

Delay in Transit

A review of the quality of care provided to patients aged over 16 years with a diagnosis of acute bowel obstruction

SUMMARY



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A report published by the National Confidential Enquiry into Patient Outcome and Death (2020)

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Contents

Introduction	3
Executive summary	4
Recommendations	5
Method and data returns	10

Introduction

Acute bowel obstruction occurs when there is an interruption to the forward flow of intestinal contents, and accounts for 10% of emergency surgical admissions.¹ Intestinal obstruction is associated with life threatening complications such as aspiration pneumonia as well as bowel ischaemia and perforation. Planning optimal therapy can be challenging; surgeons have to make critical decisions with regard to non-operative management versus surgery. Prompt radiological investigations and diagnosis is essential to prevent a delay in surgical intervention, which can significantly affect patient outcome.

Early recognition of impending perforation is essential using clinical and radiological investigations to ensure expedient surgery or other therapeutic intervention. Early abdominal CT with intravenous contrast is recommended to identify closed-loop obstruction, bowel ischaemia and bowel perforation.²⁻⁴ Adhesions from previous surgery are currently the leading cause of small bowel obstruction in industrialised countries (70%), followed by malignancy, inflammatory bowel disease, and hernias. Malignancy and volvulus are the commonest causes of large bowel obstruction.⁵

When surgery is required, mortality can exceed 10%, far higher than seen in elective gastrointestinal surgery. The majority of patients requiring surgery can be categorised as

'high-risk' and require consultant delivered care as well as admission to critical care after surgery. Prompt recognition of patient deterioration, sepsis, and perforation is needed. Surgery may be required within a matter of hours for the surgical source control of sepsis, or to prevent impending perforation.^{6,9}

Currently there is no national guideline nor framework for the management of acute bowel obstruction and there is considerable variation in care, with variation in outcomes.^{2,5,7-9}

This NCEPOD study was developed with wide multidisciplinary input and a number of areas for review were identified as those affecting the care and outcome of patients with bowel obstruction. Particular focus was on the early clinical recognition of bowel obstruction and early definitive diagnosis by abdominal CT with intravenous contrast. Data were collected on potential delays in the pathway including the availability of CT imaging, decision-making regarding the timing of surgery and subsequent access to theatres.

This review includes an assessment of service structure at an organisational level and patient care at a clinical level. Recommendations are formed from data provided by clinicians and from the external peer review of a sample of patients.

Executive summary

Aim

The aim of this study was to highlight areas where care could be improved in patients who were admitted to hospital and had a diagnosis of acute bowel obstruction.

Method

A retrospective questionnaire review was undertaken in 690 patients and a case note review in 294 patients aged 16 and over who had an acute bowel obstruction either presenting to hospital or during their hospital admission.

Key messages

This study has highlighted significant opportunities to improve the care of patients with acute bowel obstruction. The overarching finding was that there were significant delays in the pathway of care for this group of patients, from requesting imaging, diagnosis, decision-making and availability of an operating theatre.

There were delays in imaging in 57/276 (20.7%) of the cases reviewed and the delays increased if an abdominal X-ray was performed as well as an abdominal CT. Furthermore a delay in imaging led to a delay in diagnosis in 35/57 (61.4%) patients whereas only 14/219 (6.4%) patients had a delay in diagnosis if there was no delay in imaging.

Delays in consultant assessment led to a delay in diagnosis in 13/32 (40.6%) patients. Only 23/147 (15.6%) patients who were seen in a timely manner by a consultant experienced a delay in diagnosis. Following diagnosis 72/368 (19.6%) patients experienced a delay in access to surgery and in 38/72 (52.8%) patients the delay was due to non-availability of theatre and in 34/72 (47.2%) it was due non-availability of an anaesthetist.

In addition to the delays, there was found to be room for improvement in the clinical care of this group of patients. Risk and frailty assessments were variable. Risk assessment is important as patients who had a risk assessment had better escalation of care, however this was inadequate in 98/219 (44.7%) patients. Similarly, only 34/124 (27.4%) patients over 65 years of age had their frailty score assessed on admission to the ward and if patients did have a Rockwood frailty score of 5 or higher this was more likely to result in discussions around mortality, resuscitation status and treatment options.

To prevent malnutrition and acute kidney injury, nutrition and hydration status are fundamental to care in patients with an acute bowel obstruction, these were often not well assessed. Only 163/686 (23.8%) patients had their hydration status recorded, 105/254 (41.3%) patients either had no nutritional status assessment or the assessment was inadequate and only 88/233 (37.8%) patients had a nutrition assessment on discharge.

The areas for improvements in care highlighted in the report, and the recommendations made, have the potential to improve the care of a large proportion of surgical patients. This should lead to measurable improvements in outcomes and enhanced patient care.

Recommendations

These recommendations have been formed by a consensus exercise including all those listed in the acknowledgements. They highlight a number of areas that are suitable for local audit and quality improvement initiatives to address any areas of care that are below the expected standard. The

result of the audits or quality improvement initiatives should be presented at a quality or governance meeting and action plans shared with the Executive Board.

RECOMMENDATIONS		
Suggested groups to undertake the recommendation are shown in brackets after each one, as a guide only. NB. The term clinicians includes nurses	# is the number of the supporting key data in the report	Associated guidelines and other related evidence
<p>1 Undertake a CT scan with intravenous contrast promptly, as the definitive method of imaging* for patients presenting with suspected acute bowel obstruction. Prompt radiological diagnosis will help ensure admission to the correct specialty, so the time to CT reporting should be audited locally.</p> <p><i>*unless the use of IV contrast is deemed inappropriate by a senior clinician, in which case CT without contrast should be performed – in line with NICE CG169</i></p> <p><i>(Emergency Medicine, Admitting Clinicians, Radiologists, Quality Improvement Leads)</i></p>	<p>CHAPTER 5 – PAGE 33 #23 There were delays in imaging in 57/276 (20.7%) of the cases reviewed</p> <p>CHAPTER 5 – PAGE 28 #24 Radiological imaging was most often reported by a consultant: X-ray for 216/293 (73.7%) patients; CT with IV contrast for 403/436 (92.4%) patients and CT without contrast for 33/38 (86.8%) patients</p> <p>CHAPTER 5 – PAGE 29 #25 CT with IV contrast was sufficient to diagnose acute bowel obstruction in 427/479 (89.1%) patients whereas abdominal X-ray was sufficient to diagnose acute bowel obstruction in 132/411 (32.1%)</p> <p>#26 CT with IV contrast affected subsequent decision-making in the management of acute bowel obstruction in 456/484 (94.2%) patients and abdominal X-ray in 266/411 (64.7%) patients</p> <p>CHAPTER 5 – PAGE 31 #27 35/57 (61.4%) patients with delayed imaging also experienced a delay in diagnosis whereas only 14/219 (6.4%) patients had a delay in diagnosis if there was no delay in imaging</p> <p>CHAPTER 5 – PAGE 33 #21 34/434 (7.8%) patients who had an abdominal X-ray and 9/491 (1.8%) patients who had a CT with IV contrast had a delay in the reporting on the image</p> <p>#22 43/491 (8.8%) patients who underwent a CT with IV contrast and 6/421 (1.4%) patients who underwent an abdominal X-ray experienced a delay due to access to radiology</p> <p>#28 In 23/29 (79.3%) cases reviewed where the patient was considered to have had unnecessary imaging and 28/57 (49.1%) where there was an unnecessary delay, the patient had undergone both an abdominal X-ray and a CT scan</p> <p>CHAPTER 11 – PAGE 58 #69 In 31/168 (18.5%) hospitals there was a CT scanner in the emergency department</p> <p>CHAPTER 11 – PAGE 60 #71 There was a maximum time reporting of CT of less than 1 hour in 43/74 (58.1%) hospitals (in hours) and 48/94 (51.1%) hospitals out-of-hours</p>	<p>NELA https://www.nela.org.uk/reports</p> <p>ACPGBI - NASBO https://www.acpgbi.org.uk/content/uploads/2017/12/NASBO-REPORT-2017.pdf</p> <p>ACPGBI – LBO pathway https://www.acpgbi.org.uk/content/uploads/2016/12/Large-Bowel-Obstruction-pathway-2017.pdf</p> <p>RCSEng & AAGBI https://www.rcseng.ac.uk/library-and-publications/rcs-publications/docs/emergency-general-guide/</p> <p>NICE CG169 https://www.nice.org.uk/guidance/cg169/chapter/1-Recommendations#assessing-risk-of-acute-kidney-injury</p> <p>NICE CG131 https://www.nice.org.uk/guidance/cg131/ipf/chapter/acute-large-bowel-obstruction</p>

RECOMMENDATIONS

<p>2</p>	<p>Undertake a consultant review in all patients diagnosed with acute bowel obstruction as soon as clinically indicated and at the latest within 14 hours of admission to hospital. Discussion with a consultant should occur within an hour for high-risk patients*</p> <p><i>*As recommended by the RCP London and NHS England ('High risk' is defined as where the risk of mortality is greater than 10%, or where a patient is unstable and not responding to treatment as expected)</i> (Consultant Surgeons)</p>	<p>CHAPTER 4 – PAGE 22 #12 41/258 (15.9%) patients experienced a delay in consultant review</p> <p>CHAPTER 5 – PAGE 33 #29 13/32 (40.6%) patients who had a delay in consultant assessment had a delay in diagnosis. In patients who were seen in a timely manner by a consultant only 23/147 (15.6%) experienced a delay in diagnosis</p>	<p>RCP Acute care toolkit 12 https://www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-12-acute-kidney-injury-and-intravenous-fluid-therapy</p> <p>RCP Acute care toolkit 4 https://www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-4-delivering-12-hour-7-day-consultant-presence-acute-medical-unit</p> <p>NHS England NHS Services, Seven Days a Week Forum. Standard 2 https://www.england.nhs.uk/wp-content/uploads/2013/12/forum-summary-report.pdf</p>
<p>3</p>	<p>Admit patients with symptoms of acute bowel obstruction as necessary, but patients who have a definitive diagnosis of acute bowel obstruction should be admitted under the care of a surgical team. (Clinicians, Clinical Directors)</p>	<p>CHAPTER 4 – PAGE 22 #11 Admission to an inappropriate ward was most commonly due to admission to a medical rather than surgical ward (22/24; 91.7%), which was also the reason for a delay to the patient being assessed by the surgical team in 31/52 (59.6%) patients</p> <p>CHAPTER 4 – PAGE 24 #31 14/26 (53.8%) patients who experienced a delay in surgical assessment also had a delay in diagnosis compared with 24/170 (14.1%) when surgical assessment was not delayed</p> <p>CHAPTER 4 – PAGE 35 #30 Delays in obtaining a CT scan with IV contrast were more likely if patients were admitted under the medical team (18/74; 24.3%) compared with admission under surgery (33/351; 9.4%)</p> <p>#33 Clinicians reported a delay in diagnosis that was outside of their control in 22/118 (18.6%) patients where the patient was admitted under medical teams compared with 20/454 (4.4%) of those under surgical teams</p> <p>#34 A delay in making the decision about the best treatment for the patient occurred in 11/125 (8.8%) admissions under medical teams and 14/483 (2.9%) under surgical teams</p>	

RECOMMENDATIONS

4	<p>Assess pain in all patients with symptoms of acute bowel obstruction and give analgesia in line with local and national guidelines. Ensure that:</p> <ol style="list-style-type: none"> Pain is assessed at presentation to the emergency department Pain is assessed throughout the admission Referral to the acute pain team is undertaken when pain is difficult to manage, while ensuring the referral does not cause a delay in any definitive treatment. <p><i>(Clinicians, Acute Pain Teams)</i></p>	<p>CHAPTER 3 – PAGE 19 #4 438/690 (63.5%) patients had a presenting symptom of pain. However, a pain score was performed in 252/438 (57.5%)</p> <p>CHAPTER 4 – PAGE 23 #15 163/544 (30.0%) patients did not have their pain score assessed on admission to a ward of which 102/163 (62.6%) patients had presented with abdominal pain</p> <p>#16 When analgesia was given, it was considered by case reviewers to be timely in 164/187 (87.7%) patients and adequate in 166/184 (90.2%)</p> <p>CHAPTER 4 – PAGE 27 #17 37/639 (5.8%) patients were seen by the acute pain team prior to surgery</p> <p>CHAPTER 8 – PAGE 49 #54 343/354 (96.9%) surgical patients received adequate postoperative pain management</p> <p>CHAPTER 11 – PAGE 57 #65 In 15/148 (10.1%) hospitals there was no guideline for pain scoring in the emergency department</p>	
5	<p>Measure and document hydration status in all patients presenting with symptoms of acute bowel obstruction in order to minimise the risk of acute kidney injury (AKI). Ensure that hydration status is:</p> <ol style="list-style-type: none"> Assessed at presentation to the emergency department Assessed throughout the admission <p><i>(Clinicians)</i></p>	<p>CHAPTER 3 – PAGE 20 #5 163/690 (23.6%) patients had their hydration status recorded and 157/690 (22.8%) patients had their weight recorded resulting in Body Mass Index (BMI) only recorded in 80/690 (11.6%) patients</p> <p>CHAPTER 3 – PAGE 21 #8 69/264 (26.1%) patients had acute kidney injury (AKI) on admission and 16 patients developed it following admission. In the view of the case reviewers this was avoidable in four patients and clinicians completing questionnaires thought that AKI resuscitation was inadequate in 10/178 (5.6%) patients</p>	
6	<p>Undertake, record and act on nutritional screening in all patients who present with symptoms of acute bowel obstruction. This should include:</p> <ol style="list-style-type: none"> A MUST score on admission to hospital A MUST score at least weekly throughout the admission Review by a dietitian/nutrition team once a diagnosis has been made A MUST score, and if required a dietitian/nutrition team assessment at discharge <p><i>As recommended by BAPEN</i> <i>Clinicians, Dietitians, Nutrition Teams)</i></p>	<p>CHAPTER 3 – PAGE 20 #5 163/690 (23.6%) patients had their hydration status recorded and 157/690 (22.8%) patients had their weight recorded resulting in Body Mass Index (BMI) only recorded in 80/690 (11.6%) patients</p> <p>CHAPTER 4 – PAGE 24 #18 105/254 (41.3%) patients either had no nutritional status assessment or the assessment was inadequate</p> <p>#19 271/516 (52.5%) patients had a MUST score recorded on the ward</p> <p>CHAPTER 8 – PAGE 48 #56 35/181 (19.3%) patients did not have an appropriate ongoing nutritional assessment</p> <p>#57 Some patients in the study were starved for at least one day: 41/163 (25.2%) prior to admission, 34/96 (35.4%) of conservatively/medically cared for patients and 85/133 (63.9%) patients undergoing surgery</p> <p>#55 105/191 (55.0%) patients in the study were reported to have had a MUST score performed on a weekly basis if they were in hospital for more than a week</p> <p>CHAPTER 10 – PAGE 54 #62 88/233 (37.8%) patients had a nutrition assessment on discharge</p> <p>#63 147/409 (35.9%) patients received no nutritional advice on discharge and no advice was given to 80/304 (26.3%) patients who had commenced on new medication</p>	<p>BAPEN. THE 'MUST' REPORT Nutritional screening of adults: a multidisciplinary responsibility. 2003 https://www.bapen.org.uk/pdfs/must/must-report.pdf</p> <p>ACPGBI - NASBO https://www.acpgbi.org.uk/content/uploads/2017/12/NASBO-REPORT-2017.pdf</p>

RECOMMENDATIONS

7	<p>Ensure patients with a high frailty score (eg. Rockwood 5 or more) receive:</p> <ol style="list-style-type: none"> A multidisciplinary team discussion for shared decision-making, including care of the elderly A risk assessment, with input from critical care relevant to the patient's needs A treatment escalation plan Their resuscitation status recorded <i>(Clinicians including Care of the Elderly)</i> 	<p>CHAPTER 2 – PAGE 17 #3 195/549 (35.5%) patients had a frailty score of 5 or more, of whom 187/195 (95.9%) patients were aged 60 years or older</p> <p>CHAPTER 4 – PAGE 26 #14 Only 34/124 (27.4%) patients over 65 years of age had their frailty score assessed on admission to the ward</p> <p>CHAPTER 6 – PAGE 38 #38 Care of the elderly input was sought in 61/498 (12.2%) patients in the view of the clinicians completing questionnaires. Of the patients who had no care of the elderly input, 343/437 (78.5%) were over the age of 65 #40 21/204 (10.3%) patients who did not have a critical care opinion should have; 4/21 (19.0%) of these patients died and 18/21 (85.7%) patients had an operation.</p> <p>CHAPTER 6 – PAGE 39 #42 Critical care input influenced care in 36/61 (59.0%) patients. Of those patients who had surgery 99/390 (25.4%) required critical care post operatively #43 579/603 (96.0%) patients had their treatment plan discussed with them and in 394/497 (79.3%) it was discussed with the their family #44 If the patient had a Rockwood frailty score of 5 or more, their treatment plan was discussed with them 169/186 (90.9%) cases reviewed and with their family in 168/190 (88.4%) #45 101/279 (36.2%) patients had their resuscitation status documented</p> <p>CHAPTER 7 – PAGE 42 #48 30/109 (27.5%) patients did not have all possible alternative treatment options discussed with them</p> <p>CHAPTER 10 – PAGE 54 #61 84/223 (37.7%) patients noted to be frail (Rockwood score 5-9) on admission, died during the admission compared to 10/333 (3.0%) who had a Rockwood score of 1-4 when they were admitted to hospital</p>	<p>The Rockwood Frailty Score: Rockwood K Song X, MacKnight C et al. 2005. A global clinical measure of fitness and frailty in elderly people. CMAJ. 173:489-495 https://www.dal.ca/sites/gmr/our-tools/clinical-frailty-scale.html</p>
8	<p>Ensure local policies are in place for the escalation of patients requiring surgery for acute bowel obstruction to enable rapid access to the operating theatre.* This should be regularly audited to ensure adequate emergency capacity planning. <i>*e.g. The NCEPOD Classification of Intervention can be used to ensure that patients are treated within a clinically acceptable timeframe (Medical Directors, Clinical Directors, Quality Improvement Leads)</i></p>	<p>CHAPTER 7 – PAGE 45 #49 183/273 (67.0%) patients had their operation within 6 hours of the decision to operate. Of the 29 patients where case reviewers found that the timing of surgery was inappropriate, they were of the opinion that the inappropriate delay affected the outcome of eight patients</p> <p>CHAPTER 7 – PAGE 44 #50 72/368 (19.6%) patients experienced a delay in access to surgery and in 38/72 (52.8%) patients the delay was due to non-availability of theatre, in 34/72 (47.2%) it was due non-availability of an anaesthetist and in 15/72 (20.8%) the patient required further treatment</p> <p>CHAPTER 11 – PAGE 63 #73 136/170 (80.0%) hospitals had at least one dedicated emergency (CEPOD) theatre #74 120/166 (72.3%) hospitals reported that there was priority grading for emergency surgery and in 79/164 (48.2%) hospitals there was a theatre co-ordinator to facilitate this</p>	<p>NCEPOD Classification of Intervention www.ncepod.org.uk/classification</p>

RECOMMENDATIONS

9	<p>Agree joint clinical network pathways of care that enable improved access to stenting services for those patients with acute large bowel obstruction who require the service.</p> <p><i>(Medical Directors, Division Leads, Commissioners, Clinical Networks)</i></p>	<p>CHAPTER 11 – PAGE 64 #75 38/171 (22.2%) hospitals had no on-site access to stenting and only five reported to be part of a clinical network to improve access to this service</p>	
10	<p>Calculate morbidity and mortality risk for all patients admitted with, and before any surgery for, acute bowel obstruction, to aid:</p> <ol style="list-style-type: none"> Shared decision-making between the patient, carers and clinicians, with regard to the treatment options available and to ensure the appropriate informed consent is taken Assessment of the risk and predicted outcome associated with undertaking a laparotomy <p><i>(Surgeons)</i></p>	<p>CHAPTER 6 – PAGE 37 #37 In 98/219 (44.7%) of patients case reviewers felt that mortality and morbidity risk assessment was not adequate</p> <p>CHAPTER 7 – PAGE 42 #47 199/353 (56.4%) patients undergoing emergency surgery for bowel obstruction had their risk of death documented on the consent form</p> <p>#48 30/109 (27.5%) patients did not have all possible alternative treatment options discussed with them</p>	<p>https://www.nela.org.uk/reports NELA 4th report - recommendation 2.3 (2019)</p>
11	<p>Minimise delays to diagnosis and treatment for acute bowel obstruction. Development of an evidence-based pathway for acute bowel obstruction, including recommendations 1-10 could facilitate this. The pathway should be audited at specific time points such as:</p> <ol style="list-style-type: none"> Time from arrival to CT scan Time from arrival to diagnosis Time from decision to operate to start of anaesthesia <p><i>(Clinicians, Medical Directors, Clinical Directors, Quality Improvement Leads)</i></p>	<p>CHAPTER 9 – PAGE 50 #Figure 9.1 Delays in the pathway of care of patients with acute bowel obstruction showing where the same patients were affected by delays at different stages and where different patients were affected</p> <p>CHAPTER 11 – PAGE 56 #67 28/169 (16.6%) hospitals reported a specific pathway for acute bowel obstruction; in 63/169 (37.3%) there was not a specific acute bowel obstruction pathway but a more general acute abdomen pathway</p> <p>CHAPTER 11 – PAGE 58 #68 Of those hospitals where there was a pathway, they only included guidelines on time limit to treatment decision in 22/91 (24.2%) hospitals and timing of surgery in 33/91 (36.3%) hospitals</p> <p>CHAPTER 11 – PAGE 62 #76 149/165 (90.3%) hospitals reported that there was a discharge planning team but in 68/149 (45.6%) hospitals this did not include nutrition or dietetic staff</p>	

Method and data returns

Study Advisory Group (SAG)

A multidisciplinary group of clinicians was convened to define the objectives of the study and advise on the key questions. The study advisory group comprised anaesthetists, dieticians, gastroenterologists, general physicians, intensivists, lay representatives, nurses, radiologists and surgeons (both general and those specialising in upper and lower gastrointestinal surgery).

Study aim

The aims of the study were to look at remediable factors in the process of care of patients over the age of 16 years who were admitted to hospital and had a diagnosis of acute bowel obstruction.

Objectives

- Emergency admission factors including recognition of bowel obstruction
- Initial assessment and diagnosis (including risk assessment and any delays in diagnosis)
- Admission to the ward (including the route of admission, admitting speciality and delays in admission)
- Imaging (including the modality of imaging, the time to imaging, the reporting of imaging and the communication of results)
- Treatment plan (including continuity of care and communication)
- Decision-making (including multidisciplinary input and clinician seniority)
- Non-surgical therapy
- Surgery (including delays, decision-making and continuity of care)
- Postoperative care (including location, nutrition and complications)
- Discharge/follow-up arrangements
- End of Life Care if appropriate
- Organisational factors that impacted on patients' outcomes.

Study population and case ascertainment

Inclusion criteria

The study population comprised patients aged 16 and over who had bowel obstruction and were admitted to hospital between 16th April and 13th May 2018. Patients were identified by ICD10 codes for conditions associated with large and small bowel obstruction (see Appendix 1 for details) and sampled for inclusion in the study as follows:

- A maximum of ten patients per hospital were selected for the completion of a clinical questionnaire: two patients treated medically, four treated surgically, two patients who had died and, two patients who had acute kidney injury. All the patients (apart from those who died) needed to have had a minimum hospital stay of three days
- A maximum of two of the ten patients were sampled from each hospital for peer review of anonymised case notes.

Hospital participation

National Health Service hospitals in England, Scotland, Wales and Northern Ireland were expected to participate as well as public hospitals in the Isle of Man, Guernsey and Jersey.

Within each hospital, a named contact, referred to as the NCEPOD Local Reporter, acted as a link between NCEPOD and the hospital staff, facilitating case identification, dissemination of questionnaires and data collation.

Data collection

Spreadsheet

A pre-set spreadsheet was provided to every Local Reporter to identify all patients meeting the study criteria during the defined time period. From this initial cohort the sampling for inclusion into the study took place.

Questionnaires

Two questionnaires were used to collect data for this study: a clinician questionnaire for each patient and an organisational questionnaire for each participating hospital.

Clinician questionnaire

This questionnaire was sent online to the consultant responsible for the patient at the time of their admission to hospital. If the consultant was not the most suitable person to complete the questionnaire they were asked to identify a more appropriate consultant. Information was requested on the patient's presenting symptoms, initial management, imaging and other investigations, surgery (if applicable), escalation in care, discharge/ death (if applicable).

Organisational questionnaire

This questionnaire was disseminated to each hospital with cases in the study and included information on bowel cancer screening, pathways/protocols for the management of acute bowel obstruction and imaging and other provision of services.

Case notes

Copies of case note extracts were requested for each case that was to be peer reviewed. These included:

- General practitioner referral letter
- Ambulance service Patient Report Form/notes
- All inpatient annotations/medical notes
- Emergency department clerking proforma/ records
- Nursing notes
- Critical care notes/ charts
- Operation/procedure notes
- CT with/without IV contrast, abdominal X-ray and other radiology investigation reports
- Observation charts
- Haematology/biochemistry results
- Fluid balance charts
- Drug charts including anticoagulation charts
- Consent forms
- Do Not Attempt Cardio Pulmonary Resuscitation (DNACPR) and treatment escalation forms
- Discharge letter/summary
- Autopsy report if applicable.

Peer review of the case notes and questionnaires

A multidisciplinary group of case reviewers was recruited to peer review the case notes. The group of case reviewers comprised consultants, trainees and clinical nurse specialists, from the following specialties: colorectal surgery, general surgery, hepatobiliary/ pancreatic surgery, upper gastrointestinal surgery, anaesthesia, intensive care medicine, acute medicine, emergency medicine, gastroenterology, radiology, specialist nursing and dietetics.

Case notes were anonymised by the non-clinical staff at NCEPOD. All patient identifiers were removed. Neither the Clinical Co-ordinators at NCEPOD, nor the case reviewers, had access to patient identifiable information.

After being anonymised, each case was reviewed by at least one reviewer within a multidisciplinary group. At regular intervals throughout the meeting the Chair allowed a period of discussion for each reviewer to summarise their cases and ask for opinions from other specialties or raise aspects of the case for discussion.

Case reviewers answered a number of specific questions using a semi structured electronic questionnaire and were encouraged to enter free text commentary at various points.

The grading system below was used by the case reviewers to grade the overall care each patient received:

Good practice: A standard that you would accept from yourself, your trainees and your institution

Room for improvement: Aspects of **clinical** care that could have been better

Room for improvement: Aspects of **organisational** care that could have been better

Room for improvement: Aspects of both **clinical and organisational** care that could have been better

Less than satisfactory: Several aspects of clinical and/or organisational care that were well below that you would accept from yourself, your trainees and your institution

Insufficient data: Insufficient information submitted to NCEPOD to assess the quality of care

Information governance

All data received and handled by NCEPOD comply with all relevant national requirements, including the General Data Protection Regulation 2016 (Z5442652), Section 251 of the NHS Act 2006 (PIAG 4-08(b)/2003, App No 007), PBPP (1718-0328) and the Code of Practice on Confidential Information.

Each patient was given a unique NCEPOD number. The data from all paper questionnaires received were electronically scanned into a pre-set database. All electronic questionnaires were submitted through a dedicated online application. Prior to any analysis taking place, the data were cleaned to ensure that there were no duplicate records and that erroneous data had not been entered during scanning. Any fields that contained data that could not be validated were removed.

Data analysis

Following cleaning of the quantitative data, descriptive data summaries were produced. Qualitative data collected from the case reviewers’ opinions and free text answers in the clinician questionnaires were coded, where applicable, according to content to allow quantitative analysis. The data were reviewed by NCEPOD Clinical Co-ordinators, a Clinical Researcher and Researcher to identify the nature and frequency of recurring themes.

Case studies have been used throughout this report to illustrate particular themes.

The findings of the report were reviewed by the Study Advisory Group, Case Reviewers, NCEPOD Steering Group including Clinical Co-ordinators, Trustees and Lay Representatives prior to publication.

Data returns

A total of 177/242 (73.1%) organisational questionnaires were received. There were 3,695 patients identified who fulfilled the study criteria of which 1,161 were sampled for clinical questionnaire completion (maximum of ten per hospital) and 349 were sampled for case note review (two per hospital). A return of 690 clinical questionnaires (59.4%) was made and 294 sets of case notes (84.2%) (Figure 1.1).

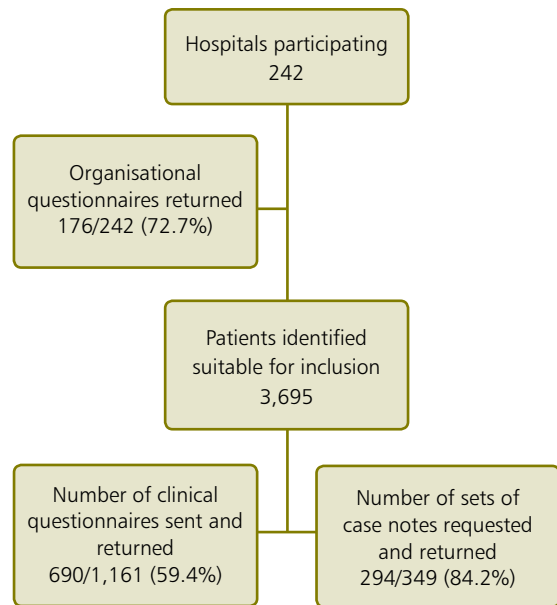


Figure 1.1 Data returns

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Ground Floor
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