**Value Added Care
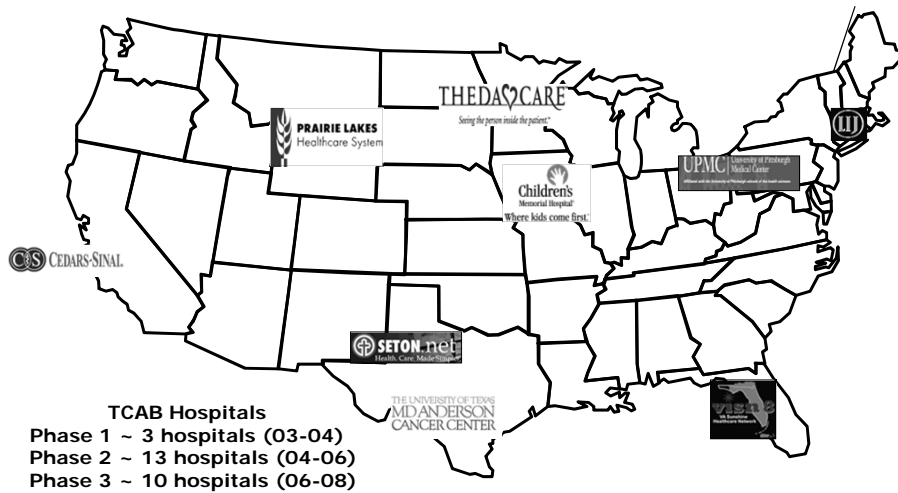New Mexico Regional TCAB
Training**

Cindy A. Liberi
University of Pittsburgh Medical Center

TCAB History

TCAB Hospitals
Phase 1 ~ 3 hospitals (03-04)
Phase 2 ~ 13 hospitals (04-06)
Phase 3 ~ 10 hospitals (06-08)

UPMC TCAB Timeline 2003-2008

IHI Initiative--3 hospitals: Kaiser Permanente, Seton, UPMC Shadyside

RWJ joins: Expanded to 13 hospitals across country

Expanded to 5 more units at UPMC Shadyside

Expanded to UPMC South Side

Schools of Nursing involved

TCAB System Learning Community
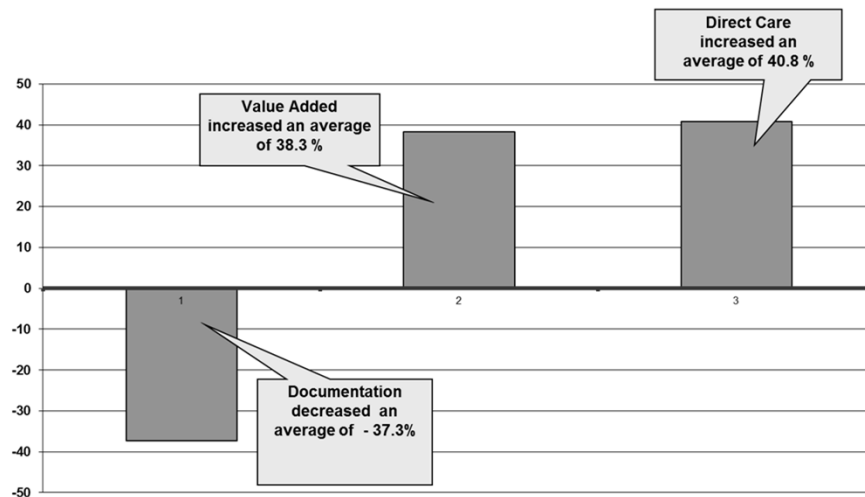
Patient & Family Advisory Council

Phase I   **Phase II**   **Phase III**

AONE takes on TCAB with new 60 sites

Formal TCAB 10 completes

UPMC TCAB Outcomes

- UPMC TCAB looked at these measures
  - Staff vitality
  - Turnover
  - Time in Direct Patient Care
  - Value Added Care
  - Documentation
  - Codes A/C
  - Patient Satisfaction

- Process measures for over 280 prototypes
  - 34% spread off of pilot unit

- Staff Vitality Survey
  - 68% of vitality questions showed an increase

UPMC PDA Outcomes

Value Added increased an average of 38.3 %

Direct Care increased an average of 40.8 %

Documentation decreased an average of - 37.3%

Goals for today:

- Review a paper method to measure time in direct patient care

- Identify different types of waste

- Introduce a Spaghetti Diagram

- Understand the process of 5S'ing

TCAB Themes

- ✓ Safety and reliability (Reliability)
- ✓ Joyful and supportive work environments (Vitality)
- ✓ Patient centered care (Patient Centeredness)
- ✓ **Value-added work (Lean)**

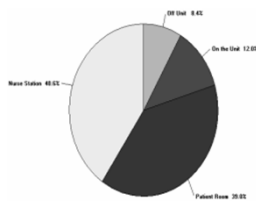# Value-Added Care Processes

Design Targets

- Promote Continuous Flow
- Remove "Waste" from our processes
- Spend more time in direct patient care
- Improve our physical space (work) design

Here is what we know

- Nurses spend 31-44% of their time in direct patient care activities
- Nurses experienced an average of 8.4 work system failures per 8-hour shift
  - Medications
  - Orders
  - Supplies
  - Staffing
  - Equipment
- Nurses spend 42 minutes of each 8-hour shift resolving operational failures

Anita L. Tucker and Steven Spear, Operational Failures and Interruptions in Hospital Nursing, Health Research and Educational Trust, 2006, pp. 1-20

Using PDA's

IHI Goal:

70% OF TIME IN DIRECT PATIENT CARE
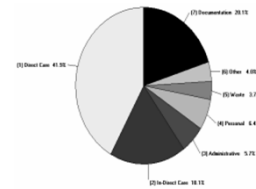
Examples of Direct Patient Care:
(VALUE ADDED - VA)
Bedside Procedure
Vital Signs
Wound/Skin Care
Incontinence
ADL
Assessment
Administer Meds

Examples of In-Direct Care:
Teaching:
   Care Processes **(VA)**
   Admission **(VA)**
   Discharge **(VA)**
Report **(VA)**
Communication w/Care Team **(VA)**
Communication w/Family **(VA)**
Calling Ancillary Dept **(NVA)**
Family Services **(NVA**

So how can we measure nurses time?

- Nurse carries PDA
- PDA vibrates randomly
- Nurse enters data using single-click
- Use pre-defined categories
- Minimal disruption
- Wear 10 shifts for a total of at least 300 data points

Patient Room	Nurse Station
Med Room	Document Server
Narc Storage	Kitchen
Supply Room	Clean Storage
Equipment Storage	Dirty Storage
Other Location on the Unit	Off the Unit

---

5 Main
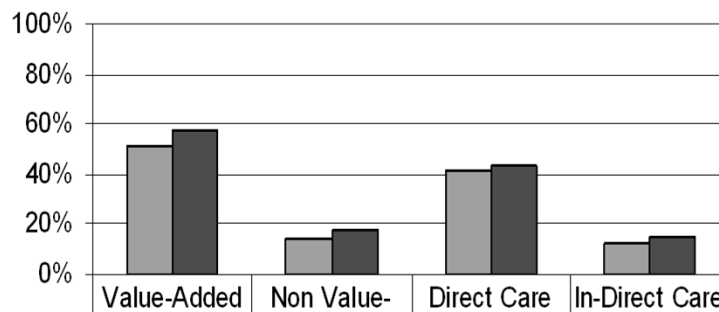
	Value-Added	Non Value-	Direct Care	In-Direct Care
5 Main Pre	50.9%	14.5%	41.8%	12.7%
5 Main Post	57.3%	18.1%	43.7%	15.1%

No PDA?

- Two data collection tools:

    - Direct observation of work with categorization

    - PDA paper tool

Direct Observation

- **WHAT IS IT?**
    - Shadowing a person in real time to understand work
    - Record timing, location, activity, and interaction information
- **WHY OBSERVE?**
    - Allows you to gather more accurate information than other data collection methods
    - Allows you to see the process and all of the associated details (timing, interruptions, barriers, etc.)
        - Repeated calls to pharmacy to get a med
        - Number of trips to supply room
        - Volume of interruptions during med preparation
        - Hunting and searching for a chart
    - GAIN RESPECT… "now you have seen what we face each day"
    - Validation of challenges…"now you have seen what we face each day

Observation Preparation

- Equipment Needed
  - Observation Record
  - Clipboard and Pencil
  - Stopwatch or Digital Watch

- Alert the Staff you will shadow
  - Establish a comfortable rapport
  - Reinforce you are watching process not the person
  - Importance of working 'with' them vs. doing something 'to' them
  - Answer their questions

Sample Observation Record

OBSERVATION RECORD Type of Observation:_____ Date/Time: _____

RECORD DURING THE OBSERVATION				LEVEL 1: TYPE			LEVEL 2: CATEGORY
Time	Location	Activity	# of Min	Value Added	Necessary	Non Value Added	Categorize as follows: DC:Direct care, IC:Indirect care, DOC:Documentation, ADM:Administrative, PER:Personal time, WAS:Waste, OTH:Other

During the observation

- Record events as they occur
  - note timing and location
  - write down statements made & others involved
  - note particulars related to your purpose
- Avoid interrupting staff while they work
  - Exception: patient safety issues
- Jot down your questions, ask them later
- Make honest comments that 'connect' you to staff member's world ("It took over an hour…….")
- Know that you may need to observe a typical work sampling multiple times

---

Sample Observation Record

OBSERVATION RECORD Type of Observation: _RN Observation_   Date/Time: _8/14 3pm_

	RECORD DURING THE OBSERVATION			LEVEL 1: TYPE			LEVEL 2: CATEGORY
Time	Location	Activity	# of Min	Value Added	Necessary	Non Value Added	Categorize as follows: DC:Direct care, IC:Indirect care, DOC:Documentation, ADM:Administrative, PER:Personal time, WAS:Waste, OTH:Other
3:10	411	Gave patient 3 medications					
3:14	"	Pt teaching: re: drop in blood sugar					
		Instructed on calling for assistance					
		getting OOB					
3:18	COW in hallway	charting meds and teaching					
3:24	Supply room	went to get pillow for transporter					
3:25	RN Station	patient relations coordinator asking					
		about patient complaint					
3:28	COW	calling GI lab re: time of pt test					
3:30	419	in to help another RN move pt					
		from carrier to bed					
3:34	410	in to tell patient about colonoscopy timing					
3:35		explained detail of test to patient					
3:38	RN Station	Chart preparation for pt going to test					
3:40	RN Station	2ND page to MD for MD clarification					
3:42	multiple patient rooms	looking for IV pole with pump					

Complete this section during the observation ←

Completed Observation Record

OBSERVATION RECORD Type of Observation: RN Observation   Date/Time: 8/14 3pm

| | RECORD DURING THE OBSERVATION | | | LEVEL 1: TYPE | | | LEVEL 2: CATEGORY |
| | | | # of Min | Value Added | Necessary | Non Value Added | Categorize as follows: DC:Direct care, IC:Indirect care, DOC:Documentation, ADM:Administrative, PER:Personal time, WAS:Waste, OTH:Other |
Time	Location	Activity					
3:10	411	Gave patient 3 medications	4	X			DC
3:14	"	Pt teaching: re: drop in blood sugar	2	X			DC
3:16	"	Instructed on calling for assistance getting OOB	2	X			DC
3:18	COW in hallway	charting meds and teaching	6		X		DOC
3:24		...transporter	1			X	WAS
3:25		...for asking about patient complaint	3		X		IC
3:28	COW	Calling GI lab re: time of pt test	2		X		IC
3:30	419	in to help another RN move pt from carrier to bed	4	X			DC
3:34	410	in to tell patient about colonoscopy timing	1	X			DC
3:35	410	explained detail of test to patient	3	X			DC
3:38	RN Station	Chart preparation for pt going to test	2		X		DOC
3:40	RN Station	2nd page to MD for order clarification	2			X	WAS
3:42	Multiple patient rooms	looking for IV pole with pump	6			X	WAS

Complete this section after the observation

Analysis of the Observation

1. Tally number of minutes spent on each activity
2. LEVEL 1: Assign activities into <u>TYPE</u> of work grouping:
   A. VALUE ADDED: transforming goods or services to meet a patient need; what a patient would pay for
   B. NECESSARY: preparatory steps required to provide value added care; what a patient may not recognize as important
   C. NON VALUE ADDED: anything that does not add value to the final product or service; what a patient would clearly recognize as not important

Analysis Continued

3. **LEVEL 2: Assign each activity into a <u>CATEGORY</u> of work grouping**
   A. **Direct Care**: tasks completed in presence of and to the patient
   B. **Indirect Care**: necessary work to meet a patient's need; typically not done in presence of patient
   C. **Documentation:** charting
   D. **Administrative:** in-services, teaching students/coworkers, bed control, meetings, paging caregiver,
   E. **Personal:** breaks, personal calls, lunch
   F. **Waste:** retrieving equipment/supplies, waiting, looking for information, supplies, or people
   G. **Other:** everything else

Analysis Continued

4. Tally number of minutes for each activity based on both TYPE and CATEGORY of work

5. Tally total number of minutes in each type and category grouping across entire observation

6. Divide by total number of minutes in observation to obtain percentage

IHI Paper Method

● 1. List the names of nurses for each shift on a deck of cards

● 2. Randomly select one card per shift

● 3. Notify selected nurse at beginning of shift that he/she has been selected

● 4. Handout Worksheet to nurse

● 5. Select RANDtime for nurse (8 or 12 hour shift)

● 6. Signal nurse for each random time

● 7. At end of shift, nurse turns in completed worksheet

● 8. At end of month, total the occurrences in each category and enter in totals in Worksheet

● 9. Report monthly: % time in value added work, necessary work, non-value added work to team

Options for Observation

● Assign an observer to follow a nurse and record nursing activity at a designated rate, such as every five minutes. Observations may be customized for each unit. Three examples of how to accomplish this are as follows:

   ● Observe a nurse for an hour per day, recording observations every five minutes. Rotate the hour each successive day until all 24 hours are observed over a month.

   ● Observe a nurse for four hours, collecting data every five minutes, and repeat six times a month until 24 hours are covered.

   ● Observe an entire shift.

Patient Room

- Bedside Procedure
- Vital Signs
- Wound/Skin Care
- Incontinence
- ADL
- Administer Meds
- Assessment
- Documentation
    - Admission Paperwork
    - Daily Assessments
    - Transcribing Orders
    - Writing Care Plan
    - Meds Paperwork
    - Teaching
    - Discharge Paperwork
    - Other Documentation
- Admit/Discharge
- Comm w/Care Team
- Comm w/Patient
- Patient Services
- Emergency
- Teaching
    - Care Processes
    - Admission
    - Discharge
    - Student/Resident
- Family Services
- Waiting Delay
- Other

% Direct Care   #DIV/0!
% Waste   #DIV/0!

Nurse Station

- Chart Review
- Report
- Comm w/Care Team
- Comm w/Family
- Paging Caregiver
- Calling Ancillary Dept.
- White Board
- Documentation
    - Admission Paperwork
    - Daily Assessments
    - Transcribing Orders
    - Writing Care Plan
    - Meds Paperwork
    - Teaching
    - Discharge Paperwork
    - Other Documentation
- Teaching
    - Care Processes
    - Admission
    - Discharge
    - Student/Resident
- Bed Control
- *Com Data Entry*
- Copy/Fax Machine
- Personal Time
- Waiting Delay
- Other

Off Unit

- Escort Patient
- Retrieve Equipment
- Admin/Training
- Monitor Patient
- Retrieve Supplies
- Documentation
- Personal Time
- Waiting Delay
- Other

On the Unit

- Care Rounds Team Doc
- Deliver Food Tray
- Ice/Beverage
- Meds Activity
- Emergency
- Care Conference
- Deliver Supplies
- Documentation
    - Admission Paperwork
    - Daily Assessments
    - Transcribing Orders
    - Writing Care Plan
    - Meds Paperwork
    - Teaching
    - Discharge Paperwork
    - Other Documentation
- Teaching
    - Care Processes
    - Admission
    - Discharge
    - Student/Resident
- Admin/Training
- Personal Time
- Look for Equipment
- Look for Person
- Look for Supplies
- Look for Information
- Waiting Delay
- Other

Using the Data to Improve

- Look at your baseline data and target an area for improvement
    - Example: Increase direct care time with patient
- Plan tests of change that would help accomplish your goals
- Complete observations after each test to measure impact
- Track and share results with staff
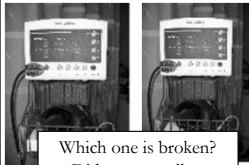
Example: Tracking Over Time

Direct Care Time

Supplies in pt room

Hourly Rounds

31.3 34.4 35.8 39.3 45.2

May-08 Jun-08 Jul-08 Aug-08 Sep-08

%

0 5 10 15 20 25 30 35 40 45 50
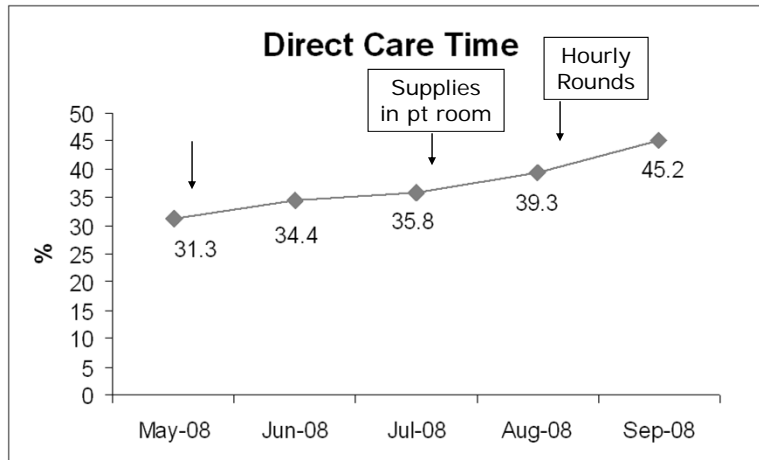
"Stand on the shop floor long enough and you will figure out what needs to be done"

Taiichi Ohno

To download the forms:
http://www.ihi.org/IHI/Topics/MedicalSurgicalCare/MedicalSurgicalCareGeneral/Tools/paperTimeStudy Worksheet.htm
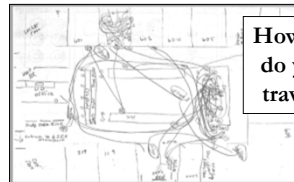
CHALLENGE: Where's the waste in your department?

Where's my med?

How far do you travel?

Which one is broken? Did anyone call to get it fixed?

29

WASTE: A question of VALUE

Value Added vs. Non Value Added

Value Added: What a customer would pay for; transforming services or info to meet need

Non Value Added: WASTE; add time, resources, space to process without adding value to the service itself

- **ELIMINATE these steps**

- **Minutes matter!**

Types of Waste

1. **Defective products**
2. **Overproduction**
3. **Waiting**
4. **Transportation**
5. **Inventory**
6. **Motion**
7. **Excess Processing**

Value-Added Care: All care processes are free of waste and promote continuous flow

- Prototyping for Value Added Care
  - Creation of Admission Team
  - Supplies in Rooms
  - Grab and Go Supplies
  - Cart Indicators
  - Pocket Phones

Value-Added Example: Admission Team

Problem

- Admissions were seen as an add on to a nurses work
- Observed to admit a patient it could span over 2 ½ hours
- Inconsistent documentation of key assessment information

Solution

- Specify admission work and dedicate a team to this work only

---

Supplies at the Bedside at ThedaCare's Appleton Medical Center

- Problem: nurses spend considerable non-value-added time hunting and gathering supplies and equipment. The team documented that nurses left patients' rooms 56 times during a 24-hour period to retrieve supplies and equipment.
- TOC: Relocated supplies, linens, and medications in or near patients' rooms. They moved about 85 percent of the supplies generally needed into the room and eliminated the central storage room.
- Outcome: Reduced the time spent by the nursing staff in hunting and gathering supplies and equipment by four hours per nurse per shift, and they decreased the time spent by nurses entering and leaving patients' rooms by 75 percent.

4 Main – UPMC Shadyside:
Grab n' Go Bags

- **Problem:** On average 8-12 mislabeled Nurse draw lab samples every month. Via observation, 4M identified 2 issues around the mislabeling of the specimens: time to gather supplies, forgetting to compare specimen label to patient's ID band.

- **Solution:** 4M came up with "Kit", which includes all needed supplies for blood draw and a visual cue to remind RN to check label against ID band.

- **Outcome:**
  - Saved RN steps: 96 steps pre-kit compared to 18 steps post-kit
  - Saved RN time: 8 min pre, vs 4 min post

Grab and Go Bins: Supplies

*Urology kit
*Wound vac
*Chest tube insertion
*Sterile procedures
*Aspiration/Injections
*Central Line

Spaghetti Diagram

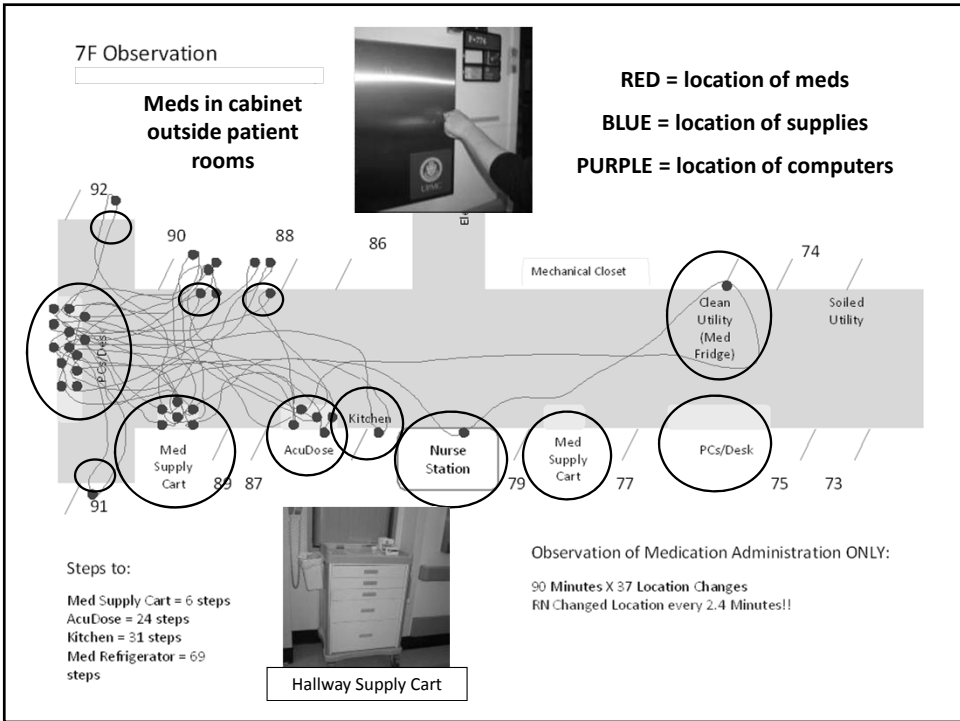

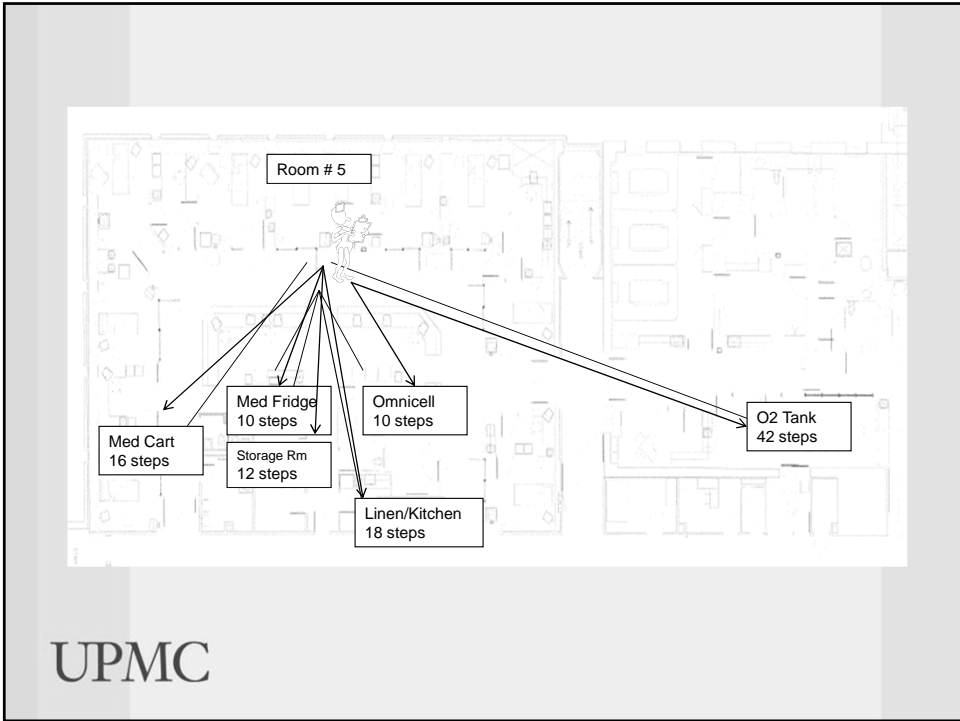# 6. Motion….Trace your steps

The Results?
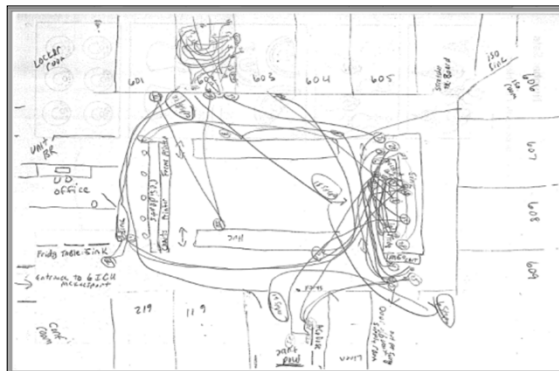
STRESS

BURNOUT

EXHAUSTION

Spaghetti Diagram

Observation of an RN in the Emergency Room

1 hr 50 min: 72 position changes

2-Hour RN Observation
Trauma Burn Center

1030 – 1104 =

34 min with 4 location changes
Line Insertion in Room #6

1104 – 1230 =

85 min with 47 location changes

CHANGED LOCATION AN AVERAGE
OF **EVERY 1.8 MINUTES!**

Slide 1:

Room # 5

Med Fridge
10 steps

Omnicell
10 steps

O2 Tank
42 steps

Med Cart
16 steps

Storage Rm
12 steps

Linen/Kitchen
18 steps

UPMC

Slide 2:

7F Observation

Meds in cabinet outside patient rooms

RED = location of meds

BLUE = location of supplies

PURPLE = location of computers

92

90   88   86

Mechanical Closet

74

Clean
Utility
(Med
Fridge)

Soiled
Utility

AcuDose

Med
Supply
Cart   89 87

AcuDose

Kitchen

Nurse
Station   79

Med
Supply
Cart   77

PCs/Desk   75   73

91

Steps to:

Med Supply Cart = 6 steps
AcuDose = 24 steps
Kitchen = 31 steps
Med Refrigerator = 69 steps

Observation of Medication Administration ONLY:

90 Minutes X 37 Location Changes
RN Changed Location every 2.4 Minutes!!

Hallway Supply Cart

Number Exercise

What is 5S?

- **Spring cleaning on steroids!**
- **Goal -** Organize your work place so that your materials and flow sustainably fit your needs.
  - **Sort** – *Seiri* (organization)
  - **Set in Order** – *Seiton* (orderliness)
  - **Shine** – *Seiso* (cleanliness)
  - **Standardize** – *Seikutsu* (standardized cleanup)
  - **Sustain** – *Shitsuke* (discipline)

Why do a 5S?

- Stabilizes the system.
- Makes problems visible – helps you see improvement opportunities.
- Organizes the work environment according to your needs which….
  - Reduces work flow problems and interruptions.
  - Enhances efficiency and productivity.
  - Ensures greater quality and safety.

What do you need for a successful 5S?

- *Think About* - How does your space help or hinder you from achieving ideal patient care?
- *Need a Clear Plan* –
  - What area will you 5S?
  - When will you do the 5S?
  - Who will 5S? Leadership, front line staff, secretarial help, IT, EVS
  - Who will gather supplies ? Cleaning supplies, label maker, trash bags, gloves, signs, etc.
  - Where will items you don't need go?

What do you need for a successful 5S?

- *Tips-*
  - Before you start, take pictures of the area you plan to 5S.
  - Make a log of your changes as you go.
  - Involve the front-line staff who know the work!
  - Establish a "holding area" for things that you aren't sure what to do with.
  - Think outside the box – how can we set up our workplace to ensure we can provide ideal care?

Sort and Red Tag

- Identify unnecessary items and "red tag" them. Ask the following questions:
  - Is this item needed?
  - If it is needed, is it needed in this quantity?
  - If it is needed, does it need to be located here?

- Leave the bare essentials

Red Tag Process

- Literally putting red tags on items that need to be evaluated as being necessary or unnecessary
- Each staff member will be given red tags
- Making the Red Tag
  - Reason – why a red tag was attached to the item
  - Throw it away, return, fix ,return or send to the appropriate unit
- Complete and attach to item
- Only bare essentials remain after 'Red Tag' process

Red Tag Holding Area (Sort)

- This is a protection against removal of items that may be mistakenly identified as unneeded

- Set up a holding area for temporarily locating red tagged items

- Transfer red tagged items to hold area daily

5S Evaluation Process (Sort)

- Evaluation Team/Unit Director
  - Evaluate red-tagged items
- Possibilities for red tagged items:
  - Throw away
  - Give away
  - Return to vendor
  - Use somewhere else in the hospital
  - Store in a long term area

Sort: ICU Red Tagging…fun

Lost and Found Area

Place items you have questions about here

Once Red Tagging is completed and you have a sense of what you have, it is time to tackle workflow and make your workplace shine….

Set in Order, Shine & Standardize!

Take Five

- What problems occur in your work area because of the accumulation of unneeded items?

- Name three types of items that you could target for red-tagging in your work area

Set in Order, Shine & Standardize

GOAL - Organize, arrange, and identify everything to ensure that:
- Items are arranged so that they are easy to use.
- Items are labeled so anyone can find them & put them away.
- You have the resources you need, when you need them without hunting.
- Waste is reduced –
  - Waste in motion, time, and energy in locating items.
  - Waste of excess inventory.
  - Waste due to difficulty in using & returning items.

Set in Order Principles

Select appropriate locations for supplies based on:
- **Principles of storage**
  - Locate items according to their frequency of use.
  - Store items together if they are used together.
  - Store items in the sequence in which they are used.
- **Principles of motion economy**
  - Locate parts & equipment in the best location possible to eliminate unnecessary motion.

Importance of Visual Cues

'Visual controls' can easily communicate how work should be carried out, for example:

- Where an item belongs.
- How many items belong there.
- What is the standard procedure.
- What is the status of the work in process.
- When to order more supplies.

EXAMPLES OF VISUAL CUES

Visual Cue Examples

Example from Beth Israel Deaconess Hospital

A Place for Everything and Everything in its place

Pocket phones
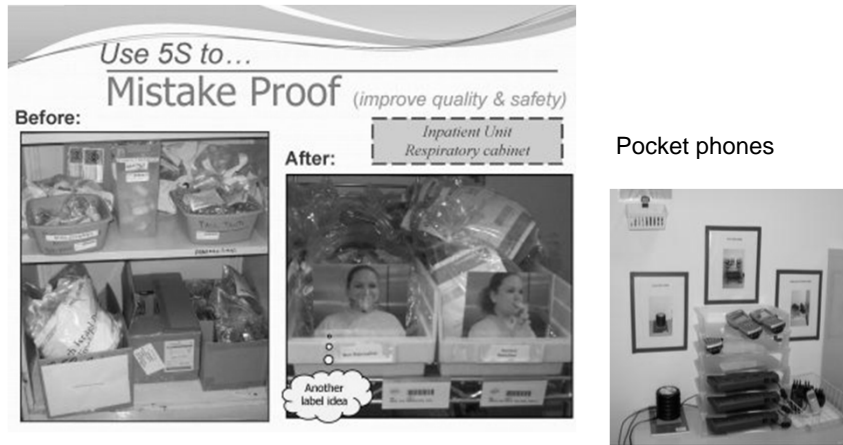
Example from Beth Israel Deaconess Hospital

Set in Order Example

Equipment parking places:

Fetal Monitors

Standard linen/supplies

Take Five

- Write down one example of how you could use visuals or parking lots to implement Set in Order in your work area.

Five Steps in Implementing Shine

- Determine shine targets
- Determine shine assignments
- Determine shine methods
- Prepare shine tools
- Implement shine☺

Making it Shine

Need to know…
- **How** are you going to do this given staffing and patient needs?
- **What** are you going to focus on?
- **Who** is doing what task and what area?
  - Cleaners
  - Label makers
  - Repairers - correct defects immediately
  - Trash removal
  - Laminators

Take Five

- What types of procedures and schedules does your company currently use to clean and inspect its equipment? Who does the cleaning and inspection?

Standardize

- **Goal of Standardizing:**
  - To make sure that the first three pillars (Sort, Set in order, Shine) are regularly maintained.
  - A work structure must be developed to support the new practices and turn them into habits.
  - Integrate 5S duties into regular work duties.
  - Check on how well 5S conditions are maintained.

Sustain!

- Design needs to have **sustainability built in.**
- Need ongoing support from management and problem solving on part of front-line staff to nip problems in the bud.
- Identify - Whose job is it to maintain new space?
  - Need to designate responsibility clearly.
- Now that you are done, **take pictures** to show your progress!

What if we aren't sustaining?

- Find and address the root cause by using 5 Whys. For example:
  - *Why do unneeded items accumulate?*
  - *Why does equipment get put back incorrectly?*
  - *Why do certain items remain dirty?*
- Is the responsibility for maintaining system clearly designated?
- Is the flow designed to meet the needs of front-line workers?

5S Checklist

- ❏ Decide what area you plan to 5S.
- ❏ Identify the 5S team – Leadership + Front line staff + Other Support (EVS, ordering, etc).
- ❏ Take pictures of the current state.
- ❏ Get red tags.
- ❏ Pick a time frame to Red Tag (i.e. one week).
- ❏ Create a logistics plan:
  - ❏ How to get rid of things you don't need (recycle, Global Links, etc).
  - ❏ Collect materials for shining.

5S Checklist

- Pick a time to do 5S (Shine, Set in Order, Standardize) when patient volume allows.
- Gather team – you need bodies – this is to be an intense organizational process!
  - Front line staff
  - Leadership
- Assemble needed items for 5S.
  - Cleaning supplies – Heavy duty cleaning gloves, Windex, 409, sponges, Goo Be Gone, etc.
  - Trash bags, recycling bags
  - Organization supplies – laminator, label maker
  - Someone to type and laminate
  - Food to keep energy up
  - Music if desired and feasible
  - Involvement of cleaning service and/or IT support?

5S Checklist

Day of 5S
- Focus your attention on specific areas – goal is to make a dramatic difference.
- Clean, organize, label; "when in doubt, throw it out".
- Take pictures when you are done to show work!
- Log improvements as you go to show work!
- Create a plan for sustainability – whose job is it going to be to maintain the new system?

Take Five

- What are some conditions that would help sustain people's commitment to 5S implementation in your workplace?

Before

After

Order, Chaos, Order……
Med Room, Before and After
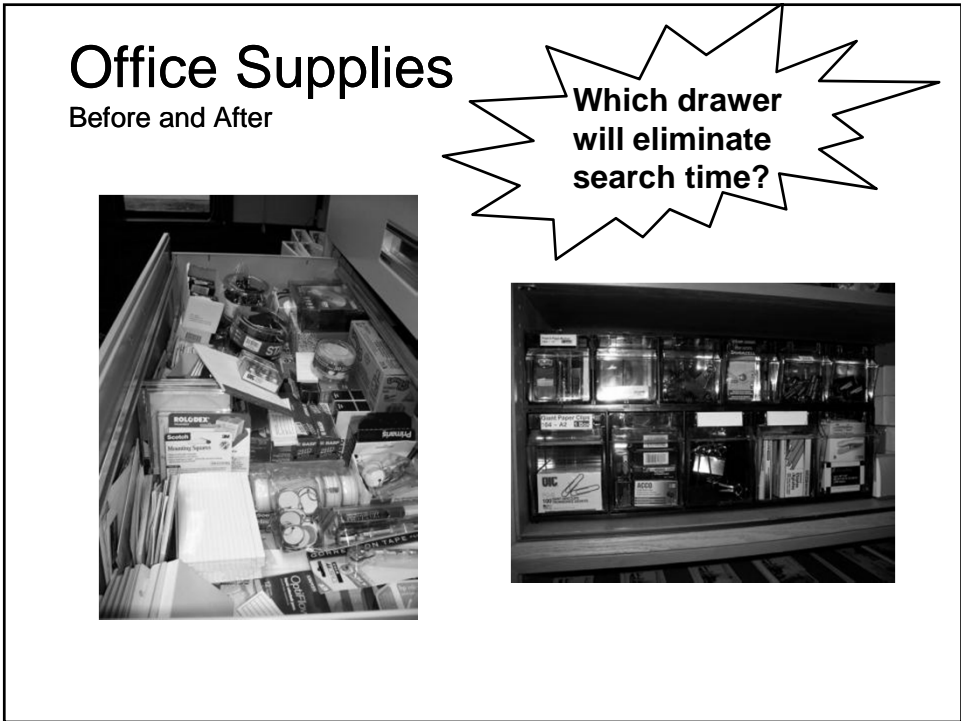

5S of a Nursing Unit –
UPMC Shadyside

Nursing Storage Room

Before

After
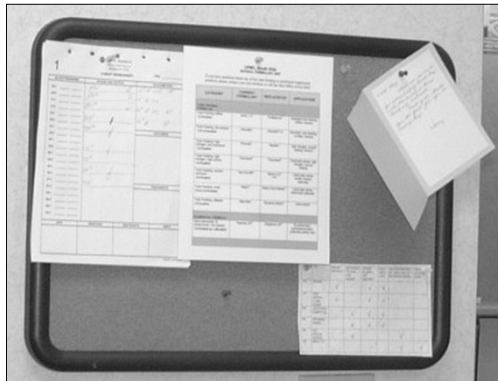
Before
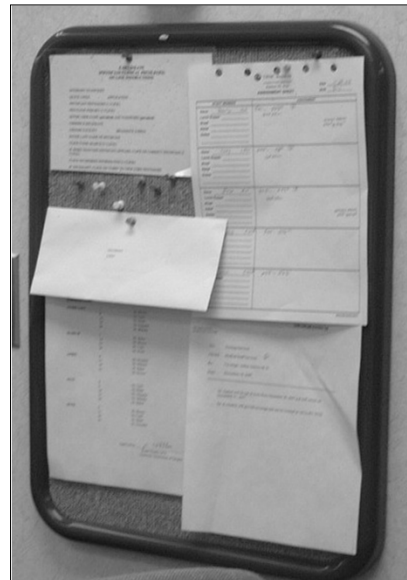
After

Office Supplies

Before and After

Which drawer will eliminate search time?

Hallway

Before

After

5 S

Information Overload…. Do we need ALL of this posted?

Just the information we need

Important Phone Numbers

Before

After

Difficult to see the *staff* behind the *stuff!*

Old signage

Forms everywhere!
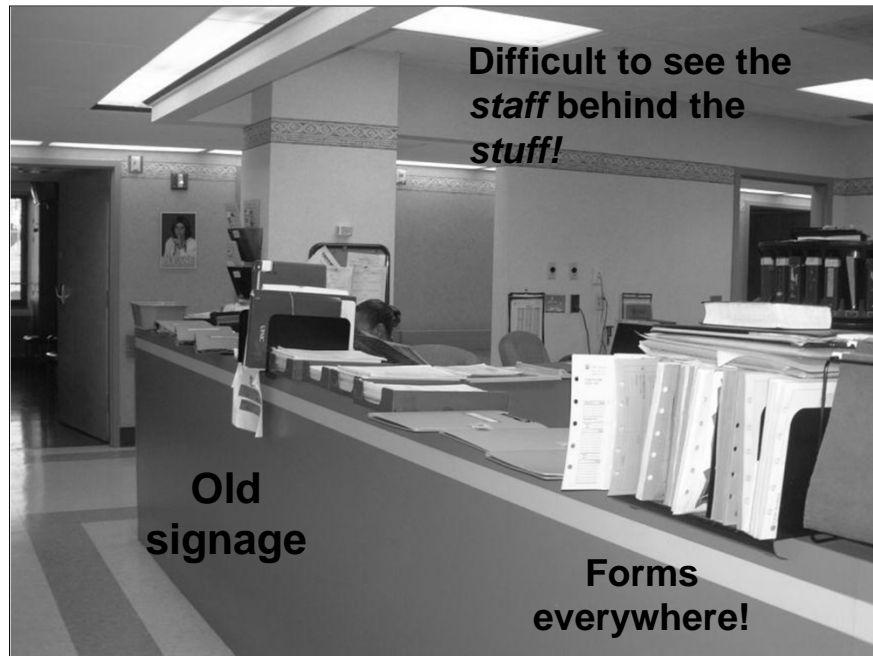
Clean countertops help to make a great first impression for our patients, families, and staff!

To Do's that Came Out of the 5S Event

•Remove this as it is not used… could the chart rack be built here instead?

- Consider 5S process in work room

- Re-evaluate needed forms with implementation of print on demand

Key Challenges

- Changes are small
- Changes take time to become cumulative
- Changes are not always show stoppers
- Changes can feel insignificant to some peer Senior Leaders
- Business Case is long term
- Business Case is VERY REAL
  - Turnover
  - Percentage of Time in Direct Patient Care
- Change is felt at a unit level first not hospital wide

Getting Started with TCAB

Boldly Going Where No Patient Care Has Gone Before!!

Questions?

Resources

- [1] Hendrich A, Lee N. *A Time and Motion Study of Health Care Workers: Tribes of Hunters and Gatherers*. Unpublished data cited in the IOM report, *Keeping Patients Safe*.
- [2] Institute of Medicine Committee on the Work Environment for Nurses and Patient Safety. *Keeping Patients Safe: Transforming the Work Environment of Nurses*. Washington, DC: The National Academies Press; 2003.