

Is Using Metformin for Cancer Helpful and Safe?

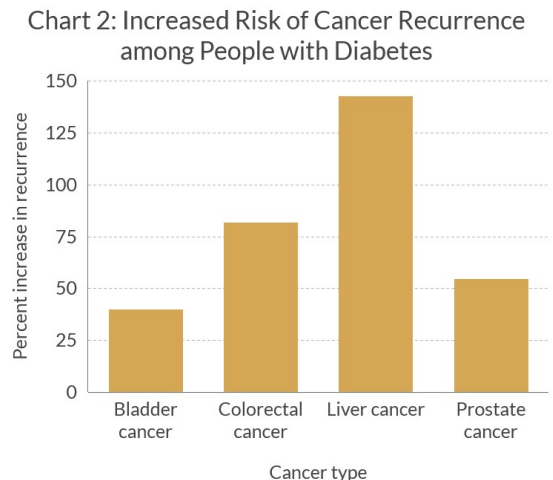
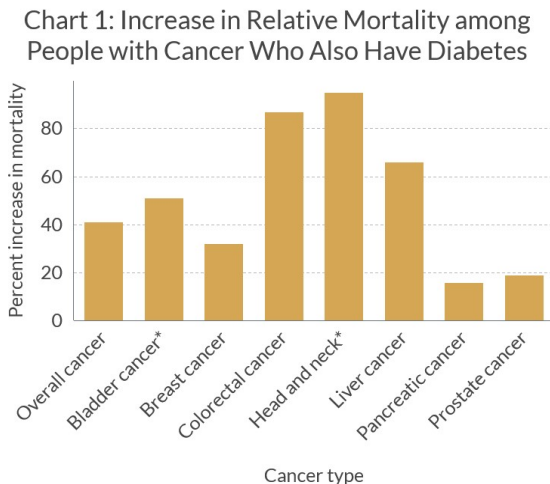


Healing with conventional & complementary care

www.cancerchoices.org

Metformin is a drug the FDA approved to lower blood sugar. Researchers have looked at whether or not metformin might help to reduce the risk of getting cancer or improve outcomes in people who have cancer. Using a drug for something other than the original FDA approval is called “off-label” use.

Research shows that people with diabetes are at increased risk of cancer. They also have higher risk of cancer returning (recurrence) or shorter average survival (higher mortality) with cancer.



*Cancer-specific survival; all others are overall survival

Metformin is seen as a good option for managing diabetes, so it makes sense that metformin might help people with diabetes or metabolic imbalances who are at risk for cancer or have cancer.

Studies have found conflicting results about the benefits of using metformin in cancer care. Metformin use is also accompanied by some serious side effects of concern among people with cancer or receiving cancer treatments:

- Some chemotherapy drugs may become too strong and cause serious side effects (increased toxicity).
- People may develop gastrointestinal symptoms—such as diarrhea, bloating, or heartburn—or too few red blood cells (anemia), or hormone imbalances.

When does using metformin help people with cancer?

After reviewing hundreds of studies, researchers at CancerChoices found that metformin’s effects on cancer outcomes depend on whether or not the person with cancer has diabetes or other metabolic imbalances.

People with diabetes or metabolic imbalances

For many cancer types and for cancer as a whole:

- For people with diabetes or metabolic imbalances, most evidence shows a survival advantage or a bigger anticancer response from using metformin.
- For people with **advanced cancer** and diabetes, **no** evidence shows a survival benefit from using metformin.
- The clearest evidence of benefit to date in lowering the risk of recurrence is for these cancer types: bladder, cervical, colorectal, endometrial, head and neck, liver, ovarian, and prostate.

People without diabetes or metabolic imbalances

Studies comparing nondiabetic people with cancer using metformin to nondiabetic people with cancer not using metformin found a different pattern:

- The evidence is less clear but leans toward **no** advantage in survival or anticancer response from using metformin.
- Only limited evidence is available but does **not** show that metformin provides any advantage for reducing recurrence risk.

Chart 3: Evidence of Benefit in Cancer Response or Survival from Using Metformin

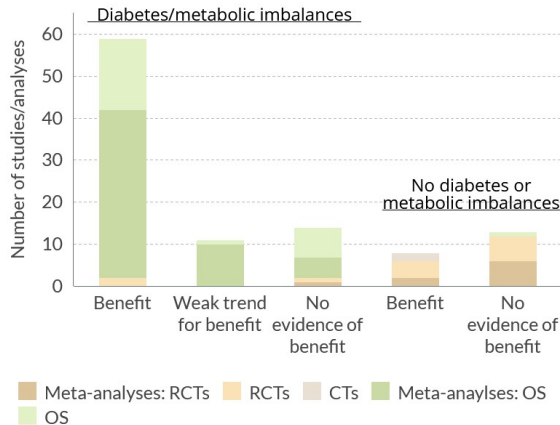
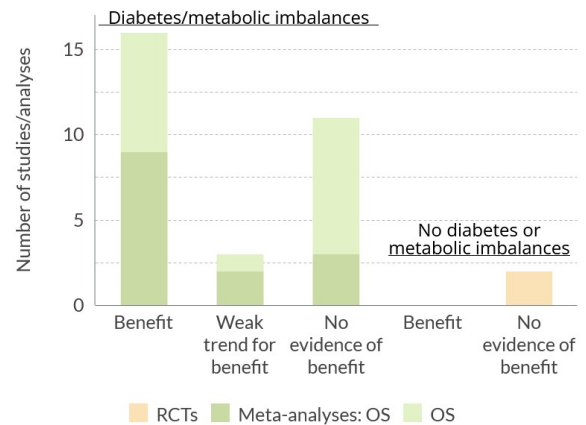


Chart 4: Evidence of Benefit in Cancer Recurrence from Using Metformin



RCT = randomized controlled trial, CT = controlled trial, OS = observational study

Benefit ($p \leq 0.05$), Weak trend ($p < \text{about } 0.1 \text{ but } > 0.05$), No evidence of an effect ($p > \text{about } 0.1$)

Some evidence also shows worse outcomes with some cancer types among people **without** diabetes/metabolic imbalances using metformin:

- Higher markers of cancer cells (breast cancer)
- Higher mortality (liver cancer)
- Higher rates of negative events including treatment failure, disease progression, and mortality among people treated with platinum-based chemotherapy and chest radiotherapy (advanced non-small cell lung cancer)

Conclusions

Substantial research shows that metformin use among people with diabetes or other metabolic imbalances may improve survival and anticancer responses, and use may lower risk of recurrence for some types of cancer.

The balance of research shows that using metformin provides **no** advantage for people **without diabetes or other metabolic imbalances**, and it may even lead to worse cancer outcomes.

Using metformin for reducing cancer risk or for treating cancer is not a one-size fits-all consideration. You and your doctor need to weigh the risks and benefits in your situation to determine if using metformin is appropriate as part of your anticancer plan.

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