

National Confidential Enquiry Into Patient Outcome And Death



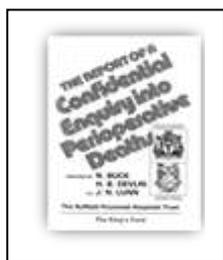
CONTENTS

Introduction and Method.....	2
Common theme 1 – Consultant review.....	3
Common theme 2 – Multidisciplinary review.....	6
Common theme 3 – Monitoring and early warning scores.....	8
Common theme 4 – Critical care review.....	11
Common theme 5 – Consent.....	14
Common theme 6 – Supervision of trainee doctors.....	17
Common theme 7 – Documentation.....	19
Common theme 8 – Morbidity and mortality reviews.....	22
Common theme 9 – Networks.....	25
Common theme 10 – Policies, protocols, proformas, guidelines & SOPs.....	27
Common theme 11 – Common clinical conditions.....	29
Conclusion.....	31
Appendix 1 – List of all NCEPOD reports to date.....	32
Appendix 2 – NCEPOD History.....	40
Appendix 3 – NCEPOD Method.....	41
Appendix 4 – NCEPOD Quality of Care Grading.....	43
Appendix 5 – NCEPOD Classification of Intervention.....	43
Appendix 6 – Example of and NCEPOD Audit Tool.....	44
Appendix 7 – Surgical Outcome Risk Tool.....	45
Appendix 8 – Version control.....	46

This work was commissioned by the Healthcare Quality Improvement Partnership (HQIP) which is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies.

www.hqip.org.uk/national-programmes Copyright© Healthcare Quality Improvement Partnership 2018

INTRODUCTION & METHOD



The Confidential Enquiry into Perioperative Deaths (CEPOD) was published in 1987 in response to professional concern about perioperative deaths.¹ After the publication of the report the Department of Health announced that it would fund a National Confidential Enquiry to repeat the work, and so NCEPOD as an organisation was established, publishing its first report in 1989.²

NCEPOD reviewed in-hospital Perioperative deaths annually until 2003 when it's remit was extended to review the quality of medical care too. At that time the method was also changed so that anyone could suggest an idea for a topic for review and the topics and reviews became more focused. A list of all NCEPOD reports to date is available in Appendix One. Each report explores a specific topic in detail and over the years, a number of common themes have emerged that are relevant to the care of all patients admitted to hospital. These include:

1. Consultant review
2. Supervision of trainee doctors
3. Multidisciplinary review
4. Documentation
5. Monitoring and early warning scores
6. Morbidity and mortality reviews
7. Critical care review
8. Networks
9. Consent
10. Policies, protocols, proformas, guidelines & standard operating procedures (SOPs)
11. Common clinical conditions

The purpose of this report is to look at the recommendations within each of the above themes, and to bring these together into a set of general recommendations.

METHOD

To extract the common themes for this report, all NCEPOD recommendations were listed and marked as a theme according to content by one reviewer (MM).

Each theme was then counted and ranked into numerical order. The top 10 themes were included in this review.

It is important to note that there may be additional common themes in the reports that have not formed recommendations. It may have been decided at the start of a study not to include a particular 'theme' as it had been covered in a previous report in more detail - an example of this would be end of life care. Or maybe we had simply stopped repeating a recommendation, such as the call for more hospital post mortem examinations.

This report is intended to be an evolving document and a 'living report'. As NCEPOD undertakes more studies further evidence will be added to the chapters and possibly chapters will no longer be relevant or new ones will emerge, either from changes in practice in healthcare or perhaps a light being shone on the smaller common themes that have evolved over the lifetime of NCEPOD reports.

1. Buck N, Devlin HB and Lunn JN. The Report of a Confidential Enquiry into Perioperative Deaths. London Nuffield Provincial Hospitals Trust/King's Fund Publishing Office 1987
2. Campling EA, Devlin HB and Lunn JN. The Report of the National Confidential Enquiry into Perioperative Deaths. London NCEPOD 1989

1 - CONSULTANT REVIEW

An elderly patient was admitted to a small district general hospital with abdominal pain and vomiting. The patient was diagnosed with gallstone pancreatitis and was given antibiotics and supportive treatment. The inpatient notes for the admission were poor and there was no evidence of consultant input. After two weeks the patient was transferred to a tertiary unit with a necrotic pancreas for percutaneous drainage of a peripancreatic collection. Over the next two weeks the patient's condition slowly deteriorated and the patient died.

The Reviewers were of the opinion that there had been inadequate consultant review, there was no clear management plan and that initial fluid resuscitation had been inadequate. Earlier structured treatment may have produced a better outcome.

Time to consultant review has been an area of concern within a number of NCEPOD reports and these reports are listed below. There are two issues to consider when referring to consultant review. The first is for acute admissions where the time between arrival and first consultant review is important. The second is for patients already admitted who require specialist review to meet the needs of their condition.

Early clinical review in an emergency admission is essential as it impacts on the management plan for that patient. It is also crucial for recognising the acutely ill patient. NCEPOD first raised concern about the timeliness of consultant review in 2005 when it endorsed the recommendation set by the RCP that a consultant should see patients within 24 hours of admission.¹ However, two years later, after undertaking a review of emergency admissions, NCEPOD recommended that this timeframe be reduced to 12 hours. The recommendation was later supported in documents from the Royal College of Physicians, London,² the Royal College of Surgeons of England³ and the Royal College of Paediatrics and Child Health.⁴ Whilst timeliness is still crucial this recommendation has been moved from 12 hours to 14 hours by NHS England⁵ in line with their plans for 7-day working and supported by the Royal College of Physicians.⁶ *This area of consultant review overlaps with the common theme of documentation (Chapter 7).*

Setting a time limit to be seen for patients admitted as an emergency is fairly easy as the clock starts at the point of 'admission'. It is harder to define a time point for review in patients who are already in hospital and for whom specialty consultant review is needed. Many NCEPOD reports have alluded to this situation, examples include patients in need of critical care not being seen quickly enough, the decision of whether to undertake chemotherapy lacking consultant input and trauma services not being consultant led. Other examples include high risk surgical patients not being seen by a consultant postoperatively

or the decision to operate not made by a consultant. *This area of consultant review overlaps with the common theme of supervision of trainee doctors (Chapter 6).*

Recommendations - based on 11,931 cases from 14 past reports since 2000

1. Patients admitted as an emergency should receive a specialty relevant consultant review as soon as possible and at the latest within 14 hours after admission to hospital.
2. Inpatients should be reviewed by specialty relevant consultants as frequently as required to plan and manage their clinical need.
3. Consultants must ensure that lines of communication are open between them and their junior staff, particularly when the junior staff are seeing patients without them.

Previous NCEPOD reports on which the above recommendations were formed. (Note - other NCEPOD reports may have covered this in the data and text)

2015	Sepsis – Just Say Sepsis!	Page 108 Rec. 11
2015	Gastrointestinal Haemorrhage – Time to Get Control	Page 97 Rec. 6
2014	Lower Limb Amputation – Working Together	Page 123 Rec. 6
2013	Alcohol-Related Liver Disease – Measuring the Units	Page 53 Rec. 5
2012	Cardiac Arrests – Time to Intervene	Page 45 Rec. 5
2011	Perioperative Care – Knowing the Risk	Page 46 Rec. 2
2010	Surgery in the Elderly – An Age Old Problem	Page 126 Rec. 2
2009	Deaths in Acute Hospitals – Caring to the End	Page 30 Rec. 1
2009	Acute Kidney Injury – Adding Insult to Injury	Page 63 Rec. 1
2008	Coronary Artery Bypass Grafts – The Heart of the Matter	Page 92 Rec. 2
2008	Systemic Anticancer Therapy – For Better, For Worse	Page 65 Rec. 2
2007	Trauma – Trauma: Who Cares?	Page 61 Rec. 4
2007	Emergency Admissions – A Journey in the Right Direction	Page 45 Rec. 1
2005	Critically Ill Patients – An Acute Problem	Sect 4 Rec. 1-3

References

1. Black A. Acute Medicine, Making it Work for Patients - report of working party. Royal College of Physicians Hosp Med. 2004 Aug;65(8):493-6.
2. Royal College of Physicians - Consultant physicians working with patients
<https://www.rcplondon.ac.uk/projects/outputs/consultant-physicians-working-patients-revised-5th-edition>

3. Royal College of Surgeons, Emergency surgery – standards for unscheduled surgical care
<https://www.rcseng.ac.uk/library-and-publications/rcs-publications/docs/emergency-surgery-standards-for-unscheduled-care/>
4. Royal College of Paediatrics and Child Health - Facing the Future: standards for paediatric
5. NHS England. 2013. NHS Services, Seven Days a Week Forum. Everyone Counts: Planning for Patients 2013/14 to 2018/19.
<https://www.england.nhs.uk/wp-content/uploads/2013/12/5yr-strat-plann-guid-wa.pdf>
6. RCP Acute care toolkit4: Delivering a 12-hour, 7-day consultant presence on the acute medical unit. 2012.
<https://www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-4-delivering-12-hour-7-day-consultant-presence-acute-medical-unit>

Links to other relevant external documents

1. NICE Clinical Guideline 50 – acutely ill adults in hospital: recognizing and responding to deterioration www.nice.org.uk/guidance/cg50
2. Academy of Medical Royal Colleges. The Benefits of Consultant Delivered Care. 2012.
https://www.aomrc.org.uk/wp-content/uploads/2016/05/Benefits_consultant_delivered_care_1112.pdf

2 - MULTIDISCIPLINARY REVIEW

A young patient with diabetes was admitted with critical foot ischaemia, sepsis and a low blood pressure. They had an acute kidney injury on admission and blood sugar was poorly controlled. Amputation was deferred until the medical complications had been stabilised. The first review by a physician was by the medical registrar seven days after admission following a medical emergency call when the patient developed signs of severe sepsis.

The Reviewers commented that the pre-operative care was poorly organised. Earlier review by a medical team could have optimised management of diabetes, sepsis and renal function and both prevented deterioration and allowed earlier surgery.

Since the remit of NCEPOD was changed in 2003 to look at medical as well as surgical care, the emphasis on the patient pathway has become the focus of many reports. As the demographics of the patient population have shown a natural tendency towards older age, reflecting the general population, the prevalence of co-morbid conditions has also increased. This has impacted on the skills of the team who treat the patient, as the need for multidisciplinary input is ever increasing. Multidisciplinary review will be required at various stages of the pathway. At admission the need for both medical and surgical involvement may be seen. Prior to planned admissions for surgical and other invasive procedures, there will have been involvement by pre-operative assessment teams. Throughout the patient's stay until discharge there may be the requirement of acute pain teams, dietitians, alcohol-liaison services or physiotherapists for example. *This area of MDT input overlaps with the common theme of morbidity and mortality reviews (Chapter 8).*

Recommendation – based on 8,761 cases from 13 past reports since 2000

1. Patients should receive relevant care from multidisciplinary and multispecialty healthcare teams to treat their condition as well as any underlying co-morbidities.

Previous NCEPOD reports on which the above recommendation was formed.

(Note - other NCEPOD reports may have covered this in the data and text)

2017	Mental healthcare in General Hospitals – Treat as One	Page 87 Rec. 17
2016	Acute Pancreatitis – Treat the Cause	Page 71 Rec. 6
2014	Lower Limb Amputation – Working Together	Page 123 Rec. 4
2014	Tracheostomies – On the Right Trach	Page 101 Rec. 15
2013	Alcohol-Related Liver Disease – Measuring the Units	Page 37 Rec. 2
2012	Bariatric Surgery – Too Lean a Service	Page 51 Recs. 3 & 4

2011	Surgery in Children – Are we There Yet	Page 70 Rec. 4
2010	Surgery in the Elderly – An Age Old Problem	Page 39 Recs. 1 & 3
2010	Parenteral Nutrition – A Mixed Bag	Page 78 Rec. 1
2008	Coronary Artery Bypass Grafts – The Heart of the Matter	Page 71 Recs. 1,2 & 5
2008	Systemic Anticancer Therapy – For Better, For Worse	Page 65 Rec. 1
2008	Sickle Cell Disease – A Sickle Crisis	Page 46 Rec. 2
2007	Trauma – Trauma: Who Cares?	Page 48 Rec. 1
2004	Endoscopy – Scoping Our Practice	Recommendations Rec. 2
2001	Perioperative Deaths – Changing the Way We Operate	Page 75 Rec. 1

Links to relevant external documents

1. Royal College of Physicians of London Future Hospital Commission
<https://www.rcplondon.ac.uk/projects/outputs/future-hospital-commission>
2. MDT Development - Working toward an effective multidisciplinary/multiagency team
<https://www.england.nhs.uk/wp-content/uploads/2015/01/mdt-dev-guid-flat-fin.pdf>

3 - MONITORING & EARLY WARNING SCORES

An elderly patient presented to hospital with a five day history of severe diarrhoea. Initial physiological observations were blood pressure 95/55mmHg, pulse 135 bpm, temperature 37.9° C. There was no record of respiratory rate or urine output. There was no record of an assessment of volaemic status. Over the next 48 hours observations were repeated eight times and revealed persistent hypotension, tachycardia and, on the four occasions where it was measured, tachypnoea. No urinary catheter was inserted. Biochemistry performed 48 hours after admission showed urea 33mmol/l, creatinine 455micromol/l and a severe metabolic acidosis. Despite eventual escalation of care to include critical care admission and renal replacement therapy the patient did not recover.

The Reviewers believed that there were long delays in recognition of signs of acute illness that prevented the provision of timely and appropriate care. The use of the National Early Warning Score (NEWS2) may have prevented these delays.

A middle-aged patient was admitted to the intensive care unit with an acute kidney injury on the background of known alcohol-related liver disease. The patient improved and was discharged to the ward. The critical care outreach team reviewed them daily and for three days requested monitoring of fluid balance. This was not done on a regular basis and urine output was not documented. The patient's renal function and general condition deteriorated over the next few days and further escalation was thought to be inappropriate.

The Reviewers felt that monitoring of fluid balance was unsatisfactory and that better monitoring had the potential to prevent the deterioration that occurred.

Deficiencies in the recognition of ill patients have been identified for many years and the care of the acutely ill hospitalised patient presents ongoing problems for healthcare services. Deficiencies are often related to poor management of simple aspects of acute care – those involving the patient's airway, breathing and circulation, oxygen therapy, fluid balance and monitoring. Other contributory factors highlighted in many NCEPOD reports include organisational failures, such as a lack of knowledge, failure to appreciate the clinical urgency of a situation, a lack of supervision, failure to seek advice, delayed response and poor communication.

NICE published a clinical guideline for the recognition and assessment of the acutely unwell inpatient.¹ This comprehensive document takes note of previous NCEPOD work and makes recommendations to provide a structure for recognising and responding to acute illness.

One of the major elements of these recommendations is a ‘track and trigger’ system or early warning score (EWS). Various scoring systems have been developed.

Recently a standardised approach has been developed with the introduction of a National Early Warning Score – NEWS2.² This consists of a monitoring tool which can track changes in patient condition to ensure rapid identification of high risk patients and a structure to ensure an appropriate response. *This area of monitoring overlaps with the common theme of critical care reviews (Chapter 4).*

Recommendations – based on 25,408 cases from 17 past reports since 2000

1. **The National Early Warning Score (NEWS2 - Royal College of Physicians of London) should be used in all acute healthcare settings in the NHS to improve communication between clinicians regarding the level of a patient’s deterioration. There should be agreed arrangements in place to respond to each trigger level, including:**
 - a) **the speed of response required in each situation**
 - b) **a clear escalation policy covering 24/7 care**
 - c) **the seniority and clinical competencies of the responder**
 - d) **the appropriate settings for ongoing acute care**
 - e) **timely access to high dependency care, if required**
 - f) **frequency of subsequent clinical monitoring.**

2. **Hospitals should have systems in place to undertake accurate monitoring of fluid balance in all inpatients, and act on any abnormalities.**

Previous NCEPOD reports on which the above recommendations were formed. (Note - other NCEPOD reports may have covered this in the data and text)

2016	Acute Pancreatitis – Treat the Cause	Page 71 Rec. 5
2015	Sepsis – Just Say Sepsis!	Page 107 Rec. 5
2014	Tracheostomies – On the Right Trach	Page 91 Rec. 13
2013	Alcohol-Related Liver Disease – Measuring the Units	Page 63 Rec. 19
2012	Cardiac Arrests – Time to Intervene	Page 60 Rec. 2
2011	Perioperative Care – Knowing the Risk	Page 46 Rec. 5
2010	Surgery in the Elderly – An Age Old Problem	Page 79 Recs. 1 & 2
2010	Parenteral Nutrition – A Mixed Bag	Page 30 Recs. 4-6
2009	Deaths in Acute Hospitals – Caring to the End	Page 54 Rec. 1
2009	Acute Kidney Injury – Adding Insult to Injury	Page 43 Rec. 2
2008	Coronary Artery Bypass Grafts – The Heart of the Matter	Page 92 Rec. 4
2008	Sickle Cell Disease – A Sickle Crisis	Page 58 Recs. 1&2
2007	Emergency Admissions – A Journey in the Right Direction	Page 67 Recs. 2&3

2005	Critically Ill Patients – An Acute Problem	Sect 4 Rec. 5
2004	Endoscopy – Scoping Our Practice	Recommendations Rec. 10
2002	Perioperative Deaths – Functioning as a team	Page 63 Rec. 3
2001	Perioperative Deaths – Changing the Way We Operate	Page 84 Rec. 3

References

1. NICE Clinical Guideline 50 – acutely ill adults in hospital: recognizing and responding to deterioration www.nice.org.uk/guidance/cg50
2. Royal College of Physicians – national early warning score (NEWS2) <https://www.rcplondon.ac.uk/projects/outputs/national-early-warning-score-news-2>

Links to other relevant external documents

1. Acute care toolkit 2: High-quality acute care www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-2-high-quality-acute-care
2. Acute care toolkit 6: The medical patient at risk www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-6-medical-patient-risk

4 - CRITICAL CARE & OUTREACH

A middle-aged patient collapsed while shopping. Bystander CPR was started and an ambulance was called. When the ambulance arrived the patient was found to be in VF and was defibrillated with an immediate return of spontaneous circulation. By the time the patient arrived in the emergency department they were awake and mildly confused but otherwise physiologically stable. ECG showed evidence of acute myocardial infarction. The patient was referred for an urgent cardiology opinion. Whilst with the cardiology SpR the patient had another VF cardiac arrest. Resuscitation continued for 25 minutes before return of spontaneous circulation. As the patient was unconscious, intubated and making no respiratory effort a referral was made to the critical care unit. The patient was seen by an SpR in critical care who stated the patient was not suitable to be admitted to intensive care. The patient was extubated and died shortly after.

In the opinion of the Advisors the patient should have received treatment for the myocardial infarction and supportive care in a critical care unit. The patient was previously in reasonable health and had received prompt and appropriate CPR. The Advisors also questioned the apparent lack of consultant input into the decision making in the peri-arrest period.

There are two areas to consider on this theme. Firstly the availability of critical care facilities in relation to number of beds and their usage and secondly, the use of critical care outreach services.

Many early NCEPOD reports called for the addition of more critical care beds. In 2011 when we published 'Knowing the Risk' it was recognised that it was not about having more beds, but using the existing ones more effectively.

Critical care beds are utilised for a variety of reasons, for emergency patients and for planned post operative surgical admissions ('Knowing the Risk' reported that if hospitals were more aware of the proportion of high risk surgery undertaken then the beds could be better utilised). Additionally hospital systems can mean that critical care beds remain filled because there is no space on the HDU or ward and that in turn may be because patients can't be repatriated to another hospital or discharged to community care. Or it may be that the right support is not available to care for the patient ('On the Right Trach' showed that the number of tracheostomies inserted in ICU is often unknown, resulting in under-resourcing of the step-down care of these patients on wards by adequately trained staff).

Outreach services were introduced in 2000 following the publication of the Audit Commission's 'Critical to Success' report.¹ The idea was further developed in the Comprehensive Critical Care report² and critical care services were given responsibility for

critically ill patients throughout hospitals, rather than only within specialist units. Nationally the outreach teams vary from a single nurse providing education on the identification and management of the critically ill patient to multidisciplinary teams providing 24-hour cover.

Critical Care Outreach Teams, Rapid Response Teams or Medical Emergency Teams, depending on the geographical location, have now become increasingly involved in sharing their expertise of critical care by reviewing and treating patients early on in their acute illness, on the ward as well as in the critical care unit, in order to prevent further deterioration and death.³ The benefit of Critical Care Outreach Teams has been demonstrated by a reduction in hospital morbidity and mortality.⁴

One of the key elements of the service is the use of early warning scores to systematically assess the condition of patients and facilitate appropriate interventions. These were discussed in more detail in Chapter 3.

Recommendations – based on 12,942 cases from 11 past reports since 2000

1. **Trusts/Health Boards should plan for and provide sufficient critical care capacity and pathways of care to meet the needs of its population including**
 - a) **planned post operative admission for high risk patients**
 - b) **emergency admissions from the community, its own hospital or any other hospital it is likely to serve.**
 - c) **When to consider step down care to the HDU/ward**
 - d) **Transfer to community care or repatriation if appropriate.**

2. **There should be close liaison between the medical, surgical and critical care teams when making escalation decisions.**

3. **A consultant led discussion by specialists with appropriate knowledge of what interventions are likely to be of benefit to the patient should always be undertaken when**
 - a) **a decision is made not to escalate a patient**
 - b) **or decision is made to proceed with high risk surgery when it is known there will be no critical care bed post operatively**

Such decisions should be discussed with the patient and the patient's representative (if appropriate) and documented clearly. Where there is doubt or disagreement about such decisions, the opinion of a second consultant should be sought

4. **Step-down care or discharge from critical care should not be undertaken at night.**

5. **Critical care outreach services should be available to patients 24-hour a day, seven-days per week that include:**

- a) The use of a track and trigger warning system to identify at-risk patients;
- b) Rapid referral to appropriately equipped experts;
- c) Timely transfer to ICU when needed;
- d) Facilitation of discharge and rehabilitation of patients from critical care.

Previous NCEPOD reports on which the above recommendations were formed. (Note - other NCEPOD reports may have covered this in the data and text)

2014	Tracheostomies – On the Right Trach	Page 46 Rec. 2
2013	Alcohol-Related Liver Disease – Measuring the Units	Page 74 Recs. 24 & 25
2012	Cardiac Arrests – Time to Intervene	Page 45 Rec. 3
2011	Perioperative Care – Knowing the Risk	Page 46 Rec. 6
2010	Surgery in the Elderly – An Age Old Problem	Page 93 Rec. 1
2009	Acute Kidney Injury – Adding Insult to Injury	Page 63 Rec. 2
2008	Coronary Artery Bypass Grafts – The Heart of the Matter	Page 118 Recs. 2&3
2005	Critically Ill Patients – An Acute Problem	Sections 6 &7
2002	Perioperative Deaths – Functioning as a team	Page 55 Rec. 1
2001	Perioperative Deaths – Changing the Way We Operate	Page 61 Recs. 2 & 8
2000	Perioperative Deaths – Then and Now	Page xxii Rec. 2

References

1. Critical to Success
<http://www.wales.nhs.uk/sites3/Documents/768/CriticalToSuccess.pdf>
2. Comprehensive Critical Care - a review of adult critical care services
http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_408287_2.pdf
3. Hillman K. Critical care without walls. *Curr Opin Crit Care*. 2002; 8(6): 594-9
4. Priestley G, Watson W and Rashidian A et al. Introducing Critical Care Outreach: a ward-randomised trial of phased introduction in a general hospital. *Intensive Care Medicine*. 2004; 30(7): 1398–404

Links to relevant external documents

1. Faculty of Intensive Care Medicine
[www.ficm.ac.uk/sites/default/files/Core%20Standards%20for%20ICUs%20Ed.1%20\(2013\).pdf](http://www.ficm.ac.uk/sites/default/files/Core%20Standards%20for%20ICUs%20Ed.1%20(2013).pdf)

5 - CONSENT

A middle-aged patient with a BMI of 60 self referred to an independent hospital because of refusal of funding by the Primary Care Trust. The patient had no comorbidities and had been unable to achieve weight loss through diet and exercise. The patient was admitted for a gastric band three weeks after initial consultation. The consent form was completed on the day of admission and stated the intended benefits as: “Weight reduction”, and the risks as: “bleeding/injury to stomach/infections”. No supplemental written information was provided. A year later the patient’s BMI had only reduced to 58.

The Reviewers were of the opinion that the consent should have been undertaken using a two stage deferred process, and written advice should have been provided at the time of the consultation. They were of the opinion that there had been undue haste and that the details recorded on the consent form were inadequate.

Consent is an issue that has been investigated in a number of NCEPOD surgical reports. The GMC provides guidance on who should obtain consent: *“If you are the doctor providing treatment or undertaking an investigation, it is your responsibility to discuss it with the patient and obtain consent, as you will have a comprehensive understanding of the procedure or treatment, how it is carried out and the risks attached to it. Where this is not practicable, you may delegate these tasks provided you ensure the person to whom you delegate: is suitably trained and qualified; has sufficient knowledge of the proposed investigation or treatment, and understands the risks involved; acts in accordance with GMC guidance”*.¹

All too frequently NCEPOD has commented on, and viewed examples of poor consent processes. These have included examples such as no evidence of consent, those taking consent being too junior, absence of any risk recorded on the consent, inappropriate consent such as lack of consideration to the mental capacity of the patient, or their age, rushed consent, illegible consent and poor evidence of communication with the patient.

Recommendations – based on 7455 cases from 9 past reports since 2000

- 1. Consent should be taken by someone with sufficient knowledge of the proposed operation and who understands the risks involved. The grade of the person taking consent should be recorded on the consent form. However, it is accepted that in some situations (e.g. extremely urgent surgery) this may be difficult as the senior surgeon is fully occupied caring directly for the patient. In these circumstances other senior clinicians should assist in discussions with relatives/carers where possible.**

2. All patients undergoing elective surgery should have
 - 2.1. a deferred two-stage consent process
 - 2.2. Details of benefits and risks of the procedure, including death, should be clearly described, and supported with written information.
 - 2.3. a record of the discussion and the risks should be clearly stated on the consent form.

The consent process should not be undertaken in one stage on the day of operation.

3. A patients' mental capacity to understand and make decisions about treatment options should be assessed in advance of taking consent. Consent should only be taken from the patient when it is certain they understand the risks and benefits of the procedure.

Previous NCEPOD reports on which the above recommendations were formed. (Note - other NCEPOD reports may have covered this in the data and text)

2014	Lower Limb Amputation – Working Together	Page 124 Rec. 11
2012	Bariatric Surgery – Too Lean a Service	Page 63 Rec. 1
2011	Perioperative Care – Knowing the Risk	Page 46 Rec. 3
2011	Surgery in Children – Are we There Yet	Page 71 Rec. 1
2010	Surgery in the Elderly – An Age Old Problem	Page 39 Rec. 2
2010	Cosmetic Surgery – On the Face of it	Page 8 Rec. 5
2008	Coronary Artery Bypass Grafts – The Heart of the Matter	Page 128 Recs. 2-4
2008	Systemic Anticancer Therapy – For Better, For Worse	Page 65 Recs. 3-5
2004	Endoscopy – Scoping Our Practice	Recommendations Rec. 4
2001	Perioperative Deaths – Changing the Way We Operate	Page 61 Rec. 5

References

1. GMC ref – Consent, patients and doctors making decisions together
http://www.gmc-uk.org/guidance/ethical_guidance/consent_guidance_index.asp

Links to relevant external documents

1. Consent to treatment
<http://www.nhs.uk/conditions/consent-to-treatment/pages/introduction.aspx>

6 - SUPERVISION OF TRAINEE DOCTORS

A young patient was admitted with right loin pain under the Urologists. Although not shocked on admission, the patient gradually deteriorated displaying features consistent with insidious septic shock. Reviews were undertaken by several trainees but no review by an appropriate surgeon was made until 24 hours post-admission. The result of a previously performed CT scan was unavailable to the reviewing surgeon. The first consultant review was in theatre at laparotomy which revealed peritonitis secondary to a ruptured tubo-ovarian abscess. The patient was admitted to ICU post-operatively.

The Reviewers commented that this represented less than satisfactory care owing to a failure of trainees to act when the patient was clearly deteriorating.

An elderly patient developed AKI after admission to hospital. In view of oliguria, hyperkalaemia and acidosis a nephrology opinion was sought. The patient was reviewed promptly by an SpR in nephrology. At the time of review the blood pressure was recorded as 95/50. A previous echocardiogram showed mild left ventricular dysfunction. The nephrology SpR provided some advice on fluid management but concluded that due to left ventricular dysfunction the patient was not a candidate for renal replacement therapy. It did not appear that there was any consultant oversight of this decision. The patient died 48 hours later.

The Reviewers felt that this patient should have been offered renal replacement therapy and that there were no significant co-morbidities that precluded this. Furthermore the advisors were concerned that an SpR, without consultant oversight, was making treatment limitation decisions.

The supervision of junior doctors is an area of concern that has been raised in numerous NCEPOD reports. The first NCEPOD report published in 1987 highlighted a number of differences in consultants' supervision of trainees, and there were a number of deaths in which junior surgeons or anaesthetists did not seek the advice of their consultants or senior registrars at any time before, during or after the operation.

When reviewing data relating to junior doctors across the reports there are still commonly occurring themes in terms of an appreciation of the clinical urgency (2005) or an underestimation of the severity of the physiological dysfunction (2007); and supervision of the junior doctor (2005 and 2009).

So there are two aspects to be mindful of – the responsibility of the consultant to offer and ensure that their junior staff are well supported and the responsibility of the junior doctor to ask for help and not work outside the scope of their abilities.

Good Medical Practice state *“You must recognise and work within the limits of your competence and you must make sure, to the best of your ability, that you are appropriately supervised for any task you perform. You must be willing to ask for advice and support from colleagues when necessary.”*¹

The Royal College of Surgeon of England states that *“Consultant surgeons must delegate duties and responsibilities only to those specialist trainees and foundation doctors or other doctors whom they know to be competent in the relevant area of practice, and to not assign as competent someone who has not reached or maintained a satisfactory standard of practice.”*²

Recommendation – based on 20,457 cases from 7 past reports since 2000

- 1. Consultants need to supervise junior doctors in accordance with the duty they are carrying out. If the consultant does not need to be physically present then junior team members need to be aware of how to access them.**

Previous NCEPOD reports on which the above recommendation was formed.

(Note - other NCEPOD reports may have covered this in the data and text)

2014	Lower Limb Amputation – Working Together	Page xx
2012	Cardiac Arrests – Time to Intervene	Page 45 Rec. 2
2009	Deaths in Acute Hospitals – Caring to the End	Page 45 Rec. 1
2007	Emergency Admissions – A Journey in the Right Direction	Page 45 Rec. 3
2005	Critically Ill Patients – An Acute Problem	Sect 8
2003	Patterns of Surgical Working – Who Operates When II	Page 49 Rec. 2
2002	Perioperative Deaths – Functioning as a team	Page 19 Rec. 2
2001	Perioperative Deaths – Changing the Way We Operate	Page 75 Rec. 3

References

1. General Medical Council – Good Medical Practice
www.gmc-uk.org/guidance/ethical_guidance/11826.asp
2. Royal College of Surgeons of England – Surgeons in training
www.rcseng.ac.uk/standards-and-research/gsp/domain-3/3-3-2-surgeons-in-training/

Links to relevant external documents

1. Care Quality Commission
https://www.cqc.org.uk/sites/default/files/documents/20130625_800734_v1_00_supporting_information-effective_clinical_supervision_for_publication.pdf
2. Acute care toolkit 1: Handover
<https://www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-1-handover>
3. Acute care toolkit 2: High-quality acute care
<https://www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-2-high-quality-acute-care>
4. Acute care toolkit 8: The medical registrar on call
<https://www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-8-medical-registrar-call>

7 - DOCUMENTATION

A middle-aged patient with a BMI of 40 had multiple comorbidities including: hypertension, severe ischaemic heart disease with atrial fibrillation, multiple transient ischaemic attacks, type 2 diabetes with neuropathy, peripheral vascular disease and impaired mobility, chronic renal failure and sleep apnoea with type I respiratory failure. There was excellent documentation to show that all the relevant specialists were fully involved in optimising the patient's condition prior to surgery and also managing them in the post-operative period. There was detailed documentation of the liaison between the various health care professionals involved and detailed documentation of the information that had been given to the patient prior to consent. The patient underwent an uneventful laparoscopic gastric bypass.

Reviewers were of the view that they received exemplary care, and the documentation was outstanding.

Good Medical Practice states that in providing care clinicians must 'keep clear, accurate and legible records, reporting the relevant clinical findings, the decisions made, the information given to the patients, and any drugs prescribed or other investigation or treatment'.¹ The Patient records should record the frequency and outcomes of take and post take ward rounds.

The Royal College of Surgeons' 'Good Surgical Practice' makes a number of recommendations regarding record keeping.² These include:

- Ensuring all medical records are legible, complete and contemporaneous, and have the patients identification details on them
- Ensuring that each time an entry is made in the notes they are signed and dated with the name of the most senior surgeon at the visit being noted
- Ensuring that a record is made of important events and communications with the patient or supporter
- Any changes in the treatment plan is be recorded
- Ensuring there are legible operative and follow up notes.

The Royal College of Physicians 'Acute Care Toolkit 2' states the quality of record keeping is compromised (on AMU) by a lack of standardised documentation.³

The case study above reflects the exception rather than the norm. NCEPOD case reviewers have assessed over 48,000 set of case notes in the history of NCEPOD and the one issue that has been a constant throughout is the poor quality of documentation, ranging from illegible

handwriting to the absence of name, grade, times, specialty, observations or incorrect medication charts to the fact that something was done such as a procedure or the detailing of a management plan – it can often be deduced but is not explicitly stated. An example of this was the reason for the title ‘Just Say Sepsis’ as it was clear from pieces of information in the case notes that the patient was septic, but no one was documenting ‘sepsis’, therefore it doesn’t get coded and the true incidence of sepsis in hospitals is not known.

Beyond coding, poor documentation may lead to poor care as any important omission means that the patient notes are misleading. Furthermore the patient care record is a legal document that should accurately reflect what has been done. In the view of lawyers, if it is not written down it was not done.

Recommendation – based on 24,111 cases from 9 past reports since 2000

- 1. Current standards for recording information in case notes should be followed. And as a minimum, every aspect of care provided and/or communicated to a patient and/or their carer must be documented in the patient’s case notes legibly; stating the name, grade and specialty of the person who wrote it and when.**

Previous NCEPOD reports on which the above recommendation was formed.

(Note - other NCEPOD reports may have covered this in the data and text)

2012	Bariatric Surgery – Too Lean a Service	Page 51 Rec. 4
2012	Cardiac Arrests – Time to Intervene	Page 45 Rec. 4
2011	Surgery in Children – Are we There Yet	Page 71 Rec. 1
2010	Parenteral Nutrition – A Mixed Bag	Page 30 Recs. 3-5
2009	Deaths in Acute Hospitals – Caring to the End	Page 54 Recs. 1-3
2007	Emergency Admissions – A Journey in the Right Direction	Page 37 Rec. 4
2005	Critically Ill Patients – An Acute Problem	Sect 10 Recs. 1-3
2002	Perioperative Deaths – Functioning as a team	Page 19 Rec. 2
2001	Perioperative Deaths – Changing the Way We Operate	Page 43 Rec. 4

References

1. GMC, Good medical practice for physicians, 2013
http://www.gmc-uk.org/guidance/good_medical_practice/record_work.asp
2. Royal College of Surgeons (Good Surgical Practice)
<https://www.rcseng.ac.uk/-/media/files/rcs/standards-and-research/gsp/gsp-2014-web.pdf?la=en>

3. Acute care toolkit 2 – High Quality Acute Care
www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-2-high-quality-acute-care

Links to relevant external documents

1. How to keep good clinical records
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5297955/>
2. Acute care toolkit 1: Handover
<https://www.rcplondon.ac.uk/guidelines-policy/acute-care-toolkit-1-handover>
3. NHS Professionals - CG2 – Record Keeping Guidelines
<https://www.nhsprofessionals.nhs.uk/en/members/elibrary/publications/cg2%20record%20keeping>
4. Healthcare record standards – Royal College of Physicians and Academy of Medical Royal Colleges
www.rcplondon.ac.uk/projects/healthcare-record-standards

8 - MORBIDITY & MORTALITY REVIEW

A young patient was admitted to their local hospital with symptoms that were correctly interpreted as representing raised intracranial pressure. A CT scan confirmed an intraventricular haemorrhage. Following deterioration in the GCS the patient was intubated and underwent delayed transfer to a neurosurgical unit. At the receiving hospital assessment and consent were undertaken by a junior specialist trainee who indicated that surgery (insertion of a shunt) was of low risk. Unfortunately decompression performed by the same trainee did not salvage the situation due to coning.

The Reviewers stated that “the surgeon was very junior for such a catastrophic situation” and that the duty consultant should have been involved”. This case also highlights problems with assessment (the situation was probably irretrievable) and the consent process. Following a multidisciplinary Morbidity & Mortality review of this case clear protocols for the transfer of such patients were established.

Individual cases discussed at morbidity and mortality (M&M) meetings can inspire changes to working practices and improve patient care. There should also be a concerted effort to monitor trends in the cases brought to these meetings and explore what lessons can be learned from them. The identification of patterns in M&M data is vital for the prevention of repeat instances of poor care over time.¹

Traditionally, there was an argument for not minuting M&M meetings to promote a more open discussion between participants. However, NCEPOD endorses the Royal College of Surgeons’ view that maintaining a formal record of the analysis of adverse outcomes demonstrates to all that a surgical team is open and willing to learn from incidents.² This would apply equally to medical cases and is the current subject of work being undertaken by the Royal College of Physicians of London.³ This has also been highlighted more recently in the National Guidance on Learning From Deaths policy.⁴

To maintain the relevance and utility of M&M meetings to medical and surgical care and training, these meetings will need to harness modern data analytic strategies, standardise case presentations to delve into root-cause analyses, and capitalise on valuable multidisciplinary discussion to inform and complement frontline Quality Improvement efforts.¹

Studies have shown that for M&M meetings to facilitate improvement and be more than a forum for peer review, they need to be structured and systematic in reviewing and discussing deaths, directing discussions towards improving system and process variations.

M&M review has been included in a number of reports which have shown some improvements over time. There does not however appear to be a consistent approach taken to mortality review except in limited areas such as deaths within 30 days following systemic anti-cancer chemotherapy, where a structured approach has been developed. Improved clarity about which deaths should be reviewed is needed. In addition a structured process that leads to learning and improvements across the system is needed.

Recommendation – based on 12,778 cases from 11 past reports since 2000

- 1. Multidisciplinary morbidity and mortality review should take place for all patients who die within 30 days of elective treatment or intervention and a sample of patients who die within 30 days of emergency treatment or intervention. This is consistent with the new national Learning from Deaths policy.**

Previous NCEPOD reports on which the above recommendation was formed.

(Note - other NCEPOD reports may have covered this in the data and text)

2016	Acute Pancreatitis – Treat the Cause	Page 72 Rec. 18
2015	Sepsis – Just Say Sepsis!	Page 108 Rec. 19
2015	Gastrointestinal Haemorrhage – Time to Get Control	Page 98 Rec. 20
2013	Alcohol-Related Liver Disease – Measuring the Units	Page 80 Rec. 27
2011	Surgery in Children – Are we There Yet	Page 71 Rec. 5
2008	Coronary Artery Bypass Grafts – The Heart of the Matter	Page 137 Recs. 1-5
2008	Systemic Anticancer Therapy – For Better, For Worse	Page 124 Rec. 2
2008	Sickle Cell Disease – A Sickle Crisis	Page 71 Rec. 1
2004	Endoscopy – Scoping Our Practice	Recommendations Rec. 7
2002	Perioperative Deaths – Functioning as a team	Page 29 Rec. 4
2001	Perioperative Deaths – Changing the Way We Operate	Page 61 Rec. 9
2000	Perioperative Deaths – Then and Now	Page xxii Rec. 4

References

1. Greg D. Sacks GD Elise H. Lawson EH, Tillou A, Hines OJ. Morbidity and Mortality Conference 2.0. Annals of Surgery _ Volume 262, Number 2, August 2015. 228-9. 53.
2. The Royal College of Surgeons of England. Morbidity and Mortality Meetings- a guide to good practice.
<https://www.rcseng.ac.uk/library-and-publications/rcs-publications/docs/morbidity-mortality-guide/>

3. Royal College of Physicians - national mortality case record review programme
www.rcplondon.ac.uk/projects/national-mortality-case-record-review-programme
4. National Guidance on Learning from Deaths A Framework for NHS Trusts and NHS Foundation Trusts on Identifying, Reporting, Investigating and Learning from Deaths in Care
<https://www.england.nhs.uk/wp-content/uploads/2017/03/nqb-national-guidance-learning-from-deaths.pdf>

Links to relevant external documents

1. General Medical Council – morbidity and mortality meetings to improve patient care
<http://www.gmc-uk.org/education/27799.asp>
2. Anaesthesia Morbidity and Mortality Meetings: A Practical Toolkit for Improvement
[www.aagbi.org/sites/default/files/SALG-M%26M-TOOLKIT-2013_0\(1\).pdf](http://www.aagbi.org/sites/default/files/SALG-M%26M-TOOLKIT-2013_0(1).pdf)
3. Health Improvement Scotland - Draft Practice Guide for Mortality and Morbidity Meetings
http://www.healthcareimprovementscotland.org/our_work/patient_safety/scottish_mortality_morbidity/smmp_practice_guide.aspx

9 - MANAGED CLINICAL NETWORKS

A middle-aged patient was admitted with acute pancreatitis due to gallstones. An ERCP five days later showed no gallstones. CT scan demonstrated a large acute necrotic collection. Transfer for endoscopic surgical drainage was advised but there was a one week delay in availability of the service. The patient deteriorated during this time and underwent a laparotomy instead.

The Reviewers commented that networks should be responsive. They considered the escalation to laparotomy inappropriate and questioned why the endoscopic drainage was not expedited.

Establishing well organised clinical networks of care is important if we want to be able to do the complex things better. Networks of care may be formal or informal. The definition of a formal network that NCEPOD has used is: “A linked group of health professionals and organisations from primary, secondary and tertiary care and social care and other services working together in a coordinated manner with clear governance and accountability arrangements”.¹ An informal network has been defined as: “A collaboration between health professionals and/or organisations from primary, secondary and/or tertiary care, and other services, aimed to improve services and patient care, but without specified accountability to the commissioning organisation”.¹

Many NCEPOD reports have commented on the use of networks and in particular, noting that informal networks and ad hoc/good-will cover are not robust and lead to delays in treatment or the use of alternative, more invasive treatments.

Recommendations – based on 3,238 cases from 5 past reports since 2000

- 1. Formal networks between hospitals should be established so that every patient has access to specialist interventions, regardless of which hospital they present to and are initially offered care in. Ambulance teams should be made aware of the networks so that patients can be taken to the most appropriate hospital for the care they need. Informal or ad hoc/good-will networks should not be relied upon when referring patients for specialist review.**
- 2. Every hospital should have a policy that covers when to refer and/or transfer a patient for review at a specialist tertiary centre and should include repatriation protocols to ensure efficient bed utilisation.**

Previous NCEPOD reports on which the above recommendations were formed. (Note - other NCEPOD reports may have covered this in the data and text)

2016	Acute Pancreatitis – Treat the Cause	Page 72 Rec. 14
2015	Gastrointestinal Haemorrhage – Time to Get Control	Page 97 Rec. 1
2013	Subarachnoid Haemorrhage – Managing the Flow	Page 39 Rec. 1
2011	Surgery in Children – Are we There Yet	Page 42 Rec. 2
2008	Systemic Anticancer Therapy – For Better, For Worse	Page 38 Rec. 2
2007	Trauma – Trauma: Who Cares?	Page 116 Rec. 5 Page 124 Rec. 4 Page 131 Rec. 4

References

1. Department of Health. A Guide to Promote a Shared Understanding of the Benefits of Managed Local Networks. http://dera.ioe.ac.uk/7650/7/dh_4114368_Redacted.pdf

Links to relevant external documents

1. The management and effectiveness of professional and clinical networks
http://www.netscc.ac.uk/hsdr/files/project/SDO_FR_08-1518-104_V01.pdf
2. Royal College of Paediatrics and Child Health. Bringing Networks to Life. A guide to understanding pathways and implementing networks

10 – LOCAL POLICIES, PROTOCOLS, PROFORMAS, GUIDELINES & STANDARD OPERATING PROCEDURES

An elderly patient tripped while intoxicated. A Glasgow Coma Score of 3 was recorded in the ambulance. At the receiving hospital it was recorded as 8. The hospital was unable to perform a CT head scan therefore the patient was transferred to the local neurosurgical hospital. The transfer was performed without securing the airway. At the neurosurgical hospital the patient was transferred to CT still with an unprotected airway. Intubation was subsequently performed after CT scanning.

The Reviewers commented on the haphazard arrangement for the secondary transfer of this severely injured patient. There were deficiencies in local protocols, use of national guidelines, consultant oversight and documentation. Furthermore, avoidance of transfers by the initial direct transport of the severely injured patient to a centre with the appropriate facilities should have been considered.

It is worth noting the difference in terminology, which is often used interchangeably:

Policy: The course or principle of action adopted or proposed by an organisation or individual – this might be defined nationally or locally.

Protocol: The accepted or established code of procedure or behaviour in any individual or group, organisation, or situation.

Guideline: A general rule, principle, or piece of advice

Proforma: A document that satisfies minimum or set requirements

Trusts/Health Boards should have policy documents stating how to dealing with most general healthcare situations. This might mean adhering to national or local guidelines. Separate protocols provide the step by step approach on how to comply with the policy or guideline, which may be hospital or even specialty specific. However, these policies, guidelines and protocols are only effective if they are actioned. Review of case notes frequently highlights that although hospitals believe they have these, in fact they are not being followed, often because the staff managing the patients do not know of their existence. Many NCEPOD reports have highlighted the need for policies and protocols in both the organisation of care and in clinical care, such as use of antimicrobials, escalation of care, use of networks, resuscitation, transfer, insertion of central venous catheters, parenteral nutrition, neutropaenic sepsis, sepsis, subarachnoid haemorrhage and trauma to example just a few.

Recommendation – based on 13,022 cases from 14 past reports since 2000

1. Trust/Health Board should have evidence-based policies, protocols and guidelines for the organisation and delivery of safe care for patients in all areas of healthcare;

They should be

- a) kept up to date
- b) be accessible to all staff
- c) audited regularly
- d) augmented with staff training in their use

Previous NCEPOD reports on which the above recommendation was formed.

(Note - other NCEPOD reports may have covered this in the data and text)

2017	Mental Healthcare in General Hospitals – Treat as One	Page 87 Rec. 18
2016	Pancreatitis – Treat the Cause	Page 71 Rec. 5
2015	Sepsis – Just Say Sepsis!	Page 107 Rec. 1
2014	Tracheostomies – On the Right Trach	Page 91 Rec. 13
2013	Subarachnoid Haemorrhage – Managing the Flow	Page 62 Rec. 6
2011	Surgery in Children – Are we There Yet	Page 42 Rec. 4
2010	Surgery in the Elderly – An Age Old Problem	Page 126 Rec. 3
2010	Parenteral Nutrition – A Mixed Bag	Page 30 Rec. 8
2009	Acute Kidney Injury – Adding Insult to Injury	Page 50 Rec. 2
2008	Sickle Cell Disease – A Sickle Crisis	Page 65 Rec. 4
2008	Systemic Anticancer Therapy – For Better, For Worse	Page 113 Rec. 2
2004	Endoscopy – Scoping Our Practice	Recommendations Rec. 6
2002	Perioperative Deaths – Functioning as a team	Page 41 Recs. 2 & 4
2001	Perioperative Deaths – Changing the Way We Operate	Page 75 Rec. 2

Links to relevant external documents

1. Grimshaw JM, Russell IT. Effect of clinical guidelines on medical practice: a systematic review of rigorous evaluations. *Lancet*. 1993;342:1317–1322.
2. Effective Health Care, 1994. Implementing clinical practice guidelines. No 8.

11 - COMMON CLINICAL CONDITIONS

Acute Kidney Injury

An elderly patient was admitted with a fractured neck of femur. The patient was known to have chronic kidney disease but the biochemistry on admission showed no evidence of recent deterioration. The patient was noted to be taking aspirin and two diuretics. Hemi-arthroplasty was undertaken but post-operatively the patient developed worsening renal function consistent with pre-renal failure. Whilst this was noted and recorded, the diuretics were not discontinued and the patient was given inadequate intravenous fluid replacement. Renal function continued to deteriorate to the point where significant acidosis developed. After a prolonged hospital stay the patient ultimately died of acute kidney injury secondary to hypovolaemia precipitated by the above mismanagement.

Reviewers felt that this case illustrated both poor understanding of pre-renal failure and a marked lack of clinical care.

Sepsis

A young patient presented with a 2 day history of cough and worsening shortness of breath on a background of bronchial asthma. The patient was seen by their GP who diagnosed a chest infection and transferred the patient by ambulance to the emergency department. Reviewers were of the opinion that the patient should have received intravenous fluids and oxygen in the ambulance since they were manifesting early hypotension and hypoxia. On arrival in the emergency department the triage nurse considered the possibility of chest infection but the hospital sepsis proforma was not completed. Chest X-ray, antibiotics and initial assessment/management for sepsis was not initiated. An hour later the patient became profoundly hypotensive and drowsy at which time the patient was reviewed by a consultant who then initiated the sepsis care bundle. The patient required transfer to critical care for mechanical ventilation and their condition improved over the following 7 days. However, the ICU stay was complicated by ventilator associated pneumonia and peripheral gangrene of both feet. There was significant disability at discharge requiring prolonged rehabilitation.

Reviewers suggested that delays in recognition and management contributed to the patient's deterioration and earlier intervention would have improved the patient's outcome.

The acutely unwell patient

An elderly patient was admitted as an emergency with diarrhoea and general malaise. The only significant past medical history was treated hypertension. On admission they were noted to be dehydrated, with a BP of 110/60 mmHg and a pulse rate of 100 beats per minute. Their respiratory rate was measured at 36 breaths per minute. Serum creatinine was 154 µmol/l. They were admitted by a junior doctor who prescribed intravenous fluid and antibiotics. The impression noted in the admission clerking was “? infection”. Four hours after admission the BP was noted to be 85/50 mmHg. Maintenance intravenous fluids were prescribed and given over the next 24 hours despite the low blood pressure that persisted. In the first 24 hours after admission the nursing staff requested a medical review on five occasions. Four of these reviews were by the F1 and one by the F2. Despite continuing hypotension no additional therapy was instituted. One entry (24 hours after admission) by the F1 stated that “the blood pressure is 70/30 mmHg but that the patient appears stable.” Analysis of blood gases at that time revealed the following; pH 7.31, PaCO₂ 3.7 kPa, PaO₂ 13.5 kPa, base excess -11.1 mmol/l, lactate 4.3 mmol/l. At that time urine output was noted to be negligible. F2 review confirmed these findings and the differential diagnosis of septic shock was made. An additional 500mls of colloid were infused over the next two hours. No other treatment was initiated nor advice sought. The patient remained hypotensive, tachypnoeic and confused overnight. The patient was reviewed by the F2 on several occasions, with no changes to treatment. Indeed one nursing entry states “Dr. not unduly worried at present – continue with present regimen”. A deterioration in consciousness at 48 hours after initial hospital admission prompted referral of the patient to the outreach service. At this point the patient was more acidotic, tachypnoeic and shocked. Admission to the ICU was expedited but despite initiation of organ support the patient continued to deteriorate and died 12 hours after ICU admission.

It was clear that no one appreciated the significance of the physiological derangements in this patient nor the clinical urgency of the situation. Earlier, more adequate resuscitation may have prevented the deterioration in this patient.

Mental health

An elderly patient arrived by ambulance with generalised seizures. Ambulance notes mentioned that this was their fifth admission in one year. A previous diagnosis of learning difficulty and psychosis was also noted. The patient was observed in hospital for 24 hours and discharged the next day.

Reviewers were of the opinion that the complexity of this case was not addressed. There was no attempt at assessing mental capacity because the patient had stopped antidepressants on their own and compliance with anti-epileptic medications was an issue

too. No contact was made with liaison psychiatry to ask for help with on-going care to prevent further readmissions.

Highlighted above are four clinical areas that have been covered by NCEPOD that all specialties, but especially those in emergency and acute care should be aware of. The first three in particular could all share the same heading as AKI, sepsis and acute illness all interlink.

Recommendation – based on 2,899 cases from 5 past reports

- 1. All patients admitted to hospital are at risk of developing other conditions due to their underlying condition, comorbidities or treatment – the following conditions know no boundaries and should be considered in all patients:**
 - a) Acute kidney injury**
 - b) Sepsis**
 - c) Deterioration**
 - d) Mental health**

Previous NCEPOD reports on which the above recommendation was formed.

(Note - other NCEPOD reports may have covered this in the data and text)

2017	Mental Healthcare in General Hospitals – Treat as One
2016	Pancreatitis – Treat the Cause
2015	Sepsis – Just Say Sepsis!
2009	Acute Kidney Injury – Adding Insult to Injury
2005	Critically Ill Patients – An Acute Problem

CONCLUSION

Over time this document will evolve. Chapters will be added and removed as the healthcare services we review change. If this report had been written 10 years ago it would have focused on the increasing decline of post mortem examinations and the need to operate in hours. However, reviewing all past NCEPOD reports has demonstrated the total decline of hospital post mortem examinations the positive increase in critical care outreach services and an increased number of critical care beds. Over time our comments have focused more towards how critical care services should or could be used, rather than calling for their existence. We have seen the increased use of early warning scores and networks of care but there are some 'old favourites' that may never go. Poor documentation is one, coding which actually didn't make the cut for this draft, is another. Whilst the issues around handwriting may pass as hospitals become 'digital' new issues related to documentation will appear – absence of data linkage across providers, or indeed within the same provider is already starting to emerge as a theme.

What this report does highlight is that there is much good learning taking place across all aspects of our healthcare systems and this should be celebrated, but there is still more to do and so hopefully this report will give food for thought across a multidisciplinary readership.

APPENDIX 1 - NCEPOD REPORTS AND KEY IMPACT

Report	Year	Cases	Summary and impact
	1989	n=2,030	<i>Annual report</i> The care of children up to the age of 10 years who died within 30 days of their surgery.
	1990	n=3,485	<i>Annual NCEPOD report</i> The care of a random 20% sample of patients who died within 30 days of their surgery.
	1991/1992	n=2,732	<i>Annual NCEPOD report</i> The care of fifteen specific surgical procedures and patients who died within 30 days of their surgery.
	1992/1993	n=4,609	<i>Annual NCEPOD report</i> The care of patients aged 6 to 70 who died within 30 days of their surgery.
	1993/1994	n=2,546	<i>Annual NCEPOD report</i> This NCEPOD report highlights the care of gynaecology patients who died within 30 days of their surgery.
	1994/1995	n=1,818	<i>Annual NCEPOD report</i> This NCEPOD report highlights the care of patients who died within 3 days of their surgery.
	1995/1996	n=51,665	<i>Who Operates When?</i> This NCEPOD report highlights the patterns of when, where and who carried out surgery.
	1996/1997	n=1,424	<i>Annual NCEPOD report</i> The care of six specific surgical procedures and patients who died within 30 days of their surgery.
	1999	n=1,567	<i>Extremes of Age</i> The care of children and elderly patients who died within 30 days of their surgery.

	2000	n=1,952	<i>Then and Now</i> This NCEPOD report highlights how surgical practice had changed between the years 1990 and 2000.
	2000	n=445	<i>Interventional Vascular Radiology</i> The care of patients who died within 30 days of interventional radiology.
	2000	n=151	<i>Percutaneous Transluminal Coronary Angioplasty</i> The care of patients who died within 30 days of a PTCA.
	2001	n=1,978	<i>Changing the Way We Operate</i> The care patients who died within 30 days of their surgery and focused on specific changes in surgery.
	2002	n=2,114	<i>Functioning as a Team</i> The care of patients who died within 30 days of their surgery and focuses on team working.
	2003	n=72,343	<i>Who Operates When? II</i> The care of patients who were admitted as emergencies.
<p><i>The impact of the early NCEPOD surgical mortality work has resulted in a reduction in night time operating without the full support of all necessary staff. The reduction in junior doctors operating unsupervised and the reduction of elective lists being disrupted by emergency cases by the introduction of 'CEPOD' theatres – dedicated emergency theatres. The work programme saw the centralisation of surgery for children and called for the need for more interventional radiologists and critical care facilities.</i></p> <p><i>In 2004 NCEPOD's remit extended into medicine and also saw the method change, in the main, to more focused topics – impact assessment was therefore more specific to an individual report.</i></p>			
	2004	n=1,818	<i>Scoping our Practice</i> The care of patients who died with 30 days of an endoscopic procedure. <i>IMPACT: Highlighted the over use of PEGs and the over sedation of elderly patients</i>

	2005	n=1,154	<p><i>An Acute Problem?</i></p> <p>The care of acutely ill patients who needed access to critical care.</p> <p><i>IMPACT: NICE Clinical Guideline 50 – Recognition of the Acutely Ill Patient</i></p>
	2005	n=884	<p><i>AAA: A service in need of surgery?</i></p> <p>The care of patients who were admitted with an abdominal aortic aneurysm.</p> <p><i>IMPACT: Contributed to the NHS standard contract for specialized vascular services.</i></p>
	2006	n=1,691	<p><i>The Coroner's Autopsy: Do we deserve better?</i></p> <p>The quality of coronial autopsies.</p> <p><i>IMPACT: Provided information for the Coroners Bill that led to the Coroners and Justice Act 2009</i></p>
	2007	n=1,275	<p><i>Emergency Admissions: A journey in the right direction?</i></p> <p>The care of patients who were admitted as emergencies.</p> <p><i>IMPACT: Introduced the need for consultant review within 12 hours of admission for emergency patients – later adopted by the RCP and NHSE (and amended to 14 hours)</i></p>
	2007	n=795	<p><i>Trauma: Who cares?</i></p> <p>The care of patients who were classified as severely injured.</p> <p><i>IMPACT: Appointment of a National Clinical Director at the Department of Health to act on the recommendations</i></p>
	2008	n=81	<p><i>A Sickle Crisis?</i></p> <p>The care of patients who were diagnosed with sickle cell disease or thalassaemia.</p> <p><i>IMPACT: NICE Clinical Guideline 143 – Managing acute painful episodes in hospital</i></p>

	2008	n=911	<p><i>The Heart of the Matter</i></p> <p>The care of patients who underwent a coronary artery bypass graft.</p> <p><i>IMPACT: Commissioned by the Department of Health it highlighted the systems failures behind the consultant outcomes</i></p>
	2008	n=546	<p><i>For Better, For Worse?</i></p> <p>The care of patients who died within 30 days of receiving systemic anti-cancer therapy.</p> <p><i>IMPACT: Formed the basis of guidelines issued to each Trust in England by Sir Mike Richards in his role as National Clinical Director for cancer</i></p>
	2009	n=642	<p><i>Adding Insult to Injury</i></p> <p>The care of patients who died in hospital with a primary diagnosis of acute kidney injury.</p> <p><i>IMPACT: NICE Clinical Guideline 169 – AKI: Prevention, detection and management. NICE Quality Standard 76 and a driver used in the NHS for ‘Think Kidneys’ campaign.</i></p>
	2010	n=2,302	<p><i>Caring to the End</i></p> <p>The care of patients who died in an acute hospital within four days of admission.</p> <p><i>IMPACT: Very little, a good example of how broad studies do not have ownership to drive change, but end of life care section referenced a great deal</i></p>
	2011	n=1,211	<p><i>A Mixed Bag</i></p> <p>The care of patients who received parenteral nutrition.</p> <p><i>IMPACT: Referenced in many local adult parenteral nutrition guidelines</i></p>

	2010	n=n/a	<p><i>On the face of it</i></p> <p>This NCEPOD report reviewed variations in the organisational structures surrounding the practice of cosmetic surgery.</p> <p><i>IMPACT: Evidence for the review of the regulation of cosmetic interventions led by Sir Bruce Keogh</i></p>
	2010	n=902	<p><i>An Age Old Problem?</i></p> <p>The care of elderly patients who died within 30 days of emergency or elective surgery.</p> <p><i>IMPACT: Used as a standard for the National Emergency Laparotomy Audit</i></p>
	2011	n=378	<p><i>Are We There Yet?</i></p> <p>The care of neonates and children under 18 years old, who died within 30 days of emergency or elective surgery.</p> <p><i>IMPACT: Many hospitals reported using it as an overhaul of their children's surgical services</i></p>
	2011	n=829	<p><i>Knowing the Risk</i></p> <p>The care for adult patients who underwent elective or emergency inpatient surgery and the outcome at 30 days.</p> <p><i>IMPACT: Used as a standard for the National Emergency Laparotomy Audit. Development of NCEPOD's Surgical Outcome Risk Tool</i></p>
	2012	n=526	<p><i>Time to Intervene?</i></p> <p>The care for adult patients who received cardiopulmonary resuscitation in an in-hospital setting.</p> <p><i>IMPACT: Used to inform the content of the Resuscitation Council's guidelines and resuscitation training course.</i></p>

	2012	n=381	<p><i>Too Lean a Service?</i></p> <p>The care for adult patients who underwent bariatric surgery for weight loss.</p> <p><i>IMPACT: BOMSS Guidelines on peri-operative and postoperative biochemical monitoring and micronutrient replacement for patients undergoing bariatric surgery</i></p>
	2013	n=385	<p><i>Measuring the Units</i></p> <p>The care for patients who were treated for alcohol-related liver disease.</p> <p><i>IMPACT: It highlighted bias in the care of this group and the absence of support services</i></p>
	2013	n=490	<p><i>Managing the Flow?</i></p> <p>The care for patients who were admitted with an aneurysmal subarachnoid haemorrhage.</p> <p><i>IMPACT: NHS Standard Contract for Neurosurgery (Adult)</i></p>
	2014	n=402	<p><i>On the Right Trach?</i></p> <p>The care for adult patients who underwent a tracheostomy insertion or a laryngectomy.</p> <p><i>IMPACT: Intensive Care Society guidelines</i></p>
	2014	n=628	<p><i>Lower Limb Amputation: Working Together</i></p> <p>The care for adult patients aged 16 and over who underwent a lower limb amputation.</p> <p><i>IMPACT: Has been used to inform changes to the National Vascular Registry</i></p>
	2015	n=485	<p><i>Time to Get Control?</i></p> <p>The care for adult patients who were coded for a diagnosis of GI haemorrhage.</p> <p><i>IMPACT: Has led to the development of Lower GI Bleed guidelines</i></p>

	2015	n=551	<p><i>Just Say Sepsis!</i></p> <p>The care of adult patients who were diagnosed with sepsis.</p> <p><i>IMPACT: NICE Guideline 51 – Sepsis: recognition, diagnosis and early management</i></p>
	2016	n=697	<p><i>Treat the Cause</i></p> <p>The care of adult patients who were diagnosed with acute pancreatitis.</p> <p><i>IMPACT: NICE Guideline in development</i></p>
	2017	n=552	<p><i>Treat as One</i></p> <p>The care of adult patients admitted to a general hospital for a physical condition who also had a mental health condition.</p>
	2017	n=353	<p><i>Inspiring Change</i></p> <p>The care of patients receiving acute non-invasive ventilation.</p> <p><i>IMPACT: BTS Quality Standards</i></p>
	2018	n=634	<p><i>Each and Every Need</i></p> <p>The care of patients aged 0-25 years old with chronic neurodisability, using the cerebral palsies as examples of chronic neurodisabling conditions.</p>

WWW.NCEPOD.ORG.UK/REPORTS.HTML

APPENDIX 2 - NCEPOD HISTORY



The Confidential Enquiry into Perioperative Deaths (CEPOD) was published in 1987 in response to professional concern about perioperative deaths.¹

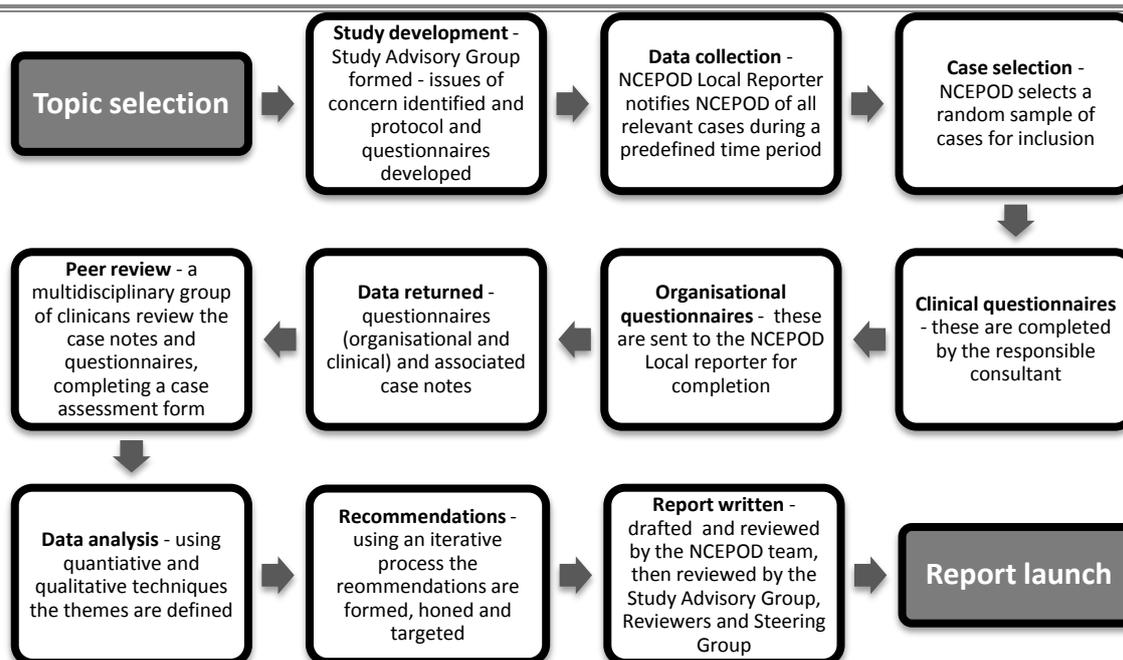
After the publication of the report the Department of Health announced that it would fund a National Confidential Enquiry to repeat the work, and so NCEPOD as an organisation was established, publishing its first report in 1989.² NCEPOD was not the first confidential enquiry to be formed, the method was already well established by the Confidential Enquiry into Maternal Deaths (CEMD) which dates back to 1952 and was the longest running enquiry when it merged in 2003 with the Confidential Enquiry into Stillbirths and Deaths in Infancy (CESDI). This had been set up in 1993 to address the relatively high stillbirth and infant mortality rates in the UK. These two enquires formed the Confidential Enquiry into Maternal and Child Health (CEMACH) (later becoming CMACE (Centre for Maternal and Child Enquiries) in 2009). During this period, in 1999, the Confidential Inquiry into Suicides and Homicides committed by people with mental illness (NCISH) was established by Manchester University. Additional enquiries have also been undertaken by the Royal College of Physicians of London who provided a National Review of Asthma Deaths (NRAD)³ and by the University of Bristol who undertook the Confidential Inquiry into Premature Deaths of People with Learning Disabilities (CIPOLD).⁴

In 2010 commissioning for these Enquiries came under the National Patient Safety Agency and were tendered under the umbrella name of Clinical Outcome Review Programmes. The commissioning resulted in a change of supplier in some and an expansion of remit in others. The Maternal and Child Health programme was once again divided; the Maternal and Perinatal aspect is now undertaken by MBRRACE-UK (Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK)⁵ and the Child Health aspect was run by the Royal College of Paediatrics and Child Health until 2013,^{6,7} but is now also run by NCEPOD.

In 2011 responsibility for commissioning was transferred to the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England, NHS Wales, the Scottish Government Health and Social Care Directorate, the Northern Ireland Department of Health, Social Services and Public Safety (DHSSPS), the States of Guernsey, the States of Jersey and the Isle of Man Government. HQIP is an independent organisation led by the Academy of Medical Royal Colleges, The Royal College of Nursing and National Voices, established in 2008 to promote quality in healthcare, and in particular to increase the impact that clinical audit and outcome programmes have on healthcare quality improvement.

1. Buck N, Devlin HB and Lunn JN. The Report of a Confidential Enquiry into Perioperative Deaths. London Nuffield Provincial Hospitals Trust/King's Fund Publishing Office 1987
2. Campling EA, Devlin HB and Lunn JN. The Report of the National Confidential Enquiry into Perioperative Deaths. London NCEPOD 1989
3. Royal College of Physicians. Why asthma still kills: the National Review of Asthma Deaths (NRAD) Confidential Enquiry report London RCP 2014
4. Heslop P, Blair P and Fleming P et al. Confidential Inquiry into premature deaths of people with learning disabilities Norah Fry Institute Bristol 2013
5. Kurinczuk JJ, Draper ES and Field DJ et al. Experiences with maternal and perinatal death reviews in the UK—the MBRRACE-UK programme. BJOG 2014;s4:41-46
6. Child Health Reviews—UK. Overview of child deaths in the four UK countries 2013 Royal College of Paediatrics and Child Health London
7. Child Health Reviews—UK. Coordinating Epilepsy Care: a UK-wide review of healthcare in cases of mortality and prolonged seizures in children and young people with epilepsies Royal College of Paediatrics and Child Health London 2013

APPENDIX 3 - NCEPOD METHOD



Topic selection

An open call for topic proposals is made annually, via direct mailings to all Royal Colleges and Specialist Associations, all hospitals in the UK and to around 200 third-sector and patient representative organisations, as well as an announcement on the NCEPOD website and via social media.

Scoring of the proposals is undertaken initially by the NCEPOD clinical and research team against a set of pre-defined criteria. A short list of topics is then presented to the NCEPOD Steering Group for detailed clinical discussion and a second scoring and ranking. Finally the top four topics ranked by the Steering Group are presented to the Independent Advisory Group at HQIP who make the final decision on the two studies that will be undertaken.

Study development

To ensure that each study is developed by those who have topic-specific experience NCEPOD convenes a Study Advisory Group.

This group is led by two NCEPOD Clinical Co-ordinators, an NCEPOD Clinical Researcher, a Researcher and a Lay representative. Wider external membership of this multidisciplinary group, including patient representation, is sought by means of open advertisement, nomination by specialist organisations and direct sourcing through on-line searches and 'word of mouth'.

The group is responsible for:

1. Agreeing the issues of concern to be reviewed (using a consensus exercise if needed⁸)
2. Agreeing the aims and objectives of the study
3. Defining the population needed to test the issues of concern (inclusions and exclusions)
4. Identifying any pre-existing standards/guidelines which should be used to assess against, to ensure a robust review grounded in existing evidence
5. Commenting on the protocol and the project management plan

6. Reviewing the findings of a test data collection and questionnaire completion to determine if the study designed is fit for purpose before it is undertaken

Data collection

In every UK hospital NCEPOD has a primary contact known as the NCEPOD Local Reporter. This person, who is most often based in the audit department, is a major strength of NCEPOD as they provide continuity across topics and are critical in ensuring cases can be identified and questionnaires are completed and returned with the case notes. In many hospitals they are supported by senior clinicians known as NCEPOD Ambassadors.

This initial stage identifies the overall sample of cases from which a smaller sample will be randomly selected for further review. The aim of the enquiry is to take a 'snapshot' of data that is representative of the whole country and review it in detail, with the clinicians working in the field providing a narrative to the data. So it is more effective to have the included sample made up of a minority of cases from the majority of hospitals, rather than having the majority of cases from a minority of hospitals.

Once a sample of cases has been identified a clinical questionnaire is sent to the clinician/s involved in the care of the patient and an organisation questionnaire is sent to the Local Reporter to complete.

Peer review of the case notes

On average 30 case reviewers are recruited per study following an open application process.

Reviewers are selected to achieve a mix of healthcare professionals from across the UK, from a mix of hospitals i.e. district general hospitals and acute teaching hospitals, a mix of specialties and to include some senior trainee doctors as well as other professions such as physiotherapists where relevant.

Each case review meeting is chaired by an NCEPOD Clinical Co-ordinator and each meeting comprises a mixed specialty group of around 8-10 reviewers per meeting who individually reviews 5-10 sets of case notes each. Reviewers never review any sets from their own hospital.

An assessment form for each case is completed by the reviewers. The semi-structured form ensures consistency of review and aids the quantitative analysis whilst free text boxes allow the freedom of opinion that underpins case note review. The free text can also be used to merge into case studies for the final report.

Data analysis

The quantitative data collected in the clinical questionnaires and assessment are aggregated and analysed as are the organisational questionnaires and the assessment forms. The peer review data are also aggregated so that individual cases, clinicians or hospitals are not identifiable. The two elements of quantitative and qualitative data combine to describe nationally occurring themes in the quality of care on which recommendations to improve them are based.

During the drafting of the report the recommendations are drafted, based on the available data and the original objectives of the study.

Publication

The report is published and made available free of charge along with a self assessment checklist for hospitals and an audit tool to measure change locally. Anonymised organisational data are provided to allow hospitals to benchmark their facilities against similar sized Trusts/Boards and patient leaflets are produced, where appropriate, to help patients ask questions about the procedures/services they are accessing.

APPENDIX 4 - QUALITY OF CARE GRADING

Score	Grade	Example
1	Good practice	A standard that you would accept from yourself, your trainees and your institution
2	Room for improvement in clinical care	Aspects of clinical care that could have been better.
3	Room for improvement in organisational care	Aspects of organisational care that could have been better.
4	Room for improvement in clinical and organisational care	Aspects of both clinical and organisational care that could have been better.
5	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.

WWW.NCEPOD.ORG.UK/GRADING.HTML

APPENDIX 5 - CLASSIFICATION OF INTERVENTION

Grade	Example
Immediate	Immediate life, limb or organ-saving intervention – resuscitation simultaneous with intervention. Normally within minutes of decision to operate.
Urgent	Intervention for acute onset or clinical deterioration of potentially life-threatening conditions, for those conditions that may threaten the survival of limb or organ, for fixation of many fractures and for relief of pain or other distressing symptoms. Normally within hours of decision to operate.
Expedited	Patient requiring early treatment where the condition is not an immediate threat to life, limb or organ survival. Normally within days of decision to operate.
Elective	Intervention planned or booked in advance of routine admission to hospital. Timing to suit patient, hospital and staff.

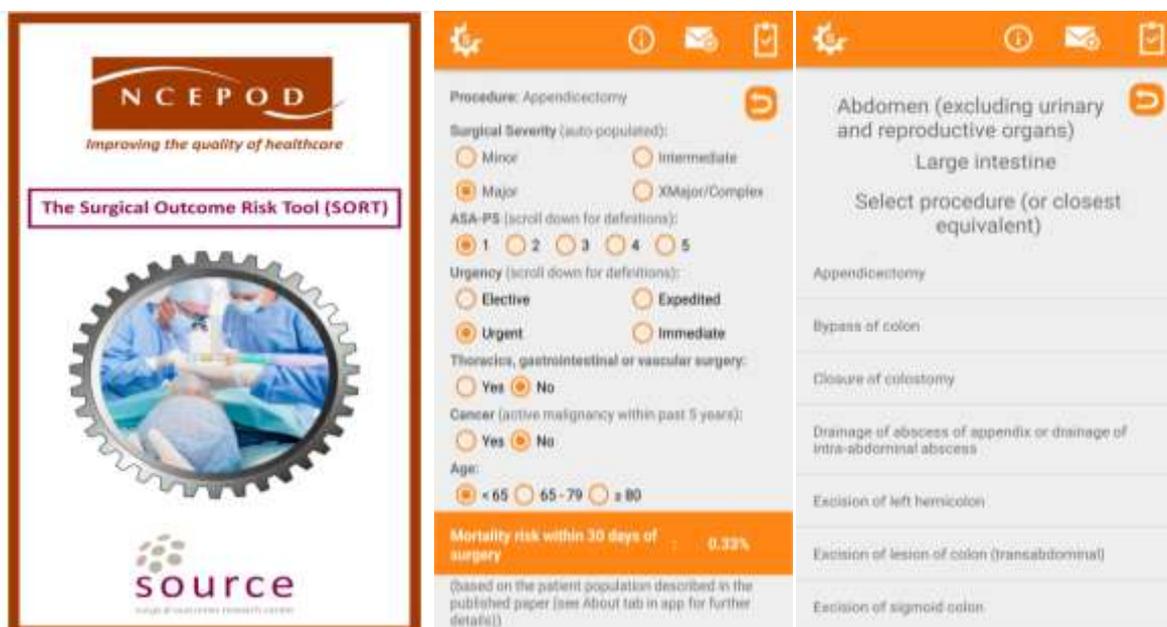
WWW.NCEPOD.ORG.UK/CLASSIFICATION.HTML

APPENDIX 7 - SURGICAL OUTCOME RISK TOOL



The SORT is a surgical preoperative risk prediction tool. The work describing the development and validation of it was published in the British Journal of Surgery in November 2014. It provides a percentage mortality risk for death within 30 days of surgery for adults undergoing inpatient surgery (exclusions – obstetrics, neurosurgery, cardiac and transplant surgery). It has an advantage over many existing prediction tools by consisting of solely preoperative variables and allowing rapid and easy data entry. In the analyses, it was also found to have greater accuracy than two other preoperative tools.

The SORT was developed and internally validated as a collaborative effort by researchers from NCEPOD and the UCL/UCLH Surgical Outcomes Research Centre (SOuRCe).



WWW.NCEPOD.ORG.UK/SORT.HTML

APPENDIX 8 – VERSION CONTROL

Date last updated	By whom	Change made
July 2017	Marisa Mason	Released to HQIP
August 2018	Marisa Mason	Updated with regard to NEWS2