Closed-Loop Insulin Medication Safety Bundle

NURS-FPX4020 Assessment 3 - Improvement Plan In-Service Presentation

- Audience: adult medical-surgical nurses, charge nurses, pharmacists, educators, and support partners
- Format: 45-minute in-service with demonstration, practice, debrief, and feedback
- Model scenario: fictional wrong-patient rapid-acting insulin event

Aim: safer insulin administration through reliable systems and team practice

Presenter notes

Welcome participants and introduce the purpose of the in-service. Explain that the session follows a fictional wrong-patient insulin event analyzed in a root-cause review. The event is used for learning, not blame. State that insulin is a high-alert medication and that safe administration depends on the nurse, the patient, reliable technology, pharmacy controls, leadership support, and clear exception procedures.

Set the tone by saying that anyone may stop the process when patient identity, dose, glucose, meal status, equipment, or documentation is uncertain. The session will show the new workflow, allow staff to practice a scanner-failure scenario, and collect feedback before full implementation. Remind participants that the case and baseline data are illustrative and should be replaced with verified organizational data in a real presentation.

Purpose, Learning Outcomes, and Agenda

- Explain why the insulin safety plan is needed and how it responds to the root causes
- Demonstrate the Stop-Scan-Verify-Administer-Document workflow
- Apply the downtime and interruption-restart process in a simulation
- State each team member's role in implementation and sustainment
- Give feedback using a one-minute evaluation and confidence rating
- Agenda: 10 min evidence and event, 12 min workflow, 15 min practice, 5 min debri

Success requires knowledge, skill, and a workable environment

Presenter notes

Review the learning outcomes in observable terms. Participants should leave able to explain the problem, perform the new workflow, apply the downtime algorithm, and identify who to contact when the system is unsafe. This is more specific than asking staff to understand medication safety.

Explain the session flow. The first section establishes the need for change. The second demonstrates the bundle. The third is active practice because staff must perform the process, not only hear about it. The debrief tests clinical reasoning, and the final evaluation collects confidence, remaining barriers, and suggestions. Ask participants to keep questions that affect immediate safety and place longer implementation concerns on the parking-board so they can be answered before the pilot begins.

Why Change Is Needed

- Fictional event: scanner failure + interruption + manual override + no independent insulin check
- Patient received 10 units of rapid-acting insulin intended for another patient
- Severe hypoglycemia: glucose 42 mg/dL, IV dextrose, extended monitoring
- Illustrative 6-week baseline: 82% complete scans; 19% overrides lack useful reason; 7 insulin near misses
- The event reflects a system gap, not a single careless act

The safest process must remain safe when technology fails

Presenter notes

Briefly tell the fictional event in sequence. Avoid identifying or blaming an individual. Emphasize that the scanner failure removed one defense, the interruption disrupted attention, the override removed another defense, and the absent independent check allowed the mismatch to reach the patient.

Explain that the baseline numbers are illustrative examples for teaching. A real unit must verify its own scan compliance, override patterns, equipment logs, near misses, and harm events. The important point is the pattern: when exceptions become routine, a technology-enabled process can provide false reassurance. The improvement plan redesigns both normal work and exception work. It also includes monitoring so the team can see whether the process is improving rather than assuming that education alone fixed the problem.

Root Causes Identified

- Technology: unreliable scanner connectivity and slow replacement
- Process: manual override lacked an equivalent patient-medication verification
- Human factors: interruptions, cognitive load, and unsafe task resumption
- People: float orientation and competency validation were incomplete
- Communication: failures and near misses were not escalated or fed back
- Leadership: ownership was divided across nursing, pharmacy, IT, and quality

Root cause = a controllable system weakness

Presenter notes

Use this slide as a fishbone-style verbal review. Technology failure was important, but replacing one scanner would not be enough. The unsafe override, interruption environment, incomplete orientation, weak feedback, and fragmented governance would still remain.

Invite participants to identify which causes they have experienced. Do not ask them to disclose individual errors in the group. Instead, ask where the current process becomes difficult: bedside connectivity, duplicate documentation, unclear meal timing, lack of second-nurse availability, or non-urgent interruptions. Capture these workflow barriers. Their feedback will guide PDSA testing and reduce the chance that the new policy looks safe on paper but fails during actual work.

The Five-Part Safety Bundle

1. Reliable bedside barcode scanning with a safe downtime algorithm
2. Targeted independent double check for high-risk insulin situations
3. Protected medication workflow and interruption-restart verification
4. Pharmacist-led education, demonstration, and competency validation
5. Just-culture reporting, visible feedback, and PDSA measurement

No single defense is enough for a high-alert medication

Presenter notes

Explain that the bundle uses layered defenses. Scanning helps match the patient, order, and product. The independent check adds human verification when risk is high or the electronic defense is unavailable. Interruption controls protect attention. Education builds skill. Measurement and feedback reveal drift.

Clarify that the bundle is not a request for duplicate work at every dose. The independent check is targeted to defined situations, such as scanner downtime, unusual or concentrated products, high doses, rapid dose changes, conflicting glucose or meal information, or uncertainty. The team will test criteria during the pilot and revise them if they create delay without safety value.

New Workflow: Stop - Scan - Verify - Administer - Document

- STOP: prepare one patient at a time; remove distractions; review the order and allergies
- SCAN: scan the patient wristband and medication at the bedside
- VERIFY: two identifiers, insulin type, dose, glucose, meal status, timing, and order
- ADMINISTER: explain the medication, assess readiness, and give safely
- DOCUMENT: record immediately, monitor response, and report exceptions or near misses
- After interruption: return to STOP and repeat verification before proceeding

An interrupted task restarts at the last verified safe point

Presenter notes

Demonstrate the workflow using an empty practice insulin pen or simulated syringe. Show one-patient-at-a-time preparation and bedside identification. Read the name and date of birth from the wristband while also confirming verbally when appropriate. Explain that room number is not an identifier.

During VERIFY, connect the medication rights to the patient's clinical condition: current glucose, meal availability, insulin type, timing, dose, allergies, and order. If any element is uncertain, pause and clarify. After an interruption, do not rely on memory about where the task stopped. Return to the last verified safe point. This simple restart rule is central to the intervention because interruptions cannot be completely eliminated in acute care.

When the Scanner Does Not Work

- Pause administration and inform the charge nurse
- Try the assigned troubleshooting steps; obtain the charged spare device
- Contact IT/biomedical support if the issue is not resolved within 10 minutes
- Use the downtime algorithm only when delay creates greater clinical risk
- Complete independent patient, order, product, dose, glucose, and timing check
- Document the override reason and submit an equipment or near-miss report

A failed device must not remove every safety defense

Presenter notes

Walk through the downtime card. The first response is not to continue automatically. The nurse pauses, notifies the charge nurse, and obtains a spare device. The unit will keep the spare in a known location and test it each shift.

If clinical urgency requires a manual process, the nurse and independent checker each verify the patient, order, medication, product, dose, current glucose, timing, and meal status. The checker forms an independent answer before hearing the first nurse's conclusion. The override reason must be meaningful because data such as scanner unavailable, wristband unreadable, or urgent clinical need directs different corrective actions. Reporting the device problem is part of patient care because it protects the next patient.

High-Alert Insulin Safeguards

- Store and label insulin to reduce look-alike selection
- Use standardized concentrations and approved devices whenever possible
- Independent check when BCMA is unavailable or clinical risk is elevated
- Confirm current glucose, nutrition status, timing, and signs of hypoglycemia
- Teach the patient the insulin name, purpose, dose context, and symptoms to report
- Escalate unclear, unusual, or rapidly changing orders before administration

The second check must be independent, not a co-sign after the fact

Presenter notes

Clarify what the independent check includes. The second nurse reviews the original order and patient information, independently calculates or interprets the dose, inspects the insulin product, and confirms the patient. A quick question such as Does this look right? is not independent verification because it anchors the checker to the first nurse's answer.

Discuss patient participation. Invite the patient to state identifiers and ask about the insulin, but do not make the patient responsible for catching the error. Explain symptoms of hypoglycemia in plain language and ask the patient to report sweating, shaking, confusion, weakness, or palpitations. For patients with communication, cognitive, or language barriers, use appropriate supports and interpreter services.

Roles and Responsibilities

- Bedside nurse: follow workflow, monitor response, report exceptions, stop unsafe work
- Charge nurse: provide coverage, respond to device failure, support escalation
- Nurse educator/super-user: teach, observe competency, coach, orient float staff
- Pharmacist: review insulin safeguards, orders, storage, education, and trends
- IT/biomedical: maintain devices, connectivity, replacement, and response logs
- Quality/leadership: dashboard, PDSA support, resources, and just-culture feedbac
- Patient/family: confirm information, ask questions, report symptoms and experienc

Safety is shared; final bedside accountability remains clear

Presenter notes

Review each role and make ownership explicit. The bedside nurse is responsible for using the workflow and stopping when it is unsafe. The charge nurse protects time and helps solve exceptions. Educators and super-users provide immediate coaching rather than only sending reminders. Pharmacy brings medication-use expertise. IT and biomedical teams own device reliability. Quality and leadership connect data to action.

Ask participants to identify the correct escalation path on their shift. Who provides the spare scanner? How is IT contacted? Who completes the independent check? Where is the downtime card? Resolve any uncertainty before the pilot. A safety plan fails when responsibility is distributed so widely that no one knows who acts in the moment.

Skills Practice: Scanner Failure During Insulin Administration

- Scenario: two insulin orders, scanner fails, phone rings, meal tray is delayed
- Pair roles: administering nurse and independent checker
- Perform the pause, escalation, verification, patient explanation, and documentation
- Observer uses a six-item checklist and notes one strength and one opportunity
- Switch roles and repeat with a new interruption
- Time: 8 minutes practice + 4 minutes debrief

Practice the exception, not only the ideal workflow

Presenter notes

Divide participants into pairs or groups of three. Provide a fictional eMAR, wristband, insulin label, glucose result, and downtime card. The administering nurse begins the task. Introduce a scanner failure and a non-urgent call. The nurse should pause, redirect the interruption, notify the charge nurse, obtain support, and use the independent verification process if the simulation requires downtime.

The observer checks whether the nurse handled one patient at a time, used two identifiers, reviewed the original order, confirmed insulin type and dose, assessed glucose and meal status, explained the medication, restarted after interruption, and documented the exception. This activity is intentionally realistic. It tests whether the plan can be performed under the same conditions that contributed to the event.

Debrief and Answer Key

- Safe first action: pause - do not normalize the override
- Urgent vs. non-urgent interruption must be triaged, not ignored
- Independent checker reaches an answer before hearing the first nurse's conclusion
- Meal status and glucose are clinical safeguards, not documentation details
- A meaningful override reason supports system repair
- Reporting a near miss is a successful recovery, not a failure

Ask: Which step was hardest to perform in real workflow?

Presenter notes

Invite each group to describe one strength and one barrier. Reinforce the safe first action: pause and preserve patient identification. If the interruption is urgent, stabilize the patient and then restart the medication task from a verified point. If it is non-urgent, redirect it according to the coverage plan.

Correct any misunderstanding about the independent check. The checker should not simply watch the first nurse or add a co-sign. Discuss why meal status and glucose can change whether rapid-acting insulin is safe at that moment. End by asking which step is most likely to fail on the actual unit. Record that concern for the PDSA pilot. The goal of the debrief is not perfect performance in a classroom; it is learning what the system must support.

Implementation Timeline and Measures

- Weeks 1-2: validate baseline, inspect devices, finalize workflow and definitions
- Weeks 3-4: train pilot pod, test bundle, collect observations and feedback
- Weeks 5-8: revise and spread across the unit with super-user coverage
- Weeks 9-12: standardize, report results, address remaining barriers
- Targets: >=95% complete scans; >=90% eligible checks; 30% fewer interruptions
- Outcome aim: 50% fewer insulin errors and near misses within 90 days
- Balancing measures: medication-pass time, urgent response delay, workload

Use data for learning, not public ranking of individual nurses

Presenter notes

Explain the staged rollout. The pilot protects patients and staff by testing the plan in a manageable area. Daily check-ins during the first week should identify device, staffing, and documentation issues quickly. Super-users will be available on day and evening shifts.

Review the measures. Process measures show whether the bundle was used. Outcome measures show whether harm changed. Balancing measures reveal unintended effects. For example, scan compliance could improve while medication delays increase. The team would then adjust device availability or workflow rather than abandon the safety goal. All illustrative targets must be revised after the real baseline is confirmed. Unit-level data will be shared; individual cases will be reviewed privately according to just-culture principles.

Barriers, Feedback, and Sustainment

- Barrier: scanner reliability -> daily checks, spare device, response-time standard
- Barrier: difficulty finding second nurse -> charge-nurse coverage and targeted criteria
- Barrier: interruption cue ignored -> team huddle, leadership modeling, patient education
- Barrier: alert or documentation burden -> simplify and remove non-value steps
- Feedback: one-minute survey, confidence rating, open-text barrier, skills checklist
- Sustainment: orientation, annual competency, monthly dashboard, quarterly audit
- Escalation: severe event or override spike triggers immediate review

A workable plan changes when staff evidence shows it must change

Presenter notes

Acknowledge likely barriers before asking staff to adopt the plan. Staff are more likely to support change when leaders provide reliable equipment, coverage, clear criteria, and quick problem solving. Invite specific feedback rather than asking whether everyone agrees. Useful questions include: Which step adds no safety value? When is a second nurse unavailable? Which devices fail? What information is missing from the downtime card?

Explain sustainment. The workflow will be embedded in orientation and annual competency. Monthly dashboard review will continue during the first six months. Once performance is stable, audit frequency may decrease, but severe events and override spikes will trigger immediate review. Close by asking each participant to write one commitment and one system barrier. Thank staff for identifying risks before they reach a patient.

References and Final Takeaway

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Stop unsafe work. Use the bundle. Report what the system needs.

Presenter notes

Use this slide to acknowledge the evidence base and provide participants with sources for follow-up. End with the three practical messages: stop when patient identity or medication information is uncertain; use the complete bundle rather than relying on one defense; and report barriers and near misses so the system can improve.

Remind participants that attendance is not the only completion requirement. Staff must demonstrate the workflow using the competency checklist. Give the evaluation link or paper form, identify the pilot start date and super-user contacts, and answer final questions. Thank the team for treating medication safety as shared clinical work rather than an individual memory test.