Colorectal cancer is the second most common malignant disease in developed countries, with about a million new cases and 500,000 deaths worldwide each year. Uniquely among the common solid tumours, up to 30% of colorectal cancers present as an emergency with large bowel obstruction. Emergency surgery for obstructing colorectal cancer is associated with high morbidity and mortality, prolonged hospital stay and a high frequency of stoma formation, compromising the patient's quality of life. Patients treated in the emergency setting are also compromised in their subsequent care, notably because they are frequently unable to tolerate adjuvant chemotherapy.

Stenting of large bowel obstructions provides the potential to avoid emergency surgery, allow full assessment and preparation of the patient for surgery, with the potential to reduce operative morbidity and improve quality of life and survival. However, stenting can sometimes perforate the bowel wall and may increase the risk of tumour dissemination. The balance of benefits and risks has not yet been reliably assessed. CReST (ColoRectal Stenting Trial) is a randomised controlled trial to investigate whether endoluminal colonic stenting for obstructing colorectal cancer will result in reduced operative morbidity, reduced length of hospital stay, a reduced rate of stoma formation and improved quality of life and survival compared to conventional treatment.

Patients presenting in the emergency setting with left-sided colonic obstruction and radiological features consistent with a carcinoma who are considered to require urgent decompression are randomised to either endoluminal stenting or to surgical decompression with or without resection of the primary tumour. The primary outcome measures are length of hospital stay and 30-day mortality. CReST aims to randomise a minimum of 400 patients over three years, which would provide 90% power to detect a 0.35sd reduction in days in hospital (equivalent to 1-2 days), or differences in survival of similar magnitude to those reported in audit data (eg mortality of 16% following surgery for obstructing colorectal cancer and 4% following elective surgery). The success of CReST depends on the wholehearted support of the surgical, radiological and oncological communities and, to recognise this, publication of the main results will be in the names of all collaborators and not those of the central organisers.
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1. BACKGROUND

**Obstructing colorectal cancer**

Colorectal cancer is the third most common cancer in the United Kingdom and affects 35,000 individuals each year in England and Wales. The age-adjusted mortality from colorectal cancer remains close to 50% despite improvements in diagnosis, surgery and adjuvant therapy. Uniquely amongst the common solid tumours, up to 30% of colorectal cancers present as an emergency with large bowel obstruction.

The morbidity and mortality rates after emergency surgery for obstructing colorectal lesions are high; the latter has been quoted as up to 40%\(^1\) although most papers report values of 15-30 %.\(^2\)\(^-\)\(^4\) This compares to mortality rates of 5% or less for elective colorectal cancer surgery.\(^4\) Emergency surgery for colorectal cancer is also associated with a prolonged hospital stay and a high frequency of stoma formation, compromising the patient's quality of life. Patients treated in the emergency setting are also compromised in their subsequent care, notably because they are frequently unable to tolerate adjuvant chemotherapy.

Stenting of large bowel obstructions provides the potential to avoid emergency surgery, allow full assessment and preparation of the patient for surgery, with the potential to reduce operative morbidity and improve quality of life and survival. However, stenting is not without risks:\(^2\) it may fail and perforate the tumour, increasing the risk of tumour dissemination\(^5\) and increase the complexity of patient management. The balance of risks and benefits has not yet been reliably assessed in randomised controlled trials. **CReST (ColoRectal Stenting Trial)** is a randomised controlled trial to investigate whether endoluminal colonic stenting for obstructing colorectal cancer will result in reduced operative morbidity, reduced length of hospital stay, reduced 30-day mortality, a reduced presence and duration of a stoma and improved quality of life and survival compared to conventional treatment.

**Rationale for endoluminal stenting in obstructing colon cancer**

Patients with obstructing colorectal cancer continue to pose difficult management problems. Historically, the standard surgical approach has been a primary anastomosis with the diseased segment resected or defunctioned and the patient was left with a stoma, often permanently. A high incidence of anastomotic leaks was reported with this partially attributed to proximal faecal loading causing technical difficulties leading to anastomotic dehiscence.\(^6\)

Patients with colorectal cancer are often elderly with significant co-morbidities. Preoperative severe cardiopulmonary disease and high Acute Physiology Scores are
associated with early post operative morbidity and mortality. Additional time to address and correct any inter-current medical problems should benefit these patients. Apart from technical issues of the surgery, patients with obstructing colorectal carcinomas have considerable fluid and electrolyte disturbances, which can take a week or more to settle. In addition, their abdominal distention and pain has a deleterious effect on respiratory function.

Relieving obstruction reduces diaphragmatic splinting, improves basal ventilation and reduces collapse and atelectasis. Pre-operative preparation of the whole gut has made it possible for the loaded but unobstructed colon to be mechanically prepared. However, this method is not applicable in obstructed cases where a defunctioning colostomy or Hartmann's procedure has been the standard surgical approach. On-table antegrade irrigation of the loaded colon, as described by Dudley and Radcliffe in 1980, allows primary resection and anastomosis after excision of the obstructing lesion. This procedure is more technically difficult, increases the operation time significantly, and may contribute to the postoperative fluid shift in these often-frail patients. As a consequence, on table lavage and primary anastomosis is associated with an increased risk of anastomotic dehiscence.

Moreover, specialist colorectal surgeons are not always available to perform the emergency colorectal surgery and deferring surgery until a colorectal specialist is available is frequently not possible. For patients who survive the emergency operative procedure, stage by stage survival appears similar to elective cases.

Endoluminal stenting of obstructing colorectal lesions has been performed as a palliative treatment for unfit patients and those with inoperable disease. Stenting has also been used as a temporary pre-operative measure, as well as a permanent procedure for benign strictures. However, although endoluminal stenting has been available for ten years, a clear role in relieving obstruction from colorectal cancer is yet to be established. This is in great part due to the absence of reliable trial evidence. The current use of endoluminal stenting in patients presenting with large bowel obstruction is pragmatic rather than due to clinical need or demonstrated evidence of efficacy.

**Literature review**

Non-randomised cohort studies have reported encouraging findings. A study by Martinez-Santoz et al, (2002) compared emergency surgery (n=29) with pre-operative stenting and elective surgery (n=26) in patients with obstructing colon cancer. Pre-operative stenting followed by elective surgery was associated with an increase in the primary anastomosis rate (85% vs 41%, p=0.0025) and lower frequency of colostomy formation (15% vs 59%). Pre-operative stenting was also associated with reduced hospital stay (14.2 vs 18.5 days),
intensive care unit stay (0.3 vs 2.9 days) and a reduction in postoperative complications (12% vs 41%). Another small study compared 20 patients with obstructing left sided colorectal cancer who were treated with a stent as a bridge to surgery with 40 matched patients who underwent emergency surgery.\textsuperscript{15} One patient had a stent related perforation, which led to emergency surgery. All the others had elective surgery and a primary anastomosis. In the emergency group, 28% had a stoma. The stented group had a significantly shortened median hospital stay (9 days range 5-39 days, vs 12 days range 8-49 days; \( p = 0.015 \)) and stay in the intensive care unit: median 0 (range 0-17) days and 0.5 (range 0-18 days); \( p=0.022 \). There were no significant differences in 30-day post operative mortality.

A pooled analysis of 1,198 patients in 54 heterogeneous cohort studies\textsuperscript{16} reported median technical and clinical success rates of 94\% (i.q.r 90-100) and 91\% (i.q.r 84-94) respectively. The clinical success when used as a bridge to surgery was 72\%. Early complications related to stent placement included perforation (3.7\%) and stent migration (11.8\%). Stent related mortality was 0.58\%. Long-term follow up was not available.

A decision analysis study, conducted by Targownik and colleagues from the University of California Centre for Health Sciences, compared emergency colonic stenting followed by elective surgical resection and re-anastomosis with emergency surgical resection followed by diversion (Hartmann’s procedure) or primary anastomosis.\textsuperscript{17} They calculated that colonic stenting resulted in 23\% fewer operative procedures (1.01 vs 1.32 operations per patient), an 83\% reduction in stoma requirement (7\% vs 43\%) and lower procedure related mortality (5\% vs 11\%). Colonic stenting was associated with a lower mean cost per patient ($45,709 vs $49,941). A further cohort study also reported possible economic advantages from endoluminal stenting for obstructing colorectal cancer.\textsuperscript{18}

Unfortunately, though, there is evidence of significant selection bias in the study populations in most of the non-randomised studies included in the meta-analysis that must call the conclusions into question, and restrict the relevance of the findings to clinical practice.

**Randomised trials**

To date, very little evidence is available from randomised controlled clinical trials comparing emergency colonic stenting with emergency surgery for colonic cancer. In our pilot study, 26 patients were randomised over 18 months: successful stent placement and successful bowel decompression was achieved in 77\% of patients. The multi-centre Dutch Stent-in 1 study was a randomised controlled trial designed to assess the potential benefit of
endoluminal stenting compared to surgery in patients with incurable colorectal cancer. However, the study was stopped prematurely by the safety monitoring committee because of concerns about a high rate (4/10) of perforations with stenting. The authors were unsure whether the unexpectedly high complication rate was attributable to the design of the new stent being tested or a chance phenomenon. They recommended that patients being treated with the new kind of stent should be prospectively followed in a registry, although a randomised trial would provide more reliable evidence on benefits and risks of stents than a registry. This study has now been re-launched as the Stent-in 2 study with the entry criteria widened to include patients with potentially operable malignant colonic obstructions - a group that surgeons had previously considered to be candidates for elective stenting rather than randomisation.

The need for a large, randomised trial of endoluminal stenting versus emergency surgery for obstructing colon cancer

The early closure of the Dutch study highlights the uncertainty around the role of endoluminal stenting in the treatment of obstructing colorectal cancer and the need for a proper randomised evaluation of the risks and benefits of the procedure, before it becomes adopted into standard practice. Entry into a randomised controlled trial would be a useful option given the clinical uncertainty about use of stenting and would be far more informative than the current haphazard use of endoluminal stenting at some centres. The potential adverse effects on patients need to be evaluated within a large, randomised multi-centric cohort. This would also provide the reliable evidence on potential risks and benefits that is needed to define the role of stenting and, if appropriate, the allocation of resources for stenting at centres that cannot at present undertake the procedure. It will also inform future practice such that the subpopulation most likely to benefit will be targeted for treatment.

The CReST (ColoRectal Stenting Trial) trial is a multicentre, randomised trial designed to provide reliable evidence on the value of stenting in obstructing colorectal cancer and will evaluate two key questions:

- Is there a worthwhile net benefit (in reduced operative morbidity, 30-day mortality, reduced presence and duration of a stoma and better quality of life adjusted survival) from endoluminal stenting for patients presenting with an obstructing colonic cancer compared to standard surgical approaches?

- If a benefit exists, is this identifiable in patients undergoing attempted curative treatment, palliative treatment, or both?

The information obtained by randomising 400 patients into CReST will help guide the treatment of many thousands of future patients.
2. TRIAL DESIGN

Objectives

CReST is a multi-centre randomised controlled trial with the following objectives:

Primary objectives:
To determine if endoluminal stenting for obstructing colonic cancers can result in:
• Reduced perioperative morbidity as assessed by length of hospital stay
• Reduced 30-day mortality

Secondary objectives:
To determine if endoluminal stenting for obstructing colonic cancers:
• Reduces stoma formation
• Improves quality of life
• Increases ability to tolerate adjuvant chemotherapy
• Has demonstrable benefits in the palliative and attempted curative settings
• Improves overall survival

Trial design

Patients presenting in the emergency setting with left-sided colonic obstruction and radiological features consistent with a carcinoma who are considered to require urgent decompression will be put forward for relief of obstruction and will be randomised to either:

- Group A - endoluminal stenting
- Group B - surgical decompression with or without resection of the primary tumour

Diagram:

- Obstructing Colorectal cancer
  - A) Insertion of endoluminal stent
    - Successful decompression
      - Palliative care
    - Failed stenting
      - Elective surgery
  - B) Emergency surgery
After resuscitation, patients in Group A will have a self-expanding metal enteral stent deployed across the obstructing tumour by a fluoroscopic +/- endoscopic technique. The patency and position of the stent will be checked radiologically and a post-stent deployment radiograph will be performed.

In those patients from Group A proven to suffer from unresectable local disease or metastatic disease, and in those who are unfit for further major surgery, the stenting procedure will be considered to have been a palliative measure and no further surgical intervention will be necessary.

Patients in whom stenting fails, will undergo an appropriate emergency surgical decompression along similar lines to those in Group B.

Following resuscitation, patients in Group B will have emergency surgery to perform bowel decompression, as dictated by the surgeons’ preference and the clinical condition of the patient. Surgery may involve resection, bypass or decompression depending on the stage of the disease and the clinical state of the patient.

**Outcome measures**

The primary outcome measures will be:

a. Length of hospital stay
b. 30-day mortality

Secondary outcome measures will be:

c. Presence and duration of a stoma
d. Stenting completion and complication rate (arm A only)
e. Anastomosis rate
f. 6-month survival
g. Quality of life
h. Proportion disease-free at three years (attempted curative surgery group only)
i. Length of stay on ITU and HDU
j. Perioperative morbidity
k. Cost benefit analysis
l. Rate of adjuvant chemotherapy and adherence to chosen chemotherapy protocol

Surgical morbidity will be collected prospectively during the hospital stay on standardised proformas (Appendix G). Stoma presence will be documented on the surgical outcome form. Quality of Life questionnaires, EQ 5D (Appendix J) and EORTC QLQ-C30 (Appendix K), will be handed out at outpatient follow-up.
3. ELIGIBILITY AND RANDOMISATION

Centre eligibility
The suggested entry criteria for a site to participate in CReST are that centres must have performed at least 30 stents for obstructing colorectal cancer and that any participating radiologist must have performed at least 10 stents. All participating units are also required to attend a stenting workshop. For centres with less than 30 stents to be included in the trial, they must provide stenting data and, possibly, also have a site visit.

Patient eligibility
The CReST trial will recruit patients with obstructing colon cancer who present in the emergency setting.

Inclusion Criteria
- Radiologically proven colonic obstruction of left colon/upper rectum presumed secondary to a carcinoma
- Patient considered sufficiently fit for surgery if allocated

Exclusion Criteria
- Patients with signs of peritonitis and/or perforation
- Patients with right iliac fossa tenderness and features of incipient caecal perforation
- Patients with obstruction in the rectum that may require neoadjuvant therapy (i.e. tumours in the mid or lower rectum)
- Patients who are unfit for surgical treatments or refuse surgical treatment.
- Pregnant patients

Obtaining Consent
There are difficulties with patient consent and recruitment in the emergency setting but its feasibility has already been demonstrated in our pilot study. This pilot study included 24-hour randomisation procedures and established a clear patient pathway of care. Potential trial participants should be given the CReST Patient Information Sheet (Appendix A) and give written informed consent before he or she is recruited into the trial. Consent should be obtained before randomisation and after a full explanation has been given of the treatment
options, and the manner of treatment allocation. Fully informed consent will be sought from all individuals.

The original copy of the consent form (Appendix B) should be kept in the CReST study site file, one given to the patient, one in the patient’s notes and one sent to the CReST study office.

**Telephone & Out of Hours Randomisation**

Patients are entered in the trial by telephone call to the randomisation service (telephone number 0800 9530274, toll-free in the UK, or +44 (0) 121 415 9137 from elsewhere) or by internet on the website [https://www.trials.bham.ac.uk/CReST](https://www.trials.bham.ac.uk/CReST). Telephone randomisation is available Monday-Friday 0900-1700 UK time. Randomisation out of these hours is obtained by logging on to the CReST website. Each centre and each randomiser will be provided with a unique log-in and password to do this. Randomisation notepads (Appendix C) are provided in the CReST study folder and should be used to collate the necessary information prior to randomisation. After all the necessary details have been provided, the treatment allocation will be specified at the end of the telephone call. The patient's GP should be notified that they are in CReST, and a specimen "Letter to GP" is provided for this purpose (Appendix D).

4. **TREATMENT**

**Investigations**

On admission, routine laboratory investigations will be performed (a full blood count, urea and electrolyte estimation and liver function tests). A plain abdominal and erect chest X-ray will be taken to exclude established perforation. Prior to randomisation, the diagnosis will be confirmed by a water-soluble contrast enema, CT scanning or endoscopy.

**Endoluminal stenting**

After resuscitation (such as fluid replacement, oxygen and/or blood transfusion), patients will then have a self-expanding metal enteral stent deployed across the obstructing tumour by a fluoroscopic ± endoscopic technique. The type of stent used is the decision of the local radiologist. Stents will be provided at less than half price - see cost implications, page 9.
Neither pre- nor post-stent balloon dilatation of the stricture will be performed. The patency and position of the stent will be checked radiologically. In the event of proximal faecal loading a flatus tube will be passed (under radiological guidance) through the deployed stent to allow irrigation of the proximal colon until the bowel is empty (confirmed by a plain abdominal X-ray). Patients will be given 10mls of lactulose twice daily and continued as required or until surgery in the attempted curative arm.

All patients undergoing stenting with either a combined radiology/endoscopic approach or radiology alone, will have a post-stent deployment radiograph performed to confirm the position of the stent.

Patients may be discharged post-procedure, as long as bowel function has returned and their medical condition is stabilised. Following this, disease staging will be completed and active treatment of any medical problems will be undertaken. In appropriate cases, patients will undergo delayed definitive surgery, ideally 1-4 weeks later. Prior to operation, patients will have standard bowel preparation (according to surgeons’ preference) and an appropriate elective resection will be performed.

In those patients with unresectable local or metastatic disease, and in those who are unfit for further major surgery, the stenting procedure will be considered to have been a palliative measure and no further surgical intervention will be necessary.

Patients in whom stenting fails will undergo an appropriate emergency surgical decompression along similar lines to those allocated emergency surgery (see below).

Emergency surgery
Following resuscitation, patients allocated emergency surgery will have an appropriate procedure to relieve the obstruction that may involve resection, bypass or decompression as dictated by the surgeons’ preference and the stage of the disease and the clinical condition of the patient.

A standardised antibiotic prophylactic regimen using intravenous antibiotics will be administered to both groups according to the surgeons’ preference.

Adverse event reporting
Serious adverse experiences\(^a\) believed to be due to insertion of the stent or surgery should be reported on a Serious Adverse Event Form (see Appendix H), which should be sent to

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\(^a\) For the purposes of this study, “serious” adverse events are those which are fatal, life-threatening, require or prolong hospitalisation or are significantly or permanently disabling or incapacitating. “Unexpected” adverse experiences are defined as those that would not be expected among patients who have had a stent inserted for colon cancer (which has expected risks). Expedited reporting is not required for side-effects or events that might reasonably be expected in patients presenting with obstructing colorectal cancer.
the CReST Study Office. If the event is both serious and unexpected then the SAE form must be sent to the CReST Study office within one week of the onset of the event.

For the purposes of this study, adverse events include, but are not limited to:

1. Failure to deploy stent.
   In the event that a guide wire cannot be passed through the stricture or the stent fails to dilate, the patient will remain obstructed. In these circumstances, emergency surgery will be required and it is possible that the patient is compromised by the delay incurred through attempted stenting. In our own pilot study, and other reported series, the stent failure rate is between 5% and 10%.

2. Bowel perforation.
   Rupture of the tumour or perforation of the bowel is a recognised hazard of stenting. This is a potentially life threatening event and warrants careful evaluation within this study.

3. Stent displacement/ reobstruction.
   Stent insertion will be considered an adverse event if it results in further acute obstruction requiring either further stent insertion or emergency surgery.

**Compatibility with other adjuvant studies**

Patients randomised to stenting within CReST can be considered for neoadjuvant chemotherapy in the ‘bridge to surgery’ setting. This treatment is currently being evaluated as part of the international multicentre RCT, FOxTROT. Appropriate patients in CReST may be considered for entry into FOxTROT, but only after consultation with the Trial Management Committees of each study.

**Follow-up**

Post-operative complications and disease status will be recorded at discharge and at outpatient visits six weeks after surgery, then every 3 months for the first year and every six months thereafter up to 3 years then annually. Quality of life will be assessed using EQ-5D, and EORTC QLQ–C30 with resource usage module (as in the QUASAR study) at discharge, 3 months and 1 year post-randomisation (Appendices J and K). Liver imaging will be performed ideally every 12 months but at a minimum of 3 years.

If patients are lost to follow-up, contact will be made through their GP. Flagging will be arranged through the Office of National Statistics to monitor long term survival.
5. SIZE, STATISTICS & DATA MONITORING

Projected Accrual
The sample size is pragmatic aiming to randomise a minimum of 400 patients over three years. The single centre pilot study has already demonstrated that it is feasible to randomise patients presenting in the emergency setting and indicated that it is possible to randomise half of all eligible patients. We are aiming to recruit patients from 20 units in the first year and from 30 units in the second and third years. Each centre will aim to recruit an average of 14 patients over the 3 years.

Sample size
With 400 patients randomised, CReST would have adequate statistical power to detect plausible reductions in the primary end points of length of hospital stay and 30 day mortality. For example, 400 patients would provide 90% power to detect a reduction in operative complications from 40% to 25% - Martinez-Santoz et al reported a reduction from 41% to 12% in their non-randomised study. 400 patients would also provide 90% power to detect a 0.35sd reduction in days in hospital equivalent to 1-2 days. 400 patients would also provide over 90% power to detect differences in survival of similar magnitude to those seen in Birmingham audit data (where survival at 6 months in the emergency patients was 73% vs 87% in the elective group) or those reported in a recent national audit (mortality of 15.7% following surgery for obstructing colorectal cancer and 4% following elective surgery). It is not anticipated that there will be any significant loss to follow-up.

Data Monitoring and Ethics Committee
During the period of intake in the study, interim analyses of hospital stay and 30-day mortality will be supplied, in strict confidence, to an independent Data Monitoring and Ethics Committee (DMEC) along with any other analyses that the committee may request.

The DMEC will meet annually, or more frequently if considered appropriate, and will advise the chair of the trial's steering committee if, in their view, the randomised comparison in CReST has provided both (a) "proof beyond reasonable doubt" that for all, or for some types of patient, one particular treatment is clearly indicated or clearly contraindicated in

\[ b \] Appropriate criteria of proof beyond reasonable doubt cannot be specified precisely, but a difference of at least three standard deviations in an interim analysis of a major endpoint may be needed to justify halting, or modifying, such a study prematurely. If this criterion were to be adopted, it would have the practical advantage that the exact number of interim analyses would be of little importance, so no fixed schedule is proposed.
terms of a net difference in the main outcome measures, and (b) evidence that might reasonably be expected to influence the patient management of many clinicians who are already aware of the other main trial results.

The steering committee can then decide whether to modify the study protocol. Unless this happens, however, the steering committee, the collaborators and all of the central administrative staff (except the statisticians who supply the confidential analyses) will remain ignorant of the interim results.

If the clinical coordinators are unable to resolve any concern satisfactorily, collaborators, and all others associated with the study, may write through the CReST trial office to the chairman of the data monitoring committee, drawing attention to any worries they may have about the possibility of particular side-effects, or of particular categories of patient requiring special study, or about any other matters thought relevant.

6. ORGANISATION

To ensure the smooth running of CReST and to minimise the overall procedural workload, it is proposed that each participating centre should designate individuals who would be chiefly responsible for local coordination of surgical, radiological and administrative aspects of CReST. The CReST Study Office, working together with NCRN networks, will provide as much assistance as they can to local co-ordinators and investigators in obtaining research ethics and management approval in each centre, by providing lists of local surgeons and radiologists who have expressed interest and helping resolve any local problems that may be encountered.

Local Principal Investigator at each centre

Each Centre should nominate one person to act as the Local Principal Investigator; this will be either a surgeon or a radiologist. Their responsibilities will include:

1. Liaising with local surgeons, radiologists and nurses

The local Principal Investigator will need to liaise with all surgeons managing emergency admissions to encourage them to consider suitable patients for CReST. Local Operating Procedures will need to be developed to ensure prompt radiological staging, discussion of individual patient's suitability for CReST, providing eligible patients with a CReST information sheet and obtaining consent to take part in the study. Any member of the clinical team can obtain consent and randomise patients into CReST although it is obviously
essential that surgical and radiological teams liaise closely to agree who randomises, which patients are suitable for CReST, and to ensure that radiological and surgical procedures can be undertaken promptly if allocated.

2. **To ensure that all medical and nursing staff involved in the care of colon cancer patients are reasonably well informed about the study**
This involves distributing the CReST materials to all relevant staff, displaying any wall-charts or posters where they are likely to be read, and distributing the CReST newsletters.

3. **To ensure compliance with research governance requirements**
This involves obtaining LREC and management approval for CReST, ensuring that all members of the clinical team are familiar with the protocol and trial procedures, in particular serious adverse event reporting, maintaining the local study file with copies of trial materials, approval documents, consent forms and any other required documents as advised by the CReST Study office.

**Central coordination: supply of all trial materials, 24-hour randomisation service, and data collection and analysis**
The CReST Study Office at the University of Birmingham Clinical Trials Unit is responsible for providing the CReST site files containing trial materials. These will be supplied to each collaborating centre, once relevant ethics committee and local Trust approvals have been obtained. The CReST Study Office will assist the Principal Investigator in obtaining LREC and Trust approval. Patient entry in a centre can start as soon as both approvals are granted. Additional supplies of any printed material can be obtained on request. The CReST Study Office also provides the randomisation service and is responsible for collection of data (including reports of serious adverse events thought to be due to trial treatment) and for data analyses.

**Clinical Queries**
Any clinical queries about the trial should be directed to one of the clinical coordinators (telephone numbers inside the front cover of this protocol).

**Finance**
CReST is funded by Cancer Research UK and organised by the Department of Health funded University of Birmingham Clinical Trials Unit. The general structure of the study was, however, designed by the Surgical Trials Subcommittee of the UK National Cancer
Research Institute's Colorectal Cancer Clinical Studies Group, the British Society of Gastrointestinal and Abdominal Radiology and the Birmingham Clinical Trials Unit.

Cost implications
The CReST trial can offer no financial support to the collaborating hospitals other than provision of stents at a reduced cost (less than half price). The choice of stent used is by clinician's preference and ConMed, Pyramed and Boston Scientific have agreed to supply reduced cost stents for use in the trial. Participating centres will be provided with an initial batch of stents from their preferred company, centres will deal directly with the company regarding resupply and payment. CReST should not involve any extra treatment costs for participating hospitals. Indeed, the hope is that stenting may reduce the amount of emergency care that patients need. No additional follow-up visits or investigations are needed other than those that would normally be required for standard patient care.

Indemnity
There are no special arrangements for compensation for any non-negligent harm suffered by patients as a result of participating in the study. CReST is not an industry-sponsored trial and hence ABPI guidelines on indemnity do not apply. CReST is being run – by the NCRI – as an independent study and is funded chiefly by Cancer Research UK. The University of Birmingham and Central Manchester & Manchester Children's University Hospitals NHS Trust are the trial sponsors. The normal NHS indemnity liability arrangements for clinician initiated research will, therefore, operate – see NHS Executive Health Service Guidelines HSG (96) 48, 8th November 1996. It should be noted, however that negligent liability remains the responsibility of the hospital, whether or not a patient is part of a clinical trial, because of the duty of care that the hospital has for their patients. Apart from defective products, legal liability does not arise where there is non-negligent harm.

Publication
A meeting will be held after the end of the study to allow discussion of the main results among the collaborators prior to publication. The success of CReST depends on the collaboration of a large number of surgeons, radiologists, gastroenterologists and nurses. For this reason, chief credit for the main results will be given not to the committees or central organisers but to all those who have collaborated in the study.
CReST - Endoluminal Stenting in the Acute Management of Obstructing Colorectal Cancer

Patient Information Sheet
Version 2.0, 10th October 2008

Summary of invitation to take part in a research study called CReST

- You have been admitted to hospital and tests show that the problem with your lower bowel is a blockage and this needs to be treated urgently. There are several potential causes for this blockage, but we know from experience that the most likely cause is a tumour or cancer in the bowel.

- This hospital is taking part in a research study called CReST, which aims to find out which of two different ways of treating patients with blockage in the bowel is best.

- One group of patients in CReST receive standard treatment, which is surgery. The part of the bowel that is blocked by the cancer is usually removed and a new join is made in the bowel or, sometimes, a 'stoma' (diverting the bowel out through the abdomen to allow faeces to escape into a bag) is made to relieve the obstruction.

- The other group of patients have a new procedure called stenting, which involves passing a wire stent through the blocked bit of bowel, which then expands to open up the bowel. If the stenting is successful, this will allow the bowels to start working again before surgery, which would then be done as a planned operation within 4 weeks. If stenting is unsuccessful then immediate surgery would be needed.

- People are allocated to the two groups at random (like tossing a coin) to make sure the two groups are comparable.

- You do not have to take part in CReST and if you decide not to, no-one will think badly of you and this will not affect the quality of your care.
Invitation to take part in a research study called CReST

Before you decide whether or not you wish to take part in the CReST study, we would like to explain why the research is being done and what it will involve for you. Please take time to read this information carefully and ask us if anything is unclear or if you would like more information. Take your time to decide whether or not you wish to take part. Part 1 tells you the purpose of this study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study.

Part 1

What are the treatments for large bowel obstruction?
Until recently, the standard treatment for patients with a blockage of the large bowel caused by cancer has been emergency surgery to relieve this obstruction. In some cases the ends of the bowel can be joined together but it is often the case that after this surgery the patient was left with a stoma (bringing one end of the bowel out onto the abdominal surface to allow passage of faeces into a bag), often permanently. Recently, stents have been used as a temporary measure to relieve the obstruction with the operation to remove the cancer delayed to a later time when the patient has recovered from the obstruction.

What is the purpose of the CReST study?
Unfortunately, emergency surgery for patients with large bowel obstruction has a high risk of complications. Therefore we are continuing to research ways of improving treatment and in the CReST study we are comparing emergency surgery with one other treatment: passing a stent across the blockage in the bowel. The stents are specifically designed metal mesh tubes, which if passed across the
blockage in the bowel, act to open it up and thereby relieve the obstruction allowing faeces and flatus (wind) to pass normally. The diagram shows what this means.

Stents were first used 10 years ago. But there have not been any good studies comparing stents with the standard treatment and so it's still not clear whether, on balance, stenting is better than surgery for treating patients with large bowel obstruction. The CReST study aims to determine if inserting stents for relief of large bowel obstruction can improve patient treatment compared to surgery.

Why am I being invited to take part in CReST?
Your doctor will have invited you to consider taking part in CReST because you have suspected bowel cancer that has caused an obstruction of your bowel that needs to be treated urgently. He/she is not sure whether the best treatment for you
is to insert a stent or emergency surgery so thinks that taking part in CReST would be a good option to help find out which of these treatments is best. The CReST study aims to include at least 400 people like you with large bowel obstructions caused by colon cancer from hospitals throughout the UK and elsewhere.

**Do I have to take part?**

No. Taking part in research is always voluntary. If you decide to take part you will be given this information sheet to keep, and will be asked to sign a consent form, but you are still free to withdraw at any time and without giving a reason. If you decide not to take part, then you don’t have to give a reason why and no-one will think badly of you for not wishing to take part. Your specialist will be happy to talk through alternative options.

**What does the standard treatment involve?**

The standard treatment involves an emergency operation to relieve the obstruction: because of the blockage, surgery cannot be delayed too long. Surgery will attempt to remove the source of the blockage, which is believed to be caused by a tumour, along with the surrounding part of the bowel. At the time of surgery, the surgeon assesses the condition of the bowel and the general condition of the patient to determine what surgical procedure to perform. If the surgeon considers it safe to do so, the cancer causing the obstruction is removed. The surgeon then has to decide if it safe to join the bowel ends back together (an anastomosis). Sometimes this is not possible in the emergency setting and instead the surgeon will bring the bowel out through the abdominal wall so that the faeces are collected into a bag (a stoma). If a stoma has been made, it is sometimes possible to re-join the bowel at a later date when the patient has recovered from their initial surgery.

**What will happen to me if I agree to take part in CReST?**

To begin with, all patients will have been investigated with either a contrast CT (this is a scan which takes images of your body using x-rays) or a contrast enema (this is a fluid that is passed into the large bowel via the bottom and will show up on x-ray). This fluid then allows x-ray pictures to be taken to confirm the diagnosis of large bowel obstruction and to determine the exact site of the blockage.
If you decide to take part in CReST you will have the obstruction removed by either:

i) Emergency surgery (as described above) or

ii) Insertion of a stent.

If you are allocated to insertion of a stent, stent placement will be carried out in the X-ray suite. When a stent is inserted you will be given some sedation (this makes you relaxed and probably a little sleepy). You will be positioned on your left side and under x-ray guidance a specially designed guidewire will be passed through the blockage in the bowel. This wire acts as a guide so that the stent can be placed in the correct position in the large bowel. In some cases a flexible telescope (sigmoidoscopy) might be needed to locate the narrowed passage through the bowel.

When the stent is in the right place it is released and immediately expands to widen the narrowing of the bowel. When the stent expands there is usually a sudden passage of wind and sometimes liquid faeces, this is normal and is nothing to worry about.

After stenting you will be returned to the ward and may be discharged home the following day, as long as your bowels are opening normally. Investigations to determine if you are suitable for surgery will then be arranged as an outpatient. If you are going to have surgery, planned (elective) surgery will be arranged. If you are not going to have surgery the stent will remain in place and surgery will be avoided altogether.

As a participant in the CReST study, you will be followed up for a period of three years. You will be reviewed in the outpatient clinic six weeks after discharge, then every three months for the first year. You will then be seen every six months for a further two years.

**Which of these treatments would I receive?**

So that we can find out which treatment is best, each person is put into a treatment group randomly (like tossing a coin). You have an equal chance of being allocated to the stent or surgery groups. Neither you nor your doctor can choose which treatment you will receive. This is essential so that a fair comparison can be made between the different treatment groups. Dividing people into treatment groups in this way...
way is what is called a ‘randomised clinical trial’ and it is the standard and most reliable way of comparing different treatments.

**What are the risks of stenting?**

There is a small risk of failure to place the stent due to technical difficulties. In this case, surgery will have been delayed and you will still need to undergo urgent surgery. As with all procedures, complications of stenting can occur. Previous experience has shown a small risk of bowel perforation (making a hole in the bowel wall) whilst placing the stent. This would be treated by immediate surgery. Migration of the stent (when the stent moves from its original site) has also been seen. This occurs following widening of the narrowed segment and the stent is usually passed with a bowel motion without causing any discomfort. Replacement of the stent is only necessary if recurrence of the blockage occurs. It is also possible that stenting may increase the risk of the cancer spreading but we don't know this and one important reason why we are running the **CReST** study is to check that stenting doesn't increase the risk of cancer spread.

The radiation dose received during stenting is similar to other X-ray treatment procedures (such as X-rays of the heart for coronary artery disease). The long-term risk to each patient from this is less than a 1% chance of developing a cancer in 20-30 years. This is much less than the natural risk of cancer in the population.

**What are the risks of surgery?**

Surgery on the large bowel is more difficult in the emergency compared to the elective (planned) setting because the bowel is dilated and because patients are acutely unwell. This can increase the risk of complications following surgery. In the emergency setting, there may be an increased likelihood of the surgeon bringing the bowel out through the abdominal wall so that the faeces are collected into a bag (a stoma). There may also be an increased risk of heart and lung complications after emergency surgery because patients are acutely unwell at the time of surgery.
**What are the possible benefits from taking part in CReST?**

It is believed that stenting may make surgery safer by allowing time for improvement of a patient’s general fitness before surgery, leading to less risk of complications and a shorter stay in hospital. It may also reduce the need for stoma formation. Some patients, such as those with poor eyesight or reduced dexterity, may find a stoma difficult to manage so would need to rely on help from a carer or possibly nursing home care. However, we can not be sure in advance that stenting will have all or any of these benefits – that is the reason for doing this trial. We believe that participation in CReST will provide you with the best available treatment for your cancer. The main benefit from CReST will be that the information gained from the study will help doctors in the treatment of patients in a similar condition to yours in the future.

**Part 2**

**What if relevant new information becomes available?**

Sometimes we get new information about the treatment being studied. If this happens, your research doctor will discuss how this affects your care and your participation in the CReST study. Your research doctor might consider you should continue in the study or withdraw. Either way, he/she will explain the reasons and arrange for your care to continue. If you decide to continue in the study he may ask you to sign an updated consent form. If the study is stopped for any other reason, your doctor would, again, tell you and arrange your continuing care.

**What will happen if I don’t want to carry on with the study?**

You can decide not to continue with study treatment at any time but, if you do, we would still like to follow up your progress and your data would remain on file and be included in the final study analysis unless you request that they should not be.

**What if something goes wrong?**
If you are harmed by taking part in this research project, there are no special compensation arrangements. If the harm is due to someone’s negligence, then you may have grounds for a legal action but you may have to pay for this. Whether or not you take part in the study, if you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, the normal National Health Service complaints mechanisms would be available to you. Taking part in the study would not affect your legal rights.

**Will my taking part be kept confidential?**

If you decide to take part in CReST, all information collected about you during the course of the trial will be kept strictly confidential in the same way as all of your other medical records. Information about your disease and progress will be sent by your doctors to the CReST Study Office at the University of Birmingham Clinical Trials Unit (BCTU), on paper and electronically, where it will be securely stored under the provisions of the 1998 Data Protection Act. With your permission, your GP, and the other doctors involved in your clinical care, will be notified of your participation in the CReST trial and kept informed of your progress. We may use national records to track your progress, but otherwise all information about you and your treatment will remain confidential.

With your permission, your relevant medical records may be inspected by authorised individuals from the BCTU and by the medical charity, Cancer Research UK (who are funding the study). They may also be looked at by regulatory authorities. The purpose of this is to check that the study is being carried out correctly.

**What will happen to the results of the study?**

Once the trial has finished we will publish the results in a medical journal so that others can benefit. We will also publicise the results on the trial's website [www.CReST.bham.ac.uk](http://www.CReST.bham.ac.uk). No individual patients will be identified in any publications. A copy of the published results of the trial will be sent to all patients who have participated in CReST. In line with clinical trial guidelines, at the end of the study, the data will need to be securely archived for a minimum of 15 years.
Arrangements for confidential destruction will then be made. Should you withdraw consent for your data to be used, it will be confidentially destroyed.

**Who is organising and funding the research?**

The CReST study was developed by the National Cancer Research Institute's Colorectal Cancer Clinical Studies Group, and is funded by the medical charity, Cancer Research UK. The study is coordinated by the Clinical Trials Unit at the University of Birmingham. The research has been reviewed and approved by all of these organisations, and also by an independent NHS Multi-centre Research Ethics Committee. There is no involvement of any companies other than providing stents at reduced price.

**Who has reviewed the study?**

All research in the NHS is looked at by an independent group of people called a Research Ethics Committee to protect your safety, rights, wellbeing and dignity. This study has been reviewed and given favourable opinion by Oxfordshire Research Ethics Committee B.

**Where can I get further information?**

If you have any further questions about your disease or clinical trials, please discuss them with your doctor. You may also find it helpful to contact CancerBACUP, an independent patient advisory group (freephone: 0800 800 1234; address: 3 Bath Place, Rivington Street, London, EC2A 3DR; web site www.cancerbackup.org.uk).

For any queries about the study or for further information please contact:

Name: ........................................................................................................

Tel No: ........................................................................................................

Position: ......................................................................................................

The CReST study coordinating centre is located at the University of Birmingham Clinical Trials Unit, School of Cancer Sciences, Robert Aitken Institute, University of Birmingham, Edgbaston, Birmingham, B15 2TT. Web address: www.bctu.bham.ac.uk; e-mail: CReST@contacts.bham.ac.uk
Appendix B: Consent Form

Delete this line and then print on Trust headed paper

CReST Protocol 16/07/2009

CReST trial Number

Patient Consent Form

CReST - Endoluminal Stenting in the Acute Management of Obstructing Colorectal Cancer

Version 2.0 10th October 2008

1. I confirm that I have read and understood the information sheet for the CReST study (version 2.0, dated 10/Oct/08) and have had the opportunity to ask questions.

2. I understand that my participation in this study is voluntary and that I may withdraw at any time, without giving a reason, and without my medical and legal rights being affected.

3. I understand that information about me and my progress will be supplied in confidence to the study coordinators by my own doctors and by central registries for use in the CReST study.

4. I understand that sections of any of my medical notes may be looked at by responsible individuals from the Clinical Trials Unit at the University of Birmingham, or from regulatory authorities or from the NHS trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.

5. I understand that the study researchers may contact me by telephone or email to remind me to complete the questionnaires or to ask me the questions over the telephone.

6. I understand that my GP may be contacted to provide information about my progress, in confidence, to the central organisers. I understand that the information held by the NHS and records maintained by the General Register Office may be used to keep in touch with me and follow up my health status.

7. I agree to take part in the above study.

Name of Participant:
Signature: Date:

Name of Clinician:
Signature: Date:

Version 2.0 10th October 2008
Appendix C: Randomisation Notepad

CReST Randomisation notepad - Complete this form and then telephone the Randomisation service: 0800 953 0274 or use the online randomisation at: https://www.trials.bham.ac.uk/CReST

Part A – Radiology

1. Is the patient very likely to have an obstructing colorectal cancer?  Yes ☐ No ☐
   (As diagnosed by CT scan or contrast enema)
2. Primary tumour site?
   - Transverse colon ☐
   - Sigmoid ☐
   - Splenic flexure ☐
   - Rectosigmoid ☐
   - Descending colon ☐
   - Rectum ☐
3. Has treatment been recognised as palliative or curative? Palliative ☐
   Potentially Curative ☐
4. If potentially curative, please indicate likelihood of cure?
   - Probably yes ☐
   - Probably not ☐
   - Uncertain (possibly yes) ☐

Part B – Eligibility checklist

Does the patient have:
5. An established perforation? Yes ☐ No ☐
6. An obstruction in the mid/lower rectum that may require neoadjuvant therapy? Yes ☐ No ☐
7. Is there evidence of peritonitis? Yes ☐ No ☐
8. If the patient is female – is the patient pregnant? Yes ☐ No ☐
9. To assess fitness for surgery, what is the patient’s ASA grade?
   - P1 Normal healthy patient ☐
   - P2 Mild systemic disease ☐
   - P3 Severe systemic disease ☐
   - P4 Severe life-threatening systemic disease ☐
   - P5 Not expected to survive without the operation ☐
9. Has the patient, or their representative, given written informed consent? Yes ☐ No ☐
10. What is the patient’s APACHE score? __________________________

Part C – Randomisation Allocation:

Insertion of an endoluminal stent ☐ Emergency surgery ☐

CReST trial number __________________________  Date of randomisation: __________________________

Please return this form within 1 week of entry into the trial to the CReST trial office in the Freepost envelope provided to: CReST Study Office, The University of Birmingham Clinical Trials Unit, FREEPOST RRKR-JUZR-HZHG, Robert Aitken Institute, Edgbaston, Birmingham, B15 2TT

v1.1 16/07/2009
Dear Dr

Name...........................................................................D.o.B......................................
NHS No.........................................................

Your patient, named above, presented at this hospital with a large bowel obstruction presumed to be due to colorectal cancer. Such patients are eligible for entry to CReST, a multi-centre clinical trial comparing the outcome of patients with obstructing left sided colorectal lesions, treated either by emergency surgery or by temporary stenting prior to a delayed definitive procedure. It is hypothesised that preoperative stenting of the obstructing left sided colorectal lesion allows time for proper preparation, medical improvement and staging of these patients. Hence, the surgical outcome should be significantly improved by converting an emergency procedure into an elective operation.

However, we need a proper randomised evaluation of stenting to establish this and make sure that stenting does not increase the risk of tumour spread.

CReST was developed by the National Cancer Research Institute’s Colorectal Cancer Clinical Studies Group. The University of Birmingham Clinical Trials Unit are acting as coordinating centre. The study is funded by Cancer Research UK and receives no commercial support other than reduced cost stents. The trial has been approved by Oxfordshire Multicentre Research Ethics Committee and the Local Research Ethics Committee at each participating centre.

Your patient has consented to take part in the CReST Trial and has been randomly allocated to:

- Emergency surgery
- Endoluminal stenting

I, or another member of the multi-disciplinary team responsible for your patient, will be updating you regularly on progress. If you have any queries about the patient's management, please feel free to contact me. If you require any further information about the CReST trial, it can be obtained from the CReST study office (see address below). Please file this letter in the patient’s notes. I would appreciate being notified if they are no longer one of your patients.

Yours sincerely

Name
Position

Further information about CReST is available from:

CReST Study Office, The University of Birmingham Clinical Trials Unit, FREEPOST RRKR-JUZR-HZHG, Robert Aitken Institute, Edgbaston, Birmingham B15 2TT Tel: 0121 415 9105 Fax: 0121 415 9135 Email: CReST@contacts.bham.ac.uk www.CReST.bham.ac.uk

v1.0 20/05/2008
### Colorectal Stent Insertion Form

<table>
<thead>
<tr>
<th>Patient Forename:</th>
<th>Patient Surname:</th>
<th>D.O.B (dd-mon-yyyy)</th>
<th>Hospital:</th>
<th>CReST Trial No:</th>
<th>Hospital No:</th>
<th>NHS Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date form completed (dd-mon-yyyy):</th>
<th>.../........./20....</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant Radiologist</td>
<td></td>
</tr>
<tr>
<td>Consultant Surgeon</td>
<td></td>
</tr>
</tbody>
</table>

**Date stent inserted (dd-mon-yyyy):** 
.../........./.........

**Did stent relieve obstruction?** Yes [ ] No [ ] If ‘No’, SAE and Intra-Operative Form must be completed

### Indication
- Palliation
- Bridge to surgery
- Uncertain

### Diagnosis
- Method of diagnosis:
  - Contrast enema
  - Flexible sigmoidoscopy
  - CT Scan
  - Endoscopy
- Histology available: Yes [ ] No [ ]
- Metastases

### ASA Grade:
- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4
- [ ] 5

### Stent Site
- Upper Rectum
- Rectosigmoid
- Sigmoid Colon
- Descending Colon
- Splenic Flexure
- Transverse Colon

### Stent Deployed

<table>
<thead>
<tr>
<th>Stent 1</th>
<th>Stent 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Model</td>
</tr>
<tr>
<td>Length</td>
<td>Length</td>
</tr>
<tr>
<td>Diameter</td>
<td>Diameter</td>
</tr>
<tr>
<td>Covered (C) or Uncovered (U)</td>
<td>Covered (C) or Uncovered (U)</td>
</tr>
</tbody>
</table>

### Guidance Method
- Endoscopic + fluoroscopic
- Fluoroscopic alone
- Endoscopic alone

### Stent Deployment
- Upper end
- Lower end
- Stent Expansion
- Dose: [ ] [cGy cm²]
- Duration of Procedure
- Easy [ ] Standard [ ] Difficult [ ]

### Immediate Complications
- None
- Migration (Requiring further stent insertion)
- Haemorrhage (resulting in transfusion)
- Perforation
- Resp. depression (requiring drug reversal)
- Hypotension (Requiring resuscitation)
- Other

### Drugs
- Midazolam [ ] mg
- Fentanyl [ ] mg
- Flumazenil [ ] µg
- Other

**Name of person completing form:**

---

Please return form to CReST Study Office, University of Birmingham Clinical Trials Unit, FREEPOST RRKR-JUZR-HZHG, Robert Aitken Institute, Edgbaston, Birmingham, B15 2TT

POST PROCEDURE INSTRUCTIONS: SEE PROTOCOL SECTION 4
## Appendix F: Colorectal Stent Follow-up Form

### Colorectal Stent Follow-up Form

<table>
<thead>
<tr>
<th>Patient Forename:</th>
<th>Patient Surname:</th>
<th>D.O.B (dd-mon-yyyy)</th>
<th>Hospital</th>
<th>CReST Trial No:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Patient Forename:</th>
<th>Patient Surname:</th>
<th>D.O.B (dd-mon-yyyy)</th>
<th>Hospital</th>
<th>CReST Trial No:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Date form completed (dd-mon-yyyy)</th>
<th>Hospital No:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>NHS Number:</th>
<th>……………………….. ………………………..</th>
</tr>
</thead>
</table>

### Stent number

- 1
- 2
- 3
- 4

#### COMPLICATIONS

<table>
<thead>
<tr>
<th>24 hours – 7 days</th>
<th>Late (7-28 days after stenting)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>None</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Migration – requiring further stent insertion</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Haemorrhage – resulting in a transfusion</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Perforation</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Respiratory depression – requiring drug reversal</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Hypotension – requiring resuscitation</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Other (please specify)</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

#### Sensation*:

- 0 – no awareness of stent
- 1 – awareness/discomfort
- 2 – pain controlled with simple analgesics
- 3 – pain requiring opiates

#### Stent failure:

- Did stent fail? Yes | No
- If ‘Yes’ date of failure: …………………

### N.B. Stent failure defined as ‘Failure to relieve obstruction’

<table>
<thead>
<tr>
<th>Reason for failure:</th>
<th>Migration: Yes</th>
<th>No</th>
<th>Perforation: Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Obstruction:</th>
<th>Yes</th>
<th>No</th>
<th>Overgrowth: Yes</th>
<th>No</th>
</tr>
</thead>
</table>

#### Re-intervention:

- Was re-intervention required? Yes | No

<table>
<thead>
<tr>
<th>Date</th>
<th>Day post stent</th>
<th>WHO performance</th>
<th>Karnofsky</th>
</tr>
</thead>
</table>

| ……/……/…… (48 hours post stent) | ………… | 0 - 1 - 2 - 3 – 4 | …………… |

| ……/……/…… (immediately prior to surgery) | ………… | 0 – 1 - 2 - 3 – 4 | …………… |

#### WHO performance:

- 0 = fully active; 1= mobile all day; 2= in bed <50%; 3= in bed>50%; 4= bedridden

### Other problems

…………………………………………………………………………………………………………

### Name of person completing the form:

…………………………………………………… Tel:……………………..

---

Please return form to CReST Study Office, University of Birmingham Clinical Trials Unit, FREEPOST RRKR-JUZR-HZHG, Robert Aitken Institute, Edgbaston, Birmingham, B15 2TT

v1.0 10/10/2008
<table>
<thead>
<tr>
<th>Appendix G: Surgical Details Forms – Intraoperative form</th>
</tr>
</thead>
</table>

### Colorectal Intraoperative Form

<table>
<thead>
<tr>
<th>Patient Forename:</th>
<th>Patient Surname:</th>
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<thead>
<tr>
<th>Hospital</th>
<th>CReST Trial No:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hospital No:</th>
<th>Date of Surgery (dd-mon-yyyy):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surgeon:</th>
<th>Date form completed (dd-mon-yyyy):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Site of Tumour:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transverse colon</td>
</tr>
<tr>
<td>Descending colon</td>
</tr>
<tr>
<td>Recto-sigmoid junction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Presence of large bowel obstruction:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Intraperitoneal contamination:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

If “Yes”: what is the Hinchley classification:

i) Stage I peri-colic or mesenteric abscess
ii) Stage II walled off pelvic abscess
iii) Stage III generalised purulent peritonitis
iv) Stage IV generalised faecal peritonitis

<table>
<thead>
<tr>
<th>4. Is perforation present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

If yes, site(s) of Tumour:

Caecum

Other (please specify) ..........................................................................

<table>
<thead>
<tr>
<th>5. Resection performed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

If yes:

Segmental
Total Colectomy
Anterior resection

Other (please specify) ..........................................................................

<table>
<thead>
<tr>
<th>6. Clinical Assessment of resection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Has the procedure resulted in a stoma?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

If Yes:

End Loop

<table>
<thead>
<tr>
<th>9. Was there an intraoperative transfusion?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

If yes, number of units: ..................

<table>
<thead>
<tr>
<th>10. Is there any evidence of metastatic disease in:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Liver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

- Biopsy performed? Yes | No |

<table>
<thead>
<tr>
<th>Peritoneal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

- Biopsy performed? Yes | No |

<table>
<thead>
<tr>
<th>Elsewhere:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

Please specify .................................................................

---

Please return form to CReST Study Office, University of Birmingham Clinical Trials Unit, FREEPOST RRKR-JUZR-HZHG, Edgbaston, Birmingham, B15 5TT v1.0 10/10/2008
### Hospital Discharge Form

**Patient Forename:** ………………………………………..

**Patient Surname:** …………………………………………

**D.O.B (dd-mon-yyyy):** ………/………………/19…..

**Hospital:** ……………………………………..

**Hospital No:** ……………………………………..

**NHS Number:** ……………………………………...

**Date of surgery:** …………/…………………/20…….

**CReST Trial No:** …………………………..

**Date of Discharge (dd-mon-yyyy):** (date fit for discharge) 
…………………………/………/20…….

**Date form completed (dd-mon-yyyy):** ……………../………/20…….

### Complications – Please complete for ALL patients

Did the patient experience any complications that required intervention?  Yes ☐  No ☐

Did these require or prolong hospitalisation?      Yes ☐  No ☐

If ‘Yes’, please complete SAE form.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Primary</th>
<th>Reactionary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Haemorrhage</strong> (Defined as requiring transfusion)</td>
<td>Yes ☐  No ☐</td>
<td>Yes ☐  No ☐</td>
<td>Yes ☐  No ☐</td>
</tr>
</tbody>
</table>

If ‘Yes’, number of units transfused?  ………………………………………………

<table>
<thead>
<tr>
<th>Complication</th>
<th>Yes ☐  No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anastomotic leak</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Intra-abdominal abscess</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Pulmonary complications</strong></td>
<td></td>
</tr>
<tr>
<td>Atelectasis</td>
<td></td>
</tr>
<tr>
<td>Bronchopneumonia</td>
<td></td>
</tr>
<tr>
<td>Pulmonary embolus</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Complication</th>
<th>Yes ☐  No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deep vein thrombosis</strong></td>
<td></td>
</tr>
<tr>
<td><strong>MI – Heart failure</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Urinary tract infection</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Stoma related complications</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Death</strong> (If ‘yes’, please complete SAE form)</td>
<td>Yes ☐  No ☐</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Yes ☐  No ☐</td>
</tr>
</tbody>
</table>

### Further abdominal surgery required?

Yes ☐  No ☐

If ‘Yes’, please specify: …………………………………………………………………………

### Was the patient transferred to critical care?

HDU ☐  ICU ☐  No ☐

If ‘Yes’, the number of days in critical care?  ………………days

### Was mechanical ventilation required?

Yes ☐  No ☐

### Name of person completing the form:

……………………………………………………………………

### Signature……………………………….....  Telephone Number…………………………………..

---

Please return form to CReST Study Office, University of Birmingham Clinical Trials Unit, FREEPOST RRKR-JUZR-HZHG, Edgbaston, Birmingham B15 5TT  

v1.0 10/10/2008
Appendix H: Serious Adverse Event Form

Please report immediately any SERIOUS ADVERSE EVENTS (see protocol page 10 for definition) by completing all of the details below and send this form to the CReST trials office. Please also complete the SAE form if the patient dies of any cause other than progression of colorectal cancer.

Patient identification
Patients Full Name: ………………………………………………………. CReST Trial No. ………………………..
DOB (dd-mon-yyyy) ………../………./……… Hospital No.…………………. NHS No.…………………
Responsible Surgeon: ……………………………………………………………………………………………
Hospital ……………………………………………………………………………………………………………

SAE description
Date Event started:……………………………………… Date event ceased:……………………………..
Outcome: Fatal ☐ Recovered ☐ Continuing ☐
Please provide further documentation if event continuing
………………………………………………………………………………………………………………………………
………………………………………………………………………………………………………………………………
Was event fatal or life-threatening: Yes ☐ No ☐ If died, date of death (dd-mon-yyyy): …./……/……
Details of Adverse Event (please attach copies of relevant reports)
………………………………………………………………………………………………………………………………
………………………………………………………………………………………………………………………………
………………………………………………………………………………………………………………………………
Did the event require or prolong hospitalisation? Yes ☐ No ☐
If ‘Yes’, how many days? …………………………………………………………………………………
Do you consider the SAE to be: Definitely related to treatment ☐ Probably related to treatment ☐
Possibly related to treatment ☐ Probably not related to treatment ☐
Please give reasons if you consider the event to be treatment-related:
………………………………………………………………………………………………………………………………
Was the patient disease-free at the time of the event? Yes ☐
If recurrent disease, date (dd-mon-yyyy): …./……/……

Name of Person Reporting: ……………………….. Telephone number: ……………………………
Position: ………………………………………………………………………………………………………
Signature: ……………………………….. Today’s Date: ……………………………

When you have completed the form, please then send (with copies of any relevant reports) to the CReST Study Office, University of Birmingham Clinical Trials Unit, FREEPOST RRKR-JUZR-HZHG, Robert Aitken Institute, Edgbaston, Birmingham B15 2TT
# Appendix I: Annual Follow-up Form

## CReST TRIAL: ANNUAL FOLLOW-UP

**PLEASE COMPLETE AND RETURN THIS FORM PROMPTLY**

N.B. Please give details of any important protocol deviations, any events requiring or prolonging hospitalisation, cause of death, change of follow-up doctor, etc. in the COMMENTS field.

<table>
<thead>
<tr>
<th>Patient name</th>
<th>Has patient had surgery?</th>
<th>Has patient had a recurrence of disease? Site?</th>
<th>Has patient died? If Yes, state cause or attach copies of relevant reports.</th>
<th>COMMENTS: (See above)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes □ No □</td>
<td></td>
<td>Yes □ No □ Date of death:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>approx date: <strong>/</strong>/____</td>
<td></td>
<td><em>/</em>___</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Curative: Yes □ No □</td>
<td></td>
<td>dd    mm    yyyy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes □ No □</td>
<td></td>
<td>Or approx date last seen: <strong>/</strong>/____</td>
<td></td>
</tr>
<tr>
<td></td>
<td>approx date: <strong>/</strong>/____</td>
<td></td>
<td>dd    mm    yyyy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Curative: Yes □ No □</td>
<td></td>
<td>Date of death: <em>/</em>___</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes □ No □</td>
<td></td>
<td>Or approx date last seen: <strong>/</strong>/____</td>
<td></td>
</tr>
<tr>
<td></td>
<td>approx date: <strong>/</strong>/____</td>
<td></td>
<td>dd    mm    yyyy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Curative: Yes □ No □</td>
<td></td>
<td>Date of death: <em>/</em>___</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes □ No □</td>
<td></td>
<td>Or approx date last seen: <strong>/</strong>/____</td>
<td></td>
</tr>
<tr>
<td></td>
<td>approx date: <strong>/</strong>/____</td>
<td></td>
<td>dd    mm    yyyy</td>
<td></td>
</tr>
</tbody>
</table>

Name of person completing form ............................................................... Signature ........................................ Tel no: ....................... Date form completed ..........................

Thank you for your help. PLEASE RETURN THIS FORM IN THE ENCLOSED FREEPOST ENVELOPE TO: CReST Study Office, University Of Birmingham Clinical Trials Unit, FREEPOST RRKR-JUZR-HZHG, Robert Aitken Institute, Edgbaston, Birmingham, B15 2TT v1.0 10/10/2008
Appendix J: EQ 5D quality of life questionnaire

Health Questionnaire

(English version for the UK)
(Validated for use in Éire)

© EuroQol Group 1990
By placing a tick in one box in each group below, please indicate which statements best describe your own health state today.

**Mobility**
- I have no problems in walking about
- I have some problems in walking about
- I am confined to bed

**Self-Care**
- I have no problems with self-care
- I have some problems washing or dressing myself
- I am unable to wash or dress myself

**Usual Activities** *(e.g. work, study, housework, family or leisure activities)*
- I have no problems with performing my usual activities
- I have some problems with performing my usual activities
- I am unable to perform my usual activities

**Pain/Discomfort**
- I have no pain or discomfort
- I have moderate pain or discomfort
- I have extreme pain or discomfort

**Anxiety/Depression**
- I am not anxious or depressed
- I am moderately anxious or depressed
- I am extremely anxious or depressed
To help people say how good or bad a health state is, we have drawn a scale (rather like a thermometer) on which the best state you can imagine is marked 100 and the worst state you can imagine is marked 0.

We would like you to indicate on this scale how good or bad your own health is today, in your opinion. Please do this by drawing a line from the box below to whichever point on the scale indicates how good or bad your health state is today.
**EORTC QLQ – CR30 (version 3)**

We are interested in some things about you and your health. Please answer all of the questions yourself by circling the number that best applies to you. There are no “right” or “wrong” answers. The information that you provide will remain strictly confidential.

Please fill in your initials: ____________________________

Your birthdate (Day, Month, Year): ____________________________

Today’s date (Day, month, Year): ____________________________

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you have any trouble doing strenuous activities, like carrying a heavy shopping bag or a suitcase?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Do you have any trouble taking a long walk?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Do you have any trouble taking a short walk outside of the house?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Do you need to stay in a bed or chair during the day?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Do you need help with eating, dressing, washing yourself or using the toilet?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. Were you limited in doing your work or other daily activities?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. Were you limited in pursuing your hobbies or other leisure time activities?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Were you short of breath?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. Have you had pain?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Did you need to rest?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. Have you had trouble sleeping?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. Have you felt weak?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. Have you lacked appetite?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. Have you felt nauseated?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. Have you vomited?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. Have you been constipated?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
## During the past week:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Have you had diarrhoea?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. Were you tired?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. Did pain interfere with your daily activities?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20. Have you had difficulty in concentrating on things, like reading a newspaper or watching television?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21. Did you feel tense?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22. Did you worry?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. Did you feel irritable?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24. Did you feel depressed?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. Have you had difficulty remembering things?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26. Has your physical condition or medical treatment interfered with your family life?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27. Has your physical condition or medical treatment interfered with your social activities?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28. Has your physical condition or medical treatment caused you financial difficulties?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

For the following questions please circle the number between 1 and 7 that best applies to you

29. How would you rate your overall health during the past week?  
    
    1  2  3  4  5  6  7  
    
    Very poor          Excellent

30. How would you rate your overall quality of life during the past week?  
    
    1  2  3  4  5  6  7  
    
    Very poor          Excellent  

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**EORTC QLQ – CR29**

Patients sometimes report that they have the following symptoms or problems. Please indicate the extent to which you have experienced these symptoms or problems during the past week. Please answer by circling the number that best applies to you.

### During the past week:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>31. Did you urinate frequently during the day?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>32. Did you urinate frequently during the night?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>33. Have you had any unintentional release (leakage) of urine?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>34. Did you have pain when you urinated?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>35. Did you have abdominal pain?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>36. Did you have pain in your buttocks/anal area/rectum?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>37. Did you have a bloated feeling in your abdomen?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>38. Have you blood in your stools?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>39. Have you had mucus in your stools?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

### During the past week:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>40. Did you have a dry mouth?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>41. Have you lost hair as a result of your treatment?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>42. Have you had problems with your sense of taste?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>43. Were you worried about your health in the future?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>44. Have you worried about your weight?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>45. Have you felt physically less attractive as a result of your disease or treatment?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>46. Have you been feeling less feminine/masculine as a result of your disease or treatment?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>47. Have you been dissatisfied with your body?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>48. Do you have a stoma bag (colostomy/ileostomy)? (please circle the correct answer)</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
During the past week:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>49. Have you had unintentional release of gas/flatulence from your stoma bag?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>50. Have you had leakage of stools from your stoma bag?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>51. Have you had sore skin around your stoma?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>52. Did frequent bag changes occur during the day?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>53. Did frequent bag changes occur during the night?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>54. Did you feel embarrassed because of your stoma?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>55. Did you have problems caring for your stoma?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Answer these questions ONLY IF YOU HAVE A STOMA BAG, if not please continue the form below:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>49. Have you had unintentional release of gas/flatulence from your stoma bag?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>50. Have you had leakage of stools from your stoma bag?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>51. Have you had sore skin around your stoma?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>52. Did frequent bag changes occur during the day?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>53. Did frequent bag changes occur during the night?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>54. Did you feel embarrassed because of your stoma?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>55. Did you have problems caring for your stoma?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Answer these questions ONLY IF YOU DO NOT HAVE A STOMA BAG:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>49. Have you had unintentional release of gas/flatulence from your back passage?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>50. Have you had leakage of stools from your back passage?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>51. Have you had sore skin around your anal area?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>52. Did frequent bowel movements occur during the day?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>53. Did frequent bowel movements occur during the night?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>54. Did you feel embarrassed because of your bowel movement?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

During the past 4 weeks:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>56. To what extent were you interested in sex?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>57. Did you have difficulty getting or maintaining an erection</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

For men only:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
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<td>1</td>
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<td>3</td>
<td>4</td>
</tr>
<tr>
<td>57. Did you have difficulty getting or maintaining an erection</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

For women only:

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at All</th>
<th>A Little</th>
<th>Quite a Bit</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>58. To what extent were you interested in sex?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>59. Did you have pain or discomfort during intercourse?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

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Appendix L: REFERENCES