

# Smoking and Other Health Conditions

ASH Fact Sheet

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## Contents

Plain English Summary .....	1
Introduction .....	2
Smoking and Diabetes .....	2
Smoking and Eye Disease .....	2
Smoking and Oral Health.....	3
Smoking and Multiple Sclerosis .....	4
Smoking, Meningitis and Septicaemia .....	5
Smoking and Dementia .....	5
References .....	6

## Plain English Summary

It is well-known that smoking causes cancer, lung disease and heart disease, and that smoking while pregnant can harm the unborn child. Smoking harms nearly every single organ in the body and also causes a range of other diseases.

In this fact sheet, we discuss the links between smoking and:

- Diabetes
- Eye diseases
- Mouth diseases
- Multiple Sclerosis (MS)
- Meningitis and septicaemia
- Dementia

You have a lower risk of some forms of these diseases if you've never smoked than if you smoke now. For most of these diseases, people who have quit smoking have a lower risk than people who still smoke. Sometimes, quitting smoking after you develop the disease can still improve symptoms.

# Introduction

Smoking is the leading cause of premature, preventable death globally.<sup>1,2</sup> Tobacco kills up to two-thirds of its long-term users, which equates to 8 million deaths a year globally.<sup>2,3</sup> As well as being lethal, smoking harms nearly every organ of the body and affects a person's overall health.<sup>4</sup> It is well-known that smoking causes cancer, lung disease and heart disease, and that smoking while pregnant can harm foetal development. This fact sheet lists some of the other health impacts of smoking: diabetes, eye and mouth diseases, multiple sclerosis, meningococcal disease causing meningitis and septicaemia, and dementia.

## See also:

[ASH Fact Sheet: Smoking and Cancer](#)

[ASH Fact Sheet: Smoking, the Heart and Circulation](#)

[ASH Fact Sheet: Smoking and Respiratory Disease](#)

[ASH Fact Sheet: Smoking, Pregnancy and Fertility](#)

[ASH Fact Sheet: Smoking and Mental Health](#)

## Smoking and Diabetes

Diabetes is a metabolic condition which causes increased glucose levels in the blood.<sup>5</sup> It can happen either when your body doesn't produce enough insulin or the insulin you are producing, doesn't properly control blood sugar. There are two main types of diabetes, Type 1 and Type 2. Nine in ten people with diabetes have Type 2, which tends to develop gradually as people get older, usually after the age of 40. But more and more people every year are being diagnosed at a much younger age.<sup>6</sup>

Cigarette smoking is one of the most important modifiable risk factor for type 2 diabetes.<sup>7</sup> Smoking is associated with a 30-40% increased risk of type 2 diabetes, and passive smoking also increases the risk of developing diabetes.<sup>8,4</sup> A study published in 2018 shows that there is a clear dose-response relationship with diabetes and the amount smoked or the earlier a person started smoking.<sup>9</sup> According to the Surgeon General's Report, there are several ways in which smoking may increase a person's risk for developing type 2 diabetes, but this is not yet fully understood.<sup>4</sup>

As well as increasing the chances of developing diabetes, smoking puts people who do have type 1 or type 2 diabetes at higher risk of developing complications.<sup>10,11</sup> People with type 1 and type 2 diabetes who smoke are more likely to die prematurely than those who don't smoke.<sup>12</sup> Smoking can make managing type 2 diabetes and regulating insulin levels more difficult because high levels of nicotine can lessen the effectiveness of insulin, causing smokers to need more insulin to regulate blood sugar levels.<sup>13</sup>

## Smoking and Eye Disease

Diseases of the eye cause vision loss, which can make everyday activities such as reading, driving and watching television difficult or impossible. Smoking can cause or

exacerbate several major eye conditions, including age-related macular degeneration, cataracts, diabetic retinopathy, thyroid eye disease and optic neuropathy. Smoking during pregnancy can cause severe birth defects of the eye.

Age related macular degeneration (AMD) is a degenerative condition which makes the central area of vision blurred, dark and distorted. People who smoke are up to four times more likely to have AMD than people who have never smoked.<sup>14</sup> Smoking at least doubles the risk of developing AMD, which tends to develop earlier in people who smoke.<sup>15</sup> This is because cigarette smoke has toxic effects on the retina.<sup>16 17 18</sup>

A cataract is a clouding in the lens of the eye that causes blurred vision and, if left untreated, can lead to vision loss. Smoking is a major risk factor in the development of cataracts.<sup>19</sup> Smoking leads to around a 3-fold increase in the risk of cataract development.<sup>20</sup> The risk of developing cataracts increases with the amount smoked and cataracts are more severe in people who smoke heavily.<sup>21</sup>

Diabetic retinopathy is an eye complication associated with diabetes in which the blood vessels that supply the retina are damaged by high blood sugar levels. It can eventually cause blindness.<sup>22</sup> People who have type 1 diabetes may be more likely to develop diabetic retinopathy if they smoke.<sup>23</sup> Smoking may be associated with slightly lower likelihood of developing diabetic retinopathy in people with type 2 diabetes. However, the risks of smoking to people with diabetes enormously outweigh any such unusual results.

Thyroid eye disease (TED), is an autoimmune disease which can cause the eyes to be pushed forward ('staring' or 'bulging' eyes) and the eyes and eyelids to become swollen.<sup>24</sup> There is strong evidence of an association between smoking and the development of thyroid eye disease, which is related to the number of cigarettes smoked per day.<sup>25 26</sup> People with Graves' disease who smoke have a four-fold increased risk of developing the condition, when compared to non-smokers.<sup>27</sup>

Optic neuropathy is damage to the optic nerve, which transmits visual information from the retina to the brain. There are two types, anterior ischaemic optic neuropathy (AION), a type of optic neuropathy which results in sudden loss of vision, often leading to permanent blindness,<sup>28</sup> and Leber's hereditary optic neuropathy (LHON) is a mitochondrially inherited disease leading to loss of central vision.<sup>29</sup> There is some evidence suggesting that smoking may play a role in developing both AION<sup>30</sup> and LHON.<sup>31</sup>

Maternal smoking has been found to increase the risk of a number of eye defects in unborn children including: astigmatism (misshapen eyes), anophthalmia (absence of eye), microphthalmia (abnormally small eyes), strabismus (crossed eyes), esotropia (both eyes turned inwards), exotropia (eyes turned outwards) and optic nerve hypoplasia (underdeveloped or absent optic nerve).<sup>32 33 34</sup>

## Smoking and Oral Health

Smoking can severely harm the mouth, causing damage to bones and increasing the risk of oral cancer. Mouth problems from smoking also include several aesthetic or more minor issues such as stained teeth, halitosis, tooth caries and tooth loss.<sup>35 36 37</sup>

The US Surgeon General concludes that tobacco use in any form is one of the major causes of oral cancer, accounting for more than 90% of cases.<sup>4</sup> The most common place for oral cancers to occur are the tongue (20%), the gingiva (gums) (18%), floor of mouth (12%), lip (11%) and salivary gland (8%).<sup>38</sup> Cigarette smokers have over a three-fold increased risk of oral cancer compared to individuals who have never smoked.<sup>39 40</sup> Smoking cessation reduces the risk of oral cancer and other diseases of the mouth.<sup>41</sup> However, there is some evidence to suggest that it may take at least twenty years for the risk to fall to that of never smokers.

Periodontitis is a type of gum disease can lead to tooth loss, bone loss, impaired wound healing, impaired taste and bad breath. It has been estimated that people who smoke have between a 5 fold and 20 fold increased risk of periodontal disease.<sup>42</sup> There is good evidence to suggest that quitting smoking reduces the risk of periodontal disease.<sup>43</sup> However, it can be many years before a former smoker's risk of tooth loss falls to that of a never smoker.

Smoking cigars, cigarillos and pipes poses similar risks to the mouth as smoking cigarettes.<sup>44 45 46</sup> The risks of mouth disease from using smokeless tobacco (eg snus or chewing tobacco) are also substantial.<sup>47 48</sup>

**See also:**

[ASH Fact Sheet: Smoking and Cancer](#)

## Smoking and Multiple Sclerosis

Multiple Sclerosis (MS) is a neurological condition that affects the brain and spinal cord. The nerves in the brain and spinal cord are protected by substance called myelin; but in people with MS, the immune system wrongly identifies myelin as a foreign body and attacks it, causing inflammation and damage. The loss of myelin leaves nerves exposed to direct damage. This direct damage to causes an increase in disability that becomes noticeable over time.<sup>49</sup>

Increasing evidence shows that smoking is a risk factor for developing MS, and evidence suggests smoking rates are higher among people with MS than the general population, although the exact mechanism for this is currently unclear.<sup>50</sup> Recent studies have suggested smoking can increase risks of developing MS by as much as 50%. A 2016 meta-analysis including nearly 20,000 cases of MS found that both current and former smokers had an elevated risk of developing MS.<sup>51</sup> This is supported by a 2017 systematic review and meta-analysis which found strong evidence of a causal role for smoking in development of MS.<sup>52</sup>

There is tentative evidence that passive exposure to smoke raises the risk for MS.<sup>53 54</sup> Alongside being a risk factor for the development of MS, there is evidence that smoking can worsen the disability progression associated with MS.<sup>55</sup> A systematic review of the association between smoking and MS, looking at papers published between 1965 and 2018, found that: "patients with MS who smoke have higher rates of disease activity, faster rates of brain atrophy, and a greater disability burden."<sup>56</sup>

# Smoking, Meningitis and Septicaemia

Meningococcal disease (MD) is an infection caused by bacteria known as meningococcus. Infection can occur at any age but young children, teenagers and those with impaired immune systems are especially susceptible.<sup>57</sup> It can cause two major illnesses: meningitis and septicaemia. Meningitis refers to the swelling of the meninges, the protective membrane layers surrounding the brain and spinal cord. Septicaemia, on the other hand, is a severe blood infection, which can trigger sepsis. Both meningitis and septicaemia are life-threatening medical emergencies, and they can occur individually or together. They can also be caused by infections other than MD.

Research has established that there is a dose–response relationship between smoking and the risk of meningococcal disease in all age groups.<sup>58 59</sup> It has been estimated that smoking is responsible for half of all cases of MD.<sup>60 61</sup> Exposure to second-hand smoke, especially among children, is also a clear risk factor for developing MD.<sup>61</sup>

One explanation for the increased rates of meningococcal disease in smokers and passive smokers may lie in the increased ability of bacteria to adhere to and multiply on the mucosa cells of the nasopharynx.<sup>62 63</sup> This may mean that smokers are more likely to carry and transmit the MD bacteria.<sup>64</sup> Furthermore, smoking is also a known risk factor for infection in general, so it is likely that this is a contributing factor in the link between tobacco use and MD.<sup>65 66</sup>

## Smoking and Dementia

Dementia is an umbrella term for a range of progressive neurodegenerative conditions which are characterised by symptoms such as memory loss, difficulties with thinking, problem-solving or language (cognitive function).<sup>67</sup> The most common causes of dementia are Alzheimer's disease, vascular dementia, frontotemporal dementia and dementia with Lewy bodies.<sup>68</sup> It can be caused by a combination of different types which is sometimes referred to as mixed dementia.<sup>69</sup> The risk of dementia increases strongly with age. In all types of dementia, nerve cells are destroyed, damaging the brain.<sup>70</sup>

There is now strong evidence that smoking is associated with an increased risk of dementia.<sup>71 72</sup> A 2017 Lancet Commission on dementia risk ranked smoking third among 9 modifiable risk factors for dementia.<sup>73</sup> The WHO estimates that 14% of cases of Alzheimer's disease worldwide are potentially attributable to smoking.<sup>74</sup> Studies also suggest that in those exposed to second hand tobacco smoke over many years there may be a dose–response relationship between the level of exposure and the risk of dementia.<sup>75 76 77</sup>

Selection bias may affect the outcome of some studies since a higher proportion of smokers die prematurely.<sup>78</sup> Therefore, it is possible that the association between smoking as a risk factor for dementia has been obscured in the past.<sup>79</sup>

Some studies conducted in the early 1990s had suggested that smoking had a protective effect against dementia, particularly Alzheimer's disease. This idea was perpetuated by the tobacco industry which influenced a number of studies examining

smoking and mental health disorders. The theory has now been discredited.<sup>80</sup>

Current understanding of the mechanistic links between smoking and dementia is limited. Nevertheless, chronic exposure to cigarette smoke has been linked to oxidative stress which may speed up the onset of dementia.<sup>81</sup> Smoking also increases the risk of developing risk factors for Alzheimer's disease such as stroke and hypertension.<sup>82</sup>

**See also:**

[ASH Fact Sheet: Smoking and Mental Health](#)

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