A Success Story: Improving Documentation of Medical Device Patient Safety Events

A. Casagrande Cesconetto[1]

[1] Lower Mainland Biomedical Engineering, Providence Health Care, Vancouver, Canada

I. Introduction

In British Columbia (BC), healthcare providers report patient safety events (hereafter referred to as events) via a central repository named BC Patient Safety & Learning System (PSLS). Each event is handled from initiation to closure by a clinical leader in the unit where the event occurred.

BC Biomedical Engineering Departments (Biomed) have access to PSLS and can see the details of equipment-related events reported through this system.

Lower Mainland Biomedical Engineering (LMBME) has a regional clinical engineering team overseeing reported events in the lower mainland of BC. This team identifies reports relevant to Biomed (i.e., involving equipment that Biomed supports), coordinates the investigation of such events, and reports pertinent information to Health Canada. Biomedical Engineering Technologists (BMETs) conduct the hands-on aspects of the investigations, determine whether the devices contributed to the events, and make recommendations to prevent reoccurrence.

II. Problems

Events reported through PSLS cannot be automatically documented in LMBME's computerized maintenance management system (CMMS). Undocumented or inaccurately documented events in CMMS result in inaccurate medical device records. Additionally, Biomed staff who do not have access to PSLS cannot verify which devices have been involved in events and cannot track or trend data pertaining to these events, resulting in missed opportunities to improve patient safety. Therefore, a need was identified to improve the documentation processes of events in LMBME's CMMS.

III. Methods

To achieve this goal, a team of four relevant stakeholders (clinical engineer, BMET supervisor, senior BMET, and database administrator) employed the model for improvement framework [1] and change management principles to analyze the situation and implement solutions beneficial to all stakeholders. Change ideas were developed with the aid of driver diagrams and process maps, and implemented via Plan-Do-Study-Act cycles, initially on a small scale. Once a change idea was verified to be an improvement based on results and aims outlined in a measurement plan, that solution was spread to other Biomed teams and tested on a larger scale.

IV. Results & Discussion

The change ideas that yielded the biggest improvements in the documentation processes in LMBME's CMMS were:

1. The creation of a work order type named "PSLS – Incident Investigation," used exclusively for all Biomed-related events.
2. The implementation of a standardized investigation procedure embedded in the CMMS with forcing functions to support accurate documentation of events.
3. The creation of a special asset number to document events in which Biomed is unable to identify the relevant asset or events that pertain to consumables.

The improved documentation processes resulted in additional positive outcomes related to event management:

1. An automated monthly report of event metrics, including run charts with event data from the past two years and normalized bar graphs to track and trend potentially problematic pieces of equipment.
2. A feedback system to inform clinical staff of LMBME's findings upon the conclusion of investigations, including ideas to prevent the reoccurrence of similar events.
3. Individualized education for clinical staff regarding proper isolation of equipment for investigation (Fig. 1).

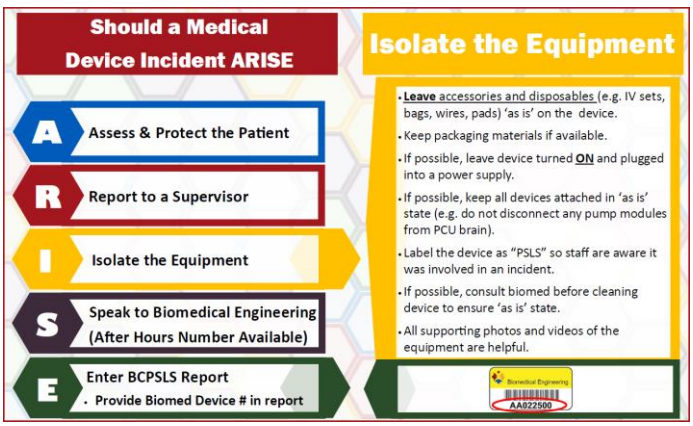

Fig. 1 ARISE Medical Device Incident Poster

Acknowledgements

The exceptional contributions of Tony Hsieh, Rafif Hakimi, Yalda Ingham, Alanna Bateman, Brendan Gribbons, and Carol Park were paramount to the success of this project.

References

1. Langley, G. J. et al. (2009). *The improvement guide* (2nd ed.). JB Wiley.