



Going Lean in Health Care

**Call 3:
Driving Out Waste Becomes the Strategy for Health Care
Organizations**

**February 16, 2005
2:00 pm – 3:30 pm Eastern
1:00 pm - 2:30 pm Central
12:00 pm – 1:30 pm Mountain
11:00 am – 12:30 pm Pacific**

**Gary Kaplan, MD
John Toussaint, MD**

Going Lean in Health Care

Call 3: Driving Out Waste Becomes the Strategy for Health Care Organizations

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Calls to Action is sponsored by the Institute for Healthcare Improvement

IHI's Mission

The Institute for Healthcare Improvement is a not-for-profit organization driving the improvement of health by advancing the quality and value of health care.

IHI's Vision

The Institute for Healthcare Improvement is a premier integrative force, an agent for profound change, dedicated to improving health care for all. Our measures of success include improved safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity.

Faculty

Consistent with the IHI's policy, faculty are expected to disclose any economic or other personal interests that create, or may be perceived as creating, a conflict related to the material discussed. This policy is intended to make attendees aware of faculty's interests, so they may form their own judgments about such material.

Unless otherwise noted below, each presenter provided full disclosure information, does not intend to discuss an unapproved/investigative use of a commercial product/device, and has no significant financial relationship(s) to disclose. If unapproved uses of products are discussed, presenters are expected to disclose this to participants.

Gary S Kaplan, MD, FACP, FACMPE, was named Chairman and CEO of Virginia Mason Medical Center in February 2000. He serves on the Virginia Mason Medical Center Board of Directors, is Chair of the Management Committee, serves on the Board of Governors, Virginia Mason Research Center Board, and Board of the Virginia Mason Foundation. Dr. Kaplan has practiced Internal Medicine at Virginia Mason Medical Center since 1982 and is a Fellow of the American College of Physicians.

Dr. Kaplan received his medical degree from the University of Michigan and is board-certified in internal medicine. He is also certified as a Fellow through the through the American College of Medical Practice Executives - the credentialing arm of the Medical Group Management Association. In addition, he is a clinical professor at the University of Washington.

In addition to his patient duties and position as CEO, Dr. Kaplan serves on the MGMA Services Board and is past chair of the MGMA Board of Directors, is a past chair of the Group Practice Advisory Committee of the American Medical Association, has served on the Board of Directors and Executive Committee for the American Medical Group Association currently serves on the Foundation Board. He also serves on the Board of Directors and Executive Committee of the National Patient Safety Foundation, and is a member of both the American College of Medical Practice Executives and the American College of Physician Executives.

John Toussaint, MD is President and CEO of ThedaCare, Inc., a health delivery system with 3 hospitals, 27 physician clinics, and a 300,000+ member health plan. ThedaCare has been nationally recognized for its quality performance results by: NCQA, best HEDIS scores in the nation 2 years in a row, by Solucient, 100 Top Hospitals for 5 years in a row, and 100 Top Cardiac Hospital in 2003. ThedaCare is also one of the 100 Top "Most Wired" institutions and has implemented an EMR as well as a disease management data warehouse.

Dr. Toussaint, as Chief Medical Officer of ThedaCare from 1994 and in 2000, was named President and Chief Executive Officer of ThedaCare. He is Chairman of the Wisconsin Collaborative for Healthcare Quality. This is a consortium of high performance healthcare organizations focused on improving the health outcomes to Wisconsin residents by publicly reporting and validating individual healthcare performance measures.

The Institute for Healthcare Improvement is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. The

Institute for Healthcare Improvement takes responsibility for the content, quality, and scientific integrity of this CME activity.

**“If you are dreaming about it...
you can do it.”**

Chihiro Nakao

Seeking Zero Defects: Applying the Toyota Production System to Medicine

IHI Calls To Action Series

February 16, 2005

Gary S. Kaplan, MD, Chairman and CEO
Virginia Mason Medical Center

First, Some Background...

Virginia Mason Medical Center

- An integrated healthcare system
- 501(c)3 Not for Profit
- 336 bed hospital
- 9 locations (main campus and regional centers)
- 400 physicians
- 5000 employees
- Graduate Medical Education Program
- Research center
- Foundation

Virginia Mason Medical Center

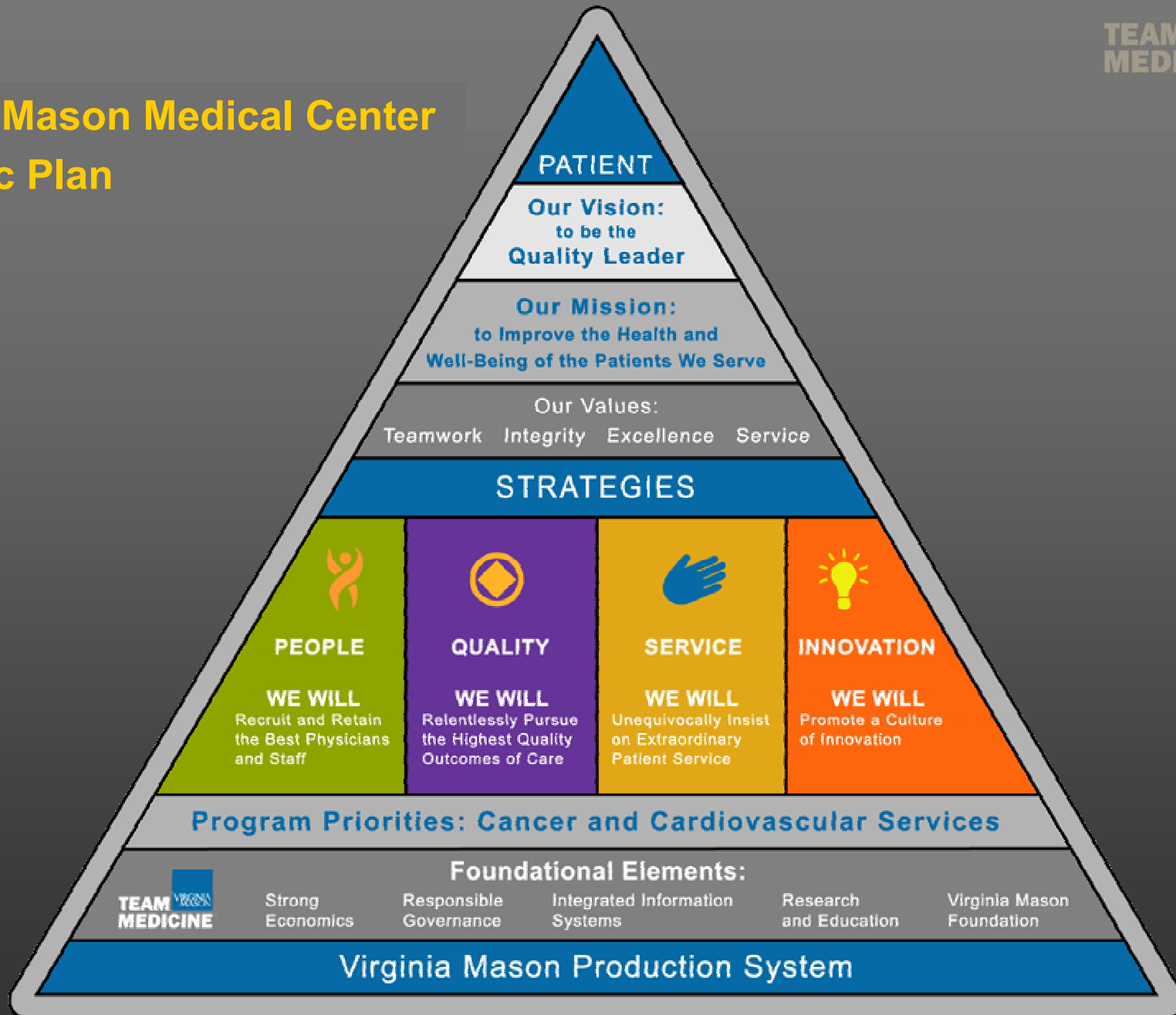
Year 2000

- Issues
 - Survival
 - Loss of Vision
 - Retention of Best People
 - Build on a Strong Foundation
 - Need for Change
- Leadership Change

Mandate for Change

- Economics
- Simultaneous Growth and Contraction
- Business Principles and Discipline
- Governance Change and Decision Making
- Communication and Shared Vision
- Leadership
- Trust

Virginia Mason Medical Center Strategic Plan



An Embarrassingly Poor Product

- The March 16, 2003 edition of The New York Times Magazine front cover reads, “Half of what doctors know is wrong.”
- The lead story is titled “The Biggest Mistake of Their Lives” and chronicles four survivors of medical errors.
- The article goes on to say that in 2003, as many as 98,000 people in the United States will die as a result of medical errors.

Mistakes Cost Lives

Highlights from a study of medical errors involving Medicare patients hospitalized from 2000 through 2002:

Out of 37 million hospitalizations, 1.14 million “safety incidents” occurred.

263,864 deaths were directly attributed to the incidents.

The safety incidents accounted for \$8.54 billion in additional Medicare costs.

Nearly 60% of safety incidents involved the failure to diagnose and treat conditions that developed in the hospital, bedsores and post-operative infections.

The Bitter Bottom Line of Medical Errors



Kidney transplant on the wrong side (U.C.L.A.)



Unnecessary radical jaw surgery



Surgical sponge and gauze left in a breast



Surgical tool left in stomach

Organizational Transformation: Physician Issues

- Clarity of Expectations
 - Compact
 - Job Descriptions
- Responsibility and Accountability
- Culture of Feedback
- Transparency
- Trust

Virginia Mason Medical Center Physician Compact

Organization's Responsibilities

Foster Excellence

- Recruit and retain superior physicians and staff
- Support career development and professional satisfaction
- Acknowledge contributions to patient care and the organization
- Create opportunities to participate in or support research

Listen and Communicate

- Share information regarding strategic intent, organizational priorities and business decisions
- Offer opportunities for constructive dialogue
- Provide regular, written evaluation and feedback

Educate

- Support and facilitate teaching, GME and CME
- Provide information and tools necessary to improve practice

Reward

- Provide clear compensation with internal and market consistency, aligned with organizational goals
- Create an environment that supports teams and individuals

Lead

- Manage and lead organization with integrity and accountability

Physician's Responsibilities

Focus on Patients

- Practice state of the art, quality medicine
- Encourage patient involvement in care and treatment decisions
- Achieve and maintain optimal patient access
- Insist on seamless service

Collaborate on Care Delivery

- Include staff, physicians, and management on team
- Treat all members with respect
- Demonstrate the highest levels of ethical and professional conduct
- Behave in a manner consistent with group goals
- Participate in or support teaching

Listen and Communicate

- Communicate clinical information in clear, timely manner
- Request information, resources needed to provide care consistent with VM goals
- Provide and accept feedback

Take Ownership

- Implement VM-accepted clinical standards of care
- Participate in and support group decisions
- Focus on the economic aspects of our practice

Change

- Embrace innovation and continuous improvement
- Participate in necessary organizational change

Changing the Mind of Leadership

- At Virginia Mason our vision is to be the Quality Leader in healthcare.
- We are committed to producing a defect free product.
- We are pursuing that goal through the adoption of the Virginia Mason Production System (VMPS).

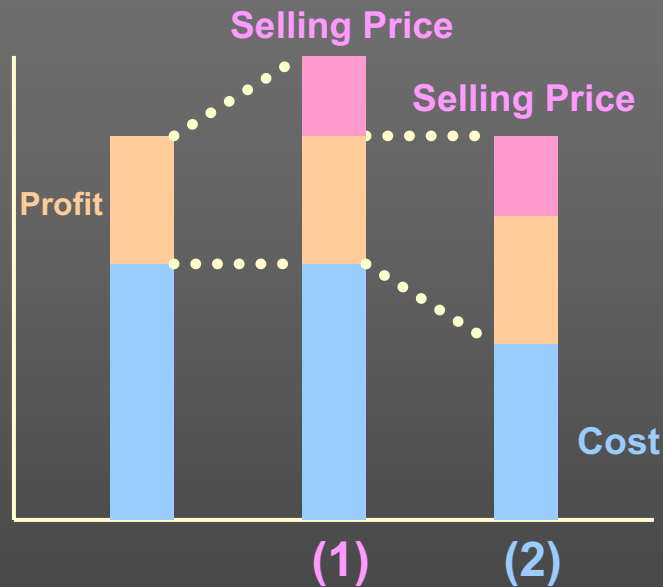
Why Zero Defects is the Only Acceptable Standard

At 99.9% quality levels, here is what happens:

- 22,000 checks are deducted from the wrong bank accounts every day
- 16,000 pieces of mail are lost by the Postal Service every hour
- 2,000 unsafe airplane landings are made every day
- 2 major airplane accidents per week
- 500 incorrect surgeries are completed every week
- 2,000,000 loss IRS documents per year

Strategic Issues for Business

- Quality
- Safety
- Morale
- Cost
- Margin



$$\text{Profit} = \text{Selling price} - \text{Cost}$$

For an increase in profit:

(1) Increase the selling price. This is determined by the market.

(2) Lower the cost. This is achieved by Kaizen.

The Virginia Mason Production System

We adopted the Toyota Production System philosophies and practices and applied them to healthcare because this industry and we were so lacking in an effective management approach that would produce:

- Customer First
- Highest Quality
- Obsession with safety
- Highest staff satisfaction
- A successful economic enterprise

Overview: Toyota Production System Principles

- Define Value Stream
- Define Takt Time (The Demand Rate)
- Removal of Waste
- Add Value
- Continuous Flow
- Pull Production
- Pursuit of Perfection
- Continuous Improvement



Taiichi Ohno

“You should submit wisdom to the company.

If you don’t have any wisdom to contribute, submit sweat.

If nothing else, work hard and don’t sleep.

Or resign.”

Relentless “War on Waste”: Key to Quality

7 Wastes:

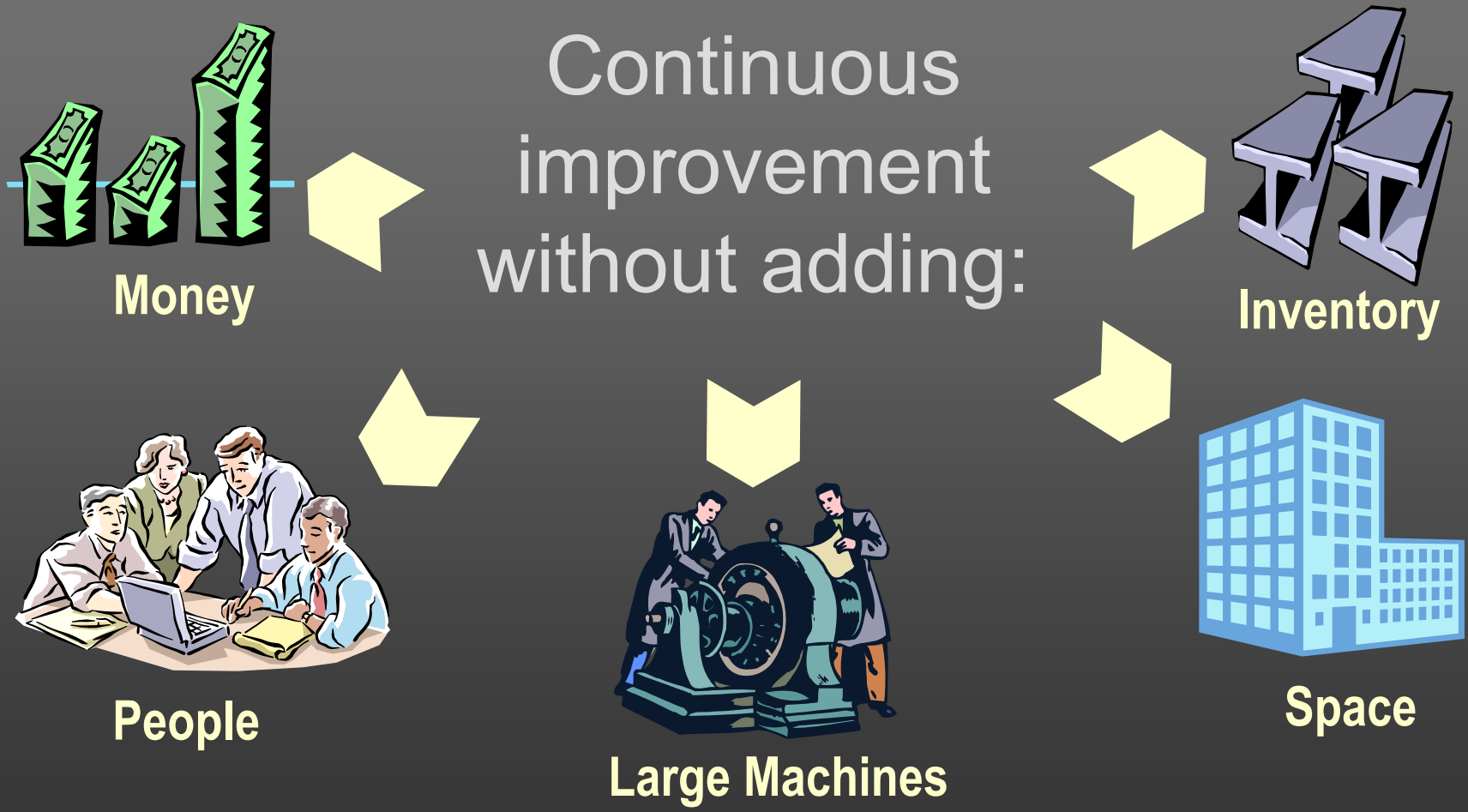
- Waste of overproduction → Lab tests
- Waste of transportation → Patient transfers
- Waste of over processing → Charge tickets
- Waste of inventory → Drugs, supplies
- Waste of motion → Searching for charts
- Waste of making defective products or poor quality → Professional liability
- Waste of Engineering → Large centralized machines

Validated Industry Averages

Direct Labor/Productivity Improved	45-75%
Cost Reduced	25-55%
Throughput/flow Increased	60-90%
Quality (Defects/Scrap) Reduced	50-90%
Inventory Reduced	60-90%
Space Reduced	35-50%
Lead Time Reduced	50-90%

Summarized results, subsequent to a 5-year evaluation, from numerous companies (over 15 aerospace-related). Companies ranged from 1 to >7 years in lean principles application/execution.

Virginia Mason Production System: Foundational Principles



A Single Goal: NO WASTE

第37回新技術現場改善
37TH SHINGIJUTSU GEMBA KAIZEN

Seeing with our Eyes Japan 2002



Hitachi Air Conditioning

Team Leader Kaplan reviewing the flow of the process with Drs. Jacobs and Glenn



Hitachi Air Conditioning

Dave recording the work flow and timing cycle time





What We Learned

Air conditioners, cars, looms, airplanes and forklifts...

What do any of these products have to do with health care?

- Health care, too, is full of production processes
- These Japanese products, like our services, involve the concepts of quality, safety, customer satisfaction, staff satisfaction and cost effectiveness
- The completion of a product involves thousands of processes—many of them very complex
- Many products, if they fail, can cause fatality
- They are in many ways, just like us



What We Learned

- Production processes have much in in common with admitting a patient, having a clinic visit, going to surgery or a procedure and sending out a bill
- To have smooth, high quality continuous flow of our patients is delightful when it happens
- Our vision is that this would happen always for our patients
- We are more convinced than ever that the principles and tools of the Toyota Production System may well become those of the Virginia Mason Production System, the system of management behind the achievement of becoming the Quality Leader



The Plan

The plan for translating what we learned into reality at Virginia Mason has seven areas of focus:

1. “Patient First” as the driver for all that we do
2. *The Virginia Mason Production System* will be our our brand of the Toyota Production System
3. The creation of an environment in which our people feel safe and free to engage in improvement - The adoption of a “No Layoff Policy”



The Plan

4. Implementation of a company-wide defect alert system called “The Patient Safety Alert System”
5. Encouragement of innovation
6. Creating a prosperous economic organization by primarily eliminating waste
7. Accountable Leadership

Virginia Mason Production System

Virginia Mason Production System

To Make Things in the Right Way

JUST IN TIME

Operate with the minimum resource required to *consistently* deliver

- *Just* what is needed.
- In *just* the required amount.
- *Just* where it is needed.
- *Just* when it is needed.

People

Standard
Work

Takt Time
Production

Materials

Standard Work
in Process
Kanban

One Piece Flow
Production
Supermarket
System

Machines

Andon
Operational
Availability

Pull System
Production

Jidoka

One-by-one confirmation to *detect* abnormalities.

Stop and *respond* to every abnormality.

Separate machine work from human work.

Enable machines to *detect* abnormalities and *stop* autonomously.

Leveled Production (Hejunka)

Cost Reduction Through the Elimination of Muda (Waste or Non-Value Added)

VMPS in Action

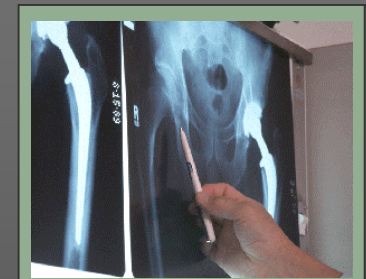
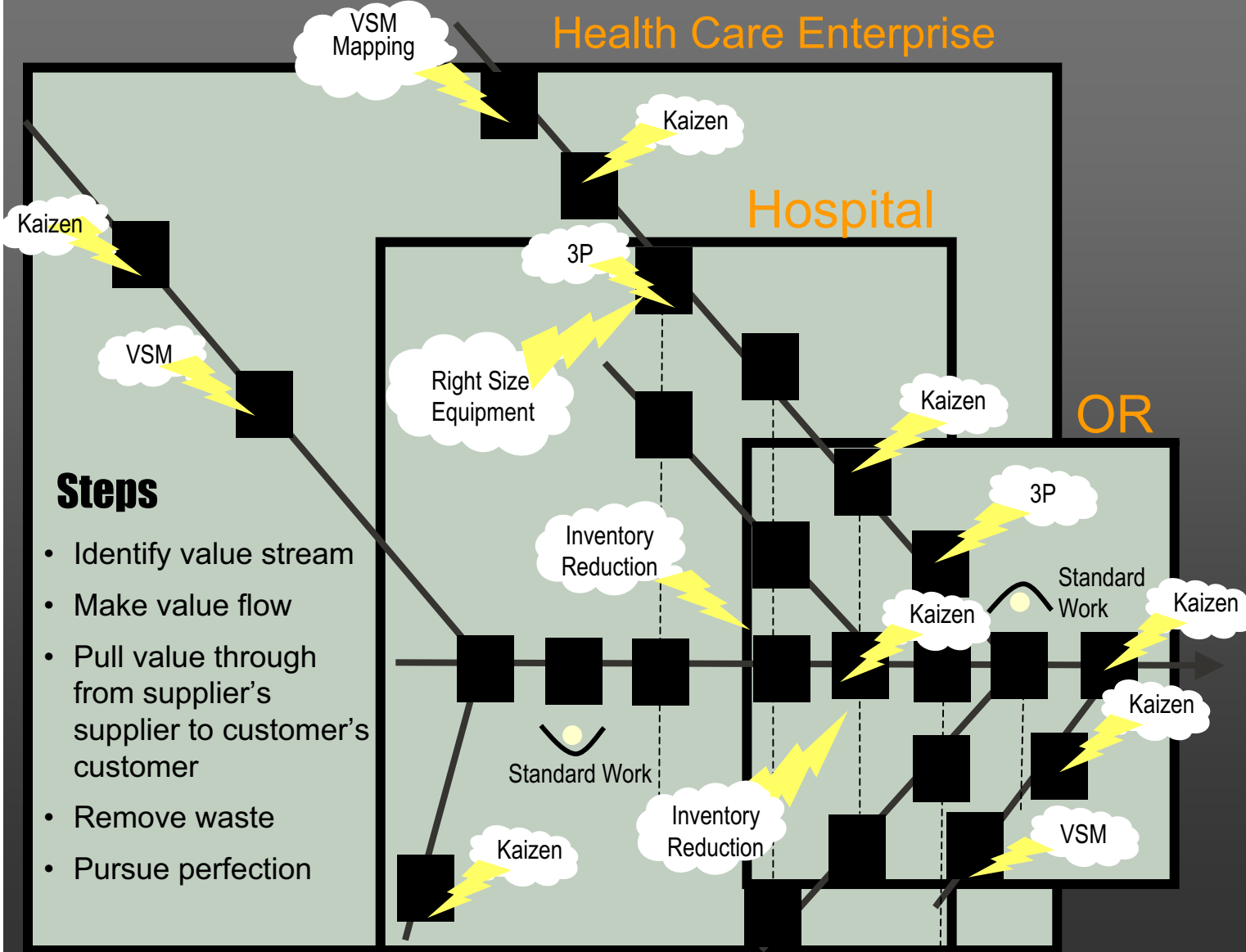
- Value Stream Development
- RPIW (Rapid Process Improvement Workshop)
- 5-S (Sort, simplify, standardize, sweep, self-discipline)
- 3-P (Production, Preparation, Process)
- Super Flow
- Daily work life

Global Enterprise Value Stream Network

Health Care Enterprise

Hospital

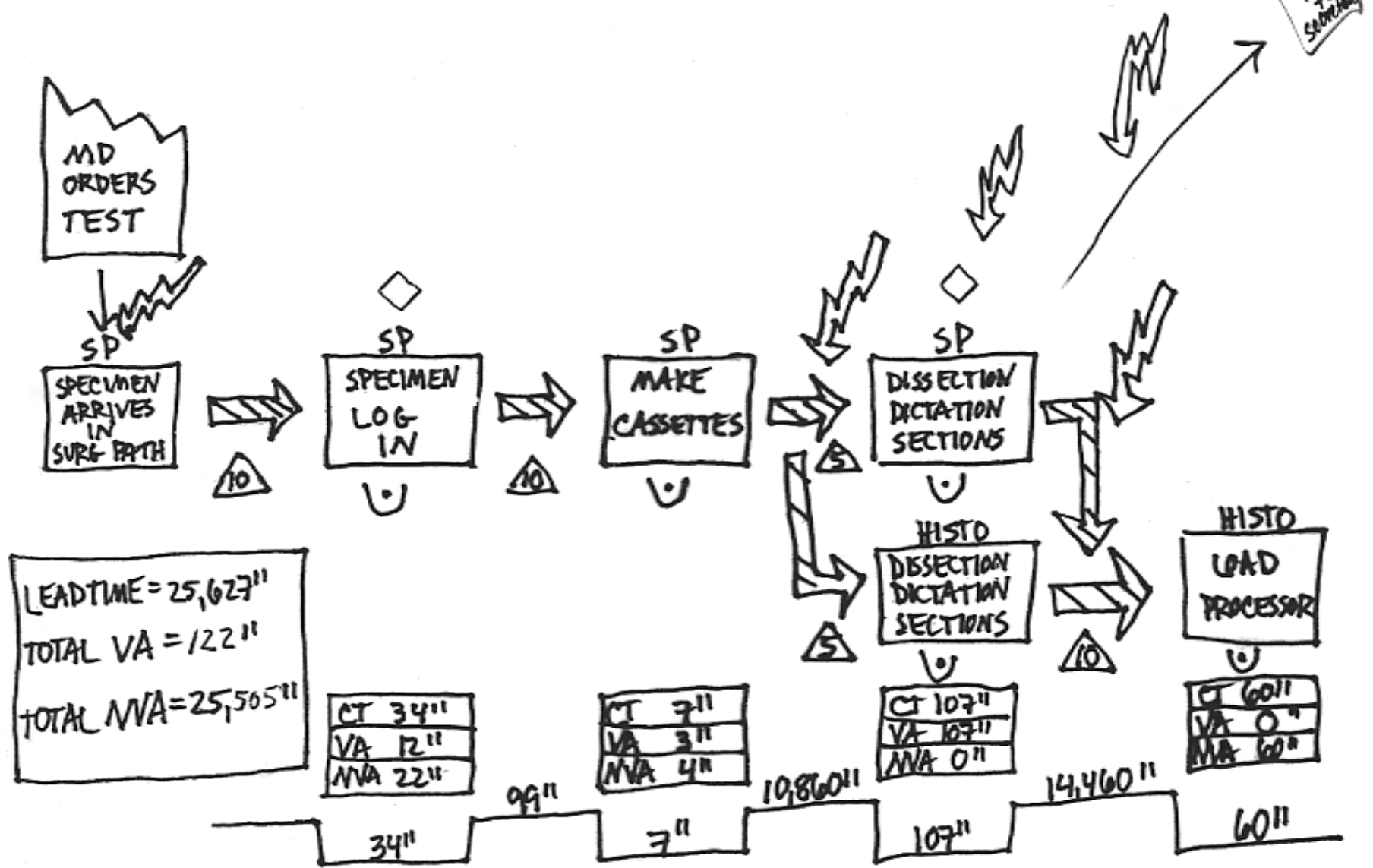
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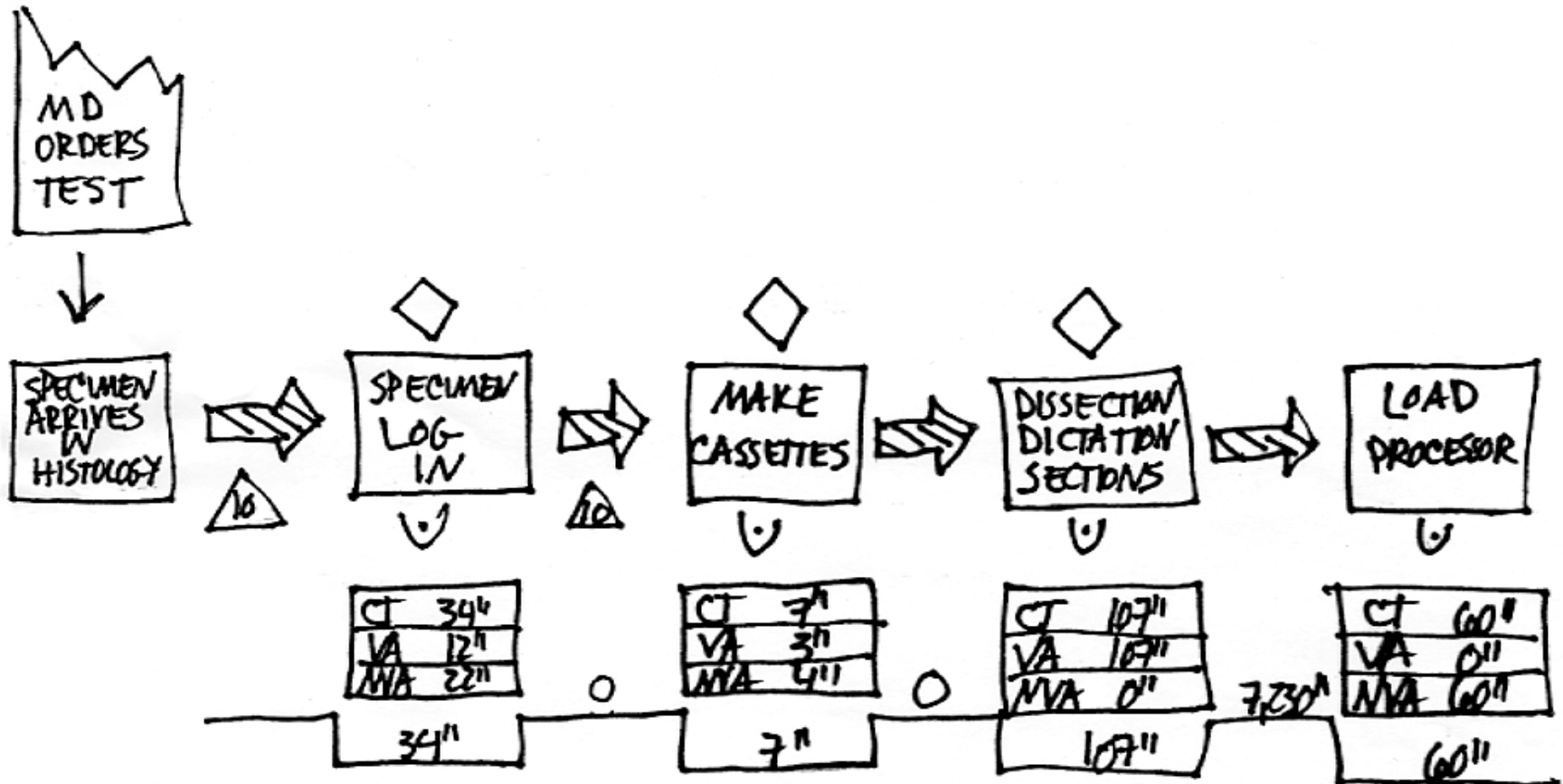
Steps

- Identify value stream
- Make value flow
- Pull value through from supplier's supplier to customer's customer
- Remove waste
- Pursue perfection

CURRENT STATE - SURGICAL PATHOLOGY ROUTINE



FUTURE STATE - SURGICAL PATHOLOGY ROUTINE



LEAD TIME = 7,438"
 TOTAL VA = 122"
 TOTAL NVA = 7,316"

Surgical Pathology Workflow

Christina Isacson MD and Lee Darrow MT (ASCP) SBB

- Progress in achieving future state value stream map = 95%
- Top 5 Defects
 - Mislabeling of specimen (wrong patient, wrong tissue) and mislabeling of cassettes
 - Reduction of internal labeling errors by 49%
 - Reduction of mislabeled cassettes (most egregious) by 69%
 - Contamination of specimen cards
 - Inadequate dissection

The Rapid Process Improvement Workshop

Definition

A team of people who do the work, fully engaged in a rigorous and disciplined five day process, using the tools of Lean to achieve immediate results in the elimination of waste.

Key Principles

1. Throw Out Your Old Attitudes About Work.
2. Don't Think of Reasons Why it Won't Work,
Think of Ways to Make the New Ideas Work.
3. Don't Make Excuses, and Don't Accept Excuses.
Don't Say, "We Can't".
4. Don't Wait for Perfection; 50% is Fine for Starters.
5. Correct Problems Immediately.
6. Wisdom Arises from Difficulties.
7. Ask 'Why' at Least Five Times Until you Find the Root Cause.
8. Better the "Wisdom" of Ten People than the "Knowledge" of One.
9. Improvements are Unlimited. Don't Substitute Money for Brains.
10. Improvement is Made at the Workplace not from the Office.



Specific Events

Day 1

Collect Data on the "As-Is" Process
Define the "To Be" Process
Set Targets
Start Implementation

Day 5

Report Out

Day 2

Floor Work

Day 4

Floor Work
Establish standard work for the new process

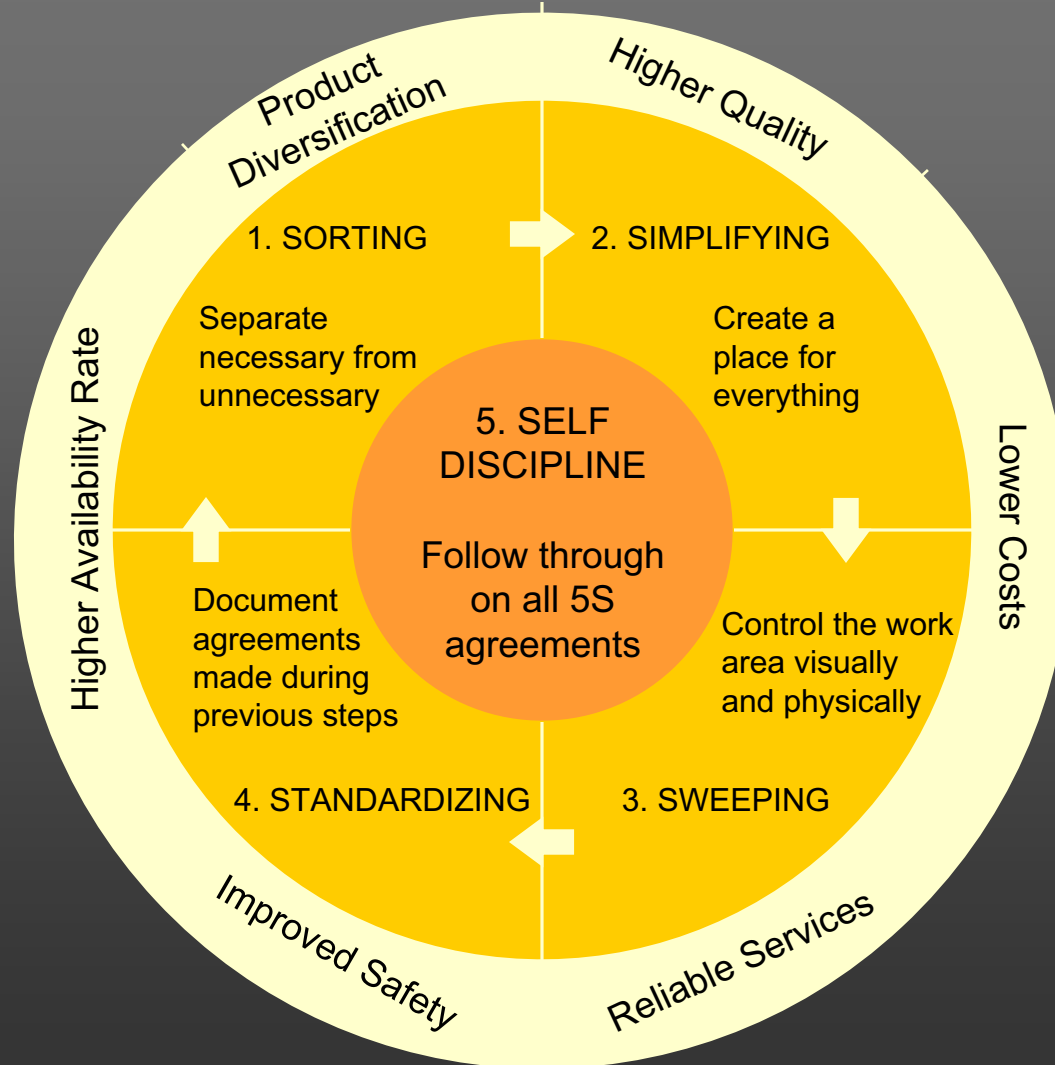
Day 3

Floor Work

Summary

- The Rapid Process Improvement Workshop is a Business Process that Provides High Leverage Opportunities to Quickly Eliminate Waste.
- Rapid Improvement gets All Stakeholders Focused on Hard-core Business Results
- Requires Committed Management Leadership to get Accomplished
- Empowers the People Doing the Work
- Provides the Foundation to Start the “Lean” Journey

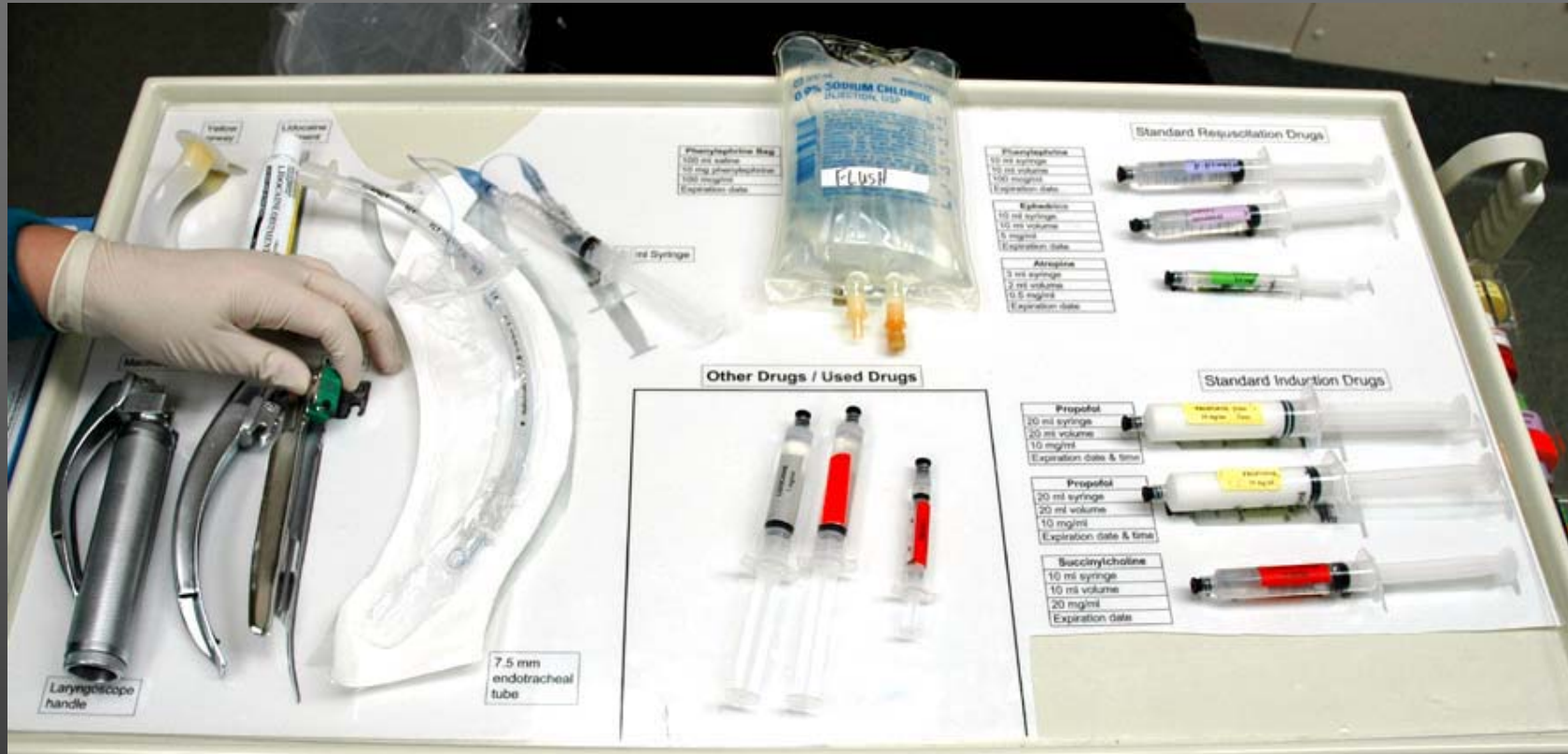
5S Workplace Organization



June 28, 2004



5S Anesthesia “Shadow Board” - Before



5S Anesthesia Shadow Board - After



5S Office Supplies



OR Equipment Room Before 5S



OR Equipment Room After 5S

Stopping the Line TM

*Virginia Mason's Patient
Safety Alert System TM*

Happy at 99.9%?

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