Preparation of the elderly patients for emergency surgery

Sooraj Motilall

Intensivist and Trauma Surgeon

Netcare Union Hospital

What does it mean to be old?

- **Becoming old is considered a privilege and results from the socioeconomic progress and improvements in health care systems worldwide.**

- **However, morbidity and mortality increases with age, and even more so in acute onset disease.**

- **Currently a considerable number of elderly patients will continue to live with good function and excellent quality of life after emergency surgical care.**

Definitions of “elderly”

- **1907 a threshold of 50 years was chosen**
- **Surgery was not warranted even in this age group**
- **Developed countries > 65 years**
- **WHO defines old age as 60 years and over**
- **Poorer countries with lower life expectancy than in developed countries, ages as low as 50–55 years can be used**

Continuum - progression from fit and healthy through to frailty

Frail older people are at greater risk of complication and death when they present with acute surgical emergencies.

Table 1 Definitions of old age

Group	Age	Goals
Entering old age Completed their career in paid employment and/or child rearing Are active and independent and many remain so into late old age	Includes people as young as 50 years old, or from the official retirement ages of 60 for women and 65 for men	Promote and extend healthy active life Compress morbidity (the period of life before death spent in frailty and dependency)
Transitional phase In transition between healthy, active life and frailty	This transition often occurs in the seventh or eighth decades of life but can occur at any stage of older age	Identify emerging problems ahead of crisis Ensure effective responses that will prevent crisis and reduce long-term dependency
Frail older people These people are vulnerable as a result of health problems such as stroke or dementia, social care needs, or a combination of both	Frailty is often experienced only in late old age, so services for older people should be designed with their needs in mind	Anticipate and respond to problems, recognizing the complex interaction of physical, mental, and social care factors, which can compromise independence and quality of life

UK, the government's National Service Framework for Older People further classifies old age into stages

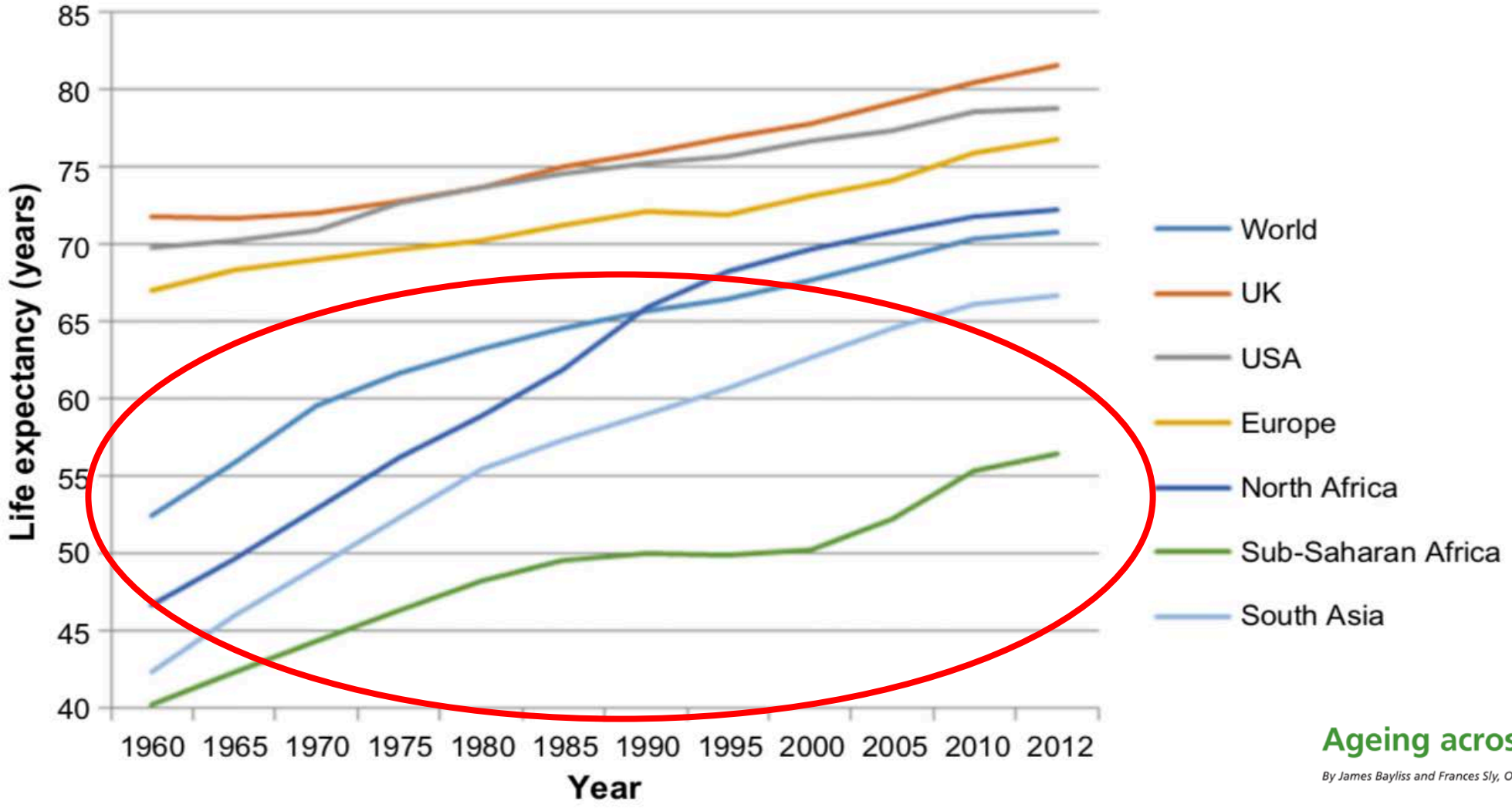
Physiological changes of the elderly

	Changes	Functional Effects
Cardiovascular	- Increased collagen matrix in Tunica Media - Loss of elastin fibers - Cardiac hypertrophy: septum thickening - Decreased cardiomyocytes and increased extracellular matrix	- Heart and vascular stiffness - Mayor endothelial dysfunction - Explosive volume preserved - Increased risk of arrhythmias
Renal	- Thinning renal cortex - Glomerular sclerosis arteries - Glomerular basement membrane Thickening	- Decreased ability to concentrate urine. Lower renin and aldosterone levels - Lower vitamin D hydroxylation
Glucose Metabolism	- Increased visceral fat - Fat tissue infiltration - Less beta cell mass	- Increased production of adipokines and inflammatory factors inflammatory factors - Greater insulin resistance and diabetes
Bones	- Decreased bone mineral content	- Increased fractures and falls - Osteoporosis
Muscular	- Loss of muscle mass - Less type II fibers - Fat infiltration	- Decreased strength and power - Falls - Fragility
Central Nervous System	- Less brain mass - Increased cerebrospinal fluid - Low neuronal loss, focused - Changes in neuronal arborization	- Less targeting neuronal activity - Lower processing speed - Decreased working memory - Less motor skills
Body Composition	- Increased body fat - Increased Body Mass Index (BMI)	- Increased risk of disease.

Epidemiology

- **Internationally populations are getting older**
- **Presently 17% of the UK population is aged 65 years and older**
- **Average life expectancy for this group adds a further 20–30 years**
- **2031 > they will account for 22% of the UK population**
  > 5% being older than 90 years

Trend is replicated globally



Ageing across the UK

By James Bayliss and Frances Sly, Office for National Statistics

Implications

- **40% of hospital admissions in people > 65 years**
- **This age group - largest increase in admissions since 2000**
- **18 – 64 (36%) vs > 65 years (45.6%)**
- **90 years (50%)**

Implications

- **Older people may not accept elective surgical procedures as frequently as their younger counterparts**

- **Mortality in elderly patients after emergency surgical presentations can approach 50%**

- **Those that survive**
  - **→ increased dependency on acute and social care**
  - **→ resource and financial implications**

Problems with operating on the elderly

- **‘‘they tolerate the operation, but not the complications.’**
- **“peri-operative care of the elderly surgical patient is fragmented and managed poorly, resulting in potentially avoidable morbidity and mortality.”**
- **“suggest that a culture of inadequate, disjointed and unsympathetic healthcare exists for elderly inpatients ”**


Doom
Gloom


"KEEP YOUR HEAD UP.
KEEP FIGHTING.
THERE IS ALWAYS LIGHT
AT THE END OF THE
TUNNEL, AND YOUR
STRUGGLES ONLY MAKE
YOU BETTER IN THE END."

Royal College of Surgeons
ADVANCING SURGICAL CARE

ELDERLY PATIENTS

Ann R Coll Surg Engl 2016; **98:** 177–180
doi 10.1308/rcsann.2015.0043

Surgical mortality in patients more than 80 years of age

AM Khan-Kheil, HN Khan

University Hospital Coventry & Warwickshire NHS Trust, UK

4,069 patients were admitted under general, vascular and urological surgeons during the study period. Of these patients, 521 were aged >80 years. Sixty-three patients underwent emergency surgery and 12 died <30 days after surgery (mortality = 19%).

Emergency surgery should not be denied to subjects aged >80 years based on age alone.

Mortality varies according to the type of emergency procedure. Mortality was highest after laparotomy and vascular surgery.

Hernia repair and abscess drainage, survival was almost 100% after 30 days.

Merani et al. World Journal of Emergency Surgery 2014, 9:43
http://www.wjes.org/content/9/1/43

WORLD JOURNAL OF EMERGENCY SURGERY

RESEARCH ARTICLE Open Access

Predictors of in-hospital mortality and complications in very elderly patients undergoing emergency surgery

Shaheed Merani[1], Judd Payne[1], Raj S Padwal[2], Darren Hudson[3], Sandy L Widder[1,3], Rachel G Khadaroo[1,3,4*]
on behalf of the Acute Care and Emergency Surgery (ACES) Group

- **70 patient admissions**
- **Mean age was 84 years**
- **Comorbidities were present in 91% of this older patient population**
- **American Society of Anesthesiologist Physical Status (ASA) Classification (OR 5.30, 95% CI 1.774-15.817, p = 0.003) and the development of an in-hospital complications (OR 2.51, 95% CI 1.210-5.187, p = 0.013) were independent predictors of postoperative mortality.**
- **Chronological age or number of comorbidities was not predictive of surgical outcome.**

Int Surg 2016;**101**:161–166
DOI: 10.9738/INTSURG-D-15-00261.1

Factors affecting outcome

Surgery of the Elderly Patient

Derya Karakoc

Department of General Surgery, Hacettepe University Medical School, Ankara, Turkey

- Physiological changes induced by the process of aging
- Cumulative impact of coexisting diseases
- Functional and nutritional status
- Presence of drug use
- Difficulties in communication and comprehension as reduced hearing or vision
- Falls
- Incontinence
- Compromised cognitive function
- Provision of informed consent

- **Comorbidities**
- **Disability**
- **Frailty**
- **Delirium**
- **Cognitive**

Definitions

- **Comorbidity - is the clinical manifestation of illness in an individual such as cardiac, pulmonary, or renal diseases.**

- **Disability is defined as difficulty in carrying out activities that are essential for independent living such as bathing, dressing, and eating**

- **Frailty in the elderly refers to patients with poor physiologic reserve who are at an increased risk of adverse events following exposure to stressors such as anaesthesia and surgery.**

Frailty

Royal College of Surgeons
ADVANCING SURGICAL CARE

REVIEW

Ann R Coll Surg Engl 2016; **98**: 165–169
doi 10.1308/rcsann.2016.0087

Frailty and cognitive impairment: Unique challenges in the older emergency surgical patient

SJ Moug[1], M Stechman[2], K McCarthy[3], L Pearce[4], PK Myint[5], J Hewitt[6] on behalf of The Older Persons Surgical Outcomes Collaboration (OPSOC)*

- **Occurs in 25% of the population aged over 85 years**
- **Predisposes to falls, disability, delirium, increased long-term care and death**
- **Associated with anaemia, poly-pharmacy (>5 medications) and significantly longer hospital stay**
- **Frail patients were 4 times as likely to die at 30 days after admission and 3 times as likely to die at 90 days.**

Royal College of Surgeons
ADVANCING SURGICAL CARE

REVIEW

Ann R Coll Surg Engl 2016; **98**: 165–169
doi 10.1308/rcsann.2016.0087

Frailty and cognitive impairment: Unique challenges in the older emergency surgical patient

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1	Very Fit	Robust, active, energetic, well motivated and fit; these people exercise regularly and are in the most fit group for their age
2	Well	without active disease, but less fit than people in group 1
3	Well, with treated comorbid disease	disease symptoms are well controlled compared to people in group 4
4	Apparently vulnerable	although not frankly dependent, these people commonly complain of being "slowed up" or have disease symptoms
5	Mildly Frail	with limited dependence on others for instrumental activities of daily living
6	Moderately Fril	help is needed with both instrumental and non instrumental activities of daily living
7	Severely Frail	completely dependent on others for activities of daily living or terminally ill

Figure 1 Canadian study of health and ageing clinical frailty score

Frailty

Lancet. Author manuscript; available in PMC 2014 July 15.

Published in final edited form as:
Lancet. 2013 March 2; 381(9868): 752–762. doi:10.1016/S0140-6736(12)62167-9.

Frailty in Older People

- **Hand grip test**
- **Get up and go test**
- **Mini mental state examination**
- **Walking speed**

Delirium

- **Present in between 11% and 24% of older patients at admission to hospital**
- **Can develop subsequent to admission in a further 5%–35%**

AMT4 (abbreviated mental test)

1. Age?
2. Date of birth?
3. Place?
4. Year?

A score less than 4 is abnormal and should prompt further cognitive screening.


There's a way to
do it better - find it.
Thomas A. Edison

- Resuscitation
- Prompt diagnosis
- Risk stratification and identification of frailty
- Patients' wishes and avoidance of futile surgery
- Nonsurgical treatments
- Timely surgical intervention that is consultant delivered
- Expert perioperative and operative care
- Careful postoperative management and avoiding "failure to rescue"
- Comprehensive geriatric assessment (CGA)
- Management of comorbidities and polypharmacy
- Trainee and surgeon education


Open Access Emergency Medicine
Dovepress
open access to scientific and medical research
Open Access Full Text Article
REVIEW
Emergency surgery in the elderly: challenges and solutions
This article was published in the following Dove Press journal:
Open Access Emergency Medicine
8 September 2015

Resuscitation - Prehospital

Aging and Disease
www.aginganddisease.org
Volume 9, Number 1; 143-150, February 2018
http://dx.doi.org/10.14336/AD.2017.0306

Review

A Comprehensive Review of Non-Steroidal Anti-Inflammatory Drug Use in The Elderly

Supakanya Wongrakpanich[1,*], Amaraporn Wongrakpanich[2], Katie Melhado[1], Janani Rangaswami[3]

- **Analgesia > NSAID's avoided till renal function assessed**
- **Fluid resuscitation > fluid overload and pulmonary oedema**
- **Warming > core temperature**
- **History taking > info from relatives/carers who may not travel to hospital**
  > record details of pre-morbid physical and cognitive status
  > drug therapy
  > next-of-kin

Resuscitation - ED

Clinical Interventions in Aging

Dovepress
open access to scientific and medical research

Open Access Full Text Article

REVIEW

Comprehensive geriatric assessment in the emergency department

Clinical Interventions in Aging
2014:9 2033–2043

- **IV fluids and correction of electrolytes**
- **Antibiotics and sepsis guidelines**
- **Guidelines suggest that patients with high early warning scores should be seen immediately by senior surgical and anesthetic/critical care staff**

Prompt diagnosis

Common missed diagnosis and pitfalls

Condition	Index of suspicion	Tips
Ruptured AAA	May be confused for cardiac event (collapse, hypotension), renal colic (first presentation with renal calculi is uncommon in patients >60 years of age); pulsatile mass may be difficult to feel in the hypotensive or obese patient	Back pain ± collapse + hypotension should prompt FAST or CT scan to assess abdominal aorta
Acute groin hernia	70% Patients >70 years old, increasing age means increasing risk of obstruction and strangulation	Careful and thorough examination of femoral and inguinal canals must be performed
Ischemic bowel	Nonspecific features, sudden onset abdominal pain out of proportion to clinical signs; patients have a soft abdomen in the early stages of the disease	Raised lactate and acidosis levels are late features Low threshold for CT imaging White cell count is typically high Peritonism and rigidity usually indicate infarcted intestine
Appendicitis	Still common in elderly patients but not as common as in young patients	Consider cecal malignancy or diverticulitis as cause and consider CT to exclude
Gastric volvulus	Nonbilious vomiting; more common in the elderly; associated with chest pain and retching; patient may have a history of a hiatus hernia or signs of a hiatus hernia on plain chest X-ray; often misdiagnosed as a upper GI bleed with "coffee ground" type vomiting	Chest X-ray reveals a hiatus hernia with a distended stomach, typically visible in the chest and the upper abdomen
Ischemic lower limb	Common cause for "off-legs", consider in AF/cancer patients	Always examine unwell patients' feet
Hip fracture	Easily missed, particularly if bedbound; the severity of the fall can be fairly minor; contractures may make external rotation difficult to assess	Maintain a high index of suspicion and consider routine hip X-ray after fall in high-risk patients

Prompt diagnosis
Liberal use of imaging (CT)

- 104 patients

- CT altered
  - admission decision - 26%
  - need for antibiotics – 21%
  - suspected diagnosis – 45%
  - certainity of diagnosis - 36% pre-CT to 77% post-CT
  - diagnosis altered in 50%

Ability of CT to alter decision making in elderly patients with acute abdominal pain

Am J Emerg Med. 2004 Jul;22(4):270-2.

Risk stratification and identification of frailty

- **None of these risk scores make any adjustment for frailty**
- **Complicated and time-consuming**
- **Balance between accuracy of prediction and real-world applicability**
- **Cumbersome requiring multiple inputs**
- **Limited practical utility in the emergency situation**


The American Journal of Surgery 216 (2018) 585–594

Contents lists available at ScienceDirect

The American Journal of Surgery

journal homepage: www.americanjournalofsurgery.com

Review

Review of risk assessment tools to predict morbidity and mortality in elderly surgical patients

Gilgamesh Eamer [a], Mohamed J.H. Al-Amoodi [a], Jayna Holroyd-Leduc [b, c], Darryl B. Rolfson [d], Lindsey M. Warkentin [a], Rachel G. Khadaroo [a, e, *]

Physiological Parameters

Age	< 61 yrs old
Cardiac	No cardiac failure
Respiratory	No dyspnoea
ECG	ECG normal
Systolic BP	110 - 130 mmHg
Pulse Rate	50 - 80 bpm
Haemoglobin	13 - 16 g/dl
WBC	4 - 10
Urea	<7.6
Sodium	>135 mmol/l
Potassium	3.5 - 5 mmol/l
GCS	15

ASA PS Classification	Definition	Examples, including, but not limited to:
ASA I	A normal healthy patient	Healthy, non-smoking, no or minimal alcohol use
ASA II	A patient with mild systemic disease	Mild diseases only without substantive functional limitations. Examples include (but not limited to): current smoker, social alcohol drinker, pregnancy, obesity (30 < BMI < 40), well-controlled DM/HTN, mild lung disease
ASA III	A patient with severe systemic disease	Substantive functional limitations; One or more moderate to severe diseases. Examples include (but not limited to): poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD undergoing regularly scheduled dialysis, premature infant PCA < 60 weeks, history (>3 months) of MI, CVA, TIA, or CAD/stents.
ASA IV	A patient with severe systemic disease that is a constant threat to life	Examples include (but not limited to): recent (< 3 months) MI, CVA, TIA, or CAD/stents, ongoing cardiac ischemia or severe valve dysfunction, severe reduction of ejection fraction, sepsis, DIC, ARD or ESRD not undergoing regularly scheduled dialysis
ASA V	A moribund patient who is not expected to survive without the operation	Examples include (but not limited to): ruptured abdominal/thoracic aneurysm, massive trauma, intracranial bleed with mass effect, ischemic bowel in the face of significant cardiac pathology or multiple organ/system dysfunction
ASA VI	A declared brain-dead patient whose organs are being removed for donor purposes	

ACS NSQIP®

Surgical Risk Calculator

100+years

AMERICAN COLLEGE OF SURGEONS

Inspiring Quality: Highest Standards, Better Outcomes

Patients' wishes and the avoidance of futile surgery

- Not all patients with conditions amenable to operative management should be taken to theatre
- Futile surgery must be avoided
- Risk assessment and discussion with the patient, family, carers, and patient advocates.
- Some patients will be aware that they are approaching death
- Would rather have the focus shifted to palliative measures rather than heroic and unrealistic surgery.
- Pressure from patients, family, and other health care professionals can influence decision making → chances of treatment success is low.

Patients' wishes and the avoidance of futile surgery

- **Litigation, ensuring that patients, families, and carers are fully involved in decision-making processes is essential.**

- **Multidisciplinary discussion**

- **Consider formal second opinion**

- **Respecting patient wishes when expressed at the time of presentation or in the form of an advanced decision to refuse treatment must be at the forefront of the emergency clinician's mind when deciding on a course of treatment**

OPTIMAL PERIOPERATIVE MANAGEMENT OF THE GERIATRIC PATIENT:

Best Practices Guideline from ACS NSQIP®/American Geriatrics Society

TYPES OF ADVANCE DIRECTIVES‡	
Living will	Specifies medical treatments—including cardiopulmonary resuscitation (CPR), mechanical ventilation, enteral feeding, dialysis, and antibiotics—that the patient would or would not want used to prolong their life, as well as other decisions regarding pain management or organ/tissue/body donation
Durable power of attorney	A person (with or without alternatives) named to make decisions on behalf of the patient if they are unable to do so
Do not resuscitate (DNR) order	Specific medical order instructing providers not to perform CPR if the patient's heart activity or breathing ceases
Do not intubate (DNI) order	Specific medical order instructing providers not to intubate the patient and/or place him or her on mechanical ventilation

‡**See** *www.lifecaredirectives.com*

Nonsurgical options

- Used in patients who are deemed unfit for emergency open surgery.
- Transfer patients to larger better-equipped hospitals
- Local referral pathways should be developed to allow this to occur.

Table 4 Potential nonsurgical treatments for various acute abdominal conditions

Diagnosis	Nonsurgical treatment option
Diverticular or appendix abscess	Radiological drainage for abscess or collection formation
Nongangrenous mesenteric ischemia	Anticoagulation
	Interventional radiology (clot thrombolysis or retrieval, arterial dilatation, and stenting)
Obstructing colorectal cancer	Endoluminal stenting
Severe cholecystitis or gallbladder empyema	Radiological drainage, "cholecystostomy", gallbladder drainage
Ruptured abdominal aortic aneurysm	Endovascular aortic aneurysm repair
Major upper gastrointestinal hemorrhage, eg, bleeding duodenal ulcer	Endoscopic hemostasis (adrenaline, clips, spray etc)
	Selective interventional radiological embolization of the bleeding vessel
Gastric volvulus/incarcerated hiatus hernia	Endoscopic decompression and guided nasogastric decompression
	Percutaneous endoscopic gastrostomy as fixation to prevent recurrence
Sigmoid volvulus	Rigid or flexible endoscopic decompression
	Percutaneous endoscopic colostomy as fixation to prevent recurrence

Timely surgical intervention

- **Elderly patients are more likely to experience a delay in access to theater than younger patients**
- **Most waiting 24 hours for surgery**
- **Time for investigation and optimization**
- **Caution → limit to amount of time for optimization**
- **Risk of adverse events outweighs**

Dodds *et al. Perioperative Medicine* 2013, **2**:6
http://www.perioperativemedicinejournal.com/content/2/1/6

CONSENSUS STATEMENT Open Access

Peri-operative care of elderly patients – an urgent need for change: a consensus statement to provide guidance for specialist and non-specialist anaesthetists

Chris Dodds[1], Irwin Foo[2*], Kerri Jones[3], Shiv Kumar Singh[4] and Carl Waldmann[5]

Expert perioperative and operative care

- **Lack of consultant involvement in emergency care results in increased complication rates and mortality**

- **Operative intervention in high-risk elderly patients should be delivered by the consultant surgeon, with anesthesia being provided at a similar consultant grade.**

The Higher Risk General Surgical Patient :

Towards Improved Care for a Forgotten Group

An Age Old Problem

A review of the care received by elderly patients undergoing surgery

A report by the National Confidential Enquiry into Patient Outcome and Death (2010)

Postoperative management
Avoiding “failure to rescue”

- **Postoperative monitoring in high-dependency or ICU**
- **“failure to rescue” a potentially treatable or avoidable postoperative complication results in a patient’s death**
- **Delirium or confusion → sepsis and anastomotic leak**
- **Delirium in elderly 50% → increased in mortality**

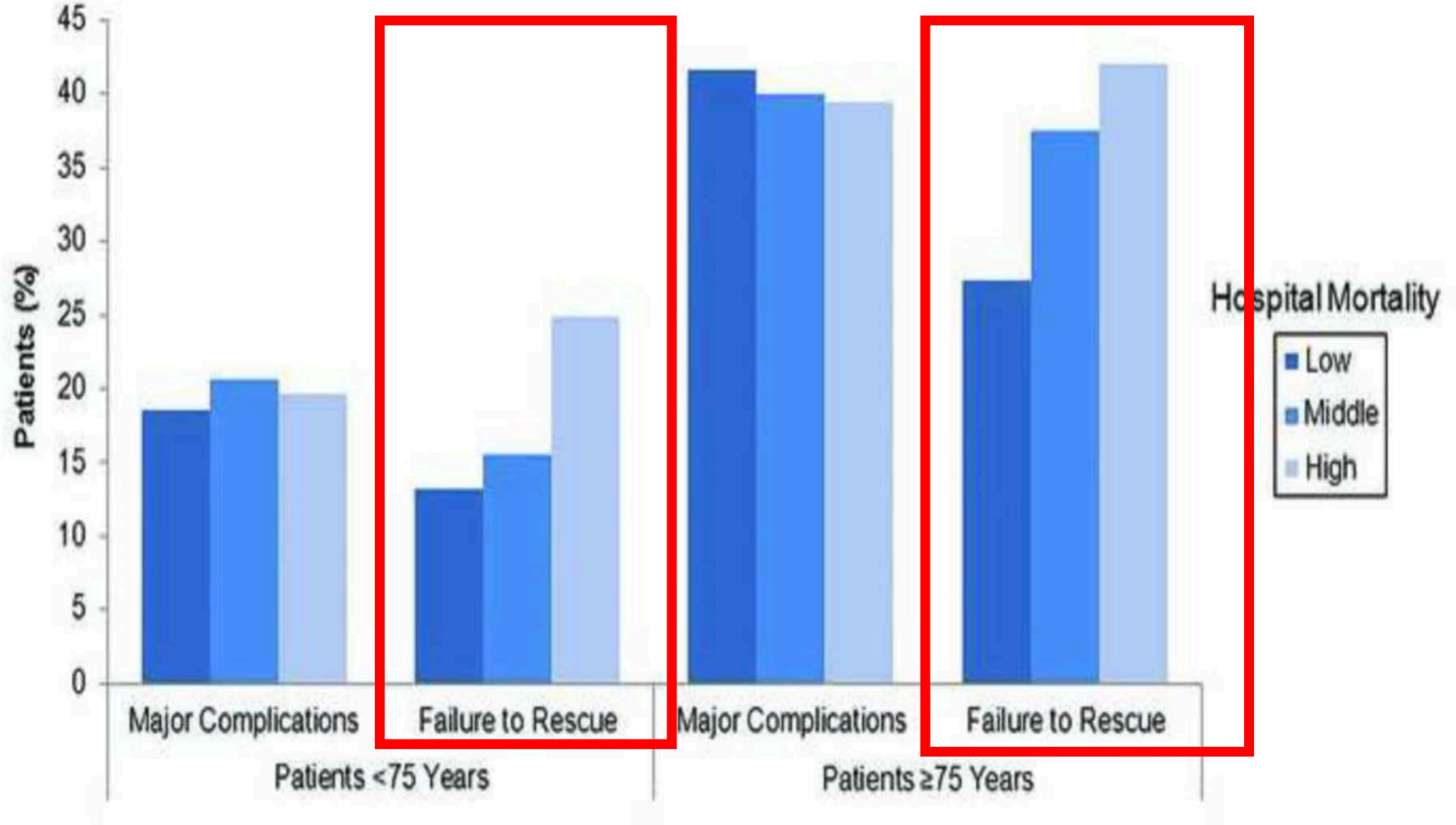
Postoperative management
Avoiding “failure to rescue”

Published in final edited form as:
Ann Surg. 2013 October ; 258(4): 614–618. doi:10.1097/SLA.0b013e3182a5021d.

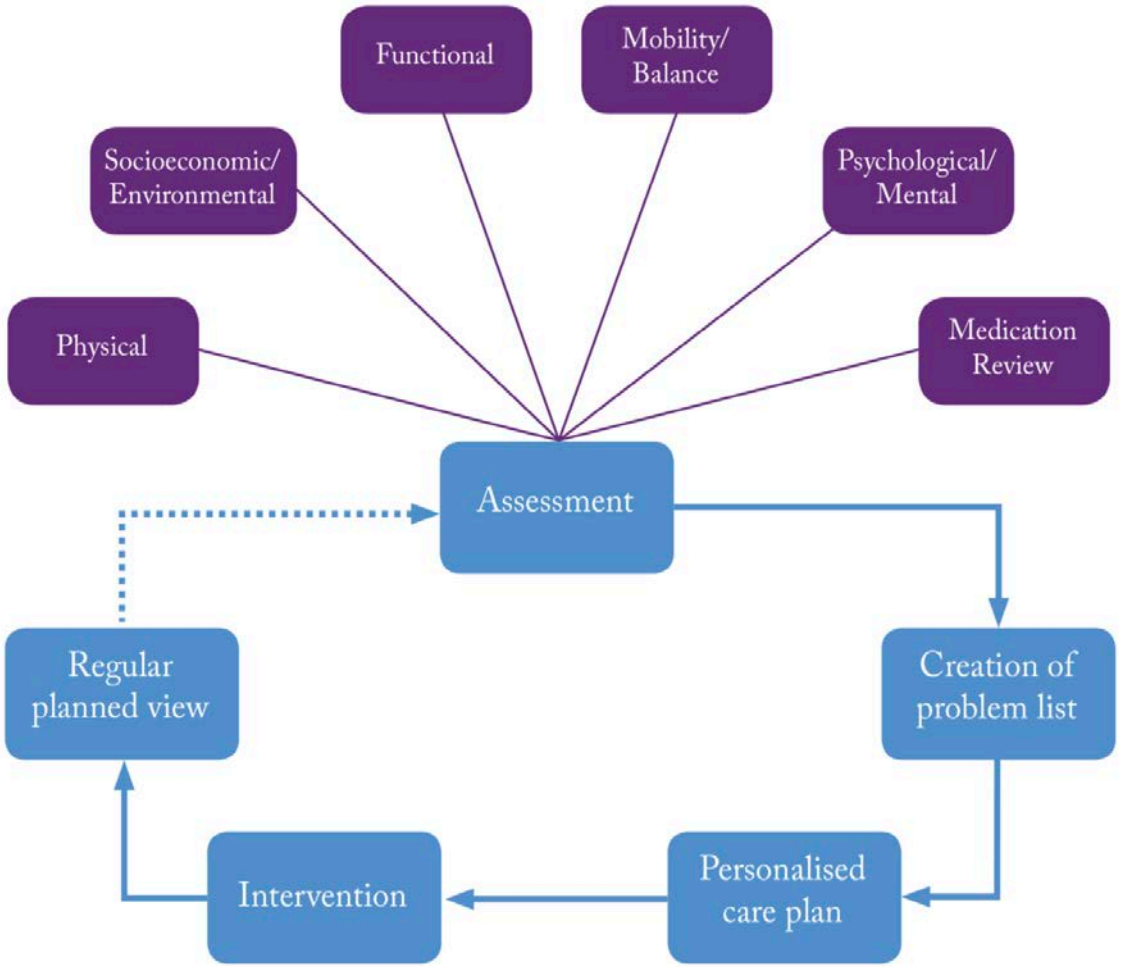
Improving Mortality Following Emergency Surgery in Older Patients Requires Focus on Complication Rescue

Kyle H. Sheetz, **Seth A. Waits**, **Robert W. Krell**, **Darrell A. Campbell Jr.**, **Michael J. Englesbe**, and **Amir A. Ghaferi**
Department of Surgery, University of Michigan, Ann Arbor, MI, USA

- **N = 23,224 patients emergent general/vascular surgery procedures**
- **41 hospitals Michigan Surgical Quality Collaborative 2006–2011**



Comprehensive geriatric assessment (CGA)



British Geriatrics Society
Improving healthcare for older people

BGS

Comprehensive Geriatric Assessment Toolkit for Primary Care Practitioners

Making CGA work

Key processes and structures which support implementation and maximise the impact of using CGA are:

- Development of multi-professional teams
- Clear identification of a joint core level of competence in assessment between health and social care practitioners
- Clarity of when referral for specialist single professional assessment is appropriate
- Single patient-held documentation
- Information sharing systems
- Regular multidisciplinary team (MDT) review meetings to share knowledge and develop team working
- Access to joint health and social care funding.

Delivery of care
Multi-disciplinary teams

Aging Clinical and Experimental Research (2018) 30:277–282
https://doi.org/10.1007/s40520-017-0886-5

EXPERT REVIEW

Geriatricians and the older emergency general surgical patient: proactive assessment and patient centred interventions. Salford-POP-GS

Arturo Vilches-Moraga[1,2] · Jenny Fox[2]

Received: 16 November 2017 / Accepted: 22 December 2017 / Published online: 6 February 2018

- Single organ specialty physicians
- General physicians/Surgeons/Anaesthetists sharing care
- Perioperative Specialists
- Geriatrician led multidisciplinary team

- **Single organ specialty physicians > reactive service triggered once complications have already developed**

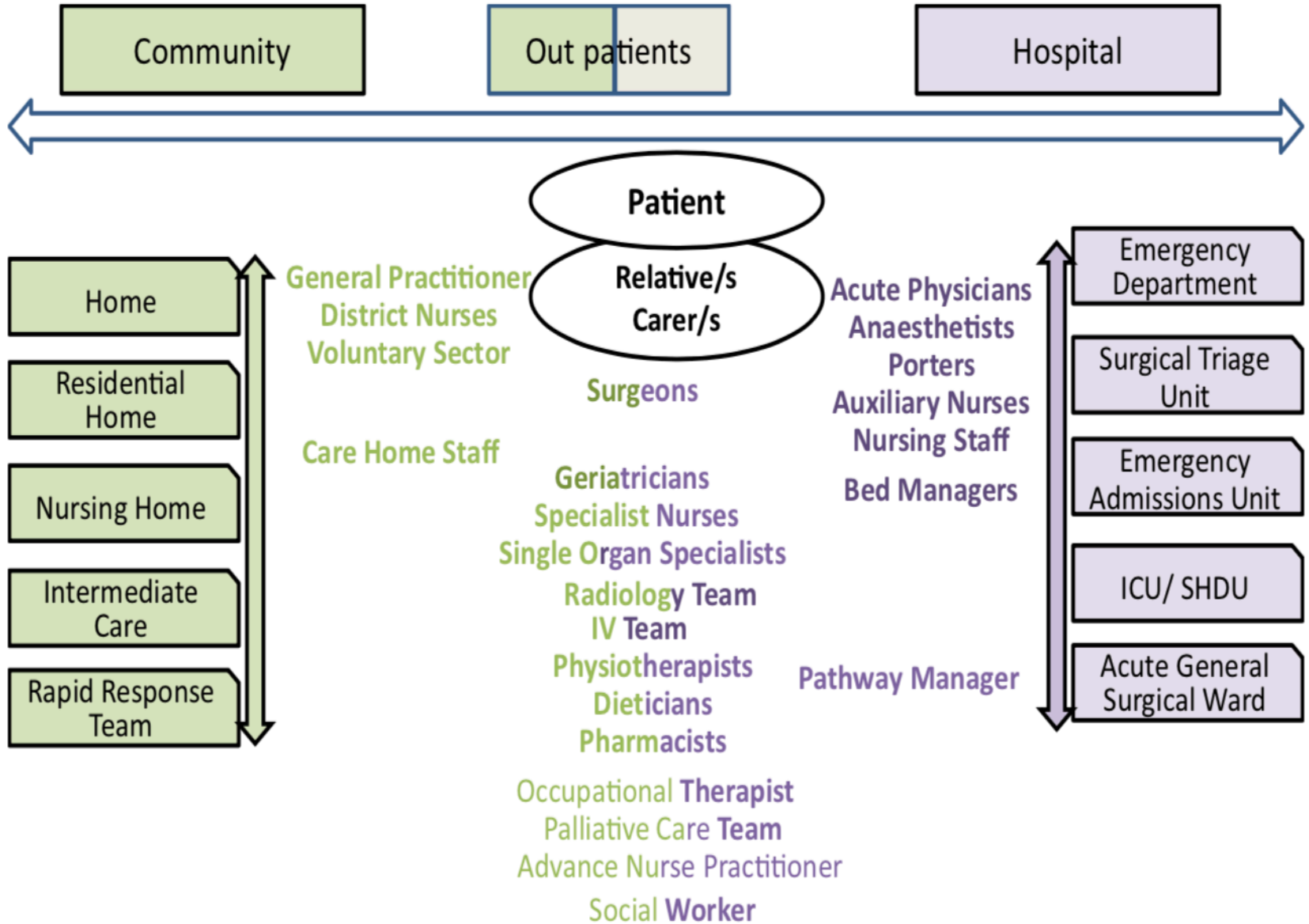
  > in older surgical patients, it may result in several referrals
  > and even conflicting recommendations.

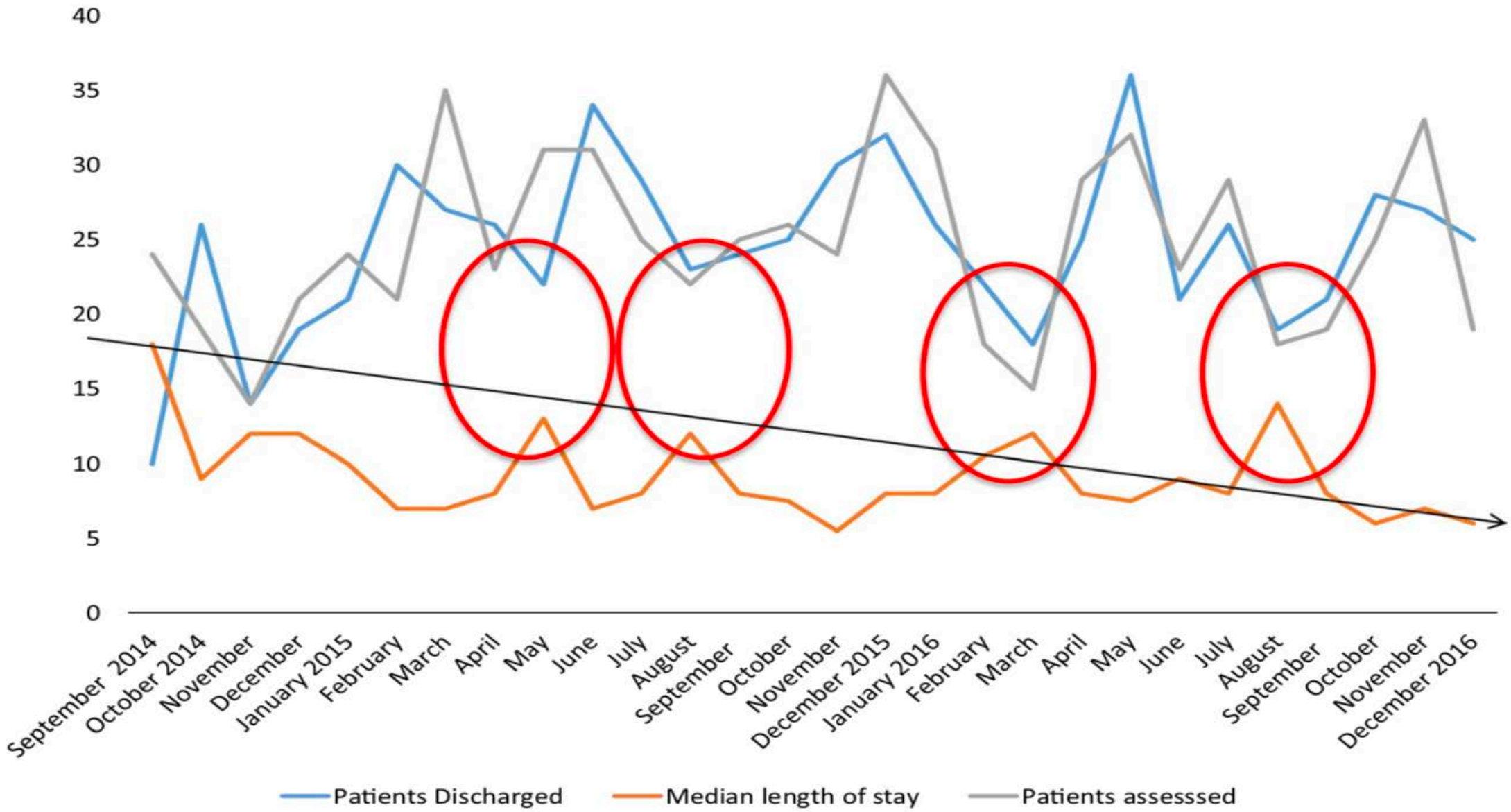
- **General physicians > joint care of all surgical patients between a physician, anaesthetist and surgeon**

  > physician coordinates the inpatient pathway, whilst the latter provide timely perioperative care

  > appears to work with younger patients
  > teams lack specific skills, training and expertise in the management of complex older people.

Fig. 3 Members of the Surgical Multidisciplinary Team

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December 2016
Patients Discharged
Median length of stay
Patients assesssed

Trainee and surgeon education


Articles

Development and Implementation of a Formalized Geriatric Surgery Curriculum for General Surgery Residents

Andrew S. Barbas, John C. Haney, Brandon V. Henry, Mitchell T. Heflin & Sandhya A. Lagoo

Pages 380-394 | Accepted author version posted online: 21 Jan 2014, Published online: 10 Mar 2014

- Surgeons lack any formal training in geriatric medicine
- 16 didactic lectures – improved assessment by the trainees in recognizing geriatric issues such as delirium and acute renal impairment

Futility

Søreide and Desserud *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine* (2015) 23:10
DOI 10.1186/s13049-015-0099-x

SCANDINAVIAN JOURNAL OF trauma, resuscitation & emergency medicine

COMMENTARY Open Access

Emergency surgery in the elderly: the balance between function, frailty, fatality and futility

Kjetil Søreide[1,2*] and Kari F Desserud[1]

- Futile care is difficult to accurately assess
- High ASA
- Vasopressors and hypoalbuminaemia
- Sarcopenia

Patient preferences should preferably be discussed be- fore an episode of acute illness occurs to allow for an in- dividualized treatment plan with discussed and agreed limitations (if applicable) to step-up of care. This will probably reduce procedures that may prolong life, but not necessarily improve quality of life. Well-informed decisions are often more difficult to make in situations in severe dis- tress or when surrogates need to make them ad hoc.

Futility

J Am Coll Surg. 2012 Oct;215(4):503-11. doi: 10.1016/j.jamcollsurg.2012.06.004. Epub 2012 Jul 11.

When is death inevitable after emergency laparotomy? Analysis of the American College of Surgeons National Surgical Quality Improvement Program database.

Al-Temimi MH[1], Griffee M, Enniss TM, Preston R, Vargo D, Overton S, Kimball E, Barton R, Nirula R.

RESULTS: There were 37,553 patients who had undergone emergency laparotomy, with a 14% mortality rate. The American Society of Anesthesiologists classification system, functional status, sepsis, and age were the variables most significantly associated with mortality. Patients older than 90 years of age, with an American Society of Anesthesiologists class V, septic shock, dependent functional status, and abnormal white blood cell count have a <10% probability of survival.

Summary

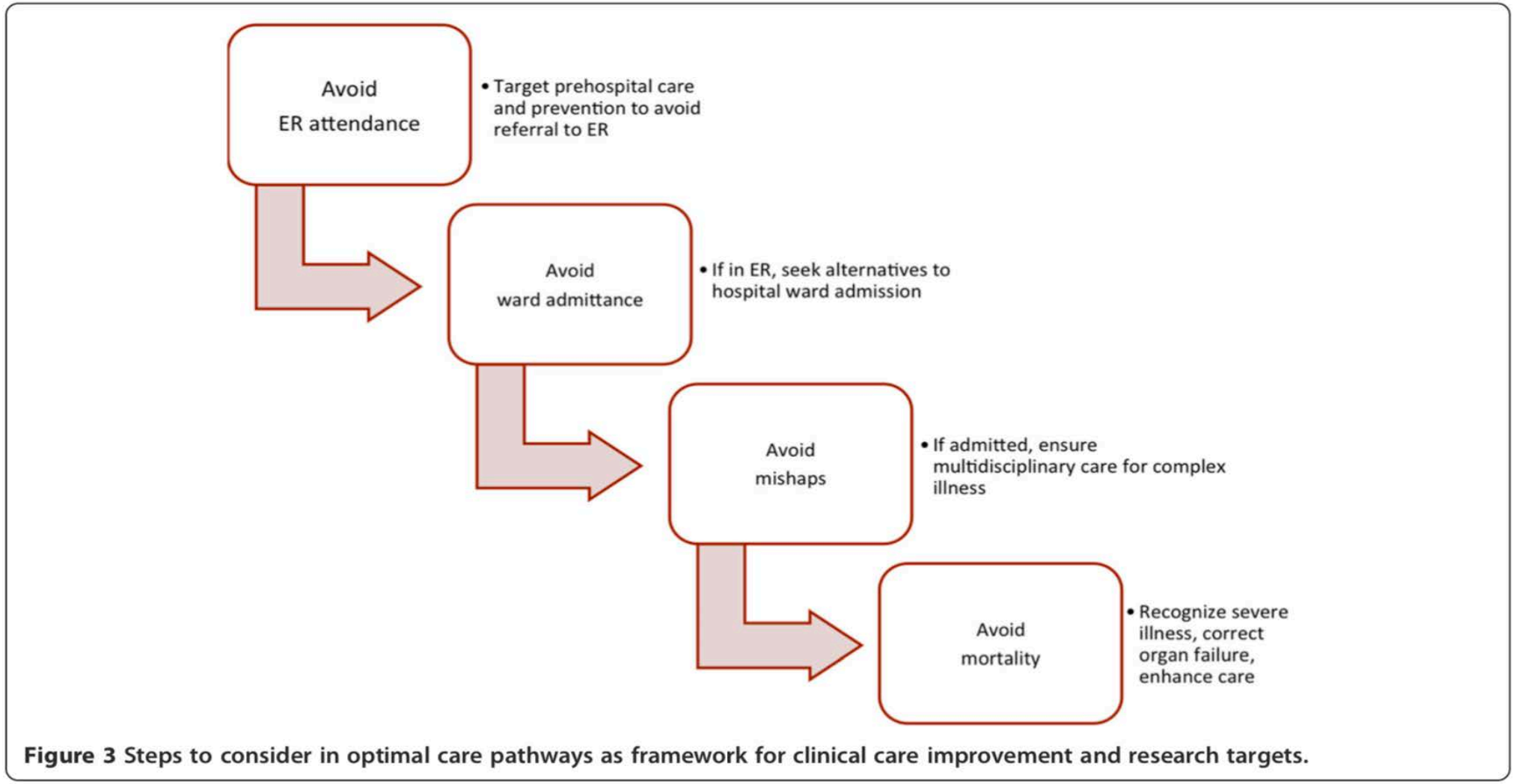
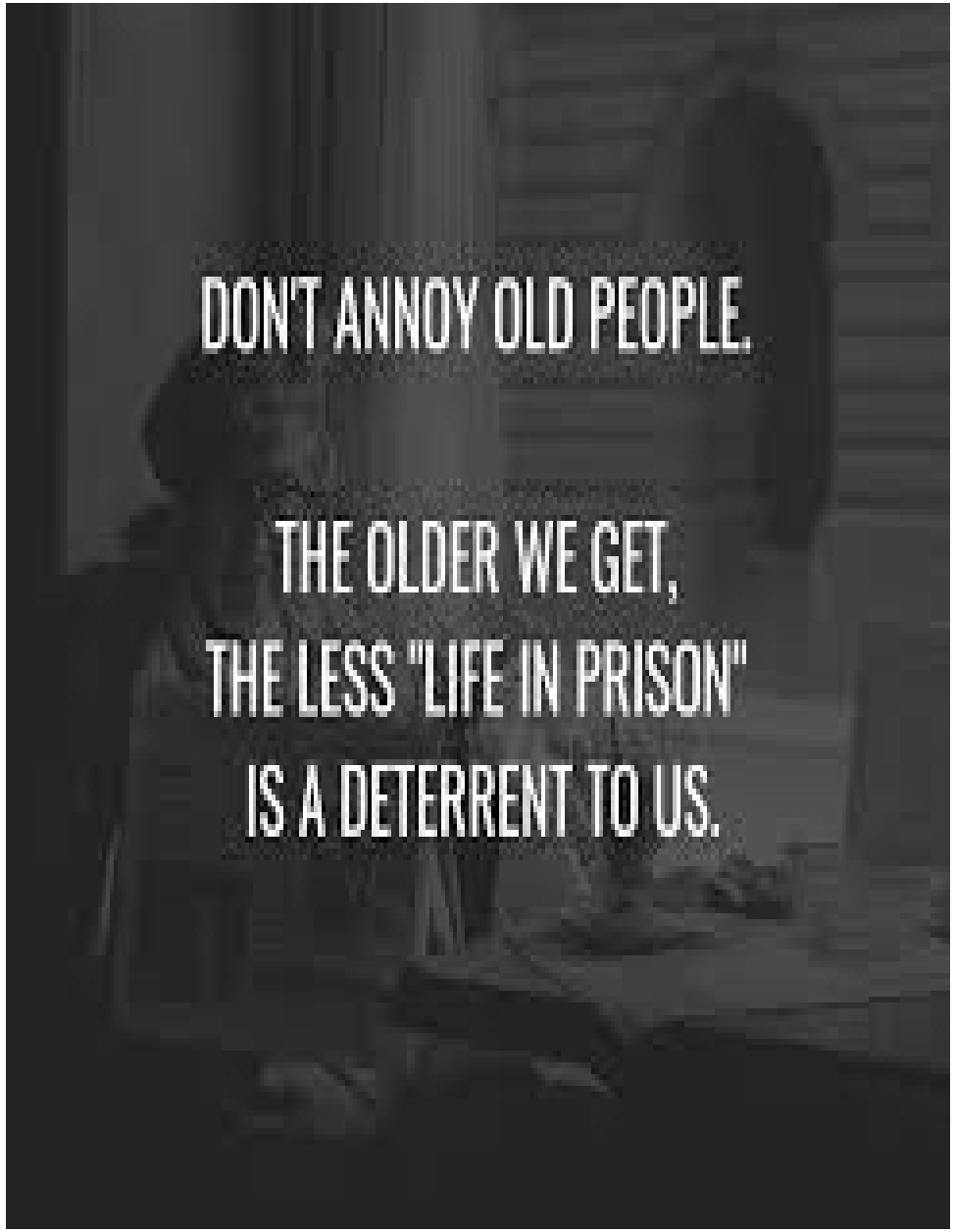


Figure 3 Steps to consider in optimal care pathways as framework for clinical care improvement and research targets.


LOVE AND RESPECT OLD AGE PEOPLE BECAUSE YOU ARE AGING TOO...
Aprana Verma


DON'T ANNOY OLD PEOPLE.
THE OLDER WE GET,
THE LESS "LIFE IN PRISON"
IS A DETERRENT TO US.