Title

REspiratory COmplications after abdomiNal Surgery (RECON)

A student-led observational prospective audit of postoperative pulmonary complications after major abdominal surgery

Division

General surgery/Urology/Gynaecology/Anaesthetics

Background/rationale *Key points*

- Post-operative pulmonary complications are very common and occur in 3-30% of patients undergoing general surgical procedures
- They most commonly occur in the 7 days following surgery.
- There are several risk factors identified for post-operative pulmonary complications – but there is currently no robust evidence in the general surgical population of risk factors, incidence and outcomes.
- Post-operative pulmonary complications vary in severity, with the most severe cases resulting in ITU admissions and even death of the patient.

Importance of this audit

Post-operative pulmonary complications can be very severe and are very common. Despite this there is a lack of robust clinical evidence regarding risk factors and outcomes for post-operative pulmonary complications. Identification of high-risk patients and current patient pathways will identify areas for improvement and help to generate hypotheses for future research studies. It will also aid in identifying high risk patient groups who may require specific peri-operative care.

References

- Patel K, Hadian, F, Ali, A, Broadley, G, Evans, K, Horder, C, Johnstone, M, Langlands, F, Matthews, J, Narayan, P, Rallon, P, Roberts, C, Shah, S, Vohra, R. Postoperative pulmonary complications following major elective abdominal surgery: a cohort study. Perioper Med (Lond). 2016;5:10.
- Chughtai M, Gwam, CU, Mohamed, N, Khlopas, A, Newman, JM, Khan, R, Nadhim, A, Shaffiy, S, Mont, MA. The Epidemiology and Risk Factors for Postoperative Pneumonia. J Clin Med Res. 2017;9(6):466-75.
- Dimick J, Chen, SL, Taheri, PA, Henderson, WG, Khuri, SF, Campbell, DA Jr. Hospital costs associated with surgical complications: a report from the private-sector National Surgical Quality Improvement Program. J Am Coll Surg. 2004;199(4):531-7.
- Khuri SF, Henderson WG, DePalma RG, Mosca C, Healey NA, Kumbhani DJ, et al. Determinants of long-term survival after major surgery and the adverse effect of postoperative complications. Ann Surg. 2005;242(3):326-43

Aims/objectives

- ***Primary Aim:*** To audit compliance to pre-, intra-, and postoperative guidelines for reducing risk of postoperative pulmonary complications.
- ***Secondary aims:***
    - To characterise incidence of postoperative pulmonary complications following major abdominal surgery.
    - To identify risk factors associated with postoperative pulmonary complications. ○ To explore association of postoperative pulmonary complications with short term outcomes (mortality, critical care admission, length of stay).

Audit standards

Pre-operative standards

1. Weight and BMI should be recorded **(Royal College of Anaesthetists: Guidelines for the Provision of Anaesthesia Services 2018). Pre-operative Assessment and Preparation Recommendation 3.2**
2. Cardiopulmonary exercise testing for high-risk patients. **(Royal College of Anaesthetists: Guidelines for the Provision of Anaesthesia Services 2018) Pre-operative Assessment and Preparation Recommendation 5.16**

Peri-operative standards

1. WHO Surgical Safety Checklist should be used for all procedures. Royal College of Anaesthetists: Guidelines for the Provision of Anaesthesia Services 2018. **Pre-operative Assessment and Preparation Recommendation 5.8**
2. Operative long-acting NMBA should not be used routinely **(ERAS for gastrointestinal surgery: consensus statement for anaesthesia practice)**
3. Monitoring using quantitative peripheral nerve stimulators should be used in conjunction with NMB drugs **(Association of Anaesthetists of Great Britain and Ireland (AAGBI): Recommendations for standards of monitoring during anaesthesia and recovery 2015)**
4. Recovery from blockade should be assessed as a train-of-four ratio > 0.9. (**Association of Anaesthetists of Great Britain and Ireland (AAGBI): Recommendations for standards of monitoring during anaesthesia and recovery 2015)**
5. Patients at risk of PONV should receive at least two intraoperative antiemetic agents **(ERAS for gastrointestinal surgery: consensus statement for anaesthesia practice)**

Post-operative standards

1. Opioid-sparing analgesic strategies should be used (**ERAS for gastrointestinal surgery: consensus statement for anaesthesia practice)**

2. Routine nasogastric decompression should be avoided in elective surgery (**ERAS for gastrointestinal surgery: consensus statement for anaesthesia practice).**
3. Early recognition of patients needing specialist postoperative input. **(Royal College of Anaesthetists: Guidelines for the Provision of Anaesthesia Services 2018) Provision of Postoperative Care Recommendation 3.23.**

Study design
National prospective clinical audit against a ERAS and Best Practice guidelines, led by the STARSurg collaborative

Sample size
In an average hospital it is expected that between 10 and 20 eligible surgeries will per performed during a two-week study period. It is anticipated that the audit will be conducted in at least 150 centres across the UK and Ireland, including approximately 4000 patients overall.

Data extraction: Prospective (clinical notes will not be required)

Data governance:
Data will be collected and stored online through a secure server running the Research Electronic Data Capture (REDCap) web application. REDCap allows collaborators to enter and store data in a secure system. It is widely used by academic institutions throughout Europe and all storage of web-based information by this system is encrypted and compliant with HIPAA-Security Guidelines in the United States. The service is managed by the University of Birmingham, UK. Collaborators will be given secure REDCap server login details, allowing secure data storage on the REDCap system. No patient identifiable information will be uploaded or stored on the REDCap database. All anonymous data will be held for a total of three years, after which it will be permanently removed from the server space. Paper copies of data should be destroyed as confidential waste within the centre once uploaded to REDCap.

Timeline:

17th Oct 2018	RECON Regional Lead recruitment opens
31st Oct 2018	Recruitment for RECON Regional Leads closes
23rd Nov 2018	Online launch of RECON Protocol and Training Materials
7th Dec 2018	RECON Project Launch at National Research Collaborative Meeting, Manchester
14th Jan 2018	RECON Investigator Training Meeting and Research Skills Event, Royal

	College of Surgeons in London
Jan 21st – 3rd Feb 2019	Start of data collection period 1 (30-day follow-up ends 5th Mar 2019).
4th – 17th Feb 2019	Start of data collection period 2 (30-day follow-up ends 19th Mar 2019).
18th Feb - 3rd Mar 2019	Start of data collection period 3 (30-day follow-up ends 2nd Apr 2019).
4th – 17th Mar 2019	Start of data collection period 4 (30-day follow-up ends 16th Apr 2019).
16th May 2019	REDCap database locked, final data submission deadline.
16th Jun 2019	REDCap database locked, final validation submission deadline.
23rd – 25th Sept 2019	RECON results presented to European Society of Coloproctology meeting.

Proposed presentation/feedback details

The RECON audit will be fed back by presentation to hospital level governance meetings including local and national adherence figures within 15 months of registration. A formal written report will also be submitted for peer-review and submitted within 24 months of registration. Presentation of the preliminary results of this audit will be presented to the European Society of Coloproctology in September 2019.

Involvement of service users and patients

Patient representation: The James Lind Alliance (JLA) is a non-profit making initiative established in 2004. It brings patients, carers and clinicians together in Priority Setting Partnerships (PSPs) to identify and prioritise the Top 10 unanswered questions or evidence uncertainties that they agree are the most important.

The RECON audit addresses the following priority areas:

- How can patient care around the time of emergency surgery be improved?
- What outcomes should we use to measure the 'success' of anaesthesia and perioperative care?
- How can we improve recovery from surgery for elderly patients?
- How can pre-operative exercise or fitness training, including physiotherapy, improve outcomes after surgery?

Please attach the RECON study protocol including the case record forms to this audit approval form.