

# Using a Checklist as a Strategy to Reduce Errors During the Administration of High Alert Continuous Intravenous Medications

Abbi Buchholtz BSN, RN, Christine Gowan BSN, RN, Lindsay Schwartz BSN, RN  
Faculty Advisor: Michelle Johnson PhD, RN

## Purpose Statement

To create a checklist for high alert continuous medications (HAMs) and to evaluate the effectiveness of the checklist, to be completed by nurses at any nurse to nurse handoff.

## Literature Review

- Medication administration errors represent one of the highest frequency healthcare failures (Keers et al., 2015).
- Sessions et al. (2019) define a medication error as a failure in following processes designed to ensure patient safety from the time the medication is ordered until the medication is administered to the patient.
- “Patient deaths have been attributed in part to a failed double checking process (Hewitt et al., 2016)”.
- Wolf (2016) identified the types of errors most frequently found with infusion medications as excessive dose, wrong drug, and wrong route of administration.
- Specific medications considered as high alert vary by organization, but all relevant organizations identify anticoagulants, sedatives, insulins, and opioids as the four major HAM drug classes (Anderson & Townsend, 2015).
- Standardizing sign-off procedures and education on the need for constant monitoring of intravenous medication infusions are two methods that could decrease operator errors (Lee et al., 2019).
- Mistakes made during medication administration are often linked to nurses’ lack of knowledge and experience, but are also dependent on the quality of the double checking process and nurses’ access to supportive resources (Keers et al., 2015).
- Engels and Ciarkowski (2015, p. 292) state, “We believe that the workplace is where education about institution-specific high-alert medications and safeguards need to be reinforced rather than being first introduced.”

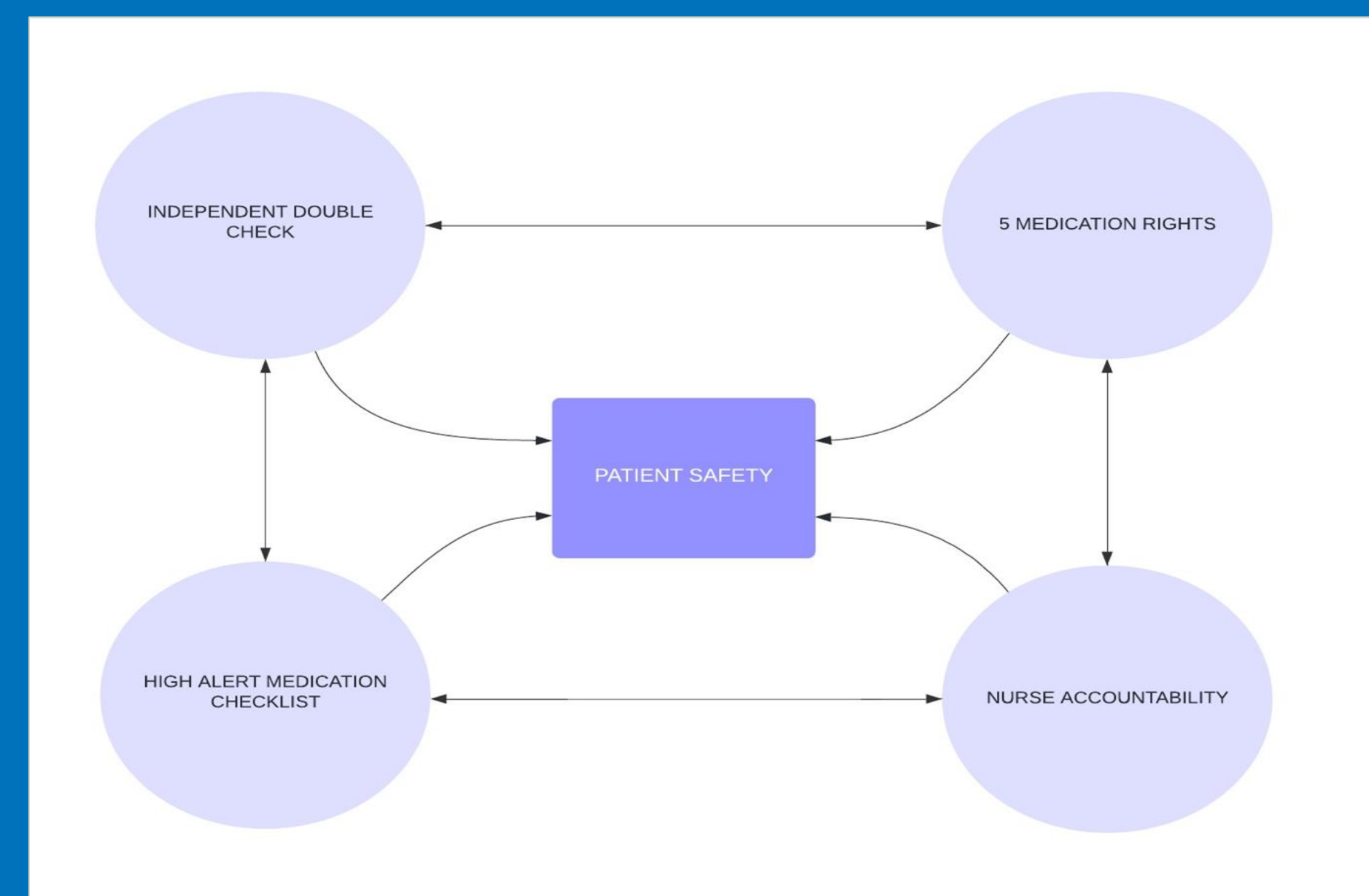
## Literature Review Cont.

- Nurses are held responsible for medications that are administered by them and must have a relevant knowledge base for the medication including understanding possible side effects, the mechanism of action, dosing and interactions (Kavanagh, 2017).
- The implementation of a double check process, where two nurses work together to ensure the 5 rights of medication administration are being met, is recommended to reduce medication errors (Wolf & Hughes, 2019) and (Keers et al., 2015).
- A randomized, blinded, controlled study found that a double check process was more effective at reducing two different types of medication errors than a single check (Douglass et al., 2017).

## Theoretical Framework

### Reason’s Swiss Cheese Model of Accident Causation (Seshia et al., 2018)

- System failure occurs when multiple “holes” align and bypass the defense system, leading to an adverse event
- Examines the system in its entirety and provides a look at how each aspect could affect another
- Utilizing a checklist has shown to help catch errors, therefore stopping or reducing harm



(Diagram designed by authors in PowerPoint.)

## Methods

### Project Design and Setting

Quality improvement project within 2 ICUs in a hospital in the Midwest

- Cardiac ICU
- Neuro/Trauma ICU
- Nurse managers from each ICU (stakeholders), granted permission to conduct the study on their units.

### Project Procedure

#### SMART Objectives

- Examine the effects of using a checklist during nurse to nurse handoff to reduce the number of errors during the administration of HAMs.
- Identify the most common errors associated with the administration of HAMs within the QI project setting.

### Data Collection

DATE & TIME	MEDICATION	CORRECT DOSE/TITRATION?	PUMP PROGRAMMED CORRECTLY (MED CONCENTRATION & PATIENT DOSING WEIGHT)?	IF CONCURRENTLY RUNNING, ARE MEDICATIONS COMPATIBLE?	IF APPLICABLE, ARE LABS ORDERED (NA, MYOGLOBIN, ETC)?	ARE THE ORDERED GOALS BEING ACHIEVED?
		YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
		YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
		YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
		YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A
		YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A	YES NO N/A

### MEDICATION SAFETY CHECKLIST SURVEY

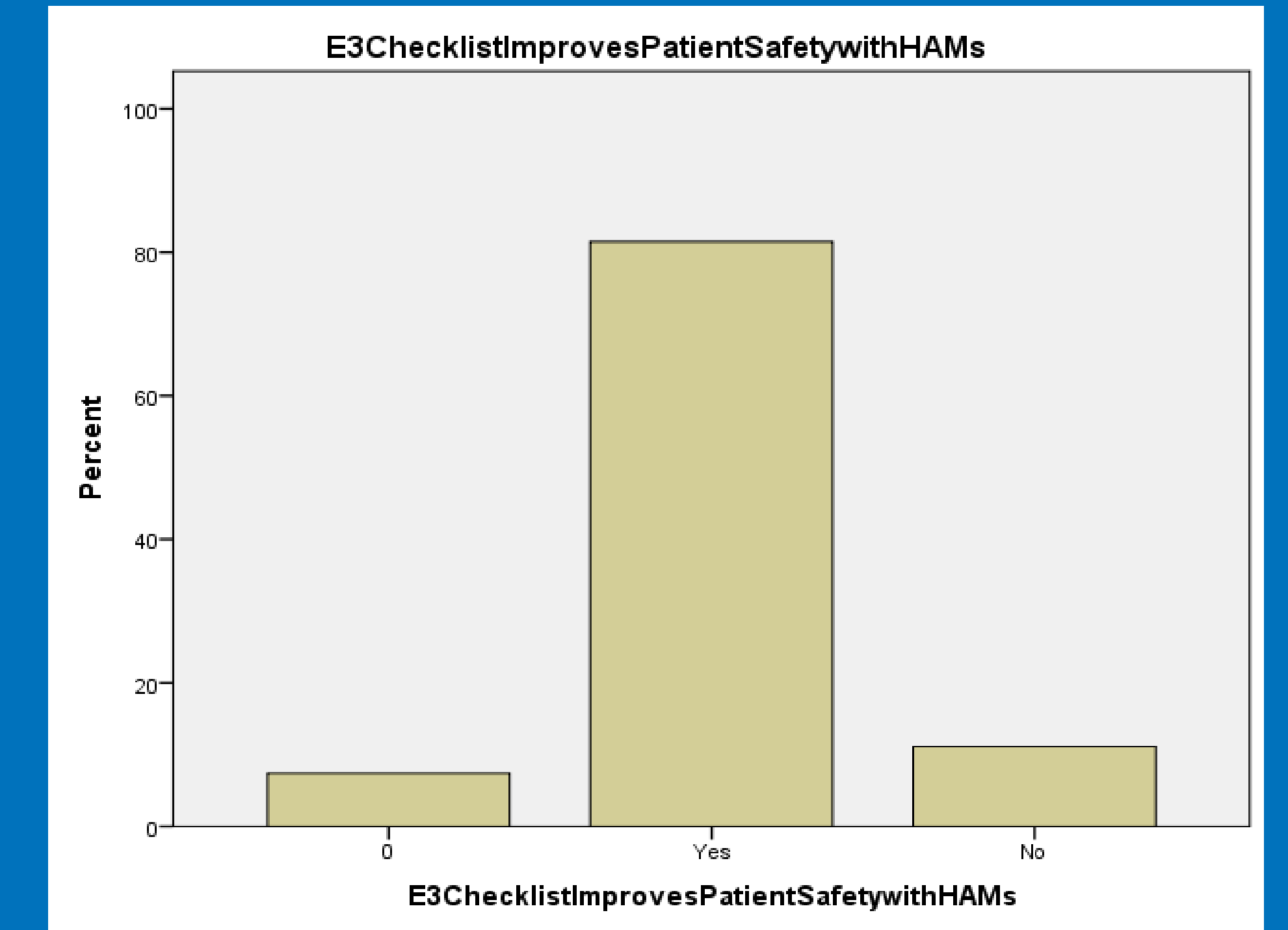
- Did the checklist help you identify an error? If so, what medication and what was the error?
- Did you feel the checklist was easy to use?
- Do you think this checklist improves patient safety in the administration and maintenance of continuous intravenous high-alert medications?
- In the space below, please leave any additional comments you may have.

### Data Analysis

- Descriptive statistics
- SPSS used to analyze results
- Qualitative responses

## Ethical Considerations

### Results



### Project Outcomes

**HIGH ALERT MEDICATION SAFETY**

FINDINGS FROM THE BCHS MSN QUALITY IMPROVEMENT STUDY FOUND THAT OF 27 COMPLETED SURVEYS, **THREE** MEDICATION ERRORS WERE IDENTIFIED...

**CHECK YOURSELF**

- ENSURE **DOSING WEIGHT** IS UTILIZED ON WEIGHT BASED MEDICATIONS
- DOUBLE CHECK IV PUMP SETTINGS AT **EVERY** HAND-OFF (EX: UNITS/HR VS UNITS/KG/HR)
- MONITOR OUTCOMES**... ARE ORDERED GOALS BEING ACHIEVED? (LABS, SAS, ETC.)

... IT'S AS EASY AS 1, 2, 3

### Discussion

#### Project Evaluation

- PICO Question
- SMART Objectives 1&2
- Theoretical Framework: Reason’s Swiss Cheese Model of Accident Causation
- Lessons Learned

### Conclusion

- Integration into current practices
- Bedside nurse education/training