

## Risk Factors for Developing Cancer

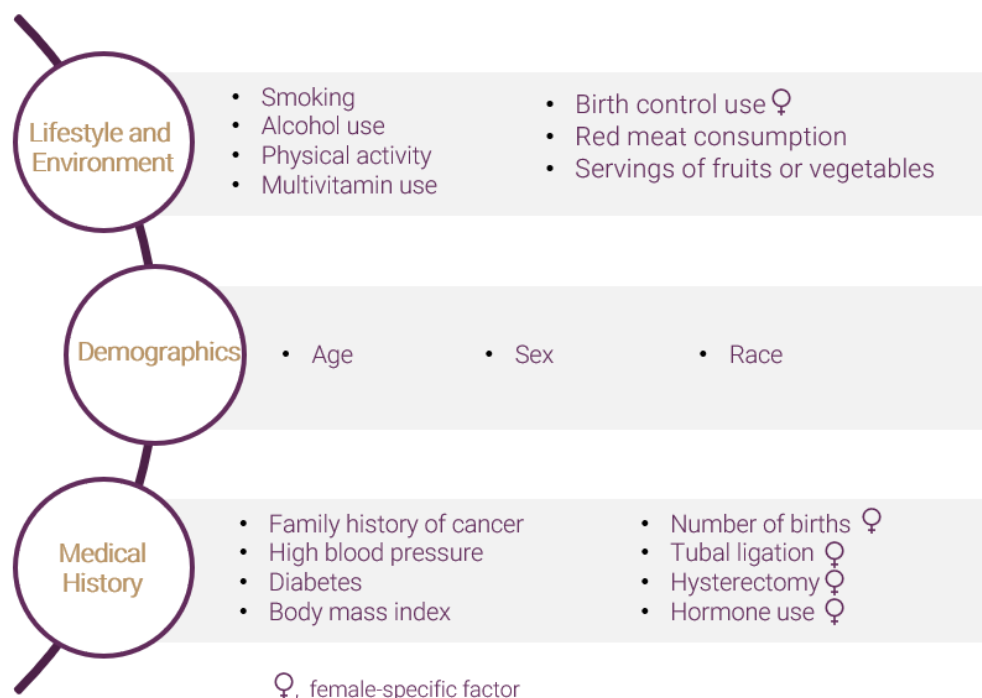
Summary of “Key risk factors for the relative and absolute 5-year risk of cancer to enhance cancer screening and prevention”  
– Data published in *Cancer*, 2022 –

Cancer patients have the best chance of surviving if the disease is found early, when it is easiest to treat.<sup>1-3</sup> That’s why doctors screen for common cancers, like breast and prostate cancer. But cancer screening is only recommended for a total of 5 cancers in the United States, including breast and prostate cancer. There are many other types of cancers that *don’t* have screening tests. In fact, cancers that *aren’t* screened for are the cause of almost two-thirds of cancer deaths.<sup>4</sup> Therefore, GRAIL created a multi-cancer early detection test that uses a patient’s blood to screen for a cancer signal across many types of cancers at the same time.<sup>5</sup>

Researchers wanted to know who might benefit most from taking the multi-cancer early detection test. So, they wanted to understand what factors put someone at risk of developing any type of cancer. They also wanted to know to what *extent* those factors put someone at risk. Prior studies showed increased cancer risk in certain people (like those over 50 years old<sup>6</sup>). But, the information collected from people was limited, and some studies focused on only one cancer at a time. The present research used data from two large studies run by the American Cancer Society. These studies collected detailed lifestyle information from over 400,000 participants.<sup>7</sup>

Participants in the first study were 50-74 years old. Those in the second study were 30-65 years old. All participants took surveys that collected information on their lifestyle and environment. In addition, demographics and medical history, including family history of cancer, were collected (**Figure 1**).

**Figure 1. The American Cancer Society Studies Collected Information on Many Potential Risk Factors for Cancer**



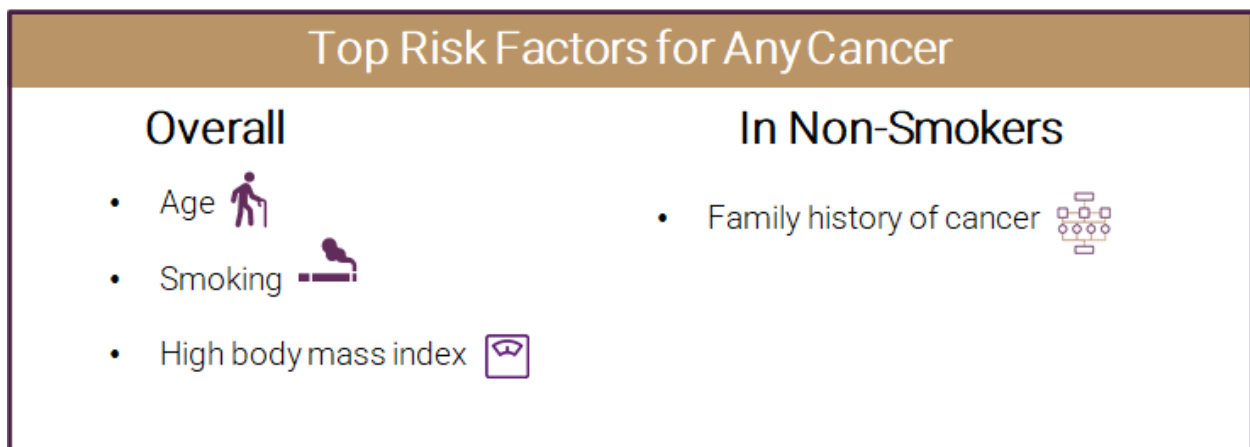
Participants were followed for 5 years to see if they developed cancer. More than 15,000 cancers were diagnosed during the studies. When age was not taken into account, smoking was the most important risk factor for any type of cancer (**Figure 2**). For participants who never smoked (or those who quit a long time ago), body mass index (BMI) and family history of cancer were the most important. Other risk factors for cancer in men were alcohol use, family history of cancer, eating red meat, and lack of exercise. Risk factors in women were also family history of cancer and lack of exercise. But women had more risk factors, including high BMI, type 2 diabetes, not giving birth, and high blood pressure.

One way that researchers measure to what *extent* factors put someone at risk of developing cancer is by looking at “absolute risk”. Absolute risk tells researchers how likely it is

that someone who doesn't have cancer will develop cancer over a certain amount of time. Researchers found that in participants older than 50, the absolute risk of getting any type of cancer within the next 5 years was at least 2%. This means that 2 out of 100 people over the age of 50 will develop cancer within 5 years. In addition, absolute risk was at least 2% in almost all men aged 45-49 who smoked and almost all women aged 35-49 who had certain risk factors such as smoking. In men younger than 50, cancer risk was highest in smokers who had other risk factors such as heavy drinking, family history of cancer, and limited physical activity. In women under 50, smokers with various additional risk factors also had the highest absolute risk. Even in women who never smoked or quit at least 30 years ago, BMI, family history of cancer, and number of births were most strongly associated with cancer risk. High BMI and a family history of cancer increased risk in both men and women who never smoked (or quit a long time ago).

Overall, the two biggest risk factors for developing any cancer were advanced age followed by smoking (**Figure 2**). These findings are important for identifying patients who would benefit the most from taking the multi-cancer early detection test.

**Figure 2. Risk Factors for Any Cancer**



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