

<b>PSI 2: Death in Low-Mortality DRGs</b>	
<b>Origin: Review of an AHRQ PSI (3)</b>	
<b>Dimension</b>	<b>Description</b>
<b>Description of Specific Aspects of Patient Safety</b>	Death in patients admitted to hospital for an extremely low-mortality condition or procedure might happen due to adverse events. Thus this theme is suitable as a measure of patient safety.
<b>Aim of the PSI</b>	This PSI is intended to flag cases of in-hospital deaths in patients unlikely to die during hospitalisation.
<b>Level of Determination of Patient Safety</b>	Safety is assessed at the aggregated patient level.
<b>Source(s)</b>	This indicator was originally proposed by Hannan et al. as a criterion for targeting “cases that would have a higher percentage of quality of care problems than cases without the criterion as judged by medical record review” (3).
<b>Extent of Clinically Testing</b>	<p>The AHRQ project team developing this PSI conducted empirical analyses on this PSI. The team concluded: “Deaths in low-mortality DRGs generally performs well on several different dimensions including reliability, bias, relatedness of indicators and persistence over time”. The AHRQ project team reviewed the literature and found a two-stage implicit review of randomly selected deaths by Hannan et al. They found that “patients in low-mortality DRGs (&lt;0.5%) were 5.2 times more likely than all other patients who died (9.8% versus 1.7%) to have received “care that departed from professionally recognised standards,” after adjusting for patient demographic, geographic, and hospital characteristics. In 15 of these 26 cases (58%) of substandard care, the patient’s death was attributed at least partially to that care. The association with substandard care was stronger for the DRG-based definition of this indicator than for the procedure-based definition (5.7% versus 1.7%, OR=3.2)”(3).</p> <p>The AHRQ PSI software was applied to Veteran Affairs (VA) administrative data to identify potential instances of compromised patient safety; determine occurrence rates of PSI events in the VA; and examine the construct validity of the PSIs. The study population was 97% male, with a mean age of 65 years, 54% were age 65 and older. Mean length of stay was 7.1.days. All together 11411 PSI events were identified, 46% of PSI events occurred in surgical hospitalisation and 54% in medical hospitalisation. The observed PSI rate per 1000 discharges was 3.23 for death in low-mortality DRGs. This PSI was significantly associated with the AHRQ PSI for failure to rescue. Statistically significant differences were found for hospitalisations with this PSI event and those without PSI events for longer lengths of stay and costs (4).</p> <p>The performance of the AHRQ PSIs was analysed to: 1) provide</p>

	<p>a descriptive analysis of the incidence of PSI events from 2001 to 2004 in the VA; 2) examine trends in national PSI rates at the hospital discharge level over time; and 3) assess whether hospital characteristics (teaching status, number of beds, and degree of quality improvement implementation) and baseline safety-related hospital performance predict future hospital safety-related performance. Risk-adjusted rates of the PSI for iatrogenic pneumothorax and failure to rescue demonstrated no clear trend in the rate over time. It was concluded, that the PSI is a useful tool for tracking and monitoring patient safety events. Future research should investigate whether trends reflect better or worse care or increased attention to documenting patient safety events (5).</p> <p>The Agency for Healthcare Research and Quality PSI algorithms were applied to administrative data across four years of 1.92 million discharges from children's hospitals. The mean risk-adjusted rates of PSI events ranged from 0.1 events per 1000 discharges for a foreign body left in during a procedure to 140 events per 1000 discharges for failure to rescue. The researchers concluded: "PSIs derived from administrative data are indicators of patient safety concerns and can be relevant as screening tools for children's hospitals; however, cases identified by these indicators do not always represent preventable events. Some, such as a foreign body left in during a procedure, iatrogenic pneumothorax, infection attributable to medical care, decubitus ulcer, and venous thrombosis, seem to be appropriate for paediatric care and may be directly amenable to system changes. In their present form, two of the indicators, namely, failure to rescue and death in low-mortality DRGs, are inaccurate for the paediatric population, do not represent preventable errors in the majority of paediatric cases, and should not be used to estimate quality of care or preventable deaths in children's hospitals"(6).</p> <p>Administrative data from community hospitals in 16 US states with reliable race/ethnicity measures using the AHRQ PSIs was analysed to determine whether racial and ethnic differences in patient safety events disappear when income (a proxy for socioeconomic status) is taken into account. Deaths in low-mortality DRGs occur significantly less often among Hispanic people and Asian Pacific Islander than among white. It was concluded that: "The AHRQ PSIs are a broad screen for potential safety events that point to needed improvement in the quality of care for specific populations" (7).</p> <p>The results suggest that this PSI may be useful as a measure of patient safety – Though special thoughts should be given to application of this PSI to the paediatric population. (3-6).</p> <p>AHRQ is determining the feasibility and practicality in a project concerning validation of selected AHRQ Quality Indicators (8).</p>
<b>Evidence of Clinically use of Standards</b>	No evidence of clinically use of standards was found.

<b>PSI category</b>	Disease Disease Specific PSI
<b>Data definitions</b>	In-hospital deaths per 1000 patients in DRGs with less than 0.5% mortality.
<b>Numerator Description</b>	Discharges with dispositions of “deceased”.
<b>Denominator Description</b>	<p>Patients, 18 years and older or MDC (pregnancy, childbirth and puerperium), in DRGs with less than 0.5% mortality rate, based on NIS 2003 low-mortality DRG.</p> <p>If a DRG is divided into “without/with complications”, both DRGs must have mortality rates below 0.5% to qualify for inclusion.</p> <p>Exclude cases with any code for trauma, immunocompromised state, or cancer.</p>
<b>Data Source</b>	Administrative data.
<b>Identifying the institutional context</b>	The impact of deaths in low-mortality DRGs related to adverse events makes this PSI important in quality improvement policies.
<b>Care Setting</b>	The PSI applies for quality health care.
<b>Professionals Responsible for Health Care</b>	All authorised health care workers.
<b>Lowest Level of Health Care Delivery Addressed</b>	Individual clinical department.
<b>Allowance for Patient Factors</b>	No risk adjustment described.
<b>Stratification by Vulnerable Populations</b>	Because the denominator includes many heterogeneous patients cared for by different services, this PSI should be stratified by DRG type i.e., adult medical, paediatric medical, adult surgical, paediatric surgical, psychiatric, obstetric and neonatal (3;4).
<b>Standard of Comparison</b>	No specific standards given.
<b>Scoring</b>	<p>AHRQ has PSI software for scoring.</p> <p>This indicator should be evaluated separately by type of DRG when used as an indicator of quality. For example, the PSI Software reports the low-mortality DRG rate for all the included DRGs and separately by DRG type: adult medical, adult surgical (with and without an operating room procedure), paediatric medical, paediatric surgical (with and without an operating room procedure), and obstetric and psychiatric (3).</p>