Institute *for* Healthcare Improvement

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IHI Forum Learning Lab 20

Continuous Value Improvement

Beyond Episodic Gains

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#IHIFORUM

Disclosure

Brian H. Maskell, BMA Inc., provides consulting services and training in Lean Accounting and Lean Management.

Kevin Little, Ph.D., Informing Ecological Design, LLC provides consulting services to help clients turn data into information and action.

Session Description

Lean Accounting has been used to great benefit in many industries for more than 15 years.

- It is a simple and timely method for managing cost and value.
- Provides frontline managers with weekly information that enables them to control and improve financial results.
- They can quickly identifying improvement opportunities & the real bottom-line impact of their decisions.
- And maximizing benefits to patients and staff.

Participants in this learning lab will learn practical applications of Lean Accounting in health care.

Information on Lean Accounting:
www.maskell.com/lean_accounting_8_2589996685.pdf
https://en.wikipedia.org/wiki/Lean_accounting

Our Objectives

1. Discuss the principles of Lean Accounting and its application to health care delivery
2. Illustrate Lean Accounting "in action" using a case example
3. Identify two to three opportunities to introduce Lean Accounting tools and concepts in your own work

Session Agenda

1. Introduction
2. Working with Value Streams
3. What is a Box Score
4. Performance Measures--the Linkage Chart

Break

5. Lean Accounting: Value Stream Financial Performance
6. Process Capacity
7. Box Score and Management "Standard Work"
8. Reflection & Wrap-up

1. INTRODUCTION

Audience Survey Questions: In your organization…

1. *Who in your organization has primary responsibility to review and use quality and financial data to monitor and improve performance of care processes?*

A. Operations managers and staff who work in the care processes or service lines
B. Specialists in quality and finance, who advise operations managers
C. Other response (free text)

Audience Survey Questions: In your organization…

2. How do people who work in the care processes know about their current quality and financial performance?

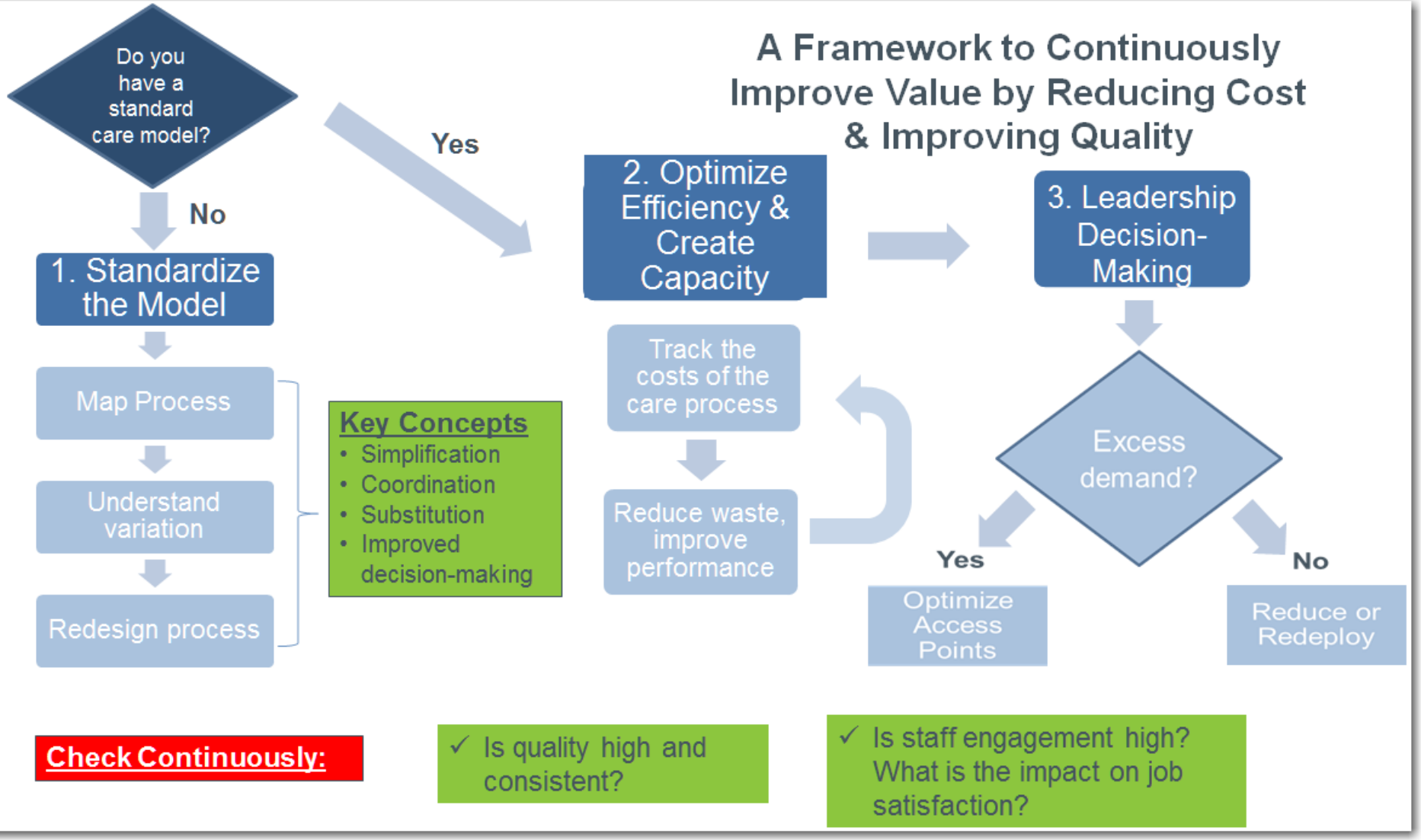
A. Quality and financial data are posted on the wall in the work area, updated and reviewed weekly by managers and staff.
B. Regular reports are available to unit and department managers on financial and quality metrics, shared with supervisors and staff at least monthly.
C. Regular reports are available to unit and department managers on financial and quality metrics, not regularly shared with supervisors and staff.
D. Other response (free text)

Audience Survey Questions: In your organization…

3. Have you organized any clinical services by 'value stream,' with appropriate mapping of processes, assignment of people and equipment, and regular review of fidelity to standard work?

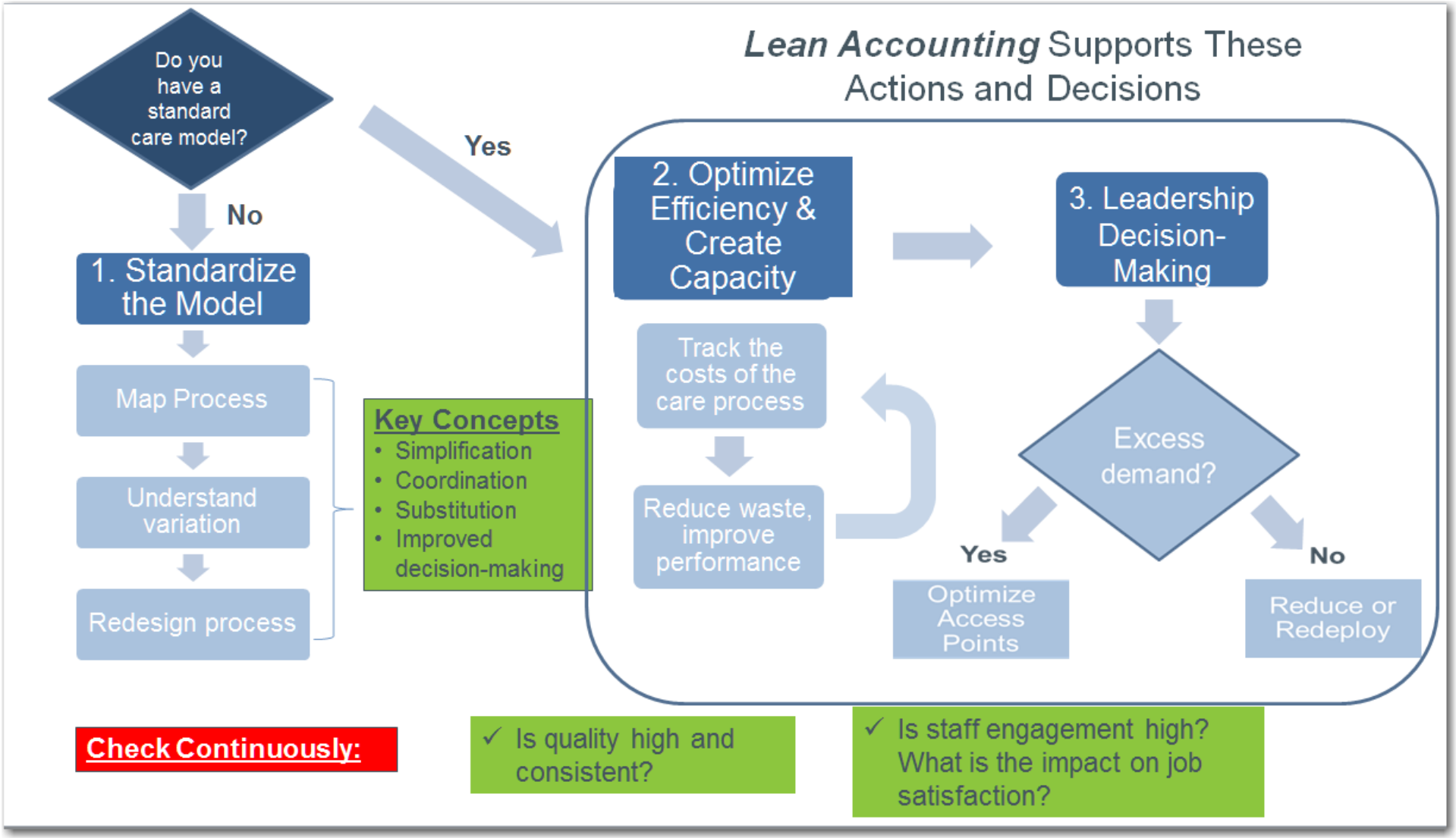
A. Yes, for two or more service lines (e.g., orthopedic surgery).
B. We are in the process of doing this now for at least one service.
C. We have learned about value streams but have not changed from a traditional departmental organization.
D. I am not familiar with the term 'value stream.'
E. Other response (free text)

A Framework to Continuously Improve Value by Reducing Cost & Improving Quality



Check Continuously:

- ✓ Is quality high and consistent?
- ✓ Is staff engagement high? What is the impact on job satisfaction?


Do you have a standard care model?
No
Yes
1. Standardize the Model
Map Process
Understand variation
Redesign process
Key Concepts
• Simplification
• Coordination
• Substitution
• Improved decision-making
Lean Accounting Supports These Actions and Decisions
2. Optimize Efficiency & Create Capacity
Track the costs of the care process
Reduce waste, improve performance
3. Leadership Decision-Making
Excess demand?
Yes
No
Optimize Access Points
Reduce or Redeploy
Check Continuously:
✓ Is quality high and consistent?
✓ Is staff engagement high? What is the impact on job satisfaction?

Lean Accounting Ingredients

1. VALUE STREAM TEAM IMPROVES THEIR OWN WORK

- Report & Improve the Flow
- Value Stream Team Improves Process

2. WEEKLY VALUE STREAM MEASUREMENTS

- Operational, Financial, & Capacity
- Visual Performance Board

3. PLAIN ENGLISH INFORMATION

- Everybody immediately understands
- Direct Costs; Little or no allocations

4. DAILY LOCAL MEASURES CONTROL THE PROCESSES

- On-Time, Quality, Issues/Problems

5. FULL TEAM MEETS EVERY WEEK

- Stand-Up Meeting; Visual Performance Board
- 10 Mins: Next Week's Work
- 20 Mins: Improvement Plans

6. CONTINUOUS IMPROVEMENT BY VALUE STREAM TEAM

- Improve Service, Reduce Costs
- Remove Waste, Increase Services
- Improvement Goes On for Ever

7. DECISION-MAKING USING THE BOX SCORE

- Box Scores Show True Impact of Lean Decisions & improve costs

8. TRANSACTION ELIMINATION

- Eliminate Wasteful Reporting
- Cut the costs & frees peoples' time

Increase Patient Service, Eliminate Waste, Reduce Costs.
A Formal & Standard Process for Continuous Improvement.

HQ
Highland Quality Approach

NHS
Highland

Kay Cordiner NHS Highland

Twitter: @kaycordiner #IHIForum2016 #teamrespiratory

What are the challenges?

- There’s less money year on year, after taking health care inflation in to account
- There is an increasing proportion of older people, who generally have higher care needs
- Many people have multiple long-term conditions, but much of our money is in episodic acute care
- We know errors are common, and many recur time after time

HQ Highland Quality Approach Story

NHS Highland

COPD RPIW @365 days

- 145 patients
- Reduction in ALOS from 8.2 days to **4.8 days**
- Reduction in readmissions from 5.7% to **5.59%**
- Total nights saved **494.2**
- Overall fully absorbed saving **£195,549.998**

Why Lean Accounting?

- Financial data not timely
- Quality / performance data considered in isolation from financial data
- Perception of a lack of control amongst clinicians

How might Lean Accounting help?

- Much more timely information (weekly where possible)
- Performance/capacity/financial information considered as a unified Box Score
- Empower the local ‘value stream team’ to make decisions or recommend decisions to SMT as appropriate
- Facilitate a conscious decision around capacity

HQ
Highland Quality Approach

NHS Highland

Our current Box Score

Ward 7a Value Stream Box Score		03/10/2016	10/10/2016	17/10/2016	24/10/2016	31/10/2016	07/11/2016	14/11/2016	21/11/2016	28/11/2016
Performance Measures	Average Length of stay	5.4	8.68	9.5	9.14	7	5.4	5.8	8.6	
	Discharges Delayed for non-medical reasons		1		1				1	
	30-day readmission rate to Ward 7a		2.10%		3.10%					
	Patient satisfaction (1-5 scale)	4.8	4.8	4.8	4.8	4.8	4.8	4.9	4.9	4.9
	On-time discharge (EDD = ADD)	25	21						30	
	Falls (raw numbers)	0	1	0	1	0	0	0	2	0
Nurse Capacity	Direct care					16.6%			46.20%	37.60%
	Indirect care					63.3%			38.80%	39.10%
						20.1%				
	Available Time %	100.0%	100.0%	100.0%	100.0%	0.0%	100.0%	100.0%	15.0%	23.3%
Financial Measures	Medical staff salary	15,284	15,284	15,284	15,284	15,284	15,284	15,284	15,284	15,284
	Establishment nursing	21,445	21,445	21,445	21,445	21,445	21,445	21,445	21,445	21,445
	Bank nursing	2,667	1,839	2,224	1,396	1,580	1,667			
	Drugs	8,351	8,351	8,351	8,351	8,351	8,351	8,351	8,351	8,351
	Drugs Waste									
	Surgical Sundries	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417	1,417
	Other	1,376	1,376	1,376	1,376	1,376	1,376	1,376	1,376	1,376
	Total COSTS	£ 50,540	£ 49,712	£ 50,098	£ 49,270	£ 49,453	£ 49,541	£ 47,873	£ 47,873	£ 47,873
	Total Costs by total number of patients	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Total COSTS per bed	£ 1,743	£ 1,714	£ 1,728	£ 1,699	£ 1,705	£ 1,708	£ 1,651	£ 1,651	£ 1,651

Senior Buy-In

- Personal interest from CEO
- DoF facilitating the Value Stream team
- Medical Director input
- Support from Raigmore SMT
- Scottish Govt sponsorship

Who's on the team?

- Multi-disciplinary
- Medical
- Nursing
- Pharmacy
- Finance
- Information

With support from

- Our own QI Team
- IHI

What have we learned so far?

- Real time data
- Ability to be proactive not reactive
- Improved Information from Service Planning
- That it isn't simple!

What now?

- Looking at cost and quality in real time
- Proactive budget management at ward level
- Proactive reduction in waste
- Increasing the % of Direct care

A note on our case example

We've built a case example, the Brockmenter Medical Center, Orthopedics Service line. We'll focus on one value stream, elective hip and knee replacement, to illustrate ideas and tools.

This example is based on experience and interactions with several organizations and does not reflect the results or experience of any specific institution.

We believe that this example realistically shows how a high volume, high cost service can benefit from Lean Accounting methods. The example should help you understand how you could apply Lean Accounting in your own organization.

Content under development

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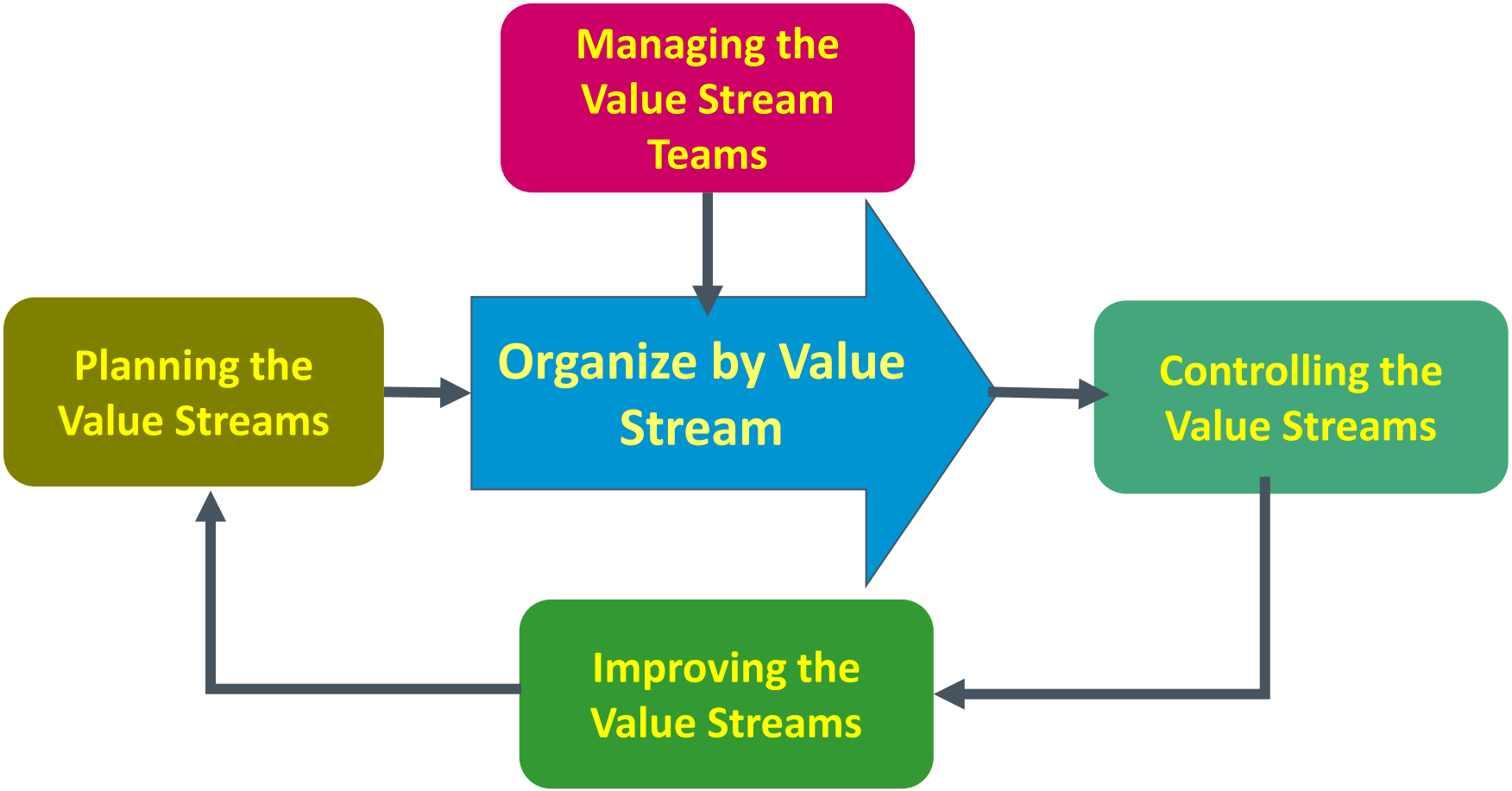
We welcome your questions and suggestions for improvement (bmaskell@maskell.com and klittle@iecodesign.com)

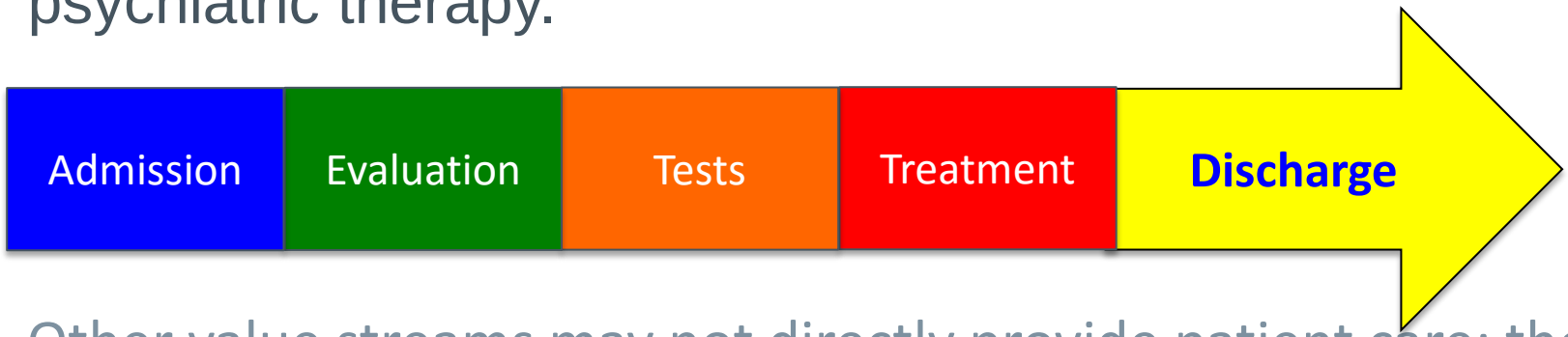
2. WORKING WITH VALUE STREAMS

Value Stream Management



What is a Value Stream?

- All the actions required to provide care to patients; organized so the process can flow without stopping. The flow includes both value-adding and non-value-adding activities.
- A value stream usually provides a specific type of patient care; eg. orthopedic surgery, emergency department, or psychiatric therapy.



- Other value streams may not directly provide patient care; they are support & administrative processes

What's the Problem?

- Most healthcare organizations are designed around functions and departments having their own people, space, and budgets.
- Many problems and much waste come from the interaction & handoffs between departments.
- The departments lack focus on the patients' real needs. They focus on their part alone.
- At best, this leads to delays, waiting, frustration, and distress for the patients. At worst, the patient is harmed because no one sees their whole needs.
- The delays, waiting, and frustration also undermine the productivity of hard-working and dedicated professionals.

Does This Sound Right to You?

- The causes of delays and waste are difficult to see because they happen in independent departments.
- Delays are often between departments.
- Additionally, a lot of wasteful work is needed to “coordinate care” !!
- Departments are not appropriate for flow, continuous improvement, lean organizations, or optimizing patient needs.

“We have the very best pharmacy sitting right next to the very best laboratory, sitting right next to the very best x-ray and MRI department, sitting right next to the very best nursing departments ……. and the hospital doesn’t work well for the patients.”

Dr. Paul Batalden, The Dartmouth Institute, Geisel School of Medicine at Dartmouth

What's the alternative?

Some organizations organize around the flow; not departments.

That is, they organize by value stream.

Why Do We Focus on the Value Stream?

- Value for the patient is created by the whole value stream.
- Enables the process to flow without stopping.
- Identify value and waste.
- Identify flow and obstacles to flow.
- “See” the issues & problems, improve the process.
- Maximize patient care and patient satisfaction.
- Enables employees to drive continuous improvement.

Why Do We Organize by Value Streams?

- Focus on creating patient value.
- Clear accountability for the process and the patient experience and outcome.
- Departments can be “optimized” but we need to optimize the flow through the value stream.
- Develop lean-thinking physicians, managers, nurses, and support people.
- “Seeing the Whole”

“Whenever there is care provided to a patient, there is a value stream. The challenge lies in seeing it."

Adapted from “Learning to See” by Mike Rother & John Shook

Extending the Value Streams

- Ideally, the scope of the value stream would reach beyond the purely in-house, patient care processes. For example, the value stream manager is often responsible for such things as:
  - Prevention monitoring.
  - Diagnosis.
  - Preparation.
  - Scheduling.
  - Meds and materials.
  - Information & reporting.
  - Aftercare services.
  - On-going training.
  - Etc.

Value Stream Manager

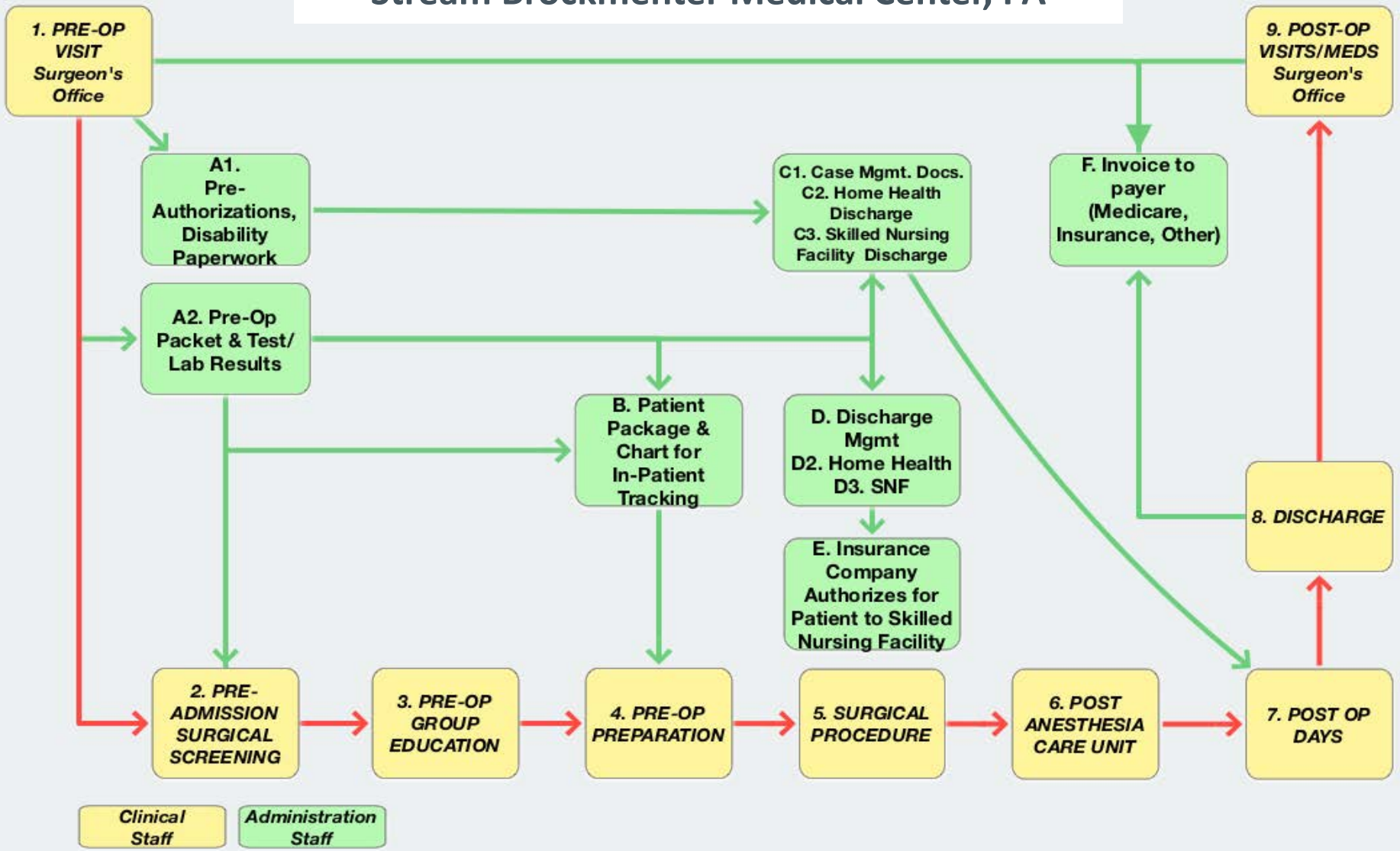
- While the term “value stream manager” may not be used, it is important to have a single person responsible for the flow.
- Value stream manager:
  - *Reports to the top person.*
  - *Monitors all aspects of the value stream using data & measurements.*
  - *A hands-on person driven by results; patient care, safety, employee motivation, productivity, & costs/profits.*
  - *Can be from any aspect of the process.*
  - *Lead continuous improvement.*
  - *Always attends the daily, weekly, & monthly stand-up meetings*

Full Control & Accountability

Criteria for Value Streams

- Family of patient care processes with similar flows.
- Include all the people, equipment, & facilities that support patient care within the value stream.
- The value stream team a reasonable size.
- Minimize “monuments”
  - Machines, equipment, people, and departments shared by more than one value stream
- Ideally…extend the value stream to where the patient first enters the process, and through to when the patient exits.
- The value stream may begin prior to when the patient arrives and may finish with steps after the patient leaves.

Value Stream Map for Hip and Knee Value Stream Brockmenter Medical Center, PA



Here's How a Value Stream Works

- Value stream may include
  - Scheduling
  - Reception
  - Evaluation
  - Tests
  - Diagnosis
  - Preparation
  - Treatment
  - Recovery
  - Medication
  - Information & Reports
  - Quality Assurance
  - Discharge
  - After-care services
  - Etc.

- Most value streams contain monuments--machines or processes that are shared by more than one value stream.
  - Short term: Work around them
  - Long term: Eliminate monuments & "right size" the equipment

- In the early stages of value stream management, you may find there are not enough people with the right skills
  - Short term: Have them work in more than one value stream
  - Long term: Cross-train people to do different kinds of tasks.

There Are Some People or Equipment that are Outside the Value Streams

- In the early stages of value stream management you may find there are not enough people with the right skills
  - Short term: Have them work in more than one value stream
  - Medium term: Cross-train people to do different kinds of tasks.

Examples:

- Senior manager(s)
- Financial accounting
- Human resources
- Information systems
- Facilities management

These people support the value streams but are not part of them. Their work is not a part of the flow.

There are very few “perfect” value streams

- A perfect value stream
  - Includes everyone from beginning to end of the value stream, and all the people that are required to support this value stream.
  - Has no monuments.
  - The people working in the value stream provide all the steps in the processes that relate to the patient flow, and the processes required to complete the work before and after the patient is in the flow.
  - The value stream manager has complete control and responsibility of every aspect of the value stream operation.

There are very few perfect value streams. Initially value streams may be restricted to the patient-direct processes only.

When there are discontinuities in the value streams…

- We must have effective methods for bringing together the “true” value stream for planning, problem resolution, new products, and for routine management.
- We need methods to bring the “true” value stream together for situations more complex than elective joint replacement surgery:
  - Patients arriving through the ED
  - Complex ICU patients
  - Long-term care for patients with multiple chronic diseases

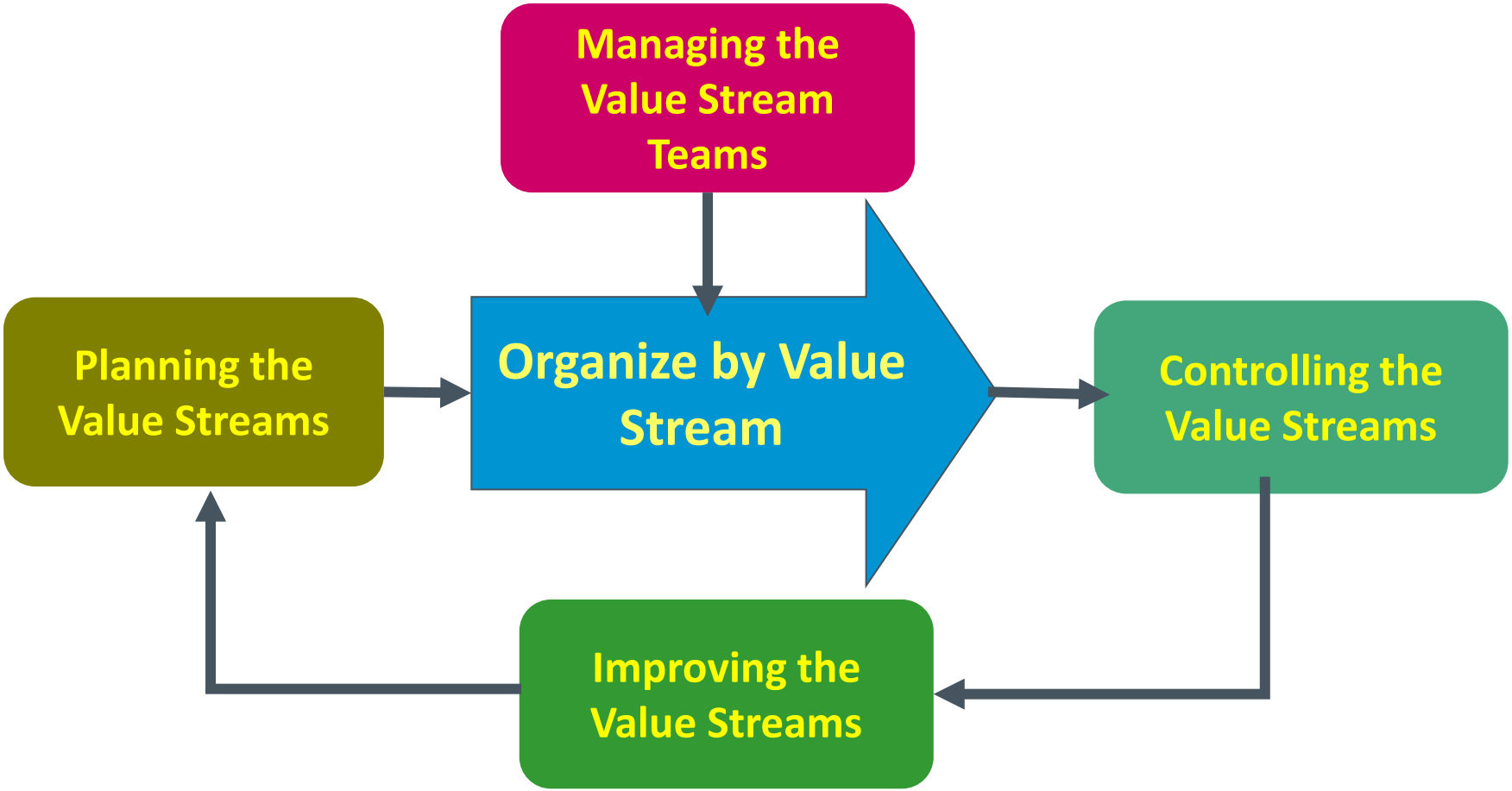
What if we can not achieve the “perfect” value stream?

- Many organizations can not practically achieve “perfect” lean value streams.
  - The support processes may clash with service flow
  - Processes may not flow perfectly
  - There are substantial monuments that disrupt the flow and complicate the value stream approach.
  - The value stream people are not working as teams.
- Don’t wait for perfection.
  - The lean approach is to move ahead with the best you can do now.
  - 60% is good enough
  - As you move ahead you will learn how to do it better
- Provide methods to make sure the “true” value streams work together cross-functionally

Key questions:

- What healthcare delivery systems best support your value streams?
- How well do different delivery systems support the flow of value for the patient?
  - Departmental organization
  - Departmental matrixed with “dotted line” to the Value Stream
  - Value Stream organization matrixed with dotted line to Departmental Managers
  - Value Stream organization with specialist people and/or equipment supporting the value streams.
  - Value Stream organization

Value Stream Management



Try the ideas

Please go to Exercise 1 in the Exercise Packet:

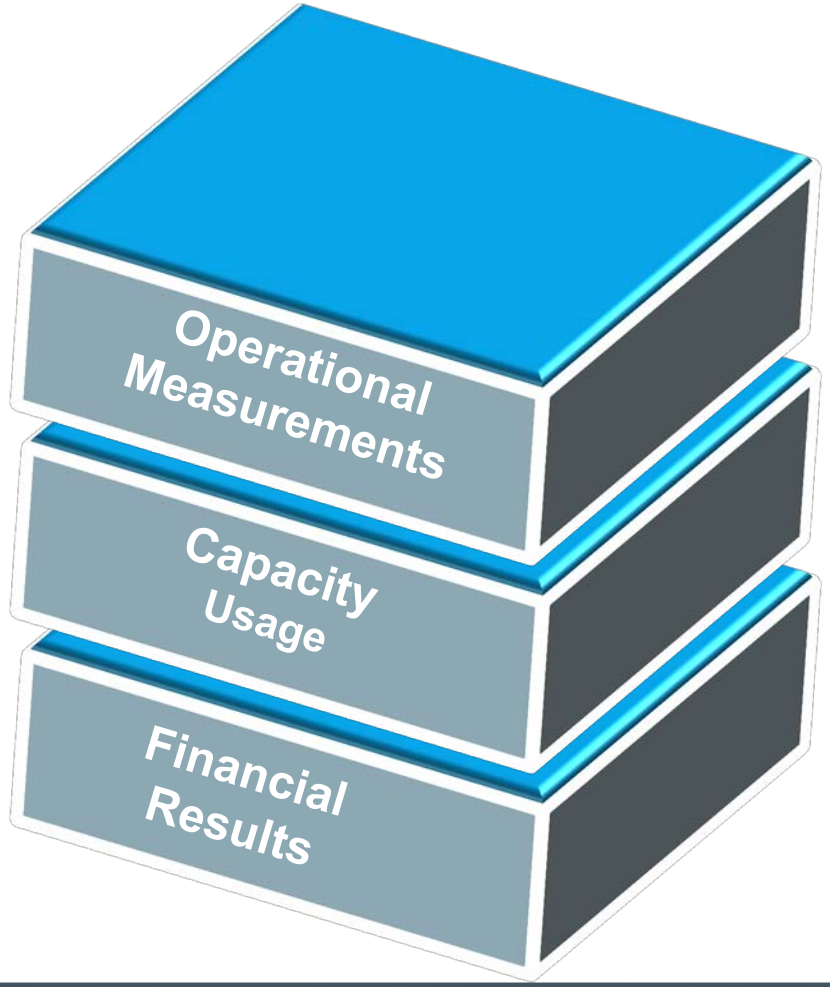
Part 1: Pros and Cons: Three value streams in the orthopedic service?

Part 2: Pros and Cons: In-patient steps only in the hips and knees value stream?

3. INTRODUCTION TO THE BOX SCORE

The Box Score Summarizes the Performance of the Value Stream

- The Box Score shows a *Three Dimensional* view of the value stream
- Provides an understanding of the operational, financial, and capacity impact of actions and decisions
- Leads to better understanding and better decisions



What is a Box Score?

Value Stream Performance Measurements	30-day Readmissions				
	% Safety First Time				
	% Discharge on Time				
	% Discharge to Home				
	Average LOS				
	RN Hours/Patient				
	Staff Reportable Safety Incidents				
Value Stream Capacity	RN Direct Capacity				
	RN Indirect Capacity				
	RN Available Capacity				
Value Stream Financials	REVENUE				
	Implants				
	Drugs				
	Medical Supplies				
	Employee Costs				
	All other Costs				
	PROFIT				
	Return on Revenue				

What is a Box Score?

Value Stream Performance Measurements	30-day Readmissions				
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Value Stream Capacity	RN Direct Capacity				
	RN Indirect Capacity				
	RN Available Capacity				
ials	REVENUE				
	Implants				
Value Str	All other Costs				
	PROFIT				
	Return on Revenue				

Shows the Weekly Operational Performance Measurements.
These are also shown on the Value Stream Weekly Improvement Board

What is a Box Score?

Value Stream Performance Measurements	30-day Readmissions				
	% Safety First Time				
	% Discharge on Time				
	% Discharge to Home				
	Average LOS				
	RN Hours/Patient				
	Staff Reportable Safety Incidents				
Value Stream Capacity	RN Direct Capacity				
	RN Indirect Capacity				
	RN Available Capacity				
Val	Return on Revenue				

Shows the Weekly Financial Results for the Value Stream.
Are our costs under control? Are our costs reducing?
Are our revenues & profits what they should be?
This is also shown on the Value Stream Income Statement.

What is a Box Score?

Value Stream Performance Measurements	30-day Readmissions				
	% Safety First Time				
	% Discharge on Time				
	% Discharge to Home				
	Average LOS				
	RN Hours/Patient				
	Staff Reportable Safety Incidents				
Value Stream Capacity	RN Direct Capacity				
	RN Indirect Capacity				
	RN Available Capacity				
ncials	REVENUE				
	Implants				

Are we making good use of our resources?
How much of our time is spent “productively”?
How much is spent “non-productively”?
How much available capacity do we have in the value stream?

What is a Box Score?

		Current State			
Value Stream Performance Measurements	30-day Readmissions	0			
	% Safety First Time	94%			
	% Discharge on Time	95%			
	% Discharge to Home	84%			
	Average LOS (hrs)	52.5			
	RN Hours/Patient	23.5			
	Staff Reportable Safety Incidents	1			
Value Stream Capacity	RN Direct Capacity	38%			
	RN Indirect Capacity	45%			
	RN Available Capacity	17%			
Value Stream Financials	REVENUE	$1,046,005			
	Implants	$416,468			
	Drugs	$33,053			
	Medical Supplies	$91,169			
	Employee Costs	$176,430			
	All other Costs	$43,661			
	PROFIT	$285,224			
	Return on Revenue	27%			

We must measure the right things.
A few key measurements, linked to strategy and exposing waste.

Increase direct care time.
Reduce indirect care time.
Use available capacity to serve patients and grow the business.

Timely financial information that is readily understood by everyone.
Control costs and reduce costs.
Increase revenue & profits.

BOX SCORE FOR WEEKLY PERFORMANCE REPORTING

Weekly Results for Hip and Knee Value Stream

		30-Sep	7-Oct	14-Oct	21-Oct	4-Nov	11-Nov	18-Nov	25-Nov	2-Dec	9-Dec	16-Dec	23-Dec	GOAL
OPERATIONS MEASURES	30-Day Readmission	0	0	1	0	0								0
	% Safety First Time	92%	93%	94%	94%	93%								95%
	% Discharge On-Time	92%	93%	93%	93%	90%								98%
	% Discharge to Home	84%	85%	86%	86%	86%								88%
	Average Length of Stay Hrs	54.0	53.7	53.5	53.2	53								52
	RN Hours/Patient	23.8	23.7	23.7	23.2	23.2								23.0
	Staff Safety Incidents	1	0	0	0	0								0
CAPACITY	RN Direct Capacity	38%	38%	40%	40%	40%								40%
	RN Indirect Capacity	45%	45%	42%	41%	41%								40%
	RN Available Capacity	17%	17%	18%	19%	19%								20%
FINANCIAL MEASURES	REVENUE	$1,047,964	$1,036,835	$1,044,544	$1,039,168	$1,030,246								$1,045,000
	Implants	$418,685	$428,361	$420,504	$408,094	$394,824								$350,000
	Drugs	$33,238	$34,091	$33,818	$33,521	$32,492								$31,000
	Medical Supplies	$92,415	$92,482	$92,165	$90,621	$92,748								$90,000
	Employee Costs	$175,856	$178,075	$174,672	$175,649	$175,193								$175,000
	All Other Costs	$44,918	$44,090	$44,102	$44,559	$44,067								$35,000
	PROFIT	$282,852	$259,736	$279,283	$286,724	$290,922								$364,000
	Return on Revenue	27%	25%	27%	28%	28%								35%

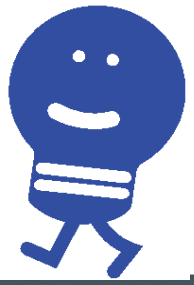
Here are several different ways the Box Score is used.

- BOX SCORE FOR WEEKLY PERFORMANCE REPORTING
- BOX SCORE WHEN YOU ARE VALUE STREAM MAPPING
- BOX SCORE FOR KAIZEN EVENTS AND CI PROJECTS
- BOX SCORE FOR DECISION-MAKING
- BOX SCORE FOR MAJOR LONG TERM PROJECTS
- BOX SCORE FOR MONTHLY PLANNING

The Box Score is *standard work* for showing the performance of value streams.

Here are several different ways the Box Score is used.

BOX SCORE FOR WEEKLY PERFORMANCE REPORTING



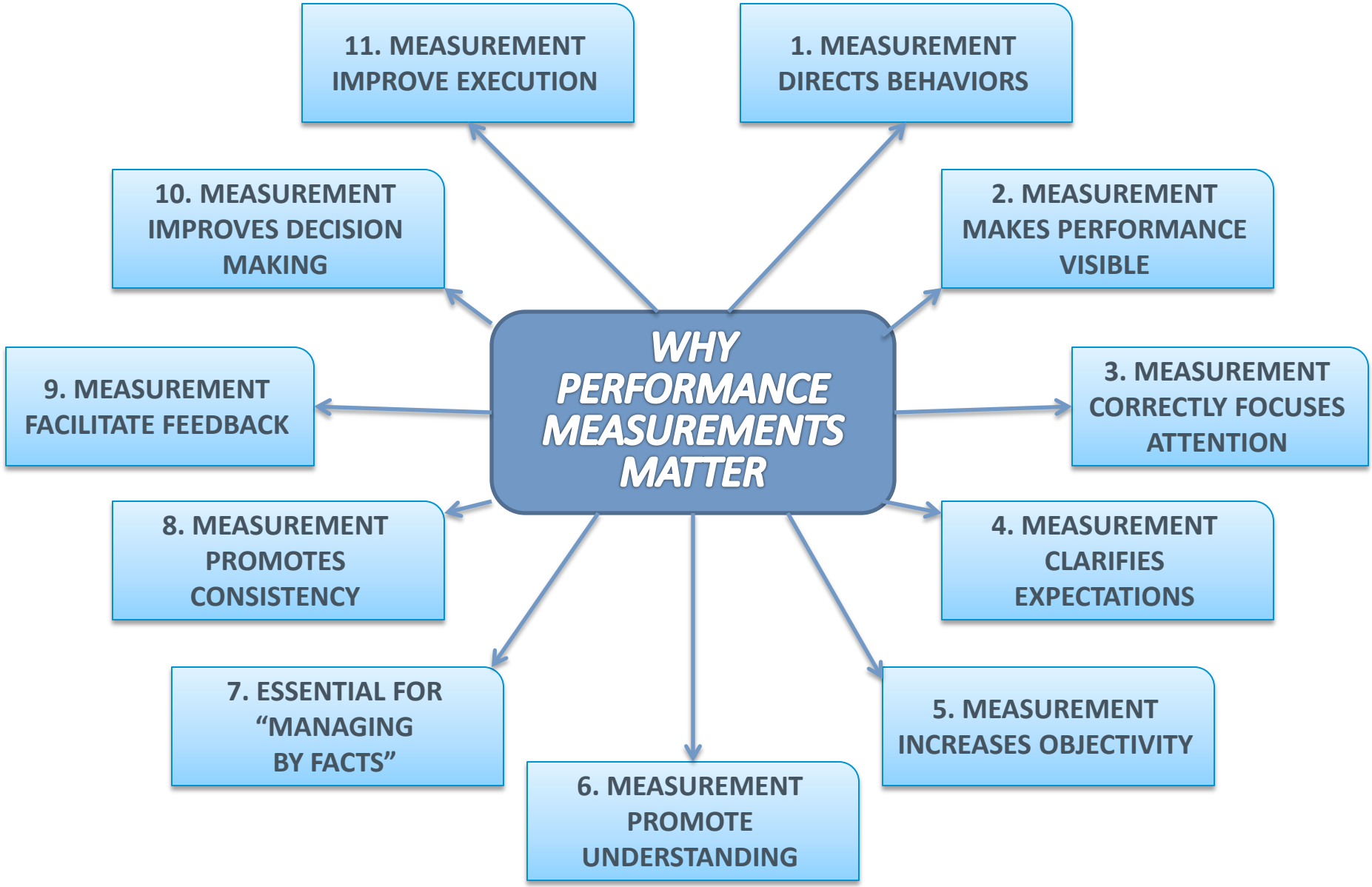
The Box Score is *standard work* for showing the performance of value streams.

BOX SCORE FOR WEEKLY PERFORMANCE REPORTING

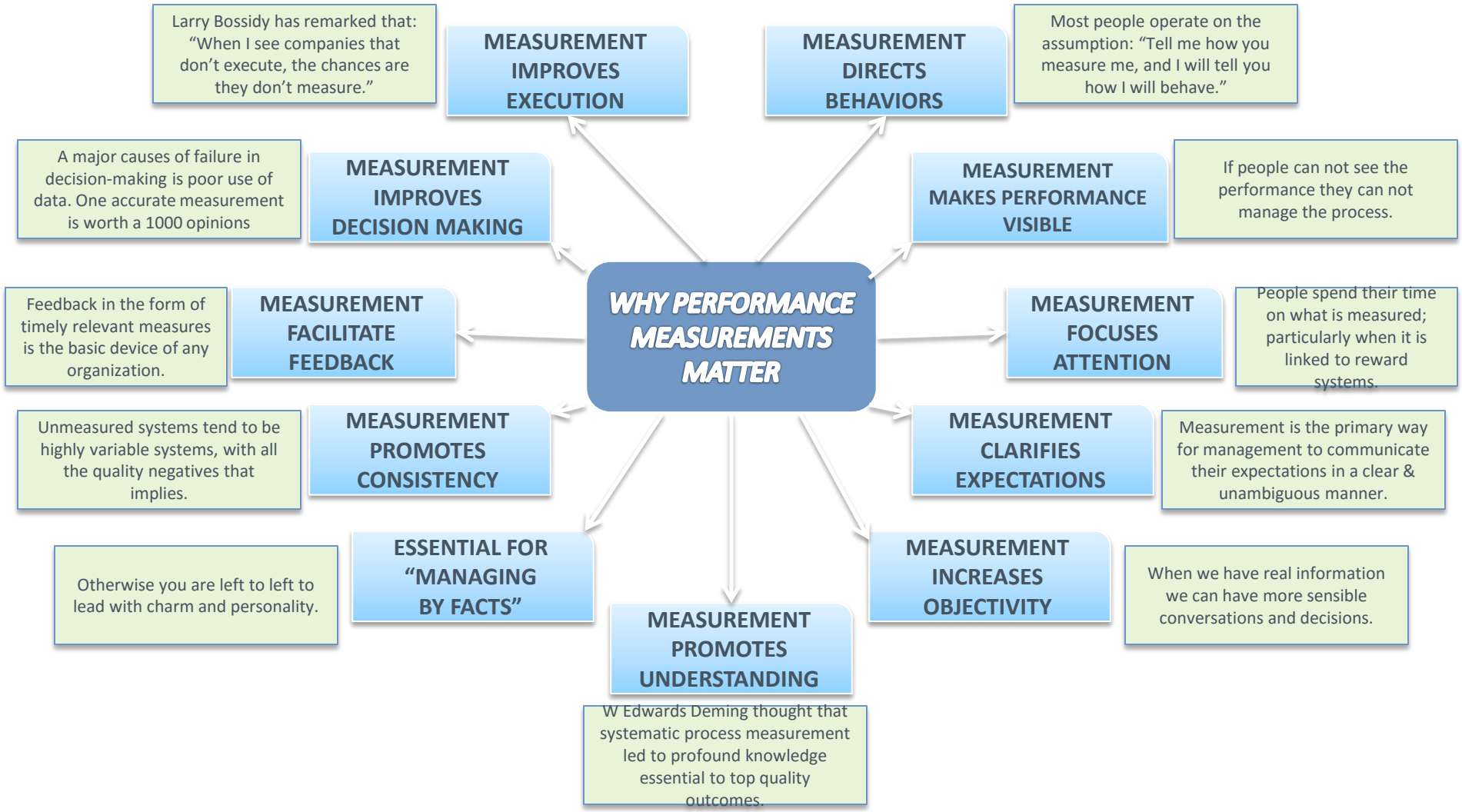
- The Box Score is used to provide value stream performance information to others in the organization.
- The Box Score is also used for the weekly “Box Score Meeting”
- Box Scores are like A3’s*. If there is something important to say, you need to put it on one sheet of paper.

*A3: Structured operations problem-solving tool, displayed on a single piece of A3 size paper (297 x 420 mm, approximately 11 x 17 inches)

4. PERFORMANCE MEASURES



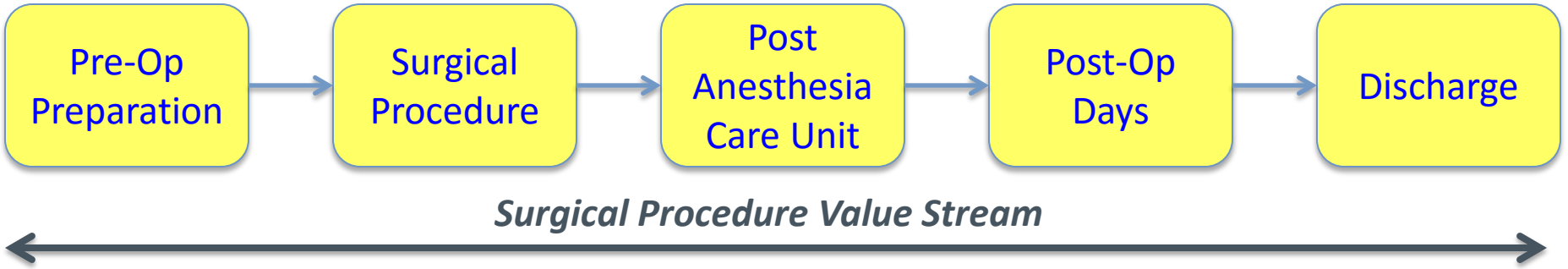
MEASUREMENTS CONTROL THE PROCESSES & IMPROVE THE PROCESSES



ACTIONS ARE TAKEN BASED ON PERFORMANCE MEASUREMENTS

What is a Value Stream?

- Here's the textbook definition of a Value Stream,
  - Sequence of activities required to produce a specific good or service; along with information, materials, and work flows.
  - Value streams are organized so that the value stream manager has complete control and responsibility for entire flow.
  - Lean companies do not use conventional departmental organizations. They organize around their horizontal value streams.



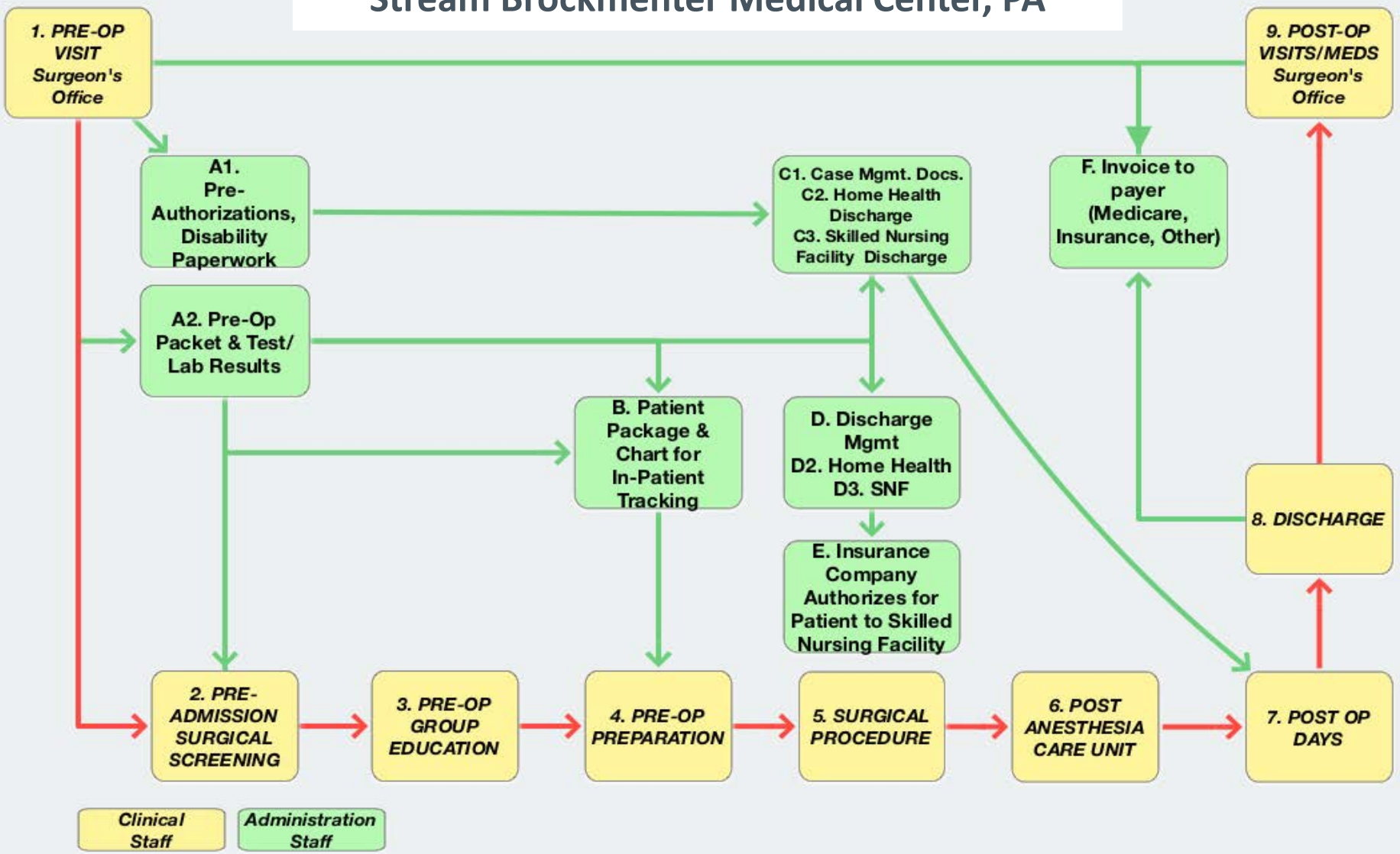
Purpose of Value Stream Performance Measurements

- Visual measurements that provide excellent operational control.
- Measurements that motivate people to lean improvement.
- Measurements that reflect the company's business strategy at every level.
- Measurements that are lean themselves & are gathered and reported simply, easily, frequently.
- Minimum number of measurements required to control & improve the business.

Use Measurements for Controlling, Learning, Problem Solving, & Improvement

Traditional Use	Lean Use
Measures the results.	Concerned with results and the process of getting results.
Top-down control. Authority Oriented.	Local control & responsibility
Hides the problems.	Reveals the problems & leads directly to solutions.
One-shot image. Success or failure based on targets.	Feedback loops to drive problem-solving, measure results, & learning.
Focus on control of resources, people, & results.	Focus on process & resources, standard work, & people development

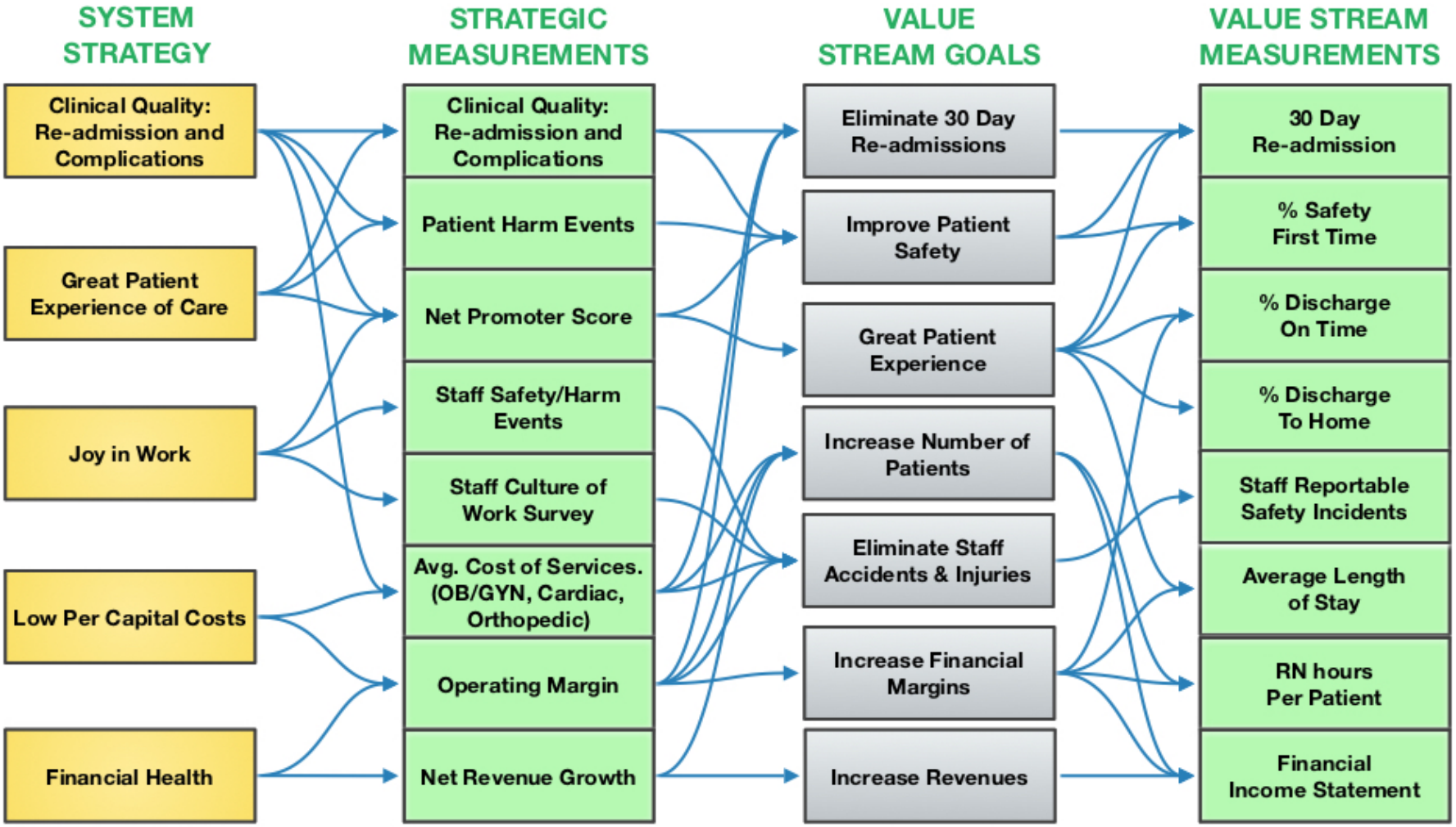
Value Stream Map for Hip and Knee Value Stream Brockmenter Medical Center, PA



FOR OUR PURPOSE, WE WILL DEFINE OUR VALUE STREAM AS IN-PATIENT PRE-OP PREPARATION (#4) THRU DISCHARGE (#8)

Performance Measurement Linkage Chart

Knee and Hip Replacement Value Stream



THE MEASUREMENTS USED BY LEAN COMPANIES ARE DIRECTLY LINKED TO THE COMPANY'S STRATEGY. MEASUREMENTS DRIVE STRATEGIC GOALS.

Lean Performance Measurement Linkage Chart

Managers from Rolls Royce Aero Engines using a Linkage Chart to Design their Lean Performance Measurement System:

- **Monthly plant measures.**
- **Weekly Value Stream measures.**
- **Daily cell & process measures.**

Derby, UK

Value Stream Performance Measurements

VALUE STREAM MEASUREMENTS

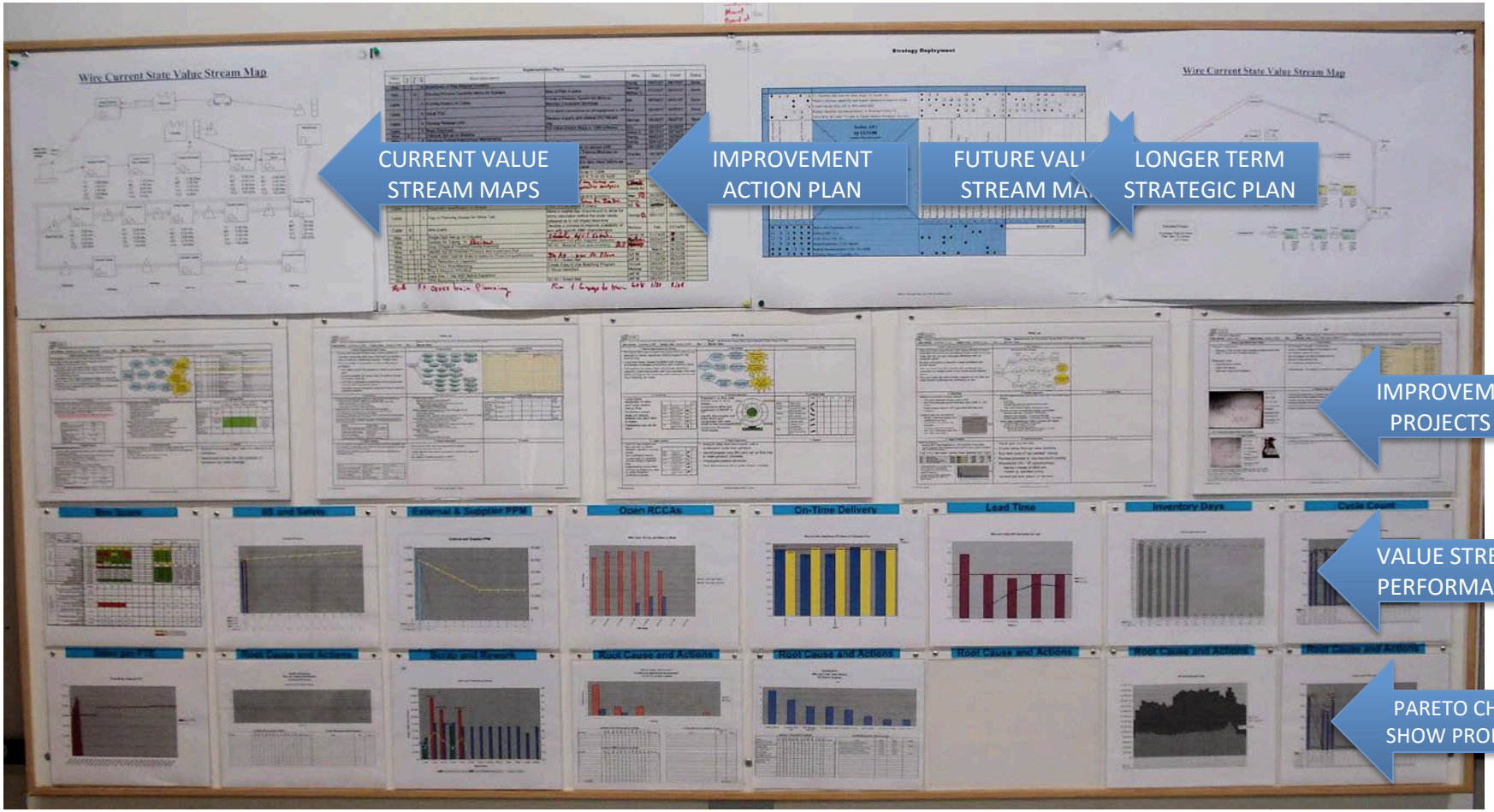
To monitor the value stream process.
To quickly identify problems when they occur.
To drive process improvement.

TYPICAL VALUE STREAM MEASUREMENTS

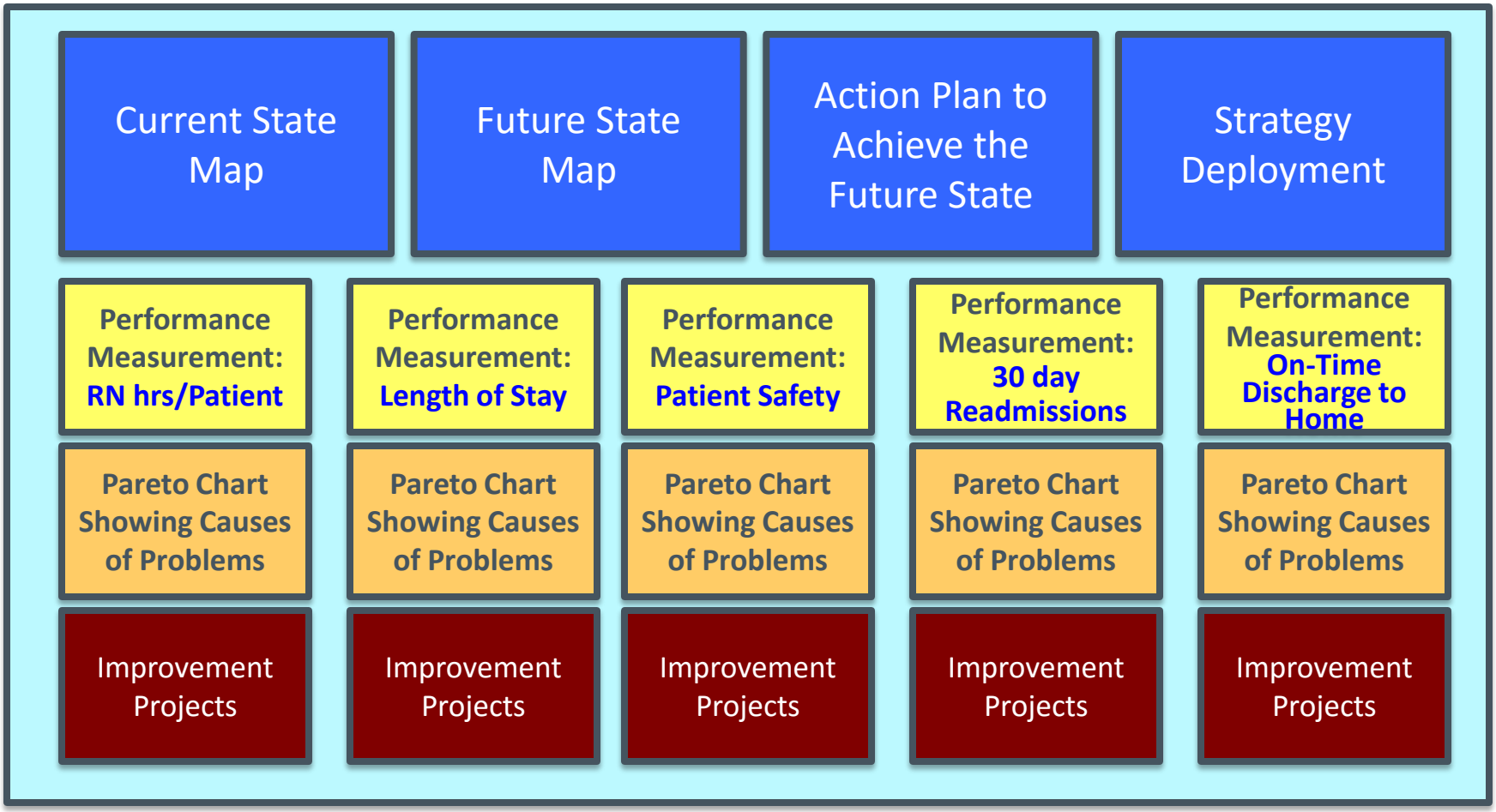
- **RN Hours/Patient**
- **Patient Safety**
- **Patient Length of Stay**
- **On-Time Discharge**
- **Discharge to Home**
- **Re-admission Rate**
- **Staff Reportable Safety Incidents**

VALUE STREAM MANAGERS HAVE FULL ACCOUNTABILITY FOR THE PATIENT CARE & SERVICES PROVIDED BY THEIR VALUE STREAMS.

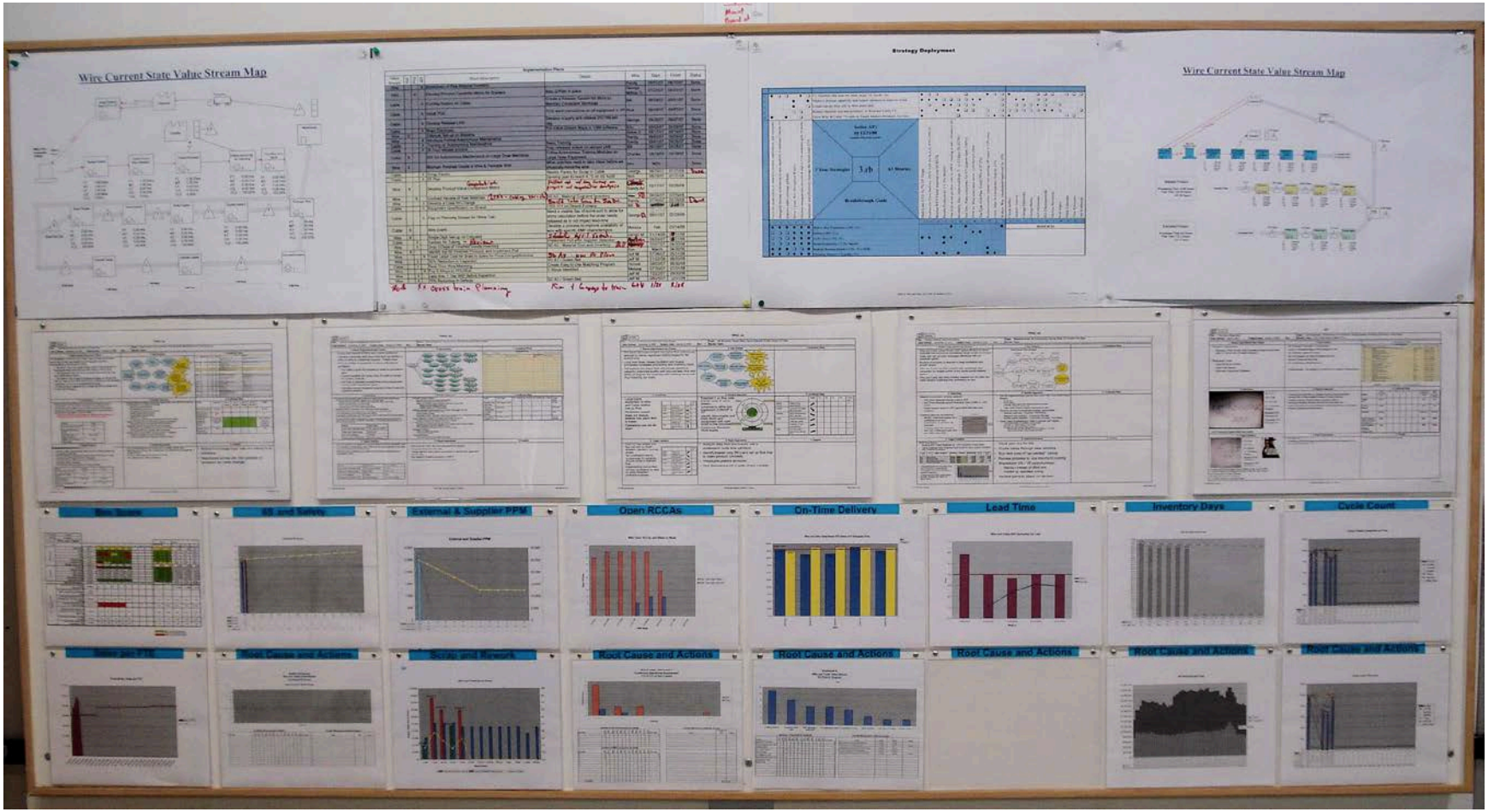
Value Stream Visual Performance Measurement Board



Value Stream Improvement Board



Value Stream Performance Measurement: Weekly Stand-Up Meeting



THE WEEKLY STAND-UP MEETING AROUND THE VALUE STREAM BOARD IS THE MOST IMPORTANT MEETING. A PLAN TO SERVE & A PLAN TO IMPROVE.

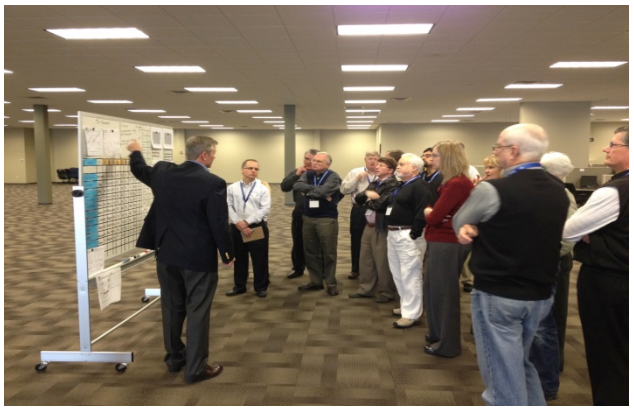
Keeping the Value Stream Board Updated

- The best way to maintain the board is for the people working in the area or department to update their own board.
- One person for each measurement updates the board each week:
  - Measurement to show this week's performance.
  - Pareto charts to understand the causes of the problems.
  - Monitor & manage the continuous improvement processes.
- Attend the weekly board meeting.

ENGAGE EVERYBODY. KEEP THE INFORMATION UP-TO-DATE.
MAKE THE BOARD THE PRIMARY PROCESS FOR CONTROL & IMPROVEMENT.

Using the Value Stream Visual Board

- Who attends the Value Stream Board stand-up meeting:
  - The value stream owner or manager
  - The people who work in the value stream. As many as practical.
  - People supporting the value stream including the lean improvement leader, accountant, trainer, administrative folks.



- Agenda for the Meeting
  - 10 mins on last week's & this week's work, issues, & related topics.
  - 10 mins for each person to comment on their work, priorities, problems, and needs.
  - 20 minutes on current problem-solving and lean kaizen improvement. Don't try to solve them; just make plans for this week.
  - Focus on the problems & the continuous improvement.

WEEKLY STAND-UP VALUE STREAM BOARD MEETING :
PLAN ACTIVITIES, IDENTIFY PROBLEMS, DRIVE LEAN IMPROVEMENT

Value Stream Accounting

VALUE STREAM REVENUES & COSTS

The value stream costs are tracked for the employees, contract labor, materials, services, and facility costs. Revenues come from Accounts Receivable. Avoid cost allocations; real costs needed.

TYPICAL VALUE STREAM FINANCIAL REPORTS

- Revenues, costs, and profits
- Average cost per patient
- Average cost for each kind of procedure
- Income or cost statement reviewed bi-weekly by the value stream staff.

VALUE STREAM MANAGERS HAVE FULL RESPONSIBILITY FOR THE PRODUCTS AND SERVICES PROVIDED BY THEIR VALUE STREAMS.

Wrap up:
Lean Performance Measurements Challenge

- Develop a set of measurements that thoroughly reflect the company's strategy and goals.
- Replace the traditional measures and accounting with measurements that are designed to motivate and monitor lean behavior.
- As people work to improve the results, they will be actively working to achieve the company's strategic goals.

BOX SCORE FOR WEEKLY PERFORMANCE REPORTING

Weekly Results for Hip and Knee Value Stream

		30-Sep	7-Oct	14-Oct	21-Oct	4-Nov	11-Nov	18-Nov	25-Nov	2-Dec	9-Dec	16-Dec	23-Dec	GOAL
OPERATIONS MEASURES	30-Day Readmission	0	0	1	0	0								0
	% Safety First Time	92%	93%	94%	94%	93%								95%
	% Discharge On-Time	92%	93%	93%	93%	90%								98%
	% Discharge to Home	84%	85%	86%	86%	86%								88%
	Average Length of Stay Hrs	54.0	53.7	53.5	53.2	53								52
	RN Hours/Patient	23.8	23.7	23.7	23.2	23.2								23.0
	Staff Safety Incidents	1	0	0	0	0								0
CAPACITY	RN Direct Capacity	38%	38%	40%	40%	40%								40%
	RN Indirect Capacity	45%	45%	42%	41%	41%								40%
	RN Available Capacity	17%	17%	18%	19%	19%								20%
FINANCIAL MEASURES	REVENUE	$1,047,964	$1,036,835	$1,044,544	$1,039,168	$1,030,246								$1,045,000
	Implants	$418,685	$428,361	$420,504	$408,094	$394,824								$350,000
	Drugs	$33,238	$34,091	$33,818	$33,521	$32,492								$31,000
	Medical Supplies	$92,415	$92,482	$92,165	$90,621	$92,748								$90,000
	Employee Costs	$175,856	$178,075	$174,672	$175,649	$175,193								$175,000
	All Other Costs	$44,918	$44,090	$44,102	$44,559	$44,067								$35,000
	PROFIT	$282,852	$259,736	$279,283	$286,724	$290,922								$364,000
	Return on Revenue	27%	25%	27%	28%	28%								35%

Try the ideas

Please go to Exercise 2 in the Exercise Packet:

Part 1: Assess Proposed Measures

Part 2: Should the Box Score include a measure proposed by the Joint Commission?

Financial Performance of the Value Stream

5. LEAN ACCOUNTING

Why Lean Accounting?

- Lean Accounting provides clear, simple, and understandable financial information for healthcare organizations.
- Lean Accounting shows timely and relevant financial reports for leaders throughout your health care organization.
- Lean Accounting enables busy people to control and improve their financial decisions, and maximize the benefits to the patients and the company.
- Lean Accounting uses and supports lean management by eliminating waste, creating productive operations, reducing costs, and increasing revenues and profits.

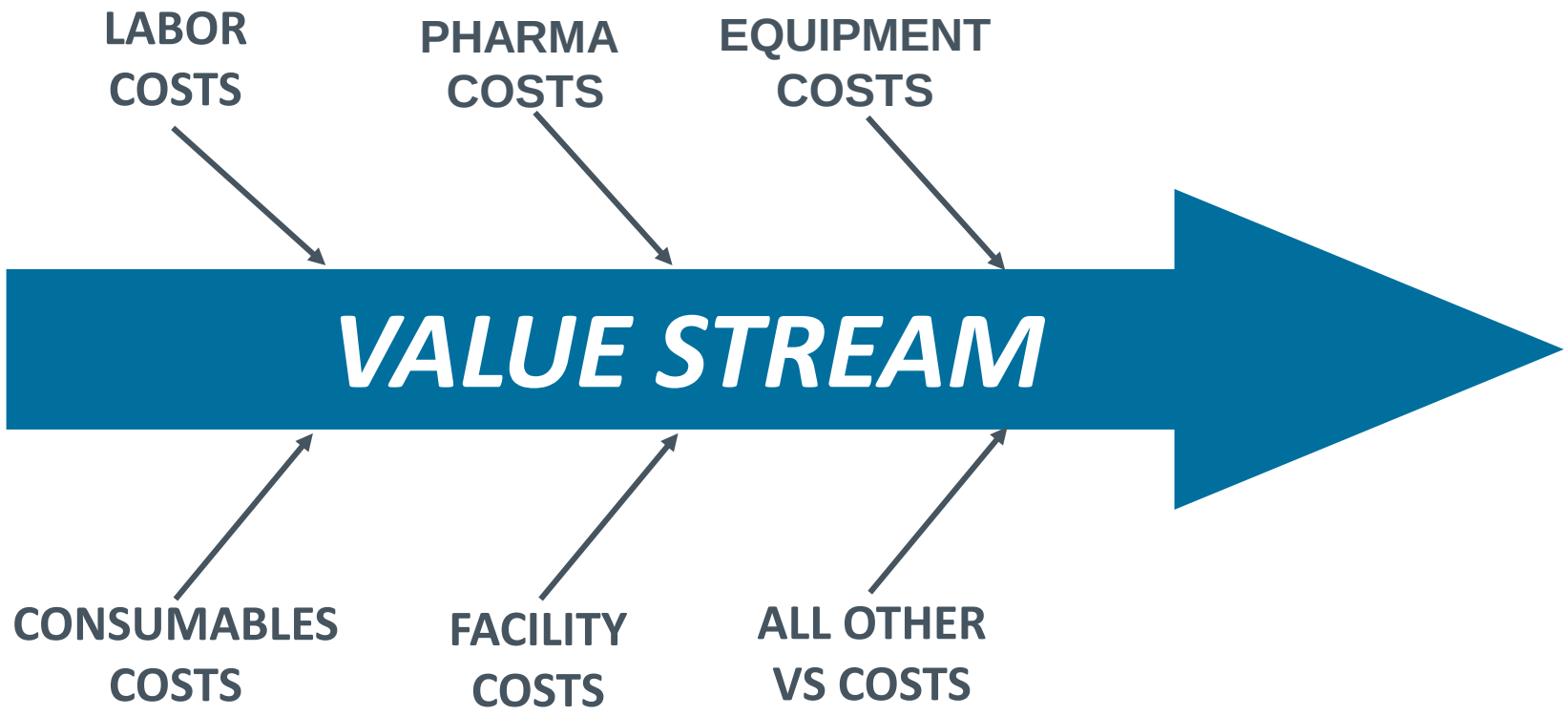
BETTER INFORMATION. EASILY UNDERSTANDABLE BY EVERYONE.
LESS TIME WASTED ON ADMIN. BETTER OPERATIONAL & CLINICAL RESULTS.

Value Stream Accounting

- Lean Financial Accounting:
  - Shows the revenues, costs, & profits for each VALUE STREAM.
  - NOT by departments, services, or procedures.
  - Lean Accounting controls & improves the flow.
- Lean Financial Accounting simply shows the financial results of the value stream each week (or other interval).
- Lean Financial Accounting focuses on actual direct costs, and largely eliminates cost allocations.
- The Value Stream Managers are fully responsible for the revenues, costs, and profits.

THE PURPOSE OF VALUE STREAM ACCOUNTING IS TO CONTROL AND REDUCE COSTS, AND INCREASE REVENUES & PROFITS.

Value Stream Accounting Uses Actual Costs



ACTUAL COSTS: PEOPLE, PHARMACEUTICALS, IMPLANTS, EQUIPMENT, CONSUMABLES, SUPPORT SERVICES, FACILITES, ETC.. CHARGED DIRECTLY WITH LITTLE OR NO ALLOCATION.

Value Stream Accounting: Example Income Statement

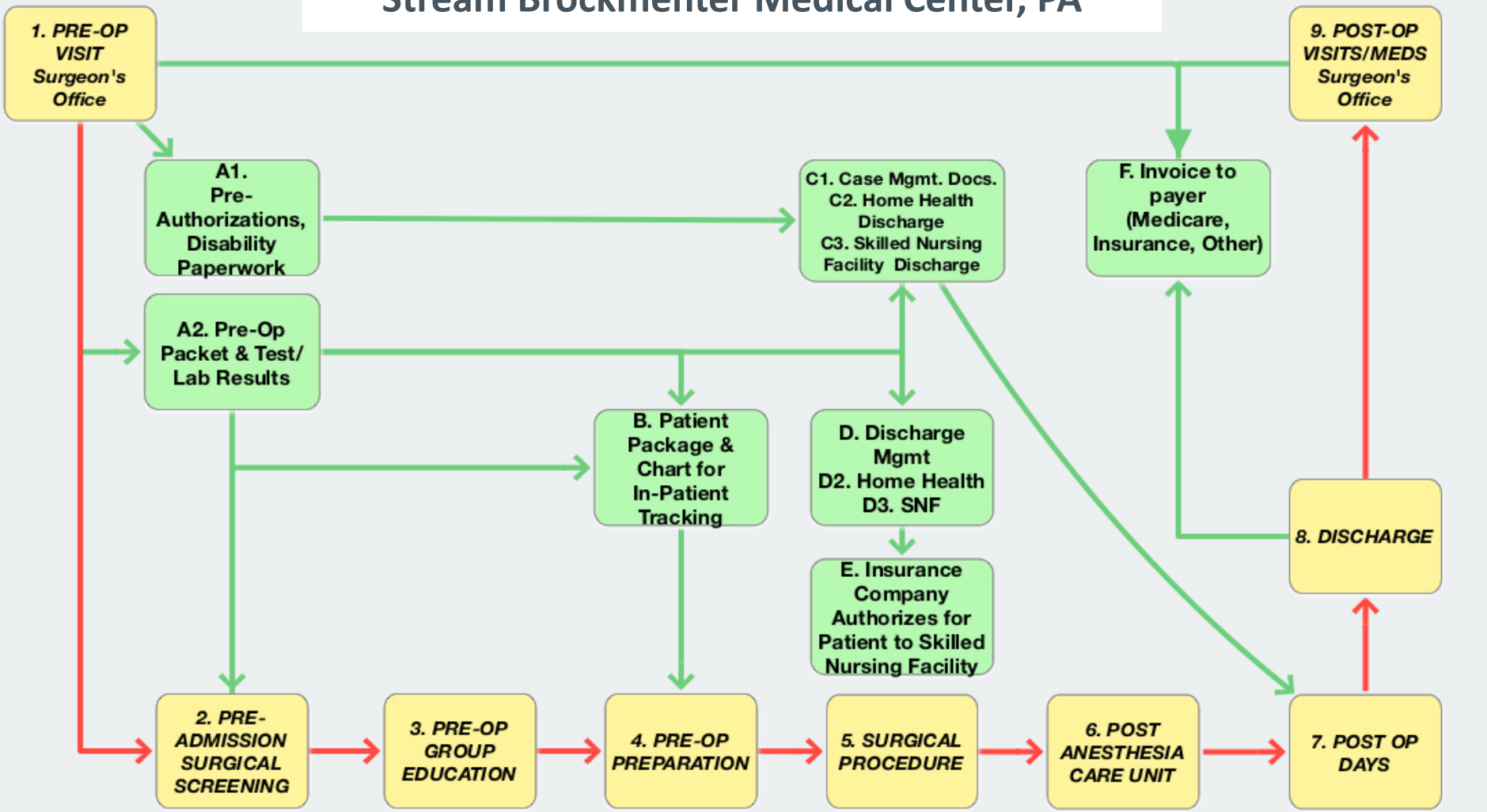
BROCKMENTER HEALTHCARE CORP.		WEEK
HIP AND KNEE VALUE STREAM		NOV 11 2017
INCOME STATEMENT SUMMARY	REVENUE	$1,045,980
	EMPLOYEE COSTS	$176,436
	IMPLANTS	$416,448
	PHARMACEUTICALS	$33,048
	MEDICAL SUPPLIES	$91,152
	OVERTIME	$4,914
	CONTRACT EMPLOYEES	$-
	OTHER COSTS	$9,709
	FACILITIES (SQUARE FEET)	$29,201
	PHYSICAL THERAPY	$-
	PROFIT	$285,072
35%	HURDLE RATE	27%

THIS IS THE VALUE STREAM WE WILL BE LOOKING AT IN DETAIL

Sources of Value Stream Costs

Cost Category	*Basis for Charging*	*Source of Data*
Implants	Supplier Purchase Order	Purchase journal
Employees	When paid	Payroll system
Contractors	When paid	Expense Invoice
Pharmaceuticals	Supplier Purchase Order	Purchases journal
Consumables	PO or Receiving Document	General Journal
Facilities	Square feet occupied	Standard Journal Entry
Other Costs	Voucher on receipt	Credit card payment

Value Stream Map for Hip and Knee Value Stream Brockmenter Medical Center, PA



Collect Actual Costs Based on Value Stream Map Resources

BROCKMENTER HEALTHCARE	HIP & KNEE VALUE STREAM		
	QUANTITY	AVERAGE	AMOUNT
REVENUE	54	$19,370	$1,045,980
EMPLOYEE COSTS -			
Clinical Staff -	74	$1,811	$134,014
Management/Supervisors -	10	$3,523	$35,230
Admin Staff -	8	$899	$7,192
IMPLANTS -	54	$7,712	$416,448
PHARMACEUTICALS -	54	$612	$33,048
MEDICAL SUPPLIES -	54	$1,688	$91,152
OVERTIME -	54	$91	$4,914
CONTRACT EMPLOYEES -	0	$1,800	$-
OTHER COSTS -	1	$9,709	$9,709
FACILITY COSTS/SQ FT -	64892	$0.45	$29,201
PHYSICAL THERAPY -	0	$-	$-
TOTAL COSTS -			$760,908
PROFIT			$285,072
Hurdle Rate	35%		27%

Value Stream P&L Statement

BROCKMENTER HEALTHCARE	HIP & KNEE VALUE STREAM		NOV 11 2017
PROFIT & LOSS STATEMENT		Patients:	54
	Weekly Amount	Per Patient	Revenue%
REVENUE	$1,045,980	$19,370	100%
Employee Costs	$176,436	$3,267	16.87%
Implants	$416,448	$7,712	39.81%
Pharmaceuticals	$33,048	$612	3.16%
Medical Supplies	$91,152	$1,688	8.71%
Overtime	$4,914	$91	0.47%
Contract Employees	$-	$-	0.00%
Other Costs	$9,709	$180	0.93%
Facilities Costs/SqFt	$29,201	$541	2.79%
Physical Therapy	$-	$-	0.00%
TOTAL COSTS	$760,908	$14,091	73%
PROFITS	$285,072	$5,279	27%
Hurdle Rate			35%

CASH FLOW			
Implant Inventory	$1,341,027	16.1	Days
Accounts Receivable	$7,531,336	36	Days
Accounts Payable	$3,389,236	-29	Days

LEAN ACCOUNTING FINANCIAL REPORTS ARE IMMEDIATELY UNDERSTOOD.
NO COMPLICATED ACCOUNTING OR JARGON.

Weekly Income Statement for Brockmenter Orthopedic Service Lines

	VALUE STREAMS			
	Hip and Knee	Other	SUPPORT COSTS	Total Service Line
REVENUE	$1,046,005	$106,597	$0	$1,152,602
EMPLOYEE COSTS	$176,430	$14,489	$8,153	$199,072
IMPLANTS	$416,468	$35,721		$452,189
DRUGS	$33,053	$8,401		$41,454
MEDICAL SUPPLIES	$91,169	$13,190		$104,359
OVERTIME	$4,913	$2,382		$7,295
CONTRACT EMPLOYEES	$0	$2,860		$2,860
OTHER COSTS	$9,709	$2,382	$207	$12,298
FACILITIES	$29,039	$7,864	$2,010	$38,913
PHYSICAL THERAPY	$0	$0		$0
VALUE STREAM PROFIT	$285,224	$19,307	-$10,370	$294,162
RETURN %	27%	18%		26%

REVENUES			
	Gross Sales	$ 32,332,000	
	Adjustments	$ (162,000)	
	Adjusted Sales	$ 32,170,000	
VARIABLE COSTS			
	Sales Rep Commission	$ 2,428,000	7.5%
	Materials Purchased	$ 7,853,000	24.4%
	Contribution Margin	$ 21,889,000	68.0%
FIXED COSTS			
	Wages & Fringes	$ 10,930,000	34.0%
	Supplies & Tooling	$ 1,523,000	4.7%
	Depreciation	$ 465,000	1.4%
	Travel	$ 158,000	0.5%
	Outside Services	$ 1,554,000	4.8%
	Professional Services	$ 69,000	0.2%
	Scrap & Warranty	$ 468,000	1.5%
	Rentals	$ 118,000	0.4%
	Advertising & Exhibits	$ 27,000	0.1%
	Recruitment	$ 28,000	0.1%
	Utilities	$ 247,000	0.8%
	Other Conversion Costs	$ 26,000	0.1%
	Other Support Costs	$ 2,000	0.0%
		$ 15,615,000	48.5%
OPERATING PROFIT		$ 6,274,000	19.5%

"Plain English" Financial Statements

Clear, Simple, Understandable & Actionable

This one is from a manufacturing company, but it works the same in health care.

13 Weeks Value Stream Income Statement Manufacturing Example

Orchestral	Week-01 (04/20/14-04/26/14)	Week-02 (04/27/14-05/03/14)	Week-03 (05/04/14-05/10/14)	Week-04 (05/11/14-05/17/14)	Week-05 (05/18/14-05/24/14)	Week-06 (05/25/14-05/31/14)	Week-07 (06/01/14-06/07/14)	Week-08 (06/08/14-06/14/14)	Week-09 (06/15/14-06/21/14)	Week-10 (06/22/14-06/28/14)	Week-11 (06/29/14-07/05/14)	Week-12 (07/06/14-07/12/14)	Week-13 (07/13/14-07/19/14)	Rolling 13 Week Average
Revenue														
Branded	128,477	147,614	194,749	154,627	179,483	123,957	136,520	162,473	212,616	186,546	96,429	210,281	131,857	158,895
OEM/PL	87,923	29,370	17,599	55,693	60,452	65,159	23,102	10,820	54,170	70,658	50,776	42,159	28,171	45,850
Gross Sales	**216,400**	**176,984**	**212,348**	**210,320**	**239,935**	**189,116**	**159,622**	**173,294**	**266,787**	**257,204**	**147,205**	**252,440**	**160,028**	**204,745**
Adjustments - Invoice Discounts	(1,755)	(640)	(632)	(588)	(650)	(384)	(923)	(1,609)	(2,272)	(615)	(785)	(1,210)	(1,757)	(1,063)
Adjustments - Price Adjustments	(185)	(1,465)	-	-	(738)	-	-	-	-	(791)	-	(2,739)	(660)	(506)
Adjustments - Endorsee Discounts	(1,356)	(1,497)	(1,117)	(647)	(1,242)	(1,961)	(883)	(2,163)	(655)	(2,733)	(1,447)	(683)	(1,300)	(1,360)
Adjustments - Rebates	(1,092)	(1,254)	(1,655)	(1,314)	(1,525)	(1,054)	(1,160)	(1,381)	(1,807)	(1,586)	(820)	(1,787)	(1,121)	(1,351)
Total Adjustments	**(4,388)**	**(4,857)**	**(3,405)**	**(2,549)**	**(4,156)**	**(3,399)**	**(2,967)**	**(5,153)**	**(4,734)**	**(5,725)**	**(3,051)**	**(6,420)**	**(4,838)**	**(4,280)**
Net Revenue	**$ 212,012**	**$ 172,127**	**$ 208,943**	**$ 207,771**	**$ 235,779**	**$ 185,717**	**$ 156,655**	**$ 168,140**	**$ 262,052**	**$ 251,479**	**$ 144,154**	**$ 246,021**	**$ 155,190**	**$ 200,465**
Operating Expenses														
Material	75,341	27,836	55,866	23,666	10,016	17,552	31,559	33,791	37,794	30,022	17,034	31,856	13,722	31,235
Freight and Landing Costs	414	1,792	942	327	429	1,471	194	2,304	510	137	1,755	2,315	1,512	1,085
Printing	-	9,364	-	-	-	7,949	-	-	-	-	12,364	-	-	2,283
Outside services	2,691	1,313	2,008	1,870	786	268	1,954	933	1,426	1,957	1,204	2,800	2,416	1,664
Labor-Reg	28,032	35,873	34,847	39,032	36,192	75,196	(8,550)	39,182	36,724	38,702	35,017	29,154	33,248	34,819
Labor OT	1,703	2,214	1,936	2,140	2,334	3,138	(642)	1,446	1,517	1,429	651	701	1,468	1,541
Hol/Sick/PTO	8,759	2,530	3,631	935	3,491	5,456	6,945	2,501	3,137	3,422	4,456	11,592	2,936	4,599
Supplies	456	342	977	982	254	645	719	697	326	498	886	1,205	991	691
Facilities	21,768	22,967	22,967	22,967	22,967	20,486	20,486	20,486	20,486	20,486	22,520	22,520	22,520	21,817
Repairs and Maintence	1,244	5,622	-	-	612	-	-	889	1,025	2,558	-	-	886	987
Direct Promotionals	2,298	2,756	3,078	1,988	2,243	2,945	3,117	990	1,255	3,211	4,566	2,641	1,005	2,469
Subtotal Operating Expenses	**$ 142,706**	**$ 112,611**	**$ 126,253**	**$ 93,907**	**$ 79,323**	**$ 135,106**	**$ 55,782**	**$ 103,218**	**$ 104,200**	**$ 102,422**	**$ 100,453**	**$ 104,783**	**$ 80,703**	**$ 103,190**
Operating Margin w/Material	**$ 69,306**	**$ 59,517**	**$ 82,690**	**$ 113,863**	**$ 156,456**	**$ 50,611**	**$ 100,873**	**$ 64,922**	**$ 157,852**	**$ 149,058**	**$ 43,701**	**$ 141,238**	**$ 74,486**	**$ 97,275**
	32.7%	34.6%	39.6%	54.8%	66.4%	27.3%	64.4%	38.6%	60.2%	59.3%	30.3%	57.4%	48.0%	48.5%

Mfg Value Streams

Monument Costs

- A monument is a shared facility or an important piece of equipment that is shared by more than one value stream.
  - At first you will have to allocate the monument costs.
  - Over time you will “right size” the facility or equipment so each value stream has its own dedicated equipment.
- When you first start, you may need to have people work in more than one value stream.
  - A soon as possible, cross-train the people so that the value stream has its own, full-time employees.

WORK TO ELIMINATE MONUMENTS. GET REAL ACTUAL NUMBERS; NOT A BUNCH OF COST ALLOCATIONS & ASSUMPTIONS.

What Must Be In Place for Value Stream Costing to be Effective?

- Reporting should be by value stream - not by department
- Ideally everybody assigned to a single value stream with little or no overlap
- Few (or no) shared services departments. Try to eliminate monuments
- Working processes reasonably under control and low variability.
- Thorough tracking of “out-of-control” situations leading to continuous improvement.
- Inventory must be under control, relatively low, and consistent.

Lean Thinking:

Make it simple by eliminating the causes of complexity

Value Stream Costing

- All costs are considered *direct* and are posted to the value stream profit center on the General Ledger.
  - Very few cost/profit centers
- All value stream costs are included
  - Productive, Non-productive, available capacity
  - Direct, support, administrative
- No *overhead* costs are allocated; direct costs only. If they are in the value stream they are *direct*; if not they are excluded.
- Average Cost is often used as a value stream performance measurement.

BOX SCORE FOR WEEKLY PERFORMANCE REPORTING

Weekly Results for Hip and Knee Value Stream

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	Implants	$418,685	$428,361	$420,504	$408,094	$394,824								$350,000
	Drugs	$33,238	$34,091	$33,818	$33,521	$32,492								$31,000
	Medical Supplies	$92,415	$92,482	$92,165	$90,621	$92,748								$90,000
	Employee Costs	$175,856	$178,075	$174,672	$175,649	$175,193								$175,000
	All Other Costs	$44,918	$44,090	$44,102	$44,559	$44,067								$35,000
	PROFIT	$282,852	$259,736	$279,283	$286,724	$290,922								$364,000
	Return on Revenue	27%	25%	27%	28%	28%								35%

Lean Value Stream Accounting is Designed for Humans !!

- Simple and a Lot Less Work
- Everybody Can Understand the Reports and Use Them
- Better Decisions Lead to Higher Revenues and Lower Costs
- Creates Teamwork, Ownership, and Accountability in the Value Stream
- Maximize Profits & Cash Flow through Lean Improvement

MAKING THE NUMBERS COUNT FOR THE PATIENTS, PHYSICIANS, NURSES, ADMINSTRATORS, ACCOUNTANTS, BOSSES – EVERYONE.

Try the ideas

Please go to Exercise 3 in the Exercise Packet:

Part 1: Adjust the Income Statement
Part 2: Monument Question

6. CAPACITY

Understanding Value Stream Capacity

- Capacity: measure of patient care achieved at each step in the value stream or production process.
- There are usually one or two production steps (work units or departments) that constrain the flow through the value stream or business unit.
- We need to identify the production capacity at each step in the value stream (or production flow) so that we can understand the flow through the entire process.
- Where are the data required for this analysis?

  On the Value Stream Maps!

Analyzing the capacity: Three Types

- Direct capacity
- Indirect capacity
- Available capacity

Direct Capacity

- Direct care (hands on) for patient
- Provides immediate value to the patient

EXAMPLE OF DIRECT CAPACITY

Personal Care (washing/dressing)

Medication administration

Rounding (skin care, wound, drain, catheter maintenance)

Clinical (COPD bundles, Asthma Action, IPC care)

Patient Education

Indirect capacity

- communication
- documentation
- set-up
- training time
- meeting time
- delays (wait for replies to questions, wait for equipment or supplies, wait to move to next process step)
- work to correct or solve problems in immediate care

EXAMPLE OF INDIRECT CAPACITY

Relatives

Social (MDT's case conferences)

Communication (handovers, huddles, ward rounds)

Paperwork (notes, bundles)

Medication preparation (making IV's, infusions)

Available Capacity

Capacity that is not currently being use for direct or indirect activities.

Available Capacity = Total Capacity

- Direct Capacity
- Indirect Capacity

In-patient portion of value stream: RN capacity

4. PRE-OP (day of surgery)

	Number	Units
Volume	216	patients
Pt cycle time	90	minutes/patient
RN pt direct time	38	minutes/patient
RN pt indirect time	32	minutes/patient
RN cell admin time	30	minutes/shift
# cells	2	3 pt rooms
Crew size	1	RN
# RNs	3	RN
shift length	7	hours (net of breaks)
# shifts	1	count

5. SURGICAL PROCEDURE

	Number	Units
Volume	216	patients
Pt cycle time	120	minutes/patient
RN pt direct time	47	minutes/patient
RN pt indirect time	254	minutes/patient
RN cell admin time	30	minutes/shift
# cells	6	OR
*Crew size	2	RN (circ and scrub)
# RNs	13	RN
shift length	7	hours (net of breaks)
# shifts	1	count

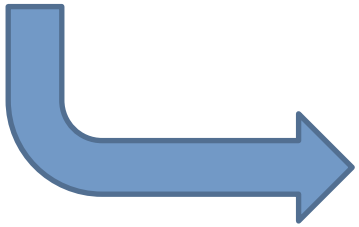
6. POST ANESTHESIA CARE UNIT

	Number	Units
Volume	216	patients
Pt cycle time	120	minutes/patient
RN pt direct time	16	minutes/patient
RN pt indirect time	50	minutes/patient
RN cell admin time	60	minutes/shift
# cells	3	double PACU bays
Crew size	1	RN
# RNs	4	RN
shift length	8	hours (net of breaks)
# shifts	1	count

7. POST OP DAYS

8. DISCHARGE

	Number	Units
Volume	56	patients
Pt cycle time	46	hours/patient
RN pt direct time	6.833333	hours/patient
RN pt indirect time	3	hours/patient
RN cell admin time	0.5	hours/shift
# cells	varies	4 to 5 rooms
Crew size	1	RN
# RNs	varies	RN
shift length	7	hours (net of breaks)
# shifts	101	count



	Number	Units
Volume	216	Patients/**month**
Pt Cycle Time	90	minutes/patient
RN pt direct time	38	minutes/patient
RN pt indirect time	32	minutes/patient
RN cell admin time	30	minutes/shift
# cells	2	3 rooms for patients
Crew size	1	RN
# RNs	3	RN
shift length	7	hours (net of breaks)
# shifts	1	count

Cycle Time

How long it takes for a patient to receive care from a process. (or: the time taken for a care team member to go through all his/her work elements before repeating them for the next patient.)

- Cycle time includes all activities (value-adding and non-value adding)
- Cycle time is measured by tracking it with a stop watch
- The process is *"under [management] control"* if the cycle time is consistent.

Crew size and number of cells

- Crew size: the number of people in the operation required to produce to the cycle time recorded on the Value Stream Map

- # of cells: the number of cells running in parallel. Similar cells, working on the same products and performing the same process step.

RN Crew size for Surgery = 2

# of cells = 6 ORs

Calculate Capacity of Pre-Op

4. PRE-OP (day of surgery)

	Number	Units
Volume	216	patients
Pt cycle time	90	minutes/patient
RN pt direct time	38	minutes/patient
RN pt indirect time	32	minutes/patient
RN cell admin time	30	minutes/shift
# cells	2	3 pt rooms
Crew size	1	RN
# RNs	3	RN
shift length	7	hours (net of breaks)
# shifts	1	count

5. SURGICAL PROCEDURE

	Number	Units
Volume	216	patients
Pt cycle time	120	minutes/patient
RN pt direct time	47	minutes/patient
RN pt indirect time	254	minutes/patient
RN cell admin time	30	minutes/shift
# cells	6	OR
*Crew size	2	RN (circ and scrub)
# RNs	13	RN
shift length	7	hours (net of breaks)
# shifts	1	count

6. POST ANESTHESIA CARE UNIT

	Number	Units
Volume	216	patients
Pt cycle time	120	minutes/patient
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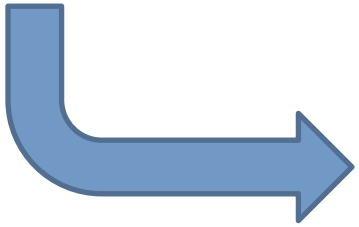
RN cell admin time	60	minutes/shift
# cells	3	double PACU bays
Crew size	1	RN
# RNs	4	RN
shift length	8	hours (net of breaks)
# shifts	1	count

7. POST OP DAYS

	Number	Units
Volume	56	patients
Pt cycle time	46	hours/patient
RN pt direct time	6.833333	hours/patient
RN pt indirect time	3	hours/patient
RN cell admin time	0.5	hours/shift
# cells	varies	4 to 5 rooms
Crew size	1	RN
# RNs	varies	RN
shift length	7	hours (net of breaks)
# shifts	101	count

8. DISCHARGE



	Number	Units
Volume	216	Patients/**month**
Pt Cycle Time	90	minutes/patient
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RN cell admin time	30	minutes/shift
# cells	2	3 rooms for patients
Crew size	1	RN
# RNs	3	RN
shift length	7	hours (net of breaks)
# shifts	1	count

Calculate the RN capacity

Step 1. Calculate the Total Available RN Time
- (#RNs x #days x Work Hrs per shift)

Step 2. Calculate the Direct Care Time
- (# Pts per month x Direct Care Time per patient x Crew Size)

Step 3. Calculate the *Direct Capacity Percentage*
- (Direct Care Time / Total Available Time) x 100

Step 4. Calculate the Indirect Time components
- (RN cell admin time per shift x # cells x Crew Size)
- (# Pts per month x RN indirect care time per patient x Crew Size)

Step 5. Calculate the Total Indirect Time
- Sum of Step 4

Step 6. Calculate the *Indirect Capacity Percentage*
- (Total Indirect Time/ Total Available Time) x 100

Step 7. Calculate the *Emp. Available Capacity Percentage*
- 100% - (Direct Capacity + Indirect Capacity)

Pre-Op RN Capacity per Month

1	Total RN Time: 3 x 16 x 7	336 hrs
2	Total RN Direct Care Time: 216 x (38/60) x 1	137 hrs
3	RN Direct Capacity: (137/338) x 100	41%
4	Indirect Time:	
	RN Cell admin: 16 x 0.5 x 3	24 hrs
	RN Indirect Care Time: 215 x (32/60) x 1	115 hrs
5	Total RN Indirect Time: 24 + 115	139 hrs
6	RN Indirect Capacity: (139/338) x 100	41%
7	Available Capacity: 100 - (41 + 41)	18%

Pre-Op Capacity: Staff vs Facility

	RNs	Rooms
Direct Capacity	41%	48%
Indirect Capacity	41%	16%
Available Capacity	18%	36%

In the Pre-op unit, there is more physical capacity than RN staff capacity with the current staffing model.

(Facility capacity calculated analogously to the RN capacity; at Brockmenter, facility capacity is greater than RN staff capacity at each step.)

Value Stream: RN Capacity

	Pre-Op Day of Surgery	Surgery	PACU	In- Patient/ Discharge
RN Direct Capacity	41%	12%	13%	54%
RN Indirect Capacity	41%	70%	61%	30%
Available Capacity	18%	18%	26%	16%

Value Stream Demand = 216 patients per month

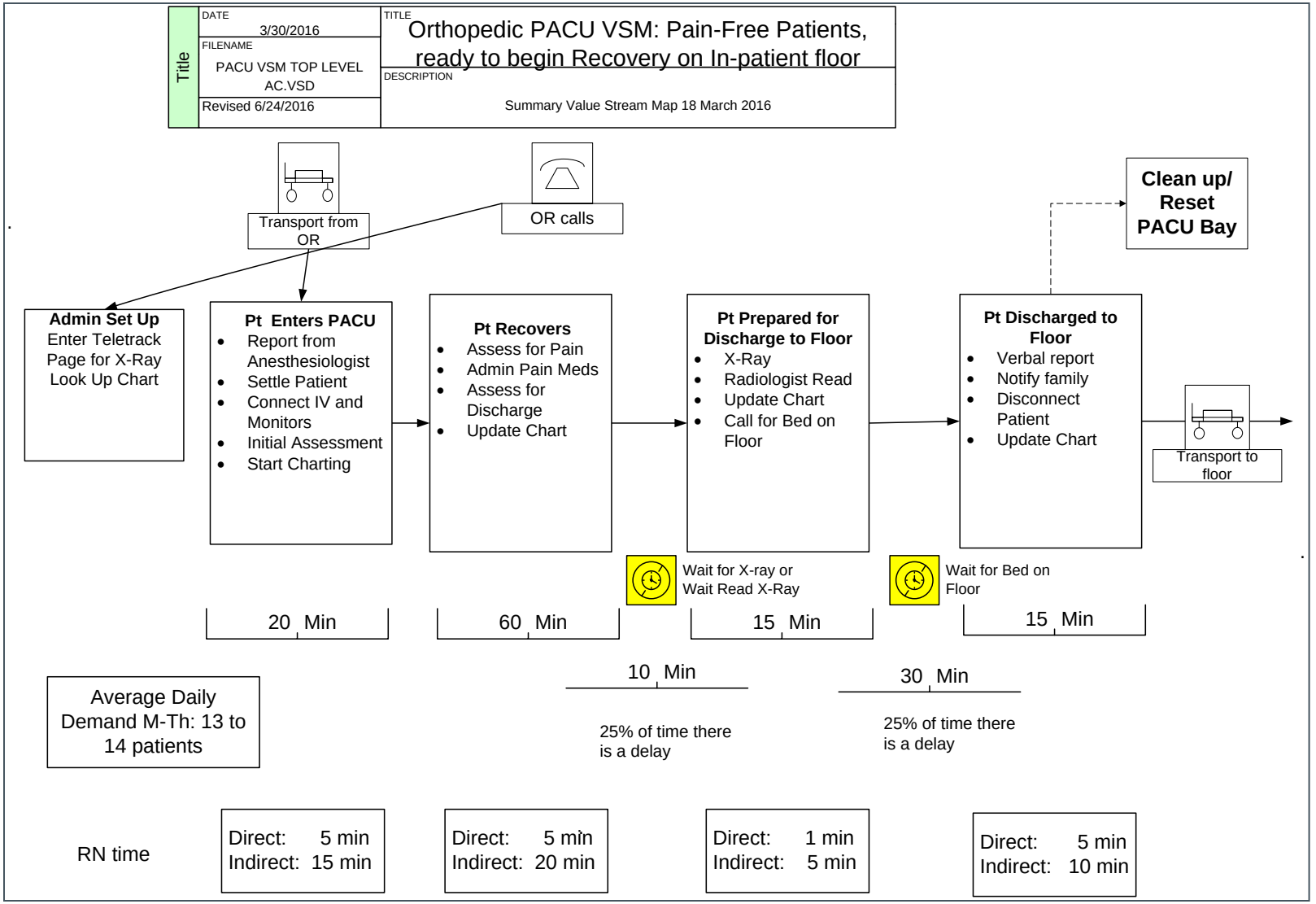
BOX SCORE FOR WEEKLY PERFORMANCE REPORTING

Weekly Results for Hip and Knee Value Stream

		30-Sep	7-Oct	14-Oct	21-Oct	4-Nov	11-Nov	18-Nov	25-Nov	2-Dec	9-Dec	16-Dec	23-Dec	GOAL
OPERATIONS MEASURES	30-Day Readmission	0	0	1	0	0								0
	% Safety First Time	92%	93%	94%	94%	93%								95%
	% Discharge On-Time	92%	93%	93%	93%	90%								98%
	% Discharge to Home	84%	85%	86%	86%	86%								88%
	Average Length of Stay Hrs	54.0	53.7	53.5	53.2	53								52
	RN Hours/Patient	23.8	23.7	23.7	23.2	23.2								23.0
	~~Staff Safety Incidents~~	~~1~~	~~0~~	~~0~~	~~0~~	~~0~~								~~0~~
CAPACITY	RN Direct Capacity	38%	38%	40%	40%	40%								40%
	RN Indirect Capacity	45%	45%	42%	41%	41%								40%
	RN Available Capacity	17%	17%	18%	19%	19%								20%
FINANCIAL MEASURES	REVENUE	$1,047,964	$1,036,835	$1,044,544	$1,039,168	$1,030,246								$1,045,000
	Implants	$418,685	$428,361	$420,504	$408,094	$394,824								$350,000
	Drugs	$33,238	$34,091	$33,818	$33,521	$32,492								$31,000
	Medical Supplies	$92,415	$92,482	$92,165	$90,621	$92,748								$90,000
	Employee Costs	$175,856	$178,075	$174,672	$175,649	$175,193								$175,000
	All Other Costs	$44,918	$44,090	$44,102	$44,559	$44,067								$35,000
	PROFIT	$282,852	$259,736	$279,283	$286,724	$290,922								$364,000
	Return on Revenue	27%	25%	27%	28%	28%								35%

PACU Process Example

6A: DIRECT AND INDIRECT TIME DETAILS



- Average Patient Cycle Time: **120 minutes**
- RN Pt Direct Time: **16 minutes**
- RN Pt Indirect Time: 50 minutes; Average Waiting Between Steps: 10 minutes
- Total RN Indirect Time: 50 + 10 = **60 minutes**

From Observations to Data Table

	Number	Units
Volume	216	patients/month
Pt cycle time	**120**	minutes/patient
RN pt direct time	**16**	minutes/patient
RN pt indirect time	**60**	minutes/patient
RN cell admin time	60	minutes/shift
# cells	3	double PACU bays
Crew size	1	RN
# RNs	3.5	RN
shift length	8	hours (net of breaks)
# shifts	1	count

7. BOX SCORE & MANAGE-MENT STANDARD WORK

The Box Score is an Important Document

- The Box Score is ***standard work*** for reporting the performance of the value streams.
- Whenever performance information is needed, or decisions to be made, or insight required for kaizen events, value stream mapping, or long-term projects or planning ….. You will need to use a Box Score.
- Box Scores are required, one-page documents for lean control, measurement, reporting, decision-making, planning, and improvement.

Box Score: Impact of Potential Decisions Example

- Standardizing on fewer implant models (and vendors) is one way to reduce costs of joint replacement surgeries.*
- Suppose that one standardization option appears to yield an 8% decrease in implant costs.
- How would the value stream managers use the Box Score to inform a decision with surgeons and vendors that reduces implant models?

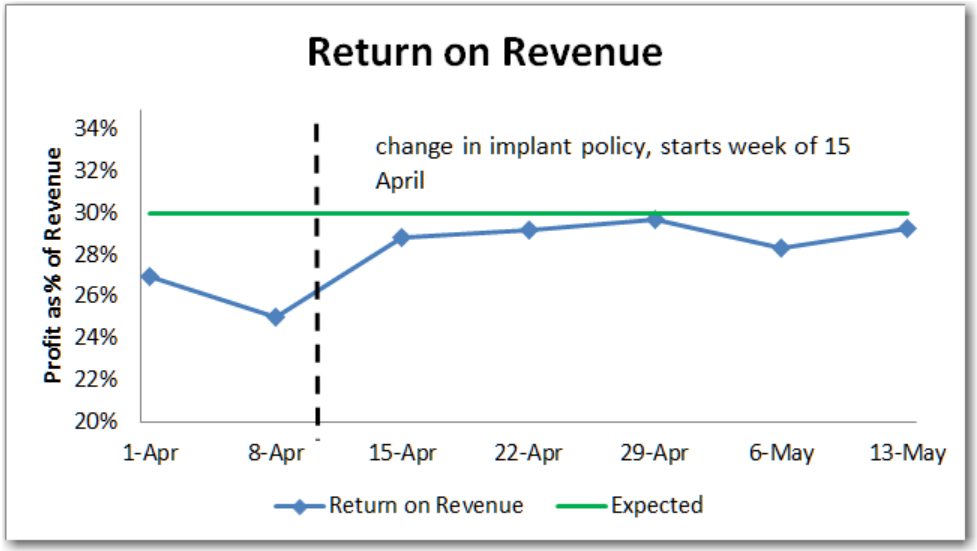
*Duncan J, Mate K. New payment models drive value. Healthcare Executive. 2016 Nov;31(6):64-66. http://www.ihi.org/resources/Pages/Publications/New-Payment-Models-Drive-Value.aspx

Think Through The Impact

		Current State	Standardize Implants (avg 8% cost reduction)		
Value Stream Performance Measurements	30-day Readmissions	0	0		
	% Safety First Time	94%	94%		
	% Discharge on Time	95%	95%		
	% Discharge to Home	84%	84%		
	Average LOS (hrs)	52.5	52.5		
	RN Hours/Patient	23.5	23.5		
	Staff Reportable Safety Incidents	1	1		
Value Stream Capacity	RN Direct Capacity	38%	38%		
	RN Indirect Capacity	45%	45%		
	RN Available Capacity	17%	17%		
Value Stream Financials	REVENUE	$1,046,005	$1,046,005		
	Implants	$416,468	$383,151		
	Drugs	$33,053	$33,053		
	Medical Supplies	$91,169	$91,169		
	Employee Costs	$176,430	$176,430		
	All other Costs	$43,661	$43,661		
	PROFIT	$285,224	$318,541		
	Return on Revenue	27%	30%		

Do you believe no impact on Performance and Capacity?

And after a decision, monitor (PDSA)

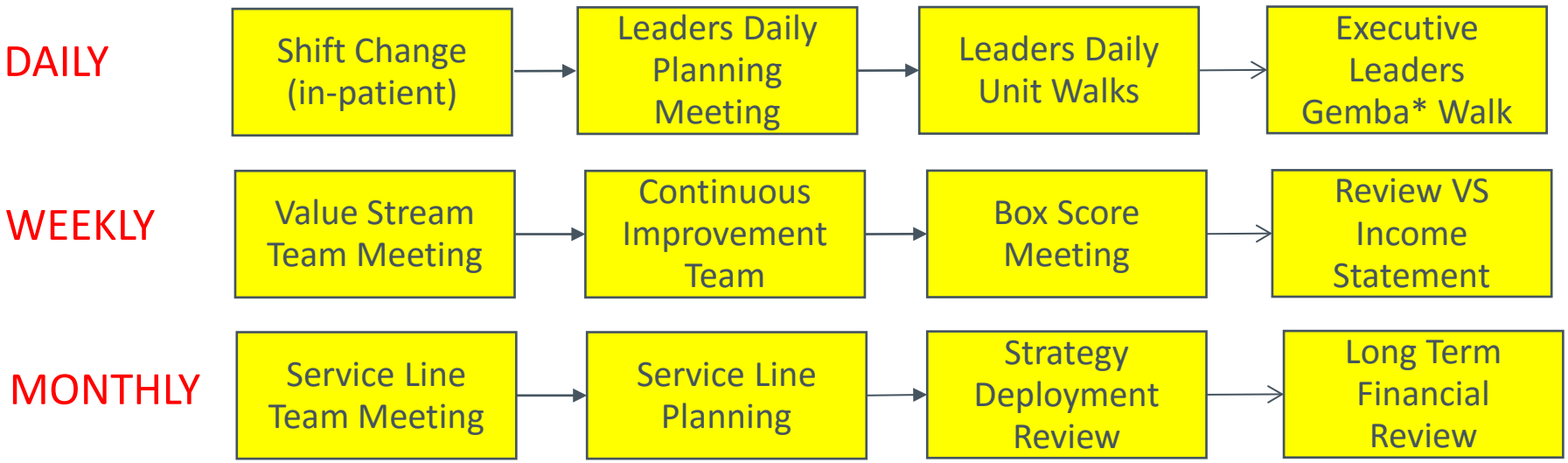


Reduced # implant models starts this week

		8-Apr	15-Apr	22-Apr	29-Apr	6-May	13-May
	0	0	0	0	0	0	0
	%	93%	91%	95%	92%	94%	94%
	%	93%	94%	93%	94%	95%	95%
% Discharge to Home	84%	85%	86%	85%	84%	83%	84%
Average LOS (hrs)	54.0	53.7	53.5	53.2	53.0	52.7	52.5
RN Hours/Patient	23.8	23.7	23.7	23.6	23.6	23.5	23.5
Staff Reportable Safety Incid	1	0	0	0	0	0	1
RN Direct Capacity	38%	38%	38%	38%	38%	38%	38%
RN Indirect Capacity	45%	45%	45%	45%	45%	45%	45%
RN Available Capacity	17%	17%	17%	17%	17%	17%	17%
REVENUE	$1,047,964	$1,036,835	$1,044,544	$1,039,168	$1,030,246	$1,039,534	$1,046,005
Implants	$418,685	$428,361	$398,218	$391,770	$379,031	$399,807	$395,645
Drugs	$33,238	$34,091	$33,818	$33,521	$32,492	$33,070	$33,053
Medical Supplies	$92,415	$92,482	$92,165	$90,621	$92,748	$91,625	$91,169
Employee Costs	$175,856	$178,075	$174,672	$175,649	$175,193	$176,310	$176,430
All other Costs	$44,918	$44,592	$44,090	$44,102	$44,559	$44,067	$43,661
PROFIT	$282,852	$259,233	$301,581	$303,505	$306,223	$294,655	$306,047
Return on Revenue	27%	25%	29%	29%	30%	28%	29%

Is there evidence that the value stream is producing the expected level of return?

Value Stream Management Team Meetings: Where Box Score Fits



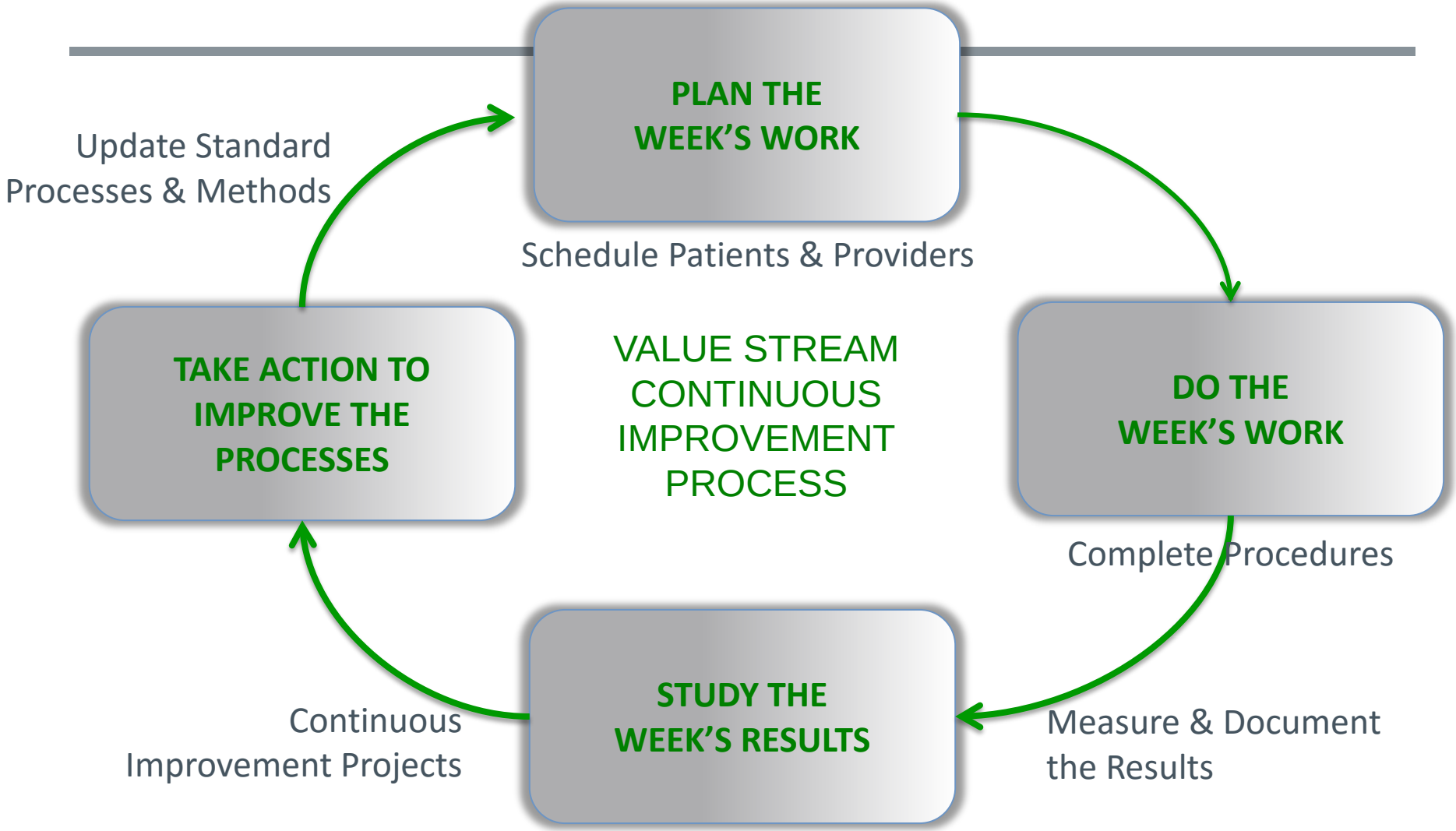
Short, Stand-Up Meetings at the Place the Work is Done.
Strict Attendance. Strict Agenda. Focused on Creating Value and Improvement.
Component of Standard Work for Managers.

*Gemba: Japanese word that means 'the real place.' In management terms, gemba is the place where value is created for the patients. Managers need to go and see to understand.

Value Stream Continuous Improvement

- The primary purpose of the weekly reporting is to guide the value stream manager and his/her team towards continuous improvement.
- Tools
  - Value stream performance measurement boards
  - Value stream profit and loss statement
  - Box Score
  - Data analysis of problems
  - Continuous improvement projects

PLAN-DO-STUDY-ACT: Continuous Improvement



ALL LEAN ORGANIZATIONS USE ***CONTINUOUS IMPROVEMENT.***
CONTINUOUS IMPROVEMENT MEANS CONSTANT CHANGES EVERY WEEK.

8. REFLECTION & WRAP-UP

Lean Accounting Ingredients

1. VALUE STREAM TEAM IMPROVES THEIR OWN WORK

- Report & Improve the Flow
- Value Stream Team Improves Process

2. WEEKLY VALUE STREAM MEASUREMENTS

- Operational, Financial, & Capacity
- Visual Performance Board

3. PLAIN ENGLISH INFORMATION

- Everybody immediately understands
- Direct Costs; Little or no allocations

4. DAILY LOCAL MEASURES CONTROL THE PROCESSES

- On-Time, Quality, Issues/Problems

5. FULL TEAM MEETS EVERY WEEK

- Stand-Up Meeting; Visual Performance Board
- 10 Mins: Next Week's Work
- 20 Mins: Improvement Plans

6. CONTINUOUS IMPROVEMENT BY VALUE STREAM TEAM

- Improve Service, Reduce Costs
- Remove Waste, Increase Services
- Improvement Goes On for Ever

7. DECISION-MAKING USING THE BOX SCORE

- Box Scores Show True Impact of Lean Decisions & improve costs

8. TRANSACTION ELIMINATION

- Eliminate Wasteful Reporting
- Cut the costs & frees peoples' time

Increase Patient Service, Eliminate Waste, Reduce Costs.
A Formal & Standard Process for Continuous Improvement.

Questions

Questions for us:

Which of the concepts and methods today require more explanation and investigation?

Question for you:

Which of the concepts and methods presented today could you start testing "by next Tuesday" to gain insight and experience?

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