# How Effective Is Your HTM Program?

BY :   Donald Armstrong, CHTM, CBET, CABT
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# Izabella Gieras, CCE, CSSBB

- Currently the Director of Clinical Engineering at Huntington Hospital in Pasadena and Cedars-Sinai Medical Center in Beverly Hills, CA

- Worked as the Director of Clinical Engineering with ARAMARK Healthcare/Mount Sinai Medical Center, New York, NY; Director of Technology Management at William Beaumont Hospital in Royal Oak, MI

- Past President of ACCE (American College of Clinical Engineering)

- Fellow of ACCE, AAMI

- Certified Clinical Engineer (CCE)

- Holds a B.S. in Electrical Engineering from the University of Cape Town in South Africa, M.S. in Biomedical Engineering from the University of Connecticut and an MBA from Walsh College in MI

# Donald Armstrong, CHTM, CBET, CABT

- Currently at Renovo Solutions as Manager of Technical Training
- 41 years as a Biomed, many of those in the OR
- Get to share my gift of servanthood daily
- Love the HTM Field and what it has meant to me and my family.
- Have worked at Stanford Health Care, UCSF, GE Healthcare
- On Facility with AAMI teaching CBET Prep.
- CBET, CHTM, CABT
- AAMI, TMC, Editorial Board BIT
- Past President of HTMA Texas
- CABMET, CMIA, HTMA Texas

Discovering the Possibilities

# Session Description

**How do you evaluate the effectiveness of your healthcare technology management (HTM) program?**

While metrics like PM completions and equipment downtime remain crucial, we encourage a more forward-thinking approach to assessing your department's performance and the contributions of your team members. In addition to discussing traditional indicators, we will explore innovative methods to gauge the effectiveness of managers and technicians, integral components of the HTM department. We aim to contribute to the ongoing conversation about effectiveness in HTM, drawing from our experience in third-party companies and extensive involvement in running in-house programs.

We invite you to share your insights and best practices to enrich this important discourse.

# Session Objectives

- Gain a comprehensive grasp of the key indicators that truly matter.

- Develop a measurable, effective, and realistic Medical Equipment Management Plan (MEMP).

- Utilize Key Performance Indicators (KPIs), satisfaction scores, and retention rates as robust metrics for evaluating program effectiveness.

- Explore the integration of financial considerations into the overall assessment of program efficacy.

# Agenda

- **Background**
  - Traditional HTM Programs
  - Healthcare Trends
- **Our HTM Programs**
  - In House
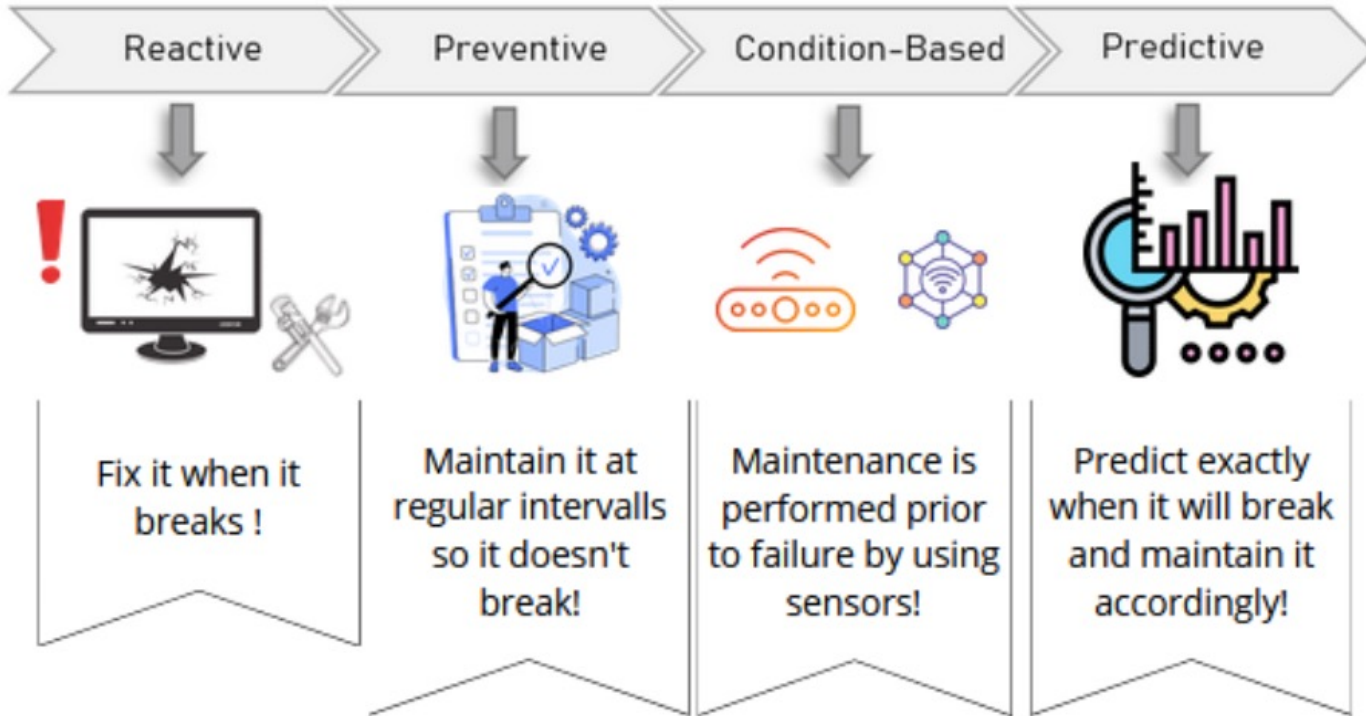  - Third Party
- **Share your experiences**
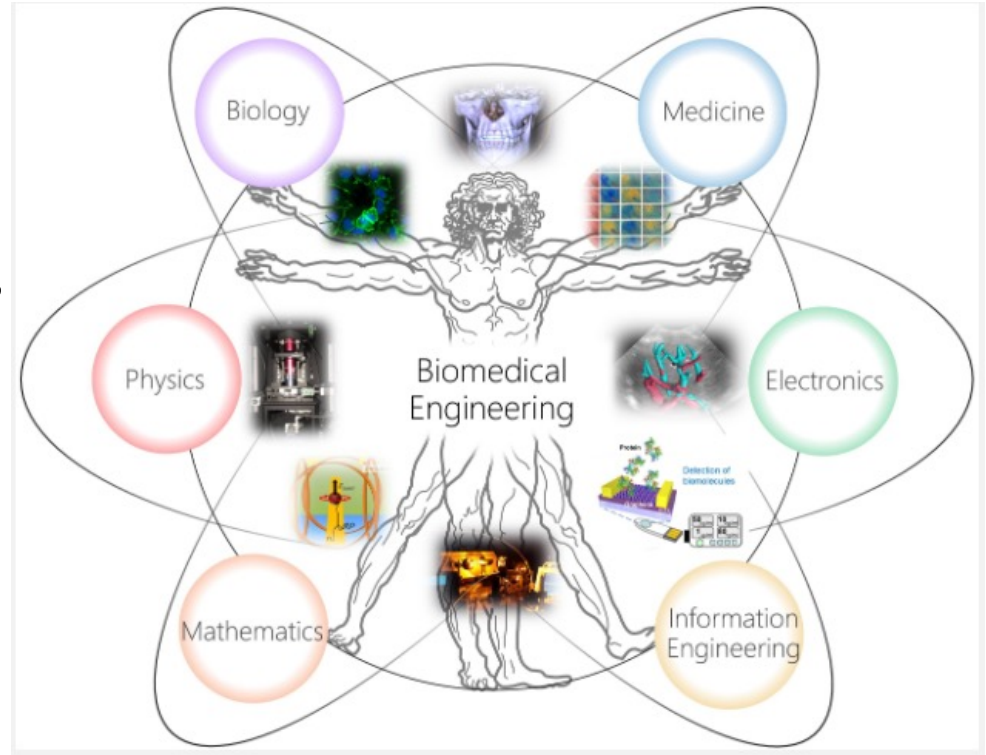
# Traditional HTM Programs

- Preventive Maintenance

- Corrective Maintenance

- Productivity

  - Labor cost

- Total inventory

- Cost of maintenance (service contracts)

- Customer satisfaction

# Background



| Reactive | Preventive | Condition-Based | Predictive |
|---|---|---|---|
| Fix it when it breaks ! | Maintain it at regular intervalls so it doesn't break! | Maintenance is performed prior to failure by using sensors! | Predict exactly when it will break and maintain it accordingly! |

# Artificial Intelligence In Medical Devices Global Market Report 2024

## TBRC GROWTH FORECAST

2024 – $22.3 billion

2028 – $97.07 billion

## EXPECTED GROWTH RATE THROUGH 2024-2028

## 44.4 %

## NORTH AMERICA

was the largest region in the AI in medical devices market in 2023

Increasing emphasis on the continuous monitoring of patients' health parameters is a key driver

Leading medical device manufacturing companies are strategically integrating advanced AI assistance into their imaging devices

The Business Research Company

*As per the report by Fortune Business Insights, the global U.S. medical devices market size is projected to reach USD 291.04 billion by 2030, at a CAGR of 6.1% during the forecast period*

Pune, India, June 07, 2023 (GLOBE NEWSWIRE) -- According to Fortune Business Insights, the U.S. Medical Devices Market size was valued at USD 184.61 billion in 2022 and is projected to grow from USD 192.78 billion in 2023 to **USD 291.04 billion by 2030**, exhibiting a **CAGR of 6.1%** during the forecast period. The rise is due to an escalating

## Healthcare Technology Trends

- Internet of Medical Things
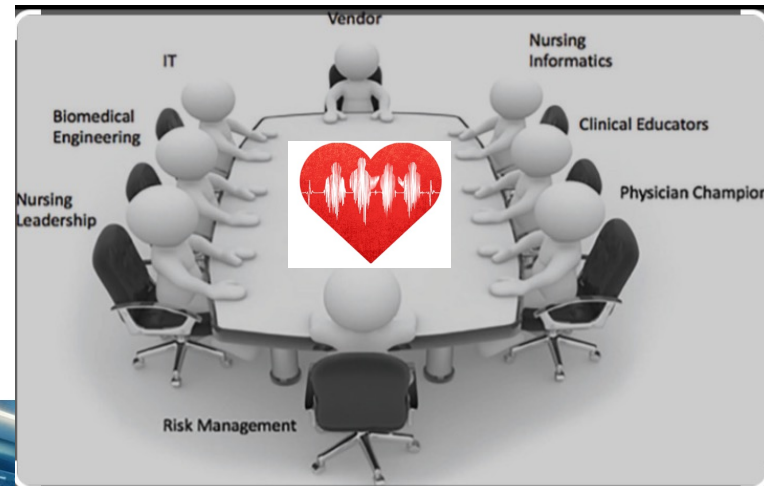- Remote Patient Monitoring & Healthcare Wearables
- Artificial Intelligence
- Telehealth
- Big Data
- Virtual Reality

Key Management Group

The **average** biomed tech is responsible for up to **1,200** devices


MedCadre

The Future Outlook for **Biomedical Equipment** Technicians

The need for skilled technicians to maintain life-saving medical equipment is increasing rapidly, driven by an aging population and continuous technological advancements. This means a bright future awaits biomedical equipment technicians, with the U.S. Bureau of Labor Statistics projecting a *13% job growth from 2022 to 2032.*


Vendor
Nursing Informatics
IT
Biomedical Engineering
Clinical Educators
Physician Champion
Nursing Leadership
Risk Management

**Izabella
Gieras**

# Affiliation – Cedars-Sinai/Huntington Health

## Huntington Hospital Affiliation with Cedars-Sinai Becomes Official

Published on Wednesday, August 4, 2021 | 12:18 pm



The affiliation between Huntington Hospital and Cedars-Sinai Health System became official Wednesday, with the completion of the appropriate regulatory approvals. The affiliation will strengthen Huntington's long-term commitment to providing affordable, accessible, high-quality care to the San Gabriel Valley.



*Extract from Pasadena Now, online*

# Cedars-Sinai Medical Center - Clinical Engineering

- Located in Beverly Hills, CA
- Licensed for 889 beds
- Over 14,000 employees
- 91,014 patients seen in the ED annually
- Over 32,000 surgeries annually
- Over 105 anesthesia locations
- 4500+ end user computing devices
- 34 members strong (BMETs, CEs, Imaging Specialist, Manager, Director, Support Staff)
  - Over 33,000 medical devices
  - Reports to Enterprise Information Services

# Huntington Health - Clinical Technology





- Located in Pasadena, CA
- Level II Trauma Center with 619 licensed beds
- Bariatric & Stroke Center
- 18 Operating Rooms
- 3 DaVinci Robotic Systems
- 6 Cath Labs & IR Suites
- 6500+ personnel
- 300+ applications
- 4500+ end user computing devices
- Affiliate of the Cedars-Sinai Health System
- 12 members strong (BMETs, Manager, CE, Support Staff, and a Director)
  - Over 10,500 medical devices
  - Reports to Enterprise Information Services

# Department's Major Functions

- **Operations**
  - Maintenance
  - **Staff management**
    - Succession planning
    - Training and growth
  - Budgeting
  - Service contracts
- Equipment evaluations

# Department Major Functions cont.

- Construction and renovation

- Incident investigations

- Process improvements

  - Six sigma

- Risk assessments

  - SBAR

  - RCA

  - AEM and Title 22 waivers (CA)



Six Sigma and Improving Healthcare

6σ

# Department Major Functions cont.

- Safety initiatives

  - Misconnections/small bore connector standards

  - Alarm management

- Information Technology

  - Info security/Vulnerability assessment

  - Device integration

  - Clinical applications

**IV tubing erroneously connected to trach cuff**



WARNING: Photographs depict IV tubing erroneously connected to trach cuff. DO NOT DO THIS!

www.fda.gov

ISO 80369 Small-Bore Connector Standards



ALARM

# Operations

- Financials

    - Ops budget

    - Parts agreements

    - Scope realignment

    - Service contract SLAs and negotiations

- Policies and Procedures

    - MEMP

    - Annual Eval Plan

    - Departmental and any other administrative policies (i.e. warming cabinet temp, power strips)

# Operations cont.

- Performance Indicators

  - Traditional indicators

  - Benchmarking

  - Think outside the box

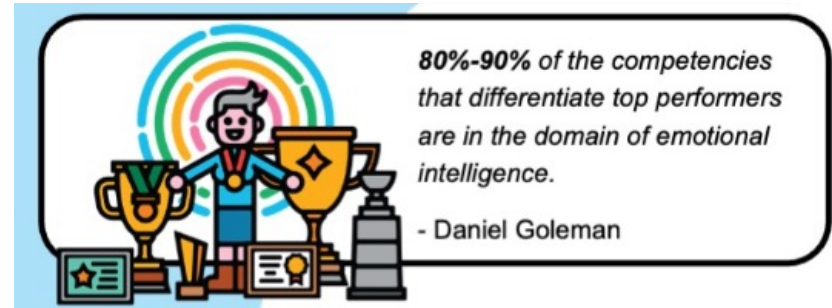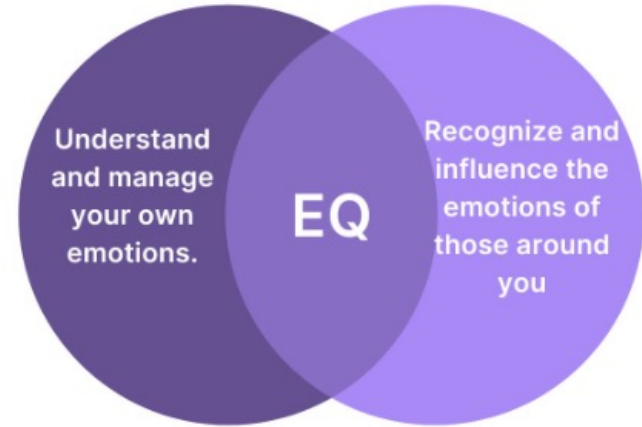  - Talk to your HTM network

- Customer Service

  - Surveys

  - Rounding

# Staffing

- Training and education

- Succession planning

  - Employee growth

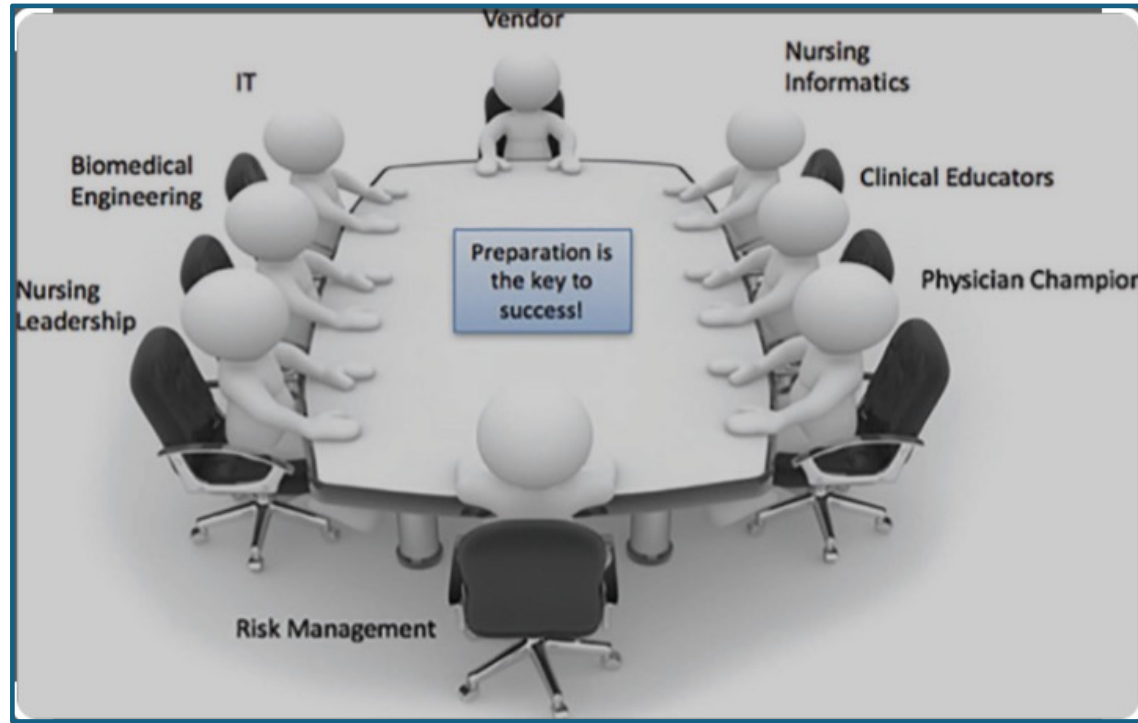- Retention and recruiting

- Get to know your employees – EI/EQ
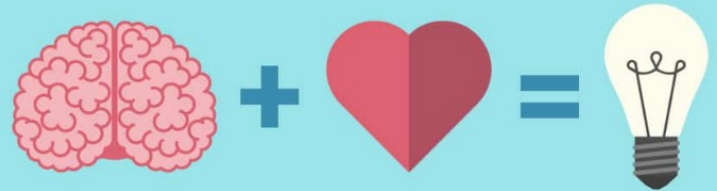
# EQ – Emotional Intelligence & Support

- Get to know your employees
  - Celebrate b-days/special events
  - Make time
  - Be patient
- Work life balance
- Mental health
- Diversity

Understand and manage your own emotions.
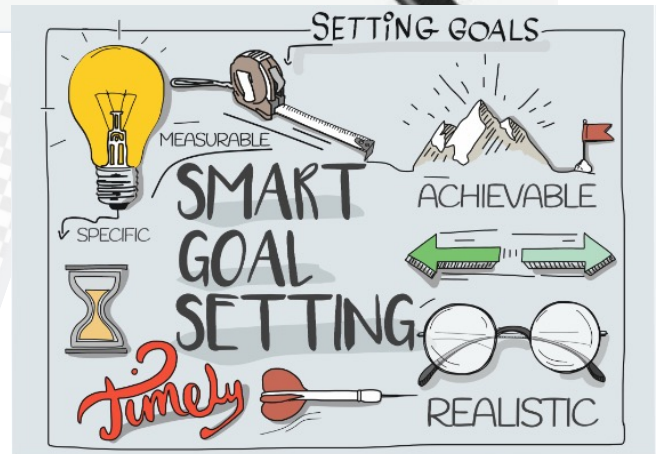
EQ

Recognize and influence the emotions of those around you

**80%-90%** of the competencies that differentiate top performers are in the domain of emotional intelligence.

- Daniel Goleman

# Secure a seat at the table

# Focus Areas

- Set smart goals
- Optimize scope/workflows
- Invest in your staff
- Manage budgets
- Put the dept. on the map

# Donald Armstrong
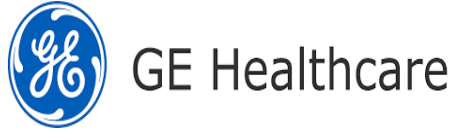
**Donald Armstrong, CBET, CHTM, CABT**

# Metrics and KPI's

| | | |
|---|---|---|
| How many assets are you managing | How many are under contract and warranty | Accurate inventory |
| PM Completion Numbers | PM Records and Policy | Incoming Inspection Records and Policy |
| What are your KPIs? (*KPIs are goals while Metrics are measured parameters that feed KPIs*) | ULTs, TTTR, Response times, down times. | How are you doing based on your KPIs? Do you change the process to achieve your KPI goals? |
| Staffing, productivity, and availability. | Annual Evaluation (Annual Evaluation (Effectiveness of the Program): | |

| KPIs | Metrics |
|---|---|
| • All KPIs are Metrics | • All Metrics are not KPIs |
| • KPIs give a holistic view of the performance of different functions in your organization | • Metrics give you a picture of how different individual activities rolled out within the functions are progressing |
| • KPIs tell you where exactly your teams stand with respect to the overall business goals | • Individual Metrics do not give any insights on their own |
| • Examples: Pre-sales KPIs, Email Marketing KPIs, Customer Success KPIs | • Examples: Open Rate, Conversations in the last 2 weeks, Deals lost last quarter |

Discovering the Possibilities

# Regulatory Readiness

- Up-to-date MEMP (evaluated annually)

- What is under AEM and signed EOC documents

- Be able to articulate the ECs and PEs from the AOs.

- Crucial documents are easily available

  - Equipment Disposal Equipment Selection (PO Sign off), Recalls and Hazards, SMDA Policy

  - Disaster Planning, Emergency plan, Employee training, PHI Sanitation, Employee files

- ISO normally has a department that performs Internal

- Audits to assess the HTM's

- In House, departments should do some sort of

  Audit of their HTM Program

# Financial Strength

- Do you have a Budget? Of course, you do.

- How do you evaluate it?

- What is included in the budget

  - Staffing

  - Capital Purchases

  - Training

  - Calibrations of test equipment

  - Parts

- Contract Management

- Do you generate Revenue? Even some In-House Department Generate Revenue

# Employee and Customer Satisfaction

Is there a culture of growth, safety, and inclusion? What is your culture?

Are you open to input from all staff? You should if you don't.

What are your retention rates? Do people stick around?

Do you have employee satisfaction surveys? Are they useful?

Do you conduct Customer Satisfaction Surveys? Make sure your questions have action behind them.

What do you do with the results?

Use this only to improve the department.

# The Eye and Ear Test

Sometimes what you see and hear is what you get.

Is your shop organized and clean?

Is all equipment marked either broken or good to go?

Do all the staff know their roles?

What is being said about your department?

Is your department at the tables they need to be?

Is the department a place people want to work?

Is it a positive environment in your shop(s)? If not find out why?





"Raise your paw for the corresponding ear when you hear the sound of a can opener."

Discovering the Possibilities

How do you assess your department's effectiveness?

Who does the assessing of department's performance? It is better you know the results before someone else assesses them.

How often do you check your department's performance?

How often do you think about this?

# Share Your Experiences



Experience is the teacher of all things.

JULIUS CAESAR

@INFOPRENEURPATH

# References

AAMI's HTM Levels Guide – Planning Tool for HTM Departments

AAMI's Planned Maintenance Compliance and Definitions Guide

AAMI's HTM Benchmarking Guide

AAMI's HTM Manual

AAM's Job Description Templates

And more…


Healthcare Technology Management Manual

# HTM Week – May 19-25, 2024



Discovering the Possibilities