W23: Optimising outcomes from surgical treatment of the frail and multimorbid older person

Workshop Chair: Adrian Wagg, Canada
13 September 2017 09:00 - 10:30

Start	End	Topic	Speakers
09:00	09:10	Opening words	Adrian Wagg
09:10	09:30	What is frailty and who has it? How do I measure it?	Tomas Griebling
09:30	09:50	Does frailty and multimorbidity matter and can I improve things when I plan surgical treatment for my older patients?	Kathleen Hunter
09:50	10:10	How can I prevent, detect and best treat delirium in my frail older patients?	William Gibson
10:10	10:30	How can I make things the best after surgery in frail and multimorbid older women?	Adrian Wagg

Speaker Powerpoint Slides

Please note that where authorised by the speaker all PowerPoint slides presented at the workshop will be made available after the meeting via the ICS website www.ics.org/2017/programme Please do not film or photograph the slides during the workshop as this is distracting for the speakers.

Aims of Workshop

After this workshop, participants will be able to:
1. Identify, measure and screen for physical and cognitive frailty in older persons
2. Identify co-existing conditions which might be amenable to pre-operative intervention to achieve best outcomes following surgical treatments for lower urinary tract and pelvic floor dysfunction in frail older women.
3. Identify and implement post-operative interventions designed to improve outcomes from surgical intervention for lower urinary tract and pelvic floor dysfunction in women

Learning Objectives

1. Identify, measure and screen for physical and cognitive frailty in older persons
2. Identify co-existing conditions which might be amenable to pre-operative intervention to achieve best outcomes following surgical treatments for lower urinary tract and pelvic floor dysfunction in frail older women.
3. Identify and implement post-operative interventions designed to improve outcomes from surgical intervention for lower urinary tract and pelvic floor dysfunction in women

Learning Outcomes

Identify and use appropriate tools to identify cognitive and physical frailty in their patients.
Identify common comorbid conditions in older people which may be amenable to pre-operative intervention in order to prevent post operative poor outcomes
Put in place delirium prevention protocols, screen for and identify delirium in the post operative period and utilise appropriate order sets to initialise evidence informed treatment
Put in place protocols and guidelines for “elderly friendly” post operative care in order to minimise postoperative complications and ensure efficient delivery of post operative rehabilitation.

Target Audience

Physicians and surgeons

Advanced/Basic

Advanced

Suggested Reading

https://www.youtube.com/watch?v=hwz9M2jZi_o – delirium recognition
https://www.youtube.com/watch?v=hwz9M2jZi_o – delirium assessment
https://www.youtube.com/watch?v=TKp3w9E4Fyc – modifiable factors in frailty

Other Supporting Documents, Teaching Tools, Patient Education etc

www.garn-network.org/documents/WHITEBOOKONFRAILTY-USVERSION.pdf - the white book on frailty

Tomas L. Griebling, MD, MPH
What is Frailty and Who Has It? How Do I Measure It?

Frailty is a complex geriatric syndrome that can influence multiple aspects of older adult life as well as clinical care decisions. It is characterized by a deterioration of functional status if a variety of domains. Numerous associated and causative factors have been hypothesized which may predispose to development of frailty. These include increased inflammatory conditions that lead to underlying dysfunction or deterioration of organ-systems, and impaired cellular and tissue function leading to organ-system decline.

Multiple different systems have been developed to measure and assess frailty. One way to conceptualize development of frailty is through an 'accumulated deficit model'. Each additional loss of functional status or ability leads to greater summative levels of frailty. While this is a helpful way to think about how frailty can develop and progress, it can be difficult to accurately measure levels of frailty in this model. However, one of the more widely used and clinically validated systems is what has been termed the 'frailty phenotype' as outlined by Fried and colleagues. This conceptual model includes measureable changes in five functional domains that are associated with the development of the frailty syndrome including: 1) diminished walking time / gait speed; 2) decreased hand grip strength; 3) decreased levels of physical activity; 4) a sense of easy exhaustion with activity; and 5) unintended weight loss (> 10 pounds / > 4.55 kilos / > 5% total body weight) in the past year. Individuals who display three or more of these criteria are considered to be 'frail', those who demonstrate one or two are considered 'pre-frail' or at increased risk, and those with none of the criteria are considered 'non-frail'.

Consideration of the level of frailty is important clinically because worse frailty has been linked to poorer outcomes from surgery and some other types of clinical care. Clinicians can easily measure a number of key frailty components as part of a routine assessment of geriatric patients. These including measures of functional abilities, gait speed, grip and weight. There has been an increasing interest in the relationship between changes in cognition and the development of frailty. Cognitive status is another parameter that can be readily measured as part of a routine clinical evaluation.

This presentation will highlight conceptual models and operational definitions of frailty, and will review validated measurement tools that can be incorporated as part of the geriatric assessment. The current literature on the utility of frailty measurement and predictive value of various measures will also be discussed.

Suggested Reading:

Fried LP, et al: Frailty in Older Adults: Evidence for a Phenotype. J Gerontol A Biol Sci Med Sci 2001; 56A: M1-M11
Leung SX, et al: Inflammation and Frailty in Older Women. J Am Geriatr Soc 2007; 55: 864-871
Studenski S, et al: Gait Speed and Survival in Older Adults. JAMA 2011; 305: 50-58

Kathleen F. Hunter PhD RN NP GNC(C) NCA
Does frailty and multimorbidity matter and can I improve things when I plan surgical treatment for my older patients?

With world wide population ageing, there is increased demand for urological and urogynecological surgical interventions, even for those patients who are frail or have multiple comorbid conditions. Surgery can be successful in this group from the perspective of patient satisfaction and improved quality of life. In frail older adults, the presence of poor physical function, geriatric syndromes, impaired cognition and poor nutrition can increase risk of poor outcomes even if comorbidity is low. To best use resources, the at risk group of older people who are frail need to be identifiable preoperatively.

Once a potential surgical patient is identified as frail, they should be referred for preoperative Comprehensive Geriatric Assessment (CGA). Team based CGA goes beyond the traditional preoperative assessment of comorbidity and medications, taking in to account medical, functional, psychological and social factors. Some factors, such as sarcopenia, the loss of skeletal muscle mass associated with ageing, are potentially modifiable preoperatively with nutrition and strength/balance interventions. This type of intervention part of "surgical prehabilitation". There is beginning evidence that CGA, along with pre-operative intervention as well as post-operative follow-up can improve outcomes for frail older persons.

Recent research and guidance on preoperative integration of geriatric assessment and services in surgical care, including urological surgery, will be presented.

Suggested Reading:

Braude P et al: Evaluation and establishment of a ward based geriatric liaison service for older urological surgical patient: Proactive care of Older People undergoing Surgery (POPS) Urology. BJU Int 2016; doi.10.1111/bju.13526

Tang VL & Suskind AM: AUA Perioperative Management of the Older Urology Patient. AUA Update Series 2016: Lesson 36, 35.

Welsh TJ et al: Comprehensive geriatric assessment: a guide for the non-specialist. Intl J Clin Prac 2014; 68: 290-293. doi: 10.1111/ijcp.12313

Dr. Bill Gibson MBChB MRCP(UK)
How can I prevent, detect and best treat delirium in my frail older patients?

Delirium is an acute neuropsychiatric disorder, characterised by inattention and global cognitive dysfunction. It classically has an acute onset and fluctuant change in mental status. It is highly prevalent in hospitalised older adults, with up to 90% or older adults treated in ITU having delirium, and up to half of post-operative patients over 65 years old affected. Although the pathophysiology is not well understood, it is likely that a combination of factors associated with the ageing brain, including accumulated ischaemic insults, breakdown of the blood-brain barrier, and changes in neurotransmitter function and availability are involved in the development of delirium. Identified risk factors in the literature include greater age, with those aged over 80 at a five-fold increased risk compared to young adults and pre-existing cognitive impairment. The use of a simple, standardised diagnostic tool, the Confusion Assessment Method (CAM) will be outlined.
Delirium can be subdivided into **hyperactive** delirium, characterised by agitation, shouting, aggression, and upset, or **hypoactive** delirium, typically presenting with a patient who is flat or withdrawn, often described as "resting' or "sleeping" by staff, or "just not right". It is well recognised that hyperactive delirium has a lower mortality, most likely as it is far more easily recognised.
Delirium is associated with negative outcomes for patients, including increased mortality, greater length of stay in hospital, and significant distress for patients and their families, as well as risks to staff and other patients. In addition, the occurrence of delirium is strongly associated with an increased risk of dementia in the future.
During this session the potential causes of a delirium diagnosis will be discussed, as well as the management of delirium. Whole-system approaches to avoiding delirium in surgical patients, including pre-operative screening for cognitive impairment, elder friendly hospitals, avoidance of restraints, minimising inappropriate interventions such as urinary catheters, and observance of a day/night cycle within the hospital setting.

Suggested Reading

NICE (UK) Guidelines https://www.nice.org.uk/guidance/cg103
Fong TG, Tulebaev SR, Inouye SK. Delirium in elderly adults: diagnosis, prevention and treatment
Nat Rev Neurol. 2009 Apr;5(4):210-20. doi: 10.1038/nrneurol.2009.24.

Dr. Adrian Wagg MB FRCP (Lond) FRCP (Edin)
How can I make things the best after surgery in frail and multimorbid older women?
As a higher proportion of people in the population survive into later life, the prevalence of urinary and faecal incontinence and pelvic floor dysfunction will rise. Likewise, the number of older men and women requiring surgery for their condition will also rise. Although the health of the baby boomer generation appears to be better than their forebears, a substantial proportion of older people suffer with either multimorbidity, frailty or both. Surgery for incontinence in older peope from the gynaecological, urological and lower GI perspective lacks data in multimorbid and frail older people. Case series have reported on surgical outcomes in people in their eighth and ninth decade of life but there are few data on post operative functional, cognitive and quality of life outcomes. The morbidity and mortality for older patients undergoing anti-UI procedures appear to be similar to those of other major non-cardiac surgical procedures. Mortality is inconsistently associated with increased age, and most strongly related to cardiac or cancer complications. Many studies do not uniformly control for the impact of comorbidity on mortality. Although some single institution cases series have reported excellent surgical results the findings of these case series should be considered with caution because they tend to describe healthy well-selected patients undergoing procedures at specialised centres. The true risk of surgery in older patient is likely higher than that reported. It si clear that frailty is associated with poorer outcomes from surgery, so proactive identification seems pertinent, to allow for early discharge planning and co-ordination. This can be done with simple screening tools or a frailty index can be derived from administrative data.

In addition to pre - and per-operative management, it is increasingly important to ensure that post operative care and early, proactive rehabilitation to discharge is undertaken. As much as interventions for older people in any environment needs to be multicomponent, a multiprofessional approach to identification and active management of poet operative older people needs to be taken. This includes delirium prevention, detection and management, early mobilization, associated with reduced length of stay a reduction in complication, nutrition and early removal of catheters and lines, in addition to active bowel and bladder management. There is emerging evidence for the benefit of a geriatric liaison service in the identification and management of post operative patients.

Suggested reading:

BJU Int. 2016 May 11. doi: 10.1111/bju.13526
Med J Aust. 2016 Nov 21;205(10):S12-S15.

Frailty in Older Adults

Tomas L. Griebling, MD, MPH

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National Institutes of Health (NIH) – grant recipient
National Institute on Aging (NIA) – grant recipient
Donald W. Reynolds Foundation – grant recipient

† All financial ties (over the last year) that you may have with any business organisation with respect to the subjects mentioned during your presentation

Funding for speaker to attend:

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Educational Objectives

Discuss frailty as one of the major geriatric syndromes

What is it?
- Review conceptual models of frailty
- Compare and contrast these theoretical frameworks

Who has it?
- Examine prevalence data
- Outline risk factors for frailty in older adults

How do I measure it?
- List assessment methods for components of the syndrome
- Describe clinical use of assessment tools

What is Frailty?

What is Frailty?

Frailty is a geriatric syndrome
- Multifactorial condition
- Associated with aging
- Various clinical outcomes and effects

Comorbidity
- Underlying diseases or disorders
- Progression of comorbidities may lead to frailty

Disability
- Need for assistance to perform activities
  - Activities of daily living (ADLs)
  - Instrumental activities of daily living (IADLs)
- May be an outcome of progressive frailty

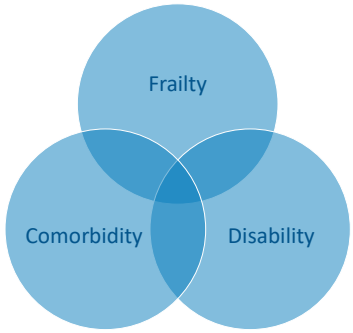
What is Frailty?

More commonly associated with aging
- Frailty can occur at any age
  - Young and middle-aged
  - Linked to comorbidity
    - Neurologic conditions
    - Immunological conditions
    - Rheumatological conditions

Not inevitable

Not considered normal part of aging

What is Frailty?



Functional Assessment

Activities of Daily Living (ADLs)
- Bathing, grooming, eating, dressing, ambulation or other mobility, and toileting

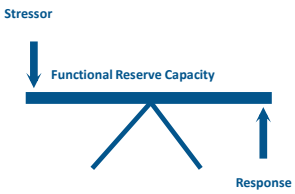
Instrumental Activities of Daily Living (IADLs)
- Shopping, housekeeping, laundry, using telephone, taking transportation, balancing finances, preparing food or medications

Provides insight into level of independence or dependence and may predict some outcomes

Lawton MP & Brody EM: Gerontologist 1969, 9: 179-186

Functional Reserve Capacity

Functional Reserve Capacity



Predictive Value of Function

Functional Status at Age 70	Average Life Expectancy (years)	Annual Health Care Costs ($)
Independent	14.3	$4600
IADL Deficit Only	12.4	$8500
1+ ADL Deficit	11.6	$14,000

Lubitz et al *NEJM* 349:1048-1055, 2003

Frailty Phenotype Model

Five (5) hallmark features of frailty
- Unintended weight loss (≥ 10 pounds / year)
- Low levels of physical activity
- Easy exhaustion
- Diminished handgrip strength
- Reduced walking speed

≥ 3 characteristics = Frail

1-2 characteristics = 'Pre-frail'

0 characteristics = Not frail

Fried LP et al: *J Gerontol A Biol Sci Med Sci* 2001; 56A: M146-M156

Frailty Phenotype Model

Frailty Phenotype model

Validation study

- 5,317 community based older adults
  - > 65 years
  - Men and women

- Overall prevalence 6.9%
- Subjects followed longitudinally
- Incidence of new onset frailty 7.2% at 4 years

Fried LP et al: *J Gerontol A Biol Sci Med Sci* 2001; 56A: M146-M156

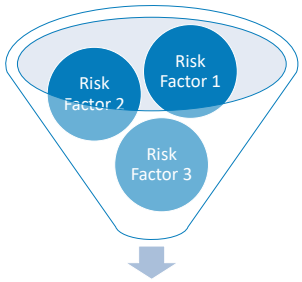
Accumulated Deficits Model

Alternative conceptual model

- Small deficits add up to lead to functional loss
- Multisystem deterioration
- Loss of physiological reserve capacity
- Cycle of continued deterioration
- Manifestations:
  - Decreased physical activity
  - Worsening of comorbid conditions
  - Malnutrition

- 'Domino' effect
- Some treatments could prevent or delay accumulation of deficits / progression

Accumulated Deficits Model



Deficits…..

Accumulated Deficits Model

Deficit Accumulation Index (DAI)

- 39 different variables
- Each assessed in terms of function or status
- Leads to numeric scoring

Utility in clinical practice versus in research settings

Simple numerical summation may not reflect subtle factors associated with frailty

Cohen RR, et al: *J Am Geriatr Soc* 2012; 60: 1609-1615

Cognition and Frailty

- Increased recognition of the role of cognition as a component of frailty
- Additive versus synergistic effect as a hallmark component of the frailty syndrome
- Not necessarily included in some of the published assessment tools
- Often added to other assessment tools

Who has Frailty?

Who has Frailty?

Frailty Phenotype model

Validation study

5,317 community based older adults

> 65 years

Men and women

Overall prevalence 6.9%

Subjects followed longitudinally

Incidence of new onset frailty 7.2% at 4 years

Fried LP et al: *J Gerontol A Biol Sci Med Sci* 2001; 56A: M146-M156

Who has Frailty?

Links to frailty and biomarkers

Atrial fibrillation and other cardiac arrythmias

Mobility

- Life-space analysis
- Not mobile outside neighborhood at least 4 times weekly = 1.7 times more likely to be frail ($p<0.005$)
- Homebound had 3x increase in mortality

Xue QL, et al: *Am J Epidemiol* 2008; 167: 240-248

Who has Frailty?

Hormonal deficiencies

- No single abnormality directly linked to frailty
- Multiple deficiencies may be associated

Study of 494 women 70-79 years old

Testosterone, insulin-like growth factor-1 (IGF-1), dehydroepiandrosterone (DHEAs)

Single deficiency showed trend toward frailty

Two or three = OR 2.79 (95% CI 1.06 – 7.32)

Cappola AR, et al: *J Gerontol A Biol Sci Med Sci* 2009; 64A: 243-248

Who has Frailty?

Muscle Strength and Bone Health

Decreased musculoskeletal strength linked to several components of frailty (gait speed, activity, grip)

- Cross-sectional analysis (Women's Health Initiative)
- 250 women 76-86 (mean 79.6 ± 2.7)
- Frailty prevalence 6.8%
- Sarcopenia + either osteoporosis or osteopenia → OR = 6.4; 95% CI = 1.1 – 36.8)

Frisoli A, et al: *Bone* 2011; 48: 952-957

Who has Frailty?

Inflammation and Frailty

Increased levels of inflammation associated with frailty (biomarkers)

Women's Health & Aging Study – 558 women

- WBC and IL-6 independently associated with frailty
- Top tertile WBC: OR 3.15 (95% CI = 1.34 – 7.41)
- Top tertile IL-6: OR 2.81 (95% CI = 1.19 – 6.64)
- Combined: OR **9.85** (95% CI = 3.04 – 31.99)

Leung SX: *J Am Geriatr Soc* 55:864-871, 2007

Who has Frailty?

Biomarkers INCREASED	Biomarkers DECREASED
C-reactive protein	Insulin like growth factor (ILG-1)
D-dimer	Growth hormone (GH)
Fibrinogen	Dehydroepiandrosterone (DHEA)
IL-6	Glucose tolerance
WBC	• Metabolic syndrome • Diabetes mellitus

Arch Intern Med 162:2333-2342, 2002

How is Frailty Assessed?

How is Frailty Assessed?

Questionnaires

- Use of survey instruments alone likely inadequate
- Debate over which instrument(s)
- Do these measure all components of frailty?

Comprehensive Geriatric Assessment (CGA)

- Measures multiple domains in addition to frailty
- Time and resources

Component Analysis (individual factors)

- Validated assessment tools

Kim H, et al: *Gerontol Geriatr Int* 2013; 14: 78-83
Sünermann S, et al: *Eur J Cardiothorac Surg* 2011; 39: 33-37

How is Frailty Assessed?

Weight Loss

- Unintentional
- Consider association of underlying medical conditions / comorbidity

- ≥ 10 pounds in one year
- ≥ 5% body weight in one year

Fried LP et al: *J Gerontol A Biol Sci Med Sci* 2001; 56A: M146-M156

How is Frailty Assessed?

Grip Strength

- Hand dynamometer
- Dominant hand
- Mean of 3+ measures

Male BMI	Cutoff	Female BMI	Cutoff
≤ 24	≤ 29	≤ 23	≤ 17
24-26	≤ 30	23-26	≤ 17.3
26-28	≤ 30	26-29	≤ 18
> 28	≤ 32	> 29	≤ 21

Fried LP et al: *J Gerontol A Biol Sci Med Sci* 2001; 56A: M146-M156

How is Frailty Assessed?

Easy Exhaustion

- Measure of poor endurance
- Self-reported

CES-D (Centers for Epidemiological Studies Depression) scale questions

"I felt that everything I did was an effort"

"I could not get going"

Criterion is positive if at least one (1) condition is present for 3 days or more during last week

Fried LP et al: *J Gerontol A Biol Sci Med Sci* 2001; 56A: M146-M156

How is Frailty Assessed?

Low Physical Activity

- Questionnaire assessment
- Minnesota leisure Time Physical Activity Questionnaire
- Time spent in each activity recorded in minutes for past 2 weeks – then multiplied by activity score
- Half of total all activities in kilocalories per week

Criterion is positive if weekly activity is:

Male < 383 kcal/week

Female < 270 kcal/week

Fried LP et al: *J Gerontol A Biol Sci Med Sci* 2001; 56A: M146-M156

How is Frailty Assessed?

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Gait Speed and Mobility

- Important for independent toileting
- 'Get Up and Go Test'
  - Stand from chair, walk 3 meters, turn, return and sit down
  - Allowed to use mobility assistive devices (walker, cane)
  - Measures quadriceps strength, mobility, gait, balance, transfers, and ability to follow instructions
  - Timed vs. untimed
    - ≤ 10 seconds – most adults
    - 11-20 seconds – normal for frail older adults

Podsiadlo D & Richardson S: J Am Geriatr Soc 1991, 39: 142-148

How is Frailty Assessed?

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Gait Speed

Cutoffs to walk 4.57 m (15 feet)

Height / male (cm)	Cutoff (sec)	Height / female (cm)	Cutoff (sec)
≤ 173 cm	≥ 7 (0.65 m/sec)	≤ 159	≥ 7 (0.65 m/sec)
> 173 cm	≥ 6 (0.76 m/sec)	> 159	≥ 6 (0.76 m/sec)

Fried LP et al: *J Gerontol A Biol Sci Med Sci* 2001; 56A: M146-M156

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Videos courtesy of Stephanie Studenski, MD, MPH
National Institutes on Aging (NIA)

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0.7 m/second 1.4 m/second

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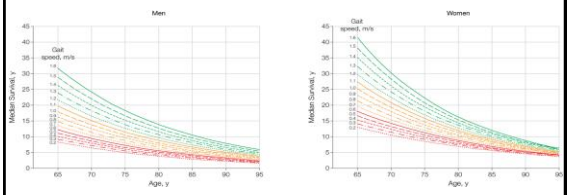
Predicted Median Life Expectancy by Age and Gait Speed



Studenski, S. et al. JAMA 2011;305:50-58

JAMA

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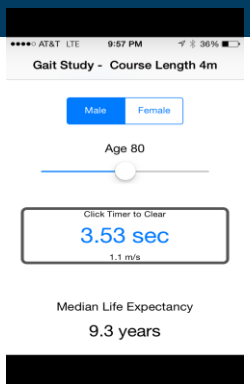

How is Frailty Assessed?

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Cognitive Assessment

- Important in overall assessment of older adults
  - Informed consent and decision-making capacity
  - Some treatments may influence cognition (medications)
- Folstein Mini-Mental State Exam (MMSE)
  - 13 items – 30 points
- Mini-Cog
  - 3 item recall and clock-drawing test

Folstein MF, et al: J Psychiatr Res 1975, 12: 189-198
Borson S, et al: Int J Geriatr Psychiatry 2000, 15: 1021-1027

How is Frailty Assessed?

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3 unrelated items – repeat and remember

- Specific items, not abstract concepts, colors, etc.

Draw face of a clock, including all numbers, and set time (11:10)

Repeat 3 items

- 1 point for each remembered item
- 0 (abnormal) or 2 (normal) points for clock
- Total 0-2 suggests dementia / 3-5 negative screen

Borson S, et al: Int J Geriatr Psychiatry 2000, 15: 1021-1027

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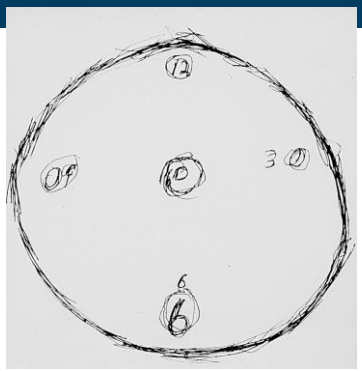

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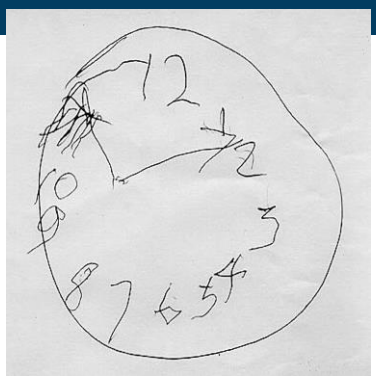

Frailty and Outcomes

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Frailty and Outcomes

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N = 594 patients

Age > 65 yrs

Independently predicts surgical outcomes

- Complications: OR (2.06 / 2.54)
- LOS: OR (1.49 / 1.69)
- Discharge status: OR (3.16 / 20.48)

Makary et al, J Am Coll Surg 210: 2010

Frailty and Outcomes

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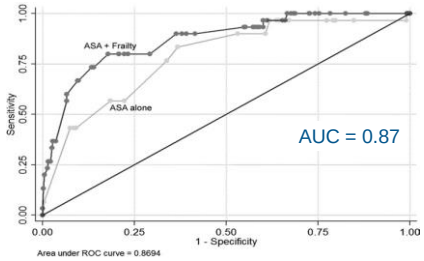

Makary et al, J Am Col Surg 210: 2010

Summary

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- Frailty is a very common geriatric syndrome
- Several conceptual models exist
- Overall prevalence in community-dwelling older adults is about 7%
- Frailty is related to but not synonymous with comorbidity and disability

Summary

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- Frailty typically assessed by contributory components
- Each has validated measures
- Specific validation tools depend on conceptual model
- All have advantages and disadvantages (clinical versus research use)
- Important to consider frailty due to impact on outcomes

KU Medical Center

Theo and Alfree M. Landon Center on Aging

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DOES FRAILTY AND MULTIMORBIDITY MATTER? PLANNED CARE FOR SURGICAL TREATMENT OF FRAIL OLDER PATIENTS

Kathleen F Hunter PhD RN NP GNC(C) NCA
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Nurse Practitioner, Specialized Geriatrics (Glenrose Hospital)
Assistant Adjunct Professor, Division of Geriatric Medicine UofA

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GLENROSE CONTINENCE CLINIC

Kathleen Hunter

Affiliations to disclose:

- Trial participation (site coinvestigator) Astelles PILLAR
- Research grant (coinvestigator) - SCA

Funding for speaker to attend:

Enter X in appropriate box

x	Self-Funded
x	Institution (non-industry) funded – University of Alberta Division of Geriatric Medicine and Professional Expense Reimbursement
	Sponsored by: N/A

ICS

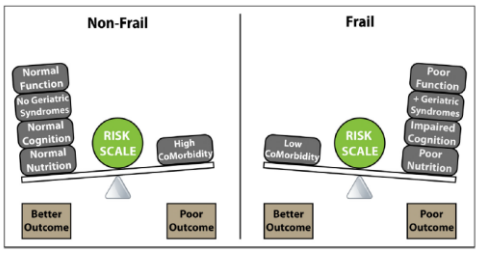
Why do surgery in older adults?

- Demand – with an ageing population worldwide, demand for urological/urogynecological surgery increasing - even among the frail
  - Underlying issues not life threatening, but have important quality of life implications

More older people worldwide → More demand for urological and prolapse surgery

But….can it be successful?

- Even in very old women, surgery can be successful and produce positive outcomes
- Follow-up of 128 women 80 years and older in the Netherlands who had undergone surgery for POP
  - Variety of surgical interventions
  - 3 cases of serious complications (1 death)
  - 88% of the 87 who responded to the postal survey were very satisfied with outcome Schweitzer et al 2005



Robinson et al (2013) The American Journal of Surgery, https://doi.org/10.1016/j.amjsurg.2013.03.012

Frailty and surgery

- Increased interest in *intervention* for frailty in surgical patients but should special pre op interventions be offered to all older adults?
  - Likely not the best use of resources
  - Enhanced vs usual preop assessment of N=62 older women undergoing pelvic floor surgery Richter et al 2005
    - No difference on mental, physical or satisfaction between groups
    - Healthy older women - baseline good health, high functional status

Going forward

- Identify frailty
  - Not just age alone as criteria
- Refer those who are frail for Comprehensive Geriatric Assessment preoperatively
  - Geriatrician/geriatric team - more comprehensive view of risk than traditional pre-op assessment
- Sarcopenia (loss of skeletal muscle mass) potentially modifiable preop with nutrition and strength/balance interventions – "surgical prehabilitation"
- AUA - need to address frailty, delirium risk, functional status and decision making capacity preop in addition to comorbidity and medications Tang & Suskind 2016

Comprehensive Geriatric Assessment

- Comprehensive review of medical, functional, psychological and social
- Holistic, multidimensional, interdisciplinary
- Involves geriatrician and specialized geriatric team

BGS Fit for Frailty 2014

Comprehensive Geriatric Assessment

Table 1 Domains of health

Physical medical conditions	Comorbid conditions and disease severity Medication Review Nutritional status Problem list
Mental health conditions	Cognition Mood and anxiety Fears
Functioning	Core functions such as mobility and balance Activities of daily living Life roles that are important to the patient
Social circumstances	Social networks: informal support available from family, the wider network of friends and contacts, and statutory care Poverty
Environment	Housing: comfort, facilities and safety Use or potential use of 'telehealth' technology Transport facilities Accessibility to local resources

- Welsh et al 2014

Does CGA and involvement of the geriatric service make a difference?

- Systematic review of preoperative CGA on post operative outcomes Partridge et al 2014
- 5 studies included
  - 2 RCTs, 3 before/after studies
  - Heterogeneity precluded meta-analysis
- Concluded likely a positive impact, further definitive research needed.

POPS 2007

- Proactive care of older people undergoing surgery (POPS) Harari et al 2007
- Development and modelling phase
  - Observational cohort of 65+ undergoing elective surgery, exploratory evaluation of before/after comparison
  - Referrals from GPs – even those pts deemed "medically unfit"
  - Elective orthopedic patients n= 54 in each group (pre POPs and POPs)
  - Developed a referral guidance and pathway
  - Individualized interventions preop, post op and post discharge

Table 2. Referral guidance (pre-operative risk assessment) for POPS

POPS accepts referrals of patients aged 65 years and over who are awaiting surgery with *any* of the following risk factors:

- Uncontrolled hypertension (BP above 160/90)
- Recent history of myocardial infarction (in the past 2 years)
- Unstable angina
- Undergoing treatment for heart failure
- Poorly controlled diabetes
- Previous stroke
- Currently taking Warfarin
- Chronic lung disease, which you consider may put your patient at risk
- Poor nutritional status (BMI<20, or weight loss of 5 kg or more over past 6 months)
- Two or more falls from standing height in the past year
- Significant memory problems, or history of confusion, or known dementia

Needs personal help with:

- Getting to the toilet
- Moving from bed to chair
- Standing up
- Dressing
- Walking
- Likely to need a complex discharge package

Harari et al 2007

POPs 2007 Interventions

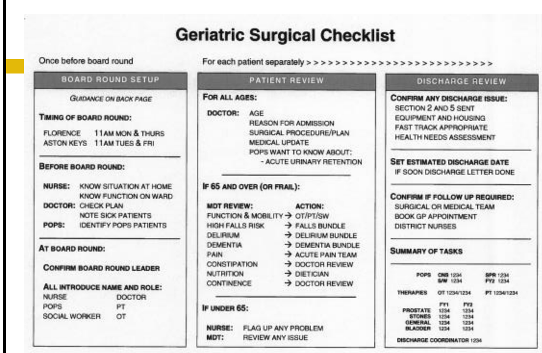
- Preop
  - Assessed by POPs team (geriatrician, nurse specialist, OT, PT, SW)
  - All patients: preop home exercises, nutrition, relaxation techniques, pain management
- Postop
  - Geriatrician and nurse reviewed pts on ward
  - Early detection/rx of med complications, early mobilization, pain mgmt, bladder-bowel fx, nutrition, discharge planning
- Post discharge
  - Therapy visit for fx problems, outpt review of medical problems
  - Linking to other services: e.g. falls program, continence service

POP 2007 Outcomes

- POPs group had more preop comorbidity, but fewer post op medical complications
- Improvements in: pressure ulcers, pain control, early mobilisation and inappropriate use of urinary catheters
- LOS reduced by 4.5 days, fewer delayed discharges

POPs – Urology 2016

- Embedding of a geriatric liaison service for elective and emergency urology patients 65 and older Braude et al 2016
- Phase 1: control month n=112
  - Started daily round, weekly multidisciplinary meeting, targeted geriatrician led ward rounds
- Phase 2: intervention month n=130
  - Quality improvement, created Geriatric Surgical Checklist to standardize intervention and identify pts needing CGA, collaboration between surgical and geriatric medicine teams



Geriatric Surgical Checklist

Once before board round

For each patient separately >

BOARD ROUND SETUP

Guidance on back page

Timing of board round:
FLORENCE 11AM MON & THURS
ASTON KEYS 11AM TUES & FRI

Before board round:
NURSE: KNOW SITUATION AT HOME
KNOW FUNCTION ON WARD
DOCTOR: CHECK PLAN
NOTE SICK PATIENTS
POPS: IDENTIFY POPS PATIENTS

At board round:
CONFIRM BOARD ROUND LEADER
ALL INTRODUCE NAME AND ROLE:
NURSE DOCTOR
POPS PT
SOCIAL WORKER OT

PATIENT REVIEW

For all ages:
DOCTOR: AGE
REASON FOR ADMISSION
SURGICAL PROCEDURE/PLAN
MEDICAL UPDATE
POPS WANT TO KNOW ABOUT:
- ACUTE URINARY RETENTION

If 65 and over (or frail):

MDT REVIEW:	ACTION:
FUNCTION & MOBILITY →	OT/PT/SW
HIGH FALLS RISK →	FALLS BUNDLE
DELIRIUM →	DELIRIUM BUNDLE
DEMENTIA →	DEMENTIA BUNDLE
PAIN →	ACUTE PAIN TEAM
CONSTIPATION →	DOCTOR REVIEW
NUTRITION →	DIETICIAN
CONTINENCE →	DOCTOR REVIEW

If under 65:
NURSE: FLAG UP ANY PROBLEM
MDT: REVIEW ANY ISSUE

DISCHARGE REVIEW

Confirm any discharge issue:
SECTION 2 AND 5 SENT
EQUIPMENT AND HOUSING
FAST TRACK APPROPRIATE
HEALTH NEEDS ASSESSMENT

Set estimated discharge date
IF SOON DISCHARGE LETTER DONE

Confirm if follow up required:
SURGICAL OR MEDICAL TEAM
BOOK GP APPOINTMENT
DISTRICT NURSES

Summary of tasks

POPS CNS 1234 SPR 1234
S/W 1234 FY2 1234
THERAPIES OT 1234/1234 PT 1234/1234

	FY1	FY2
PROSTATE	1234	1234
STONES	1234	1234
GENERAL	1234	1234
BLADDER	1234	1234

DISCHARGE COORDINATOR 1234

Braude et al 2016

POP – Urology 2016 Outcomes

- Patient outcomes
  - Reduced LOS in intervention group (4.0 days vs 4.9 for control)
  - Significantly decreased medical and surgical complications in intervention group
  - Non-significant reductions in cancellations, unplanned readmissions
- Survey of staff who participated in board round baseline, 1 and 6 months
  - Improved understanding of roles
  - Staff felt more involved, helped identify CGA issues

Take-aways

- Frail surgical patients can benefit from CGA and involvement of the geriatric service in their care preoperatively as well as postoperatively
- Beginning evident that integration of geriatric services with surgical services contributes to positive outcomes

Select References

19

BGS (2014). Fit for frailty: consensus best practice guidance for the care of older people living with frailty in community and outpatient settings. London: British Geriatric Society. http://www.bgs.org.uk/campaigns/fff/fff_full.pdf

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Partridge, J.S.L, Harari, D., Martin, F.C., Dhesi, J.K. (2014). The impact of pre-operative comprehensive geriatric assessment on postoperative outcomes in older patients undergoing surgery: a systematic review. Anaesthesia, 69(Suppl.1), 8-16.

Tang, V.L & Suskind, A.M. (2016). AUA Perioperative Management of the Older Urology Patient. AUA Update Series. Lession 36, Vol 35.

Welsh, T.J., Gordon, A.L., Gladman, J.R. (2014). Comprehensive geriatric assessment: a guide for the non-specialist. The International Journal of Clinical Practice, 68(3), 290-293. doi: 10.1111/ijcp.12313

How do I identify, prevent, and best treat delirium in my frail older patients?

Dr. Bill Gibson MBChB MRCP
Assistant Professor, Division of Geriatric Medicine
University of Alberta

Delirium

An acute neuropsychiatric disorder characterized by inattention and global cognitive dysfunction.

DSM V Criteria

Disturbance in attention (ie, reduced ability to direct, focus, sustain, and shift attention) and awareness.

Change in cognition (eg, memory deficit, disorientation, language disturbance, perceptual disturbance) that is not better accounted for by a preexisting, established, or evolving dementia.

The disturbance develops over a short period (usually hours to days) and tends to fluctuate during the course of the day.

There is evidence from the history, physical examination, or laboratory findings that the disturbance is caused by a direct physiologic consequence of a general medical condition, an intoxicating substance, medication use, or more than one cause.

Epidemiology

Common

- 1-2% in the community
- Between 6% and 56% of hospital inpatients
- 15 – 53% of post-surgical patients over 65
- Up to 90% on ITU

Nat Rev Neurol. 2009 Apr; 5(4): 210–220.

Pathophysiology

Not well understood
Neurotransmitter hypothesis
Inflammatory hypothesis
Hormonal changes
Blood-brain barrier changes
Functional reserve

J Geriatr Psychiatry Neurol. 1998 Fall;11(3):138-45

Risk factors

Age (Over 80 OR 5.22)[1]
Pre-existing cognitive impairment (OR 8.97)[1]
Fracture (OR 6.5)[1]
Coexisting neurological disease (PD, MS, CVD)[2]
Previous delirium[2]
Visual or hearing impairment[2]
Urinary Catheter[2]

1 JAMA. 1992 Feb 12;267(6):827-31
2 J Am Geriatr Soc. 45 (1997), pp. 174–178

Causes

Drugs, dehydration, detox (alcohol) discomfort (pain, retention)
Electrolytes, elimination problems (constipation), environment
Lungs (hypoxia), lack of sleep
Infection, infarction (heart or brain), iatrogenic
Restraints, restricted movement, renal failure
Injury, impaired sensory input, intoxication
Unfamiliar environment
Metabolic, metastases, medications

Clinical features

Acute onset and fluctuant
Inattention
Disorganised thinking
Altered level of consciousness
- May be hyperactive or hypoactive

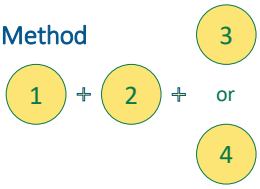
Hyperactive	**Hypoactive**
"High"	Flat
Shouting	Withdrawn
Aggressive	Quiet
Agitated	Resting
Upset	Just not themselves

Other features

Plucking behaviours
Disordered sleep cycle
Hallucinations (rare)
Delusions

Confusion Assessment Method

1. Acute onset and fluctuating course
2. Inattention
3. Disorganised thinking
4. Altered level of consciousness



Why is this a problem?

Delirium is associated with poor outcomes
- Mortality
- LOS
- Dementia

Highly distressing for patients and relatives
Delirium **does not** cause amnesia
- People will remember events while delirious
- **They will remember how they were treated**
- Increased mortality
- Increased LoS

CALM THE NURSES DOWN

The reaction to an "aggressive" patient is often

- Shouting at them
- Trying to sit them down
- Getting several people in the room
- Standing over them
- Restraints
- Calling security

These just make things worse

Management

Minimise stimulation

- Reduce the number of people in the room
- Get the most sensible nursing aide you have
- Send everyone else out
- Low lighting
- Quiet
- Improve comprehension with glasses and hearing aids

Social norms

There is no trouble so great or grave that cannot be much diminished by a nice cup of tea

Bernard-Paul Heroux

Identify the cause

- Urinary retention
- Pain
- New drugs
- Old drugs
- Missing drugs
- Bowels
- Infection
- Glucose

Identify the cause

- New neurology
- Signs of chest pain
- Recent blood results
  - Uraemia? CRP? Calcium?

Identify the cause

- Environmental
- Restraints
- Boredom
- Change in environment
  - Admission to hospital
  - Movement within hosptial

Pharmacological Management

- Avoid benzodiazepines
  - Paradoxical agitation
- Olanzapine 2.5mg
- Haloperidol 0.5mg
- Quetiapine 12.5mg
- Respiridone 0.5mg

https://www.nice.org.uk/guidance/cg103
Ann Pharmacother 2006 Nov;40(11):1966-73

Can we?

Up to 40% of cases of delirium in inpatients are preventable

Age Ageing. 2006 Jul; 35(4):350-64

Really simple things…

How?

Hospital Elder Life Programme (HELP)

- Maintaining orientation to surroundings
- Meeting needs for nutrition, fluids and sleep
- Promoting mobility within the limitations of physical condition
- Providing visual and hearing adaptations for patients with sensory impairments

OR of delirium in the treated group 0.6

N Engl J Med. 1999 Mar 4;340(9):669-76

Elder friendly hospitals

http://seniorfriendlyhospitals.ca/toolkit

Staff training

Physical environment

- Orientation
- Day/night differentiation

Organisational culture

Individual patients?

Preoperative and in-reach geriatric consult

- RR of delirium 0.64 in the consult group

No evidence to support prophylactic antipsychotics

Limited evidence for the use of melatonin at night

- Better evidence on medical than surgical wards

Risk assessment

Early identification

J Am Geriatr Soc. 2001 May;49(5):516-22
Mol Neurobiol. 2016 Aug;53(6):4046-4053

Conclusion

Delirium is common, distressing, dangerous, and preventable

Design your systems to cope with the fact that many of your patients are old, frail, and at risk

Identify patients at risk of delirium before surgery and minimise those risks

Do

Set up your team to prevent, identify, and treat delirium

Use a simple screen such as CAM

Arrange the inpatient environment to reduce the risk

- Day/Night
- Big clocks and calendars
- Family photographs
- Introduce yourselves

Involve your geriatrician colleagues

Use appropriate pharmacotherapy

Don't

Ignore the lady who's being nice and quiet

Use benzodiazepines

Tie your patients to the bed

How can I make things the best after surgery in an older, frail, multimorbid group?

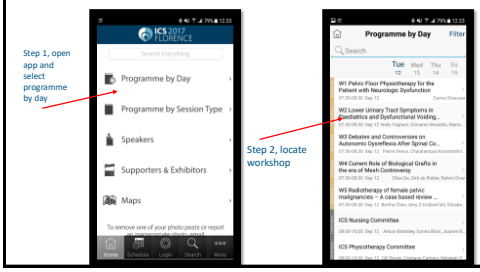
Adrian Wagg

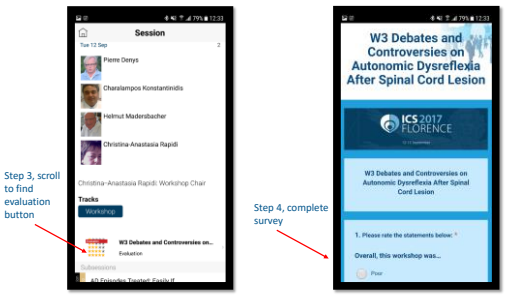
Capital Health Endowed Chair in Healthy Ageing,
Department of Medicine, University of Alberta

UNIVERSITY OF ALBERTA

NEW FOR 2017

Please complete the in-app evaluation in the workshop before leaving.





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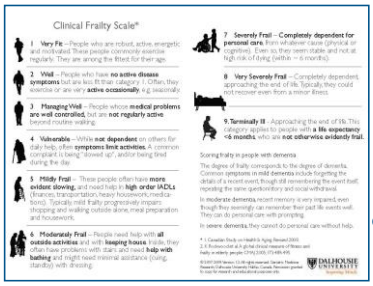
Frailty as a Predictor of Surgical Outcomes in Older Patients

n=594	Non-Frail (58.2%)	Intermediate (31.3%)	Frail* (10.4%)
Age (yr)	71 (67-94)	75 (65-92)	76 (65-94)
Female Sex (%)	67.6	52.7	41.9
Post-operative complications	1.0	2.06 (1.2-3.6)	2.54 (1.1-5.8)
Length of stay	1.0	1.49 (1.2-1.8)	1.69 (1.3-2.2)
Institutionalized	1.0	3.2 (1.0-9.9)	20.5 (5.5-76)

* FRAILTY defined by the physical phenotype criteria proposed by Fried

Makary et al JACS 2010

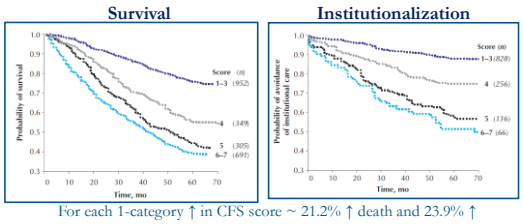


CFS score and mathematically derived FI highly correlated (Pearson 0.80, p<0.01)

Available at: http://geriatricresearch.medicine.dal.ca/clinical_frailty_scale.htm

Rockwood et al CMAJ 2005

A global clinical measure of fitness and frailty in elderly people



For each 1-category ↑ in CFS score ~ 21.2% ↑ death and 23.9% ↑ institutionalization

Rockwood et al CMAJ 2005

Modified frailty index in non-oncological gynaecology

	Domain	Coding
1	Diabetes mellitus	Insulin dependent diabetes mellitus or non-insulin dependent diabetes mellitus
2	Functional status	Partially dependent or total dependent
3	Respiratory problems	Chronic obstructive pulmonary disease or current pneumonia
4	Congestive heart failure	Congestive heart failure
5	Myocardial infarction	Prior myocardial infarction
6	Other cardiac problems	Previous percutaneous coronary intervention or coronary surgery or angina
7	Hypertension	Hypertension requiring medication
8	Peripheral vascular disease	Peripheral vascular disease or resting pain
9	Impaired sensorium	Impaired sensorium
10	Cerebrovascular disease	Transient ischemic attack or cerebrovascular accident
11	Cerebrovascular disease with neurologic deficit	Cerebrovascular disease with deficit

BJOG. 2016 Feb; 123(3): 455–461

	N	Clavian IV complication	Wound complication	Any complication	Mortality
All patients					
0	44,045	0.98	2.41	3.71	0.06
0 to 0.09	9341	1.55	3.04	4.79	0.27
0.1 to 0.19	2555	2.97	5.21	6.69	0.23
0.2 to 0.29	7930	2.03	3.44	5.09	0.25
0.3 to 0.49	2110	3.74	4.98	8.01	0.57
≥0.5	124	7.26	4.84	14.52	3.23
P-value		<0.001	<0.001	<0.001	<0.001
Denominator ≥6 *					
0	25,610	0.91	2.40	3.71	0.04
0 to 0.09	9341	1.55	3.04	4.79	0.27
0.1 to 0.19	2555	2.97	5.21	6.69	0.23
0.2 to 0.29	356	4.78	5.90	9.55	1.12
0.3 to 0.49	72	12.50	9.72	19.44	5.56
≥0.5	1	100.00	0.00	100.00	0
P-value		<0.001	<0.001	<0.001	<0.001

* >6 variables available

The ability to predict adverse outcomes was greatest when age, ASA class, functional status, and the modified frailty index are used in combination

BJOG. 2016 Feb; 123(3): 455–461

In addition to a history and physical examination….

- Assess cognitive ability → MMSE / Mini COG, MoCA
- Assess capacity → Interview
- Screen for depression → GDS, CES-D, PHQ-2
- Identify risk factors for delirium
- Think alcohol / substance dependence

http://dx.doi.org/10.1016/j.jamcollsurg.2012.06.017

Perioperative cardiac and respiratory optimisation

Document functional status and any history of falls → Barthel Index or alternative

Document baseline frailty status →

Nutritional state →

Medication history – consider appropriate adjustment → MUST or alternative

Goals and expectations

Family and social support mechanisms

Mini-Cog 3 item test and clock draw

1. GET THE PATIENT'S ATTENTION, THEN SAY:
   "I am going to say three words that I want you to remember now and later. The words are: *banana, sunrise, chair*. Please say them for me now."
   Give the patient 3 tries to repeat the words. If unable after 3 tries, go to next item.
2. SAY ALL THE FOLLOWING PHRASES IN THE ORDER INDICATED:
   "Please draw a clock in the space below. Start by drawing a large circle. Put all the numbers in the circle and set the hands to show 11:10 (10 past 11)."
   If subject has not finished clock drawing in 3 minutes, discontinue and ask for recall items.
3. SAY: "What were the three words I asked you to remember?"

(Mini-Cog™ copyright S Borson [soon@uw.edu]. From: S Borson, with permission).

Scoring and interpretation

SCORING:

3 item recall (0 to 3 points):	1 point for each correct word
Clock draw (0 or 2 points):	0 points for abnormal clock 2 points for normal clock

A NORMAL CLOCK HAS ALL OF THE FOLLOWING ELEMENTS:
All numbers 1 to 12, each only once, are present in the correct order and direction (clockwise) inside the circle.
Two hands are present, one pointing to 11 and one pointing to 2.

ANY CLOCK MISSING ANY OF THESE ELEMENTS IS SCORED ABNORMAL. REFUSAL TO DRAW A CLOCK IS SCORED ABNORMAL.

Total score of 0, 1, or 2 suggests possible impairment.
Total score of 3, 4, or 5 suggests no impairment.

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PHQ-2

ASK THE PATIENT THE FOLLOWING QUESTIONS:

1. "In the past 12 months, have you ever had a time when you felt sad, blue, depressed, or down for most of the time for at least 2 weeks?"
2. "In the past 12 months, have you ever had a time, lasting at least 2 weeks, when you didn't care about the things that you usually cared about or when you didn't enjoy the things that you usually enjoyed?"

If the patient answers YES to either question, then further evaluation by a primary care physician, geriatrician, or mental health specialist is recommended.

NB: Not validated in FRAIL elderly patients
CES-D may be preferable (but longer)

Risk factors for pulmonary complications

Patient related factors

- Age >60
- COPD
- ASA class II or greater
- Functional dependence
- CHF
- OSA
- Pulmonary hypertension
- Current smoking
- Preoperative sepsis
- Weight loss >10% in 6/12
- Serum albumin < 35g/L
- Blood Urea > 7.5mM
- Serum Creatinine > 133µM

Surgery related factors

- Operation time > 3h
- Surgical site
- Emergency surgery
- GA
- Perioperative transfusion
- Residual neuromuscular blockade after an operation

Avoiding pulmonary complications

Preoperative optimization of pulmonary function in patients with COPD and asthma that is not well controlled

Smoking cessation, up to 8 weeks pre-operatively

Preoperative intensive inspiratory muscle training – limited data from CABG surgery

Short functional assessment

ASK THE PATIENT THE FOLLOWING QUESTIONS:

1. "Can you get out of bed or chair yourself?"
2. "Can you dress and bathe yourself?"
3. "Can you make your own meals?"
4. "Can you do your own shopping?"

If NO to any of these questions, more in-depth evaluation should be performed, including full screening of activities of daily living and instrumental activities of daily living.

Deficits should be documented and may prompt perioperative interventions (ie, referral to occupational therapy and/or physical therapy) and proactive discharge planning.

Functional assessment

Any reported deficits in vision, hearing, or swallowing should be documented.

All patients should be asked about history of falls ("Have you fallen in the past year?").

Assess for limitations in gait and mobility using the Timed Up and Go Test,

Any person demonstrating difficulty rising from the chair or requiring more than 15 seconds to complete the test is at high risk for falls.

30-day mortality more strongly predicted by functional status than age

Impaired mobility in elderly patients has been linked to increased risk of postoperative delirium and surgical site infections with MRSA.

more independent preoperative functional status strongly predicts both better postoperative function (in terms of ADLs and instrumental ADLs) and shorter recovery periods after major abdominal surgery

Ann Surg 2009;250:449–455
J Am Geriatr Soc 2010;58:527–532
J Am Coll Surg 2011;213:37–42; discussion 42–44
J Am Coll Surg 2004;199:762–772.

Activities of Daily Living

- Bathing
- Dressing
- Toileting
- Transferring
- Continence
- Feeding

Instrumental Activities of Daily Living

- Telephone ability
- Shopping
- Food preparation
- Housekeeping
- Laundry
- Transportation
- Medication management
- Handling finances

Nutrition

Document height and weight and calculate body mass index (BMI)

Measure baseline serum albumin and prealbumin levels.

Inquire about unintentional weight loss in the last year.

Document patients with severe nutritional risk if they exhibit any of the following:

- BMI <18.5 kg/m²
- Serum albumin 30 g/L (with no evidence of hepatic or renal dysfunction)
- Unintentional weight loss 10% to 15% within 6 months.

Ann Surg 2009;250:338–347
Clin Geriatr Med 2008;24:573–583
Clin Nutr 2006;25:224–244

Nutrition

Patients at severe nutritional risk should, if feasible, undergo a full nutritional assessment by a dietician to design a perioperative nutritional plan to address deficits, and should be considered for preoperative nutritional support

Medication management

Ensure you know what the patient takes and when – not what they should be taking WRITE IT DOWN

Remember to include over the counter remedies, supplements, vitamins and herbs – they won't tell you about these unless you ask

Avoid starting new prescriptions for benzodiazepines and consider reducing benzodiazepines when possible.

Ensure that pain is adequately controlled to reduce risk for developing postoperative delirium.

Use caution when prescribing antihistamine H1 antagonists (especially diphenhydramine/Benadryl) and other medications with strong anticholinergic effects.

When possible, nonessential medications should be discontinued perioperatively and the addition of new medications should be kept to a minimum.

Advance care directives / goals of care planning

Describe the expected postoperative course and possible complications

If relevant, include discussion of possible functional decline and need for rehabilitation or nursing home care during the informed consent process.

Determine the patient's family and social support systems, which are of significant importance for discharge disposition.

If there is concern of an insufficient family or social support system, consider preoperative referral to a social worker.

Blood tests

Routine sets of preoperative *screening* tests are NOT recommended. Three exceptions are hemoglobin, renal function tests, and albumin, which are indicated for all geriatric surgical patients.

Preoperative *diagnostic* tests should be performed selectively and limited to higher risk patients who can be identified based on history and physical examination, known comorbidities, and the type of procedure to be performed.

Normal laboratory values obtained up to 4 months before surgery can be used safely as preoperative tests as long as no substantial change in the patient's clinical status has occurred.

Preoperative tests	Indications
Hemoglobin	Recommended for all geriatric surgical patients, especially those: Undergoing operations with anticipated clinically significant blood loss or transfusion requirement. With suspected or known severe anemia.
Renal function tests (blood urea nitrogen, creatinine)	Recommended for all geriatric surgical patients, especially those: Undergoing major surgery.* With diabetes, hypertension, cardiovascular disease, or who use medications that affect renal function (angiotensin-converting enzyme [ACE] inhibitors, NSAIDs).
Serum albumin	Recommended for all geriatric surgical patients, especially those: With known liver disease, multiple serious chronic illnesses, and recent major illness. Undergoing major surgery. Likely to have malnutrition.

Preoperative tests for selected patients

Preoperative tests	Indications*
White blood cell count (WBC)	Known or suspected infection or myeloproliferative disease, or at high risk for leukopenia from drugs or other known disease. May be included as part of a complete blood count.
Platelet count	High likelihood of thrombocytopenia or thrombocytosis. May be included as part of a complete blood count.
Coagulation tests (PT/INR/PTT)	History of bleeding disorders, on medications affecting coagulation, on warfarin, or on hemodialysis, Undergoing specific types of surgery, such as arterial reconstruction, cardiac surgery, cancer operations, and ones in which small amounts of bleeding can cause dramatic complications (neurosurgical or orthopaedic spine procedures), Malnutrition, malabsorption, or liver disease.
Electrolytes (Na, K, Cl, CO_2)	Baseline renal insufficiency, congestive heart failure. Taking diuretics, digoxin, angiotensin-converting enzyme (ACE) inhibitors, or other medications that increase likelihood of abnormal results.
Serum glucose	Known or suspected diabetes, or obesity.
Urinalysis	Suspected urinary tract infection, known diabetes, or undergoing urogenital surgery.

*These test are NOT RECOMMENDED for routine preoperative screening.
INR, international normalized ratio; PT, prothrombin time; PTT, partial thromboplastin time.

Mobility

Normal medications

Oral intake

Catheters and cannulae out

As soon as possible

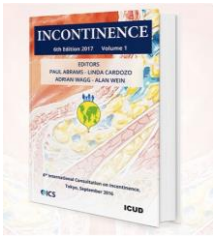
Regular analgesia, not prn

Consider non-drug measures for pain relief

In acute general surgery in older patients, patients with delayed mobilization, after adjusting for age, sex, Charlson Comorbidity Index, medications, haemoglobin, and frailty:

delayed mobilization was associated with 2.7-times greater risk of 30-day readmission or death (adjusted odds ratio [aOR] 2.73, 95% CI 1.25–5.98, P = 0.01; C-statistic = 0.76, 95% CI 0.67–0.85)

ICI guidelines for surgery in frail older men and women



Wagg, A. et al. "Incontinence in frail older persons" in Incontinence, Report of the 6th ICI 2017. ICS. Bristol

No studies have been done regarding gynaecological surgery in institutionalised elderly women. (**Level 4**)

Exogenous administration of oestrogen is ineffective in promoting wound healing after gynaecological surgery in older women. (**Level 3**)

Injection of bulking agents for SUI appears to give minor benefit in women, however the technique is minimally invasive and age does not appear to correlate with outcomes. (**Level 3**)

Injection of onabotulinumtoxinA might be an option in patients with idiopathic or neurogenic overactive bladder although risk of residual urine and a lower long-term success rate have been described. (**Level 3**)

Wagg, A. et al. "Incontinence in frail older persons" in Incontinence, Report of the 6th ICI 2017. ICS. Bristol

No studies evaluate functional or quality of life outcomes after UI surgery in frail older persons (**Level 4**)

Risks of morbidity and mortality for frail patients undergoing anti-UI procedures are similar to those of other major non-cardiac surgical procedures. (**Level 2**)

Surgical mortality risks are still low in elderly persons, and when deaths do occur, they are often due to cardiac or cancer complications. (**Level 2-3**)

Operative mortality is inconsistently associated with increased age, and most studies do not uniformly control for comorbid conditions (**Level 2-3**)

Some case series and waitlist-controlled trials suggest that minimally invasive surgical approaches may be useful in older adults, yet these trials may have little to do with whether surgical treatments are appropriate in the frail elderly (**Level 3**)

Wagg, A. et al. "Incontinence in frail older persons" in Incontinence, Report of the 6th ICI 2017. ICS. Bristol

BJUI

Evaluation and establishment of a ward-based geriatric liaison service for older urological surgical patients: Proactive care of Older People undergoing Surgery (POPS)-Urology

Phase 1
daily board round, weekly multidisciplinary meeting, and targeted geriatrician-led ward rounds for elective and emergency urology patients aged ≥65 years

Phase 2
quality improvement project involving Plan-Do-Study-Act cycles and qualitative staff surveys in order to create a Geriatric Surgical Checklist to standardize the intervention in Phase 1, improve equity of care by extending it to all ages, improve team- working and streamline handovers for multidisciplinary staff

BJU Int. 2016 May 11. doi: 10.1111/bju.13526.

Phase 1 included 112 patients in the control month and 130 in the intervention month.

length of inpatient stay was reduced by 19% (mean 4.9 vs 4.0 days; P = 0.01)

total postoperative complications were lower (risk ratio 0.24 [95% confidence interval 0.10, 0.54]; P = 0.001).

A non-significant trend was seen towards fewer cancellations of surgery (10 vs 5%; P = 0.12) and 30-day readmissions (8 vs 3%; P = 0.07).

In Phase 2, questionnaires repeated at intervals showed that the GSCL helped staff to

- understand their role better in multidisciplinary meetings
- improve their confidence to raise issues
- reduce duplication of handovers and standardized identification of geriatric issues.

Equity of care was improved by providing the intervention to patients of all ages, despite which the time taken for the daily board round did not lengthen

Summary

Proactive preoperative assessment and timely intervention and,

Proactive post operative mobilization can improve outcomes for older persons undergoing surgery