Challenges in perioperative care of the elderly patient

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Agenda

Frailty & Cognitive assessments in pre-op clinic

Suitability for surgery

Delirium - where does the Anaesthetist contribute?

Practical considerations including service development

Where to from here?
Summary

❖ Multidisciplinary teams might be useful in pre-op clinics to determine suitability for surgery

❖ Poor cognition and frailty are major risk factors for poor outcomes including nursing home placement. There are some simple ways to screen for both.

❖ Anaesthetists can contribute to delirium management

❖ limit fasting period, recovery orientation, opioid sparing, fluids
Pre-operative assessments and Frailty
Pre-operative Frailty Assessment

❖ Frailty has been validated for mortality, LOS and NHP  
  Partridge et al Age & Ageing 2012
❖ Many different tools - InterRAI, CHS, Rockwood Frailty index, SHARE-FI, IANA FRAIL.
  ❖ Physical frailty - walking speed / METs
  ❖ Cognitive frailty
  ❖ Comorbidities / accumulated deficits
❖ Grip strength as a single tool - elective setting
❖ “Look for what system is going to fail”
❖ Is less - more?
Recurrent falls are a hallmark of frailty

Cognitive frailty trumps physical frailty
Fried’s Definition of Frailty / CHS

- **Weight loss** 10 lbs (4.5kg) over 1 year or >5%
- **Exhaustion** self-reported
- **Gait speed**
  - *best predictor of institutionalisation* (Rothman JAGs 2008)
  - 10 seconds to do 10 feet / >7 seconds to do 15 feet
- **Grip strength** bottom 20%
- **Physical activity** <383 Kcal for men and <270 Kcal for women

(TGUAG >12 seconds might be useful in a clinic as well but is not part of the CHS)
Clinical Frailty Scale*

1. **Very Fit** — People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2. **Well** — People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g. seasonally.

3. **Managing Well** — People whose medical problems are well controlled, but are not regularly active beyond routine walking.

4. **Vulnerable** — While not dependent on others for daily help, often symptoms limit activities. A common complaint is being “slowed up”, and/or being tired during the day.

5. **Mildly Frail** — These people often have more evident slowing, and need help in high order IADLs (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6. **Moderately Frail** — People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.

7. **Severely Frail** — Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8. **Very Severely Frail** — Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9. **Terminal Ill** - Approaching the end of life. This category applies to people with a life expectancy <6 months, who are not otherwise evidently frail.

**Scoring frailty in people with dementia**

The degree of frailty corresponds to the degree of dementia. Common symptoms in mild dementia include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In moderate dementia, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In severe dementia, they cannot do personal care without help.

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Frailty as a Predictor of Surgical Outcomes in Older Patients

Martin A Makary, MD, MPH, FACS, Dorry L Segev, MD, PhD, FACS, Peter J Pronovost, MD, PhD, Dora Syin, MD, Karen Bandeen-Roche, PhD, Purvi Patel, MD, MPH, Ryan Takenaga, MD, Lara Devgan, MD, MPH, Christine G Holzmueller, BLA, Jing Tian, MS, Linda P Fried, MD, MPH

J Am Coll Surg 2010;210:901–908
Pre-operative cognitive assessment

❖ No role for screening CT
  ❖ Volumetric studies not widely used (Chris Rowe AIBL)
  ❖ MRI for white matter disease / lacunes

❖ Did they have delirium after the last GA?

❖ How long were they in hospital afterwards?

❖ Preclinical dementia & mixed dementia

❖ If they’re on a cholinesterase inhibitor find out for how long
Pre-operative Cognitive Assessment

- MMSE not great test of executive function
- (Addenbrooke’s cognitive assessment)
- Mini-COG (3 point recall and clock drawing test)
- Trails B

- Questionnaire’s for family
  - IQCODE
- Check in with service provider
Compared with 10 years ago how is this person at:

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<td>A bit</td>
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<td>change</td>
<td>worse</td>
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<td>A bit</td>
<td>Not much</td>
<td>A bit</td>
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<td>improved</td>
<td>change</td>
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<td>Much</td>
<td>A bit</td>
<td>Not much</td>
<td>A bit</td>
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<td>A bit</td>
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Futile Surgery and Suitability for Surgery
Suitability for Surgery

❖ Challenges in assessment:
  ❖ potential benefits for patient vs complications vs goal of care for patient
  ❖ Death vs disability
    ❖ applicability of establishing studies - how frail were those patients (TAVR)
    ❖ disability after operations very little data beyond hip fracture surgery
  ❖ How good is the peri-operative care provision? How good are the rehabilitation resources?
  ❖ Laparoscopic surgery and rarer surgeries
    ❖ Old people are unpredictable - Harwood et al and second cataract surgery
  ❖ What’s the threshold for declining surgery - 5% mortality? 10%? 20%?
  ❖ The average lifespan after diagnosis of dementia is 6.7 years
  ❖ Lymphoma, prostate cancer - what’s the prognosis these days?

❖ This is where the Multidisciplinary Team model could work
Futile surgery - how do you engage both patient and surgeon?

Is the geriatrician helpful for you here?
What are we getting wrong?

When should we be talking about this to the patient? Pre-admission clinic?
Is that a good place to about this?

Are Doctors good arbiters of what is QOL?
Are most doctors – even consultants – sufficiently skilled and handling this discussion?
Is this currently part of surgical / medical training?
How do we teach this to our registrars?

Are we communicating well amongst ourselves as clinicians?
Do we know how to work as a team?
Do we teach teamwork well or at all?

Are we providing enough time and contact for families and patients to make the right decision?
What are the influences on surgeon decision making?

Surgeon education and imprinting from mentors

Is futility discussed well in surgical circles?

Prior “catastrophes”

Long-term relationship with patient- not abandoning the patient

Is dying while trying more heroic?

Does one procedure tend to lead to the next?

Doctor shopping “If they don’t have it resected here they’ll have it resected elsewhere anyway”

Do MDT meetings add or reduce pressure to perform surgery?

OVERSERVICING in the private sector?
A 90-year-old Japanese man has been recognized as the world's oldest practicing rugby player.

What do we do with the elites?
Assessing Risk of Disability
How likely will they be at home

- 1 transfer
- Continent of faeces
- Prompting and hazard awareness (executive function)

- **pre-operative function and cognition**
- Day 1 mobilisation
- >80 yo
- (anemia) - FOCUS?
- **DELIRIUM IS A DRIVER OF PROGRESSION TO DEMENTIA**
Surgical Risk Calculator

Procedure
27130 - Arthroplasty, acetabular and proximal femoral prosthetic replacement (total hip arthroplasty), with or without autograft or allograft

Risk Factors
Age: 65-74, Female, Partially dependent functional status, Clean/Contaminated wound, Previous cardiac, Dyspnea with exertion, COPD

Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Estimated Risk</th>
<th>Chance of Outcome</th>
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<tbody>
<tr>
<td>Serious Complication</td>
<td>7%</td>
<td>Above Average</td>
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<tr>
<td>Any Complication</td>
<td>9%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>1%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Cardiac Complication</td>
<td>&lt;1%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Surgical Site Infection</td>
<td>1%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>2%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Venous Thromboembolism</td>
<td>1%</td>
<td>Average</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>&lt;1%</td>
<td>Average</td>
</tr>
<tr>
<td>Return to OR</td>
<td>2%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Death</td>
<td>&lt;1%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Discharge to Nursing or Rehab Facility</td>
<td>46%</td>
<td>Above Average</td>
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</table>

Predicted Length of Hospital Stay: 3.0 days

How to interpret the Graph Above:

Your Risk

Average Patient Risk

Your % Risk

Surgeon Adjustment of Risks
This will need to be used infrequently, but surgeons may adjust the estimated risks if they feel the calculated risks are underestimated. This should only be done if the reason for the increased risks was NOT already entered into the risk calculator.
What percentage of older patients have diastolic heart failure?
PBLD 6A Poll
What proportion of elderly patients have diastolic heart failure?

Results
PBLD 6B Poll
What proportion of elderly patients have diastolic heart failure?

Results
Kane et al Olmsted County

1400 participants BMI 28 BP 130/70

4 year follow-up mean age 61 (34%>65)

E/A ratio <0.75

40% had diastolic dysfunction

>65 OR diastolic HF 2.85

Older patients less ACE use and less well managed HT
Implications of diastolic HF

- Not proven but this is what we’re talking about:
  - “Oxygenation and perfusion”
  - Volume management becomes more important
  - Likelihood of perioperative AMI
  - Is cerebral perfusion affected?
  - Poorer tolerance of post-op AF
    - Amiodarone drops BP
    - Digoxin a problem if renal failure and may not be as responsive
    - Sotalol and prolonged QTc
Mortality post-op

- Hip fractures - where is the excess mortality?
- Vascular / inflammatory / functional paradigm and immobility / cellular?
- Post-op AMI
  - 22-59% troponins raised (how do you interpret this)
  - Post-op troponin on the back of POISE silent infarct data - might be useful to target patients for more attention post-op (VISION)
- Hypoactive delirium is far more dangerous
- Hyperactive delirium = impulsive = falls
Delirium is the endgame

**Delirium: An Independent Predictor of Functional Decline After Cardiac Surgery**

James L. Rudolph, MD, SM, *†‡ Sharon K. Inouye, MD, MPH, ‡§||# Richard N. Jones, ScD, ‡|| Frances M. Yang, PhD, ‡§||** Tamara G. Fong, MD, PhD, ‡‡† Sue E. Levkoff, ScD, SM, MSW, ‡** and Edward R. Marcantonio, MD, SM ‡§||‡‡‡§

Apostrophe 2010—VOL. 58, NO. 4 JAGS


**Persistent Delirium Predicts Greater Mortality**

Dan K. Kiely, MPH, MA, *Edward R. Marcantonio, MD, SM, ‡‡ Sharon K. Inouye, MD, MPH, *† Michele L. Shaffer, PhD, § Margaret A. Bergmann, MS, GNP, ‡ Frances M. Yang, PhD, ‡ Michael A. Fearing, PhD, * and Richard N. Jones, ScD‡‡

JAGS 57:55–61, 2009
Delirium begets dementia
Dementia drives all cause outcomes including death

If they’ve been delirious after surgery consider referral to a cognition clinic
What proportion of patients will be delirious after hip fracture surgery?
PBLD 6A Poll
What proportion of elderly patients will be delirious post-op?

Results
PBLD 6B Poll
What proportion of elderly patients will be delirious post-op?

Results
So that’s 1 in 8 of your patients during the pain round

Kalisvaart JAGs 2006

12.3%
What do Geriatrician’s do with Delirium?

- Multicomponent interventions
- Cessation of psychoactive medications eg benzodiazepines and TCA
- Sepsis management
- Aperients for constipation
- Behavioural interventions - verbal reorientation
- Removal of restraints / IDCs
- Feeding support, Fluid management
- Analgesia
Anaesthetists and delirium

- Pre-operative fasting (fluids) time
- Choice of Anaesthetic? Regional vs GA
  - sedation in regional anyway / BP management important in vascular dementia
- Don’t delay or cancel surgery
- Morning list - team review in afternoon / shorter fasting times
- Depth of anaesthetic?
- Pre-op hydration / volume loading (Initial drop in theater? avoidable)
- Post-op fluid management - keep Systolic BP >90mmHg
- Recovery environment and orientation
- Minimising opioids - aperients for constipation
- “Lines out - family in”
  - Possible agents: Antipsychotics / melatonin
  - Not useful: cholinesterase inhibitors (van Ejik Lancet 2010, Marcantonio JAGs 2011)
Berlin study - 900 patients ~51yo
2/3rds ASA 1&2
11% delirium (Nu-DESC)
>6 hours fluid fasting (OR 2.69)
Solids not significant
**Fasting Clock**

**AM THEATRE TIME**

**RULES**

2am to 6am
May drink a Clear Fluid Drink 50mls/hr

6am to 8am
RN to check on Surginet to track theatre time
May continue Clear Fluid Drink 50 mls/hr

No food after 2am
No fluids after 6am

From 11am
Decision time continue to fast or feed patient. Contact theatre to confirm theatre time, re-commence feeding if theatre is not approaching.

**NOTE:** Clear fluids include: water, uncarbonated iso-osmolar carbohydrate drinks (Resource, Gatorade) and cordials.
Anaesthetists role in delirium minimisation

❖ Opioid sparing
❖ Geriatricians: “Don’t use Opioids but don’t let them be in pain”
❖ Post-op fluid management - beyond recovery
  ❖ If you’ve given multiple doses of aramine think about handing over to someone on the ward
  ❖ RMOs tend to underfill - who runs the patient after they leave you?
❖ HDUs vs targeting patients on the wards
❖ Acidosis analysis and discussion
Why is everyone wearing pyjamas?
How the heck did I end up in China!
With regard to the person you care for:

1. Are there things you know of, that may cause distress to ____________ (e.g. Female/male staff, noise, colours, words, clothing, visitors)

2. When ____________ is unsettled, are there things /tasks /tasks that you do that help settle him/her? (e.g. Photos, trinket box, cup of tea, turn light off, sit in chair, read paper)

3. Are there set routines you have developed that help keep ____________ reassured? (e.g. At bedtime, meals, with personal care, taking medication)

4. Are there any repetitive questions or re-occurring issues that may need specific answers? (e.g. “Where is George?”) Who is ____________ likely to call out for? What is the preferred answer?

5. Are you aware of any signs or triggers, that indicate that ____________ may have a need or want something? (e.g. fidgeting = time for a walk; pointing = need to toilet; singing = turn on/off the radio/TV)

The staff member negotiates with the carer the TOP 5 strategies which could be the most effective on the ward.
430 hip fracture patients >70

CAM

1.5mg haloperidol per day

continued 3 days post

15.8% delirium

incidence of delirium the same

duration of delirium and LOS less

12 days -> 5 days

23 days - > 17 days
Post-op delirium

- Melatonin - mainly small ICU studies
  - McCleery et al Cochrane 2014 AD sleep - 3 studies no significant side effects
  - Sundowning de Jonghe et al 2010
  - What dose? How long?
  - Probably other areas to work on before melatonin (Pain)

- HILO bed - falls prevention
- Restraints - using a restraint to protect a central line might be counter-productive
What’s the rush?

❖ Preop TTEs:
  ❖ What changes in management come from the TTE
    ❖ ?fluid management / volume
    ❖ risk prediction
  ❖ Easier for a geriatrician to say this - I’m not the one in theatre giving the anaesthetic!
  ❖ And I’m interested in diastolic HF but often it’s not even measured
  ❖ Is this a case of patient selection? Which ones?

❖ Hip surgery what’s the rush?
  ❖ Survival in some studies (inconsistent)
  ❖ Less pain and decreased LOS
  ❖ Delirium & Rehab potential is the geriatrician’s main gambit

❖ Which ones should we delay?
  ❖ Renal failure and LRTI
  ❖ not much research here including in hip surgery
Some areas of debate - Pain Management

- Tramadol - constipation and delirium
- NSAIDs and renal failure / triple whammy
- Multimodal pain management vs polypharmacy
- What do you do in patients with renal failure?
- Norspan patches and PRN
- Gabapentin and drowsiness
Service structure
Service development

- Lots of anaesthetists - How does a geriatrician or other physician engage with you?
- Where does the M&M reside for a hip fracture?
- Consultant to Consultant
- Surgeon / anaesthetist / geriatrician / family - need a huddle!
- Anaesthetist often not in same clinical stream/cluster as physicians - hospital service structure
- Singapore clinician clusters
Structure of service - thoughts

- Care pathways
  - Too onerous? Not user friendly (Ipads?)
  - Does it actually impact mortality? Do we know why there’s elevated mortality?
  - Might be good for simpler complications e.g. IDC related UTIs or pressure sores
  - Surgical registrars rotate - I’d focus on CNCs or NUMs

- “Can’t get consults” delays to assessment (Cardiac registrar “get a TTE”) - This is where Geriatrician services are useful

- Data - local issues operator / unit and local habits
  - How do you review the data? in what meeting?

- Redflagging vs HDUs - Targeted support especially if resources limited

- Conjoint rounds - often difficult  ?overlapping round times?

- Other services - Haematologists and anticoagulation, Endocrinologists and glycemic control, Cardiology and Respiratory failure/ICU for NIV - Maybe this is where the geriatricians can talk “physician” and summarise for you
Overseas innovators

- **Proactive Care of Older People undergoing Surgery (POPs) 2003**
  St Thomas’s and Guys London (Dhesi / Harari)
- Pre-op Comprehensive Geriatric Assessment (Nurse 30 mins / Geriatrician 30 mins)
- Joint admission/rounding model - Surgeon / Anaesthetist / Geriatrician / CNC
- Consultant / CNC based (retained corporate knowledge)
- Strong use of care pathways/protocols (speed)
- **Not clear where is the bang for the buck in a CGA**
  - LOS 15 -> 11 days hip fracture (Harari et al)
  - complications: pneumonia, pressure sores, delirium
- Heterogeneity in how a CGA is performed and what interventions follow
Future directions

❖ Pre-rehab - fast track surgery
  ❖ How much physio and how?
  ❖ What run-in time?
  ❖ poor uptake of exercise (Falls Clinics research)
  ❖ injuries and drop-out rates
  ❖ often the fit will take it up - not the ones who need it
  ❖ funding? Chronic disease management plan - Needs GP referral & only 5 visits

❖ Baby boomers
  ❖ extension of morbidity rather than compression?
  ❖ OA, obesity
  ❖ OSA

❖ Delirium research - the new holy grail
Multidisciplinary teams might be useful in pre-op clinics to determine suitability for surgery

Poor pre-operative cognition and frailty are major risk factors for poor outcomes including poor functional recovery. There are some simple ways to screen for both.

Anaesthetists can contribute to delirium management

- limit fasting period, recovery orientation, opioid sparing, fluids

Fluid resuscitation post-op is vital for the elderly patient because of the prevalence of diastolic HF
What’s afoot

- Geriatric AT numbers swelling - more will be going into periop care
- Emerging area in geriatrics - need a forum for discussion amongst clinicians (not a lot of studies)
- ANZHFR
  - based on NHFD
  - Time to surgery
- Guidelines on hip fracture surgery:
  - ANZHFR, ACI, CEC
  - Blue Book, AAGBI
Future collaboration?

- POCD vs delirium and transplanting research
- Anaesthetic and delirium / dementia
- Service structures - how would an MDT work and who does what?
- Data collection / research - ANZHFR
  - Pain management - not enough data in the elderly
  - Exploring complications for other surgery
- Developing the art of AMPs and the conversation
- Structure of decision making for futile surgery
- Controversial areas could be explored (NSAIDS in elderly / regional / TTEs pre-op? & pre-op cardiac assessments etc.)

- Cross-training - ICU & ED trainees in Westmead
- Interpreting the guidelines (AAGBI - consensus document “we don’t know”)