

Final Updates to the Leapfrog Hospital Safety Grade Methodology for Spring 2022 and Fall 2022

On November 15, 2021, Leapfrog published planned updates to the Hospital Safety Grade methodology and held a public comment period through December 9, 2021. We thank commenters for their insightful feedback and suggestions that helped us finalize the methodology. This document includes responses to the comments received and summarizes the final changes that will be made to the scoring methodology effective with the spring 2022 Hospital Safety Grade. In addition, this document includes the spring 2022 Leapfrog Hospital Safety Grade measures, reporting periods, and data sources in [Appendix A](#).

Responses to Public Comments

Commenters expressed support for scoring all four performance categories for the Hand Hygiene measure beginning with the fall 2022 Safety Grade.

The exact point values assigned to each performance category will be determined following a review of the distribution of Survey Results published in July 2022.

Commenters shared concerns about the time and resources needed to achieve Leapfrog’s Hand Hygiene standard.

Leapfrog published proposed changes to the 2022 Leapfrog Hospital Survey and held a 30-day public comment period in November 2021. In response to the public comments received, Leapfrog is reviewing the scoring algorithm for the Hand Hygiene standard on the 2022 Leapfrog Hospital Survey. The Summary of Changes to the 2022 Leapfrog Hospital Survey will be published in early March and will outline modifications, if any, to the Hand Hygiene scoring algorithm.

Leapfrog received strong support for the proposed change to the imputation model, which will now assign the lower of two possible cohort scores to hospitals that don’t respond to the Leapfrog Hospital Survey. One commenter noted that even with the change, non-reporting hospitals still benefit from the strong performance of reporting hospitals and that those hospitals with imputed scores should not be able to receive an A grade. Similarly, another commenter suggested imputing the bottom quartile score for each cohort rather than the mean.

Leapfrog’s goal is to offer the public the most accurate information on hospital safety, information that we would want our own families to have. When hospitals decline to provide key data, Leapfrog imputes scores using a methodology designed to estimate their performance as accurately as possible. The Hospital Safety Grade imputation model was developed with guidance from Mathematica and Leapfrog’s national expert panel. Several different options for imputation were tested for both validity and reliability. Using the mean performance, rather than the bottom quartile or decile, produced the strongest agreement between predicted and actual scores, meaning the use of the mean most accurately resembled the actual performance we could expect if hospitals were to report to the Leapfrog Hospital Survey. Leapfrog will continue to test and re-test imputation models and refine the current model as appropriate, again with the goal of ensuring the Hospital Safety Grades are a reliable and accurate reflection of hospital safety.

One commenter expressed concern that the inclusion of both PSI-8 (In-hospital fall with hip fracture rate) and the “falls and trauma” measure leads to redundancy in the calculation of the Hospital Safety Grades.

Based on an analysis of our technical experts, overlap between these two measures is minimal. PSI-8 focuses on a very narrow subset of patients: Medicare Fee-for-Service patients who had a post-operative hip fracture. The falls and trauma measure includes a broader patient population: Medicare Fee-for-Service patients who had one of many different types of falls with injury.

Summary of Final Methodology Changes

1. Hand Hygiene measure from the Leapfrog Hospital Survey

Spring 2022: Maintaining scoring for the Hand Hygiene measure from Fall 2021

For spring 2022, Leapfrog will maintain the scoring for the Hand Hygiene measure from the Leapfrog Hospital Survey that was used in the fall 2021 Hospital Safety Grade. This means that hospitals achieving the top two performance categories on the 2021 Hospital Survey (Achieved the Standard or Considerable Achievement) will receive 100 points and hospitals achieving the bottom two performance categories (Some Achievement or Limited Achievement) will not have the Hand Hygiene measure used to calculate the spring 2022 Safety Grade. Instead, the standard weight assigned to the Hand Hygiene measure in the Hospital Safety Grade methodology will be redistributed to the other measures in the Process/Structural Measure Domain and the measure will be reported as “Not Available.”

For hospitals that declined to respond to the 2021 Leapfrog Hospital Survey, the standard weight assigned to the Hand Hygiene measure in the Hospital Safety Grade methodology will be redistributed to the other measures in the Process/Structural Measure Domain and the measure will be reported as “Declined to Report.” More information is available in the fall 2021 [Hospital Safety Grade Scoring Methodology](#).

Fall 2022: Update to scoring for the Hand Hygiene measure

Beginning with the fall 2022 Hospital Safety Grade, a numerical score will be assigned to each of the four performance categories from the 2022 Leapfrog Hospital Survey for the Hand Hygiene measure. Leapfrog originally proposed to assign 100 points to hospitals that Achieved the Standard (4-filled bars), 70 points to hospitals that earned Considerable Achievement (3-filled bars), 40 points for hospitals that earned Some Achievement (2-filled bars) and 15 points for hospitals that earned Limited Achievement (1-filled bar). However, Leapfrog has decided to withhold assigning points to each of the four performance categories on the 2022 Leapfrog Hospital Survey for the Hand Hygiene measure until we review the distribution of performance categories following the publication of 2022 Leapfrog Hospital Survey Results in July.

For hospitals that decline to respond to the 2022 Leapfrog Hospital Survey and are therefore publicly reported as “Declined to Respond” for the Hand Hygiene measure on Leapfrog’s [Survey Results website](#), Leapfrog will assign a score for the Hand Hygiene measure using a two-step imputation methodology as follows:

Step 1: Use a hospital’s most recent score on the measure

If the hospital has a score in the Hospital Safety Grade for the Hand Hygiene measure in the previous four rounds of grades (i.e., spring 2022, fall 2021, spring 2021, or fall 2020), the hospital is assigned the most recent score on that measure. If the hospital was assigned “Not Available” or the hospital has no score during those rounds because the hospital declined to report to the Leapfrog Hospital Survey, Step 2 will be used for imputation (see below).

Step 2: Use the mean of the scores assigned to similar hospitals eligible for a Hospital Safety Grade

If the hospital is not eligible for Step 1, the hospital is assigned the mean score of a cohort of similar hospitals. The cohort is identified using three or four hospital characteristics obtained from either the 2022 Leapfrog Hospital [Survey Results](#) or the most recent CMS Impact file: (1) urban/rural status (from the Impact File), (2) safety net status (determined by disproportionate share hospital patient percentage from the Impact File), (3) number of beds (from the Impact file), and (4) teaching status. Teaching status is obtained from the 2022 Leapfrog Hospital [Survey Results](#) if available; otherwise, it is determined from the Resident to Bed Ratio from the Impact file if available. Teaching status is only used for urban hospital cohorts.

Once assigned to a cohort, the hospital is assigned the lower of two possible mean scores based on their cohort’s performance:

- **Mean of current and recent scores:** The mean score of the cohort is calculated based on the hospital scores in the current round (i.e., spring 2022) from either Leapfrog’s publicly reported [Survey Results](#) or Step 1 of the imputation model.
- **Mean of scores obtained in each hospital’s first year of reporting on Leapfrog’s Hand Hygiene standard via the Leapfrog Hospital Survey:** The mean score of the cohort is calculated based on the score (i.e., performance category from the Leapfrog Hospital Survey) each hospital in the cohort obtained the first year they reported on Leapfrog’s Hand Hygiene standard, starting with the 2020 Leapfrog Hospital Survey (the year the Hand Hygiene standard was publicly reported).

As described above, Leapfrog will assign points to each of the four performance categories from the Leapfrog Hospital Survey following a review of the 2022 Leapfrog Hospital Survey Results in July.

2. CPOE and BCMA measures: Starting in Spring 2022

Since implementing the imputation methodology for hospitals missing measure scores for Computerized Physician Order Entry (CPOE) and Bar Code Medication Administration (BCMA) in spring 2021, one major concern has been shared by stakeholders: hospitals that declined to report on their CPOE or BCMA performance to the Leapfrog Hospital Survey are receiving scores based on hospitals in their assigned cohort that have worked over several years to successfully achieve Leapfrog’s high standards on these measures.

To better reflect the relevant achievements in patient safety that are highlighted in the comments by these stakeholders, Leapfrog will update the approach to imputation. For hospitals that have declined to report to the Leapfrog Hospital Survey, Leapfrog will impute the lower of two possible mean scores for CPOE and BCMA based on their cohort’s performance:

- **Mean of current and recent scores:** The mean score of the cohort is calculated based on the hospital scores in the current round (i.e., spring 2022) from either Leapfrog’s publicly reported [Survey Results](#) or Step 1 of the imputation model.
- **Mean of scores obtained in each hospital’s first year of reporting on Leapfrog’s CPOE and BCMA standards via the Leapfrog Hospital Survey:** The mean score of the cohort is calculated based on the score (i.e., performance category from the Leapfrog Hospital Survey) each hospital in the cohort obtained the first year they reported on Leapfrog’s CPOE and BCMA standards, starting with the 2018 Leapfrog Hospital Survey (the year the CPOE and BCMA standards were last significantly updated). Leapfrog will exclude scores from 2020 when the CPOE Test was not included on the Leapfrog Hospital Survey due to COVID-19.

More information about the Hospital Safety Grade, including important dates for the spring 2022 Hospital Safety Grade, can be found on the Hospital Safety Grade website at www.hospitalsafetygrade.org.

Appendix A: Spring 2022 Leapfrog Safety Grade Measures, Reporting Periods, and Data Sources

PROCESS/STRUCTURAL MEASURES (12)				
Measure Name	Primary Data Source	Reporting Period	Secondary Data Source	Reporting Period
Computerized Physician Order Entry (CPOE)	2021 Leapfrog Hospital Survey	2021	Imputation Model Applied	N/A
Bar Code Medication Administration (BCMA)	2021 Leapfrog Hospital Survey	2021	Imputation Model Applied	N/A
ICU Physician Staffing (IPS)	2021 Leapfrog Hospital Survey	2021	Imputation Model Applied	N/A
Safe Practice 1: Culture of Leadership Structures and Systems	2021 Leapfrog Hospital Survey	2021	N/A	N/A
Safe Practice 2: Culture Measurement, Feedback & Intervention	2021 Leapfrog Hospital Survey	2021	N/A	N/A
Safe Practice 9: Nursing Workforce	2021 Leapfrog Hospital Survey	2021	N/A	N/A
Hand Hygiene	2021 Leapfrog Hospital Survey	2021	N/A	N/A
H-COMP-1: Nurse Communication	CMS	07/01/2020 – 03/31/2021	N/A	N/A
H-COMP-2: Doctor Communication	CMS	07/01/2020 – 03/31/2021	N/A	N/A
H-COMP-3: Staff Responsiveness	CMS	07/01/2020 – 03/31/2021	N/A	N/A
H-COMP-5: Communication about Medicines	CMS	07/01/2020 – 03/31/2021	N/A	N/A
H-COMP-6: Discharge Information	CMS	07/01/2020 – 03/31/2021	N/A	N/A

OUTCOME MEASURES (10)				
Measure Name	Primary Data Source	Reporting Period	Secondary Data Source	Reporting Period
Foreign Object Retained	CMS	07/01/2018 – 12/31/2019	N/A	N/A
Air Embolism	CMS	07/01/2018 – 12/31/2019	N/A	N/A
Falls and Trauma	CMS	07/01/2018 – 12/31/2019	N/A	N/A
CLABSI	2021 Leapfrog Hospital Survey	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021	CMS	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021
CAUTI	2021 Leapfrog Hospital Survey	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021	CMS	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021
SSI: Colon	2021 Leapfrog Hospital Survey	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021	CMS	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021
MRSA	2021 Leapfrog Hospital Survey	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021	CMS	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021
C. Diff.	2021 Leapfrog Hospital Survey	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021	CMS	10/01/2019 – 12/31/2019 AND 07/01/2020 – 03/31/2021
PSI 4: Death rate among surgical inpatients with serious treatable conditions	CMS	07/01/2018 – 12/31/2019	N/A	N/A
CMS Medicare PSI 90: Patient safety and adverse events composite*	CMS	07/01/2018 – 12/31/2019	N/A	N/A

***COMPONENT PSIs**

Component PSI	Primary Data Source	Reporting Period	Secondary Data Source	Reporting Period
PSI 3: Pressure ulcer rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A
PSI 6: Iatrogenic pneumothorax rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A
PSI 8: In-hospital fall with hip fracture rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A
PSI 9: Perioperative hemorrhage and hematoma rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A
PSI 10: Postoperative acute kidney injury rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A
PSI 11: Postoperative respiratory failure rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A
PSI 12: Perioperative pulmonary embolism or deep vein thrombosis rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A
PSI 13: Postoperative sepsis rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A
PSI 14: Postoperative wound dehiscence rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A
PSI 15: Unrecognized abdominopelvic accidental puncture/laceration rate	CMS	07/01/2018 – 12/31/2019	N/A	N/A

Note: CMS calculates PSI 90 using the ten (10) component PSIs listed above. While scores for each of the 10 component PSIs will NOT be used to calculate spring 2022 Hospital Safety Grades, they will be publicly reported on the Hospital Safety Grade [website](#).