

RCoA Research, Education & Travel Grants 2017

Award: Sargant Fund

Applicant: Dr Elizabeth Hood

Project Title: *Reducing post-op pulmonary complications following major surgery*

Project Description:

Postoperative pulmonary complications (PPCs) are estimated to account for between 2-40% of all perioperative complications¹. Studies have consistently shown increased length of stay (LOS) and mortality rates at 30 and 90 days postoperatively for patients that develop PPCs, which has financial and clinical implications².

There is limited evidence that interventions such as incentive spirometry alone reduce the rate of PPCs^{4, 5}. However, recent studies using the technique as part of a bundle of care have reported promising results in single centre studies. The ICOUGH program consists of preoperative patient education and a standardised postoperative care program using ward based pulmonary interventions, early mobilisation and good oral care. Cassidy et al reported a reduction in PPC rates from 2.6% to 1.6% across all surgeries after implementation of ICOUGH in their hospitals³. Similar work in Manchester concentrating on major surgery saw PPCs drop from 19.3% to 10.5%².

An audit of patients listed for elective major or major+ surgery was conducted to determine the PPCs rate in our tertiary referral centre. The PPC rate in this group of patients was 18.75%. A survey of the information currently provided in pre-assessment clinic, and measures taken in the postoperative period to reduce PPCs was also conducted. While aspects of the ICOUGH bundle are currently in practice, there is variability in the information patients receive, and postoperative interventions are not standardised. No patients currently receive advice about oral hygiene, and incentive spirometers are not available in our trust.

We plan to evaluate the effectiveness of an ICOUGH bundle, with the aim of reducing our PPC rate. Pre-operative information will be standardised to include an oral hygiene regime, advice to increase physical activity, to quit smoking (referral to smoking cessation services offered), and the importance of breathing exercises, including incentive spirometry training. In the postoperative period incentive spirometry, in addition to hourly coughing and deep breathing exercises, twice daily teeth brushing/mouthwash, twice daily mobilisation, and head of bed elevation will be prescribed as standard care.

We plan to implement the project from January 2018 and in the first instance trial 200 patients. This will give us a clear indication if the bundle is worth investing in long term to decrease our patients' PPCs.

References

1. Miskovic A et al. Postoperative pulmonary complications. *BJA Br J Anaesth* 2017;118(3):317-334
2. Moore JA et al. Impact of a peri-operative quality improvement programme on post operative pulmonary complications. *Anaesthesia* 2107;72:317-327
3. Cassidy MR et al. I COUGH: Reducing Postoperative Pulmonary Complications With a Multidisciplinary Patient Care Program. *JAMA Surg* 2013;148(8):740-745

4. Nascimento et al. Incentive spirometry for prevention of postoperative pulmonary complications in upper abdominal surgery. 2014. The Cochrane collaboration. The Cochrane database of Systematic reviews.
5. Celso et al. Incentive spirometry for prevention of postoperative pulmonary complications in upper abdominal surgery. Rev Bras Fisioter 2011;15(5):343-50.