



Inpatient Quality Indicators (IQI) Risk Adjustment in the QI Software

AHRQ is re-releasing the SAS Inpatient Quality Indicator (IQI) software as v2021.0.2 and WinQI software as v2020.0.1 with an updated version of the limited-license grouper which will allow for the calculation of admission-based APR-DRGs. The Inpatient Quality Indicators (IQI) software uses admission-based All Patient Refined Diagnosis Related Groups (APR-DRG) as covariates in risk-adjustment models. This software replaces SAS IQI v2021.0.1 and WinQI v2021 which included a limited-license grouper based on discharge APR-DRGs.

The APR-DRGs are based on proprietary clinical mapping of diagnosis and procedure information to classify each discharge into a single DRG; in addition, the APR-DRGs include a risk-of-mortality subclass (minor, moderate, major, extreme), making them well suited for the mortality-focused IQIs. The APR-DRG software allows users to specify whether to use all information on the discharge (discharge-based APR-DRGs) or only that information available upon admission (admission-based APR-DRGs). For the IQI risk adjustment models, the admission-based APR-DRGs are conceptually more appropriate, as the IQIs assist healthcare systems aiming to reduce inpatient mortality. Using discharge-based APR-DRGs may adjust away the consequences of poor quality of care, i.e., any diagnoses that arise during the admission. Thus, the reference population was produced with the admission-based APR-DRGs and then used to develop the IQI risk-adjustment models in v2020 and v2021.

The limited-license grouper software provided with v2020 and v2021 of the SAS QI and WinQI software produces discharge-based APR-DRGs resulting in inconsistencies with the IQI risk-adjustment model methodology. This often leads to biased risk-adjusted rates from the AHRQ IQI software. The direction of the bias is downward, meaning that mortality due to complications occurring during the admission may be adjusted away.

The new limited-license grouper embedded in SAS IQI v2021.0.2 and WinQI v2021.0.1 requires present on admission (POA) indicators to produce the admission-based APR-DRGs. This aligns the updated AHRQ IQI Software risk-adjustment models with their intended methodology of capturing risk at the time of admission. AHRQ plans to release SAS IQI v2021.0.2 and WinQI v2021.0.1 in late March 2022.

After implementing the updated version of the limited-license grouper, users should expect to see an increase in their risk-adjusted rates for several IQIs (IQI 08, 09, 12, 30, and 31 with observed-to-expected ratios ranging from 1.50 to 2.67). The software includes an option for users to calibrate the observed-to-expected ratio to their own data in the SAS QI control program (see page 38 of the Quality Indicators Software Instructions, SAS QI v2021). Similarly, in WinQI, the “observed-to-expected ratio” option can be configured in the Area report wizard (see section 12.3.4.2.6, page 88 of the Quality Indicators Software Instructions, WinQI v2021). Exercising this option can resolve some of the calibration issues produced by the updated limited license; however, this is only recommended for users with multiple hospitals in their datasets.