# Uncovering Patterns

## Through 6 Sigma and Process Mapping

Bob Barnes and Marilyn Lombardi

Duke UNIVERSITY

1

Part A

# Process Improvement

## Flow Charting and Value Stream Mapping

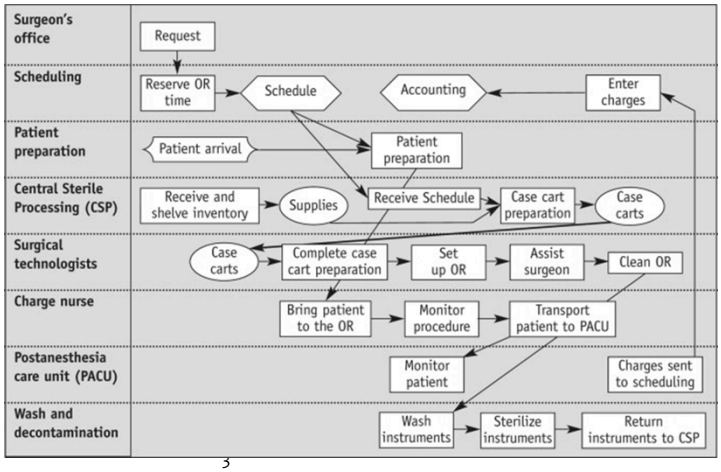
***Six Sigma Quality***

**D**efine → **M**easure → **A**nalyze → **I**mprove → **C**ontrol

2

# An Example of Process Flow

*… quick and easy, any body can do it!*




3

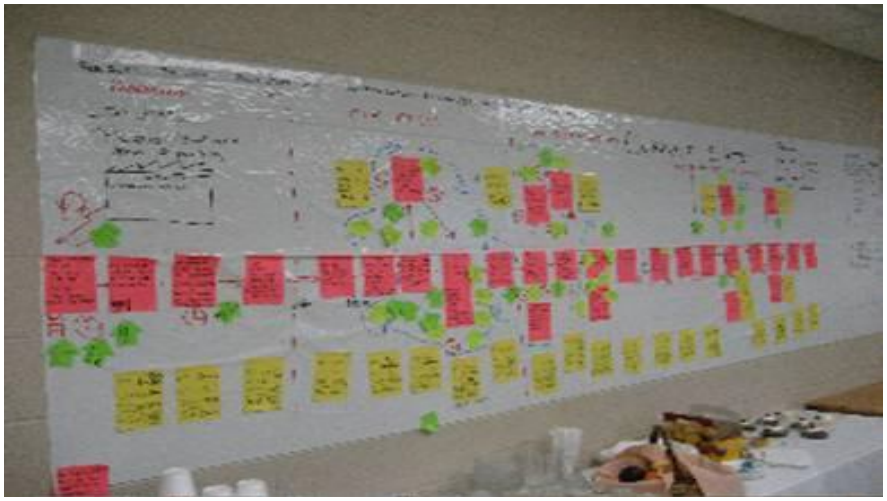
# It's Simple

Just work together as a team!

4

# Process Mapping

72 feet of Improvement!



# Some Details – No. 1

**What is it?**
A flow chart is a picture of any process (sequence of steps, activities, or tasks) which transforms inputs into outputs in a system. A deployment flow chart is an especially useful version.

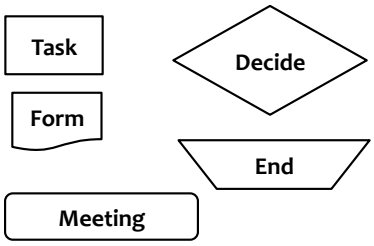
**When is a deployment flow chart used used?**
It is used whenever it is useful to show the relationship of the people and the steps in a process.

6

# Some Details – No. 2

**How is it Made?**

1. Define the process boundaries
2. Observe the process in operation
3. Draw a people or organization column
4. List major steps in the process
5. Draw the flow chart using consistent symbols
6. Study the flow chart
7. Remove Non Value Adding Work
8. Revise the flow chart
9. Walk through the actual work

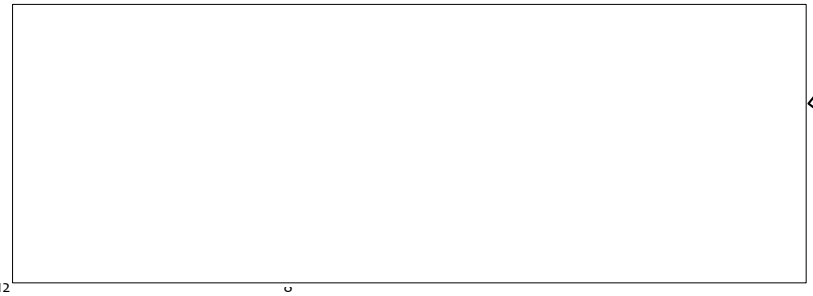



7

Focus:
Elimination - Reduction

1. **T**ransport
2. **I**nventory
3. **M**otion
4. **W**aiting
5. **O**verproduction
6. **O**ver Processing
7. **D**efects

Before





8

# NVA – Non Value Adding Work

1. **T**ransport - moving products that are not actually required to perform the processing
2. **I**nventory - all components, work in process, and finished product not being processed
3. **M**otion - people or equipment moving or walking more than is required to perform the processing
4. **W**aiting - waiting for the next production or process step
5. **O**verproduction - production ahead of demand
6. **O**ver Processing - the creation of unnecessary activity due to poor tool or product design
7. **D**efects - the effort involved in inspection and fixing defects

9

# Opportunities for Improvement

**in Hospitals**

Admission
Medications reconciliation
H&P/results review/differential diagnosis
Patient assessment
Care planning/pathways
Provider orders
Consultation management
Patient monitoring and charting
Medication administration
Surgery/recovery
Transfer of care/care coordination
Discharge/patient instructions
Charge capture/coding
Reporting/quality improvement
Departmental operations

**in Clinics**

Scheduling/check-in and check-out
Patient intake
Results review
H&P/encounter notes
Care planning/guidelines
Medication management: medication list maintenance/ prescribing/refills
Provider orders
E&M coding
Charge capture
Patient instructions/education
Patient follow up/health maintenance
Reporting/quality improvement

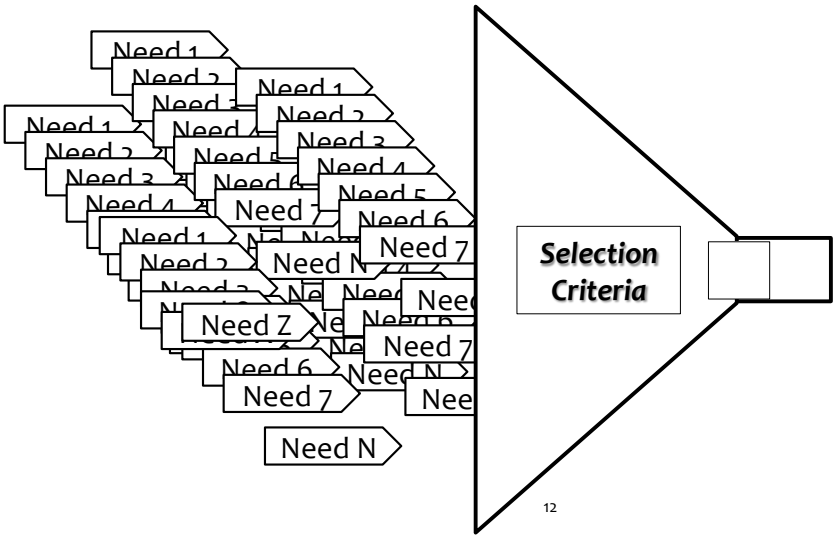
10

Part B

# Quality Function Deployment

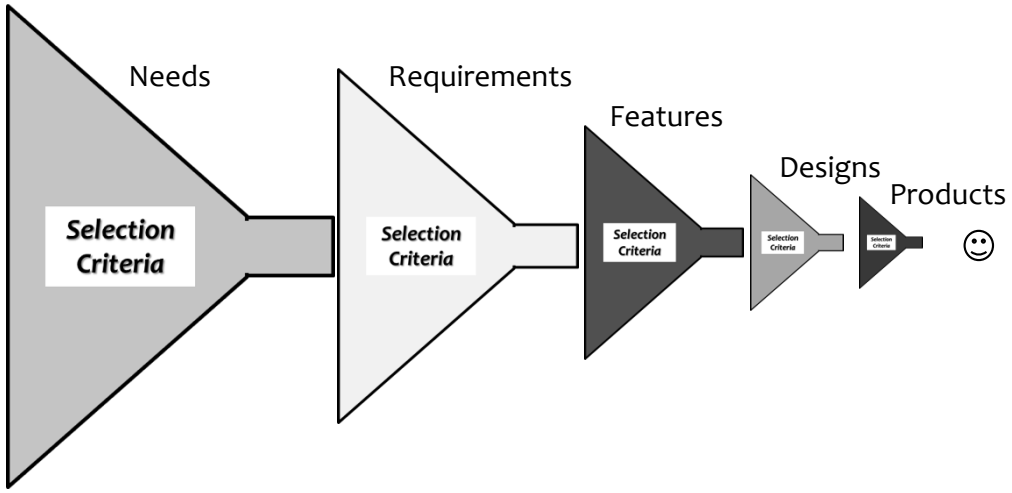
11

# QFD is a Filtering Process




12

# QFD – Multi-Filter




13

# Simple First Step QFD

| No. | Need |
|---|---|
| A | There is a need to better organize **cables** in the OR. |
| B | There is a need for a device that allows surgeons to **see** what they are operating on during single incision surgeries |
| C | There is a need to maintain the body **temperature** of the patient during surgery. |
| D | There is a need for a more efficient method for surgeons to dictate patient **notes**. |
| E | There is a need to accurately determine whether **surgical** intervention is necessary. |

14

# QFD at It's Simplest

| | | A | B | C | D | E |
|---|---|---|---|---|---|---|
| cables | A | A | B | C | A | E |
| vision | B | B | A | B | B | E |
| temp | C | C | B | A | C | E |
| notes | D | A | B | C | A | E |
| surgery? | E | E | E | E | E | A |

| | | | Priority |
|---|---|---|---|
| A | 2 | 10% | 4 |
| B | 6 | 30% | 2 |
| C | 4 | 20% | 3 |
| D | 0 | 0% | 0 |
| E | 8 | 40% | 1 |

15