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Smoking and Breast Cancer

For breast cancer patients, it is never too late to quit smoking



After being told they have breast cancer, many female smokers say “what the hell” and continue to smoke, figuring they have nothing more to lose. A 2016 study found that’s not true—that quitting is advantageous even after such a dire diagnosis. The study included more than 20,600 women with breast cancer. Those who quit had a **33%** lower mortality rate from breast cancer than those who kept smoking.

After breast cancer diagnosis, many survivors may be motivated to make behavioural and lifestyle changes if they believe it will help improve prognosis, quality of life, and survival. For the approximately 12% of women in Victoria who are smokers at the time of breast cancer diagnosis, smoking cessation is one important behavioural change that may improve survival after breast cancer.

Cigarette smokers have about a **10%** increased risk of developing breast cancer over never smokers, albeit far from the 600% to 800%, or more, increased risk for cancers of organs in direct contact with carcinogens in smoke such as lung, head and neck and others.

A 2017 study looked at data pooled from 14 different cohort studies and found that:

- The overall association of smoking with breast cancer was modest.
- Smoking for more than 10 years before the birth of a first child carried a high risk of breast cancer.
- Smoking 40 or more cigarettes per day was associated with the highest risk of breast cancer.
- Drinking alcohol can have a compounding effect on breast cancer risk, particularly when heavy drinking is combined with smoking a large number of cigarettes or smoking for many years.

Research also has shown that there may be link between very heavy second-hand smoke exposure and breast cancer risk in postmenopausal women.

When advising patients with newly diagnosed breast cancer on their smoking habits, breast surgeons advise against it on the basis of the increase in surgery related complications (See **Smoking and Breast Surgery Complications**) and mortality seen in the general population. Recent studies of breast cancer survivors however find that a surprisingly low number of breast cancer patients quit or reduce smoking after diagnosis.

About one-third of women with breast cancer who smoke, successfully quit within two years following diagnosis. While this exceeds the proportion of cancer-free women who quit during the same period, it still falls short of quit rates reported for patients with lung and head and neck cancers.

Over 60% of smokers diagnosed with cancer continue to light up even after they learn they have the disease. Many are so stressed about the cancer and its treatment that they continue to use cigarettes as a crutch. Still more are nihilistic, figuring, “Hey, I’ve already got cancer, what does it matter?”

There are a host of reasons why smoking cessation is even more important after a cancer diagnosis. Stopping tobacco use after diagnosis offers many physical and mental benefits. First, there’s the possibility of living longer, but there’s also a better chance of successful treatment, fewer and less serious side effects from every kind of treatment — surgery, chemo, radiation, — and faster recovery from treatment, too.

Smoking also can increase complications from breast cancer treatment, including:

- difficulty healing after breast surgery and breast reconstruction
- damage to the lungs from radiation therapy
- higher risk of blood clots when taking hormonal therapy medicines

For established smoking-related malignancies, continued smoking after diagnosis is associated with increased risk of disease progression and death.

- In a large prospective study of breast cancer survivors, recent prediagnostic cigarette smokers were **25%** more likely to die of breast cancer than were those who never smoked.
- Although not statistically significant, the women who quit smoking after their breast cancer diagnosis had **33%** lower risk of death as a result of breast cancer than did women who continued to smoke after diagnosis.
- Postdiagnosis quitters had a **9%** lower risk of death as a result of all causes than postdiagnosis smokers; this difference included a statistically significant **60%** lower risk of death from respiratory cancer and a **20%** lower risk of death as a result of cardiovascular disease.



A large systematic review and meta-analysis found a **28%** increase in breast cancer-associated mortality in those who were current smokers compared to never smokers. The mortality in former smokers was equal to the one found in never smokers. This indicates that breast cancer patients ceasing to smoke can lower their risk of dying from their breast cancer disease dramatically, and possibly regain the risk of a never smoker.

In a population-based study of women diagnosed with first primary breast cancer, at-diagnosis smoking was associated with a 69% increase in the risk of long-term all-cause, but not breast cancer-specific, mortality. Among women who continued smoking after breast cancer, the risk of all-cause mortality was elevated 130%.

The study found that continuing to smoke after breast cancer results in poorer overall survival relative to women who quit upon receiving their diagnosis. The increased risk of death from any cause for continued smokers should not come as a surprise given the litany of recognized adverse outcomes of smoking, including increased risk of wound infections from mastectomy and breast conserving surgery, respiratory and cardiovascular comorbidities, second primary malignancies, and poorer overall quality of life. Smokers are more likely to have treatment-related complications, such as toxic effects on the heart, and may need to stop treatment earlier than intended. A disease-specific association, on the other hand, may be indicative of more direct effects on tumour burden, including potentially poorer response to endocrine therapy.

Among breast cancer survivors, persistent cigarette smoking is associated with adverse health outcomes. Smokers are known to have lower rates of mammographic screening, which suggested that they might be diagnosed with higher-stage disease, which could explain a worse prognosis. Smokers are more likely to have developed comorbidities that affected longevity; some also receive less than recommended doses of cancer treatments, including adjuvant endocrine therapies for patients with hormone receptor-positive disease.



Cancer therapies can take a toll on your body. Smoking has been shown to increase the severity and duration of many common side effects, even after treatment is finished. According to a 2011 study (10), people who continued smoking six months after the completion of therapy have a greater likelihood of severe symptoms compared to their non-smoking counterparts.

These include:

- **Concentration problems:** 2.46-fold increased risk
- **Depression:** 2.93-fold increased risk
- **Fatigue:** 2.9-fold increased risk
- **Hair Loss:** 2.53-fold increased risk
- **Memory problems:** 2.45-fold increased risk
- **Pain:** 1.91-fold increased risk
- **Skin problems:** 3.3-fold increased risk
- **Sleep problems:** 3.1-fold increased risk

The researchers concluded that participants who quit had significant and sometimes profound improvements in symptom severity scores, highlighting the importance of smoking cessation in restoring health and quality of life after cancer treatment.



Successful promotion of smoking cessation among these patients could lead to a significant, additive benefit to the established benefits of adjuvant chemotherapy, adjuvant endocrine therapy, and postmastectomy radiation therapy and that it may be as important as, or more important than, any other survivorship recommendations. Additionally, smoking cessation in these patients may mitigate surgical complications and avoid much of the excess risk of secondary lung cancer and heart disease seen in patients with breast cancer who smoke and who undergo curative intent radiation.

Reasons why approximately half of medical oncologists have not aggressively promoted smoking cessation include the following: unclear evidence of benefit; lack of time; priority of primary treatment; and inadequate training and expertise, especially when patients exhibit high psychological stress and depression.