A collaboration among the University of Minnesota, University of Minnesota Physicians and Fairview Health Services

Perioperative Specimen Management Process Improvement: Operating Room, Peds Sedation Unit, and Lab Services

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ABSTRACT

Surgical specimen handling is a complex process involving numerous steps, systems, and people in various roles. It is fraught with potential for error due to planning, identification, labeling, communication, documentation, and reporting. Errors may result in improper patient treatments, delay in care, or additional surgery. An estimated error rate in surgical specimen handling is between 0.43%[5] and 2.9%.[1-2]

The most common errors are in specimen labeling, collection, preservation, and transport.[2] Effective handoffs and standardized processes with embedded quality controls can reduce specimen handling errors,[3] while a team approach fosters communication among team members.[4]

The M Health Fairview Quality Improvement Team led Surgery, Peds Sedation Unit, and Laboratory Services in a specimen handling improvement project. Frontline staff, leaders, and surgeons were included in the effort for effective process redesign.[5] Specimen handling errors with a "C" harm rating were reduced from 0.3% to 0.1% throughout the project and maintained at 0.0% for the last four consecutive quarters.

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BACKGROUND

Objective:

- In 2019, lost and mishandled specimens contributed to patient harm in an M Health Fairview OR and a Peds Sedation Unit.
- Adverse Health Event reporting codes include:
  C = No harm reached patient; No monitoring required
- Goal was to reduce level “C” events by 50%
- Enhanced standard work was implemented in Q4 2019

METHODS

An interdisciplinary team of Perioperative and Laboratory Services representatives used current and future state process maps to identify gaps in current specimen handling process and create an enhanced standard workflow including:

- Specimen Overview/Plan during the OR Brief, prior to surgery
- Specimen Pause with read-back during collection at the field and immediate transfer to container
- Specimen Review during the OR Debrief
- Warm Handoff with read-back between OR RN and Lab runner
- Warm Handoff between Lab runner and Lab technician
  - Hard stop if inaccuracies found, then specimen is returned to OR
- Lab technician will notify Pathology of specimen pick-up
- Other standard work: staff break handoffs, lab test troubleshooting, and specimen drop-off after hours

Implementation plan included staff education where workgroup representatives assisted in coaching and training. Process compliance was audited, and adverse specimen events were captured in an event reporting system.

OR & PEDS SEDATION UNIT SPECIMEN EVENT DATA

	Q1 2019	Q2 2019	Q3 2019	Q4 2019*+	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021
Any events	8	8	9	2	4	5	2	2	1	1
Level “C” events	1	2	5	1	1	1	0	0	0	0
Total Lab Specimens	761	782	800	535	701	558	849	846	798	941
% Any events	1.1%	1.0%	1.1%	0.4%	0.6%	0.9%	0.2%	0.2%	0.1%	0.1%
% Level “C” events	0.1%	0.3%	0.6%	0.2%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%

*Implementation of enhanced standard work occurred in Q4 2019.
+November 2019 data are not included due to change in adverse event reporting system.

WARM HANDOFF

PROCESS AUDITS

MONTH	OR PROCESS COMPLIANCE
Q1 2020	75%
Q2 2020	80%
Q1 2021	52%
Q2 2021*	94%

*After staff re-education on enhanced standard work.

LIMITATIONS

1. Different event reporting system in 2019 which may have impacted event reporting.
2. Surgical volumes were impacted by COVID in 2020 which led to an 18% decrease in surgical lab specimens in the first half of the year.
3. Process audits showed a drift toward non-compliance over time and required re-education to achieve 94% in Q2 2021.

SUMMARY

1. Total specimen events decreased from an average of 0.9% pre-implementation (2019) to 0.4% post-implementation (2020-2021).
2. Level “C” specimen events decreased from a high of 0.6% in 2019 to a low of 0.0% in 2021.
3. A drift towards non-compliance over time required further staff re-education and process auditing.

ACKNOWLEDGEMENTS

We acknowledge Angel Even, MHA, CPHQ; Shaina Kargus, BSN, RN; Savitrie Pidana; Dakota Nelsen, RN; Kathy Plakut, BAN, RN, CNOR; Jina Forys, MBA, BS; Karla Saeger, MHA, MLS; Michelle Kreitz, AAS; Meghan Pickard, MS; Jennie Anderson, HT(ASCP); Ashley Auseth, BS; Jennifer Thomas, MS; Ann Buckley, RN; Sarah Jan Schwarzenberg, MD; Edward Y. Cheng, MD; and Heather Sheridan, MBA, BA, for their leadership and support, and the entire M Health Fairview Surgery, Peds Sedation Unit, and Laboratory Services Team.

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