LEAPFROG HOSPITAL SURVEY

Factsheet: Inpatient Surgery

Section Overview

The inpatient surgery section of the Leapfrog Hospital Survey was introduced in 2017. The eleven procedures that hospitals are asked to report on in this section are those that have a strong, evidence-based relationship between volume and patient outcomes. In addition to understanding hospital and surgeon experience, the section also assesses whether hospitals have processes in place to ensure surgery is only being performed on patients who meet evidence-based, hospital-defined criteria.

Why is Surgical Volume Important?

Three decades of research have consistently demonstrated that patients that have their high-risk surgery at a hospital and by a surgeon that have more experience with the procedure have better outcomes, including lower mortality rates, lower complication rates, and a shorter length of stay than for patients who have their surgery done at a hospital or by a surgeon with less experience.[1-27] A recent study of cancer surgeries by the California Health Care Foundation further points to the relationship between very low volumes of cancer surgeries and poor patient outcomes.[28] The study concluded that there is an association between low hospital surgery volume and higher mortality and complication rates for the following cancers: bladder, brain, breast, colon, esophagus, liver, lung, pancreas, prostate, rectum, and stomach. The study also found that the majority of California's hospitals performed surgery for one or more of these 11 cancers only once or twice in 2014. Of cancer patients who had surgery at a hospital that did a small number of those surgeries in 2014, more than 70% were within 50 miles of a hospital performing higher volumes. Furthermore, a study of the relationship between surgeon volume and outcomes for eight cardiovascular procedures and cancer resections showed that surgeon volume was significantly related to operative mortality for all eight procedures studied.[29] The adjusted odds ratios for operative death among patients of low-volume surgeons as compared with patients of high-volume surgeons were as high as 3.61.

Lower surgical mortality at high-volume hospitals does not simply reflect more skillful surgeons and fewer technical errors with the procedure itself. More likely, it reflects more proficiency with all aspects of care underlying successful surgery, including patient selection, anesthesia, and postoperative care.[30]

Why is Surgical Appropriateness Important?

Given that Leapfrog is using surgical volume as a proxy measure for quality, there could be possible concern about incentivizing hospitals to perform unnecessary surgery. As a way to balance this concern, Leapfrog wants to understand what hospitals are doing internally to ensure that surgery is only being performed when it is needed. For certain surgical procedures, there is evidence of hospitals overusing surgery as a treatment option.

Surgical Volume and Appropriateness

Based on the research by Dartmouth-Hitchcock Medical Center, Michigan Medicine, and Johns Hopkins Medicine, as well as guidance from Leapfrog's National Surgical Volume Expert Panel, Leapfrog has identified eleven high-risk procedures for which there is a strong volume-outcome relationship. The procedures are:

- Bariatric surgery for weight loss
- Esophageal resection for cancer
- Lung resection for cancer
- Pancreatic resection for cancer
- Rectal cancer surgery
- Carotid endarterectomy
- Open aortic procedures
- Mitral valve repair and replacement
- Norwood procedure
- Total knee replacement
- Total hip replacement

For each procedure, hospitals are asked to report on their total hospital volume over a 12-month period or their annual average over a 24-month period. To achieve Leapfrog's Surgical Volume Standard for a procedure, a hospital must meet the established minimum volume for the listed high-risk procedures that the hospital electively performs.

Additionally, Leapfrog asks hospitals about whether their privileging process for surgeons requires that the surgeon meet or exceed the minimum surgeon volume

standards established for each of the eleven high-risk procedures.

The procedures and their corresponding minimum hospital volumes and minimum surgeon volumes for credentialing are shown in the table below.

Procedure	Average Annual Hospital Volume	Minimum Annual Surgeon Volume for Credentialing
Bariatric surgery for weight loss	50	20
Esophageal resection for cancer	20	7
Lung resection for cancer	40	15
Pancreatic resection for cancer	20	10
Rectal cancer surgery	16	6
Carotid endarterectomy	20	10
Open aortic procedures	10	7
Mitral valve repair and replacement	40	20
Norwood procedure*	8	5
Total knee replacement*	50	25
Total hip replacement*	50	25

*New in 2020. Information will not be scored or publicly reported.

This section asks hospitals about their progress in developing surgical appropriateness criteria for six high-risk procedures (carotid endarterectomy, mitral valve repair and replacement, open aortic procedures, bariatric surgery for weight loss, total knee replacement, and total hip replacement) based on published guidelines and input from local surgeons, supporting and monitoring adherence to those criteria, as well as communicating with surgeons, hospital leaders, and board members about adherence to the criteria. This section also asks hospitals about their use of a multidisciplinary tumor board to review the surgical appropriateness for four cancer surgeries (lung resection for cancer, pancreatic resection for cancer, esophageal resection for cancer, and rectal cancer surgery). This subsection on surgical appropriateness will be publicly reported, but not scored against a standard in 2020.

Why Purchasers Need to Get Involved

Because lower volumes of high-risk surgeries have been tied to poorer surgical outcomes, such as increased rates of mortality and complications, purchasers can help save thousands of patients' lives by guiding them to hospitals and surgeons that meet or exceed the outlined surgical volume standards. Furthermore, surgical complications are costly mistakes. Not only do surgical complications increase the cost of surgery they also increase the risk of costly readmissions. Research has shown that hospitals that have very low volumes for particular surgical procedures place patients at a significantly higher risk of death or unplanned readmission. To avoid the risk of increased costs due to surgical complications and readmissions, purchasers should be encouraging patients to seek their surgeries at hospitals and by surgeons that have met or exceeded minimum volume standards.

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For a comprehensive list of references please review the Hospital and Surgeon Volume Bibliography, available here: https://www.leapfroggroup.org/ratings-reports/inpatient-surgery.