

Introduction and Problem Statement

- Feeding tubes are often a necessary tool used in many NICUs as a bridge to provide enteral feeds while an infant learns to eat by mouth or transitions off IV fluids
- The gold standard for feeding tube placement confirmation is via x-ray imaging
- In 2022, there were 1983 x-rays completed over 7 months in the NICU for feeding tube placement confirmation
- The frequency of imaging is associated with increased cumulative radiation exposure to vulnerable neonates as well as increased workload for the multidisciplinary clinical team
- This prompted the creation of a workgroup to evaluate viable alternatives

PICO Question

- In neonates in a 108-bed NICU, does point-of-care gastric pH testing for feeding tube placement verification, compared to routine x-ray verification, reduce radiation exposure, improve workflow efficiency, and result in cost savings while maintaining accurate placement?

Project Goals

- This project aimed to change the method of feeding tube placement verification from routine x-rays to point of care (POC) gastric pH testing, in conjunction with a standard measurement of nose-ear-mid umbilicus (NEMU) to reduce radiation exposure, improve workflow efficiency, and lower costs while maintaining accurate placement for vulnerable neonates in a 108-bed NICU.

Intervention-Improvement Methods

- Create multidisciplinary workgroup
- Review literature
- Select standardized pH verification tool
- Develop clinical algorithm for use
- Collaborate with lab for validation of tool
- Develop Quality Control Process
- Develop documentation capability in EHR

- Train superusers
- Pilot new workflow using strict criteria
- Collect feedback using QR code
- Collect any adverse event data
- Superusers train peers on unit

- Develop virtual education to train new nurses
- Develop tracking tool in EHR
- Develop ordering/stocking workflow with supply chain
- Reevaluate inclusion criteria to include smaller patients

Pre-Work

Implementation

Audit and Review

Algorithm

Does patient clinical condition warrant an x-ray? Such as:

- Critical illness with Intubation
- Decreased and/or absent gag or cough reflex
- Neurological impairment with decreased LOC
- Pharmacologically gastric pH altering medications (PPI's)
- Pharmacologically sedated or paralyzed
- Overall clinical status

YES

Clinical Indication for Xray Confirmation
Discussion with a provider

NO

Candidate for Right Spot pH Indicator Confirmation

Initial Placement Xray: Umbilical lines or respiratory distress
(Discuss with provider if infant Term)

Place NGT/OGT prior to Xray

Reference "IFMC NICU Right Spot pH Indicator Quick Reference Guide" for troubleshooting steps.

Patient on continuous feeds?

YES

Stop feeding and wait 20 to 30 minutes.

Check pH:
Approx. 0.2 mL of gastric aspirate (until you see color change)

pH less than or equal to 5.0

Gastric placement confirmed.
Document feeding tube length (cm)

Greater than 5.0

Wait 10 minutes and recheck

pH less than or equal to 5.0

Gastric placement confirmed.
Document feeding tube length (cm)

pH greater than 5.0

Xray Indicated

NO

Clear tube with 1.5 mL - 2.0 mL of air

Able to obtain gastric aspirate from feeding tube?

YES

Reposition patient onto left side.
Recheck in 10 - 15 minutes.

Unable to obtain gastric output?

Xray Indicated

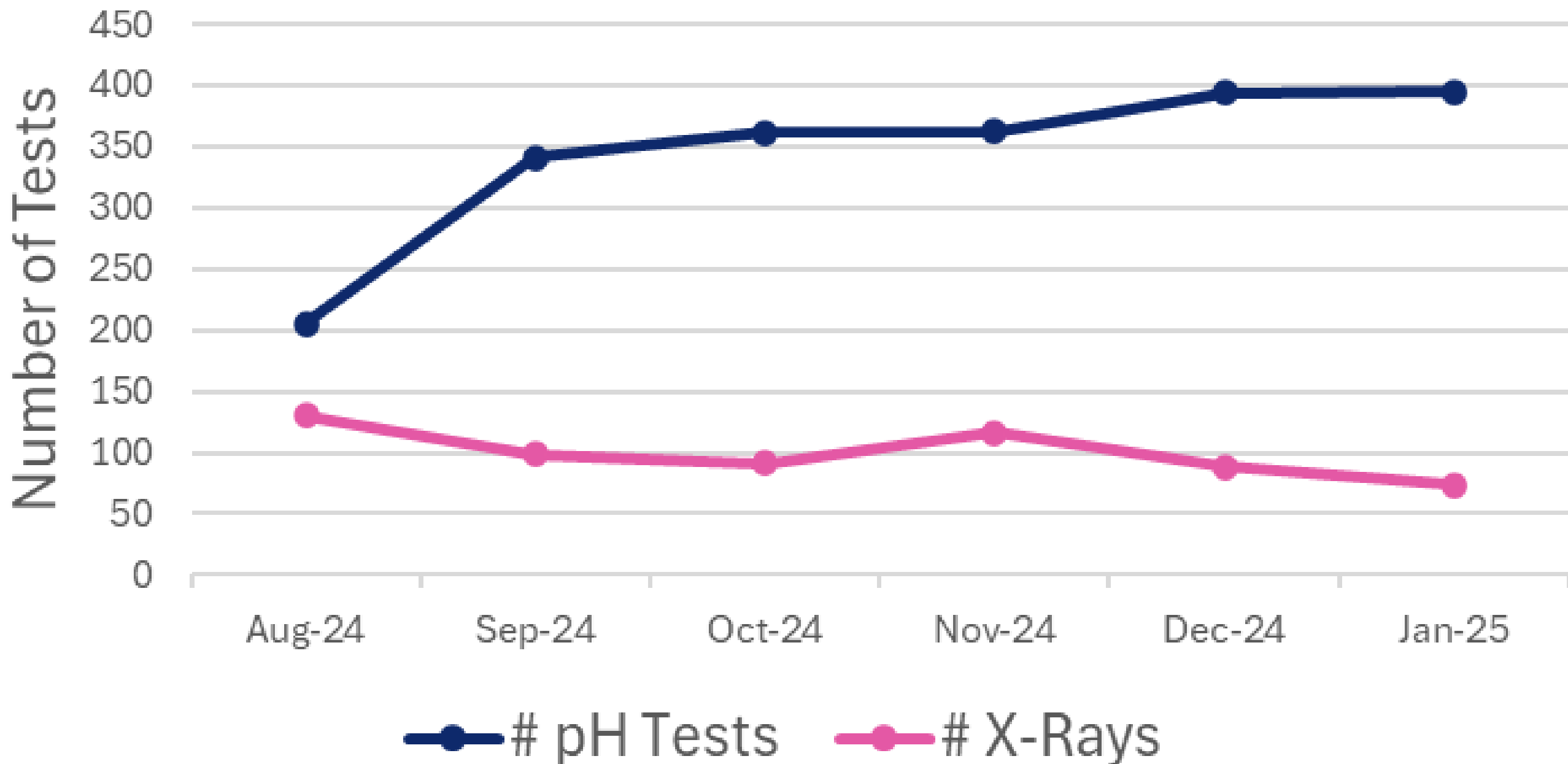
NO

Xray Indicated

Improvement Achieved - Outcomes

- 2,058 POC tests performed in first six months = >\$80,000 cost savings
- POC testing now unit standard for infants >24 weeks corrected gestational age

Feeding Tube Verification



Month	# pH Tests	# X-Rays
Aug-24	200	130
Sep-24	340	100
Oct-24	360	90
Nov-24	360	120
Dec-24	390	90
Jan-25	390	70


Recommendations

- Expand utilization to other units further enhancing clinical practice and reducing unnecessary radiation exposure, offering valuable insights for improvements in care delivery.
- As staff grow more comfortable with the tool, edit algorithm to include infants >22 weeks

References

Please scan the QR code for a complete list of references

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