



Improving Cardiac Operating Room to Intensive Care Unit Handover Using a Standardized Handover Process

**A studentship Project
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Investigators:
Dr. Irene McGhee
Dr. Josh Gleicher

Acknowledgements

This studentship project was made possible by financial contributions from the Canadian Patient Safety Institute and the Sunnybrook Health Sciences Centre Department of Anesthesia. I would like to acknowledge the leadership and guidance of Dr. Irene McGhee, as well as contributions of Dr. Neill Adhikari, Dr. Fuad Moussa, and Ms. Pamela Meyer.

Project Summary

Handovers from the cardiovascular operating room (CVOR) to the cardiovascular intensive care unit (CVICU) are complex processes involving the transfer of information, equipment and responsibility, at a time when the patient is most vulnerable. This transfer is typically variable in structure, content, and execution. This variability can lead to the omission and miscommunication of critical information leading to patient harm. We set out to improve the quality of patient handover from the CVOR to the CVICU by introducing a standardized handover protocol.

This study is an interventional time series study over a four-month period at an adult cardiac surgery centre. A standardized handover protocol was developed using quality improvement methodologies. The protocol included a handover content checklist and introduction of a formal “sterile cockpit” timeout. Implementation of the protocol was refined using monthly iterative Plan-Do-Study-Act. The primary outcome was the quality of handovers, measured by a Handover Score, comprised of handover content, teamwork, and patient care planning indicators. Secondary outcomes included handover duration, adherence to the standardized handover protocol, and handover team satisfaction surveys.

37 handovers were observed (6 pre and 31 post intervention). The mean handover score increased from 6.5 to 14.0 (maximum 18 points). Specific improvements included fewer handover interruptions and more frequent postoperative patient care planning. Average handover duration increased slightly from 2:40 to 2:57 minutes. Caregivers noted improvements in teamwork, content received, and patient care planning. The majority (>95%) agreed that the intervention was a valuable addition to the CVOR to CVICU handover process.

The implementation of a standardized handover protocol for post cardiac surgery patients was associated with fewer interruptions during handover, more reliable transfer of critical content, and improved patient care planning.

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Purpose / Objectives / Research questions

Effective and comprehensive patient care handovers are critical for patient safety. Weak handover processes have been identified as contributing causes for adverse events and patient harm¹⁻⁴. Specifically, failure to communicate intraoperative events to the postoperative management team can result in “inappropriate monitoring of patients postoperatively, absence of enhanced vigilance for specific, predictable postoperative complications, and medication errors.”⁵ Furthermore, poor postoperative handovers lead to incorrect treatment plans, diagnostic delays, patient complaints, increased length of stay, and increased mortality^{6,7}.

Post cardiac surgery patients have been shown to be especially vulnerable to the negative consequences resulting from poor postoperative handovers⁸. This is not surprising given the morbidity of the patients, higher baseline mortality rate, and surgical complexity. Studies evaluating post-cardiac surgery handovers noted that important content items are omitted more than 50% of the time^{9,10}. As a result, recent cardiac surgery guidelines from the American Heart Association (AHA) highlighted post-cardiac surgery handover failures as a significant source of medical errors, and recommend handover improvement using standardized handover protocols⁸.

Despite compelling evidence that poor postoperative handovers contribute to patient morbidity, handovers for elective and emergent surgical cases remain inconsistent and incomplete. In a recent observational study at our centre, physician-to-physician postoperative handovers were received in only 4% of elective surgery patients transferred from the postoperative care unit to the critical care unit. Even more concerning was the fact that in 17% of the total cases, important information relevant to postoperative patient management and resuscitation was not communicated to the critical care team¹¹.

Contributing factors to postoperative handovers include inconsistent perioperative team attendance, lack of handover structure and documentation, and interruptions and distractions throughout the handover process^{7,12}. Proposed solutions to improving postoperative handover quality include implementing standardized handover protocols. Studies using such protocols have yielded promising results in the pediatric cardiac surgery settings^{9,10,13-15}. However, little research exists on implementing postoperative handover protocols in adult cardiac surgery programs. We set out to improve our post cardiac surgery handover process by developing and implementing a standardized handover protocol.

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Methodology

Study design / Location

Our study is a prospective time series interventional study conducted in the cardiovascular intensive care unit (CVICU) of a tertiary care centre. The patient population included all patients undergoing elective or emergent cardiac surgeries. Operating room (OR) and CVICU team member rotations meant that it was not feasible to randomize teams to intervention and non-intervention groups. Formal ethical approval was not required as per our centre's guidelines for quality improvement (QI) projects of this nature.

Development of Intervention

The improvement intervention was a standardized handover protocol. The goal of the protocol was to improve the effectiveness of information transferred during patient handover by improving team attendance, reducing distractions, specifically addressing patient care planning, and improving documentation of handover. The handover improvement initiative was led by a team of physicians and nurses, and included representatives from anesthesiology, cardiac surgery, and critical care. The protocol content was developed based on an extensive review of up-to-date postoperative handover literature, as well as feedback from frontline workers derived from inventive problem solving methodology¹⁶.

The standardized handover protocol included two key components:

- **Streamlined Process**

Upon patient arrival to the CVICU, the patient was connected to the mechanical ventilator. The handover team then entered a “sterile cockpit” -like environment and performed a formal timeout. Introductions were made to improve ad hoc teamwork and ensure complete handover team attendance. The Anesthesia Assistant was then charged with monitoring the patient while the rest of the clinicians were free to communicate without interruption. Non-essential tasks, (i.e. organizing infusion pumps, moving lines and tubes, attending non-emergent issues regarding other patients, etc...) were not permitted throughout the handover process. The timeout was concluded by an opportunity for any team member to ask questions, followed by a readback outlining ongoing medical/surgical issues and a review of contingency plans.

- **Information Checklist and Documentation**

An overview checklist (appendix 1) outlining the information components to be discussed during handover was used to aid in the verbal transfer of information. This new handover checklist included a documentation sheet filled out by the anesthesia team. It became part of the patient chart thus enabling clinicians caring for the patient later in the day (not present during the handover) to review critical patient information and patient care planning at a glance. The checklist also included a component requiring the surgeon to briefly describe the procedure performed, any surgical difficulties or unexpected events encountered, and postoperative surgical concerns.

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Methods of Evaluation

A single observer, not part of the handover team, and experienced in anesthesiology and critical care, was present for handovers based on availability. The primary outcome of our intervention was the quality of handovers, measured by the total handover score. The handover score was evaluated based on three dimensions: handover content, teamwork, and patient care planning (appendix 1).

The handover content dimension included a succinct review of patient comorbidities, presenting illness, surgical procedure (as described by the surgeon) and ongoing patient management such as ongoing resuscitation, invasive monitoring, ventilation, and hemodynamic support. The handover teamwork dimension score comprised of the absence of handover interruptions, and the CVICU physician's readback. A handover interruption was defined as any non-emergent event distracting the attention of a handover team member from the handover process, such as multitasking or the transfer of equipment. We defined the receiving physician's readback as a brief verbal summary describing any ongoing patient medical/surgical issues, in a close loop communication format. Lastly, the patient care planning dimension focused on whether the handover team discussed appropriateness for our institution's post cardiac surgery early extubation protocol, as well as the formulation of management and contingency planning for ongoing medical issues.

Secondary outcome measures included handover duration and handover team surveys, and focused on ensuring that our intervention did not introduce any inadvertent harm. This was of particular importance in our patient population, as they are vulnerable post cardiopulmonary bypass and an overly prolonged handover process could potentially result in patient harm. The overall duration of handover was recorded and defined as the duration from the moment the initial timeout commenced, to the final readback by the receiving physician. We surveyed satisfaction rates of both OR and CVICU teams on the various aspects of our intervention. This provided further feedback and suggestions used generate further improvement to our handover process, and alerted our team to any potential unintended and unanticipated consequences noted by frontline workers.

Adherence to our intervention was assessed through a number of process measures. First, we recorded whether the handover team entered a sterile cockpit environment for the verbal handover. Second, we measured whether our new handover documentation checklist was being utilized as intended for transfer of content. Finally, we tracked whether the anesthesiologists were documenting the handover content using our handover checklist.

In order to address any gaps in handover team adherence to our intervention, the study utilized the iterative capability of Plan-Do-Study-Act (PDSA) cycles. Through the use of PDSA cycles, the information collected was reviewed on a monthly basis by the project team. Protocol compliance was monitored via process measures described above, and enhanced using the

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lessons learned and change ideas derived from this information. The PDSA model also helped ensure that change ideas derived from similar handover studies were adapted successfully to our local setting^{9,10,13-15}.

Analysis

We estimated that observing approximately 30 handovers would provide a representative sample. Run charts and statistical process control charts were used to analyze our data and track potential improvement generated by our intervention (Note: process control chart analysis is still pending).

Results

The post-cardiac surgery standardized handover protocol was launched in September 2013. Data collection and PDSA cycles were conducted over four months with a total of 37 handovers (6 pre-intervention) observed during this time period. To minimize bias due to variability in communication skills, we ensured that each cardiac anesthesiologist was observed providing a handover at least twice during the study period.

As with any QI intervention, user adherence to our intervention was imperative. In total, three PDSA cycles were completed throughout the study period. Table 1 outlines each PDSA cycle including iterative modifications made to our handover intervention using PDSA data.

Table 1: A review of the PDSA cycles used to implement the standardized handover protocol

PDSA	Plan	Do	Study	Act
Cycle #1	- Implement new handover protocol	Handover protocol implemented throughout September/October 2013	- Checklist utilized effectively with improvement in content communicated - Confusion of CVICU nursing over which equipment is connected upon patient arrival - Difficulty of	- New guideline in handover protocol that only mechanical ventilation be connected prior to entering sterile cockpit - Anesthesia assistant designated as

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			anesthesiologist to concurrently utilize checklist and monitor patient	responsible for patient monitoring, anesthesiologist will focus on handover
Cycle #2	<ul style="list-style-type: none"> - Continue handover protocol use - Revise equipment connection sequence and patient monitoring 	Handover protocol continued throughout November 2013	<ul style="list-style-type: none"> - Observed smoother equipment transition and entering sterile cockpit - CVICU team often waiting too long for patient arrival 	<ul style="list-style-type: none"> - Introduce notification protocol from OR informing CVICU that patient will arrive within 5 minutes
Cycle #3	<ul style="list-style-type: none"> - Ensure OR team notifies ICU of patient arrival in a timely manner - Sustain gains made by handover protocol 	Handover protocol refinement and use continued throughout December 2013	<ul style="list-style-type: none"> - Reduction of CVICU team waiting for patient and OR team arrival 	

A total of 6 pre-intervention and 31 post-intervention handovers were observed throughout the study period. The mean handover score increased from 6.5 to 14.0 by an average value of 7.5 (p value =0.001, 95% CI 5.8 to 9.2). Specifically, improvements noted were the reduction of handover interruptions and improved postoperative patient care planning and contingency planning for ongoing medical and surgical issues (table 2).

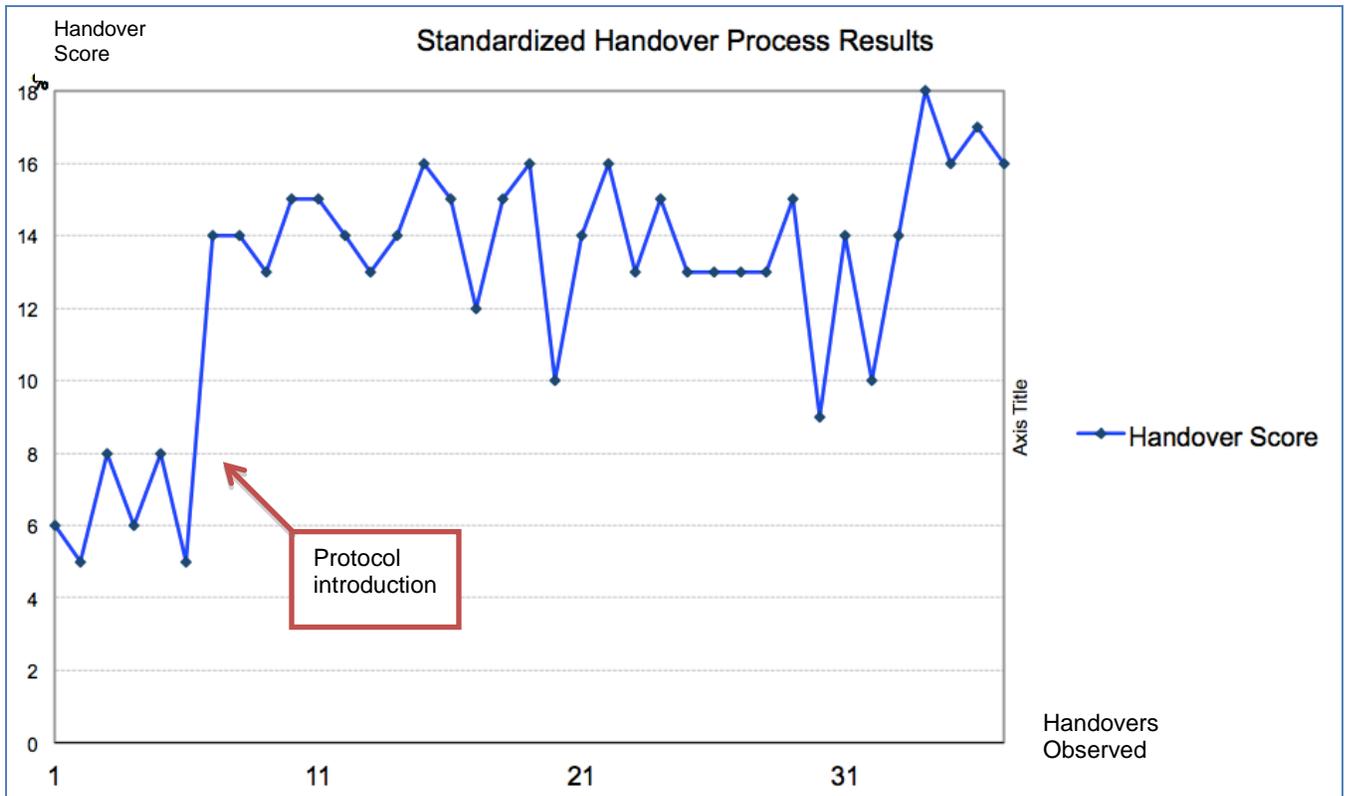
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Figure 1: A run chart illustrating the improvement in overall handover score after implementation of the standardized handover protocol. Process control chart analysis is currently pending.



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Table 2: a summary of the outcome, process, and balance measure results evaluating the standardized handover protocol.

Outcome Measures	Preintervention	Postintervention	<i>p</i>
Handovers Observed (unpaired t-test)	6	31	
Mean Handover score (out of 18)	6.5	14.0	0.001
% of handovers with interruptions	66% (4/6)	13% (4/31)	0.013
% of handovers with patient care planning and contingency planning	16% (1/6)	87% (27/31)	0.002
Mean # of major content omissions (out of 14 items)	9.2	3.2	0.001
Process Measures			
% of handovers utilizing handover checklist	N/A	81% (25/31)	N/A
% of handovers utilizing formal timeout (sterile cockpit environment)	N/A	97% (30/31)	N/A
Balancing Measures			
Mean Handover Duration (minutes)	2:40	2:57	0.344

No unexpected harm resulted from the introduction of the standardized handover protocol. Handover duration increased marginally from 2:40 minutes to 2:57 minutes ($p=0.344$). Thirty-six surveys were collected with feedback from members of the cardiac team participating in the handover initiative. These caregivers noted improvements in teamwork, content received, and patient care planning. The majority (>95%) agreed that the intervention was a valuable addition to the CVOR to CVICU handover process (table 3).

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Table 3: A summary of the handover team survey results. A total of 36 nurses, anesthesiologists, and critical care specialists were surveyed regarding the new standardized handover protocol

Question	% that agreed
The new standardized handover process improved the quality of information transferred during handover	91%
The new standardized handover process improved teamwork between OR and CVICU team members	91%
The new standardized handover process interfered with caregivers' ability to provide timely patient focused care	3%
Overall, the standardized handover process is a valuable addition to the cardiac surgery program	97%

Limitations

There are several implementation challenges that need to be considered when attempting to improve the postoperative handover process through standardization. The transferability and sustainability of the interventions described above need to be taken into consideration. Surgical centres may have differing team structures, postoperative care units, and resources. Cognisant of this obstacle, our study utilized PDSA cycles to facilitate iterative improvement of the handover protocol. Joy et al. reported similar effectiveness of PDSA cycles to fine-tune their intervention, which in turn led to a reduction in handover technical errors and content omissions¹⁰. Other studies have used various methods to adapt handover protocols to their local settings. Such strategies included surveying frontline workers, and forming multidisciplinary handover protocol development teams^{9,13}. In order to overcome local implementation barriers, we recommend the use of such QI methodologies when developing and disseminating standardized handover protocols.

Another limitation of our project was the lack of clinical outcome measure. Ideally, we would have liked to demonstrate direct improvement in patient outcome variables such as inpatient mortality or ICU length-of-stay (LOS). But with local adult cardiac surgery mortality rates of 2–4% and ICU LOS being dependent on a number of other medical and logistical factors, our study was underpowered and unable to examine such patient outcomes¹⁹.

Lastly, the sustainability of any patient safety improvement hinges on continuous iterative improvement and maintenance cycles, which are dependent on measurement of data. This can be

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labour intensive as in the case of our handover improvement project. External funding was instrumental in initiating change and providing the momentum needed, but in order to achieve long-term sustainability we will need to secure local resources in order to maintain and improve on gains made by this project.

Recommendations

There is mounting evidence linking effective patient handovers to medical error prevention^{1,8,17}. It follows that there is growing support for implementing standardized handover processes for patient care transfers across various medical settings. This is especially true for patients at higher risk for medical errors, such as perioperative and ICU patients^{2,18}. This study was therefore aimed to develop and implement a robust handover protocol for patients transitioning from the cardiac OR to the CVICU. Direct communication, minimizing interruptions and multitasking, discussion of anticipated events and contingency plans, and documentation of critical content, were the key elements of the protocol.

Review of the literature and specifically work reported from pediatric cardiac surgery, identified critical elements which we were able to adapt and apply in the development and implementation phases of our study^{9,13,14}. Specifically, the use of a checklist to ensure handover content completeness, and the principle of a “sterile cockpit” environment to minimize distractions were adopted and adapted to our centre’s culture. These elements were well received by handover team members, as evident by frontline worker surveys indicating perceived improved teamwork and transfer of content. We recommend adapting these communication tools when implementing handover protocols for critically ill patients.

One of the major goals our handover protocol was the reduction of handover content variability. This was accomplished by introducing structure and sequence to the handover process as illustrated by the handover checklist and documentation tool. Previous studies have specifically targeted reducing handover variability with similar positive results. Zavalkoff and colleagues introduced a handover information transfer tool for pediatric cardiac surgery patients, which intended to reduce handover content variability¹³. They derived this concept from Six Sigma literature, and emphasized that by reducing variability they were able to reduce the chance of error (i.e. information omissions). In addition to observing more complete handovers, their results included a reduction in postoperative high-risk events. It is our conclusion that reducing variability should be a focus of any communication tool, as it allows for more complete transfer of information and better synthesis of this information by the receiving patient care team.

Despite the improvements made in the transition of cardiac surgery patients to the critical care unit, this is still but a small sub segment of critically ill patients transitioning between various

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care teams at our institution. Future improvement projects will focus on postoperative handovers of trauma, vascular surgery, and emergency surgery patients, transitioning from the perioperative care setting to the critical care unit.

Student Learning

As a graduate student learning the science of quality improvement and patient safety, my goals for this project were twofold. First, to generate clinical improvement in the way we transition patients from the surgical setting to the postoperative critical care setting. Second, to learn how to effectively apply principles, theories and methods of improving patient safety to a clinical problem. From the onset of the project, obtaining stakeholder buy-in proved to be challenging. This was in part due to the scope of the project and the large amount of clinical care providers involved. These included critical care physicians, surgeons, anesthesiologists, respiratory therapists, and nurses. Forming a project team and engaging middle management and frontline workers was instrumental in helping our project move in the right direction. Through these actions, I learned how to motivate health care providers and provide them with a sense of ownership for this patient safety improvement.

In every patient safety improvement project, it is always very tempting to jump right into the intervention phase, as this is often the exciting part that yields improvement. But as with any quality improvement endeavour, measurement of data, both pre and post intervention is crucial in order to better understand the problem and determine whether any clinical improvement actually occurred. This is something I did not fully understand initially, and in hindsight, I would have probably spent more time in the pre-intervention phase studying the problem and collecting baseline handover data.

Lastly, I better understand the value of gaining input from patients and frontline workers when working on a patient safety project. This became evident to me the more I interacted with the critical care nurses and anesthesiologists. They would frequently redirect me to where the real problems with the handover processes are. And although we were not able to directly involve patient input in this project (due to the patients still being under sedation), I can sense the value of including input from individuals who are at the epicentre of any patient safety gap, whether they are health care providers or the patients themselves.

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Appendix 1: Handover score sheet

Teamwork	Attendance and Interruption Free	___ / 1
	Readback of ongoing issues/concerns by CVICU physician	___ / 1
Content	Pump time	___ / 1
	Comorbidities and presenting illness	___ / 1
	Preoperative hemoglobin	___ / 1
	Preoperative creatinine	___ / 1
	Preoperative LV grade	___ / 1
	Initial cardiac index (CI)	___ / 1
	Intubation and ventilation	___ / 1
	Lines and vasoactive agents	___ / 1
	Coagulation and blood products given	___ / 1
	Last lactate	___ / 1
	Last hemoglobin	___ / 1
	Pacing requirements/dependency	___ / 1
	Brief description of surgery and surgical concerns (by surgeon)	___ / 1
	Hemodynamic status and CI after chest closure	___ / 1
Planning	Early extubation candidate	___ / 1
	Patient care planning for ongoing medical/surgical issues and contingency planning	___ / 1
Total Score		___ / 18

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Appendix 2: Handover Tools Developed

Figure 2: the post cardiac surgery handover checklist and documentation tool

Cardiac OR to CVICU Checklist and Transfer Note	PATIENT IDENTIFYING INFORMATION										
1. INTRODUCTIONS (ensure all team members present)											
2. PATIENT IDENTIFICATION (name band & allergies noted)											
3. INFECTION PRECAUTIONS no / yes _____											
4. PROCEDURE DETAILS (described by surgeon) elective / urgent on / off pump _____											
5. COMORBIDITIES LV grade (circle one) 1 2 3 4 _____											
6. INTRAOPERATIVE COURSE (Intubation, ventilation, monitoring/lines, separation from CPB) _____											
7. STATUS POST CPB											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Pump time</td> <td style="width: 70%;">Separation from CPB</td> </tr> <tr> <td>Last HGB</td> <td>Blood Products Transfused</td> </tr> <tr> <td>Coagulation</td> <td></td> </tr> <tr> <td>Vasoactive Agents</td> <td></td> </tr> <tr> <td>Pacing Requirements Yes / no</td> <td>TEE findings postop</td> </tr> </table>	Pump time	Separation from CPB	Last HGB	Blood Products Transfused	Coagulation		Vasoactive Agents		Pacing Requirements Yes / no	TEE findings postop	
Pump time	Separation from CPB										
Last HGB	Blood Products Transfused										
Coagulation											
Vasoactive Agents											
Pacing Requirements Yes / no	TEE findings postop										
8. CVOR NURSING / PERFUSION ISSUES											
9. EARLY EXTUBATION CANDIDATE yes / no if no please indicate reason: <input type="checkbox"/> Complicated OR <input type="checkbox"/> Poor general status <input type="checkbox"/> Difficult AW <input type="checkbox"/> Respiratory											
10. PATIENT CARE PLANNING AND POTENTIAL COMPLICATIONS (graft/valve details, hemostasis, renal, arrhythmias, neurological deficits, etc...)											
a. _____ b. _____ c. _____ d. _____											
11. OPPORTUNITY FOR QUESTIONS AND READBACK OF OUTSTANDING ISSUES BY MRP & NURSE Sign OFF at (date and time) _____											

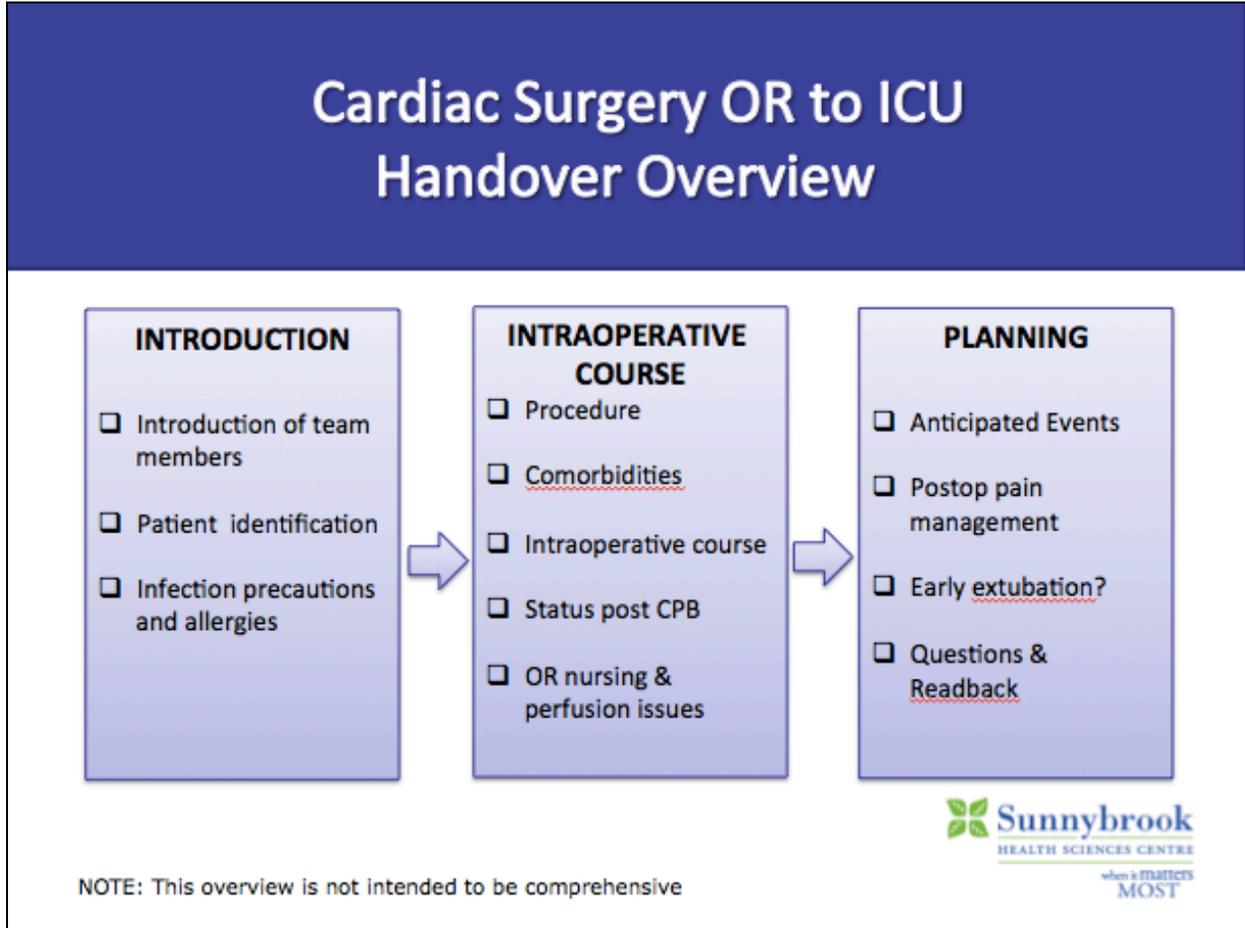
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Figure 3: a visual aid overview of the handover content used by the handover team



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Appendix 3: Posters

Figure 4: the poster presented at our University of Toronto Department of Anesthesia research day

Canadian Patient Safety Institute

Institut canadien pour la sécurité des patients

“What I Said Was NOT What You Heard”

Standardizing Post Cardiac Surgery Handovers

Y. Gleicher, I. McGhee

INTRODUCTION

Background

- Ineffective postoperative handovers lead to diagnostic delays, incorrect treatment plans, patient adverse events, and increased patient morbidity¹.
- Specifically, handovers from the cardiac operating room (CVOR) to the cardiovascular intensive care unit (CVICU) involve the transfer of critical patient information and extensive equipment at a time when the patient is most vulnerable^{2,3}.
- These handovers are typically VARIABLE IN STRUCTURE, CONTENT, AND EXECUTION, which leads to omissions and miscommunication of critical information^{4,5}.

Contributing Factors to Handover Breakdown

Why “what I said was NOT what you heard?”

PEOPLE

- INCONSISTENT ATTENDANCE
- FORGETTING INFORMATION
- MULTITASKING

EQUIPMENT

- DISTRACTING ALARMS
- COMPLEXITY
 - Lines
 - Ventilator
 - Perfusionist
 - Calipers
 - Pumps

↓

NON-STANDARDIZED
POOR DESIGN AND TRAINING
NO DOCUMENTATION

VULNERABLE POST-OP
MULTIPLE COMORBIDITIES

ENVIRONMENT
PROCESS
PATIENT

↓

Ineffective and Inefficient Handover!

Standardization of the handover process after cardiac surgery is an intervention that meets Class B evidence criteria, and is advocated by Accreditation Canada, the American Heart Association, and the World Health Organization^{6,7,8,9}.

Objective

We set out to improve the quality of patient handover from the CVOR to the CVICU by introducing a standardized handover protocol.

MATERIALS AND METHODS

Study Design and Patient Population

Prospective time series interventional study. The study was performed at a tertiary adult cardiac surgery centre.

Intervention

- The protocol was developed using principles from high reliability organizations such as NASA (National Aeronautics Space Agency) and EMS (Emergency Medical Services), as well as using iterative input from our interprofessional cardiac care team.
- The protocol focused on improving team attendance, reducing omissions of critical information, reducing distractions, and encouraging structured patient care planning.
- A FORMAL TIMEOUT was executed upon patient arrival to the CVICU and a STANDARDIZED CHECKLIST was used by the anesthesiologist to improve completeness of information transferred.

CVOR to CVICU Standardized Handover Checklist

INTRODUCTION

- Introduction of team members
- Patient identification
- Infection precautions and allergies

INTRAOPERATIVE COURSE

- Procedure
- Comorbidities
- Intraoperative course
- Status post CPB
- OR nursing & perfusion issues

PLANNING

- Anticipated Events
- Postop Pain management
- Early Extubation
- Questions & Road-back

Quality Improvement Framework

- Plan-Do-Study-Act (PDSA) cycles were used to maximize adherence to our intervention and refine its effectiveness.
- The project team met monthly to review PDSA data and intervene accordingly.

RESULTS

- 37 handovers were observed throughout the study period.
- The standardized handover process was adopted over several months and improved the quality of information transferred, reduced critical omissions, and improved patient care planning.
- The standardized handover process did not prolong average handover duration (approximately 3 minutes), and did not interfere with the caregivers' ability to provide timely care for the patient.

Standardized Handover Process Results

Team Survey Results

36 nurses, anesthesiologists, and critical care specialists were surveyed regarding the new standardized handover protocol

Improved the quality of information received during handover, and teamwork between OR and CVICU team members	91%
Interfered with caregivers' ability to provide timely patient focused care	3%

Overall, the standardized handover process is a valuable addition to the cardiac surgery program **97%**

CONCLUSIONS

- Standardizing the post cardiac surgery handover process resulted in a more complete exchange of critical information and improved patient care planning, with no significant prolongation of the handover duration.
- Utilization of quality improvement methodology such as Plan-Do-Study-Act cycles can help adapt perioperative patient safety interventions to local settings and improve user adherence.

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Improving Cardiac Operating Room to Intensive Care Unit Handover Using a Standardized Handover Process

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