

Smoking increases the risk of infection

Clinical question Is an increased infection rate yet another argument to encourage smokers to quit?

Bottom line The list of infections that occur more commonly in smokers is long and not limited to the respiratory tract. Colds, pneumonia, tuberculosis and influenza are more common in smokers, as is Legionnaires' disease. Meningococcal disease, periodontal disease and ulcers occur more frequently in smokers. In children of parents who smoke, especially mothers who smoke, otitis media occurs more frequently. The take-away message: all of these diagnoses present another opportunity to counsel patients that their health would be better without cigarettes.

Synopsis The authors of this systematic review searched MEDLINE for articles on the mechanisms and epidemiology of smoking-related infectious disease. Pneumococcal pneumonia is related to smoking, especially in patients with chronic obstructive pulmonary disease. In a population-based survey in Texas, smokers comprised 47 per cent of the patients with invasive pneumococcal disease, though smokers typically comprise only 23 per cent of the population. In two case-control studies, adult smokers were two to four times more likely to develop invasive pneumococcal disease or pneumonia than similar non-smoking adults. Smokers are seven times more likely than non-smokers to develop

Legionnaires' disease (odds ratio [OR] 3.48, 95 per cent CI 3.27–17.17). Cigarette smoking is also associated with meningococcal disease; in one study of a meningococcal disease outbreak among college students, smokers were almost eight times more likely to be infected, although the exact estimate is imprecise (OR 7.8, 95 per cent CI 1.3–64.4). Second-hand smoke exposure is also associated, in a dose-related manner, with children developing meningococcal disease. Otitis media occurs more frequently in children of smoking parents (OR 1.88, 95 per cent CI 1.02–3.49), although the clinical course is not different between the two groups. In another study, smoking during pregnancy was also predictive of subsequent ear infections in children in a dose-related fashion. Periodontal disease is 2.5 to six times more common in smokers (again in a dose-related manner) and the disease is more severe in smokers. Gastric and duodenal ulcers are more likely in smokers. And, as is already well known, the common cold, influenza and tuberculosis occur more often in smokers.

Level of evidence 2b (systematic review).

Reference Arcavi L, Benowitz NL. Cigarette smoking and infection. *Archives of Internal Medicine* 2004;164:2206–16.

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