

Untangling infusion confusion: A comparative evaluation of interventions in a simulated intensive care setting.

Study Summary

This study investigated strategies to reduce infusion line identification errors in intensive care settings, where patients often receive multiple IV infusions simultaneously. Using a simulated ICU environment, researchers compared different interventions designed to help nurses trace and identify infusion lines accurately.

Design:

Randomized, controlled, simulation-based study involving experienced critical care nurses.

Participants completed medication-change and line-tracing tasks using three setups:

- Control: Standard setup with no intervention.
- Organized lines: Physical separation and alignment of tubing.
- Standardized labeling system: Color-coded and clearly marked labels for each line.

Findings:

Both interventions—organized line layout and standardized labeling—significantly reduced identification errors and shortened task completion time compared to the control.

The combination of organized layout and labeling achieved the best performance, showing that structured line management improves safety and efficiency in complex infusion setups.

Participants reported higher confidence and lower cognitive load when using organized or labeled systems.

Conclusion:

Implementing structured line organization and clear labeling can meaningfully reduce wrong-line errors and improve workflow in ICU environments. The study supports the adoption of standardized IV line management systems to enhance patient safety during multi-infusion.

REFERENCE: Pinkney, S. J., Fan, M., Chan, H., Nicol, P., & Carvalho, M. (2019). Untangling infusion confusion: A comparative evaluation of interventions in a simulated intensive care setting. *BMJ Quality & Safety*, 28(11), 923–931. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4549602/>