

DESCRIPTION

Specimen labelling and transport errors pose a significant patient safety risk, with potential consequences including diagnostic delays, inappropriate treatment, and patient harm. Humber River Health's (HRH) mission: "Working together with our community to deliver innovative, safe and equitable healthcare" drives ongoing quality improvement initiatives. In response to recurring safety events, the Quality and Patient Safety (QPS) team conducted a comprehensive review of specimen-related incidents documented in the internal incident reporting system.

A hospital-wide Failure Mode and Effects Analysis (FMEA) was launched to examine risks across the entire specimen-related pathway, from collection and labelling to transport and processing. This cross-departmental initiative involved process mapping and root cause analysis to identify system-level vulnerabilities and develop standardized interventions to improve safety and reliability.

OBJECTIVE

To prevent specimen-related safety incidents by identifying and mitigating high-risk failure points in collection, labelling, and transport processes.

ACTIONS TAKEN

Analysis of specimen-related incidents from April 2024 to March 2025 revealed that most errors involved incorrect patient identification, tube/label mismatches, or misrouted specimens. High-risk tests included Complete Blood Count (CBC), Pathology, Chemistry, and Group & Screen. Errors predominantly occurred during the day shift, with "Wrong Patient" and "Mislabelled Specimen" as leading themes. Based on this, incidents were categorized into four domains: Blood, Chemistry, Pathology - Operating Room and Pathology - Surgical Clinics.

Pathology Specimen
Order Entry, Labeling, Collection, Transport, Processing

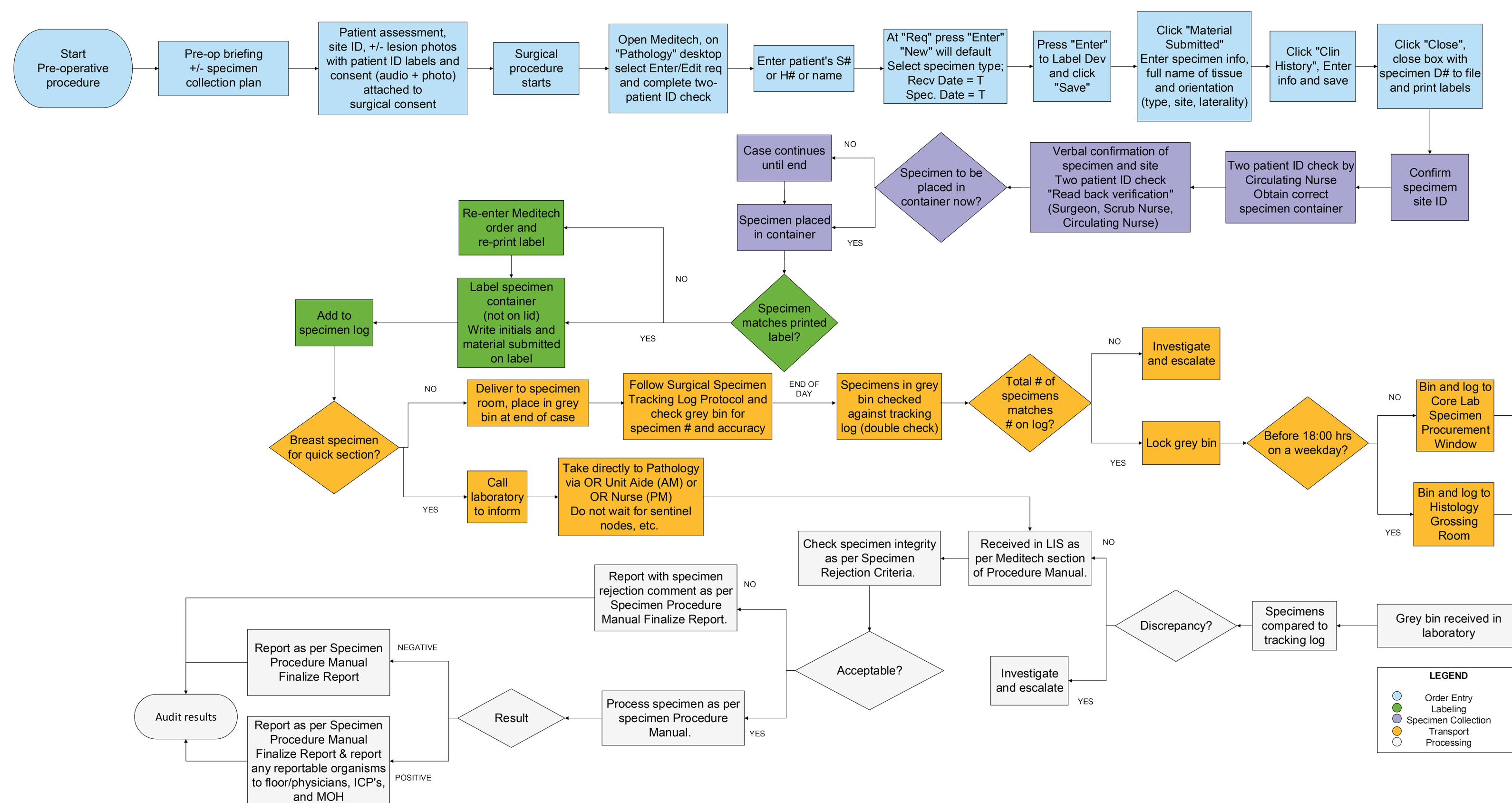


Figure 1. Process map of the specimen order, collection, labelling and delivery process in the Operating Room.

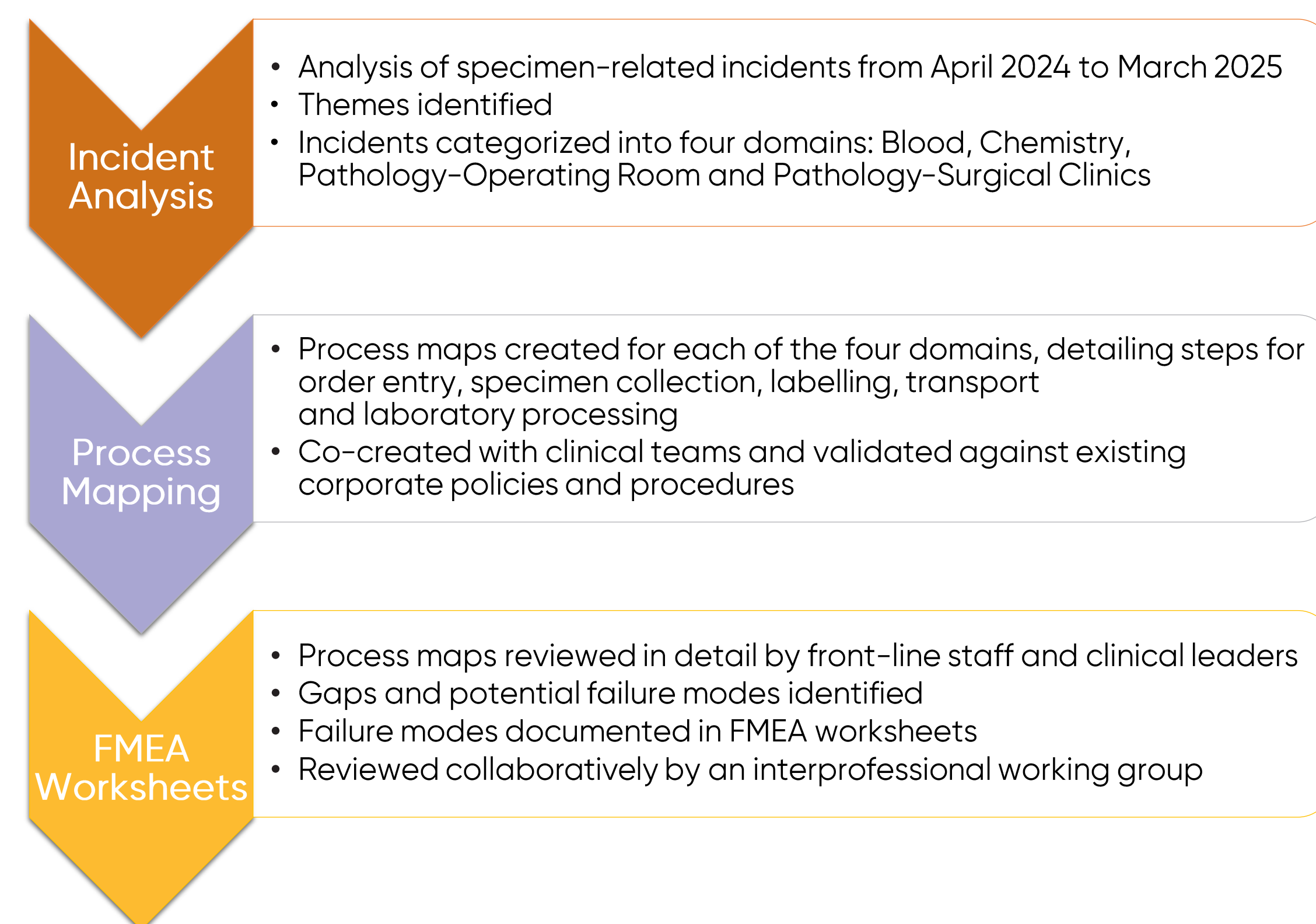


Figure 2. Flowchart detailing steps and substeps that were undertaken as part of the specimen safety initiative.

SUMMARY OF RESULTS

Detailed process maps were co-created in an iterative fashion with clinical teams and validated against existing corporate policies and procedures. These maps outlined each step – order entry, specimen collection, labelling, transport and laboratory processing – along with the responsible personnel. Front-line staff and clinical leaders identified gaps and potential failure modes, which were documented in FMEA worksheets. An interprofessional working group reviewed these collaboratively. The next phase includes finalizing action plans and piloting redesigned processes, with future evaluation of their impact.

LESSONS LEARNED

Process mapping is a valuable tool to visualize complex workflows, foster shared understanding, and uncover hidden failure modes not previously recognized.

