Improving Pediatric Code Cart Usability with Standardized Approach

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BACKGROUND

- Emergency management of pediatric patients is unique, as clinicians must consider the patient's weight to select equipment of the appropriate size.
- It is an evidence-based practice to use a color-coded system in emergencies to estimate a child's weight to select appropriate size equipment and supplies (Agarwal, et. al., 2005).
- Adapting a color-coded system for organizing supplies in the code cart is proven to decrease cost and improve quality of care (Frazier, et. al., 2023; Mamaril, et. al., 2016).
- The Broselow Cart is a nationally recognized standard which incorporates all weight-based items needed in a resuscitation into one drawer per weight category.
- Currently, UMC lacks a standardized approach to pediatric code cart organization, making it time-consuming to find the appropriately sized equipment in emergencies, causing delays in life-saving interventions.
- The Interprofessional Pediatric Code Blue Committee worked on gathering evidence-based data and organizing supplies according to the standardized color-coded weight-based system.

PURPOSE

- The purpose of the project is to implement a standardized color-coded weight based system for supply storage in pediatric code carts across UMC Children's Hospital.
- We aim to increase efficiency of code cart use by December 2025 by:
1. Reducing the time it takes to retrieve appropriate equipment in an emergency by 25%
2. Reduce costs of emergency supplies needed to stock carts by 5%

FISHBONE GRAPH
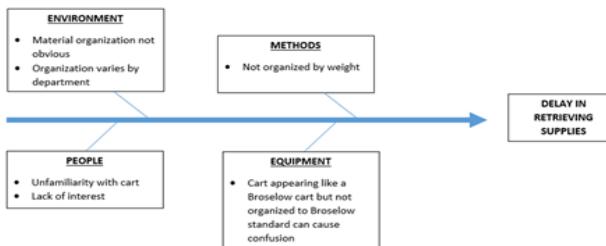
NEW CODE CARTS

- Color-coded drawers correspond to the color-coded weight-based system (Broselow tape)
- Equipment is grouped by patient's weight, making it easier to find right the appropriate size supplies with improved response times for life-saving interventions.
- All equipment and supplies are standardized per color-coded Broselow system
- Staff had input on new organization and selection of supplies

METHODS

- In pre-implementation test of change phase, total of eight nurses from pediatric units (Peds ER, PICU, Pediatric MedSurg) were asked to volunteer their time to participate in scavenger hunt activity. They were asked to retrieve appropriate size supplies from the current crash cart while team member timed how long it takes to complete the task.
- Then the scavenger hunt activity was repeated using new code carts while same nurses were timed completing task.
- The comparison of time of appropriate supplies retrieval from the old code cart versus new code cart is displayed on Table 1.
- Participants also received post-activity survey to evaluate ease of use of the new code cart compared with the old system.

Table 1 — Average Time of Item Retrieval
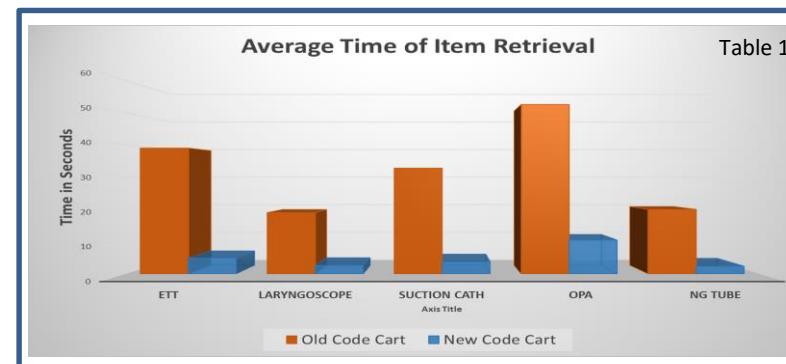
RESULTS

- Table 1 shows significant decrease in time it takes for the staff to retrieve appropriate size of emergency supply using new crash carts versus old ones. The new cart time of retrieval averages to 4.74 seconds, in comparison to 32.15 seconds it takes to retrieve accurate size equipment from the old code cart—approximately 7 times faster!
- Staff satisfaction with a newly organized code carts was 100% across all Pediatric departments (Peds ER, PICU and Pediatric MedSurg). Nurses found new system more intuitive and easy to use.
- Limitations include small group of test subjects for preliminary analysis and delays in getting new code carts to the units until the hospital purchases them for all the pediatric areas.
- The plan for the future is to repeat experiment at 3 months and 6 months post-implementation of the new code carts, evaluating usability and sustainability of the project.
- In addition, the team will obtain supply cost analysis from the materials management team to see if using standardized code carts reduces overall cost of supplies for UMC Hospital.

CONCLUSIONS

By adapting to the standardized approach of organizing emergency supplies, our clinical team have demonstrated significant decrease in time it takes to retrieve supplies from the new pediatric code cart. The overall goal is to increase the efficiency of pediatric code cart use, facilitating better emergency response and improving overall patient outcomes.

REFERENCES

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