Perioperative Outcomes in Smokers Undergoing Major Surgery: A Retrospective Audit at Northern Health

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Northern Health

RESEARCH WEEK 20-24 OCTOBER 2025 INSPIRED RESEARCHERS Northern Health

1 Background

- Smoking remains one of the leading preventable causes of morbidity and mortality, accounting for:
  - 13% of all deaths[1]
  - 7.6% of total burden of disease[2]
- Although smoking rates have declined in Australia over recent decades, reaching 10.6% in 2022[3], a significant proportion of patients continue to smoke at the time of surgery
- Understanding how smoking status influences postoperative outcomes is essential for optimising preoperative management

2 Aims

- To evaluate the potential value of a preoperative smoking cessation program at Northern Health by determining the:
  - prevalence of smokers undergoing major elective surgery at Northern Health and
  - incidence of postoperative complications in this population

3 Methods

- Retrospective data collected at Northern Health between July 2021 and June 2022
- Inclusion criteria:
  - ❑ Adults
  - ❑ Major general, orthopaedic, thoracic, and vascular surgeries
- Exclusion criteria:
  - ❑ Pregnancy
  - ❑ Palliative
  - ❑ Emergency surgery

Classification of smoking status

Non-smoker	• Never smoked
Ex-smoker	• Ceased smoking more than 4 weeks before surgery
Current smoker	• Smoked within 4 weeks of surgery

Key variables

Patient demographics
Age, BMI, ASA score, smoking status

Comorbidities
Hypertension, COPD, heart failure

Operative characteristics
Type of anaesthesia, postoperative hypothermia

Postoperative outcomes
Respiratory, cardiac, and wound complications

4 Results

- After exclusions, there were 574 patients included in the analysis

Figure 1. Distribution of patients by smoking status

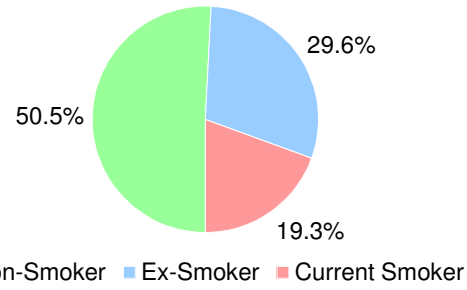
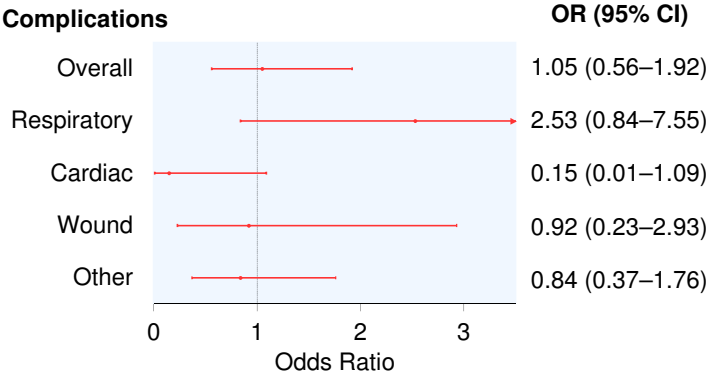


Table 1. Incidence of postoperative complications

Outcomes	Non-smoker	Ex-smoker	Current smoker
Overall (%)	19.0	29.4*	21.6
Respiratory (%)	3.1	10.0*	9.0*
Cardiac (%)	3.1	6.5	0.9
Wound (%)	3.8	5.9	3.6
Other (%)	13.4	20.0	9.9

Note. * Significantly different vs non-smokers ($p < 0.05$).

Figure 2. Adjusted analysis for current smokers vs non-smokers



Note. OR: odds ratio; CI: confidence interval.

5 Discussion/Conclusion

- Nearly one in five patients at Northern Health continue to smoke at the time of their procedure—almost twice the national average
- The observed trend of increased respiratory complications among current smokers highlights the potential benefits of preoperative smoking cessation programs
- No strong associations between smoking status and postoperative cardiac, wound, and other hospital-acquired complications were identified, likely due to small subgroup sizes and low event counts
- Future research should consider how smoking intensity and length of cessation can influence postoperative outcomes

References

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