



Lung Cancer Risk Factors

- 1. Smoking** (tobacco, pipe smoking, marijuana, e-cigarettes)
- 2. Radon** (Radon is an invisible, odorless, tasteless radioactive gas that occurs naturally in soil and rocks)
- 3. Asbestos** (Asbestos is a mineral fiber that has been used in the manufacturing of many products for decades, including insulation and tiles)
- 4. Secondhand Smoke** (Regular exposure to smoke from other people's tobacco use can increase lung cancer risk 20-30% compared to those not exposed)
- 5. Military service** (Smoking rates for those in the military are higher than in the general population, but past and present military service also increases the risk for developing lung cancer due to several occupational agents that may increase their future risk)
- 6. Age** (10% of lung cancer cases occur in people younger than 50 years old)
- 7. Environmental exposure, industrial chemicals**
- 8. Beta carotene** (It is important to note that foods containing beta-carotene are thought to decrease risk for developing lung cancer, as is increasing fruit consumption)
- 9. Health-related issues**
- 10. Family History**

Nearly 20% of lung cancer in women occurs in non-smokers, compared to just 2 to 6% in men (North CM, 2013)

Women who have never smoked are two and a half times more likely to get lung adenocarcinoma than men who never smoked (Patel, 2005). This incidence is amplified among Asian women for whom non-smoking-related lung cancers are 1.5 to 2 times more likely than for women in other ethnic groups (DeRouen MC, 2022)

Sex differences in smoking-related lung cancer also exist – women who smoke are at increased susceptibility to developing lung cancer compared to men (Sung H, 2021)

The molecular profile of women's lung cancer is distinct from men's, which can in part, explain some of the differences in susceptibility and incidence and contribute to lung cancer that develops differently in women and men. For example:

- The mutation profile of lung tumors differs between women and men, with the frequency of EGFR and KRAS mutations being higher in women (Florez N, 2024).
- Women differentially express CYP450 proteins that are responsible for metabolizing carcinogens and are more likely to have null mutations in genes that encode enzymes to detoxify environmental toxins, making their DNA more susceptible to toxic damage (He Q, 2018; Kobayashi Y, 1994).
- Female hormones are inhibitors of some carcinogen metabolizing enzymes, further compounding the potential role for sex differences in mediating lung cancer risk (Chlebowski RT & Investigators, 2009; Fuentes N, 2021).
- Additionally, sex differences in DNA repair capacity could contribute to increased risk of lung cancer in women (Ryberg D, 1994).