Making surgery safer for older patients

Proactive care of Older People undergoing Surgery (POPS)

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Dept of Ageing and Health
Guy’s and St Thomas’, London

“Improving the care of older surgical patients through collaboration, education and research”
The changing surgical population

Increasing numbers of older people

Ageing associated with degenerative, metabolic & neoplastic disease

Such conditions often require elective or emergency surgery

Increasing numbers of older people have surgery

But older people still have less surgery than would be expected

<table>
<thead>
<tr>
<th>Age in 2014</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
<td>18.9</td>
<td>21.4</td>
</tr>
<tr>
<td>75</td>
<td>11.7</td>
<td>13.5</td>
</tr>
<tr>
<td>85</td>
<td>6.1</td>
<td>7.2</td>
</tr>
<tr>
<td>90</td>
<td>4.3</td>
<td>5.0</td>
</tr>
</tbody>
</table>

ONS
Older surgical patients at higher risk of adverse...

Clinician reported outcomes
- Morbidity
- Mortality

Patient reported outcomes
- Recovery (change in trajectory of disease/disability)
- Experience, satisfaction

Process related outcomes
- Harm and complaints
- LOS, readmissions
- Cost (in-hospital, rehab, formal and informal)
Knowing this, how do we currently look after older surgical patients?

- Assess risk factors
- Not ‘fit’ for surgery
  - V
  - Fit for surgery
    - Sal/Sx ward
    - Admit to SAL/Sx ward
    - HDU/ITU
    - Discharge to community
    - Surgical ward
Whereas what we could be doing is....

Identify and modify risk factors

Risk management

Improve ‘fitness for surgery’

Shared decision making
Is this possible?

- Identify risk factors
- Modify risk factors
- Make patient fitter
- Less complications, managed better
- Improve outcomes

**BMJ Open** High-intensity interval exercise training before abdominal aortic aneurysm repair (HIT-AAA): protocol for a randomised controlled feasibility trial

Garry A Tow, 1 Matthew Weston, 1 Else Korthmann, 2 Alan M Betterham, 4 Joanne Gray, 3 Karen Kerr, 3 Denise Martin, 3 Shah Nawaz, 3 David Yulea, 3 Gerard Darjoux 1

*BJA* Management of adults undergoing surgery and elective procedures: improving standards
Yes, but it is complicated...

- Nutrition
- Skeletal muscle conditioning
- Cardiopul fitness
- Clinical pathway
- Manage comorbidity
- Anaemia
- Frailty
...even before we get to the in-patient phase....

- Medical complications
- Rehabilitation
- Discharge
- Follow up
**A typical ‘not too complicated’ patient story**

<table>
<thead>
<tr>
<th>74 yrs old F</th>
<th>Osteoarthritis</th>
<th>No surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living alone</td>
<td>Diabetes</td>
<td>HbA1c 8.2%</td>
</tr>
<tr>
<td>No support</td>
<td>Hypertension</td>
<td>BP 170/88</td>
</tr>
<tr>
<td>‘Difficult’ historian</td>
<td>SOB ?cause</td>
<td>ECG NAD</td>
</tr>
<tr>
<td></td>
<td>Anaemia</td>
<td>CXR NAD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hb 100g/l</td>
</tr>
</tbody>
</table>

**Elective colorectal cancer (orthopaedic/vascular/gynae/any) surgery**
...on the enhanced recovery programme...
...but the following happens

<table>
<thead>
<tr>
<th>Refuses surgery</th>
<th>Referred for medical opinion</th>
<th>Cancelled on day of surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Opiates</td>
<td></td>
</tr>
<tr>
<td>Post-op ileus</td>
<td>On/off ‘sliding scale’</td>
<td></td>
</tr>
<tr>
<td>Hypovolaemic (AKI)</td>
<td>Fluids</td>
<td></td>
</tr>
<tr>
<td>Anaemia</td>
<td>Blood</td>
<td></td>
</tr>
<tr>
<td>Peripheral oedema</td>
<td>Diuretics</td>
<td></td>
</tr>
<tr>
<td>(Apathy) Hypoactive delirium</td>
<td>Anti-depressants</td>
<td></td>
</tr>
<tr>
<td>Functional decline</td>
<td>POC</td>
<td></td>
</tr>
</tbody>
</table>
Does this really happen?

- 4 in 5 high risk patients to general ward
- Management on wards by junior staff
- Poor recognition of medical problems
- Reliance on on-call staff
- Multiple medical team involvement
Why does this happen?

- Knowledge
  - Assessment, optimisation, post-op medical care, rehabilitation, discharge planning

- Behaviours
  - Reactive approach
  - Unstandardised and uncoordinated medical management

- Attitudes
  - Cultural, traditional, silos of care
An alternative model

Surgical OP → Triage nurse → Admissions → Day case
- Generic PAC (Nurse led)
- Specialist PAC (Nurse led)
- POPS (Proactive care of Older People undergoing Surgery)
- Anaesthetist

POAC MDTMs

Medical specialties
The POPS model

Surgical OP/PAC Referrals
- Screening criteria
- ‘Medically unfit’
- Support required for decision making

Pre-op CGA
Consultant CNS
OT
Social worker

Post Discharge
Intermediate Care
Primary care
Social care
Specialist clinics

Hospital Admission
Ward rounds
MDMs
Case conferences
Education and training

Liaison
Patient
Surgical team
Anaesthetists
GP
Community service
Comprehensive geriatric assessment (CGA)

- Holistic, multidimensional, interdisciplinary assessment of an individual

- Formulation of
  - a list of needs and issues to tackle
  - an individualised care and support plan
  - tailored to an individual’s needs, wants and priorities
...because it allows...

Risk assessment
- Recognition of known comorbidity
- Identification of unrecognised disease, disability, frailty
- Assessment of functional reserve

Optimisation
- Medical, functional, psychological & social condition
  - Application of organ specific guidelines
  - Use of multidisciplinary interventions
...and facilitates...

Collaborative decision making
- Risk/harm versus benefit
- Consent, capacity, advance directives
- Communication

Risk management
- Prediction of post operative complications
- Planning of postoperative care promoting
  - Early identification of medical complications
  - Standardised mx of medical complications
- Prediction of support required on discharge
...and has a good evidence base

**THE LANCET**

**Clinical practice**

**Comprehensive geriatric assessment: a meta-analysis of controlled trials**

A.E. Stuck, MD, A.L. Siu, MD, O.D. Wieland, PhD, L.Z. Rubenstein, MD, J. Adams, PhD

**Anaesthesia 2014, 69 (Suppl. 1), 8–16**

**Review Article**

The impact of pre-operative comprehensive geriatric assessment on postoperative outcomes in older patients undergoing scheduled surgery: a systematic review

**DEPARTMENT OF PUBLIC HEALTH, OXFORD**

June 2012– Evidence Summary of a Cochrane Effective Practice and Organisation of Care group systematic review

Does inpatient comprehensive geriatric assessment improve care for frail older adults admitted to hospital?
## The same patient with POPS input...

<table>
<thead>
<tr>
<th>OA</th>
<th>Pain</th>
<th>Treat/physio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>HbA1c 8.2%</td>
<td>Treat/plan</td>
</tr>
<tr>
<td>HTN</td>
<td>BP 170/88</td>
<td>ABPM/treat</td>
</tr>
<tr>
<td>SOB ?cause</td>
<td>Ischaemic ECG</td>
<td>Medical optimisation</td>
</tr>
<tr>
<td>‘Difficult’</td>
<td>Anaemia</td>
<td>Iv iron</td>
</tr>
<tr>
<td>historian</td>
<td>Deconditioning</td>
<td>Exercise programme</td>
</tr>
<tr>
<td></td>
<td>Cog impair’t</td>
<td>Delirium risk/mx</td>
</tr>
<tr>
<td></td>
<td>Social issues</td>
<td>Equipment/POC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Psychological support</td>
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<td></td>
<td></td>
<td>Discharge planning</td>
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</tbody>
</table>
Admission on day of surgery
Detailed info to anaesthetist

Planned individualised intraoperative care

Proactive standardised mx of ileus, diabetes, fluid balance by joint team

Appropriate discharge plans

POPS Letter
Does this approach work?

Pre and post study
Ortho elective, Age and Ageing, 2007;36:190-196

Randomised controlled trial
- Single centre elective aortic & lower limb vascular
- 40% reduction in LOS
- No increase in readmission
- Predominantly due to
  - reduction in medical complications
  - streamlining of process (reduction in SD of LOS)
## The additional benefits

<table>
<thead>
<tr>
<th>Pre-op</th>
<th>↓ multiple hospital appts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>↓ ‘lost in the system’</td>
</tr>
<tr>
<td></td>
<td>↓ late cancellations</td>
</tr>
<tr>
<td><strong>Post-op</strong></td>
<td>↓ medical/multidisciplinary complications</td>
</tr>
<tr>
<td></td>
<td>Standardised mx of complications</td>
</tr>
<tr>
<td></td>
<td>Improved quality of overall care</td>
</tr>
<tr>
<td></td>
<td>Improved discharge planning</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td>Reduced LOS</td>
</tr>
<tr>
<td></td>
<td>Reduced readmissions</td>
</tr>
<tr>
<td></td>
<td>Improved coding</td>
</tr>
</tbody>
</table>

Cancer pathways

18 week pathway

Day of surgery admission

Communication

Education

Patient and staff satisfaction
What we do now at GSTT

<table>
<thead>
<tr>
<th>Guys</th>
<th>St Thomas’</th>
<th>POPS Clinic</th>
<th>CPOAC MDTMs</th>
<th>Ward based MDTMs</th>
<th>Joint surgical ward rounds</th>
<th>Amputee Rehab Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective – known to POPS</td>
<td>Orthopaedic – trauma</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective – not known to POPS</td>
<td>Upper GI/Lower GI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Elective</td>
<td>Vascular</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Orthopaedic – elective</td>
<td>Plastic</td>
<td></td>
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<tr>
<td>Urology</td>
<td></td>
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<td></td>
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<tr>
<td>Head and Neck</td>
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<td></td>
<td></td>
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<tr>
<td>ENT</td>
<td></td>
<td></td>
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</table>
Putting it into practice – case studies

Jason Cross
ANP – POPS team

“Improving the care of older surgical patients through collaboration, education and research”
### Intervention / CGA

- 77 year old elective / Fem distal bypass for PVD
  - Direct referral from consultant

<table>
<thead>
<tr>
<th>Issue</th>
<th>Assessment</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>IHD</td>
<td>Stable / BNP 450</td>
<td>Continue aspirin</td>
</tr>
<tr>
<td>PPM</td>
<td>Requires check as &gt;6 months</td>
<td>Arranged / site OK</td>
</tr>
<tr>
<td>CKD 4</td>
<td>Stable with risk of AKI &amp; dialysis</td>
<td>No contrast confirmed / risk discussed</td>
</tr>
<tr>
<td>DM</td>
<td>Referral to specialist / Hba1c &gt;10%</td>
<td>Pre op plan</td>
</tr>
<tr>
<td>MCI</td>
<td>MoCA 21/30 / High Delirium risk</td>
<td>Counselling / info given</td>
</tr>
<tr>
<td>Falls</td>
<td>Multi-factorial / risk of f/decline</td>
<td>POPS OT</td>
</tr>
</tbody>
</table>
High surgical risk
Morbidity 97%
Mortality 56%
Patient symptomatic
Requires intervention
Patient concern over risk
Unsure of options

Risk discussed with surgery / POPS presence

Less invasive procedure
Angioplasty and stent
Good symptomatic relief

Communication
Verbal

Email Clinic letter
Identify and modify risk factors

Risk management

Improve ‘fitness for surgery’

Shared decision making

Outcome
Emergency surgical – admission avoidance

- Abdominal pain
- 89 year old lady / on admissions ward
- Multimorbidty
- No surgical issues / requesting transfer to elderly care
- Nurses report patient has care needs / daughter struggling
- Proactive case finding with expedited assessment
## Intervention / Outcome

<table>
<thead>
<tr>
<th>Issue</th>
<th>Assessment</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constipation</td>
<td>Faecal loading on imaging</td>
<td>Laxatives prescribed / advice</td>
</tr>
<tr>
<td>Frail with f/decline</td>
<td>Risk of falls / increased care</td>
<td>OT referral and assessment</td>
</tr>
<tr>
<td>Social care</td>
<td>Living with daughter / requesting care input</td>
<td>Discussed / advice / community ref</td>
</tr>
</tbody>
</table>

- **Patient home after bowels opened**
- **Proactive case funding with holistic assessment**
- **Admission avoidance with appropriate community referral**
Emergency general surgery admission

- 76 year old gentleman
- Incarcerated hernia
- Requires emergency surgery
- Discussed at EGS handover meeting
  - Concerns raised
  - Nursing home resident
  - Patient confused ‘has dementia’
  - Would palliative care be more appropriate
## Intervention / Pre op

<table>
<thead>
<tr>
<th>Issue</th>
<th>Assessment</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF</td>
<td>Rate controlled</td>
<td>Plan detailed / IV Digoxin</td>
</tr>
<tr>
<td>Warfarin</td>
<td>INR high (2.4)</td>
<td>Discussed / Vitamin K</td>
</tr>
<tr>
<td>Anaemia</td>
<td>Hb 11 / stable for surgery</td>
<td>Haematinics obtained</td>
</tr>
<tr>
<td>Immobility</td>
<td>High risk PA breakdown</td>
<td>Air mattress</td>
</tr>
<tr>
<td>High Surgical risk</td>
<td>Morbidity 81%, Mortality 14%</td>
<td>Discussion</td>
</tr>
<tr>
<td>Confusion</td>
<td>Delirium NOT dementia</td>
<td>Delirium pathway / advice</td>
</tr>
<tr>
<td></td>
<td>Mild cognitive impairment</td>
<td>• Best interest discussion</td>
</tr>
<tr>
<td>Consent</td>
<td></td>
<td>• Family involved</td>
</tr>
<tr>
<td></td>
<td>• Lacks capacity (delirium)</td>
<td>• Documentation</td>
</tr>
<tr>
<td></td>
<td>• Collateral history</td>
<td>• Consent form 4</td>
</tr>
<tr>
<td></td>
<td>• Good QOL</td>
<td>• Proceeds to surgery</td>
</tr>
<tr>
<td></td>
<td>• Living independently</td>
<td></td>
</tr>
</tbody>
</table>
### Intervention / post op

<table>
<thead>
<tr>
<th>Issue</th>
<th>Assessment</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ileus</td>
<td>Albumin dropping NBM prolonged</td>
<td>Dietetic review TPN</td>
</tr>
<tr>
<td>AF</td>
<td>Fast rate</td>
<td>IV Digoxin / advice / pathway</td>
</tr>
<tr>
<td>AKI</td>
<td>Baseline 3a 20% cr rise</td>
<td>Fluid resus / AKI pathway</td>
</tr>
<tr>
<td>Delirium</td>
<td>Acute / multi-factorial</td>
<td>Haloperidol (not used) / pathway</td>
</tr>
<tr>
<td>Functional decline</td>
<td>Global weakness Deconditioned</td>
<td>Early therapy Rehab referral</td>
</tr>
</tbody>
</table>

**Issue Assessment Intervention**

- **Issue:** Delirium resolves at day 5
- **14 day hospital stay**
- **Early therapy referral to rehab unity**
- **4 week stay at rehab then home**
The POPS model

Surgical OP/PAC Referrals
- Screening criteria
- ‘Medically unfit’
- Support required for decision making

Pre-op CGA
Consultant CNS
OT
Social worker

Hospital Admission
Ward rounds
MDMs
Case conferences
Education and training

Liaison
Patient
Surgical team
Anaesthetists
GP
Community service

Post Discharge
Intermediate Care
Primary care
Social care
Specialist clinics
Special Interest Group (SIG)

www.bgs.org.uk/