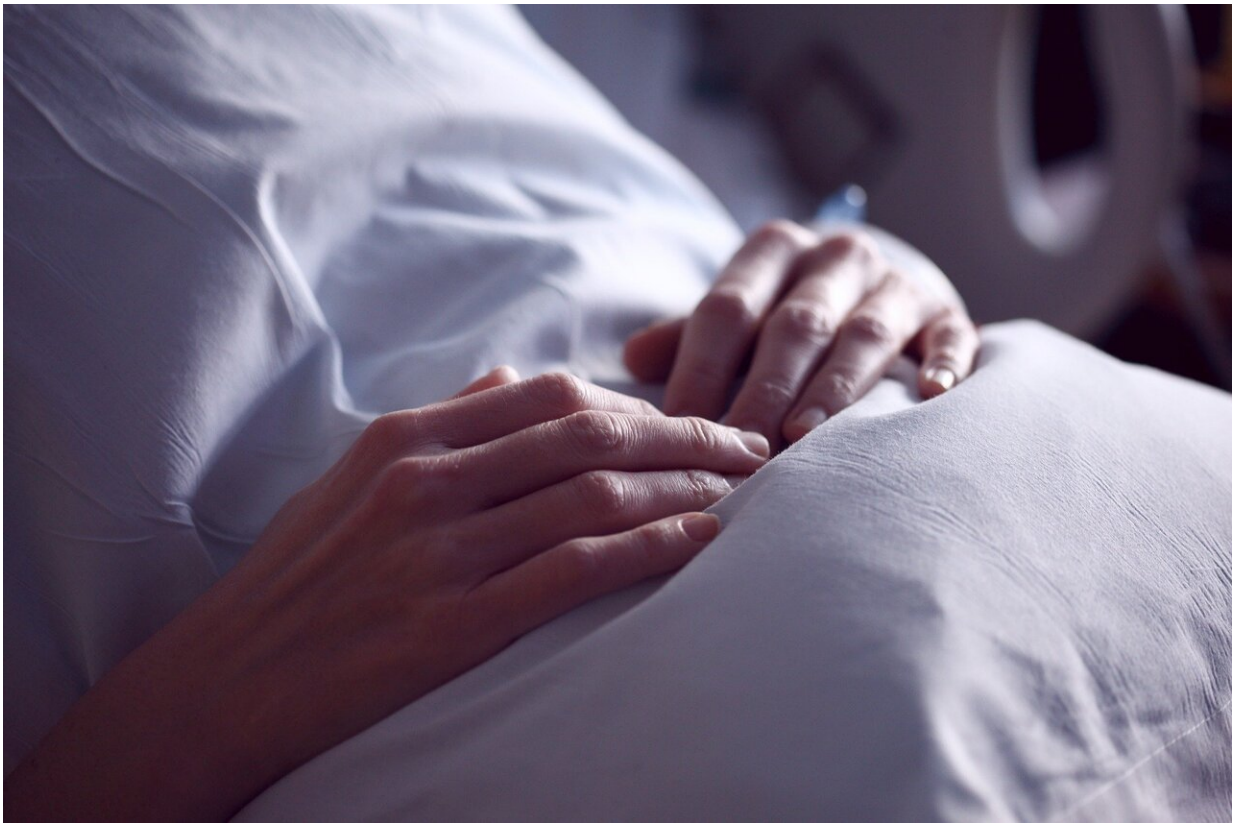


# Potential ways to improve survival for cancer patients who receive fragmented care

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Credit: CC0 Public Domain

New research reveals that 28 percent of patients who are readmitted to the hospital with complications after surgical removal of pancreatic, liver, or stomach cancer go to a different hospital for follow-up care.

This fragmentation of health care is associated with a 50 percent increased odds of dying, according to a study published online by the *Journal of the American College of Surgeons* ahead of print.

The researchers from Washington University School of Medicine, St. Louis, sought to identify patient and hospital characteristics that raise the [death risk](#) during readmission to an outside hospital—one other than the original hospital where the operation was performed, referred to as the *index hospital*. Using the state inpatient databases from the federal Healthcare Cost and Utilization Project, the investigators evaluated data from adults undergoing [surgical removal](#) of liver, pancreatic, bile duct, and gastric cancers beginning in 2006. Patients lived in California, Florida, or New York.

A total of 31,256 [patients](#) were discharged from the hospital postoperatively, and 7,536, or 24 percent, were readmitted to any hospital in the first three months after discharge. Among readmitted patients, 28 percent, or 2,123, went to an outside hospital. As in prior research, the study findings showed a higher death rate for those patients versus patients returning to the index hospital: 8 percent versus 5.4 percent.

## **Centralized cancer care not always aligned with readmissions**

Most operations to remove liver, pancreatic, bile duct or stomach cancers take place at regional medical centers where [surgical teams](#) perform a large volume of these complex procedures. These operations have high rates of complications and readmissions, and large surgical volume is associated with improved outcomes.

"This centralization of cancer surgical care means many patients travel

great distances to undergo their operations and therefore may need to present instead to a hospital closer to home if they experience complications. That hospital may not have access to the patient's surgical records or even the specialists to care for patients with such complex medical problems," said the study's lead investigator, David G. Brauer, MD, MPHS. "Patients who experience this type of care fragmentation die more often than patients who don't experience care fragmentation. Convenience of care should not come at the expense of getting the appropriate care."

### **Readmission risk factors**

The researchers identified the following [risk factors](#) for readmission to an outside hospital:

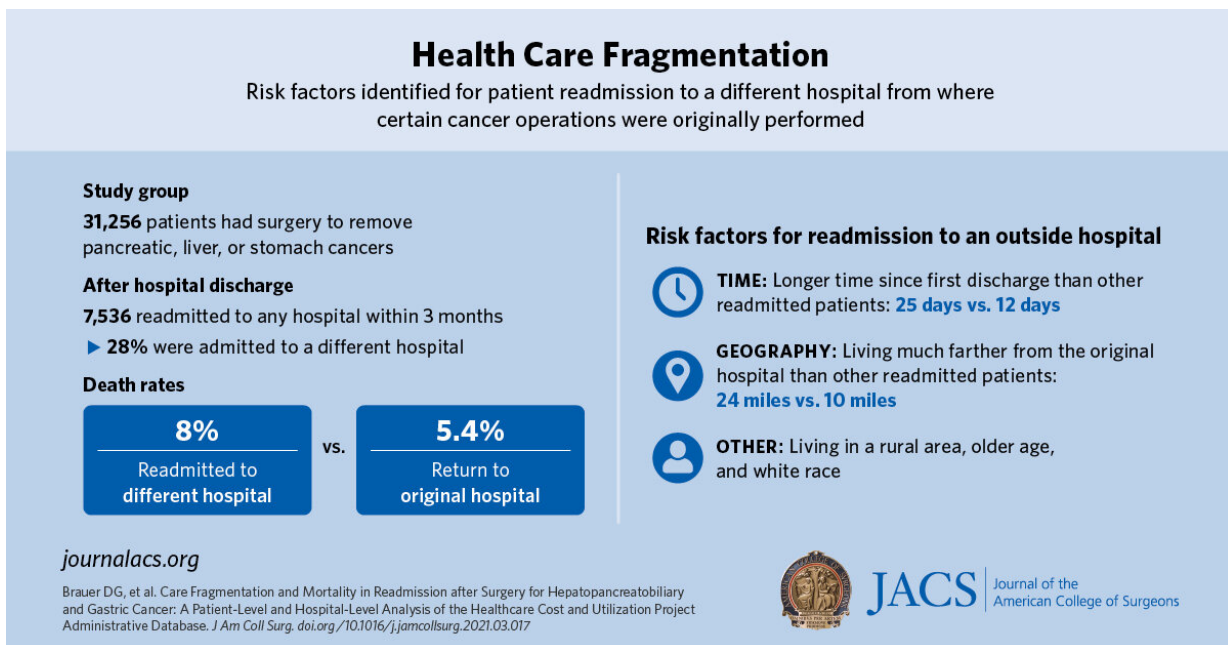
- Longer time since the first discharge: a median, or middle value, of 25 days versus 12 days for patients readmitted to the index hospital
- Living much farther from the index hospital than other readmitted patients: 24 miles versus 10 miles
- Living in a rural area, older age, and white race

### **Ways to address fragmented care**

Based on identified risk factors from this study, Dr. Brauer recommended the following ways to reduce care fragmentation for these patients:

- Index hospitals should identify patients who have the "clear" risk factors found in this study, such as living far away and older age, and should determine safe sites of care for hospital readmission.
- Surgeons might consider more frequent follow-up and telehealth visits with at-risk patients.

- At-risk patients should ask their surgeons where they should go if they have a complication.
- When patients choose an outside hospital for readmission, they should ask the treating physicians to communicate with their surgeons.
- If there is any concern regarding the patient, the readmission hospital should divert care back to the surgeon or another higher-acuity hospital.



Risk factors identified for patient readmission to a different hospital from where certain cancer operations were originally performed Credit: American College of Surgeons

## Care fragmentation is complex

The investigators noted finding characteristics of readmission hospitals

that resulted in fewer in-hospital deaths, even at outside hospitals. These factors included teaching hospitals and hospitals that performed at least 100 of these cancer operations annually. However, Dr. Brauer said multivariable statistical analyses found no significant mortality association with these hospital characteristics, indicating the reasons for care fragmentation are complex.

In addition, Dr. Brauer noted geographical distance was a barrier to care access. However, neither greater distance from the index hospital nor longer time between discharge and readmission had an association with more deaths, suggesting other factors contributed to the mortality difference at outside hospitals. "Our analysis shows that returning to the original surgeon and hospital to manage complications, while preferable, may not always be an absolute necessity," Dr. Brauer said.

He concluded: "There is a suggestion that certain [hospital](#)-level characteristics, such as high surgical volume, may make an outside facility safer for postoperative [readmission](#) care. It also depends on the specifics of the patient and severity of postoperative complication, barriers to access care, and the treating physicians, including their familiarity with the patient's cancer operation."

Dr. Brauer led the research team while a surgical resident at Washington University School of Medicine, St. Louis. He is now a clinical fellow in surgical oncology at Memorial Sloan-Kettering Cancer Center, New York City. Other study authors are Ningying Wu, Ph.D.; Matthew R. Keller, MS; Sarah A. Humble, MS; Ryan C. Fields, MD, FACS; Chet W. Hammill, MD, MCR, FACS; William G. Hawkins, MD, FACS; Graham A. Colditz, MD, DrPH; and Dominic E. Sanford, MD, MPHS, all from Washington University School of Medicine, St. Louis.

**More information:** David G. Brauer et al. Care Fragmentation and Mortality in Readmission after Surgery for Hepatopancreatobiliary and

Gastric Cancer: A Patient-Level and Hospital-Level Analysis of the Healthcare Cost and Utilization Project Administrative Database.

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