Going Lean in Healthcare

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"Sometimes no problem is a sign of different problem."

Mark Rosenthal

" The most dangerous kind of waste is the waste we do not recognize."

"Improvement usually means doing something that we have never done before."

Shigeo Shingo

What is Lean?

- *Lean* is an *Operational Excellence Strategy* that enable you to change for the *better-* in fact the Japanese often use "*Kaizen*" which use by lean practitioners to describe incremental improvements.

Kaizen

改善

To make better

What is Lean?

- *Persistent* process in *elimination of waste* – **MUDA** (uselessness/ wastefulness) – describes any activity that's done, but add no real value to the product or service.

Where Does It Come From?

- Originated from the Toyota Production System
- To create more value using less work
- To reduce waste
  - Rework
  - Overproduction
  - Conveyance
  - Waiting
  - Inventory
  - Motion
  - Overprocessing

Lean Manufacturing

- *Lean Manufacturing* – A way to **eliminate waste** and **improve efficiency** in a manufacturing environment

- Lean focuses on *flow*, the *value stream* and eliminating *waste*

- Lean manufacturing is the production of goods using *less* of everything compared to traditional mass production: less waste, human effort, manufacturing space, investment in tools, inventory, and engineering time to develop a new product .

Lean and Just-in-Time

- Lean was generated from the *Just-in-time* (*JIT*) philosophy of **continuous and forced problem solving**

- **Just-in-time** is supplying customers with exactly what they want when they want it

- With JIT, supplies and components are "pulled" through a system to arrive where they are needed when they are needed

Lean Management

- *Lean Management* is an approach to running an organization that supports the concept of **continuous improvement**, a long-term approach to work that systematically seeks to achieve **small, incremental changes** in process in order to *improve efficiency and quality*.

Margaret Rouse

Core values of Lean Management Theory

- *Respect for people* (eg, patients, staff members, managers, physicians),

- *Continuous improvement* (eg, easier, better, faster, cheaper), and

- *Human development*.

- Lean management principles for years to help **eliminate waste, streamline processes, and cut costs.**

- This pragmatic approach to **structured problem solving** can be applied to health care.

- **Health care leaders** can use a step-by-step approach to document processes and then identify problems and opportunities for improvement using a *value stream process map.*

Lean Thinking

- *Lean Thinking* is a business methodology that aims to provide a **new way to think** about how to organize human activities to deliver *more benefits* to society and individuals while *eliminating waste*.

- Five **principles** for lean thinking are *customer value*, steps in *value stream*, actions creating *value flow*, *just-in-time* approach and *perfection* by continuous waste removal.

Womack & Jones

Lean Thinking Cont;

- ***Lean Thinking*** is a methodology to produce ***highest quality*** product in the ***shortest*** amount of ***time***, at the ***lowest*** possible ***costs*** by ***eliminating*** the ***seven wastes***.

- The seven wastes are waste of ***overproduction***, waste of ***time***, waste of product ***transport***, waste in ***excess processing***, waste in ***inventory***, waste in ***movement*** & waste in producing ***defects***.

University of Colorado

Lean Strategies

- Define the problem or current state

- Create a future state

- Determine the appropriate lean "tools" that should be used

- A smooth transition from the current state to the future state involves leadership, teamwork, communication, and sponsorship from management.

- Continuous improvement

Lean Tools

- ❖ ***Value Stream Mapping*** – A mapping process that visual depicts the flow of materials and information of a product or service

- ❖ ***Kaizen Events*** – Small group that involves workers and managers to come together to make improvements to a process by reducing waste.

- ❖ ***Spaghetti Diagrams*** – Path taken to create a product during the manufacturing process.

Value Stream – Anatomic Pathology
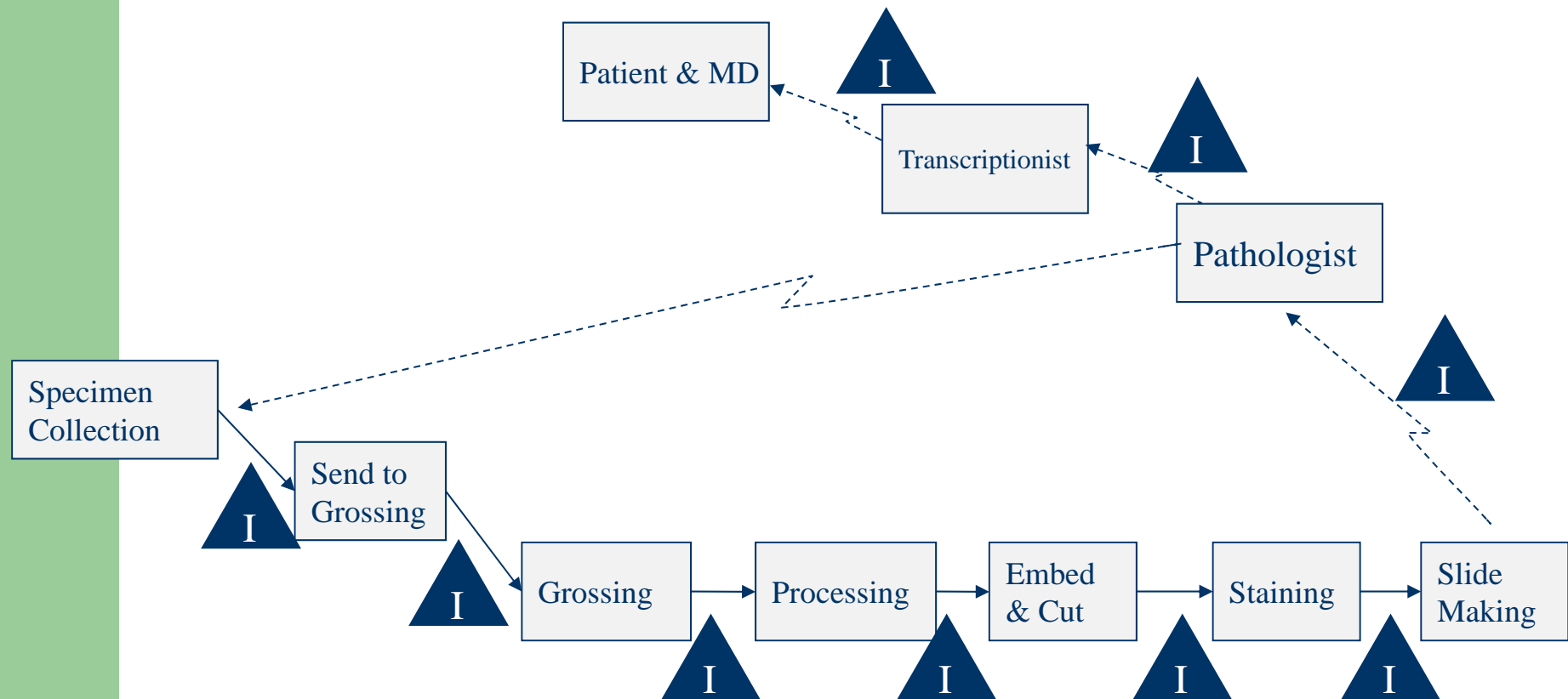
Mark's Spaghetti Chart
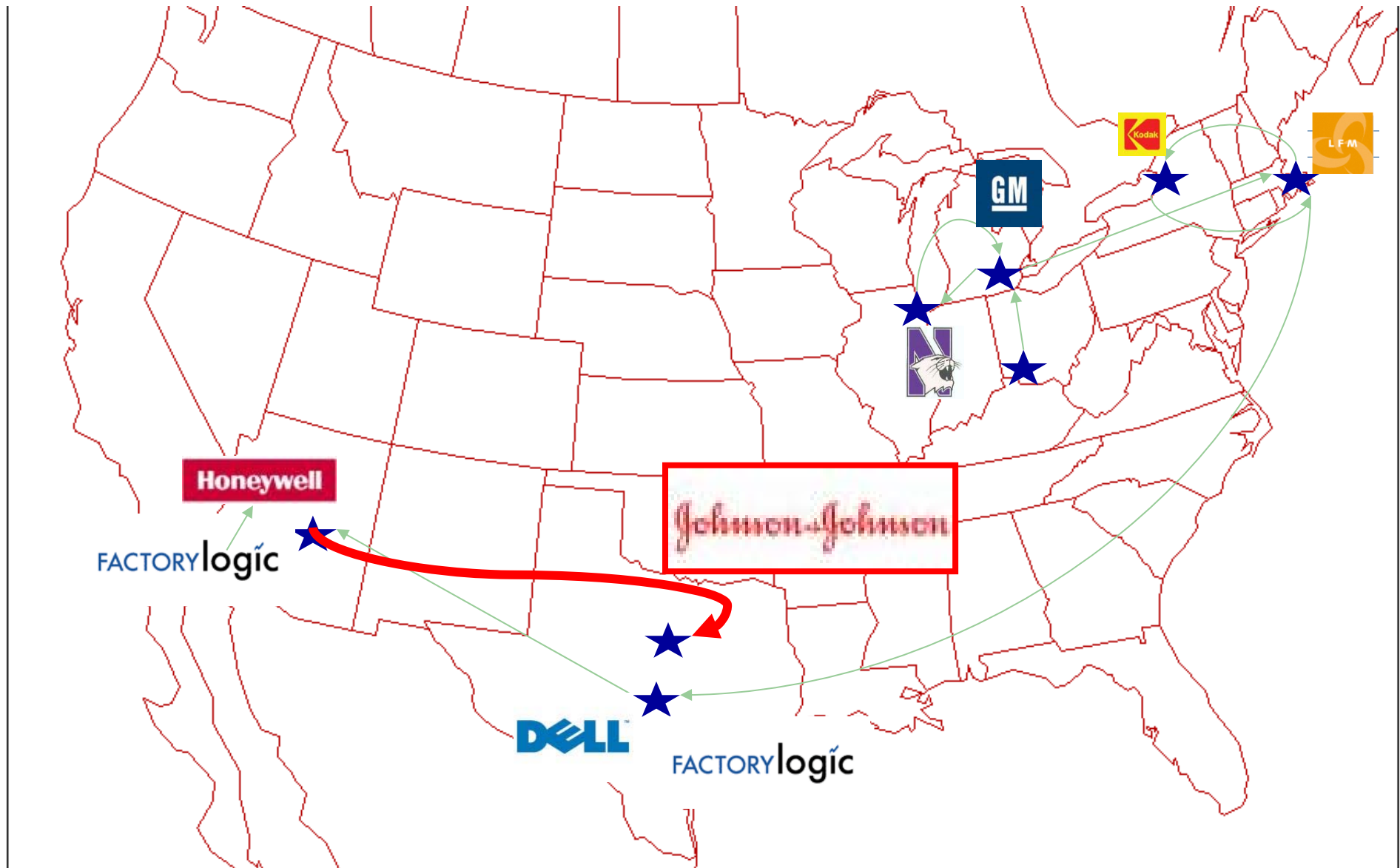
Lean Tools Cont;

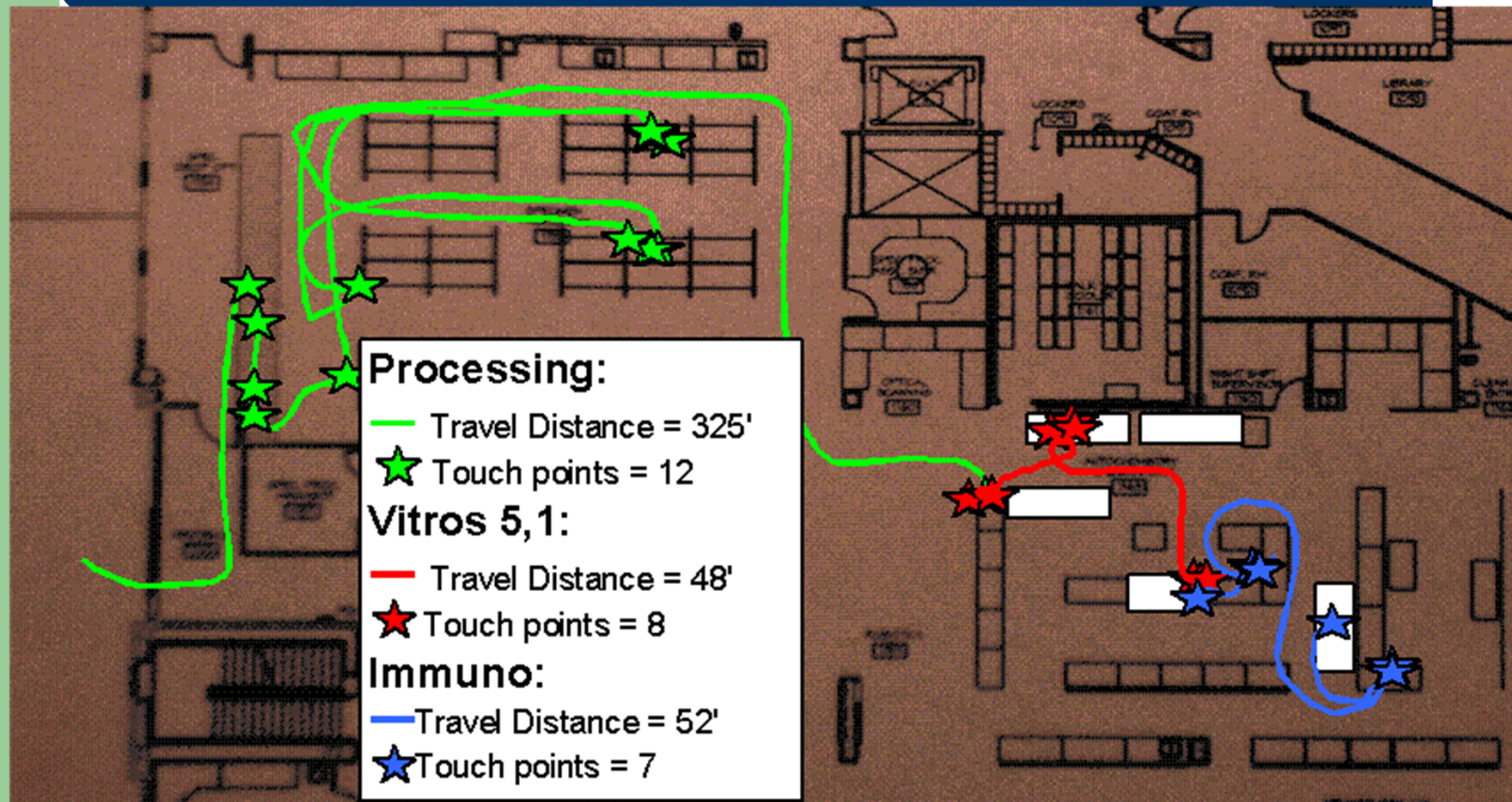- ❖ *5S*
  - ✓ Sorting
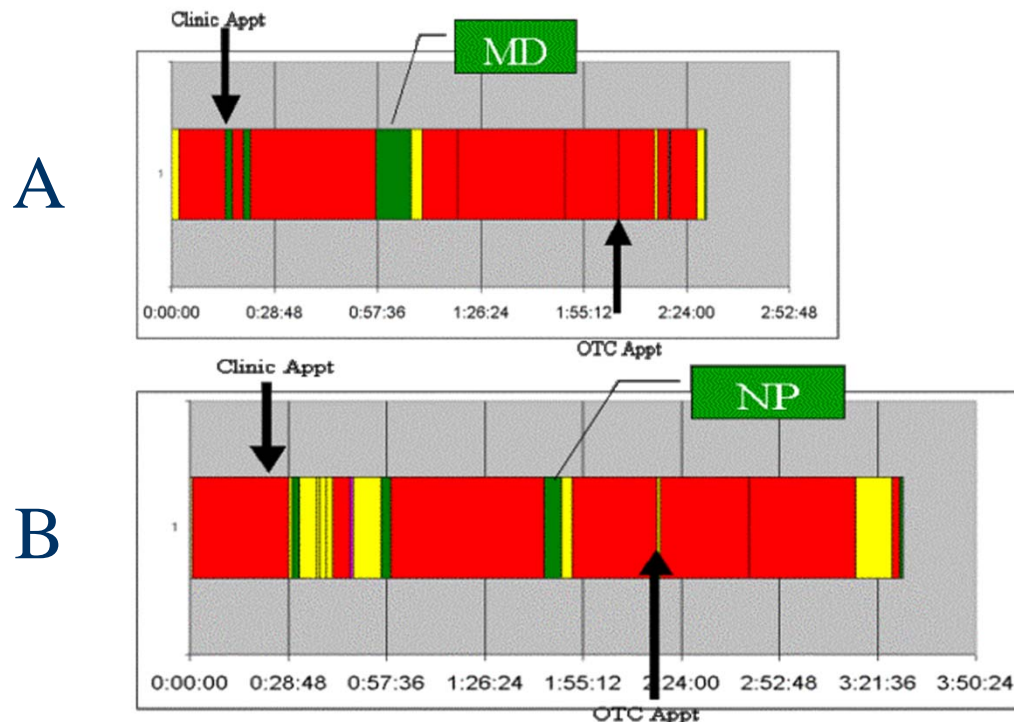 - ✓ Set in Order
  - ✓ Shining
  - ✓ Standardizing
  - ✓ Sustaining
- ❖ *Process Maps* – Shows the different processes from beginning to end used when creating a product
- ❖ *Standardized Work Plans*

Clinical Laboratory Product Flow

Processing:
- Travel Distance = 325'
- ⭐ Touch points = 12

Vitros 5,1:
- Travel Distance = 48'
- ⭐ Touch points = 8

Immuno:
- Travel Distance = 52'
- ⭐ Touch points = 7

Outpatient Oncology Patient "Flow"

PATIENT	ARRIVAL TO TREATMENT (HOURS)	LATENESS FOR TREATMENT (HOURS)
A	2.5	0.42
B	3.5	1.08
AVG	**3.0**	**0.75**

Value Added

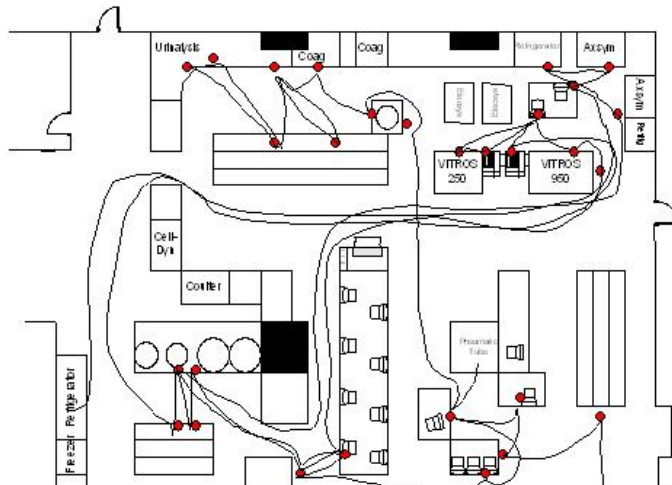- Blood drawn
- MD consult
- Needle into Port

NVA But Required

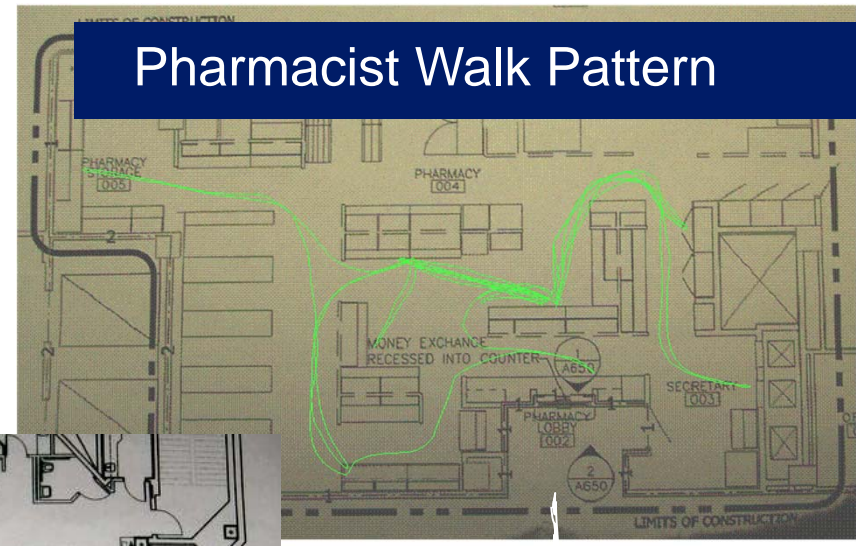- Check In / Check Out
- Moving from room to room

NVA, "Pure Waste"

- Waiting for Check In
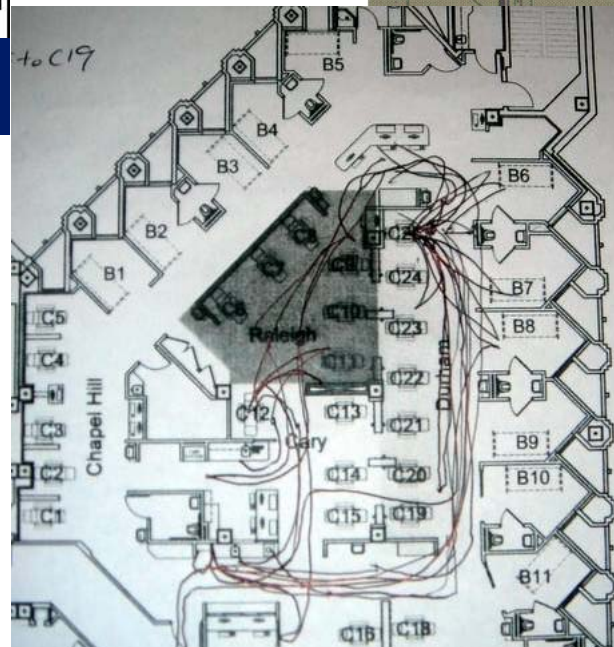- Waiting for MD
- Waiting for Treatment

Layouts Drive Waste of Motion

Med Tech Walk Pattern

Pharmacist Walk Pattern

Cancer RN Walk Pattern

Miles per Day!

5 S's

Sort
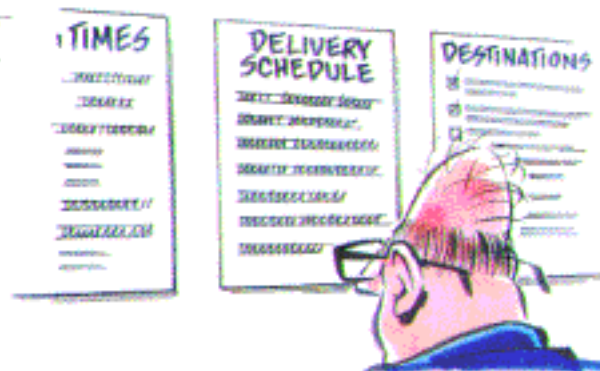Clear out rarely used Items by Red Tagging

Straighten
Organise and Label a Place for Everything

Shine
Clean It

Standardize
Create Rules to Sustain the first 3 5'S

Sustain
Use Regular Management Audits to Stay Disciplined
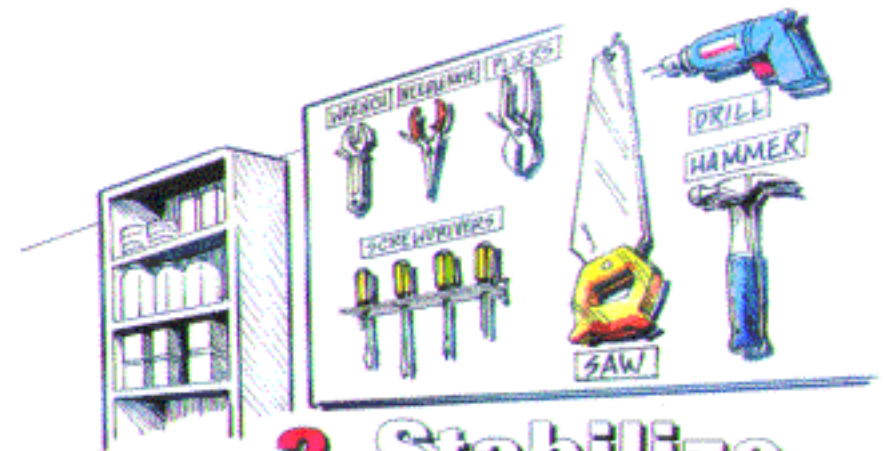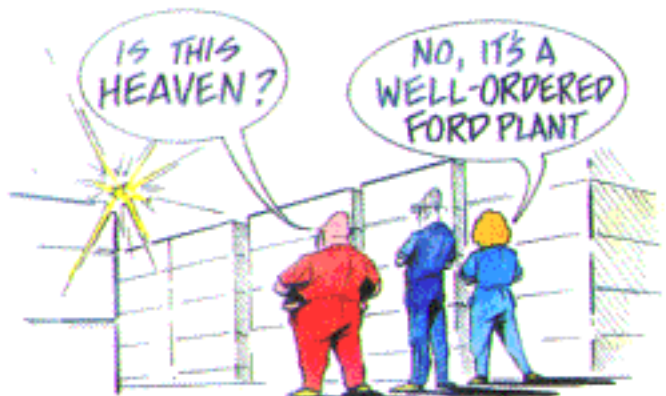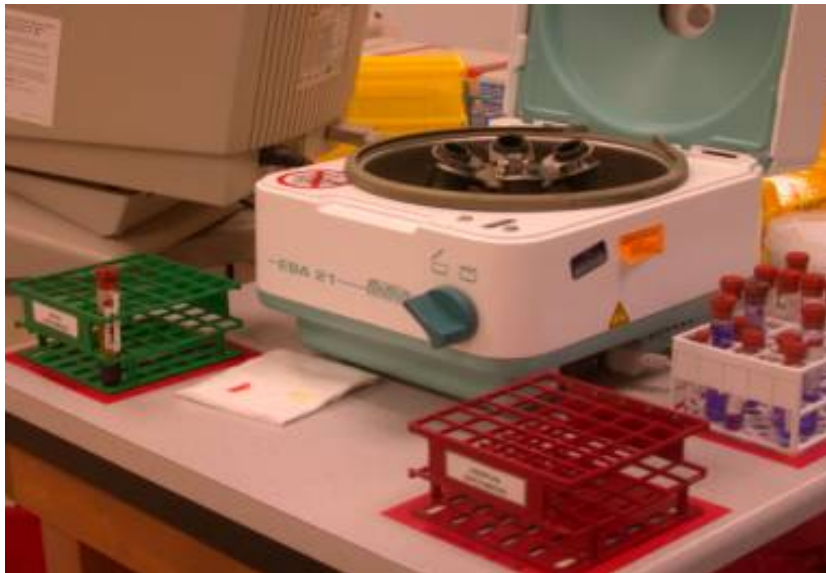
Eliminate Waste

Typical 5S Baseline

- Unorganized Workbenches
- Product Flow not Obvious
- Time wasted looking for things
- Hoarding of supplies

- Poor Utilization of Space
- General Clutter
- Supply Shortages and "Hidden" Inventories

5S Improvement Examples

Lean Healthcare
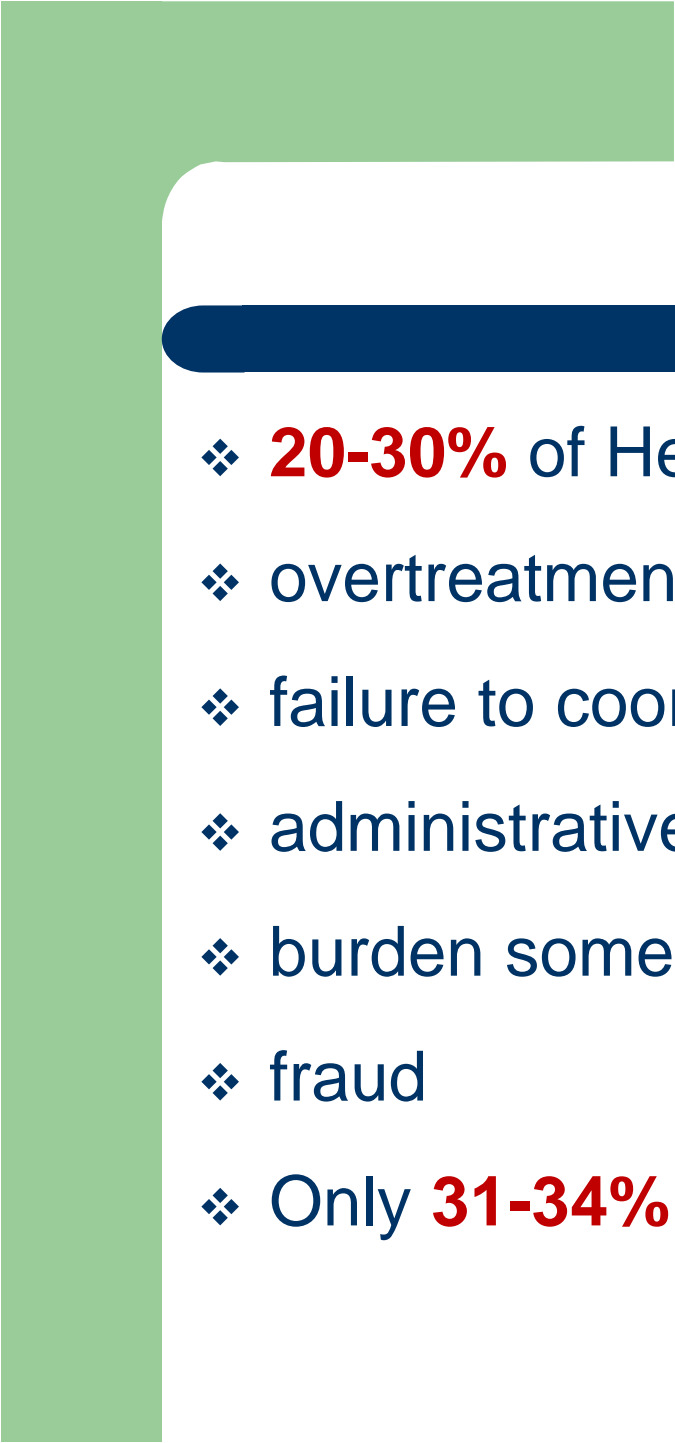
- *Lean Healthcare* is a structured way of **continuously exposing and solving problems** to eliminate waste in healthcare delivery system that deliver value to the customers (patients). Lean principles can be applied to any process of healthcare: **operations**, **clinical care**, **business offices** and **supportive services**.

Dwayne Keller

Much of the PATIENT'S time is spent WAITING

- **80% or more** of the *time* spent in a healthcare processes is *waste*
- Most of the patient time is spent waiting, moving, etc.
- **Lean Focuses on Reducing Waste**
- **Increase % Value Added Work and reduce Waste to Increase Throughput, Lower Cost and Improve Quality**

- **Healthcare has many processes and lots of waste**
- **• Lean is an overall method (with many tools) for improving processes by removing waste**
- **• There are many opportunities for lean application in Healthcare.**

- **20-30%** of Healthcare Spending is Waste

- overtreatment of patients

- failure to coordinate care

- administrative complexity

- burden some rules

- fraud

- Only **31-34%** of nurse time spent with patients

Lean in Healthcare

- Admitting/Discharge
- Internal patient flow within and between departments
- Operating room turnover
- Scheduling processes and systems
- Workplace disorganization
- Medical Records
- Inventory (supplies) control
- Administrative processes and billing
- Equipment availability
- Shift change processes
- Pharmacy and Laboratory work flows and turnaround times
- Emergency Room work throughput
- Clinical Processes
- HR/Hiring Processes
- Med/Surg floor improvement

Eight Types of Waste in Healthcare

- ❖ **Overproduction (Unnecessary Services)**

- ❖ **Waiting**

- ❖ **Excess Motion**

- ❖ **Excess Conveyance (Excessive Transportation)**

- ❖ **Over-processing**

- ❖ **Inventory**

- ❖ **Defects (Errors)**

- ❖ **Unused Creativity**

Overproduction

- Also known as Unnecessary Services

- Producing work or providing a service before it is required or requested

- Examples
  - Pills given early to suit staff schedule
  - Testing ahead of time to suit lab schedule
  - Entering repetitive information on multiple documents
  - Printing, emailing, sending the same document multiple times
  - Treatments done off-schedule to balance hospital staff workloads
  - Treatments done off-schedule to balance equipment loads
  - Delivering extra meal trays when patient has been moved

Waiting

- Waiting for people, equipment, signatures, supplies, information, etc.

- Relatively easy to identify; low-hanging fruit

- Examples
  - ➤ Waiting for admissions to Emergency Department
  - ➤ Delays for lab test results
  - ➤ Delays in receiving information on patients
  - ➤ Patient back-up due to equipment not working properly
  - ➤ Delays for bed assignments in the hospital
  - ➤ Delays for transfer to another health care provider
  - ➤ Excessive signatures or approvals

Excess Motion

- Excess movement of people, equipment, paperwork, electronic communication

- Motion that is not value-added

- Extra walking, reaching, bending, etc

- Examples
  - Searching for charts or doctor's orders
  - Searching for medications
  - Searching for poorly located supplies
  - Searching for patients
  - Walking to equipment that is not centrally located
  - Hand-carrying paperwork to another process

Excessive Conveyance

- Also known as Excessive Transportation

- Delivering work products without adding value

- In the healthcare environment, the patient is a "work product" that flows through the system

- Examples
  - Delivery of equipment too early or too late
  - Transporting patients to surgery prematurely
  - Moving samples or specimens to the wrong location
  - "Placing a gurney in the hall and constantly having to more it"

Over-Processing

- Putting work into accomplishing something that the patient, physician, or healthcare provider either does not ask for or does not want

- Results in non-value added work that the customer does not want to pay for

- Examples
  - ➢ Retesting (eg. Performing a second 24-hour urine test because a staff member obtained the first specimen incorrectly)
  - ➢ Ordering more diagnostic tests (may be unnecessary)
  - ➢ Entering repetitive forms
  - ➢ Completing excessive paperwork

Inventory

- Excess or outdated supplies; excess medicines & consumables

- Elimination of inventory frees up space and makes it easier to find essential items quickly

- Examples
  - Duplicate medications and supplies in excess of normal usage
  - Obsolete office equipment
  - Excessive office supplies
  - Obsolete charts, files, and medical equipment
  - Extra or outdated manuals, newsletters, or magazines

Defects

- Also known as mistakes or **errors**

- Defect waste includes all processing required to correct a defect or mistake

- It takes less time to do it right the first time than to discover and correct the mistakes

- Examples
  - Medication errors
  - Incorrect patient information
  - Incorrect procedure
  - Missing information
  - Redraws

Unused Creativity

- Not utilizing the available talents and skills of the staff to their fullest

- Examples

  ➤ Insufficient cross-training of staff

  ➤ Reluctance to elicit process improvement ideas from workers closest to the process

  ➤ Design of policies, procedures, and practices without sufficient input from workers

What Mistake-Proofing Means to Healthcare?

The Global Goal: *Reduce Medical Errors*

*"Human error is inevitable. We can never eliminate it. But we can **eliminate problems** in the* system *that make it more likely to happen."*
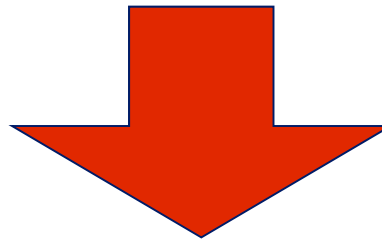
Liam Donaldson

WHO World Health Alliance

for Patient safety

Lean Requires a Cultural Shift

- Traditional Approach:
  - "Naming, Shaming, and Blaming"

- Lean Approach:
  - Supports open reporting of mistakes
  - Root cause problem solving process
  - "Anyone can make mistakes"

Benefits from Lean (Eg.)

- Productivity improvement >30%
- Space savings of >450 sq ft
- Standardized work practices
- Reduction in Errors and Error Potential
- Test Turnaround Time (CT) reduced by 50%

Area	Before	After	% Improve
Hematology	170 min	43 min	75%
Chemistry	175 min	67 min	62%
Coagulation	199 min	26 min	87%
Troponin	131 min	97 min	26%

Benefits from Lean (Eg.)

- From 60,000 sq ft to 40,000 sq ft for new lab
  - Cost avoidance of $800,000

- Blood bank in new lab w/o adding 2,500 sq ft
  - Cost avoidance of $400,000

- Hospital food service cancels new building
  - Cost avoidance of $7,200,000

Benefits from Lean (Eg.)

PATIENT SATISFACTION SURVEY SCORES

October 2005	Hospital System ED	December 2005
60%	Overall Rating	96%
62%	Privacy	84%
78%	Wait Time for MD	96%
61%	Likelihood of Recommending	98%

Potential Obstacles to Lean Healthcare

- Culture of organization or department
- "It's not my job" attitude
- Lack of vision or purpose from upper management
- Lack of capable processes and standards
- Fear of change
- Inadequate training

Potential Obstacles to Lean Healthcare Cont;

- Financial constraints
- Lack of departmental communication and co-ordination of care or information
- Governmental regulations
- Legal constraints
- Safety concerns
- Certification/licensing requirements

Why do Hospital Need Lean?

- ❖ Bureaucratic reform & health reform in Myanmar
- ❖ Increased healthcare expenditure
- ❖ Introduction of health insurance
- ❖ Health workforce shortage
- ❖ Variable quality of healthcare
- ❖ Rising healthcare cost
- ❖ TQM does not cover all hospital
- ❖ Solving so many problems that plague hospitals each day

How To Apply Lean in Myanmar Healthcare System?

Where do we start it?

- What is a patient safety problem or risk to solve?
- What are the most pressing complaints from patients?
- What major issues do physicians or other employees bring to your attention?
- What departments have been struggling with employee shortages?
- Who is proposing an expansion or renovation of their space?

Any Question?
Thanks for Your Attention!