

Setting up a proactive service to make surgery safer for older people

Jugdeep Dhesi

Background

The rate of older people undergoing surgical procedures is increasing faster than the rate of population ageing.^{1,2} Surgery offers mortality and symptomatic benefits in older people³⁻⁶ but post-operative outcomes are worse than they are for younger patients.⁷⁻¹¹ Medical comorbidities and geriatric syndromes (such as cognitive impairment, post-operative delirium, and frailty) adversely impact post-operative outcomes^{10,12,13,14} and increase length of stay in hospital.¹³ Current pre-operative assessment does not proactively identify or optimise these common issues in order to reduce post-operative risk. This leads to patients being inappropriately declined surgery, cancellations, poor post-operative outcomes, and a protracted length of hospital stay for the older surgical patient.

Modeling/designing the Proactive care of Older People undergoing Surgery (POPS) service at Guy's and St Thomas' (GSTT)

Exploratory work to examine the feasibility of pre-operative Comprehensive Geriatric Assessment¹⁵ (CGA) intervention for older surgical patients found that older patients undergoing elective surgery had high levels of modifiable pre-operative comorbidity, but rarely received geriatric or multidisciplinary team input before surgery.¹⁶ Of those aged 65 and over, 20% had their surgery delayed for preventable medical reasons and there was a high incidence of significant post-operative problems delaying discharge. Opinion was sought from "front line" workers (eg surgical nurses, general practitioners) and patients about the potential value of a pre-operative intervention service.

Following this exploratory work, the POPS pilot was commenced. The POPS team comprised a consultant geriatrician, a nurse specialist for older people, an occupational therapist, a physiotherapist, and a social worker. A questionnaire was posted to patients aged 65 years and over awaiting surgery. These self completed questionnaires identified potential risk factors known to lead to poor post-operative outcomes.

Patients with these risk factors were then invited to attend a pre-operative assessment and optimisation clinic and direct referrals from local consultants and GPs were also encouraged. Pre-operatively, patients were screened using a Comprehensive Geriatric Assessment (CGA) based on validated screening methods or tools. The identified problems were then pre-operatively optimised by the multidisciplinary team. Education on exercise, nutrition, and pain management was provided. Therapy input involved anticipation of needs at hospital discharge, and proactive provision of equipment.

Post-operatively, the geriatrician and the nurse reviewed patients on the surgical wards, providing direct intervention and staff education in early detection and treatment of medical complications, delirium, early mobilisation, pain management, bowel/bladder function, nutrition, and discharge planning. Following discharge, the POPS team provided a follow-up therapy home visit for those with functional difficulties, and outpatient clinic review in those with on-going medical problems. Thereafter, patients were linked with pre-existing services as needed, e.g. falls programmes, continence service, other outpatient services, and the voluntary sector.

Two cohorts of older elective orthopaedic patients were studied. One was referred to the newly designed POPS service and the other received routine pre-operative care. Despite higher comorbidities in the POPS cohort, they had reduced medical complications (pneumonia 20% vs 4% [P = 0.008], delirium 19% vs 6% [P = 0.036]), multidisciplinary issues (pressure sores 19% vs 4% [P = 0.028], delayed mobilisation 28% vs 9% [P = 0.012]), and length of stay (4.5 days).¹⁶ Similar results have been replicated by the COPS service in Bolton and the SCOPES team in Nottingham. Local GSTT data has shown that the service is sustainable and that patient outcomes continue to improve. The original project was funded by a grant from the Guy's and St Thomas' Charity (formerly the Charitable Foundation).

The current POPS service

Following the results of this research study, the POPS service was substantively funded. The

current POPS team includes 1.7 equivalent geriatricians, 2.6 clinical nurse specialists, an occupational therapist, a social worker, and an administrator.

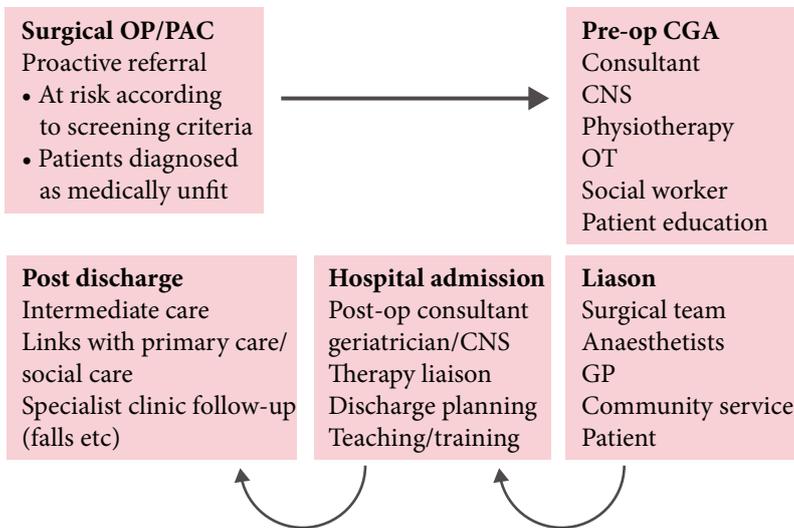


Fig 1. The POPS service

The service works across two sites covering all surgical sub-specialities except cardiothoracics. POPS has worked with local initiatives such as a trust transformation programme, as well as with clinicians and managers, to ensure that the surgical pathway is patient centred. The POPS team is now embedded throughout this pathway from pre-operative assessment through to hospital discharge for both elective and emergency patients.

Pre-operative

When the provisional decision to proceed to surgery is made, all surgical patients are triaged to the appropriate pre-operative assessment clinic: either nurse led pre-operative assessment

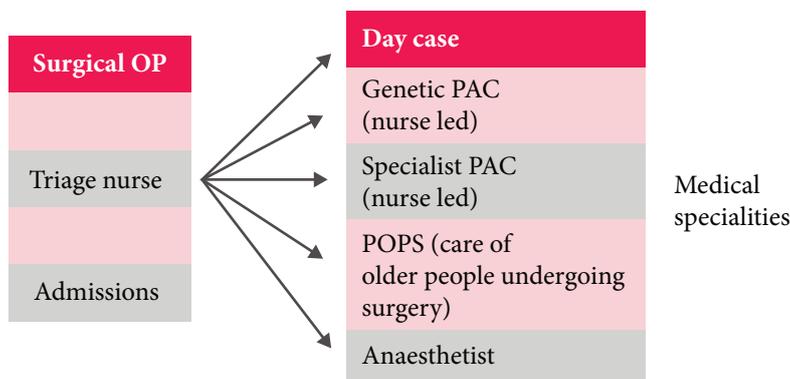


Fig 2. Pre-operative assessment pathway

(which is standard care throughout the NHS) or directly to the pre-operative POPS assessment and optimisation clinic (our innovative service).

This process is supported by a daily joint anaesthetist and POPS meeting at which cases seen by pre-operative assessment clinic nurses are presented for discussion. Many issues can be resolved during the meeting; in other cases, referral for investigation or assessment in the POPS clinic may be necessary. This ensures that those patients not referred directly to POPS but who have complex needs are appropriately managed.

POPS clinics pre-operatively assess 800 new patients annually. This assessment takes the form of a targeted CGA utilising multidisciplinary skills. The review aims to:

- Assess peri-operative risk
 - Organ specific risk
 - Overall risk of morbidity and mortality
 - Risk of functional decline/post-operative cognitive disorders
- Medically optimise patients to modify risk
 - Optimise known comorbidity
 - Identify and optimise previously unrecognised disease
- Provide functional and psychosocial assessment
 - Predict and modify risk of hospital associated deconditioning
 - Predict care needs at hospital discharge
- Promote shared decision making
 - Assess capacity
 - Inform discussion of risk-benefit ratio of different treatment options (with surgeon, anaesthetist, and patient)
- Provide an individually tailored peri-operative management plan
 - Covering management of expected complications
 - Proactively communicating with patients, relatives, surgeons, anaesthetists, ward teams, primary care, etc.

In emergency patients this process of pre-operative assessment and optimisation is tailored to the ward environment. In order to ensure that emergency surgical patients are directed to the appropriate teams and settings in a timely fashion, a combination of approaches is used. These include early warning scores, frailty assessment scores, delirium risk assessments, and mortality scores. This allows early level 2 and 3 care for the very unwell patient, and proactive involvement from POPS for patients with geriatric syndromes and multi-morbidity.

Post-operative

The team annually case manages 1200 postoperative elective and emergency inpatients. POPS involvement in the post-operative pathway includes:

- Joint medical–surgical ward rounds
- Case management on surgical wards
- Ward based multidisciplinary team meetings to promote rehabilitation goals and proactive discharge planning
- Relatives’ clinics to promote communication between hospital staff, patients, and carers
- Onward referral to appropriate services after hospital discharge.

Developing POPS

Since its initial conception in 2004, POPS has continued to develop as new challenges have been identified. The methods used to support this continual local service development include:

- Regular POPS team clinical governance meetings to identify areas for improvement
- Audit and rapid improvement cycles, eg examining pre-operative use of beta-blockers for ischaemic heart disease
- Attendance and presentation at surgical and anaesthetic audit meetings
- Use of quality improvement programmes, eg trust wide initiative to promote screening, identification, and management of delirium
- Refining processes and pathways, eg working collaboratively with clinical governance to address national priorities

such as peri-operative management of diabetes

- Development of cross-speciality clinical guidelines, eg pre-operative indications for vena caval filters
- Evaluation of patient experience, eg of POPS clinic and in-hospital care.

POPS has also invested in education and training, both locally and nationally. Examples include:

- Trust wide nurse education on falls prevention, junior doctor training on pre-operative risk assessment
- Establishment of a national 2 day conference attended by geriatricians, anaesthetists, and surgeons covering aspects of peri-operative medicine
- Development of a curriculum in peri-operative medicine for the older patient for foundation trainees (London Deanery)
- Development of a curriculum in peri-operative medicine for the older patient for geriatric medicine specialist registrar trainees (endorsed by the Royal College of Physicians/British Geriatrics Society)
- Creation of an out-of-programme POPS clinical fellow position in order to train the subspecialist in peri-operative medicine
- Creation of a joint POPS–vascular anaesthesia clinical fellow (endorsed by the Royal College of Anaesthetists).

Further development will be supported by the POPS research programme. Current areas of interest include:

- Evaluation of pre-operative CGA in older vascular surgical patients
- Post-operative cognitive disorders
- Assessing frailty in emergency surgical patients
- Management of pre-operative anaemia
- Geriatric–oncology liaison.

Collaboration

The 2010 National Confidential Enquiry into Patient Outcome and Death (NCEPOD) report,

'An age old problem',¹⁷ cited the POPS service as an example of good clinical practice. This has led to POPS involvement in a number of national initiatives, including:

- Royal College of Anaesthetists working party – response to the 2010 NCEPOD report
- Association of Anaesthetists in Great Britain and Ireland – Development of a guideline – Peri-operative care of the older surgical patient
- Royal College of Surgeons/Age UK/MHP Mandate Access all Ages report
- Establishment of HQIP National Emergency Laparotomy Audit (NELA)
- Arthritis and Musculoskeletal Alliance (ARMA)
- Joint conference sessions between the British Geriatrics Society and the Association of Surgeons in Great Britain and Ireland and Association of Anaesthetists in Great Britain and Ireland
- Council representation at the Age Anaesthesia Association (Association of Anaesthetists in Great Britain and Ireland).

clinical guidelines, national reports, POPS clinical documentation, business plans, patient information, etc.)

- <http://www.bgs.org.uk/index.php/topresources/publicationfind/goodpractice/2402-bpg-pops/>
- <http://www.guysandstthomasevents.co.uk/other-training/pops-training/>

Future challenges

As evidence emerges that services like POPS services should become part of routine clinical care for older patients undergoing surgery, a number of challenges arise. These include workforce planning and funding. National initiatives such as the Future Hospital Commission and the formation of Clinical Commissioning Groups (CCGs) may provide an opportunity to address these challenges and develop the required patient centred services. The POPS best practice guide, published by the British Geriatrics Society, provides a framework to begin to integrate medical and surgical care throughout the elective and emergency surgical pathways.

Online resources

- <http://www.guysandstthomas.nhs.uk/our-services/ageing-and-health/specialties/pops/overview.aspx> (also accessible via <http://www.popsteam.co.uk>) This resource provides local, national, and international

References

- 1 Klopfenstein CE, Herrmann FR, Michel JP, Clergue F, Forster A. The influence of an aging surgical population on the anesthesia workload: a ten-year survey. *Anesth Analg* 1998;86(6):1165-70
- 2 Etzioni DA, Liu JH, Maggard MA, Ko CY. The aging population and its impact on the surgery workforce. *Ann Surg* 2003;238(2):170-7
- 3 Goldstein LJ, Halpern JA, Rezayat C, Gallagher KA, Sambol EB, Bush HL, Jr., et al. Endovascular aneurysm repair in nonagenarians is safe and effective. *J Vasc Surg* 2010;52(5):1140-6
- 4 Kurian AA, Suryadevara S, Vaughn D, Zebley DM, Hofmann M, Kim S, et al. Laparoscopic colectomy in octogenarians and nonagenarians: a preferable option to open surgery? *J Surg Educ* 2010;67(3):161-6
- 5 Alexander KP, Peterson ED. Coronary artery bypass grafting in the elderly. *Am Heart J* 1997;134(5 Pt 1):856-64
- 6 March LM, Cross MJ, Lapsley H, Brnabic AJ, Tribe KL, Bachmeier CJ, et al. Outcomes after hip or knee replacement surgery for osteoarthritis. A prospective cohort study comparing patients' quality of life before and after surgery with age-related population norms. *Med J Aust* 1999;171(5):235-8
- 7 Liu LL, Leung JM. Predicting adverse postoperative outcomes in patients aged 80 years or older. *J Am Geriatr Soc* 2000;48(4):405-12
- 8 Hamel MB, Henderson WG, Khuri SF, Daley J. Surgical outcomes for patients aged 80 and older: morbidity and mortality from major noncardiac surgery. *J Am Geriatr Soc* 2005;53(3):424-9
- 9 Leung JM, Dzankic S. Relative importance of preoperative health status versus intraoperative factors in predicting postoperative adverse outcomes in geriatric surgical patients. *J Am Geriatr Soc* 2001;49(8):1080-5
- 10 Polanczyk CA, Marcantonio E, Goldman L, Rohde LE, Orav J, Mangione CM, et al. Impact of age on perioperative complications and length of stay in patients undergoing noncardiac surgery. *Ann Intern Med* 2001;134(8):637-43
- 11 Patel SA, Zenilman ME. Outcomes in older people undergoing operative intervention for colorectal cancer. *J Am Geriatr Soc* 2000;49:1561-4
- 12 Marcantonio ER, Flacker JM, Michaels M, Resnick NM. Delirium is independently associated with poor functional recovery after hip fracture. *J Am Geriatr Soc* 2000;48(6):618-24
- 13 Makary MA, Segev DL, Pronovost PJ, Syin D, Bandeen-Roche K, Patel P, et al. Frailty as a predictor of surgical outcomes in older patients. *J Am Coll Surg* 2010;210(6):901-8
- 14 Dasgupta M, Rolfson DB, Stolee P, Borrie MJ, Speechley M. Frailty is associated with postoperative complications in older adults with medical problems. *Arch Gerontol Geriatr* 2009;48(1):78-83
- 15 Stuck AE, Siu AL, Wieland GD, Adams J, Rubenstein LZ. Comprehensive geriatric assessment: a meta-analysis of controlled trials. *Lancet* 1993;342(8878):1032-6
- 16 Harari D, Hopper A, Dhese J, Babic-Illman G, Lockwood L, Martin F. Proactive care of older people undergoing surgery ('POPS'): designing, embedding, evaluating and funding a comprehensive geriatric assessment service for older elective surgical patients. *Age Ageing* 2007;36(2):190-6
- 17 Wilkinson K, Martin IC, Gough MJ, al. e. An Age Old Problem. London: National Confidential Enquiry into Patient Outcome and Death. NCEPOD, 2010