

PSI 29: Electronic Trigger Tool - Surveillance of Adverse Drug Events	
Origin: PSI by SimPatIE	
Dimension	Description
Description of Specific Aspects of Patient Safety	<p>Adverse drug events (ADEs) are continually placing patients at risk of harm. ADEs are the single most frequent adverse event type. Tracking the occurrences of ADEs over time is a useful way to tell about the development of safety related to medication.</p> <p>Thus use of specified "triggers" or clues – signalling that an ADE might have occurred – is a suitable patient safety measure.</p>
Aim of the PSI	This PSI is intended to flag rates of ADEs.
Level of Determination of Patient Safety	Safety is assessed at the aggregated patient level.
Source(s)	<p>Manual chart review has been considered the "gold-standard" for identifying adverse events in many patient safety studies. The methodology is expensive and has shown imperfect (46). Automated surveillance for adverse drug events has been demonstrated firstly by Classen et al. in the early 1990s (47). Since then more groups have developed electronic methods suitable for detecting adverse events based on the use of "triggers", coded data, free-text clinical narratives, or a combination of techniques (47-53). Advances in such electronic systems will facilitate our ability to monitor adverse events (46).</p> <p>Thus this PSI is based upon a computerised screening tool that searches free-text discharge summaries for trigger words representing possible adverse drug events.</p>
Extent of Clinically Testing	<p>To assess the accuracy and define the epidemiology of computer based medication error reports a retrospective cohort study of 581 error reports containing 1010 medication errors was conducted. Of medication errors reviewed, 298 (30%) were prescribing errors, 245 (24%) were dispensing errors, 410 (41%) were administration errors, and 57 (6%) involved medication administration records (MAR).</p> <p>Following expert review the overall distribution of error type categories did not change significantly, although only MAR errors were underreported by the reporters. The researchers concluded “despite clear imperfections in the data captured, medication error reporting tools are effective as a means of collecting reliable information on errors rapidly and in real time. Our data suggest that administration errors are at least as common as prescribing errors in children” (49).</p> <p>A recent study by Murff et al. of the development of an electronic trigger tool was based on a cohort study including 424 randomly selected admissions. All discharge summaries</p>

	<p>with a trigger word present underwent chart review by two independent physician reviewers. The presence of adverse events was assessed using structured implicit judgment. A random sample of discharge summaries without trigger words was reviewed too. It was found that 59% of the discharge summaries contained trigger words. Based on discharge summary review, 44.8% (327 of 730) of the alerted trigger words indicated a possible adverse event. After medical record review, the tool detected 131 adverse events. The sensitivity and specificity of the screening tool were 69% and 48%, respectively. The positive predictive value of the tool was 52%. The study showed that the computerised screening method offers researchers and quality managers a means to routinely detect adverse events (50).</p> <p>The use of Trigger Tools appears to increase the rate of ADE detection approximately 50-fold over traditional reporting methodologies. This result is based upon a retrospective review of patient records (52). This result is supported by another study using the Trigger Tool in a neonate ICU. The researchers found that the rate of adverse event was substantially higher than previously described. Many adverse events resulted in permanent harm and the majority of events were classified as preventable. Only 8% of the ADEs were identified using traditional voluntary reporting methods (54). It has been found, that the use of the trigger tool decreased patient harm significantly (55)</p>
Evidence of Clinically use of Standards	The following standard has been used by IHI: “Decrease the number of ADEs per 1000 doses by 75 percent within 1 year”
Indicator category	Theme Related PSI: “Medication Errors”.
Data definitions	The total number of ADEs per 1000 doses.
Numerator Description	The total number of ADEs identified in a (defined) sample of patient records.
Denominator Description	Total number of medication doses administered to the patient records reviewed.
Data Source	Applying Trigger Tool for measuring the frequency of adverse drugs events to patient’s records.
Identifying the institutional context	The assessment of and development of safety related to medication is important in general clinical and organisational improvement policies.
Care Setting	The indicator applies for medication safety.
Professionals Responsible for health care	Doctors and cares.

Lowest Level of Health Care Delivery Addressed	Individual clinical units or departments.
Allowance for Patient Factors	Not applicable.
Stratification by Vulnerable Populations	Not applicable.
Standard of Comparison	Comparison over time can be made. No set time frame for comparison has been identified.
Scoring	Scoring is made according to the Electronic Trigger Tool chosen e.g. (50)