



Patient Safety Indicator 90 (PSI 90)

Patient Safety and Adverse Events Composite

July 2021

Hospital-Level Indicator

Type of Score: Ratio

Prepared by:

Agency for Healthcare Research and Quality

U.S. Department of Health and Human Services

www.qualityindicators.ahrq.gov

DESCRIPTION

The weighted average of the observed-to-expected ratios for the following component indicators:

- PSI 03 Pressure Ulcer Rate
- PSI 06 Iatrogenic Pneumothorax Rate
- PSI 08 In-Hospital Fall With Hip Fracture Rate
- PSI 09 Postoperative Hemorrhage or Hematoma Rate
- PSI 10 Postoperative Acute Kidney Injury Requiring Dialysis Rate
- PSI 11 Postoperative Respiratory Failure Rate
- PSI 12 Perioperative Pulmonary Embolism (PE) or Deep Vein Thrombosis (DVT) Rate
- PSI 13 Postoperative Sepsis Rate
- PSI 14 Postoperative Wound Dehiscence Rate
- PSI 15 Abdominopelvic Accidental Puncture or Laceration Rate

PSI 90 combines the smoothed (empirical Bayes shrinkage) indirectly standardized morbidity ratios (observed/expected ratios) from selected AHRQ Patient Safety Indicators (PSIs). The weights of the individual component indicators are based on two concepts: the volume of the adverse event and the harm associated with the adverse event. The volume weights were calculated based on the number of safety-related events for the component indicators in the all-payer reference population. The harm weights were calculated by multiplying empirical estimates of the probability of excess harms associated with each patient safety event by the corresponding utility weights (1–disutility). Disutility is the measure of the severity of the adverse events associated with each of the harms (i.e., outcome severity, or least preferred states from the patient perspective). The harm weights were calculated using linked claims data for two years of Medicare Fee for Service beneficiaries.

Table 1. Composite Weights for PSI 90 v2021

INDICATOR	HARM WEIGHT	VOLUME WEIGHT	COMPONENT WEIGHT
PSI 3 Pressure Ulcer Rate	0.3080	0.1048	0.1641
PSI 6 Iatrogenic Pneumothorax Rate	0.1381	0.0457	0.0321
PSI 8 In Hospital Fall With Hip Fracture Rate	0.1440	0.0194	0.0142
PSI 9 Postoperative Hemorrhage or Hematoma Rate	0.0570	0.1526	0.0442
PSI 10 Postoperative Acute Kidney Injury Requiring Dialysis Rate	0.3584	0.0310	0.0564
PSI 11 Postoperative Respiratory Failure Rate	0.2219	0.2125	0.2397
PSI 12 Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate	0.1557	0.2318	0.1835
PSI 13 Postoperative Sepsis Rate	0.3102	0.1384	0.2182
PSI 14 Postoperative Wound Dehiscence Rate	0.1441	0.0170	0.0125
PSI 15 Abdominopelvic Accidental Puncture or Laceration Rate	0.1474	0.0468	0.0351

Source: 2018 State Inpatient Databases, Healthcare Cost and Utilization Program, Agency for Healthcare Research and Quality. 2013-2014 Medicare Fee-for-Service claims data.

For more information, see Quality Indicator Empirical Methods and Composite User Guide.