

CHARTING THE COURSE: 2022 HAI REBASELINE

Frequently Asked Questions Regarding the 2022 HAI Rebaseline Project NHSN Patient Safety Component

1. What is a Baseline?

To promote external comparisons of healthcare-associated infection (HAI) or related outcomes, CDC uses national-level NHSN rate data from a specific year (the “baseline” year) to calculate the predicted number of HAIs or device days for a facility, state, or the nation. The predicted numbers are used as the denominators for the standardized infection ratios (SIRs) and standardized utilization ratios (SURs). These two metrics (SIR and SUR) compare the number of observed infections (or device days) in a facility to the number of infections (or device days) that were “predicted” to have occurred if the facility had rates equal to the rate of the national baseline. The number of predicted infections (or device days) is estimated using a regression model that was developed from the baseline year’s rate data. CDC designates a specific calendar year of data to represent a set of national rates to enable the creation of an external benchmark comparison. This set of rates forms a baseline that promotes timely comparisons to measure change in an outcome. Currently (as of June 2023), 2015 is used as the national baseline year for all SIRs and SURs. Refer to NHSN’s [SIR](#) and [SUR](#) Guides for more information.

2. What is the 2022 HAI Rebaseline?

“Rebaseline” is a term that CDC’s National Healthcare Safety Network (NHSN) staff use to describe the process of updating the national healthcare-associated infection (HAI) baselines and risk adjustment models. The 2022 HAI Rebaseline will update both the source of aggregate data and the risk adjustment methodology used for the SIR and SUR metrics. During the Rebaseline process, national aggregate data reported to NHSN for calendar year 2022 will be analyzed and used to create new risk adjustment models that estimate the number of predicted HAIs or device days in a given facility, state, or national set of exposure data. Depending on the HAI or other related outcome, exposure data could be device days (think CLABSI/CAUTI/VAE), patient days (think MRSA bacteremia/CDI LabID) or surgical procedures (SSI). Once the updated risk adjustment models have been created through the Rebaseline process, the denominator calculations for *all* existing SIRs and SURs will be updated in NHSN to utilize these new models; this includes all facility types, HAI types, and devices for which sufficient national 2022 data exist.

3. What is Risk Adjustment?

Risk adjustment is a methodology used to account for the differences in risk of an outcome or rate among a set of factors that are identified as having a statistically significant association with that outcome. In other words, any factors associated with an outcome risk or rate may explain or account for differences in a way where the resulting measure needs to adjust for them. For instance, if an outcome risk or rate differs significantly between intensive care unit (ICU) and ward patients in a hospital, then this dichotomous factor distinguishing exposure for ICU vs. ward patients will deliver risk adjustment. When the outcome data are increasingly and meaningfully risk-adjusted, hospital performance and comparisons are fairer.



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4. Why does the current risk adjustment need to be updated?

CDC updates the baseline year to refresh the data where policy, practice, and/or protocol changes may need to be incorporated in the national data used for external benchmark comparisons and may help drive the progress of preventing HAIs. Specifically, there may have been sufficient changes in surveillance definitions, diagnostic testing, healthcare facility prevention practices, science, technology, and hospital operations since the existing (2015) baseline year. In addition, the Rebaseline will ensure that the risk adjustment models are better able to capture relevant changes in the risk of HAIs since 2015 and will allow hospitals to compare their incidence of HAIs to recent national data.

5. Are the formulas and calculations changing for the SIR and SUR?

The SIR and SUR benchmark comparison metrics will still be calculated by the general formula:

$$\text{SIR} = \frac{\# \text{ observed HAIs}}{\# \text{ predicted HAIs}} \qquad \text{SUR} = \frac{\# \text{ observed device days}}{\# \text{ predicted device days}}$$

The updated risk adjustment models, created using 2022 national data, will be used to calculate revised denominators for SIRs and SURs. In other words, the Rebaseline will produce models that recharacterize the national rates for NHSN's HAI outcome measures, and the updated set of national rates from 2022 will ultimately be used to calculate the number of predicted HAIs and device days for a given facility.

6. Why was 2022 selected as the year for the new baseline?

The NHSN team remains committed to working with facilities to improve HAI prevention. COVID-19-related activities at CDC—and the national increase in HAIs associated with the pandemic—had previously delayed the team's initial plans for a rebaseline several years ago. We have been tracking the [impact of COVID-19 on HAIs](#), and while HAI data for some hospitals may have been impacted by COVID-19 activities to some extent during 2022, national-level analyses show that HAI incidence has returned, or is close to returning, to the pre-pandemic state. In addition, compared to the 2015 baseline and existing risk models, updated risk models that are created using 2022 national data will better reflect current policy, practice, and surveillance protocols. Measuring progress under an updated national standard is important to understanding HAI prevention efforts and standards in the current healthcare environment.

7. What factors will be included in the new risk adjustment models?

The NHSN team will assess all suitable factors (i.e., data elements often called variables) reported to NHSN as potential risk factors. To be used for risk adjustment, any eligible risk factor must have a statistically significant relationship with the outcome and improve the statistical fit of the model. Suitable risk factors include facility-level characteristics reported on the NHSN Annual Facility Surveys as well as other applicable patient care location- or patient-level factors reported to NHSN that are complete and available for any given patient population being assessed.



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8. Will a patient's COVID-19 status be taken into consideration as a potential risk factor for the SIR?

NHSN collects patient's COVID-19 status on the HAI event form. However, NHSN does not collect this information for all patients eligible for any specific HAI event (think denominator), and therefore COVID-19 cannot be used as a risk factor.

9. What can hospitals and other organizations expect to happen to their SIRs, SURs, and/or SIR and SUR denominators after the 2022 Rebaseline?

The data included in the 2022 baseline will serve as a new “reference point” for measuring progress in HAI prevention. CDC understands that hospital SIRs and SURs calculated using their 2022 data may shift closer to 1.0 since the baseline uses 2022 national data; however, each hospital will need to track their SIRs and SURs to better know the impact of this Rebaseline. The number of predicted infections (or device days) may increase or decrease for a particular facility depending on the HAI or device type.

10. Will NHSN Groups have access to SIRs and SURs calculated under the 2022 baseline?

Yes. Once the reports are available in the NHSN application, Groups will be able to access the SIR and SUR reports, at the same time as member facilities.

11. Will all current SIRs and SURs calculated under the existing 2015 national baseline remain available in the NHSN application for use?

Yes, all previous and current baselines in NHSN will remain in the NHSN application for use.

12. Will all previous SIRs and SURs calculated under the original national baseline years remain in the NHSN application for use?

Yes, all previous and current baselines in NHSN will remain in the NHSN application for use.

13. When will SIRs using the 2022 baseline be used for CMS programs, such as public reporting on the Care Compare website, Star Ratings, HAC scores, etc.?

For more information on when the SIRs on the 2022 baseline will be used for CMS programs, please stay tuned for future hospital inpatient quality program information.

