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## Complications after surgery: Can quitting smoking before surgery reduce the risks?



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People are often nervous before surgery, so quitting smoking might be the last thing on their minds. Even thinking about quitting might be stressful. However, people who smoke have a higher rate of complications after surgery (post-operative complications), particularly with wound healing.

There are thought to be several reasons why smoking could affect recovery from surgery. When you smoke, the amounts of carbon monoxide and nicotine in your blood increase. This reduces the amount of oxygen that is available to reach the tissues throughout your body. Oxygen is essential to help wounds heal. Further, nicotine makes the heart work harder, partly because it increases the blood pressure and pulse rate. Anaesthetic and surgery also place a greater strain on circulation and oxygen supply, and this might be worse for people who smoke.

Quitting smoking even only a short time before surgery could at least increase the amount of oxygen available to the tissues. Nicotine and the extra carbon monoxide from smoking already start disappearing from the blood after 24 hours without cigarettes. Lung function starts to improve after about 2 months of quitting smoking.

However, quitting smoking is difficult – especially in times of stress. One of the more common ways to try to quit is to use nicotine replacement therapy to help reduce the withdrawal symptoms when you stop smoking. Nicotine replacement therapy includes the nicotine patch and nicotine chewing gum. There is less nicotine in replacement therapy than there is in cigarettes and – unlike cigarettes – nicotine therapy does not increase carbon monoxide.

## **Trials show that starting to quit smoking 4 weeks before surgery can reduce complications**

Researchers from university hospitals and research centres in Copenhagen looked for randomised controlled trials of what happened when people were encouraged to quit smoking before surgery. In randomised controlled trials to help people quit smoking, volunteers are usually asked to either go into the quit programme or they receive the usual treatment at the hospital (such as getting brochures about quitting smoking). This is the best way to find out whether trying to quit smoking can really influence the outcomes of

surgery. You can read more about why studies are done in this way here (URL: <http://www.informedhealthonline.org/index.61.en.html>) .

The Danish researchers found 11 trials involving almost 1,200 people who smoked. These people were having different kinds of surgery, including hip or knee replacement, breast surgery, bowel surgery or gynaecological surgery. The trials did not cover all forms of surgery. Very few of the people were having heart surgery, and none were having lung surgery. However, there was still enough information on how smoking affects general common complications, like problems with wound healing.

The strongest evidence about complications after surgery came from 4 trials where people had weekly counseling sessions and nicotine replacement therapy starting at least 4 to 8 weeks before surgery. For them, the rate of wound complications dropped from close to 28% down to around 14%. In other words, out of every 100 people who used nicotine replacement therapy and were counseled before surgery, only about 14 people (14%) had complications after surgery. By comparison, out of every 100 people who did not have this counseling and therapy, 28 (28%) had complications.

Information or counseling alone without nicotine replacement therapy has not been proven to be enough to reduce the rate of complications. Some of the people who quit smoking before surgery were still not smoking months after the surgery, but some started smoking again later. Although it might still be possible to get a benefit from quitting smoking closer to the date of surgery, the researchers concluded that it seems that at least 4 weeks may be necessary to reduce the risk of post-operative surgical complications.

You can find out more about nicotine replacement therapy here (URL: <http://www.informedhealthonline.org/quit-smoking.311.56.en.htm>) .

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## Sources

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Thomsen T, Tønnesen H, Møller AM. Effect of preoperative smoking cessation interventions on postoperative complications and smoking cessation. *British Journal of Surgery* 2009; 96: 451-461. [PubMed summary (URL: <http://www.ncbi.nlm.nih.gov/pubmed/19358172?ordinalpos=abstract>) ]

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