



Improvement in Induction Immunosuppression Documentation Errors in a High Volume Multi-organ Transplant Center: The Mayo Clinic Arizona Experience

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Abstract

Background: Medication errors contribute to an increase in adverse patient care events, poor outcomes, and extended length of stays (Härkänen, Ahonen, Kervinen, Turunen, & Vehviläinen-Julkunen, 2015). Errors may occur during medication ordering, verification, preparation, administration, or documentation (Härkänen, Ahonen, Kervinen, Turunen, & Vehviläinen-Julkunen, 2015). Study results revealed the majority of the events were documentation related errors.

Define: From January of 2013 to July 2015, we had 94 induction documentation errors, with an average of 3.03 errors/month. These errors have the potential of causing delays in processes, adverse patient safety events, and inaccurate billing to the patient. Reducing these errors helps to aid in documentation compliance, reduced patient safety errors, and reduced inaccurate billing to the patient.

AIM: The goal is to achieve a 50% reduction in these errors by December 2016.

Measure: High level process maps were used (SIPOC) to help scope the problem, define customer requirements, as well as gather baseline data on those requirements.

Analyze: A process map was used to identify key factors contributing to the errors and opportunities were discussed using root cause analysis process improvement. Interventions were made in an iterative fashion over time showing improvements and overall progress to sustaining the problem.

Improvements: Various measures were implemented to reduce the amount of events related to documentation errors. Improvements included education, documentation changes, standardized workflow for administration of preoperative medications, enhanced handoff report, and collaboration between teams.

Additional efforts included mandatory success factors on-line learning, daily monitoring using a report, and periodic updates via staff meetings and newsletters.

Control: A control plan was developed to sustain the gains, while lessons learned were communicated at the Transplant Quarterly meeting. The before and after data went from **3.03 errors/month to 1.50 errors/month** and showed a statistically significant difference ($P < .05$) that solidified the process improvement efforts were due to the project and not random chance.

Benefits: Benefits include promoting patient safety as standardized workflows minimize under/overdosing documentation errors; supports accurate documentation essential for continuity of care and research studies; fosters collaboration between teams; supports quick reporting and resolution of discrepancies; contributes to improved Pharmacist satisfaction; and eliminates opportunities for inaccurate billing.

Purpose

Reducing Errors Supports:

- ↑ Improved patient safety
- ↑ Documentation compliance
- ↑ Accurate billing

SIPOC

Process:

- Starts with documentation
- Ends with administration of medication
- Followed by review of documentation

Key Players:

- Nursing, Anesthesia, and Pharmacy

Control Plan

- Anti-rejection discrepancy report
- Pharmacy review of documentation & charges
- Communication of discrepancies to key stakeholders
- Reinforce established documentation & workflows
- Annual training for Anesthesia (refresh training)

Study Aim

Achieve a 50% reduction in induction medication documentation errors by December 2016

Supports Strategic Objectives

- Increase customer satisfaction: patients, referring physicians, and third-party payers
- Enhance financial performance
- Enhance patient safety
- Sustain high quality in each organ program
- Recruit, train, and retain the best staff
- Develop research and education programs
- Develop and mature existing partnerships & collaborations

Improvements Implemented

- Education for staff and providers
- Documentation changes
- Administration workflow changes
- Enhanced handoff report
- Collaboration between teams
- Success factors on-line learning
- Daily monitoring using report
- Periodic updates via staff meetings and newsletters

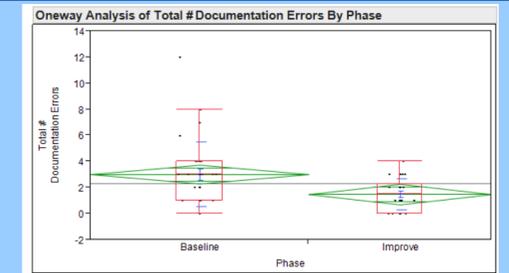
Table 1: Documentation & Medication Administration Errors for Induction Immunosuppression by Year

	2013	2014	2015	2016	2017 (Jan-Oct)
Q1 (Jan-Mar)					
#error	16	4	9	1	8
#transplant	78	85	88	109	100
Q2 (Apr-June)					
#error	23	3	8	7	5
#transplant	95	60	119	138	111
Q3 (July-Sept)					
#error	6	9	9	0	2
#transplant	91	99	90	104	101
Q4 (Oct-Dec)					
#error	8	4	6	6	2
#transplant	81	96	105	101	47
Total					
#error	53	20	32	14	17
#transplant	345	340	402	452	359

Error Type - Description	2017 (Jan-Oct)				
	2013	2014	2015	2016	2017 (Jan-Oct)
Wrong dose documented	29	5	18	4	2
Wrong drug documented	3	0	1	0	
Drug not administered	0	0	1	0	
Drug administered but not documented	6	9	5	2	1
Incorrect time	2	0	1	0	
Duplicate documentation	13	6	6	8	14
Total	53	20	32	14	17

Figure 1: Results

Improvement in Induction Immunosuppression Documentation Errors during Improvement and Control Phases



Level	Minimum	10%	25%	Median	75%	90%	Maximum
Baseline	0	1	1	3	4	6.8	12
Improve	0	0	0	1.5	2.25	3	4

Conclusions

Using the process maps to evaluate errors in the documentation of induction immunosuppression, we identified both qualitative and quantitative improvements in this critical process.

Qualitative:

- Promotes patient safety as standardized workflows minimize under/overdosing documentation errors
- Supports accurate documentation essential for continuity of care & research studies
- Fosters collaboration between teams
- Quick reporting & resolution of discrepancies
- Improved Pharmacist satisfaction

Quantitative:

- Eliminate opportunities for inaccurate billing opportunities

References

Härkänen, M., Ahonen, J., Kervinen, M., Turunen, H., & Vehviläinen-Julkunen, K. (2015). The factors associated with medication errors in adult medical and surgical inpatients: A direct observation approach with medication record reviews. *Scandinavian Journal Of Caring Sciences*, 29(2), 297-306. doi:10.1111/scs.12163