It's harder to eradicate *Helicobacter pylori* in smokers

**Research question** Does smoking affect treatment for *Helicobacter pylori* infection?

**Answer** Yes. Treatment is more likely to fail in smokers than in non-smokers.

**Why did the authors do the study?** Eradication fails in 10-20% of patients with *H pylori* infection. There's some evidence that treatment failure is more common among smokers, although the results are not entirely consistent. These authors wanted a more definitive answer, so they searched for all published studies reporting eradication rates among smokers and non-smokers then combined their results.

**What did they do?** They searched PubMed for all studies published up to August 2005. They included only those reported in English and those that studied first line eradication with three or more drugs. They hand searched reference lists but did not look for unpublished studies.

Two of the authors independently abstracted data from individual studies and then combined them to give a pooled odds ratio for the difference in eradication failure rates between smokers and non-smokers. They tested for heterogeneity and for publication bias using standard methods.

**What did they find?** They found 59 potentially relevant studies and included 22 of them in a meta-analysis. Smoking roughly doubled the risk of eradication failure, with an odds ratio of 1.95 (95% CI 1.55 to 2.45, P < 0.01). The absolute difference in eradication rates between smokers and non-smokers was 8.4% (76.3% vs 84.9%; 95% CI 3.3 to 13.5, P < 0.01), although this summary statistic was derived from only 13 of the 22 studies.

The studies, which were done in Europe, Asia, North America, and Brazil, included a total of 5538 patients with *H pylori*. All but three of the tested treatment regimens included a proton pump inhibitor, and in 17 the regimen included clarithromycin. Metronidazole featured in seven studies. The authors found no evidence of publication bias but did find significant variability between studies (heterogeneity). This was largely due to differences between studies dominated by people with or without non-ulcer dyspepsia. The effects of smoking were worse in studies that had a higher percentage of patients with non-ulcer dyspepsia.

**What does it mean?** It seems likely that treatment for this common and important infection is more likely to fail in smokers. This may be because tobacco smoke reduces the bioavailability of treatments—for example, by increasing the acidity of the stomach, reducing splanchnic blood flow, or interfering with drug metabolism. But it's also possible that smokers are simply less likely to stick to their treatment than non-smokers. These authors were unable to look in any detail at adherence to treatment, nor was it possible to look for different effects among heavy and light smokers.

If, for whatever reason, smokers do worse than non-smokers, quitting might help. A randomised trial is the only way to find out. Meanwhile, doctors can do no harm by being more alert to treatment failure among patients who smoke.


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**Editor’s choice**

**What did you do about climate change Mum?**

Ignorance is bliss. Sadly, when it comes to climate change we no longer have the luxury of ignorance. We know that the world is getting hotter and that carbon emissions are almost certainly to blame. We know that global warming means rising sea levels, floods, droughts, storms, and inconceivably large numbers of displaced people. We know that these changes are likely over the next few decades and have huge implications for human health. More importantly we know that there are things we can do, individually and collectively, nationally and internationally (p 1397). Knowing this means that we must act now if we are to look our children in the eye. Doctors carry special responsibility as influential people committed to preserving health. As Anna Coote and Lynn Eaton point out (pp 1343, 1389), doctors also collectively manage vast resources, with the potential to do great harm environmentally—or great good.

So here's a new competition. It's one you can all join in. Indeed, if Robin Stott and Mayer Hillman are right about carbon rationing (pp 1385, 1387), soon you will have no choice but to join in. It's called “How low can you go with carbon emissions?” I've just calculated my carbon footprint using Hillman's questionnaire (p 1388). It's not good: 10.5 tonnes a year just for personal use—more than double the UK average. And this doesn't include the 22 tonnes a year from the air and train travel I do for work. The only good thing is that there's room for improvement. You can see what I and other BMJ staff are doing to cut our emissions in our carbon blog on bmj.com. To add your own carbon stories, send a rapid response; we'll collect the best together in the journal. And there will be three prizes to be won at the end of the year: for the BMJ subscriber with the lowest personal carbon footprint (£500) and for the primary and secondary care providers internationally with the lowest carbon footprint per patient (£2000 each). More details of the competition will appear soon on bmj.com.

Climate change is an evolving challenge, so the BMJ is recruiting a Carbon Council: a virtual international group whose job will be to encourage us and advise us on what we should do both as a journal (should we ask authors for a carbon footprint for every paper we publish and to say what the climatological as well as the clinical and financial implications of their work are?) and as a business (video conferencing to minimise travelling, but what about offsetting emissions by planting trees: is this just a salve to our consciences or does it really make a difference?) If you'd like to apply to join our carbon council, email editor@bmj.com (put “Carbon Council” as the subject) by 30 June with a CV and a letter explaining how you can help us. We'll post the list of members and their unfolding advice on bmj.com.

Fiona Godlee editor (fgodlee@bmj.com)

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