## Title

Passing the Baton: Structured Handoff from Operating Room to Pediatric Cardiovascular ICU



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# Passing the Baton: Structured Handoff from Operating Room to Pediatric Cardiovascular ICU

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## Background / Problem

- Ineffective handoffs are the **3rd leading cause of medical error** and pose significant patient safety risks. Cardiac surgery patients are particularly vulnerable, experiencing adverse events at rates up to **4 x higher** than those undergoing general surgery. [1]
- Effective handoffs from the operating room (OR) to the pediatric cardiovascular intensive care unit (CVICU) require focused attention and coordinated teamwork, supported by clear communication and collaboration. [3,6,7,18,11,15,17]
- **Structured handoff tools** have been shown to improve communications, increase staff satisfaction, clarify patient priorities, and reduce postoperative complications in pediatric cardiac surgery by up to **50%.**[1]
- Despite this need, the transition from the OR to the pediatric CVICU at a southern California children's hospital has **lacked a standardized process** with variability based on provider preference, resulting in inconsistencies in communication of critical patient information and introducing potential risks to patient safety.

## Purpose

- To develop and implement a Structured Handoff tool from the OR to pediatric CVICU to improve interdisciplinary team participation, completeness and timeliness of handoff information, and team satisfaction.

## Literature Synthesis

**Keywords:** Handoff, Pediatric, Cardiac Surgery, Interdisciplinary

**Databases:** CINHAL, PubMed

**Findings:** 17 studies related to the use of "Handoff Tools" were examined **[Fig.1].**

**Evidence Synthesis:**

- ✓ Structured, nurse-led, OR-to-ICU handoff tools improved processes, teamwork, communication reliability, and patient safety.[6,7,9,10,12,16,18,19,20]
- ✓ The "Safe Start" time-out and checklist promoted clearer communication and minimized interruptions during patient transfer.[1,6,12]
- ✓ Iterative development of a Handoff Report Form**,** based on the literature and modified per unit practice **[Fig. 2].**[1,6,7,18,19]

**Figure 1. PRISMA Diagram**

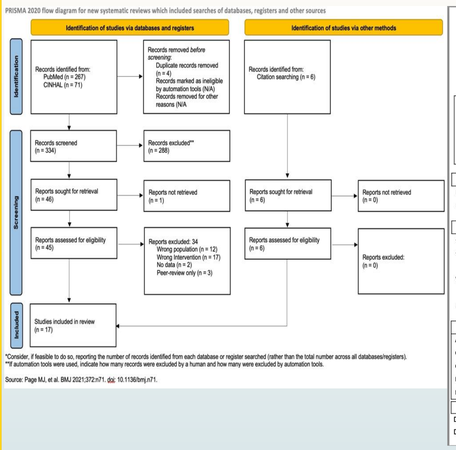
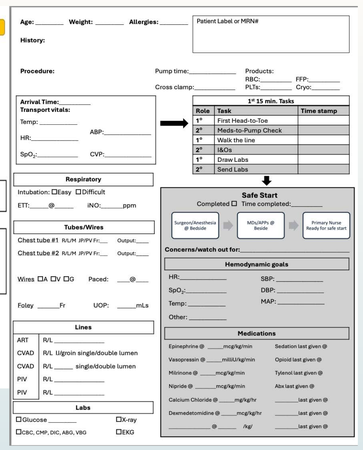



**Figure 2. Handoff Report Form**




## Methods

- **Framework**: The John's Hopkins Evidence Based Practice (EBP) framework was used to guide this project.[21]
- **Project Type:** Evidence Based Practice, IRB Exempt
- **Project Setting**: Children's Hospital in Southern California
- **Participants:** CVICU Staff Nurses and Medical Providers
- **Intervention:**
  - Staff education on the use of Safe Start and the Handoff Form
  - Handoff Form for OR to CVICU report
  - Staff Satisfaction Survey

**Figure 3. Data Collection [16 Week Implementation Period]**

**Pre-Intervention [2 Weeks]**
- Staff education on Safe Start and use of Handoff Form
- Observations on current report practice
- Satisfaction survey

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**Intervention [12 Weeks]**
- Weekly audits of collected Handoff Forms for completeness and accuracy based on outcome measures

→

**Post-Intervention [2 Weeks]**
- Weekly observations & audits of collected Handoff Forms for completeness and accuracy based on outcome measures
- Satisfaction Survey

- **Outcome Measures:**
  - 1) Team Participation, 2) Completeness of Handoff Report Form, 3) Timeliness of Handoff, and 4) Staff Satisfaction
- **Analysis:** Descriptive statistics were used pre- and post-intervention to evaluate changes in the measured outcomes and staff satisfaction.

## Results

- ✓ Out of 33 surgical cases during 14-week, 30 Handoff Forms were completed reporting a **90.9%** utilization.
- ✓ Interdisciplinary Team Participation, Completeness of Handoff Report Form and Timeliness of Handoff Report **[Table 1].**

**Table 1. Outcome Measures and Surgical Complexity**

| Variables | Pre-Intervention | 12-week Intervention | Post-Intervention | % Change |
|---|---|---|---|---|
| **# Surgical Cases** | **n=4** | **n=26** | **n=4** | |
| Team Members Present for Handoff (% present) | Range 6-7 (85.7%) | Range 6-7 (90.7%) 12 missing | Range 6-7 ↑ (92.9%) | ↑ 7.2% |
| Completeness of Handoff Form (%) | Range 72-92% (83.5%) | Range 61-100% (84.7%) | Range 76-92% (87.4%) | ↑ 3.9% |
| Handoff Report Time (minutes) | Range 6-19 (12.3) | Range 4-40 (20.6) 7 missing | Range 22-35 ↓ (25.5) | ↓ 13.2% |
| Surgical Complexity<br>• Mild<br>• Moderate<br>• Complex | <br>1<br>3 | ↑↑<br>3<br>17<br>6 | ↑<br>2<br>1<br>1 | N/A |

- ✓ Visual audits of the team handoff and use of the form compared to the RN's completed form showed an **87.5%** inter-rater accuracy rate.
- ✓ **CVICU Staff Satisfaction Survey**
  - Out of 60 CVICU RN and MDs, only 5-6 completed the survey pre- and post-intervention **(10% response rate).**
  - Majority were RNs (92%), females (84%), working day shift (74%), with > 15 years of experience (35%) **[Table 2 & 3].**

## Results (cont.)

**Table 2. CVICU Staff Satisfaction Survey Responses**

| Survey Question | Pre-Intervention [n=6] | Post-Intervention [n=5] |
|---|---|---|
| I am satisfied with the current OR-to-CVICU handoff | 4 (67%) Disagree / Strongly Disagree | ↑ 4 (80%) Agree / Strongly Agree |
| Handoff is structured | 3 (50%) Disagree<br>3 (50%) Neutral / Agree | ↑ 4 (80%) Agree |
| I am distracted during handoff | 4 (67%) Agree / Strongly Agree | ↑ 4 (80%) Disagree / Strongly Disagree |
| I can ask questions during handoff | 3 (50%) Disagree<br>3 (50%) Agree / Strongly Agree | ↑ 5 (100%) Agree / Strongly Agree |
| Handoff is clearly heard by all members of the receiving team | 3 (50%) Disagree / Strongly Disagree<br>3 (50%) Neutral / Agree | ↑ 4 (80%) Agree |
| After handoff, I often have questions requiring calling the provider for clarification | 4 (67%) Agree / Strongly Agree | ↓ 3 (60%) Agree / Strongly Agree<br>2 (40%) Neutral / Disagree |

***Survey – Likert Scale Format: Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree**

**Table 3. CVICU Staff Satisfaction Survey Open-Ended Question**

| Open Ended Question | Pre-Intervention [n=6] | Post-Intervention [n=5] |
|---|---|---|
| What aspect of the huddle process works well and what needs improvement? | • Inconsistent handoff process among providers.<br>• Best when the whole team is present with primary and secondary RN<br>• Lack of structure with limited primary RN engagement<br>• Difficulty listening to handoff when performing tasks (e.g., labs, assessment, infusion check) | • More structure and consistent handoff process (Safe Start)<br>• Improved report clarity<br>• Increased opportunity for RN to ask questions<br>• Team waiting for RN to perform immediate tasks before starting report<br>• Increased inclusion of primary RN<br>• **Ongoing challenges** distractions in post-op tasks and variability in adherence to handoff report process |

## Limitations / Conclusion / Clinical Implications

### Limitations

- Few CVICU nursing staff and only 1 physician participated in the survey.
- ↑ surgical complexity and unscheduled cases impacting staffing / workflow and post-intervention outcomes.
- Gaps in provider details during handoff limited form completion and accuracy.

### Conclusions

- This project demonstrated successful use of a EBP standardized handoff report form for patients transferred from the OR to the pediatric CVICU.
- Use of the form improved team participation, documentation accuracy, and staff satisfaction. While implementation resulted in longer report times, this was likely due to higher surgical complexity.

### Clinical Implications

- This form can be adapted for other surgical units to drive system-wide, sustainable, interdisciplinary tracking.

## References

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