2022-2023 Educational Webinar Series

CMMS Standardization and Implementation – best practices and lessons learned

June 08, 2023

Panelists:

Tom Toczylowski
Assistant Director
Healthcare Product Alerts
ECRI
ttoczylowski@ecri.org

Jane Boal
Regional Manager, Strategic Projects,
Quality Improvement & Change
Providence Health Care, Vancouver, BC
jboal1@providencehealth.bc.ca

Tedford MacLaggan
Manager, Biomedical Engineering
Island Health, Victoria, BC
Tedford.MacLaggan@islandhealth.ca

ACCE gratefully acknowledges the sponsorship of the 2022-2023 Educational Webinar series by

crothall healthcare

HEALTHCARE TECHNOLOGY SOLUTIONS
ENHANCING THE CLINICAL EXPERIENCE

MEDIGATE by Claroty

ordr

RENOVO SOLUTIONS

sodexo HEALTHCARE

About the moderator

Maryam Samiee, MSc. PEng
Regional Clinical Engineer
Shared Health, Winnipeg, Manitoba
Canada

- Regional Clinical Engineer in the province of Manitoba with more than 14 years of experience.
- Responsible engineer for technical management of a number of provincial clinical teams including Surgery, Anesthesia, and Medicine.
- Designated Professional Engineer with the Province of Manitoba.
- MSc. in Electrical Engineering from the University of Manitoba.

Logistics

❖All attendees are muted during the presentation.

❖Questions to the panelists must be submitted via the "Q&A" feature in Zoom at any time. They will be addressed at the Q&A portion.

❖If there is any urgent issue, please use the "chat" feature to communicate with the host/moderator.

❖Please remember to complete the webinar evaluation after attending. A link will be provided at the end.

Session Description

ECRI will expand on the importance of CMMS standardization and the use of a common nomenclature system to extract meaningful reports from your CMMS.

Representatives from HDO in British Columbia, Canada, who use a common CMMS, will review some of their CMMS improvement initiatives and standardized processes associated with their PM Program.

About the Panelists

Jane Boal
Regional Manager, Strategic Projects, Quality Improvement & Change
Providence Health Care, Vancouver, BC

Providence Health Care
How you want to be treated.

Jane Boal is the Regional Manager, Strategic Projects, Quality Improvement & Change with the Lower Mainland Biomedical Engineering Department in Vancouver. She supports Engineers and Technologists by bringing a quality improvement lens and group organization strategies to all projects, initiatives and innovations. In her 11 years with the lower mainland Health Authorities, Jane has collaborated on many initiatives in the lower mainland and across the province of BC.

Jane has her BBA - Bachelors in Business Admin with a focus in Integrated IT Management Systems.

About the Panelists

Ted MacLaggan
Manager, Biomedical Engineering
Island Health, Victoria, BC

Mr. MacLaggan received his BSc.Eng & M.ScE from the University of New Brunswick and has been practicing Clinical Engineering since 2005. While completing his undergraduate degree, Mr. MacLaggan had the opportunity to work part time as a biomedical Engineering Technologist allowing him to gain valuable experience and customer service skills. Prior to moving to Vancouver Island, Mr. MacLaggan, worked for the Health Associations of Nova Scotia and the Capital District health Authority as a Clinical Engineer and the IWK Health Centre as the Manager for Biomedical Engineering.

Since 2016, Mr. MacLaggan has been managing and leading Island Health's Central & North Island Biomedical Engineering teams. Mr. MacLaggan also serves as the Provincial Preventative Maintenance Program Manager for B.C.'s provincial Biomedical Engineering Programs.

Mr. MacLaggan is a member of ACCE and member of CMBES where he serves as the Awards Committee Chair and chair of the Right To Repair Committee. Lastly, in his free time he greatly enjoys the outdoor playground of Vancouver Island.

About the Panelists

Tom Toczylowski
Assistant Director, Alerts
ECRI

Tom Toczylowski is the Assistant Director of the ECRI Alerts product, which provides ECRI members with recall and safety notifications to help safely manage medical devices, pharmaceuticals, and other medical products. A proud ECRI employee since 2008, Tom manages a group of writers, editors, and data coordinators who all contribute to ECRI's Alerts, recall management solutions, and inventory management products.

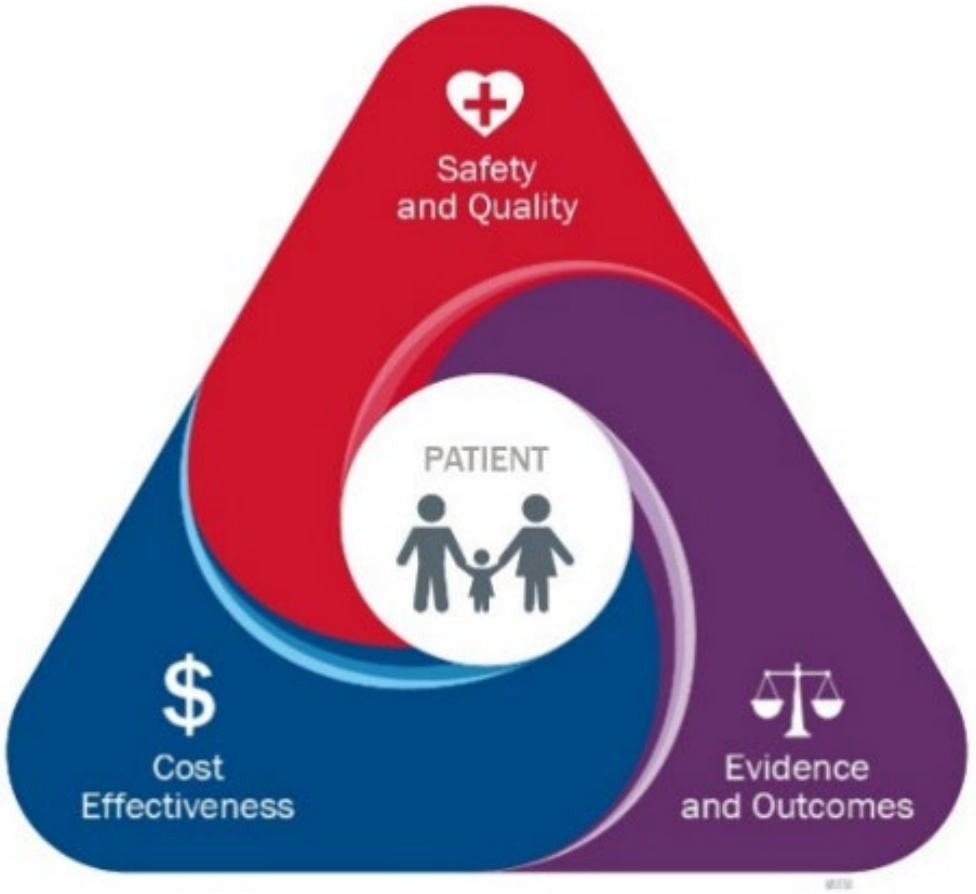
In addition to his many years of experience with medical device safety, recall management software solutions, and equipment data standardization, Tom has maintained a focus on the clinical laboratory and laboratory research. Prior to coming to ECRI, Tom spent several years working in molecular research laboratories at Fox Chase Cancer Center and Thomas Jefferson University.

Part 1

The importance of CMMS standardization
and the use of a common nomenclature system

Assurance to make healthcare safer

- **ECRI** is an independent, nonprofit organization improving the safety, quality, and cost-effectiveness of care across all healthcare settings worldwide.



CMMS Standardization

- Process and Examples of Equipment Data Cleaning

- Benefits and Value of Equipment Standardization and Normalization in CMMS Systems

ECRI Process for Standardization

- Standardizes Medical Equipment Inventory based on:
  - ECRI's Device Type Classifications (UMDNS)
  - ECRI's Manufacturer Profiles (Vendor Guide)
  - ECRI Product Specification Databases
- Based on submitted member CMMS Data, we return:
  - Standard Model Name/Number
  - Standard Current Manufacturer (and unique code)
  - Standard Device Type (and unique code)

Unstandardized Fields				ECRI Standardized Fields		
Asset No.	Manufacturer	Model	Device Type	Manufacturer	Model	UMDNS
13456	Device Manufacturer Inc	Max Infusion - Model T	Infusion Pump - Syringe	Device Manufacturer, Inc.	Model T Max Infusion	Infusion Pumps, Syringe
13457	Device Manufacturer, Inc	Infusion - Max T	Pumps - Infusion	Device Manufacturer, Inc.	Model T Max Infusion	Infusion Pumps, Syringe
13458	Device Manufacturer, Inc.	Max Infusion	Infusion Pump	Device Manufacturer, Inc.	Model T Max Infusion	Infusion Pumps, Syringe
13459	Device Manufacturer	Model T Max	Syringe Pumps	Device Manufacturer, Inc.	Model T Max Infusion	Infusion Pumps, Syringe
13465	Dev Mfr, Inc	Model T Max Infusion	Infus Pump - Syr	Device Manufacturer, Inc.	Model T Max Infusion	Infusion Pumps, Syringe
13476	Device Mfr, Inc	MAX INFUSION - Mod T	Syr Inf Pump	Device Manufacturer, Inc.	Model T Max Infusion	Infusion Pumps, Syringe
13500	DeviceManufacturerInc.	Infusion - MAX T	Infusion Pumps - Syringe	Device Manufacturer, Inc.	Model T Max Infusion	Infusion Pumps, Syringe
13777	Device Manufacturer Inc.	MAX Mod T - Infusion	Pumps - Infusion - Syringe	Device Manufacturer, Inc.	Model T Max Infusion	Infusion Pumps, Syringe

Data Standardization Example

MANUFACTURER	COMMON_MODEL	NAMEPLATE_MODEL	SERIAL	PURCHASE	ECRI Standardized Product	ECRI Standardized UMDNS	ECRI Standardized Sourcebase Manufacturer
MEDTRONIC INC	LIFEPAK 12	LIFE PAK 12	30363564	8/22/2012	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC INC	LIFEPACK 12	LIFEPACK 12	13715803	7/18/2011	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LIFEPAK12	99400-001168	12343106	10/17/2007	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LP 12	LIFEPACK 12	39176312	9/29/2010	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LIFEPAK 12	LIFEPAK 12	36543366	6/10/2008	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LIFEPAK 12	LIFEPAK 12	36543363	6/10/2008	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LIFEPAK 12	LIFEPAK 12	36999315	7/9/2008	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LP 12	LP 12	11924082	6/24/2009	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LP12	VLP12	38278930	9/25/2009	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LP12	VLP12-02-005985	11580316	5/1/2000	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LP12	VLP12-02-005985	13989712	1/1/2002	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
MEDTRONIC PHYSIO-CONTROL CORP	LP12	VLP12-02-007228	37126363	5/20/2009	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
PHYSIO CONTROL	LP12	LIFEPACK 12	30751343	1/1/2003	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
PHYSIO CONTROL	LP12	LIFEPAK 12	33837466	1/7/2005	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
PHYSIO CONTROL	LP12	LP12	38773817	4/20/2010	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
PHYSIO CONTROL	LP12	LP12	38773816	4/20/2010	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
PHYSIO-CONTROL CORP		LP12	011351	3/11/2009	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
PHYSIO-CONTROL INC	LIFEPAK 12	VLP12-02-003809	30236209	1/14/2009	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co
PHYSIO-CONTROL INC	LIFEPAK 12	VLP12-02-005986	34490973	6/12/2006	LIFEPAK 12	Defibrillators, External, Manual	Physio-Control Inc A Stryker Co

Data Standardization Example

CURRENT MANUFACTURER	ECRI Standardized Manufacturer	CURRENT COMMON_MODEL	CURRENT NAMEPLATE_MODEL	ECRI Standardized Model	DEVICE TYPE	ECRI Standardized Type
3M	3M Health Care	775	BAIR HUGGER	Bair Hugger 775	WARMING UNITs	Warming Units, Patient, Forced-Air
3M	3M Health Care	775	BAIRHUGGER	Bair Hugger 775	WARMING UNITs	Warming Units, Patient, Forced-Air
3M	3M Health Care	775	BAIRHUGGER	Bair Hugger 775	WARM UNIT PATIENT FORCED	Warming Units, Patient, Forced-Air
3M	3M Health Care	BAIR HUGGER	MODEL 775	Bair Hugger 775	WARMING UNIT PATIENT FORCED-AIR	Warming Units, Patient, Forced-Air
3M HEALTH CARE	3M Health Care		755	Bair Hugger 775	WARMING UNIT PATIENT FORCED	Warming Units, Patient, Forced-Air
3M HEALTH CARE	3M Health Care	BAIR HUGGER	775	Bair Hugger 775	WARMING UNIT ANESTHETIC	Warming Units, Patient, Forced-Air
3M HEALTH CARE	3M Health Care	775	775	Bair Hugger 775	WARMING UNIT PATIENT FORCED-AIR	Warming Units, Patient, Forced-Air
3M HEALTH CARE	3M Health Care	775	775	Bair Hugger 775	WARMING UNIT FORCED-AIR	Warming Units, Patient, Forced-Air
3M HEALTH CARE	3M Health Care	BAIR HUGGER 775	70-2007-9140-1	Bair Hugger 775	WARMING UNIT, ANIMAL	Warming Units, Patient, Forced-Air
3M HEALTH CARE	3M Health Care	775 BAIR HUGGER	775 BAIR HUGGER	Bair Hugger 775	WARMING UNIT PATIENT FORCED-AIR	Warming Units, Patient, Forced-Air
3M HEALTH CARE	3M Health Care	MODEL 775	BAIR HUGGER	Bair Hugger 775	WARMING UNIT PATIENT FORCED-AIR	Warming Units, Patient, Forced-Air
ARIZANT HEALTHCARE	3M Health Care	775	BAIR HUGGER	Bair Hugger 775	WARMING UNIT PATIENT FORCED-AIR	Warming Units, Patient, Forced-Air
ARIZANT HEALTHCARE	3M Health Care		BAIR HUGGER 775	Bair Hugger 775	WARMING UNITs	Warming Units, Patient, Forced-Air
ARIZANT HEALTHCARE	3M Health Care	775 BAIR HUGGER	BAIR HUGGER 775	Bair Hugger 775	WARMING UNITs	Warming Units, Patient, Forced-Air
ARIZANT HEALTHCARE	3M Health Care	775 BAIR HUGGER	BAIR HUGGER 775	Bair Hugger 775	WARMING UNIT PATIENT FORCED-AIR	Warming Units, Patient, Forced-Air

Advantages of CMMS Standardization

1. Data Integrity: Authoritative data & data governance
2. Reduced Variance: In naming, business processes, data, & training
3. Greater Compliance: Joint Commission, AEM
4. Improved Business Agility: Optimizing existing processes/functionality
5. Improved Patient Safety: Targeted alerts/recalls; Reduced medical errors
6. Analytics to support fast and accurate enterprise decisions:
   - Equipment forecasting / centralized purchasing
   - Product realignment / redistribution to support mission needs

Reduced Variance: In naming, business processes, data, & training

- Consistency is key to utilizing data in a functional way
- Value and accuracy of reports run from CMMS will only be as good as the accuracy and consistency of the data

MANUFACTURER	COMMON_MODEL	NAMEPLATE_MODEL	SERIAL
MEDTRONIC INC	LIFEPAK 12	LIFE PAK 12	30363564
MEDTRONIC INC	LIFEPACK 12	LIFEPACK 12	13715803
MEDTRONIC PHYSIO-CONTROL CORP	LIFEPAK12	99400-001168	12343106
MEDTRONIC PHYSIO-CONTROL CORP	LP 12	LIFEPACK 12	39176312
MEDTRONIC PHYSIO-CONTROL CORP	LIFEPAK 12	LIFEPAK 12	36543366
MEDTRONIC PHYSIO-CONTROL CORP	LIFEPAK 12	LIFEPAK 12	36543363
MEDTRONIC PHYSIO-CONTROL CORP	LIFEPAK 12	LIFEPAK 12	36999315
MEDTRONIC PHYSIO-CONTROL CORP	LP 12	LP 12	11924082
MEDTRONIC PHYSIO-CONTROL CORP	LP12	VLP12	38278930
MEDTRONIC PHYSIO-CONTROL CORP	LP12	VLP12-02-005985	11580316
MEDTRONIC PHYSIO-CONTROL CORP	LP12	VLP12-02-005985	13989712
MEDTRONIC PHYSIO-CONTROL CORP	LP12	VLP12-02-007228	37126363
PHYSIO CONTROL	LP12	LIFEPACK 12	30751343
PHYSIO CONTROL	LP12	LIFEPAK 12	33837466
PHYSIO CONTROL	LP12	LP12	38773817
PHYSIO CONTROL	LP12	LP12	38773816
PHYSIO-CONTROL CORP		LP12	011351
PHYSIO-CONTROL INC	LIFEPAK 12	VLP12-02-003809	30236209
PHYSIO-CONTROL INC	LIFEPAK 12	VLP12-02-005986	34490973

Analytics: Supports fast and accurate enterprise decisions

- Examples of such decisions include:
  - Planning the replacement of a fleet of infusion pumps and analyzing the cost of such a change
  - Alternative Equipment Maintenance or other Preventative Maintenance Decisions
  - Planning software updates across different departments or facilities

Improved Patient Safety: Targeted alerts & recalls; Reduced medical errors

- When recalls or important corrections unexpectedly arise, a consistent classification and naming convention is critical to finding (and eventually correcting) affected systems
  - ECRI has received stories of facilities that had to spend hours tracking down affected systems because they were inconsistently described in the CMMS

Part 2

British Colombia HDOs review some of their CMMS improvement initiatives and standardized processes associated with their PM Program.

BC Biomedical Engineering Overview

British Columbia Population ~5 Million

- **BC Biomed Federation**
  - 7 Different Health Organization & 4 Leaders
- **Common in BC**
  - CMMS (since 2015)
    - 1 year of data cleaning and nomenclature alignment
- **BME Staff**
  - ~277 Technologist & Supervisors
  - ~13 Engineers
  - ~8+ Managers, 7+ Directors
  - ~6 CMMS Admins
- **Alerts Recalls & Incidents Investigations**
  - 576 alerts – 251 applicable to BC (2022)
  - 338 incident investigations in LM (2022)
- **Devices**
  - 178,780 Devices (as of March 2023)
  - 10,159 Different Models
  - 903 Device Types

BC Provincial Improvements Agenda

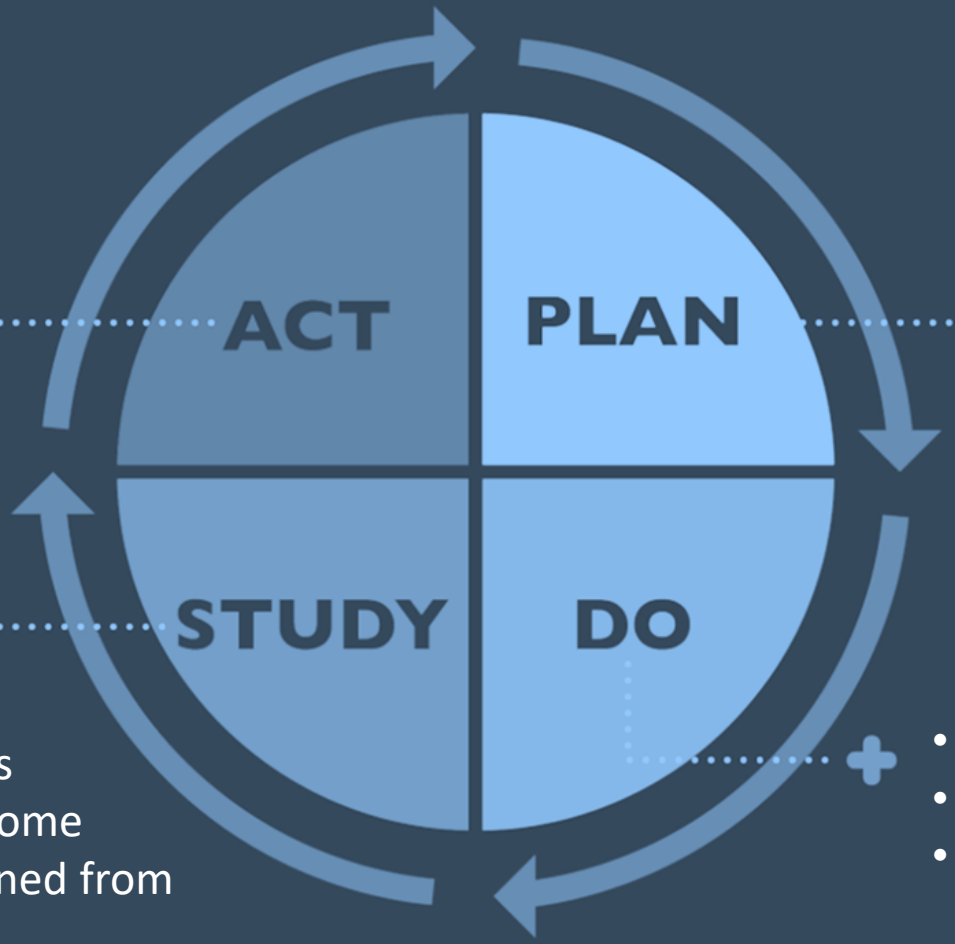
- Quality Improvement Approach
- CMMS System Improvements
- Alerts Process
- Incident Investigation Response
- PM Procedures
- Lessons Learned
- PM Program
- Next Steps and Future Projects

Quality Improvement Approach

- A Quality Improvement approach includes:
  - Process and systems thinking
  - Engaging with all levels of users
  - Leading change
  - Testing changes
  - Measuring and using data to quantify the level of improvement
  - Spreading and sustaining change

PSDA Cycle

- Adopt, Adapt or Abandon?



- Determine Objectives
- Engage with Staff
  - Surveys
  - Meetings
- Develop a Plan

- Review Analysis
- Study the Outcome
- What was Learned from the Test?

- Carry out a Test
- Document Observations
- Develop Analysis Materials

(Adapted from Langley et al, 2009: The Improvement Guide)

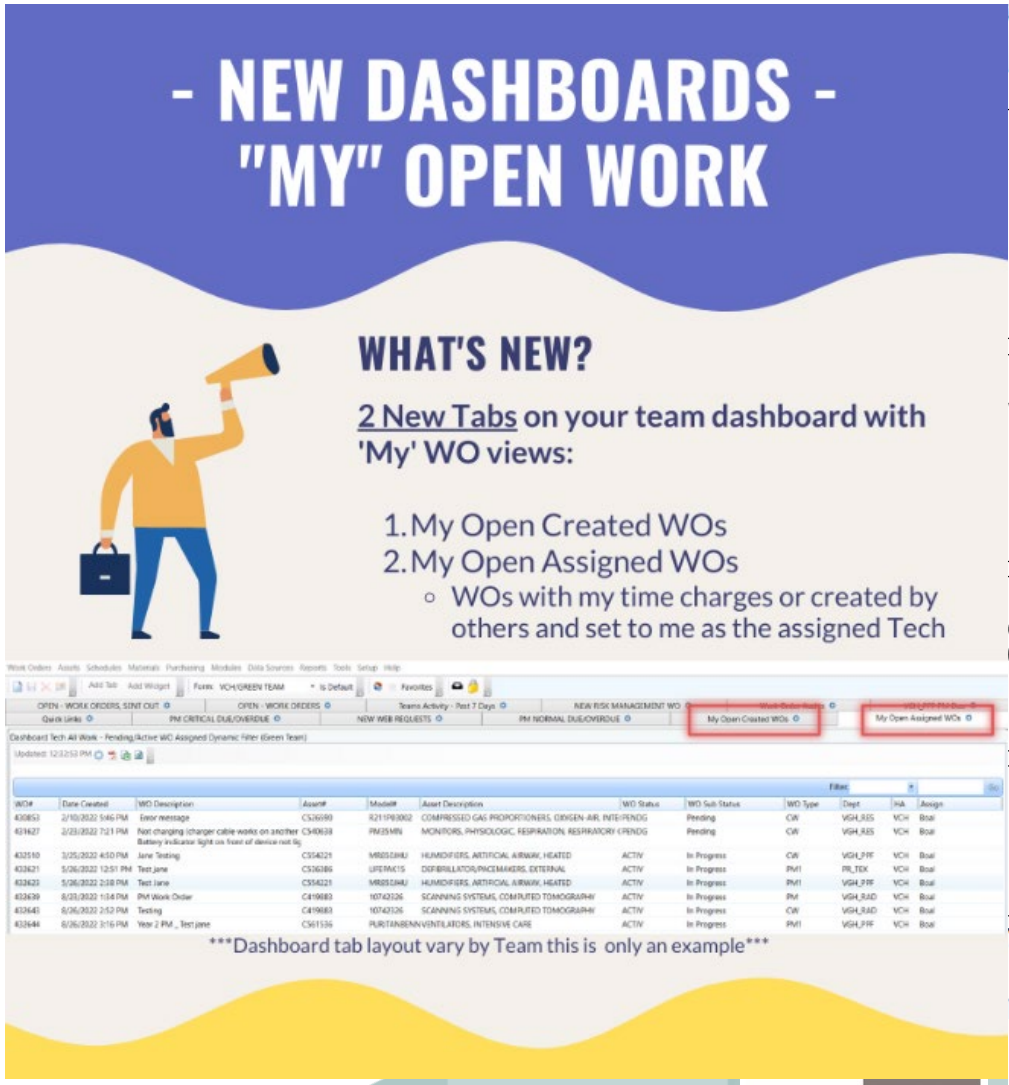
EPIQ ENGAGING PEOPLE IN IMPROVING QUALITY

BC PATIENT SAFETY & QUALITY COUNCIL
Working Together Accelerating Improvement

ACCE
AMERICAN COLLEGE OF CLINICAL ENGINEERING

Provincial CMMS System Improvements

- Key Improvements:
  - Quick Tabs for ease of completing a work order
  - Modified Incoming Inspection form for required Cybersecurity data
  - Additional WO Statuses and Dashboards
  - PM procedure improvements
- BMET Reference Group
  - Advice on challenges, improvements and testing
- CMMS Test Environment to Ensure the Changes Work
- Communications to notify all staff of changes

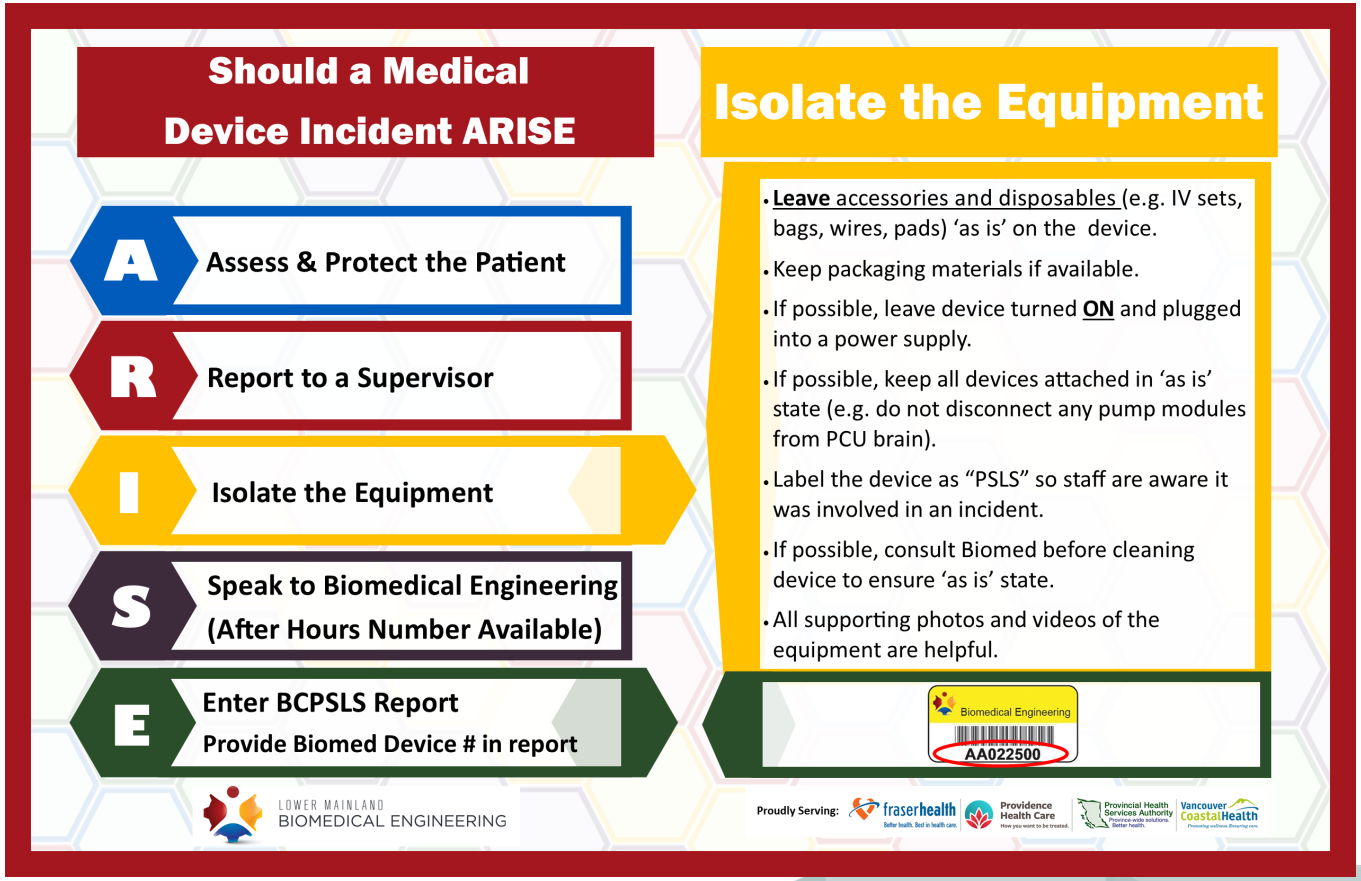


Alerts Process

- Created a centralized process for gathering all alert and recall information
  - Vendor Letters
  - Health Canada
  - ECRI
  - Medigate
- One provincial lead enters all alerts into the CMMS
  - Consistent documentation
  - Easy to review history of alerts
- Provincial group reviews all alerts weekly and determines which HOs and sites are affected
  - Leads are assigned to the alert to follow up with local technologists
  - Parent/Child work orders are created for all affected devices to document actions taken

Incident Investigation Response Process

- Clinical Reporting in BC Patient Safety Learning System (BCPSLS)
  - Limited access and visibility
  - Includes all Patient Safety Incidents, not just device related
- Developed criteria and filters within the BCPSLS system only report on Biomed devices
- Developed a process for clinical staff to aid in device investigations
  - ARISE Poster/Lanyard cards



Incident Investigation Response Process

- Created a WO process within our CMMS to give Biomed staff visibility and a clear way to report on incident investigations
  - Device history
  - Tracking on Health Canada Reporting
  - Meeting Vanessa's Law requirements in Canada
  - Online forms to compete
- Developed Process Maps
- Tested the process
  - Removed redundancies
  - Reviewed accuracy of data
  - Measured the utilization of the forms/process and the improvement
  - Surveyed staff and key users to further improve the process

Incident Investigation Procedure

Procedure Readings

LMBME PSLS Incident Investigation Procedure Error(s): 0 Blank Reading(s): 22 Warn

0. Event involving severe harm or death?

In case of severe harm or death, do not alter any evidence. Contact Engineering Team before proceeding with next steps.

- Yes
- No

1. PSLS ID

Use 0000000 for investigations without a PSLS report associated with them

Reading

(7-digit number)

2. Date of Incident

Reading

(mm/dd/yyyy)

3. Time of Incident

Reading

(exact or approximate)

4. Location of Incident

Department or Program / Specific Location / Room #

Notes/Comments

Procedure Readings

5. Event Description

Please remove all personal information from description

Notes/Comments

6. PSLS Event Handler or Reporter

Reading

Contact person for any clinical questions

7. Is this an Infusion Pump?

- Yes
- No

8. Did this event involve hemodialysis unit(s) or the handling or delivery of blood or blood products?

- Blood or blood products
- Hemodialysis unit(s)
- No

9. Can you take pictures or videos relevant to this investigation?

NOTE: Do NOT take photographs of patients, staff, visitors, or documents that involve any personal information

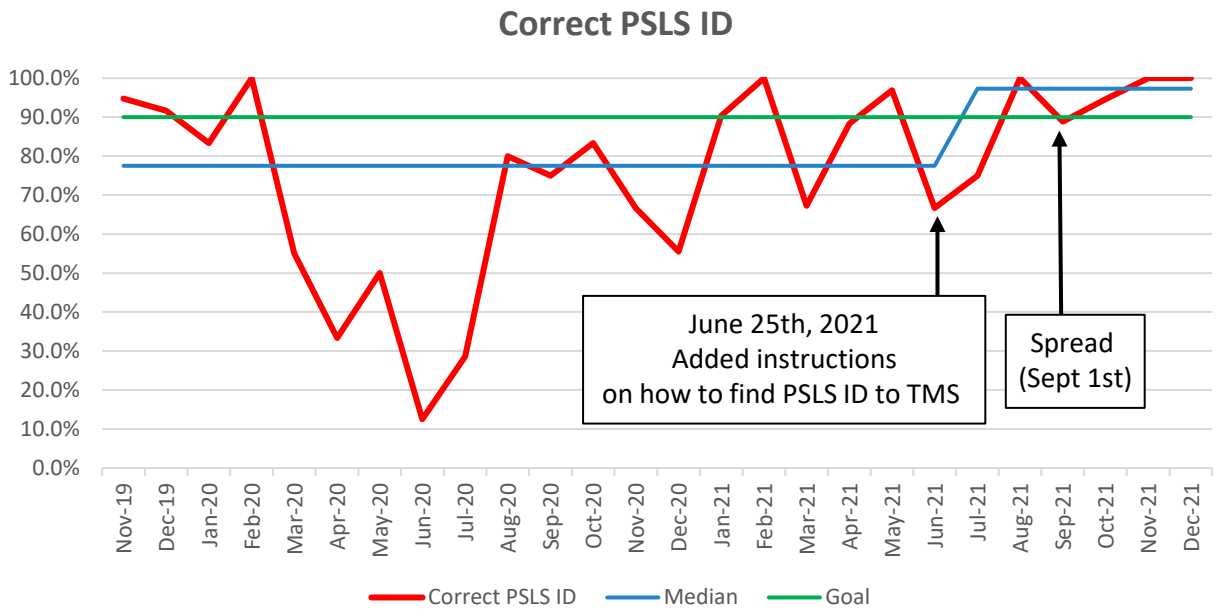
- Yes (Attach Files to WO)
- No
- N/A (e.g. irrelevant/not needed for this investigation)

10. Were you able to obtain/access the medical devices for this investigation?

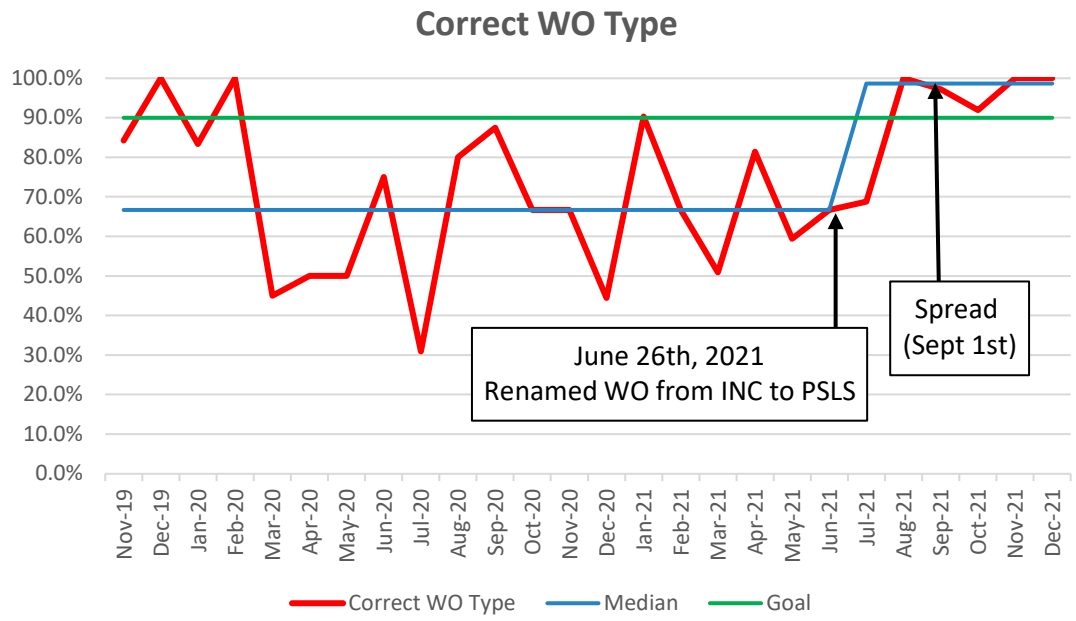
Cancel Ok

Incident Investigation – Key Measurements

How do we know the change is an improvement?



Goal: % Correct PSLS ID >90%



Goal: % Correct WO type >90%

Provincial PM Procedures

- Problem
  - Procedure stored within CMMS did not meet staff needs
    - Missing steps, missing measurements for testing, layout on CMMS was hard to read
    - Staff referenced other versions – manufacturer or historical versions
- Approach
  - BMET reference group
  - Included Engineers and Management in discussions
  - Investigated multiple CMMS options to improve the usability of forms
  - Trialed 3 device procedures with varying functions within the province
  - Surveyed staff to analyze results

Provincial PM Procedures

- Improvements
  - Majority of the result were neutral to positive
  - Reviewed the negative results in detail to find further improvements
  - Staff felt heard and engaged in the process
  - Management will be able to pull more relevant data from the CMMS
  - Ensure all sites across the province are providing the same level of device support
  - New format roll out in Spring 2023

Lessons Learned

- Some of the smallest/easiest changes had the largest impact
- Working Group discussions can be challenging
  - Members have differing opinions and positions on items
  - Ensure everyone is heard
  - If members disengage with the discussion, follow up right away
- Quality Improvements take time and patience but changes made are more likely to succeed
- Testing is key – DO NOT roll out a new initiative without working out the bugs
- Measuring results and impact are important to help prove/justify the changes
- Communicate change to all staff in as many ways possible
  - Emails
  - Newsletter
  - Team meetings
  - Staff Forums
  - Standard Operating Procedures
  - Message Boards

Provincial PM Program - Challenges & Organization

- Shared resources, knowledge & effort to develop, maintain, & standardize the PM Program
  - PM Program Policies
  - CMMS Administration
  - PM Schedules Assignment
  - PM Procedures Development
  - PM KPIs & Big Data
- PM Program Organization
  - Leadership Team
    - Director, PM Program Manager, 2 Clinical Engineers, 1 CMMS Specialist
    - Weekly Meetings
  - PM Change Request Team
    - Leadership Team + 1 HA Rep/HA
    - Bi-weekly meeting
    - Follow-up on PM Change Request tickets
  - PM Developers & Writers
    - Subject Matter Experts
    - Technologist

Device Types, Risk Management, & Prioritization

- Manufacturer/Models are Assigned to a Category/Subcategory based on ECRI Device Types (UMDNS).
- Subcategories are assessed using a Tool based on a modified version of the Fennigkoh and Smith model[1]
  - Known amongst BC BME Staff as the "WHO Tool"
  - See "Medical Equipment Maintenance Programme Overview – WHO Medical Device Technical Series.
- Device Type Priority/Risk Assessed based on
  - Equipment Function
  - Physical Risk (Most probable)
  - Scheduled Maintenance
  - Equipment History
- Risk/Priority
  - Critical
  - Normal
  - Unscheduled
- Recommended/Default Frequency
  - 6, 12, 24 months

Cat or SubCat Code:	For example: 18-823	BMET completes Green Sections	BME Asset Tag Req'd: YES
UMDNS Description:	For Example: Ultrasonic Therapy Systems		Scheduled Maintenance Req'd: ↓
Evaluation Criteria: *Risk evaluation method based on World Health Organization guidelines.*			
Equipment Function Therapeutic, Diagnostic, Analytical and Miscellaneous equipment categories are considered. *Note : This score in NOT based on equipment location (e.g. ICU) rather you are being asked whether the equipment's FUNCTION is Therapeutic, Diagnostic or Analytical regardless of it's physical location. For example a thermometer has a diagnostic score of 6, even though it may be located in a critical care area, while a defibrillator has a score of 10 even if located in a general ward.*		9	Scheduled Maintenance Required: YES
Physical Risk Associated with Clinical Application Lists the potential patient or equipment risk during use.		3	Priority: NORMAL
Scheduled Maintenance Requirement Describes the level and frequency of "***scheduled maintenance***" required as noted by the Manufacturer or through experience.		3	Frequency: 1/YEAR
Equipment History Any information available regarding service history that should be considered *(repair frequency, patient incidents, device alerts)*		0	Note: The above calculated result determines whether an equipment category/sub-category is to be included as **Scheduled Maintenance** in the BC BME CMMS.

Subcategory Setup & Historical Tracking in CMMS Critical

1. Fennigkoh, L, Smith B. *Clinical equipment management.* Joint Commission on Accreditation of Healthcare Organizations Plant Technology and Safety Management Series, 1989, 2:3–12

PM Procedure Standards & Development

- Resemble/Follow Manufacturer's Procedure
- Streamlined & easy to follow
- PM Steps/Parts
  - Associated Frequency
  - Part Numbers
- Standardized Responses for data analysis
- Include Test Limits
- Minimize Data Entry
  - Pass/Repair/Fail/NA
  - Values when required
  - Grouping Steps Together
- Includes Required Test Equipment
- Ensure Service Manual and/or OEM Procedure is attached.
- Use of Required Fields
  - Hours of Use
  - Software/Firmware Versions

- **Staff Training**
  - **Developers & CMMS Writers**
- **Prioritization**
  - **Staff Request**
  - **Risk & Model Counts**
- **Procedure Versions & Tracking**
  - **Paper & Digital Copies**
- **AEM Requirements & Data Collection**
- **Complex Procedures (e.g. CT Scanners).**
- **Re-use of sub procedures**
  - **Electrical Safety**
  - **Physical Inspections**

1. Fennigkoh, L, Smith B. *Clinical equipment management.* Joint Commission on Accreditation of Healthcare Organizations Plant Technology and Safety Management Series, 1989, 2:3–12

PM Program Change Requests & Staff Feedback

- **Drivers of PM Change Requests:**
  - Errors & Omissions
  - New Equipment
  - Alerts & Recalls
  - Incident Investigations
  - Software Updates
  - Experience & Data Analysis

- **Must consider how staff will be able to provide feedback & make request:**
  - New PM Procedures (Model/Device Type)
  - PM Procedure Updates (Model/Device Type)
  - PM Schedule Change Request (Model/Device Type)
  - New Subcategory Request (Risk Assessment & PM Schedule)
  - Device Type Risk Assessment Change Request

- **Change Request Website**
  - **Interfaced to CMMS**
  - **Accessible to all BME Staff**
  - **Unique Ticket/Change Request**
- **Change Request Committee**
  - **Meet Bi-weekly**
  - **Change Ticket Log drives the Agenda**
  - **Assignment of work & follow-ups**
  - **Identification of Experts**
  - **Discussion/Decisions documented**
  - **Notification & Scheduling of Changes**

1. Fennigkoh, L, Smith B. *Clinical equipment management.* Joint Commission on Accreditation of Healthcare Organizations Plant Technology and Safety Management Series, 1989, 2:3–12

PM Program - Other things to Consider?

- **What is the Single Source of Truth?**
  - **CMMS**
  - **Change Log used to track the decision process**
- **Does the CMMS track changes?**
  - **Impact to Work Orders?**
  - **Impact to Asset Records?**
- **How does the CMMS manage:**
  - **Device Type/Subcategories Records**
    - Risk Assessments Scores
    - Risk Class
    - PM Schedules/Frequencies
    - Device Type PM Procedures
  - **Models Records**
    - Demographics Information - (Device Type, Manufacturer, Model Name, Model #)
    - PM Procedures & Versions?
    - Change Notes to be Communicated to Techs
- **How to Manage Exceptions?**
  - HA
    - Site Specific PM Frequencies
    - Historical Equipment Responsibilities
  - Model
    - PM Frequency
    - Site Specific Procedures
- **What Key Performance Indictors are required?**
  - Accreditation
    - PM Completion Status
  - Operationally
    - WO Load Metrics
    - PM Time & Cost
    - In-house vs OEM Costs
  - Risk Management
    - Equipment Failure Rates
    - Service Induced Failures

Next Steps:

- Implementation of Failure Codes
  - Not too many
  - Carefully crafted/defined
  - User Training/Usage Critical
  - Used to determine the MTBF?
    - Impact (Who Score)
    - Probability (MTBF)
  - Does the PM improve equipment performance?
- Alternate Equipment Maintenance
  - Use of Failure codes to drive PM Frequency & PM Procedure Decisions
  - Target PM Resources to what makes a difference

Questions & Discussions

Enter your questions to the Q&A window

Thank You

Please complete the online evaluation form at

https://www.surveymonkey.com/r/2023-session10 or scan the QR code

Question Period

1. **Question for BC group: what were the deciding factors for selecting/adopting the UMDNS nomenclature over other nomenclatures such as the GMDN nomenclature?**
   - The LM HOs started using our shared CMMS system first in 2013, and at the time GMDN was still in development. We had also wanted to use ECRI for alerts and it made sense to align with UMDNS.
2. **Jane - while discussing product recalls said that they create parent child work orders. Please elaborate a bit**
   - A Parent WO is created with all the details of the remediation work needed and is copied to child WOs for all the affected devices. This is a quick way to create all the WOs, as there can be thousands of devices affected, and keeps the instructions consistent.
3. **Standardizing nomenclature, procedures, etc. is key, but it requires constant labor. From your perspective, what parts of the standardization work can already be automated and how?**
   - In BC, once we cleaned up all our data we introduced a process for adding in new devices to our CMMS. The new device requests are sent to our CMMS Admins and they enter the devices following UMDNS. We also created a Model table within our CMMS to auto populate fields when adding a device for a model that already exists.

Question Period

4. **Thinking of the hierarchy of effectiveness for improvement interventions, education, policies/rules, and posters/checklists are known to be less effective solutions, followed by simplification/standardization. How can you implement forcing functions and constraints (on top of standardization), which are the most effective solutions?**
   - Whenever possible, we try to introduce required fields in our CMMS as a forced function. The education, policies, posters, etc. supplement this. Forced functions only work when the staff understand what is required, otherwise they will populate the fields with incorrect data.

5. **Ted - Slide 36 about PM Procedure Standards - Do you have techs record actual test results? Or pass/fail w exception reporting? If actual results, why do you find data worthwhile?**
   - In BC, we limit the data recording to items that are required for accreditation purposes or are needed for future work. As part of the trial, one of our survey questions asked staff the likelihood they would use the recorded values in the future. The majority responded that they would not use it. The desire to have the recorded data was more about the ability to check off the step as completed, which works with the pass/fail check boxes on our forms.

Question Period

6. **Ted, Do you have a target for PM Completion for Critical and normal risk devices?**
   - In BC, the target for ‘Critical Risk’ devices is 100%. In the Lower Mainland and Island Health, we are working towards developing processes to have a target of 80% for ‘Normal Risk’ devices.
7. **Can you share what CMMS you are using in BC? Or is it a home grown system?**
   - In BC, we use TMS by Accruent for our CMMS system.
8. **How do you manage "unable to locate/access" devices due for PM, and do you follow up on them. Also, how do you factor them into the 100% completion requirement?**
   - Recently, we introduced a new WO status “Unable to Complete/Unable to Locate”. This new status allows us to close the PM WO, but it does NOT report the work as being completed. We are also working on removing these from our completion rates. After 6 months of the status being selected, the device will show up on an “Unable to Locate” dashboard so our teams can try to look for the device again. These steps are followed 3 times and after 18+ months of looking for the device we will change the device status to “Inactive”. Some discretion is also used depending on the device, for example, a pump might stay active longer.

Happy Summer!

Please complete the survey with your topics suggestions for the 2023-2024 Educational webinar series.