

# A preoperative smoking intervention decreased postoperative complications in elective knee or hip replacement

Møller AM, Villebro N, Pedersen T, Tønnesen H. Effect of preoperative smoking intervention on postoperative complications: a randomised clinical trial. *Lancet*. 2002 Jan 12;359:114-7.

## QUESTION

In patients having elective knee or hip replacement, is a preoperative smoking intervention more effective than usual care for reducing postoperative morbidity and mortality?

## DESIGN

Randomized {allocation concealed\*}†, blinded (outcome assessor)\*, controlled trial with follow-up time to discharge.

## SETTING

3 university-affiliated hospitals in Copenhagen, Denmark.

## PATIENTS

120 patients who were scheduled for primary elective hip or knee alloplasty and were daily smokers. Patients with a weekly alcohol intake > 35 units were excluded. 108 patients (90%) were included in the analysis (median age 65 y, 57% women).

## INTERVENTION

At 6 to 8 weeks before surgery, 60 patients were allocated to the smoking intervention and were offered a weekly meeting with the project nurse. At the first meeting, a Fagerstöm test was done to estimate the patient's nicotine dependence. Test results

and patient preference were used to devise a personalized nicotine substitution schedule. Patients were strongly encouraged to stop smoking, but they also had the option to reduce tobacco consumption by  $\geq 50\%$ . Smoking status was monitored, and nicotine substitution products were provided free of charge. At subsequent meetings, tobacco use was recorded, and patients were given advice about smoking cessation or reduction, benefits and side effects, and management of withdrawal symptoms and weight gain. 60 patients were allocated to usual care (little or no information or counseling on smoking).

## MAIN OUTCOME MEASURES

Postoperative complications (death or postoperative morbidity requiring treatment within 4 wk after surgery).

## MAIN RESULTS

Analysis was by intention to treat. No patients died before discharge. Rates of any

postoperative complication and wound-related postoperative complications were lower in the smoking-intervention group than in the usual-care group (Table).

## CONCLUSION

A preoperative smoking intervention was more effective than usual care for reducing any postoperative and wound-related postoperative complications in patients having elective knee or hip replacement.

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\*See Glossary.

†Information provided by author.

## Smoking intervention vs usual care in elective knee or hip replacement‡

Outcomes to time of discharge	Intervention	Usual care	RRR (95% CI) <sup>§</sup>	NNT (CI)
Any postoperative complication	18%	52%	65% (42 to 83)	3 (2 to 6)
Wound-related postoperative complication	5%	31%	83% (48 to 95)	4 (2 to 8)

‡Abbreviations defined in Glossary.

§CI calculated from data in article.

## COMMENTARY

Preoperative assessment seeks to reduce postoperative morbidity or mortality. These assessments are typically for patients with increased risk for cardiac and pulmonary complications. Smoking within 8 weeks of surgery increases postoperative pulmonary, cardiovascular, infectious, and wound complications (1). Although patients are encouraged to stop smoking before elective surgery, no prospective data exist to validate this advice. The study by Møller and colleagues showed that a formal smoking-cessation program reduced postoperative complications and wound-related complications in motivated patients having elective hip or knee replacements.

In this small study population, no deaths occurred before discharge so no conclusions for effects on mortality could be drawn. The 120 patients who entered the study were those who agreed to participate among the 166 who were eligible, and the study was done in Denmark, so generalizability of the results may be somewhat limited. For example, the median hospital stay in this study was 12 days compared with 5 days in the United States (2). The patients were given an American Society of Anesthesiology Physical Status Score classification, which is a subjective risk assessment; an objective cardiac or pulmonary

risk assessment (3, 4) would have reassured me that the intervention and control groups were similar in overall medical health.

Any intervention that reduces postoperative morbidity warrants attention. The study should be replicated in other settings, and a cost-benefit analysis should be done. Meanwhile, patients who are scheduled for elective surgery and who currently smoke should be encouraged to quit smoking by using whatever formal smoking-cessation interventions are locally available.

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## References

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