

Improving Transition of Care

Hanish Singh, MD

Department of Anesthesiology, WSU/SJMO

Rationale & Background for the Study

- Patient handoff includes communicating clinically significant patient information from one provider to another.
- During the perioperative period, this includes communication from anesthesia staff (anesthesia attendings, residents and CRNAs) to nursing staff in the post anesthesia care unit (PACU).
- Without standardization, there is room for error or miscommunication of vital patient information, which could result in avoidable morbidity.

Rationale & Background for the Study

- According to the ASA, “Upon arrival in the PACU, the patient shall be re-evaluated and a verbal report provided to the responsible PACU nurse by a member of the anesthesia care team caring for the patient.”
- Patient handoff reports are highly variable, and are not standardized within every institution.
- Postoperative handoff reports within our institution were not standardized and the quality and quantity of information reported was highly variable.
- During observational study, we found that key information such as the use of a non-depolarizing muscle relaxant was often omitted from handoff reports between anesthesia staff and PACU nursing personnel.

Purpose & Hypothesis of this Study

- Our goal was to improve the quality of patient handoff reporting in a cost effective and efficient manner.
- We proposed creating template card to standardize reporting and ensure the communication of necessary information during the transition of care.
- We hypothesized that the usage of this template card would increase the conveyance of vital information during the handoff.

The Design and Methods of the Study

- Our study was IRB approved.
- A list of 20 critical handover components pertaining to patients' perioperative course was obtained from current literature, feedback from anesthesiologists, CRNAs, and PACU nursing staff within the institution.
- This Study was done in two phases - Before and After introduction of the template card
- During the study PACU staff did not interrupt report, nor did they coach providers.
- Only scheduled general anesthesia cases that included advanced airway management were included in the study to ensure that all 20 elements would be required during handoff.
- Phase I of the study consisted of observation of 100 provider handoffs prior to the deployment of the template cards. **(Before Group, n=100).**
- During phase I, neither the anesthesia provider nor PACU nurses were given instruction or cues to the pertinent data points being analyzed.
- Observers stood quietly near the handoff process without interruption, while nursing staff received the handoff from anesthesia personnel.
- During this handoff, observers used the newly designed template, consisting of 20 data points as a checklist while timing the duration of the handoff.

The Design and Methods of the Study

- Phase II of the study consisted of providing both anesthesia personnel and PACU nurses with the newly designed handoff template cards and instruction on their use. Personnel were given one week to acclimate to card use during transitions of care.
- Phase II of the study was completed by observing 100 provider handoffs in the PACU by the same evaluators after this acclimation period. **(After Group, n=100).**
- Each data point was considered successfully communicated between anesthesia personnel and PACU nursing staff if information related to each point was stated in any capacity.
- All the 20 data points were treated as critical and equally important in the following data analysis.

Number	Transition Point	Description
1	Patient ID	Patient name and birth date
2	MDA	Physician Anesthesiologist in charge of case
3	Surgery performed	Procedure that was performed
4	Anesthesia type	Type of anesthetic used during case(endotracheal intubation vs. LMA)
5	PMH	Relevant Past Medical History
6	Contact Precautions	Contact precautions for patient, if any and type
7	Allergies	Medication allergies and significant reactions if any anaphylaxis, hives, rashes, etc)
8	Medications	Significant medications (B blocker, glycemic control, anticoagulants, etc)
9	Labs	Pertinent labs (HGB, Platelets, Coagulation studies, glucose, abg, etc)
10	Base Vitals	Baseline vitals prior to procedure
11	IV Access	IV location, gauge and type of access
12	Fluid Status	Includes type given (crystalloid vs colloid) and type lost (EBL, urine output, OG/NG suction)
13	Relaxants	Muscle relaxants given as well as reversal
14	Sedatives	Amnestics ,anxiolytics, and hypnotics
15	Antibiotics	Antibiotics (Penicillins, Cephalosporins, Glycopeptides, Fluroquinolones, Aminoglycosides etc) and redosing if needed
16	Opioids	Opioids given during case as well as amount and last dose given
17	Post op pain plan	Post operative analgesia plan, PO or intravenous analgesia vs regional/neuraxial
18	PONV prophylaxis	Prophylactic PONV meds given (decadron, ondansetron ,etc)
19	Anesthetic concerns	Difficult airway, ventilation, hemodynamic instability, etc
20	Clarification	Does nursing staff have any questions

Table1. List of 20 transition data points used in the template card for the patient transition of care. All the 20 transition data points are considered essential and are treated as equal.

#	Transition Point	%Before	%After	%Change	Pearson $\chi^2(1)$	Pearson p-value	Fishers Exact Probability Test (p-value)	Significant Improvement
1	Patient ID	89	100	11	11.64	0.000645	0.00073045	YES
2	MDA	28	100	72	112.5	<.0001	2.99E-31	YES
3	Surgery performed	91	100	9	NA	NA	0.00323661	YES
4	Anesthesia type	85	94	9	4.31	0.037889	0.06291272	YES
5	PMH	98	96	-2	NA	NA	0.68271659	NO
6	Contact Precautions	9	31	22	15.13	<.0001	0.00015441	YES
7	Allergies	81	86	5	0.91	0.340114	0.44643903	NO
8	Medications	52	95	43	47.47	<.0001	1.39E-12	YES
9	Labs	18	95	77	120.62	<.0001	2.78E-31	YES
10	Base Vitals	8	61	53	62.15	<.0001	6.52E-16	YES
11	IV Access	17	83	66	87.12	<.0001	1.02E-21	YES
12	Fluid Status	95	94	-1	0.1	0.75183	1	NO
13	Relaxants	14	83	69	95.31	<.0001	7.34E-24	YES
14	Sedatives	96	92	-4	1.42	0.233403	0.37270462	NO
15	Antibiotics	93	95	2	0.35	0.554113	0.76734443	NO
16	Opioids	96	94	-2	0.42	0.516937	0.74752975	NO
17	Post op pain plan	22	94	72	106.4	<.0001	2.54E-27	YES
18	Nausea	94	98	4	NA	NA	0.27904332	NO
19	Anesthetic concerns	36	98	62	86.93	<.0001	2.72E-23	YES
20	Clarification	78	94	16	10.63	0.001113	0.00181015	YES

Table2: Statistical Results for the 20 data Points of Transition. The %Before and %After represent the percentage of the appropriate transfer of the corresponding data point from among 100 patient of transfer of care before and after of the introduction of the template card.

#	Transition Data	Median (Before)	Mean (Before)	Std. Dev. (Before)	Median (After)	Mean (After)	Std. Dev. (After)	p-value	Significant change
1	Total_Score (Out of 20)	12	12.00	2.06	18	17.83	0.95	8.16E-65	YES
2	Total_Time (sec)	81.00	89.15	37.27	113	112.63	31.3	2.79E-06	YES

Table3: Statistical Results for the transitions' Total Score (Out of 20) and Total_Time. The Total_Transition_Score was significantly increased from (Mean=12, Median=12) before the introduction of the template card to (mean=17.83, median=18) which is in overall about 50% (6 data points) improvement. The total time of transition was increased from mean=89.2s to mean=112.6s. This is in overall about 26% (23.4s).

SUMMARY & DISCUSSION

- 13 of 20 data points showed significant improvement in the percentage of their appropriate conveyance during transfer after the introduction of the template card.
- 7 data points which did not show significant improvement were already conveyed during transfer of care at a rate of 90% or greater.
- The Total Transition Score (out of a maximum of 20) was significantly increased (about 50% and 6 data points) after the introduction of the template card. (initially a mean=12 and median=12 and improving to a mean=17.83 and median=18).
- The total time required to complete the transition was increased from a mean=89.2s to mean=112.6s. (roughly a 26% increase).

SUMMARY & DISCUSSION

- Overall, these results demonstrate that the introduction of the template card significantly improved the transition of relevant data with an acceptable increase in time required to complete the new process.
- These results confer that the introduction of a template card is a simple, low cost, and effective way to improve the quality of transition of care.

Acknowledgements:

- Departments of Anesthesiology, *Wayne State University School of Medicine, Detroit, MI & St. Joseph Mercy Oakland Hospital, Pontiac, MI*

Christopher John, MD

Farhad Ghoddoussi, PhD

Sandeep H. Krishnan, MD

Terry A. Ellis II, MD

Daniel J. Applefield, MD (PI)

References:

- 1) Saager L., Hesler B. D., You J., Turan A., Mascha E. J., Sessler D. I., Kurz A. Intraoperative transitions of anesthesia care and postoperative adverse outcomes. *Anesthesiology* 2014;121:695-706.
- 2) Arora V., Johnson J. A model for building a standardized hand-off protocol. *Joint Commission Journal on Quality and Patient Safety* 2006; 32: 646-655.
- 3) American Society of Anesthesiologists Committee on Surgical Anesthesia. Guidelines for patient care in anesthesiology. ASA website. <https://www.asahq.org/For-Members/Standards-Guidelines-and-Statements.aspx>. Last amended October 19, 2011. Accessed August 19, 2016.
- 4) Hoefner-Notz R., Wintz M., Sammons J., & Markowitz S. Using evidence-based practice to implement standardized anesthesia-to-PACU handoff tool and improve PACU staff satisfaction. *Journal of PeriAnesthesia Nursing* 2013;28:e3.
- 5) Salzwedel C., Bartz H. J., Kühnelt I., Appel D., Haupt O., Maisch S., & Schmidt G. N. The effect of a checklist on the quality of post-anaesthesia patient handover: a randomized controlled trial. *International journal for quality in health care* 2013;25:176-181.