

# The Leapfrog Hospital Survey Scoring Algorithms

**Scoring Details for Sections 2 – 9 of the  
2016 Leapfrog Hospital Survey**



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# 2016 Leapfrog Hospital Survey Scoring Algorithms

<http://leapfroggroup.org/survey>

This document includes the scoring algorithms for the 2016 Leapfrog Hospital Survey. The scoring algorithms are organized by section:

- Section 2 Computerized Physician Order Entry
- Section 3 Evidence-Based High Risk Referral
- Section 4 Maternity Care
- Section 5 ICU Physician Staffing
- Section 6 Safe Practices Score
- Section 7 Managing Serious Errors
- Section 8 Bar Code Medication Administration
- Section 9 Readmission for Common Acute Conditions and Procedures

For a hard copy of the Leapfrog Hospital Survey, which includes measure specifications, end notes, and FAQs, please visit: <http://leapfroggroup.org/survey-materials/survey-and-cpoe-tool-materials>.

Results from the Leapfrog Hospital Survey are publicly reported at <http://leapfroggroup.org/compare-hospitals>.

### Scoring and Public Reporting Overview

Once a hospital submits a Leapfrog Hospital Survey via the online survey tool at [survey.leapfroggroup.org](http://survey.leapfroggroup.org), the submitted responses are scored using the algorithms detailed in this document. Only responses from submitted sections are scored; saved responses are not scored or publicly reported.

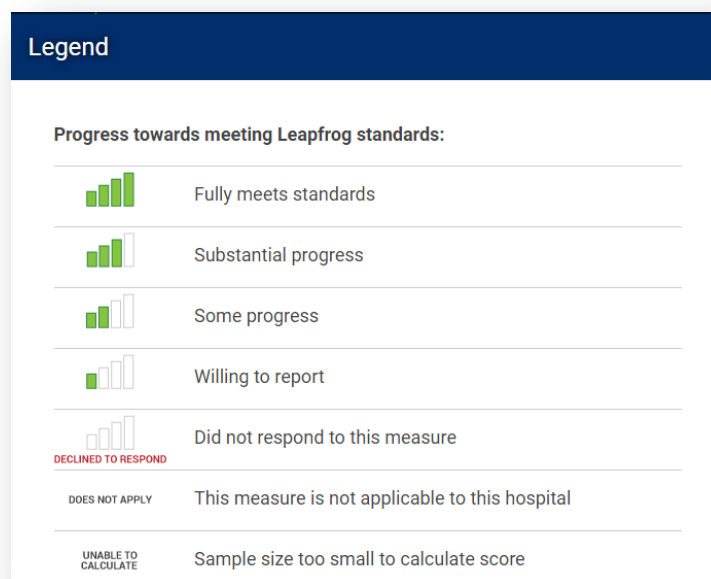
Once the submitted sections have been scored, the results are publicly reported on the Leapfrog Hospital Survey Results website at <http://leapfroggroup.org/compare-hospitals>. Results from 2016 Leapfrog Hospital Surveys submitted by June 30, 2016 will be published on July 25, 2016. Results are then refreshed within the first five business days of each month to reflect new and updated survey submissions until the survey closes for the year on December 31, 2016. More information about survey submission deadlines is available at <http://leapfroggroup.org/survey-materials/deadlines>.

For the purposes of public reporting, performance on each measure on the Leapfrog Hospital Survey is placed into one of four performance categories:

- **Fully Meets the Standard** (displayed as four-filled bars)
- **Substantial Progress** (displayed as three-filled bars)
- **Some Progress** (displayed as two-filled bars)
- **Willing to Report** (displayed as one-filled bar)

Additional scoring terms include:

- **Does Not Apply:** This term is used for hospitals that report not performing a particular procedure (e.g., AVR) or not having a particular unit (e.g., ICU).
- **Unable to Calculate Score:** This term is used for hospitals that report a sample size that does not meet Leapfrog's minimum reporting requirements.
- **Declined to Respond:** This term is used for hospitals that do not submit a survey or a particular section of the survey.



For the purposes of public reporting (<http://leapfroggroup.org/compare-hospitals>), Leapfrog groups measures together on its public reporting website. The following measures are included in each tab:

| Tab Name                         | Measure Name                                                                                         | Shown on public reporting website as:                        |
|----------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <b>Inpatient Care Management</b> | Safe Practices Score                                                                                 | <i>Steps to Avoid Harm</i>                                   |
|                                  | Never Events                                                                                         | <i>Managing Serious Errors</i>                               |
|                                  | Antibiotic Stewardship Practices                                                                     | <i>Appropriate Use of Antibiotics in Hospitals</i>           |
|                                  | ICU Physician Staffing                                                                               | <i>Specially Trained Doctors Care for Patient in ICUs</i>    |
|                                  | Readmission for Common Acute Conditions and Procedures                                               | <i>Hospital Readmission</i>                                  |
|                                  |                                                                                                      |                                                              |
| <b>Medication Safety</b>         | Computerized Physician Order Entry (CPOE)                                                            | <i>Doctors Order Medications Through a Computer</i>          |
|                                  | Bar Code Medication Administration (BMCA)                                                            | <i>Safe Medication Administration</i>                        |
|                                  |                                                                                                      |                                                              |
| <b>Maternity Care</b>            | Early Elective Deliveries                                                                            | <i>Early Elective Deliveries</i>                             |
|                                  | NTSV Cesarean Sections                                                                               | <i>Cesarean Sections</i>                                     |
|                                  | Episiotomy                                                                                           | <i>Episiotomies</i>                                          |
|                                  | Maternity Care Processes                                                                             | <i>Standard Precautions</i>                                  |
|                                  | High-Risk Deliveries                                                                                 | <i>High-Risk Deliveries</i>                                  |
|                                  |                                                                                                      |                                                              |
| <b>High-Risk Surgeries</b>       | Aortic Valve Replacement (AVR)                                                                       | <i>Aortic Valve Replacement</i>                              |
|                                  | Abdominal Aortic Aneurysm Repair (AAA)                                                               | <i>Abdominal Aortic Aneurysm Repair</i>                      |
|                                  | Pancreatic Resections                                                                                | <i>Pancreatic Resection</i>                                  |
|                                  | Esophagectomy                                                                                        | <i>Esophageal Resection</i>                                  |
|                                  |                                                                                                      |                                                              |
| <b>Injuries and Infections</b>   | Central Line-Associated Blood Stream Infections (CLABSI)                                             | <i>Central Line Infections in ICUs</i>                       |
|                                  | Catheter-Associated Urinary Tract Infections (CAUTI)                                                 | <i>Urinary Catheter Infections in ICUs</i>                   |
|                                  | Facility-wide Inpatient Hospital-onset Methicillin-resistant Staphylococcus aureus (MRSA) Bacteremia | <i>MRSA Infection</i>                                        |
|                                  | Facility-wide Inpatient Hospital-onset Clostridium difficile (C. Diff.) Infection                    | <i>C. Difficile Infections</i>                               |
|                                  | Surgical Site Infection: Colon                                                                       | <i>Surgical Site Infection Following Major Colon Surgery</i> |
|                                  | Pressure Ulcers                                                                                      | <i>Hospital-Acquired Pressure Ulcers</i>                     |
|                                  | Injuries                                                                                             | <i>Hospital-Acquired Injuries</i>                            |

|                                                                                             |
|---------------------------------------------------------------------------------------------|
| <b>Section 2: 2016 Computerized Physician Order Entry (CPOE) Standard Scoring Algorithm</b> |
|---------------------------------------------------------------------------------------------|

Link to Survey Questions and Reference Materials: <http://www.leapfroggroup.org/survey-materials/survey-and-cpoe-materials>

### CPOE Scoring Algorithm for Adult/General Hospitals

| <b>Implementation Status</b><br>(from Leapfrog Hospital Survey Questions #3-4)                                                    | <b>Score on CPOE Evaluation Tool</b>                                             |                                      |                                |                                 |                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------|--------------------------------|---------------------------------|----------------------------------------------------------------------------------------------|
|                                                                                                                                   | <i>Fully Implemented</i>                                                         | <i>Good Progress in Implementing</i> | <i>Good Early Stage Effort</i> | <i>Completed The Evaluation</i> | <i>Incomplete Evaluation (Failed deception analysis) -or- Did not complete an evaluation</i> |
| <b>75% or greater</b> of all inpatient medication orders entered through CPOE System                                              | Fully Meets the Standard                                                         | Fully Meets the Standard             | Substantial Progress           | Substantial Progress            | Willing to Report                                                                            |
| <b>50-74%</b> of all inpatient medication orders entered through CPOE System                                                      | Substantial Progress                                                             | Substantial Progress                 | Substantial Progress           | Some Progress                   | Willing to Report                                                                            |
| <b>25-49%</b> of all inpatient medication orders entered through CPOE System                                                      | Substantial Progress                                                             | Some Progress                        | Some Progress                  | Some Progress                   | Willing to Report                                                                            |
| CPOE implemented in at least one inpatient unit but <b>&lt;25%</b> of all inpatient medication orders entered through CPOE System | Some Progress                                                                    | Some Progress                        | Willing to Report              | Willing to Report               | Willing to Report                                                                            |
| CPOE not implemented in at least one inpatient unit                                                                               | Cannot take CPOE Evaluation Tool; hospital will be scored as "Willing to Report" |                                      |                                |                                 |                                                                                              |

**Declined to respond:**

The hospital did not respond to this section of the survey or did not complete the survey.

Additional information about the criteria for scoring the CPOE Evaluation Tool can be found at <http://leapfroggroup.org/survey-materials/scoring-and-results>

**CPOE Scoring Algorithm for Pediatric Hospitals**

| <b>CPOE Score</b><br>(Performance category) | <b>Implementation Status</b><br>(from Leapfrog Hospital Survey<br>Questions #3-4)                                                                                                              |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>             | <b>75% or greater</b> of all inpatient medication orders entered through CPOE System                                                                                                           |
| <b>Substantial Progress</b>                 | <b>50-74%</b> of all inpatient medication orders entered through CPOE System                                                                                                                   |
| <b>Some Progress</b>                        | <b>25-49%</b> of all inpatient medication orders entered through CPOE System                                                                                                                   |
| <b>Willing to Report</b>                    | CPOE implemented in at least one inpatient unit but <b>&lt;25%</b> of all inpatient medication orders entered through CPOE System<br>OR<br>CPOE not implemented in at least one inpatient unit |
| <b>Declined to Respond</b>                  | The hospital did not respond to this section of the survey, or did not complete the survey.                                                                                                    |

|                                                                                   |
|-----------------------------------------------------------------------------------|
| <b>Section 3: 2016 Evidence-Based Hospital Referral (EBHR) Scoring Algorithms</b> |
|-----------------------------------------------------------------------------------|

Link to Survey Questions and Reference Materials: <http://www.leapfroggroup.org/survey-materials/survey-and-cpoe-materials>

## **Aortic Valve Replacement (AVR) Scoring Algorithm**

### ***Quality Score (National Outcome Reported)***

For hospitals that report a risk-adjusted outcome from a national measurement system (STS), or from a regional registry (NNECDSG-AVR), their quality score is based on a combination of overall hospital volume and risk-adjusted mortality rates:

**Volume Credit** (if the hospital reports a risk-adjusted outcome)

- ½ credit if overall hospital volume  $\geq 120$  (Questions #2 and #3 combined)
- otherwise, ¼ credit

**Mortality Outcomes** (if the hospital reports a risk-adjusted outcome)

- ½ **additional** credit if the hospital's actual mortality rate, as indicated in the latest annual report from STS/NNECDSG, is Better than National Average on a risk-adjusted basis.

| <b>AVR Quality Score</b><br>(Performance Category) | <b>Volume</b><br>(based on Questions #2 and 3) | <b>Mortality Outcomes</b><br>(based on STS or NNECDSG) |
|----------------------------------------------------|------------------------------------------------|--------------------------------------------------------|
| <b>Fully Meets the Standard</b>                    | $\geq 120$                                     | Better than National Average                           |
| <b>Substantial Progress</b>                        | $<120$                                         | Better than National Average                           |
| <b>Some Progress</b>                               | $\geq 120$                                     | Worse than National Average                            |
| <b>Willing to Report</b>                           | $<120$                                         | Worse than National Average                            |

For hospitals that do not report a risk-adjusted outcome for a surgical procedure from a national performance measurement system (STS), or from a regional registry (NNECDSG-AVR), their quality score for that surgical procedure is based on their Survival Predictor performance. See below for details on the Survival Predictor calculation and scoring.

### ***Quality Score (Survival Predictor)***

The Survival Predictor is only calculated for hospitals that do not report a risk-adjusted outcome. The Survival Predictor is a composite measure that predicts future mortality rates and can be calculated for four of the EBHR high-risk surgeries (AVR, AAA, Pancreatectomy, and Esophagectomy). The measures are designed to optimally forecast hospital performance, based on prior hospital volumes and prior mortality rates.

Additional information about calculating and scoring the Survival Predictor can be found at <http://leapfroggroup.org/survey-materials/scoring-and-results>. The composite measure is a weighted combination of a hospital's observed raw mortality rate and the mortality rate expected given the hospital's volume. The observed mortality rate is weighted according to reliability (a function of the case volume at that hospital). The composite measure is found to be a good predictor of subsequent hospital performance.

Details about intermediate survival predictor calculations can be found on the Hospital Details page on or after July 25, 2016. To access the Hospital Details page, log in to the survey with your 16-digit security



code and select the “View Hospital Details Page” button. For the purposes of public reporting, Leapfrog only publishes the predicted mortality rate.

Hospitals can calculate their predicted mortality rate for any of the four high-risk surgeries using the Survival Predictor Calculator located at <http://leapfroggroup.org/survey-materials/scoring-and-results>.

| AVR Quality Score<br>(Performance Category) | Meaning that:                                                                                  | If Predicted Mortality is: |          |
|---------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Fully Meets the Standard</b>             | The hospital is in the best quartile for this procedure                                        | Less than or equal to      | 4.43859% |
| <b>Substantial Progress</b>                 | The hospital is above the midpoint or median, but not in the best quartile for this procedure  | Less than or equal to      | 4.87388% |
| <b>Some Progress</b>                        | The hospital is below the midpoint or median, but not in the worst quartile for this procedure | Less than or equal to      | 5.38113% |
| <b>Willing to Report</b>                    | The hospital is in the worst quartile for this procedure                                       | Greater than               | 5.38113% |
| <b>Does Not Apply</b>                       | The hospital does not perform this procedure electively.                                       |                            |          |
| <b>Declined to Respond</b>                  | The hospital did not respond to this section of the survey, or did not submit a survey.        |                            |          |

### **Abdominal Aortic Aneurysm Repair (AAA) Scoring Algorithm**

| AAA Quality Score<br>(Performance Category) | Meaning that:                                                                                  | If Predicted Mortality is: |          |
|---------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------|----------|
| <b>Fully Meets the Standard</b>             | The hospital is in the best quartile for this procedure                                        | Less than or equal to      | 2.71855% |
| <b>Substantial Progress</b>                 | The hospital is above the midpoint or median, but not in the best quartile for this procedure  | Less than or equal to      | 3.39777% |
| <b>Some Progress</b>                        | The hospital is below the midpoint or median, but not in the worst quartile for this procedure | Less than or equal to      | 4.05741% |
| <b>Willing to Report</b>                    | The hospital is in the worst quartile for this procedure                                       | Greater than               | 4.05741% |
| <b>Does Not Apply</b>                       | The hospital does not perform this procedure electively.                                       |                            |          |
| <b>Declined to Respond</b>                  | The hospital did not respond to this section of the survey, or did not submit a survey.        |                            |          |

**Pancreatic Resection Scoring Algorithm**

| Pancreatic Resection Quality Score<br>(Performance Category) | Meaning that:                                                                                  | If Predicted Mortality is: |           |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------|-----------|
| <b>Fully Meets the Standard</b>                              | The hospital is in the best quartile for this procedure                                        | Less than or equal to      | 8.30336%  |
| <b>Substantial Progress</b>                                  | The hospital is above the midpoint or median, but not in the best quartile for this procedure  | Less than or equal to      | 11.10198% |
| <b>Some Progress</b>                                         | The hospital is below the midpoint or median, but not in the worst quartile for this procedure | Less than or equal to      | 13.68581% |
| <b>Willing to Report</b>                                     | The hospital is in the worst quartile for this procedure                                       | Greater than               | 13.68581% |
| <b>Does Not Apply</b>                                        | The hospital does not perform this procedure electively.                                       |                            |           |
| <b>Declined to Respond</b>                                   | The hospital did not respond to this section of the survey, or did not submit a survey.        |                            |           |

**Esophagectomy Scoring Algorithm**

| Esophagectomy Quality Score<br>(Performance Category) | Meaning that:                                                                                  | If Predicted Mortality is: |           |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------|-----------|
| <b>Fully Meets the Standard</b>                       | The hospital is in the best quartile for this procedure                                        | Less than or equal to      | 8.71485%  |
| <b>Substantial Progress</b>                           | The hospital is above the midpoint or median, but not in the best quartile for this procedure  | Less than or equal to      | 10.39531% |
| <b>Some Progress</b>                                  | The hospital is below the midpoint or median, but not in the worst quartile for this procedure | Less than or equal to      | 11.63292% |
| <b>Willing to Report</b>                              | The hospital is in the worst quartile for this procedure                                       | Greater than               | 11.63292% |
| <b>Does Not Apply</b>                                 | The hospital does not perform this procedure electively.                                       |                            |           |
| <b>Declined to Respond</b>                            | The hospital did not respond to this section of the survey, or did not submit a survey.        |                            |           |

Details about intermediate survival predictor calculations can be found on the Hospital Details page on or after July 25, 2016. To access the Hospital Details page, log in to the survey with your 16-digit security code and select the “View Hospital Details Page” button. For the purposes of public reporting, Leapfrog only publishes the predicted mortality rate.

|                                                          |
|----------------------------------------------------------|
| <b>Section 4: 2016 Maternity Care Scoring Algorithms</b> |
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Link to Survey Questions and Reference Materials: <http://www.leapfroggroup.org/survey-materials/survey-and-cpoe-materials>

## **Early Elective Deliveries**

A hospital's early elective deliveries rate prior to 39 weeks completed gestation is used to determine which performance category a hospital is placed:

| Early Elective Deliveries Score<br>(Performance Category) | Early Elective Deliveries Rate                                                                               |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>                           | $\leq 5\%$                                                                                                   |
| <b>Substantial Progress</b>                               | $> 5\%$ and $\leq 10\%$                                                                                      |
| <b>Some Progress</b>                                      | $> 10\%$ and $\leq 15\%$                                                                                     |
| <b>Willing to Report</b>                                  | $> 15\%$                                                                                                     |
| <b>Unable to Calculate Score</b>                          | Means the hospital did not meet the minimum reporting size ( $n < 10$ )                                      |
| <b>Does Not Apply</b>                                     | Means the hospital did not deliver newborns during the reporting period                                      |
| <b>Declined to Respond</b>                                | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey |

## **NTSV Cesarean Section**

A hospital's unadjusted NTSV cesarean section rate is used to determine which performance category a hospital is placed:

| NTSV Cesarean Section Score<br>(Performance Category) | NTSV Cesarean Section Rate                                                                                   |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>                       | $\leq 23.9\%$                                                                                                |
| <b>Substantial Progress</b>                           | $> 23.9\%$ and $\leq 27.0\%$                                                                                 |
| <b>Some Progress</b>                                  | $> 27.0\%$ and $\leq 33.3\%$                                                                                 |
| <b>Willing to Report</b>                              | $> 33.3\%$                                                                                                   |
| <b>Unable to Calculate Score</b>                      | Means the hospital did not meet the minimum reporting size ( $n < 10$ )                                      |
| <b>Does Not Apply</b>                                 | Means the hospital did not deliver newborns during the reporting period                                      |
| <b>Declined to Respond</b>                            | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey |

## Episiotomy

A hospital's rate of episiotomy is used to determine which category a hospital is placed:

| Episiotomy Score<br>(Performance Category) | Episiotomy Rate                                                                                              |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>            | $\leq 5\%$                                                                                                   |
| <b>Substantial Progress</b>                | $> 5\%$ and $\leq 10\%$                                                                                      |
| <b>Some Progress</b>                       | $> 10\%$ and $\leq 15\%$                                                                                     |
| <b>Willing to Report</b>                   | $> 15\%$                                                                                                     |
| <b>Unable to Calculate Score</b>           | Means the hospital did not meet the minimum reporting size ( $n < 10$ )                                      |
| <b>Does Not Apply</b>                      | Means the hospital did not deliver newborns during the reporting period                                      |
| <b>Declined to Respond</b>                 | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey |

## Maternity Care Process Measures Score

A hospital's adherence to the two maternity care process measures is used to determine which performance category the hospital is placed. Leapfrog's target for each process measure is  $\geq 80\%$ .

| Maternity Care Process Measures Score<br>(Performance Category) | Meets the min. sample size for both measures                                                                              | Meets the min. sample size for 1 measure |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| <b>Fully Meets the Standard</b>                                 | Meets the target on both                                                                                                  |                                          |
| <b>Some Progress</b>                                            | Meets the target for 1                                                                                                    | Meets the target for 1                   |
| <b>Willing to Report</b>                                        | Does not meet the target for either                                                                                       | Does not meet the target                 |
| <b>Unable to Calculate Score</b>                                | Means the hospital did not meet the minimum reporting requirements for either maternity care process measure ( $n < 10$ ) |                                          |
| <b>Does Not Apply</b>                                           | Means the hospital did not deliver newborns during the reporting period.                                                  |                                          |
| <b>Declined to Respond</b>                                      | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey              |                                          |

## **High-Risk Deliveries Scoring Algorithm**

Scoring for this measure is based on a combination of either (a) a hospital's annual patient count of very-low birth weight (VLBW) infants and adherence to the antenatal steroids process measure **or** (b) a hospital's performance on the VON outcome measure and adherence to the antenatal steroids process measure.

Leapfrog's target for the antenatal steroids process measure is  $\geq 80\%$ . If a hospital reports that fewer than 10 cases met the criteria for the denominator, they will be reported as 'unable to calculate score' for the process measure on Leapfrog's public reporting website.

The scoring algorithms for each reporting option (volume or outcome) are described below:

### **For hospitals reporting on Volume**

| <b>High-Risk Deliveries Score<br/>(Performance Category)</b> | <b>NICU annual patient count<br/>(volume)</b> | <b>Antenatal steroid process<br/>measure</b>                              |
|--------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>                              | $\geq 50$ VLBW infants                        | Met target                                                                |
| <b>Substantial Progress</b>                                  | $\geq 50$ VLBW infants                        | Did not meet target or<br>did not measure or<br>unable to calculate score |
| <b>Some Progress</b>                                         | $< 50$ VLBW infants<br>or<br>No NICU          | Met target                                                                |
| <b>Willing to Report</b>                                     | $< 50$ VLBW infants<br>or<br>No NICU          | Did not meet target or<br>did not measure or<br>unable to calculate score |

**For hospitals reporting on VON's Death or Morbidity Outcome Measure:**

If the **upper bound** of the shrunken SMR is less than 1, the center is performing better than expected.  
--e.g. SMR: 0.7; lower bound: 0.3; upper bound: 0.9

If the **lower bound** of the shrunken SMR is greater than 1, the center is performing worse than expected.  
--e.g. SMR: 1.6; lower bound: 1.2; upper bound: 2.1

If the **lower and upper bounds include 1**, then the center is performing as expected.  
--e.g. SMR: 1.0; lower bound: 0.8; upper bound: 1.2

| High-Risk Deliveries Score<br>(Performance Category) | Death or Morbidity<br>(VON Outcome Measure)                                                                       | Antenatal steroid process<br>measure                                                       |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>                      | Hospital's outcomes are <b>better</b> than expected, after adjusting for risk factors in the NICU population      | Met target                                                                                 |
| <b>Substantial Progress</b>                          | Hospital's outcomes are <b>better</b> than expected, after adjusting for risk factors in the NICU population      | Did not meet target or did not measure or fewer than 10 cases met criteria for denominator |
|                                                      | Hospital's outcomes are <b>equal</b> to what is expected, after adjusting for risk factors in the NICU population | Met target                                                                                 |
| <b>Some Progress</b>                                 | Hospital's outcomes are <b>equal</b> to what is expected, after adjusting for risk factors in the NICU population | Did not meet target or did not measure or fewer than 10 cases met criteria for denominator |
| <b>Willing to Report</b>                             | Hospital's outcomes are <b>worse</b> than expected, after adjusting for risk factors in the NICU population       | Whether a hospital met target or did not meet target                                       |

**Declined to respond** means the hospital did not respond to this section of the survey, or the hospital did not submit a survey.

**Does not apply** means the hospital does not electively admit high-risk deliveries.

|                                                                       |
|-----------------------------------------------------------------------|
| <b>Section 5: 2016 ICU Physician Staffing (IPS) Scoring Algorithm</b> |
|-----------------------------------------------------------------------|

Link to Survey Questions and Reference Materials: <http://www.leapfroggroup.org/survey-materials/survey-and-cpoe-materials>

## **ICU Physician Staffing (IPS) Scoring Algorithm**

Hospitals are scored for the ICU Physician Staffing section of the survey based on their answers to a set of 14 questions related to the structures they have in place to care for ICU patients in adult and pediatric general medical and/or surgical intensive care units and neuro intensive care units.

| IPS Score<br>(Performance Category) | Meaning that:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>     | <ul style="list-style-type: none"> <li>• All patients in adult and pediatric general medical and surgical ICU(s) and neuro ICUs are managed or co-managed by one or more physicians who are certified in critical care medicine (intensivists) (answered “Yes” to # 3); <b>and</b></li> <li>• One or more intensivist(s) is/are present in each ICU during daytime hours on-site for at least 8 hours per day, 7 days per week OR via telemedicine 24 hours per day, 7 days per week, with some on-site intensivist time AND provide(s) clinical care exclusively in this ICU during these hours (answered “Yes” to #4); <b>and</b></li> <li>• When intensivists are not present (on-site or via telemedicine) in these ICUs, one of them returns more than 95% of pages from these units within five minutes. (answered “Yes” or “Not applicable, Intensivists are present 24/7” to #5); <b>and</b></li> <li>• When an intensivist is not present (on-site or via telemedicine) in the ICU, another physician, physician assistant, nurse practitioner or FCCS-certified nurse “effector” is on-site at the hospital and able to reach ICU patients within five minutes in more than 95% of the cases (answered “Yes” or “Not applicable, Intensivists are present 24/7” to #6).</li> </ul> <p>Note: When telemedicine is employed as a substitute for on-site time, it must meet the ten requirements (see endnote #34 in the hard copy of the survey) including some on-site intensivist time to manage the ICU patients’ admission, discharge, and care planning.</p> |
| <b>Substantial Progress</b>         | <ul style="list-style-type: none"> <li>• All patients in adult/pediatric medical ICU(s) and neuro ICUs are managed or co-managed by one or more physicians who are certified in critical care medicine (intensivists), whether on-site or via telemedicine (answered “Yes” to #3); <b>and</b></li> <li>• The hospital has a board-approved budget that is adequate to meet the IPS commitment (answered “Yes” to #11); <b>and</b></li> <li>• The hospital has implemented <u>any one or more</u> of the following practices:               <ol style="list-style-type: none"> <li>a. Intensivists are present and manage or co-manage all patients in all ICUs on-site at least 8 hours per day, 4 days per week or 4 hours per day, 7 days per week (answered “Yes” to #7);</li> <li>b. Intensivists are present and manage or co-manage all patients in all ICUs via telemedicine 24 hours per day, 7 days per week (answered “Yes” to #8) with on-site daily care planning at least 4 days per week (answered “Yes” to #9); use of telemedicine requires that additional Leapfrog telemedicine specifications are met; or</li> <li>c. Clinical pharmacists make daily rounds on adult medical/surgical and neuro ICU patients (answered “Yes” to #12).</li> </ol> </li> </ul> <p><b>And</b></p>                                                                                                                                                                                                                                                                        |

|                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                             | <ul style="list-style-type: none"> <li>An intensivist:               <ol style="list-style-type: none"> <li>leads daily, multi-disciplinary team rounds on-site (answered “Yes” to #13), <b>or</b></li> <li>makes admission and discharge decisions when on-site (answered “Yes” to #14).</li> </ol> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Substantial Progress<br/>(alternative for hospitals)</b> | <ul style="list-style-type: none"> <li>All patients in adult/pediatric medical ICU(s) and neuro ICUs are managed or co-managed by one or more physicians who are certified in critical care medicine (intensivists), whether on-site or via telemedicine (answered “Yes” to #3); <b>and</b></li> <li>Intensivists are present and manage or co-manage all patients in all ICUs via telemedicine that is functional 24 hours per day, 7 days per week with onsite care planning done by an intensivist, hospitalist, anesthesiologist, or a physician trained in emergency medicine (answered “Yes” to #8); use of telemedicine requires that additional Leapfrog telemedicine specifications are met.</li> </ul> |
| <b>Some Progress</b>                                        | <ul style="list-style-type: none"> <li>The hospital has a board-approved budget that is adequate to meet the IPS commitment (answered “Yes” to #11); <b>and</b></li> <li>Some patients in the ICU(s) are managed or co-managed by an intensivist when present on-site or via telemedicine (answered “Yes” to #7, or #8, or #9, or #10). Use of telemedicine requires that additional Leapfrog telemedicine specifications are met.</li> </ul>                                                                                                                                                                                                                                                                    |
| <b>Willing to Report</b>                                    | The hospital responded to all the Leapfrog survey questions, but it does not yet meet the criteria for <b>Some progress</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Does Not Apply</b>                                       | The hospital does not operate an adult or pediatric general medical or surgical intensive care unit or a neuro intensive care unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Declined to Respond</b>                                  | The hospital did not respond to this section of the survey, or has not submitted a survey.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



|                                                             |
|-------------------------------------------------------------|
| <b>Section 6: 2016 NQF Safe Practices Scoring Algorithm</b> |
|-------------------------------------------------------------|

Link to Survey Questions and Reference Materials: <http://www.leapfroggroup.org/survey-materials/survey-and-cpoe-materials>

## **NQF Safe Practices Scoring Algorithm**

The Leapfrog Safe Practices Score (SPS) measures hospitals' progress on eight of the National Quality Forum's Safe Practice areas. Each practice area is assigned an individual weight, which is factored into the overall score. Hospitals are then put into one of four performance categories based on their relative progress out of the total number of possible points.

| <b>SPS Score<br/>(Performance Category)</b> | <b>Description</b>                                                                                                                                                   |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>             | Means the hospital is in the top performance category for Overall Points across all Safe Practices that apply to the hospital.                                       |
| <b>Substantial Progress</b>                 | Means the hospital is above the midpoint (median), but not in the top performance category, for Overall Points across all Safe Practices that apply to the hospital. |
| <b>Some Progress</b>                        | Means the hospital is below midpoint (median), but not in the lowest performance category, for Overall Points across all Safe Practices that apply to the hospital.  |
| <b>Willing to Report</b>                    | Means the hospital is in the bottom performance category for Overall Points.                                                                                         |
| <b>Declined to Respond</b>                  | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey                                                         |

Scoring and ranking details are described below.

1. **Maximum Points:** Each of the eight Safe Practices has a number of points, or Maximum Points, based on the relative impact of the safe practice. Maximum Points for all Practices total 485. See below for a list of Safe Practices/Elements and their respective Maximum Point values.

| <b>Safe Practice</b>                                                        | <b>Weighting<br/>(pts)</b> |
|-----------------------------------------------------------------------------|----------------------------|
| 1 Culture of Safety Leadership Structures and Systems                       | 120                        |
| 2 Culture Measurement, Feedback, and Intervention                           | 20                         |
| 3 Teamwork Training and Skill Building                                      | 40                         |
| 4 Risks and Hazards                                                         | 120                        |
| 9 Nursing Workforce <sup>a</sup>                                            | 100                        |
| 17 Medication Reconciliation                                                | 35                         |
| 19 Hand Hygiene                                                             | 30                         |
| 23 Health Care Associated Complications in Ventilated Patients <sup>b</sup> | 20                         |
| <b>GRAND TOTAL</b>                                                          | <b>485</b>                 |

<sup>a</sup> Hospitals indicating in Safe Practice #9 that they have current Magnet status designation, as determined by the American Nurses Credentialing Center (ANCC), will receive full points for this Safe Practice.

<sup>b</sup> If this Safe Practice does not apply to your hospital, you can indicate so at the beginning of this Safe-Practice section. To submit this section of the survey, this Safe Practice needs to be completed, even if only to indicate not applicable to your hospital.

2. **Point values per checkbox:** Within a Practice or Element, each question has an equal point value, computed as the Maximum Points for that Practice/Element divided by the number of checkboxes within that Practice/Element.
3. **Available points:** Some Practices might not apply to a hospital, in which case total Available Points will be 0 for that Practice (e.g., Safe Practice #23 might not apply to a hospital). If so, the total Available Points across all Practices will not include the Maximum Points for those Practices. The online survey will not allow any checkboxes to be marked in those Practices and scoring for those Practices will be marked N/A in Leapfrog public results.

*Example 1:* A hospital respondent indicates Safe Practice #23 does not apply. Total Available Points for all Safe Practices is 465 = 485 less 20 points for Safe Practice #23.

4. **Points earned:** Total points earned for each Safe Practice/Element is the sum of the points for each checkbox marked in that respective Safe Practice/Element (the exception being Safe Practice #9, whereby hospitals indicating that they have current Magnet status designation, as determined by the American Nurses Credentialing Center (ANCC), will automatically receive full credit).
5. **Overall points:** The overall score of each survey is the sum of all Points Earned for each Safe Practice/Element, re-balanced for Safe Practices that are N/A. The sum of Points Earned across all Safe Practices/Elements is multiplied by the ratio of 485 Maximum Points to the sum of Available Points for each Practice/Element.

*Example 2:* Continuing from Example 1, Points Earned across the seven Safe Practices that do apply total 420.30. Overall Points are 438.38 = 420.30 x (485/465).

6. **Final scoring:** All responding hospitals are stratified into performance categories based on Overall Points.
7. **Performance Category cut-points** are based on the distribution of surveys submitted as of June 30, 2012. The distribution of scores including new or updated survey results will be reviewed periodically to determine if there are compelling reasons to revise these performance category cut-points further, but there are no current plans or commitments to change the cut-points again during the 2016 survey cycle.
8. **Updated submissions:** Hospitals may update and resubmit their surveys as often as needed to reflect actual progress achieved or additional commitments undertaken in these patient safety areas. Hospitals submitting new information will have new results replace the posted results from the prior submission to reflect this progress, consistent with Leapfrog's monthly update of survey results.

## Section 7: 2016 Managing Serious Errors Scoring Algorithms

Link to Survey Questions and Reference Materials: <http://www.leapfroggroup.org/survey-materials/survey-and-cpoe-materials>

### Never Events Scoring Algorithm

A hospital's results are publicly released and displayed on the Leapfrog Group Web site in one of three categories:

| Never Events Score<br>(Performance Category) | Description                                                                                                                                                            |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>              | Means the hospital has implemented a policy that adheres to all of the principles of the Leapfrog Group Policy Statement on Serious Reportable Events/ "Never Events." |
| <b>Willing to Report</b>                     | Means the hospital responded to the Leapfrog survey question pertaining to adoption of this policy, but does not yet meet the criteria to "fully meet the standard."   |
| <b>Declined to Respond</b>                   | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey.                                                          |

### CLABSI Scoring Algorithm

A **standardized infection ratio (SIR)** will be calculated for each hospital, which will serve as the hospital's CLABSI score. The SIR calculation divides the total number of observed CLABSI events at a hospital by an "expected" number of events. The "expected" number of events is calculated by multiplying the national CLABSI rate from the standard population (see table below) by the observed number of central line days for each type of ICU in which the hospital reported.

Leapfrog makes every effort to align with other national measurement and public reporting entities when possible and appropriate. Therefore, Leapfrog will continue to use the 2006-2008 NHSN benchmarks to maintain alignment with the NHSN and the Centers for Medicare and Medicaid Services.

| ICU Type<br>(Survey ICU Name)     | Mean NHSN CLABSI Rates<br>for 2006-2008 <sup>1</sup> (Standard<br>Population) |
|-----------------------------------|-------------------------------------------------------------------------------|
| Medical – Major Teaching          | 2.6                                                                           |
| Medical – Others                  | 1.9                                                                           |
| Surgical                          | 2.3                                                                           |
| Medical/Surgical – Major Teaching | 2.1                                                                           |
| Medical/Surgical – Others         | 1.5                                                                           |
| Pediatric Medical                 | 1.3                                                                           |
| Pediatric Medical/Surgical        | 3.0                                                                           |
| Pediatric Cardiothoracic          | 3.3                                                                           |
| Medical Cardiac                   | 2.0                                                                           |
| Respiratory                       | 1.7                                                                           |
| Surgical Cardiothoracic           | 1.4                                                                           |
| Neurologic                        | 1.4                                                                           |
| Neurosurgical                     | 2.5                                                                           |

<sup>1</sup> Rates taken from the National Healthcare Safety Network (NHSN) report: Data summary for 2006 through 2008, issued December 2009 (Table 3) <http://www.cdc.gov/nhsn/PDFs/dataStat/2009NHSNReport.PDF>

| ICU Type<br>(Survey ICU Name) | Mean NHSN CLABSI Rates<br>for 2006-2008 <sup>1</sup> (Standard<br>Population) |
|-------------------------------|-------------------------------------------------------------------------------|
| Burn                          | 5.5                                                                           |
| Trauma                        | 3.6                                                                           |
| Level II/III NICU             |                                                                               |
| <= 750 g                      | 4.9                                                                           |
| 751 – 1, 000 g                | 3.2                                                                           |
| 1,001 – 1,500 g               | 2.0                                                                           |
| 1,501 – 2,500 g               | 1.5                                                                           |
| > 2,500 g                     | 1.2                                                                           |
| Level III NICU                |                                                                               |
| <= 750 g                      | 3.9                                                                           |
| 751 – 1, 000 g                | 3.4                                                                           |
| 1,001 – 1,500 g               | 2.4                                                                           |
| 1,501 – 2,500 g               | 2.4                                                                           |
| > 2,500 g                     | 1.9                                                                           |

A hospital's standardized infection ratio is used to determine in which performance category a hospital is placed:

| CLABSI Score<br>(Performance Category) | CLABSI Standardized Infection Ratio (SIR)<br>or score description                                                                                                                |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>        | SIR of 0.0                                                                                                                                                                       |
| <b>Substantial Progress</b>            | SIR > 0.0 and <= 0.50                                                                                                                                                            |
| <b>Some Progress</b>                   | SIR > 0.50 and <= 1.10 or<br>the hospital has a SIR > 1.10 and utilizes personnel trained in<br>human factors engineering in conducting root-cause analyses on<br>adverse events |
| <b>Willing to Report</b>               | SIR > 1.10 and does not utilize personnel trained in human factors<br>engineering in conducting root-cause analyses on adverse events                                            |
| <b>Unable to Calculate Score</b>       | Means the hospital reported too small of a sample size to calculate<br>their results reliably (i.e. the number of expected infections across<br>all ICU types is <1).            |
| <b>Does Not Apply</b>                  | Means the hospital did not care for patients with central lines in an<br>ICU during the reporting period                                                                         |
| <b>Declined to Respond</b>             | Means the hospital did not respond to the questions in this section<br>of the survey or did not submit a survey                                                                  |

Hospitals can calculate their standardized infection ratios for CLABSI and CAUTI using the SIR Calculator located at <http://leapfroggroup.org/survey-materials/scoring-and-results>.

### Public Reporting

In addition to reporting the hospital's performance category, the hospital's standardized infection ratio (SIR), the number of central line associated bloodstream infections, and central line days for each ICU type reported will be reported on a secondary webpage accessed via a drill-down from the main results page at <http://leapfroggroup.org/compare-hospitals>.

## **CAUTI Scoring Algorithm**

A **standardized infection ratio (SIR)** will be calculated for each hospital, which will serve as the hospital's CAUTI score. The SIR calculation divides the total number of observed CAUTI events at a hospital by an "expected" number of events. The "expected" number of events is calculated by multiplying the national CAUTI rate from the standard population by the observed number of urinary catheter days for each type of ICU in which the hospital reported. This "expected" value can also be understood as a prediction or projection.

Below are the standard population CAUTI rates that will be used in calculating a hospital's SIR. They are based on the national NHSN data from 2009. Leapfrog makes every effort to align with other national measurement and public reporting entities when possible and appropriate. Therefore, Leapfrog will continue to use the 2009 NHSN benchmarks to maintain alignment with the NHSN and the Centers for Medicare and Medicaid Services.

| <b>ICU Type<br/>(Survey ICU Name)</b> | <b>Mean NHSN CAUTI Rates<br/>for 2009<sup>2</sup> (Standard<br/>Population)</b> |
|---------------------------------------|---------------------------------------------------------------------------------|
| Medical - Major Teaching              | 2.3                                                                             |
| Medical - Others                      | 2.0                                                                             |
| Surgical                              | 2.6                                                                             |
| Medical/Surgical - Major Teaching     | 2.3                                                                             |
| Medical/Surgical – Others             | 1.3                                                                             |
| Pediatric Medical                     | 0.8                                                                             |
| Pediatric Medical/Surgical            | 2.8                                                                             |
| Pediatric Cardiothoracic              | 2.7                                                                             |
| Medical Cardiac                       | 2.0                                                                             |
| Respiratory                           | 2.5                                                                             |
| Surgical Cardiothoracic               | 1.7                                                                             |
| Neurologic                            | 3.8                                                                             |
| Neurosurgical                         | 4.4                                                                             |
| Burn                                  | 4.4                                                                             |
| Trauma                                | 3.4                                                                             |

<sup>2</sup> Rates taken from the National Healthcare Safety Network (NHSN) report, data summary for 2009, device-associated module (Table 5) [http://www.cdc.gov/nhsn/PDFs/NHSNReport\\_DataSummaryfor2009.pdf](http://www.cdc.gov/nhsn/PDFs/NHSNReport_DataSummaryfor2009.pdf)

A hospital's standardized infection ratio is used to determine in which performance category a hospital is placed:

| <b>CAUTI Score<br/>(Performance Category)</b> | <b>CAUTI Standardized Infection Ratio (SIR)<br/>or score description</b>                                                                                           |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>               | SIR $\leq$ 0.443                                                                                                                                                   |
| <b>Substantial Progress</b>                   | SIR $>$ 0.443 and $\leq$ 0.954                                                                                                                                     |
| <b>Some Progress</b>                          | SIR $>$ 0.954 and $\leq$ 1.605 or                                                                                                                                  |
| <b>Willing to Report</b>                      | SIR $>$ 1.605                                                                                                                                                      |
| <b>Unable to Calculate Score</b>              | Means the hospital reported too small of a sample size to calculate their results reliably (i.e. the number of expected infections across all ICU types is $<1$ ). |
| <b>Does Not Apply</b>                         | Means the hospital did not care for patients with urinary catheters in an ICU during the reporting period                                                          |
| <b>Declined to Respond</b>                    | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey                                                       |

Hospitals can calculate their standardized infection ratios for CLABSI and CAUTI using the SIR Calculator located at <http://leapfroggroup.org/survey-materials/scoring-and-results>.

### **Public Reporting**

In addition to reporting the hospital's performance category, the hospital's standardized infection ratio (SIR), the number of catheter-associated urinary tract infections, and catheter days for each ICU type reported will be reported on a secondary webpage accessed via a drill-down from the main results page at <http://leapfroggroup.org/compare-hospitals>.

## **Other Healthcare Associated Infections Scoring Algorithm**

The standardized infection ratios (SIRs) for MRSA, C. Diff., and SSI Colon are calculated by the NHSN.

For a detailed description of how the SSI Colon SIR is calculated, visit:  
[http://www.cdc.gov/nhsn/PDFs/Newsletters/NHSN\\_NL\\_OCT\\_2010SE\\_final.pdf](http://www.cdc.gov/nhsn/PDFs/Newsletters/NHSN_NL_OCT_2010SE_final.pdf).

For a detailed description of how the MRSA and CDI SIRs are calculated, visit  
<http://www.cdc.gov/nhsn/PDFs/mrsa-cdi/RiskAdjustment-MRSA-CDI.pdf>.

All responding hospitals are stratified into performance categories based on their reported standardized infection ratios:

| <b>Other Healthcare Associated Infections Score<br/>(Performance Category)</b> | <b>SSI Colon SIR</b>                                                                                                                                                | <b>MRSA SIR</b>                                      | <b>CDI SIR</b>             |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------|
| <b>Fully Meets the Standard</b>                                                | $\leq 0.386$                                                                                                                                                        | $\leq 0.373$                                         | $\leq 0.450$               |
| <b>Substantial Progress</b>                                                    | $> 0.386$ and $\leq 0.825$                                                                                                                                          | $> 0.373$ and $\leq 0.766$                           | $> 0.450$ and $\leq 0.782$ |
| <b>Some Progress</b>                                                           | $> 0.825$ and $\leq 1.375$                                                                                                                                          | $> 0.766$ and $\leq 1.251$                           | $> 0.782$ and $\leq 1.093$ |
| <b>Willing to Report</b>                                                       | $> 1.375$                                                                                                                                                           | $> 1.251$                                            | $> 1.093$                  |
| <b>Unable to Calculate Score</b>                                               | Means the hospital reported too small of a sample size to calculate their results reliably (i.e. the number of expected infections across all ICU types is $< 1$ ). |                                                      |                            |
| <b>Declined to respond</b>                                                     | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey                                                        |                                                      |                            |
| <b>Does Not Apply</b>                                                          | Means the hospital did not perform colon surgery during the reporting period                                                                                        | This standard does not apply to pediatric hospitals. |                            |

Note: Cut-points for 2016 will be based on the distribution of results from the CMS dataset for the data collection period of 04/01/2014 – 03/31/2015. These cut-points will remain in place for the entire survey reporting cycle, unless it is determined that there are compelling reasons to make revisions.

## **Pressure Ulcers and Injuries Scoring Algorithm**

The rate of the hospital-acquired condition is calculated by dividing the number of discharges with the condition, which was not present on admission, by the total number of adult inpatient discharges (including deaths).

Rates of the hospital-acquired pressure ulcers and hospital-acquired injuries will be reported as a rate of occurrence per 1,000 inpatient discharges. All responding hospitals are stratified into performance categories based on their calculated rates:

| <b>Pressure Ulcers &amp; Injuries Score<br/>(Performance Category)</b> | <b>Meaning that:</b>                                                                    | <b>Hospital-Acquired Pressure Ulcer Rate<br/>(per 1000 inpatient discharges)</b> | <b>Hospital-Acquired Injury Rate<br/>(per 1000 inpatient discharges)</b> |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>                                        | The hospital is in the lowest (best) performance category                               | 0.00                                                                             | $\leq 0.16$                                                              |
| <b>Substantial Progress</b>                                            | The hospital is above midpoint (median), but not in the highest performance category    | N/A                                                                              | $> 0.16$ and $\leq 0.35$                                                 |
| <b>Some Progress</b>                                                   | The hospital is below the midpoint (median), but not in the lowest performance category | $> 0.00$ and $\leq 0.16$                                                         | $> 0.35$ and $\leq 0.64$                                                 |
| <b>Willing to Report</b>                                               | The hospital is in the highest (worst) performance category                             | $> 0.16$                                                                         | $> 0.64$                                                                 |
| <b>Does Not Apply</b>                                                  | This standard does not apply to pediatric hospitals or critical access hospitals.       |                                                                                  |                                                                          |
| <b>Unable to Calculate Score</b>                                       | The hospital reported fewer than 30 cases for the reporting period.                     |                                                                                  |                                                                          |
| <b>Declined to Respond</b>                                             | The hospital did not respond to this section of the survey or did not submit a survey.  |                                                                                  |                                                                          |

Note: Cut-points for 2016 will be based on the distribution of results from surveys submitted as of June 30, 2013. These cut-points will remain in place for the entire survey reporting cycle, unless it is determined that there are compelling reasons to make revisions.



## **Antibiotic Stewardship Practices Scoring Algorithm**

In this section of the survey, hospitals are scored on their adoption and implementation of the [CDC's Core Elements of Antibiotic Stewardship Programs](#). See how each question in Section 7D Antibiotic Stewardship Practices maps to one of the seven core elements.

| <b>CDC's Seven Core Elements of Antibiotic Stewardship Programs</b>                                                                                      | <b>Antibiotic Stewardship Question from Section 7D</b> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>1. Leadership commitment:</b> Dedicate necessary human, financial, and IT resources.                                                                  | #1 or #4                                               |
| <b>2. Accountability:</b> Appoint a single leader responsible for program outcomes. Physicians have proven successful in this role.                      | #2                                                     |
| <b>3. Drug expertise:</b> Appoint a single pharmacist leader to support improved prescribing.                                                            | #3                                                     |
| <b>4. Act:</b> Take at least one prescribing improvement action, such as requiring reassessment after 48 hours to check drug choice, dose, and duration. | #5, #6, #7, #8, or #9                                  |
| <b>5. Track:</b> Monitor prescribing and antibiotic resistance patterns.                                                                                 | #5a, 6a, or #10                                        |
| <b>6. Report:</b> Regularly report to staff prescribing and resistance patterns, and steps to improve.                                                   | #10b or #11                                            |
| <b>7. Educate:</b> Offer education about antibiotic resistance and improving prescribing practices.                                                      | #12                                                    |

Hospitals that have adopted all seven of the Core Elements will be scored as "Fully Meets the Standard." Hospitals that have adopted fewer than seven of the Core Elements will be scored as "Willing to Report." Leapfrog is intending to publicly report this measure in 2016.

| <b>Antibiotic Stewardship Practices Score<br/>(Performance Category)</b> | <b>Description</b>                                                                                                                       |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>                                          | Means the hospital has implemented all seven Core Elements identified by the CDC for a successful Antibiotic Stewardship Program.        |
| <b>Willing to Report</b>                                                 | Means the hospital has implemented fewer than seven Core Elements identified by the CDC for a successful Antibiotic Stewardship Program. |
| <b>Declined to Respond</b>                                               | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey.                            |

|                                                                               |
|-------------------------------------------------------------------------------|
| <b>Section 8: Bar Code Medication Administration (BCMA) Scoring Algorithm</b> |
|-------------------------------------------------------------------------------|

Link to Survey Questions and Reference Materials: <http://www.leapfroggroup.org/survey-materials/survey-and-cpoe-materials>

## **Bar Code Medication Administration**

In this section of the survey, hospitals are scored on four components of BCMA use:

- **% Units:** A hospital's implementation of BCMA throughout the hospital, as measured by the percentage of units with a focus on adult and pediatric medical and/or surgical units and intensive care units (adult, pediatric, and neonatal).
- **% Compliance:** A hospital's compliance with patient and medication scans during administration.
- **Decision Support:** The types of decision support that the hospital's BCMA system offers, including:
  1. Wrong patient
  2. Wrong medication
  3. Wrong dose
  4. Wrong time (e.g., early/late warning; warning that medication cannot be administered twice within a given window of time)
  5. Vital sign check
  6. Patient-specific allergy check
  7. Second nurse check needed
- **Workarounds:** A hospital's structures to monitor and reduce workarounds, including:
  1. Has a formal committee that meets routinely to review data reports on BCMA system use
  2. Has back-up systems for hardware failures
  3. Has a help desk that provides timely responses to urgent BCMA issues in real-time
  4. Conducts real-time observations of users using the BCMA system
  5. Engages nursing leadership at the unit level on BCMA use

| BCMA Score<br>(Performance Category) | % Units                                                                                                       | % Compliance | Decision Support | Processes & Structures to Prevent Workarounds |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------|------------------|-----------------------------------------------|
| <b>Fully Meets the Standard</b>      | 100%                                                                                                          | 95%          | 7 out of 7       | 5 out of 5                                    |
| <b>Substantial Progress</b>          | Hospital meets 3 of the 4 standards                                                                           |              |                  |                                               |
| <b>Some Progress</b>                 | Hospital meets 2 out of 4 standards                                                                           |              |                  |                                               |
| <b>Willing to Report</b>             | Hospital meets 1 or 0 out of 4 standards                                                                      |              |                  |                                               |
| <b>Declined to Respond</b>           | Means the hospital did not respond to the questions in this section of the survey or did not submit a survey. |              |                  |                                               |
| <b>Does Not Apply</b>                | Means the hospital does not operate an ICU or medical/surgical unit.                                          |              |                  |                                               |

|                                                                                                  |
|--------------------------------------------------------------------------------------------------|
| <b>Section 9: 2016 Readmission for Common Acute Conditions and Procedures Scoring Algorithms</b> |
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Link to Survey Questions and Reference Materials: <http://www.leapfroggroup.org/survey-materials/survey-and-cpoe-materials>

## **Readmission Measures Scoring Algorithm**

Leapfrog calculates a composite score based on the number of reported cases and the readmission rate for each condition/procedure in Section 9 where at least 25 cases were reported. Below is a description of the methodology.

### **Dealing with Outliers**

For each measure, there are potential outliers with particularly high or low readmission rates that, if utilized in determining performance cut points, would skew the distribution. Outliers, for purposes of scoring, are defined as readmission rates that are greater than or equal to 1.5 times the inter-quartile range above the 3<sup>rd</sup> quartile [ $\text{rate} \geq 75^{\text{th}} \text{ percentile} + 1.5 \times (75^{\text{th}} \text{ percentile} - 25^{\text{th}} \text{ percentile})$ ] and values that are less than or equal to 1.5 times the inter-quartile range below the 1<sup>st</sup> quartile [ $\text{rate} \leq 25^{\text{th}} \text{ percentile} - 1.5 \times (75^{\text{th}} \text{ percentile} - 25^{\text{th}} \text{ percentile})$ ]. These outliers are removed from the determination of the transformation to performance categories.

### **Determining Performance Categories**

After removing outliers, the rates for each of the four conditions (AMI, heart failure, pneumonia, COPD) and two procedures (CABG and THA/TKA) are re-scaled separately to a fractional scale as follows:

- The highest *non-outlier* readmission rate within a condition is mapped to the numerical value of 0.5.
- The lowest *non-outlier* readmission rate within a condition is mapped to the numerical value of 4.5.
- All other readmission rates are linearly rescaled using the above two points as anchors (0.5 and 4.5). Hospitals with readmission rates that are high outliers are assigned the value of 0.5.
- Each re-scaled readmission rate (now a numerical value of 0.5 to 4.5) is weighted in proportion to the number of discharges for patients hospitalized for AMI, heart failure, pneumonia, COPD, CABG, and THA/TKA at that hospital. (i.e. conditions with fewer discharges than others are weighted less)
- That weighted mean is rounded to whole numbers to produce scores of 1, 2, 3, and 4, which are then assigned one of four performance categories described below.

| <b>Readmission Composite Score</b><br>(Performance Category) | <b>Weighted Mean</b><br>(rounded to a whole number as described above)                                                    |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Fully Meets the Standard</b>                              | 4*                                                                                                                        |
| <b>Substantial Progress</b>                                  | 3                                                                                                                         |
| <b>Some Progress</b>                                         | 2                                                                                                                         |
| <b>Willing to Report</b>                                     | 1                                                                                                                         |
| <b>Does Not Apply</b>                                        | This standard does not apply to pediatric hospitals or critical access hospitals.                                         |
| <b>Unable to Calculate Score</b>                             | The hospital reported fewer than 25 cases for all conditions/procedures or no data is available for the reporting period. |
| <b>Declined to Respond</b>                                   | The hospital did not respond to this section of the survey or did not submit a survey.                                    |

\*A fractional value of 4.5 is assigned to the value of 4.

## **Rescaling Readmission Values**

If your hospital's readmission rate is  $\leq$  the lowest cut-point (i.e. the best performing hospital), the value is mapped to 4.5 (this is the best score).

If your hospital's readmission rate is  $\geq$  the highest cut-point (i.e. the worst performing hospital), the value is mapped to 0.5 (this is the worst score).

If your hospital's readmission rate is between the lowest and highest cut-point, the value is rescaled using the following formula:

$$\frac{((\text{Your hospital's 30-day risk standardized readmission rate} - \text{Highest cut-point}) * (4.5 - 0.5))}{(\text{Lowest cut-point} - \text{Highest cut-point}) + 0.5^*}$$

\*Adding 0.5 at the end of the formula above puts your score on a 0.5 to 4.5 scale.

### **What values do I need?**

- Your hospital's volume and standardized 30-day readmission rate for AMI, HF, PN, COPD, CABG, and THA/TKA. These are found in Section 9B of your Last Submitted Survey (available to download/print from your Survey Dashboard).
- The lowest and highest cut-points for the conditions and procedures, which are available in the table below:

| <b>Measure</b> | <b>Highest Cut-Point</b><br>The highest <i>non-outlier</i> readmission rate within a condition is mapped to the numerical value of 0.5 | <b>Lowest Cut-Point</b><br>The lowest <i>non-outlier</i> readmission rate within a condition is mapped to the numerical value of 4.5 |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| AMI            | 19.7                                                                                                                                   | 14.3                                                                                                                                 |
| Heart Failure  | 25.9                                                                                                                                   | 18.1                                                                                                                                 |
| Pneumonia      | 19.6                                                                                                                                   | 14.2                                                                                                                                 |
| COPD           | 23.3                                                                                                                                   | 17.1                                                                                                                                 |
| CABG           | 18.3                                                                                                                                   | 11.6                                                                                                                                 |
| THA/TKA        | 6.2                                                                                                                                    | 3.5                                                                                                                                  |

Note: Readmission anchor points for each of the conditions and procedures are based on the distribution of results from the CMS dataset for the data collection period of July 1, 2011 to June 30, 2014. These readmission anchor points will remain in place for the entire survey reporting cycle, unless it is determined that there are compelling reasons to make revisions.

### **Below is an example of how to rescale your AMI Readmission Rate:**

#### From Details Page:

AMI highest cut-point for 30-day Readmission Rate = 19.7

AMI lowest cut-point for 30-day Readmission Rate = 14.3

Hospital Standardized 30-day Readmission Rate = 18.0

#### From Leapfrog Hospital Survey:

Hospital volume = 150

$\frac{((18.0 - 19.7) * (4.5 - 0.5))}{(14.3 - 19.7)} + 0.5 = \text{rescaled 30-day Readmission Rate for AMI}$

$\frac{((-1.7) * (4.0))}{(-5.4)} + 0.5 = 1.75926$

Rescaled 30-day Readmission Rate for AMI \* Volume of Cases for AMI 30-day Readmission Rate

measure = AMI weight score

$1.75926 \times 150 = 263.889$

Repeat the calculation above for all conditions and procedures with available data in Section 9B. Divide the sum of the weighted scores by the total volume for all procedures: (AMI weighted score + HF weighted score + PN weighted score + COPD weighted score + CABG weighted score + THA/TKA weighted score) / Total volume for all 6 conditions and procedures.

Round weighted mean to nearest whole number to produce scores of 1, 2, 3, or 4 where 1 is equal to Willing to Report, 2 is equal to Some Progress, 3 is equal to Substantial Progress, and 4 is equal to Fully Meets the Standard. A value of 4.5 is equal to Fully Meets the Standard.

Results from the 2016 Leapfrog Hospital Survey will be available at <http://leapfroggroup.org/compare-hospitals> on July 25, 2016.

Results are then updated within the 5<sup>th</sup> business day of each month to reflect new survey submissions and resubmissions.

The 2016 Leapfrog Hospital Survey closes on December 31, 2016.

Find more information about the 2016 Leapfrog Hospital Survey at: <http://leapfroggroup.org/survey>.