

# A Tech's Point of View: Success in HTM Through Collaborative Problem-Solving

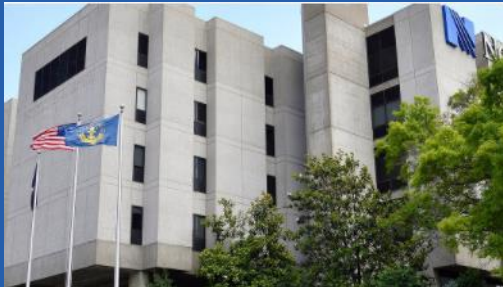
Mark Cooksey, DME Quality Engineer  
Norton Healthcare Clinical Engineering  
mcooksey6@gmail.com



# NORTON HEALTHCARE

#1 PROVIDER

IN THE LOUISVILLE & GROWING IN  
SOUTHERN INDIANA



STAY SAFE  
KEEP ~~THE~~  
FAITH®



-17,000 Employees  
~~-5 Hospitals~~ 9 Hospitals  
-1,000s of Providers  
And Growing

# Norton Healthcare Clinical Engineering: 1<sup>st</sup> ISO 13485 Accredited In-House Medical Equipment Servicer



ISO 13485  
Since 2021

# Collaborative Problem Solving: A Tech's POV

- Cascading Quality Goals at Norton
- CE Quality Improvement Teams: Best Practices
- Case Studies of Tech Led Quality Projects
  - 5S Tool Crash Carts
  - Imaging Shop 5S
  - Accessories Management Kanban

# Quality Improvement is Part of Norton's DNA

ISO 9001 CERTIFIED



LEGACY APPLICATIONS  
SUPPLY CHAIN  
CORPORATE POLICIES  
SOPs

**CLAUSE 4.0**  
QUALITY  
MANUAL  
DOCUMENT  
CONTROL



**CLAUSE 5.0**  
MANAGEMENT  
RESPONSIBILITY



**CLAUSE 6.0**  
HUMAN  
RESOURCES



**CLAUSE 7.0**  
PRODUCT / SERVICE  
DEVELOPMENT



**CLAUSE 8.0**  
QUALITY  
IMPROVEMENT



ISO 13485 CERTIFIED

# NHC Cascading Goals Process

- Staying the Norton Family
- Reaching for Zero
- Creating Great Human Interactions
- Achieving Operational Improvements



## NHC Corporate

What are **NHC** annual goals to support Mission, Vision, and Values?

1



## IS Department

What goals and objectives will CE's parent (**IS Department**) deliver to support NHC goals?

2



## Clinical Engineering

What **CE Department** goals and objectives will it deliver to support IS?

3

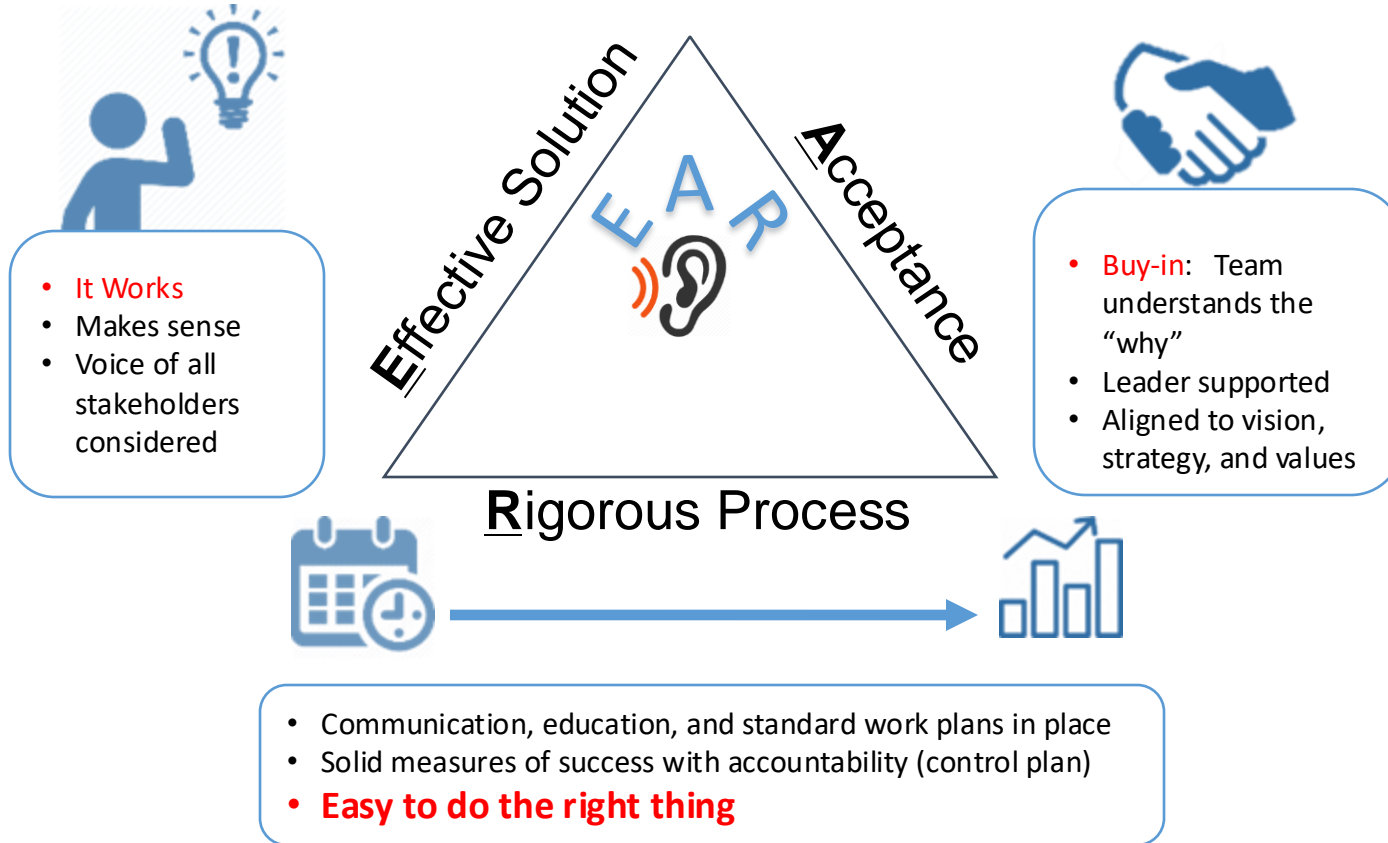


## CE Staff

What are **my deliverables** to help CE achieve its goals?

4

# Why do you need to include everyone?



# Best Practices

- Include all Stakeholders
  - Sponsors, SMEs, “Customers”
- Stay Engaged: Limit Time Frame
- Use Long Lunches – Feed them
- Break out into phases
  - Define/Measure, Analyze/Improve, Control
- Share success



# Go offsite with your team to generate goals



Annual Quality Conference includes all stakeholders

# Ask: What are 3 things that would make things better in Clinical Engineering?



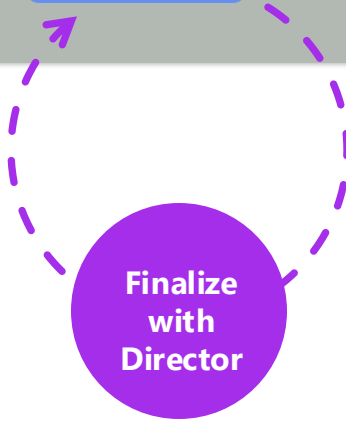
Brainstorm Ideas

Compile List from Quality Conference

Send out Master List

Multi vote Spreadsheet

Draft Goals Team



# CE Goals Team: EAR Model In Action

- Mission: Develop, Refine, Test, Build Buy-in, and Implement Quality Improvement Solutions
- Duration: One Year Rotation
- Team: (7 – 8 Members)
  - Sponsor CE Director
  - Coach: CE ISO Quality Leader
  - Leadership: Rotating Managers / Supervisors
  - Subject Matter Experts
    - BMETs from various hospital locations
    - IS Security
    - Systems

# Case Study #1:

Quality Goals Team use  
Lean 6 sigma tools to  
improve on-call process



**MD EXPO**  
New England • October 8-10, 2024

# QMS at Work

## The Problem.

30% technician **turnover** combined with **variations** in tool storage impacted customer service of weekend **“on-call” coverage**.

## The Solution.



Quality Team Formed to solve system-wide problem



BIOMED TECHS



LEAD TECH

## Quality Team Converted Discarded Carts to 5S Tool “Crash Carts”

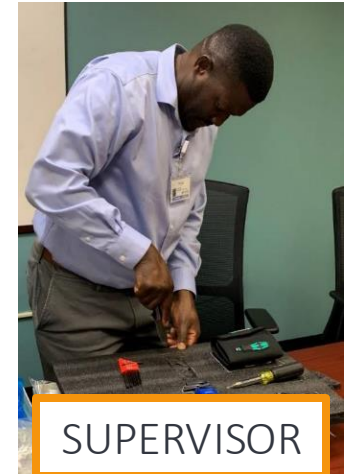
- Improved Tool Access
- Standardization
- Productivity
- Conformity to Standards



BIOMED DIRECTOR



QUALITY TEAM



SUPERVISOR



## Payoff: Techs Perspective

- Support NHC Cascading Goals
- Solve a nagging problem – on call
- Quick Solution / High Buy In
- Practical Quality Improvement - team building
- Collaborative effort – directors, supervisor, staff
- Tangible application of Lean concepts
- Standardized tools yet adaptable for unique hospital devices (adult vs. infants)

**Benefits of 5S Tool “Crash Carts”**

# Case Study #2:

**EXTREME**

**5S**

**MAKEOVER**

**Clinical Engineering Edition**



**MD EXPO**  
New England • October 8-10, 2024

# The Problem: We need more space!

What we **THINK** our shops look



What our shops **ACTUALLY** look



# The Solution: 5S



**5S Coach: Katya Kovatsenko**

U of L Biomedical Engineer, Pre-Med  
Fulbright Scholar

# KEEP ONLY WHAT YOU NEED



**BEFORE**



**AFTER**

# GET RID OF MONUMENTS CREATE NEW WORKSPACE



**BEFORE**



**AFTER**

# CLEAN UP “MAIN STREET”



**BEFORE**



**AFTER**

# TOOL CABINET: A PLACE FOR EVERYTHING AND EVERYTHING IN ITS PLACE



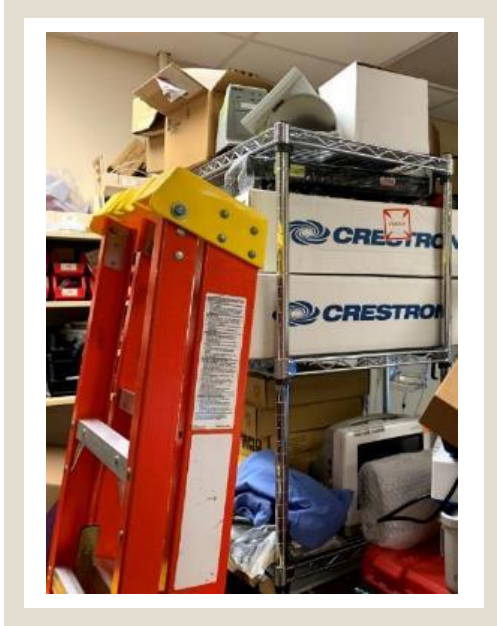
**BEFORE**



**AFTER**



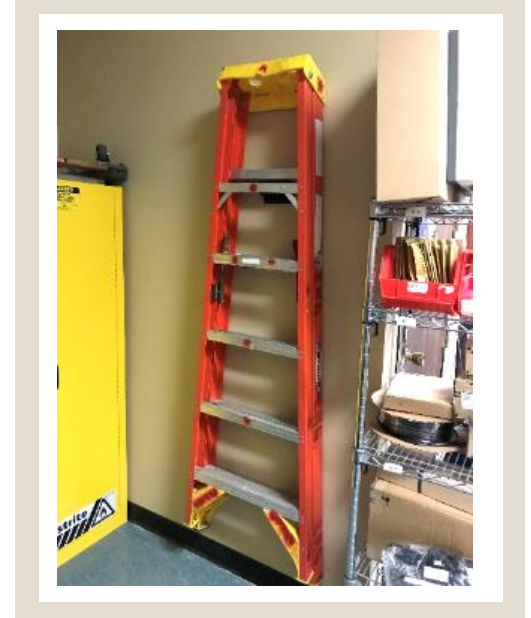
# DESIGNATED LOCATIONS FOR LADDERS



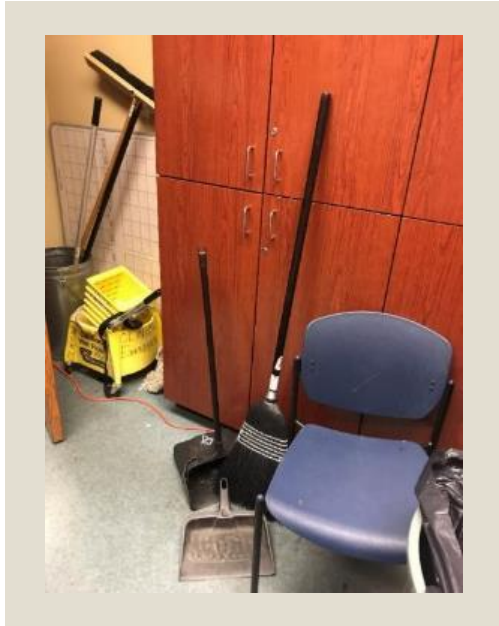
**BEFORE**



**AFTER**



# CLEAN UP CLEANING SUPPLIES



**BEFORE**



**AFTER**

# ORGANIZE THE “WAREHOUSE”



**BEFORE**



**AFTER**

# REORGANIZE “THE SUPERMARKET”



**BEFORE**



**AFTER**

## Payoff: Techs Perspective

- Solves a nagging problem – clutter
- Do 5S in phases
- Drive Sustainability and Accountability
- Supports ISO 13485 Auditing

Benefits of Shop Wide 5S

# Case Study #3: CE Leads “Rapid Cycle” to Streamline Accessories Management

## 3 C-SUITE SPONSORS

VP Supply Chain	Chief Nursing Officer	CE System Director
Staff wasting time replenishing supply	Nurse Managers spend too much time managing accessories	Techs wasting time chasing “no defect found” accessories



**MD EXPO**

New England • October 8-10, 2024

## The Problem.

Patient Monitor Accessories costs spiraled out of control with replacements exceeding \$700,000.

C-Suite Leaders Sponsored CE Goals Team to implement a solution...*quickly*

# Walk



# Solutioning



# Pilot Solution



# Get Buy In



# Share Results from Hospital “Gemba” Walk



What we found: Significant Variation in the handling storage, reorder, and replacement of accessories



# Best Practices

## Define / Measure Phase

1. **Pre-arranged Flip Chart** templates drive DMAIC decision making
2. **Data Packets** promote understanding
3. **Post-its**, Cards, Markers, promote participation



# Analyze / Improve: Introduce Decision-Making Techniques

**Brainstorm** with Post Its  
One idea per Post It  
Combine Ideas  
Multi-vote best ideas



## Rapid Cycle Running

### Rules:

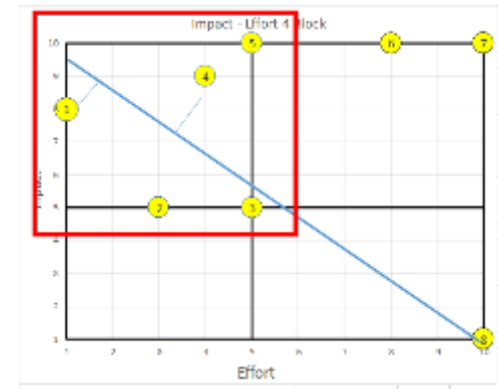
1. Everyone Participates
2. Respect for Everyone
3. Action Focused

## **Consensus** – Fist to Five

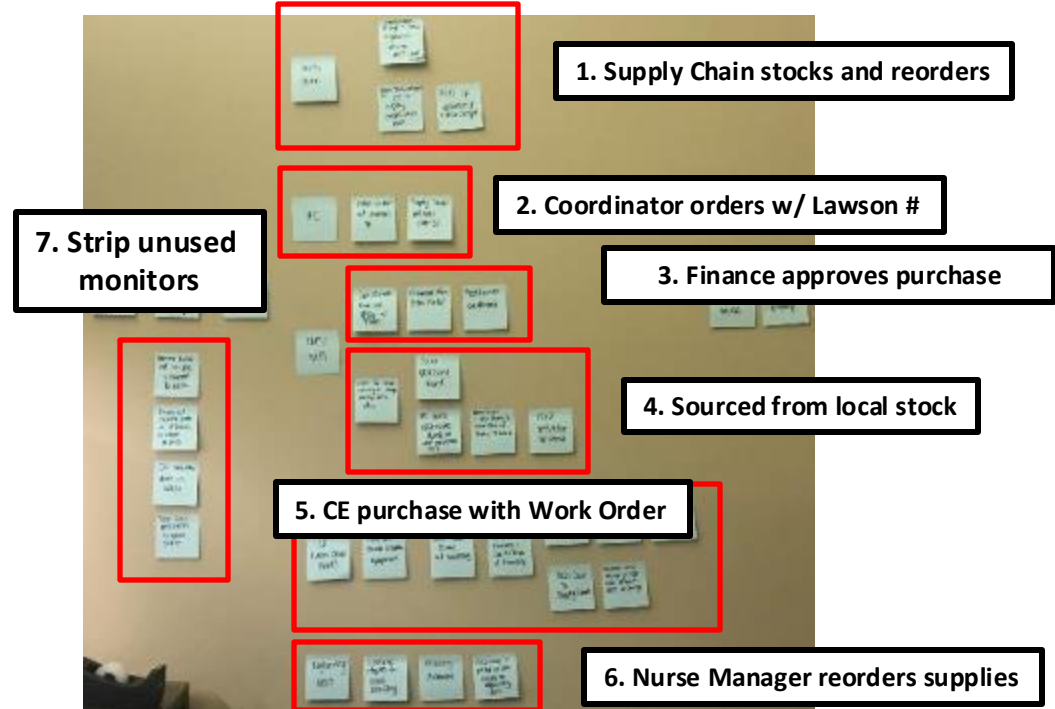
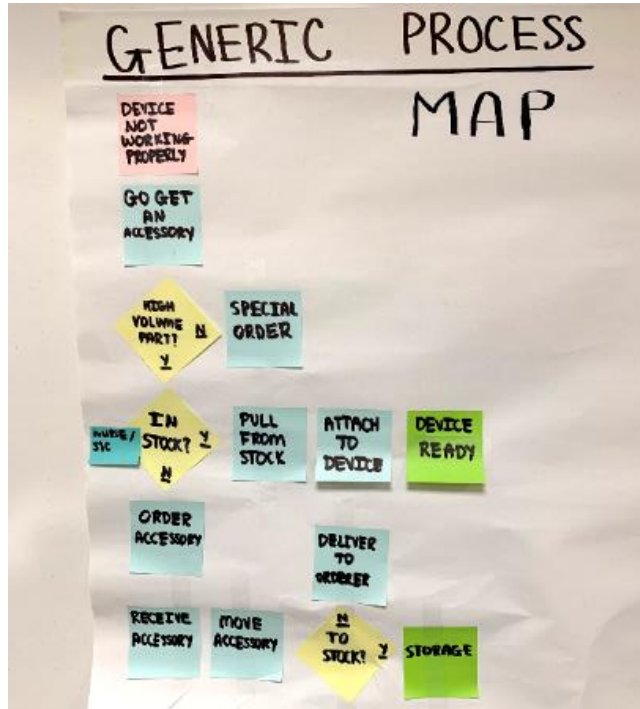
Fist means “I’m not in the boat”  
5 means “I’m in the boat paddling”



**Prioritize** - Impact / Effort 4 Block



# Compare “Ideal” Generic Map to “Actual Map”



# Improve: Create Ideal Map

TASK	PCA/RN	CE TECH	ANM	SUPPLY CHAIN
IDENTIFY NON FUNCTION	X			
ASSESS ACCESSORY DAMAGE	X			
ASSESS INVENTORY				X
ORDER NEW ACCESSORY				X
RECEIVE ACCESSORY				X
REDISTRIBUTE ACCESSORY				X
REINSTALL ACCESSORY	X			



What if **Supply Chain** Managed Accessory Inventory?

# Control: Closed Loop Kanban Replenishment

CHECK

REORDER

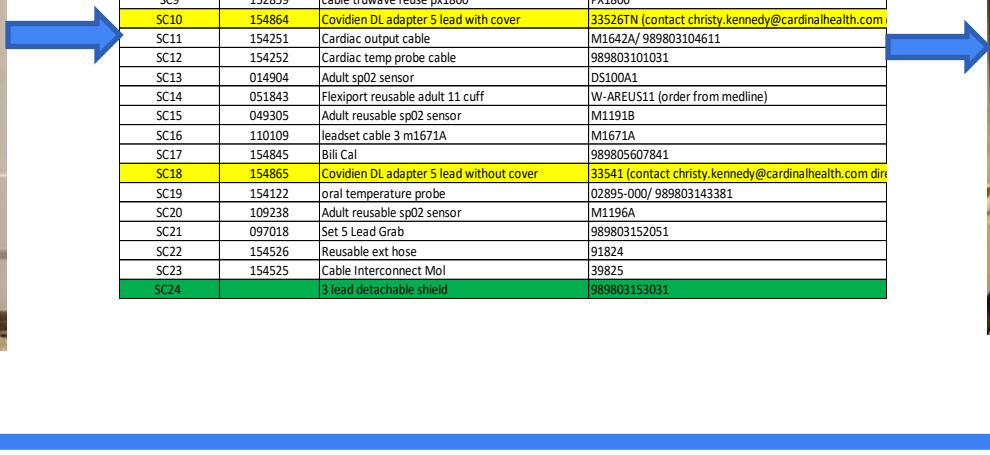
PULL FROM STOCK

RESET

Nurse's Local Supermarket

Supply Chain Warehouse

REPLENISH



Location	Lawson Number	Item Description	Reference Number
SC1	081647	Adult pressure interconnect cable 3.0m	M15998 / 989803104341
SC2	081650	spO2 adapter cable 1.1m	M1943A
SC3	153943	5 lead set icu grabber 1.6m (5.3ft.)	M1968A (989803125841)
SC4	153945	mx40 reusable 5 leads with spO2	989803171851
SC5	081651	3 lead ECG trunk cable 2.7m (9ft.)	M1669A
SC6	153941	5 lead ECG trunk cable 2.7m (9ft.)	M1668A (989803145061)
SC7	110110	3m Nellcor spO2 cable (9ft.)	M1943NL
SC8	136198	Foley cath temp sensing cable 12ft.	DYND110102
SC9	152859	cable truwave reuse px1800	PX1800
SC10	154864	Covidien DL adapter 5 lead with cover	33526TN (contact christy.kennedy@cardinalhealth.com)
SC11	154251	Cardiac output cable	M1642A / 989803104611
SC12	154252	Cardiac temp probe cable	989803101031
SC13	014904	Adult spO2 sensor	DS100A1
SC14	051843	Flexiport reusable adult 11 cuff	W-AREUS11 (order from medline)
SC15	049305	Adult reusable spO2 sensor	M11918
SC16	110109	leadset cable 3 m1671A	M1671A
SC17	154845	Bili Cal	989805607841
SC18	154865	Covidien DL adapter 5 lead without cover	33541 (contact christy.kennedy@cardinalhealth.com dir
SC19	154122	oral temperature probe	02895-000 / 989803143381
SC20	109238	Adult reusable spO2 sensor	M1196A
SC21	097018	Set 5 Lead Grab	989803152051
SC22	154526	Reusable ext hose	91824
SC23	154525	Cable Interconnect Mol	39825
SC24		3 lead detachable shield	989803153031

## PULL FROM 1 LOCATION



## 5S VISUAL MANAGEMENT



- Green Zip Tie signals replenishment
- “Golden Sample” – pick the right accessory
- 5J6 label – WAREHOUSE stock location
- PHILIPS label – used by SUPPLY CHAIN
- 5 LEAD ECG TRUNK CABLE 2.7 m (9ft) is the VENDOR label
- Badge Reader + camera controls usage

# What Will I Take Back?



# TECHS DRIVE QUALITY IMPROVEMENT



# TECHS BENEFIT FROM QUALITY IMPROVEMENT





**MD**EXPO

New England • October 8-10, 2024

# Thank You!

Mark Cooksey  
ISO 13485 Quality Leader, Norton Healthcare  
[Mcooksey6@gmail.com](mailto:Mcooksey6@gmail.com)  
(502) 554-5206

