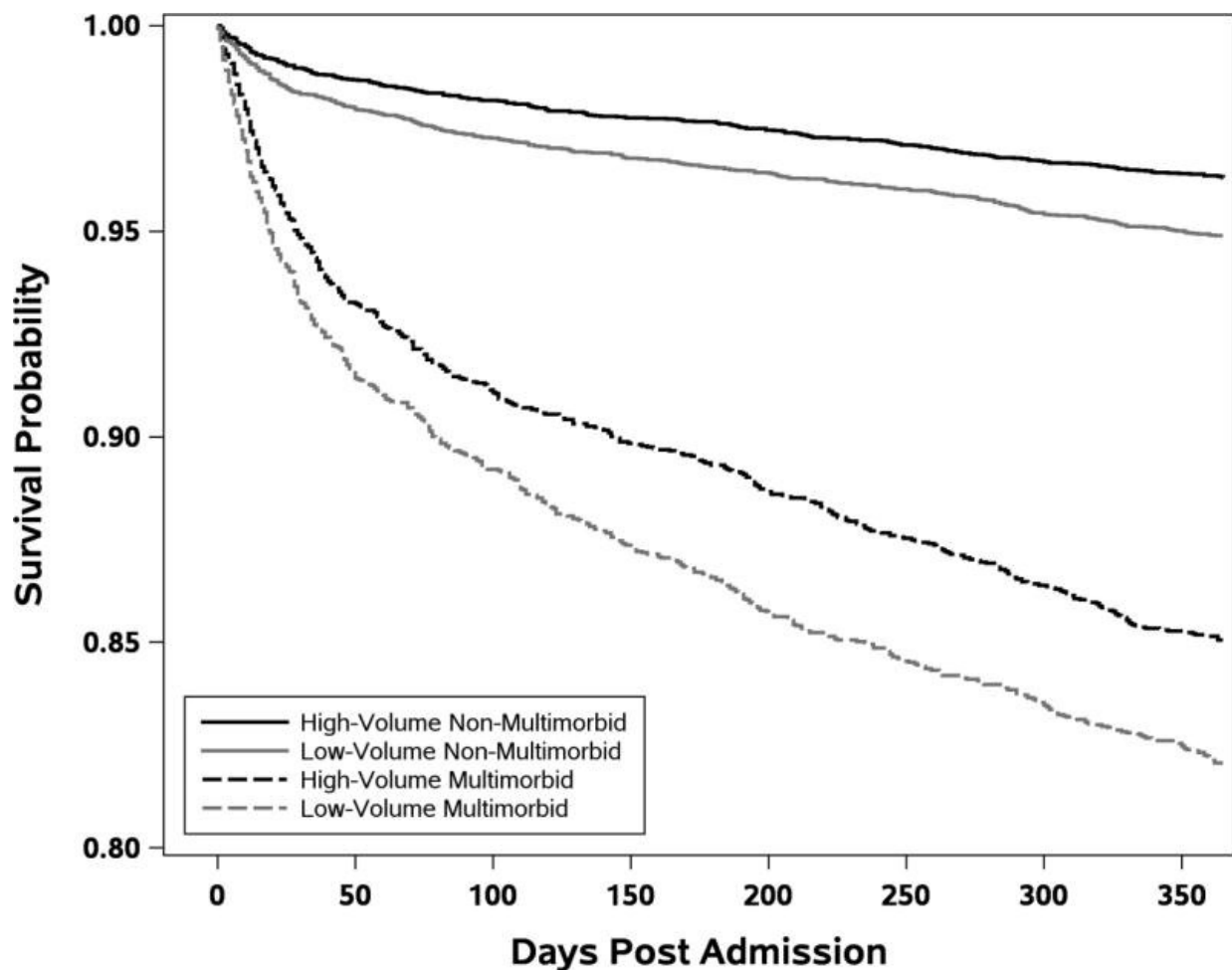


New definitions of multimorbidity may improve clinical decision-making for older surgical patients

March 15 2023



Kaplan-Meier Plots of Survival after Admission in Multimorbid and Non-Multimorbid Matched General Surgery Patients in Low-Volume and High-Volume Hospitals Each matched pair contained one patient from a high-volume

hospital and one from a low-volume hospital (N=3,151 MM pairs and N=6,387 non-MM pairs), matched exactly on 135 principal procedures and whether or not the patient was multimorbid, and further matched on risk of mortality on admission, a propensity score for admission to a low-volume hospital, demographics, admission type, 29 comorbidities, and 113 individual qualifying comorbidity sets. Credit: *Journal of the American College of Surgeons* (2023). DOI: 10.1097/XCS.0000000000000659

A new way to identify more specific, higher-risk groups of older surgical patients can help in clinical decision-making and accurately comparing the performance of one hospital to another, according to research published in the *Journal of the American College of Surgeons*.

Multimorbidity in [surgical patients](#) is defined as multiple comorbidities or [chronic conditions](#) that are common and associated with worse postoperative outcomes. Conventional multimorbidity definitions offer limited clinical usefulness because they label the vast majority of older patients as "multimorbid," do not specify which comorbidities are contributing to the risk, and do not incorporate the patient's functional status.

The new study developed and validated better surgical, specialty-specific, multimorbidity definitions based on distinct comorbidity combinations for older inpatient general, orthopedic, and vascular [surgery](#) patients. The new definitions were able to specify high-risk comorbidity combinations that contribute to patient risk while also addressing patients' functional status, said the study's lead author Omar I. Ramadan, MD, MSc, a general surgery resident at the University of Pennsylvania Perelman School of Medicine in Philadelphia.

"Ultimately, our multimorbidity methodology is a powerful way to assess risk and it's easy to apply because it uses administrative datasets," Dr.

Ramadan said.

Multimorbidity definitions

Using Medicare administrative claims data, the researchers analyzed patients aged 66-90 years undergoing either inpatient general, orthopedic, or vascular surgery procedures between 2016 and 2017 to develop the multimorbidity definitions. The researchers then analyzed patients between 2018 and 2019 to validate the definitions.

These patients were categorized into clinically relevant groups by ICD-10 principal procedure codes. In the development of the definitions for multimorbidity, the researchers did not include patients with metastatic cancer, Alzheimer's disease and related dementias, or who were 90 years or older.

These conditions are already associated with [high mortality rates](#) and patients with them would possibly have different goals of care if faced with severe postoperative complications. However, patients with these characteristics were studied using their new multimorbidity definitions.

The researchers defined multimorbidity as the presence of one or more qualifying comorbidity sets (QCSs). QCSs, in turn, were defined as combinations of one to three comorbidities that were associated with at least 2-fold (for general and orthopedic surgery patients) or 1.5-fold (for vascular surgery patients) greater risk of 30-day mortality compared to patients in the same age group undergoing the same procedure.

For further validation, the researchers tested whether patients with multimorbidity had different outcomes based on [hospital quality](#) since it is well established that higher-quality hospitals are associated with better outcomes for high-risk patients. The researchers defined higher-quality hospitals as those with a nursing skill mix and surgical, specialty-specific

patient volume above the median as well as resident-to-bed ratios (>0.25) characteristic of major or very major teaching hospitals.

Key study findings

Compared to conventional multimorbidity definitions, the new definitions labeled far fewer patients as multimorbid: for general surgery, the new definition identified 55.9% of the older population compared to 85.0% (conventional); for orthopedic surgery, 40.2% (new) versus 55.9% (conventional); and for vascular, 52.7% (new) versus 96.2% (conventional).

Thirty-day mortality was higher in the new definitions: general surgery, 5.64% (new) versus 3.96% (conventional); orthopedic surgery, 1.68% (new) versus 1.13% (conventional); and vascular, 7.00% (new) versus 4.43% (conventional). The researchers also found that higher-quality hospitals offered significantly greater mortality benefits than other hospitals for multimorbid versus non-multimorbid general and orthopedic, but not vascular, patients, in keeping with prior literature.

The study showed that the highest risk (30-day mortality) QCS for general surgery was home hospital bed or wheelchair use combined with thrombocytopenia and other hematological disorders; for [orthopedic surgery](#), protein-calorie malnutrition; and for vascular surgery, acute heart or respiratory failure.

"I was surprised at how profound the increases in mortality were for some of these QCSs," Dr. Ramadan said. "For example, in [general surgery](#), a patient who is wheelchair or hospital bed bound and has thrombocytopenia and other hematological disorders is 18 times more likely to die within 30 days than a patient who is not multimorbid undergoing the same procedure."

New definition could help patients, surgeons, and policymakers

The new multimorbidity definitions will help surgeons better explain the risks associated with any given procedure to patients and to make better care decisions, Dr. Ramadan said. For policymakers and hospital systems, the definitions offer a better way of benchmarking and accurately comparing the performance of one hospital to another, he also said.

Research using the new multimorbidity definitions is continuing in several areas, including how to use the definitions to compare hospital systems with each other, and how to use them to quickly assess a patient's risk for any given surgical procedure, Dr. Ramadan said.

More information: Omar I Ramadan et al, Redefining Multimorbidity in Older Surgical Patients, *Journal of the American College of Surgeons* (2023). [DOI: 10.1097/XCS.0000000000000659](https://doi.org/10.1097/XCS.0000000000000659)

Provided by American College of Surgeons

Citation: New definitions of multimorbidity may improve clinical decision-making for older surgical patients (2023, March 15) retrieved 25 April 2024 from <https://medicalxpress.com/news/2023-03-definitions-multimorbidity-clinical-decision-making-older.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.