



Leveraging Standardized CMMS Data to Collaborate Towards Smarter HTM Decisions

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B a r e t i c h E n g i n e e r i n g



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About the moderator



Kamecia Bruce | Acting Chief, Biomedical Engineering

Kamecia Bruce is currently Acting Chief Biomedical Engineer at the West Palm Beach VA Medical Center. She serves as Secretary of ACCE and graduated from Mississippi State University and the University of Rochester.

Logistics

- All attendees have their microphones muted during the presentation.
- Questions to the panelists must be submitted via the “Q&A” feature in Zoom at any time.
- If there is any urgent issue, please use the “chat” feature to communicate with the panelists.
- Please remember to complete the webinar evaluation after attending. A link will be provided at the end.

About the speaker

Baretich Engineering



Clinical Engineering: To improve patient care through cost-effective management of medical technology — including assistance with accreditation and regulatory compliance.

Forensic Engineering: To identify the root causes of adverse incidents and avoid recurrence — including litigation support and expert witness services.

Recent publications: *Medical Equipment Servicing Guide, AEM Program Guide, CMMS for HTM (with Cohen), Electrical Safety Manual*

Editorial boards: *Global Clinical Engineering Journal, NAFE Journal, 24x7, and ASHE publications.*

Founder, Past-President, and Fellow of ACCE.



Matt Baretich PE PhD
President, Baretich Engineering, Inc.
Fort Collins, Colorado
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About the speaker

PARTS**SOURCE**®

Experience: Cross-functional experience in healthcare IT, connected medical devices, infusion pumps and surgical instrument tracking at some of the largest and most innovative medical device companies in the world including GE Healthcare, Becton Dickinson, Hill Rom, Siemens Healthcare and now PartsSource

Education: MS, Information Technology, Northwestern University and BS, Electrical Engineering, University of Illinois at Chicago



Rob Mayer
Senior Director, PartsSource
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About PartsSource

The world's largest provider of medical replacement products and services

We partner with healthcare organizations to raise the availability and quality of patient care by maximizing uptime of their mission critical assets.

Trusted by top healthcare providers



2001

Founded in Ohio

3,500+

Hospitals and Health Systems

6,000+

OEMs and Suppliers

15,000+

Clinical sites served

4M

Parts utilizing ISO 9001:2015

90,000+

Users of our platform

500,000+

Transactions facilitated annually

24/7/365

Dedicated access to our client teams and product specialists

Session Description

While CMMS systems are essential for HTM program operations, frontline professionals sometimes regard their interaction with the CMMS as an onerous data-entry chore, and many HTM managers struggle to derive useful insights from the mountains of data.

Sophisticated CMMS databases allow the collection of vast amounts of data and offer the promise of providing actionable management information. However, with hospitals all collecting data in their own unique ways, it has been all but impossible for HTM professionals to assess their industry as a whole. Discover how six competing CMMS suppliers recently set aside their differences to standardize how medical device information is configured, and then outlined a method for optimizing and standardizing failure codes in a recent white paper.

You can become stronger contributors to the HTM community, and to your HTM department's success, by leveraging your CMMS data and utilizing standardized information when applicable.

Standardizing the CMMS Failure Code Field

The value of **HTM benchmarking** has been recognized for decades and major efforts have been made to create effective benchmark databases. For a variety of reasons, those efforts have not been successful.

One barrier to effective benchmarking has been the amount of **time required to produce actionable metrics**. A closely related barrier is the **lack of standardization** in how HTM programs collect data.

Regulatory agencies define HTM metrics (not us)

No national database for AEM-related data

Build it and they will come

The CMMS Collaborative

- Identified leading CMMS vendors
- Met unofficially at the 2019 AAMI Exchange
- Requested AAMI support
 - Executive Sponsorship
 - Facilitation & Project Management
- Agreed to create a charter
 - Standardize selected CMMS field
 - Help CMMS clients with reconfiguration

Accruent (Connectiv, TMS, EAM)

EQ2 (HEMS II)

MediMizer (MediMizer)

Nuvolo (Nuvolo)

Phoenix Data Systems (AIMS)

TMA Systems (TMA)



Selection of the Failure Code Field

AEM program decision-making

PM program performance monitoring

Equipment replacement planning

**Product design/manufacturing
enhancements**

Analysis of Failure Code field usage

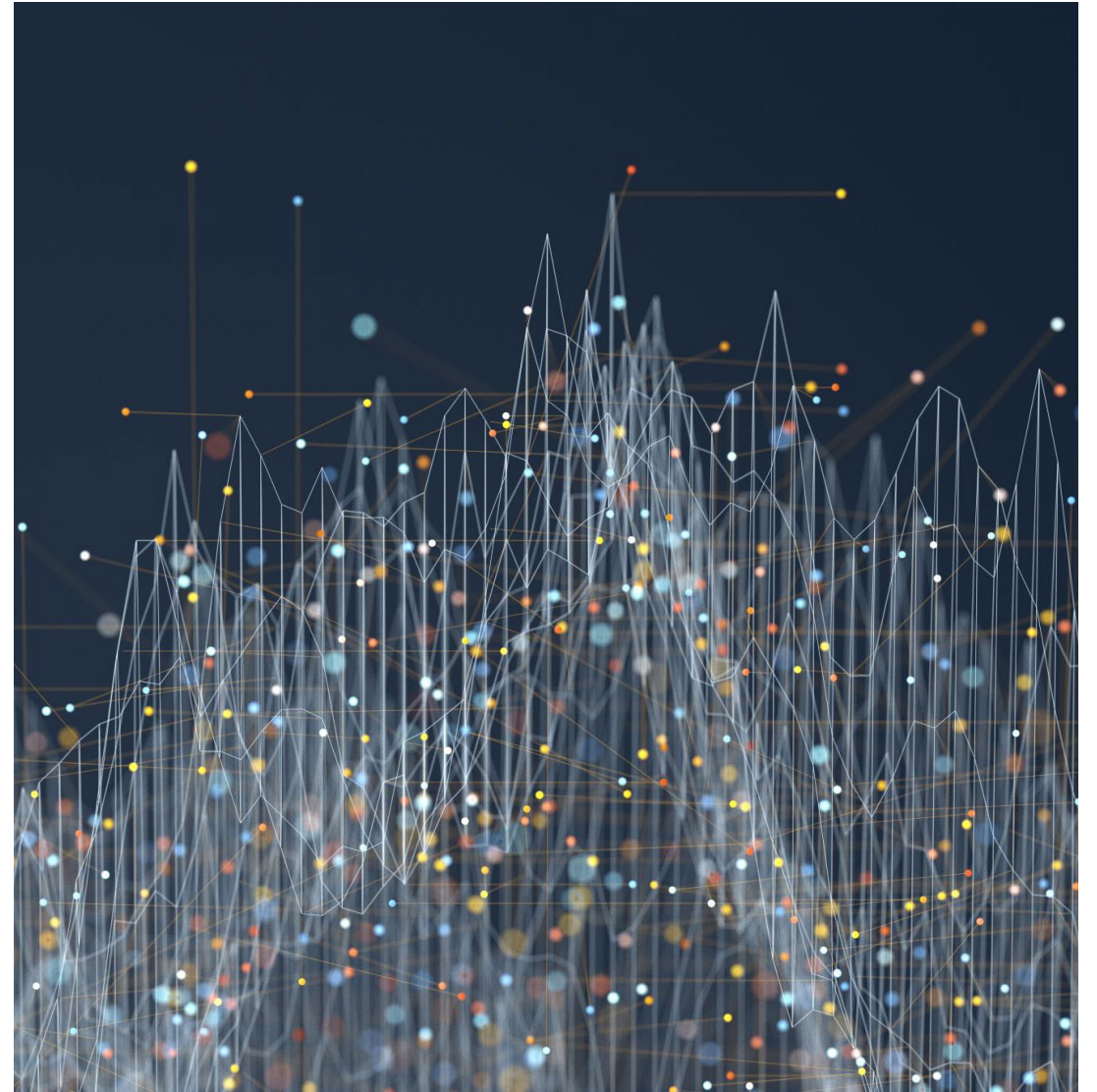
- Superior Analytics
- 2.5 million work orders
- Multiple CMMS types

Entries not representing failure data

- Cannot locate | Device in use
- Administration | Asset disposition | Training
- Initial inspection | Inspection request
- Hazard recall | Incident investigation
- Triage | Repeat problem

Failure Code Field Requirements

- Clear, practical, single-purpose definition
- Field choices must be exhaustive
- Field choices must be mutually exclusive
- Limited number of field choices
- Actionable management information

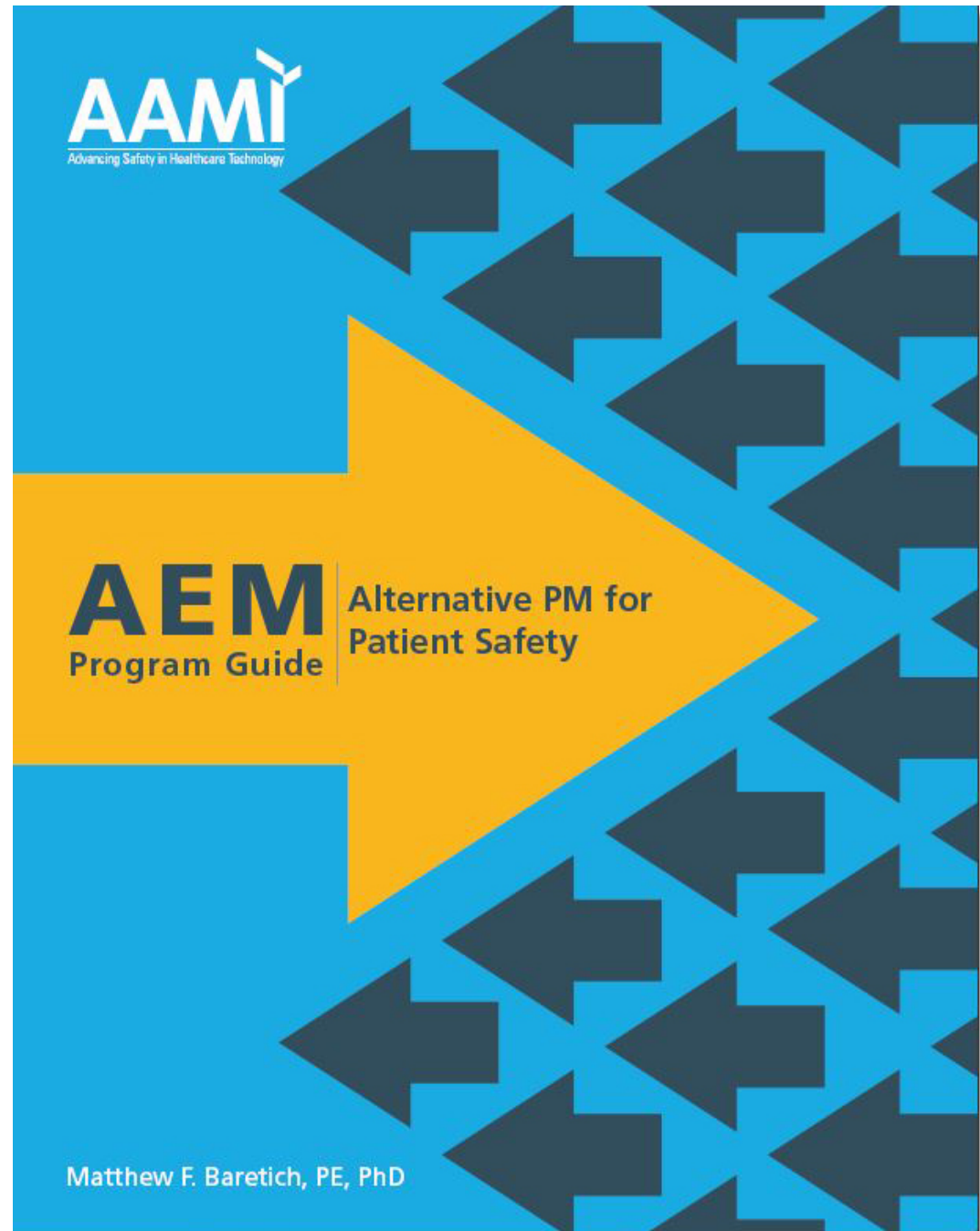


Proposed Failure Codes

- Component Failure (Battery)
- Component Failure (Not Battery)
- Accessory or Disposable Failure
- Calibration Failure
- Failure Caused by Maintenance
- Failure Caused by Abuse or Negligence
- Network or Connectivity Failure
- Software Failure
- Failure Caused by Utility System
- Failure Caused by Environmental Factor
- Failure Could Not Be Identified
- Use Error (Use Failure)
- Failure Not Diagnoses – Device Not Repaired
- No Failure Associated with the Work Order

APPLICATION

Optimizing AEM Programs



AAMI
Advancing Safety in Healthcare Technology

AEM | Alternative PM for
Program Guide | Patient Safety

Matthew F. Baretich, PE, PhD

Why implement an AEM program?

- Reduce PM cost,
consistent with the following criteria
- Equipment safety equivalent to
manufacturer recommendations
- Compliance with CMS and TJC requirements

Definitions

- PM = Planned Maintenance
- PM Activity = What we do
- PM Frequency = When we do it

Definitions

PM (Planned Maintenance) includes:

- Device Restoration PM
- Safety & Performance Verification PM

HAP EC.02.04.01 EP4

The hospital identifies the activities and associated frequencies, in writing, for maintaining, inspecting, and testing all medical equipment on the inventory. These activities and associated frequencies are in accordance with **manufacturers' recommendations** or with strategies of an **AEM program**.

HAP EC.02.04.01 EP4

Note 1: The strategies of an AEM program **must not reduce the safety of equipment** and must be based on accepted standards of practice, such as the ANSI/AAMI handbook ANSI/AAMI EQ56:2013, *Recommended practice for a medical equipment management program*.

How to measure “equipment safety” for your PM program



Useful metrics

- Patient incidents
- Downtime:
Hours per device per year
- Availability:
Hours per device per year \div required service hours

Useful metrics

- Failure rate: Failures per device per year
- Mean time between failures (MTBF)

Mean Time Between Failures

$$\text{MTBF} = \frac{(\# \text{ devices})(\# \text{ years analyzed})}{(\text{failures of all types})}$$

MTBF

- General metric for medical equipment reliability
- Depends on accurate counting of failures

Mean Time Between PM-Related Failures

$$\text{MTBF}^{\text{PM}} = \frac{(\# \text{ devices})(\# \text{ years analyzed})}{(\text{PM-related failures only})}$$

PM-Related Failures

Failures that **could have been prevented** by better PM

- Example: Early failure of infusion pump battery
- Code: Component Failure (Battery)

Hidden failures that **could have been discovered** by better PM

- Example: Low defibrillator output
- Code: Calibration Failure

MTBF^{PM}

- Performance metric for **Planned Maintenance**
- Depends on accurate counting of failures **and**
on accurate classification of failure types

Next Steps

AAMI White Paper

- CMMS Collaborative White Paper:
Optimizing the CMMS Failure Code Field
- www.aami.org/HTM/htm-resources/cmms-collaborative-white-papers

CMMS Suppliers

- **New clients:** industry leading implementation option
- **Current clients:** tools to transition to standard codes

Phase 2

- Standardization of additional fields

Adoption by HTM community

- Publication of use cases & success stories



Thank You

Please complete the online evaluation/attendance form at
https://www.surveymonkey.com/r/ACCE_03-25-21

