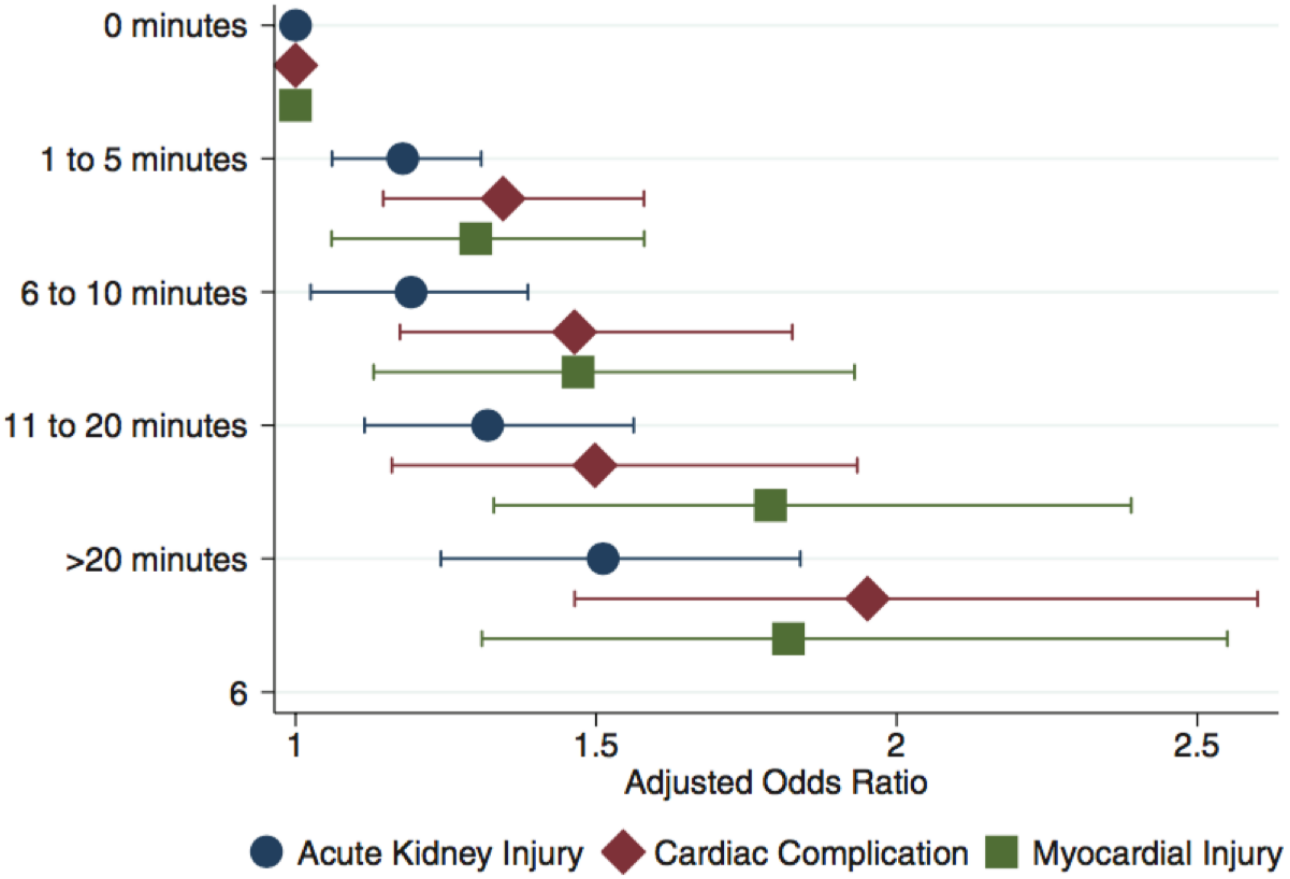

Fig. 4. Adjusted odds ratios for acute kidney injury, cardiac complications, and myocardial injury by time spent with a mean arterial pressure <55 mmHg.

Infrastructure…


CRITICAL CARE BED 12
Enterprise 9000

Oxygen & Respiratory Care

- COPD
  - Aim SpO2 88-92%
  - Nebulisers until mobile
- Chest Physio
- Chest infection
  - Treat promptly
  - If on more than nasal specs (4L), inform anaesthetist

Pacemakers

- Unless cause of collapse, do not delay surgery
- However:
  - Will need to be in a mode suitable for theatre, so the pacemaker service will need contacting.
  - 24 hour service, call them in plenty of time.

Pre-op Investigations

- FBC, U&E, Clotting, G&S
- CMP
- ECG – MANDATORY
- Relevant X-rays
- Troponin ONLY if clearly indicated

VTE Prophylaxis

- Risk assess all patients
  - Mechanical
    - Stockings
    - Intermittent compression
- LMWH once daily
  - Tinzaparin 4500 units SC
  - Enoxaparin 20mg SC if CrCl <30
  - Give between 18:00 and 20:00

Post-op Critical Care?

- Assessed on individual basis
- Will most likely need critical care
- Depending on ISS, may already be there

Any questions?