Going Lean in Health Care

Call 2:
Dramatic Results by Driving Out Waste

February 4, 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

Arthur P. Byrne
Orest J. Fiume
Call 2: Dramatic Results by Driving Out Waste

IHI's Mission and Vision
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.
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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.

Arthur P. Byrne, MBA began his kaizen journey in 1982 during his first General Managers job at the General Electric (GE) Companies Lighting Business Group. From GE, he moved to the Danaher Corporation as a Group Executive where he initiated an aggressive Lean implementation across all 13 of Danaher’s companies at the time. This eventually evolved into the now famous Danaher Business system. After leaving Danaher, Art spent from 1991 through 2002 as the Chairman, President, and CEO of the Wiremold Company, a privately held firm located in West Hartford, CT. Building a strategy around a rapid implementation of Lean, Art was able to more than quadruple Wiremold’s size, increase earnings by over 13 times, and take a company valued at $30 million in 1991 and sell it for $770 million in 2000. After leaving Wiremold, Art joined JW Childs Associates LLC, a private equity firm in Boston, MA, as an operating partner. He serves as Chairman of two of the portfolio companies and is on the board of a third. He has led Lean implementations at all of these firms as well as at several of JW Childs’ other portfolio companies. In addition, as a board member, he has started a rapid Lean implementation at a publicly traded insurance company and has led a number of kaizen events at one of the major hospitals in Hartford, CT.

Orest (Orry) J. Fiume, MS was vice president of Finance and Administration and a director of The Wiremold Company, West Hartford, CT, which gained international recognition as a leader in lean business management in “Lean Thinking,” by James P. Womack and Daniel T. Jones. Orry was Wiremold’s senior financial officer from 1978 until his retirement in 2002. Before that, he was an audit manager with Coopers & Lybrand.

Orry led Wiremold’s conversion to lean accounting in 1991 and developed alternate accounting systems that support the company’s entire lean business efforts. He went on to install lean accounting at more than 20 Wiremold acquisitions. Orry has studied lean production in both the US and Japan and has been a guest speaker at many conferences throughout the United States. In addition, he has taught courses on accounting in a lean business at The TBM Institute, The University of Dayton Center for Competitive Change, The Center for Lean Business Management, and Connstep, among others. He also was a member of the People Program’s Economic Management Delegation to China to discuss US financial management practices. More recently, Orry has co-authored the 2004 Shingo Prize winning book “Real Numbers: Management Accounting in a Lean Organization” and was inducted as a Life Member of the Shingo Prize Academy, which has been referred to by Business Week as the Nobel prize in manufacturing.
Orry has an MS in Management from Rensselaer Polytechnic Institute and a BBA in Accounting from Fairfield University. He is a certified public accountant, and a member of the American Institute of Certified Public Accountants and Financial Executives International, where he is a past president of the Connecticut Valley Chapter. He serves on the Board of Directors of several companies.

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THE WIREMOLD COMPANY

ADVANTAGES OF THE LEAN ORGANIZATION:
Dramatic Results by Driving Out Waste

Arthur P. Byrne
Orest J. Fiume

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Wire Management Systems

Perimeter Raceway

Prewired and Any Size

Poke Thru

Infloor

Overhead

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Communications Systems

Work Station Outlets

Patch Panels

Closet Wire Management

Fiber Distribution Enclosures

Power and Data Quality Systems

Plug-in Surge

Panel MTD Surge

Telcom Closet Rack MTD Units

Power Conditioners

Custom Assemblies
Lighting Systems

Specialty Lighting Fixtures

Manufactured Cabling Systems

High Bay Lighting Distribution System

Copyright 2005: AP Byrne, OJ Fiume

Specialty Products for the Office Furniture Market

Copyright 2005: AP Byrne, OJ Fiume
Wiremold Results: 1987 - 1990

1987 - 1990

Sales  \[ \uparrow \] 20%

Operating Profit  \[ \downarrow \] (82%)

Wiremold’s Status in 1990-1991

- Low Profits
- No Cash
- No Growth
- Bad Customer Service
- Losing Market Share

Time for a New Approach
A Simple Strategy Established in 1991

Be the leading supplier in the industries we serve and one of the top ten time-based competitors globally

• Constantly strengthen our base operations
  • 100% customer service
  • 50% reduction in defects - each year
  • 20% productivity gain - each year
  • 20x inventory turns
  • 20% profit sharing
  • Visual control and “5Cs” (clean, categorize, cart away, consistency and commitment)

• Double in size every 3-5 years
  • Pursue selective acquisitions
  • Use QFD to introduce new products every month

What Does It Take To Go to Lean Thinking?

In The End, It’s All About People
**Fundamental Wiremold Premise**

Companies are just collections (teams) of people trying to outperform other collections of people to satisfy a set of customers

The best, most motivated and focused team wins

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**Summary Results**

**Wire Management**

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>1999</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Shipment Fill Rate</td>
<td>60.3%</td>
<td>89.3%</td>
<td>+56%</td>
</tr>
<tr>
<td>Product Development Time</td>
<td>2-3 yrs.</td>
<td>3-12 mns.</td>
<td>(73%)</td>
</tr>
<tr>
<td>Manufacturing Material Suppliers</td>
<td>320</td>
<td>43</td>
<td>(87%)</td>
</tr>
<tr>
<td>Working Capital as % of Sales</td>
<td>21.8%</td>
<td>6.7%</td>
<td>(69%)</td>
</tr>
<tr>
<td>EBITDA Margin</td>
<td>6.2%</td>
<td>20.8%</td>
<td>+235%</td>
</tr>
<tr>
<td>Sales Per Employee</td>
<td>90K</td>
<td>240K</td>
<td>+267%</td>
</tr>
<tr>
<td>Inventory Turns</td>
<td>3.4x</td>
<td>15.8x</td>
<td>+465%</td>
</tr>
</tbody>
</table>

Quality: Achieved 40% to 57% per year reduction in defects
Wiremold in the 90’s

1990 - 1999

Sales ↑ 4.1x

Operating Profit ↑ 13.9x

Enterprise Value ↑ 25.7x

Just Scratching the Surface

Evolution of Lean

U.S Supermarket Pull

Henry Ford Flow

German Aircraft Mfg Takt Time

Toyota production System

Just in time...........Inventory

Lean.........Manufacturing

Lean Management

Your Strategy  Your Culture
LEAN
A Business Strategy

Not

A Manufacturing Tactic

Not

A Cost Reduction Program

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Set Up Takes 1 Hour</td>
<td>Set Up Takes 1 Minute</td>
</tr>
</tbody>
</table>

- Who Has Lowest Cost?
- Who Can Provide Best Customer Service?

A Small Process Improvement Provides Enormous Strategic Advantage
What Are We Trying to Do

Total Elimination of Waste

Get to a state of continuous improvement

Lean is a Time Based Growth Strategy

To eliminate waste…
understand the difference between

- Value added
- Non value added

Focus on your processes-not your results
Why Doesn’t Everyone Do “Lean”?  

- Easy to Agree With  
- Hard To Do  

Why Is It So Hard?  

WE LOOK FOR “SILVER BULLET” SOLUTIONS  

- A New Computer System  
- Automated Equipment  
- The Latest MRP System  
- The Newest Quality System or Label  
  - Six Sigma  
  - ISO 9000  

We Wind Up In A “Program of the Month” World
MANAGEMENT TOOLS HIDE PROBLEMS

• Top down - fiefdoms
• Inventory viewed as investment in high customer service
• Batch production in MRP push system
• Absorption accounting

OBSTACLES TO CHANGE

• “We tried that before”
• “We don’t do things that way here”
• “But, those companies aren’t like ours, we have different problems”
• “We’ll change, but let’s do so very slowly”
• “Our auditors won’t accept that”
THE DRIVE FOR RESULTS

• Wall Street’s focus on “this quarter”…emphasis on short term profits
• Promotions faster based on “making the numbers”; leave underlying damage for someone else
• Increase in organization size forces management “by the numbers”
• Business education emphasizes financial results (e.g. ROI, IRR, etc.)
• Executive bonus plans based on short-term profit

Key Success Factors

• Must see it as core business strategy
• Drive to implement must come from the top
• Should have no layoff policy
• Have to set stretch goals
• Need to measure results

What to Measure?
PRODUCTIVITY = WEALTH

Productivity Is The Relationship Between Quantity of Output vs. Quantity of Resources Consumed

- Sales $ = Quantity x Price
- Material $ = Quantity x Price
- Labor $ = Quantity x Price
- O/H $ = Quantity x Price

Changing the “Q’s” Requires Physical Change -- It’s Not a Financial Thing
IMPROVEMENT REQUIRES PHYSICAL CHANGE

- Physically group production by product families
- Physically change process layout to facilitate one piece flow
- Physically eliminate central parts storage - store at the point of use
- Physically reduce set up time 95%+
- Co-locate people:
  - Marketing & Product Dev.
  - Purchasing, Production Control and Operations

PERFORMANCE MEASURES THAT INHIBIT IMPROVEMENT

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Behavior</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase Price variance</td>
<td>Negotiate based on price &amp; “quantity breaks”</td>
<td>Excess inventory and carrying costs; supplier with best quality and cost may be overlooked</td>
</tr>
<tr>
<td>Machine Utilization</td>
<td>Run in excess of current requirements to maximize utilization ratio</td>
<td>Excess inventory; wrong inventory</td>
</tr>
<tr>
<td>Setup in Standards</td>
<td>Encourages high run quantities</td>
<td>Excess inventory</td>
</tr>
<tr>
<td>Scrap factor built into standard</td>
<td>No action if no variance</td>
<td>Inflated standard; scrap allowed to exist</td>
</tr>
</tbody>
</table>
### PERFORMANCE MEASUREMENT

- Support the Strategy
- Not too many
- Mostly non-financial
- Motivate the right behavior (i.e., eliminate waste)
- Simple, easy to understand
- Measure the process, not the people
- Measure Actual vs. Goals
- Don’t use Ratios … they’re too confusing
- Don’t combine measures of different things into a single index
- Must be timely … hourly, daily, weekly ...
- Must be visual and tracked over time to show trends

### Three Keys to Success

- Work to TAKT time
- One piece flow
- Pull system
Typical Results

- 50% reduction in defects – per year
- 20% productivity gain – per year
- Double inventory turns in two years – quadruple in 4 years
- Reduce lead times from weeks to days
- Free up 50% of floor space in two years

Increase the rate of growth through better customer service

All Companies Are Made Up of a Series of Processes

- Easy to have processes that are not connected
- We tend to batch things – at different rates – building up waste
- Our financial systems reward this waste
- We wind-up with long lead times
- We can’t see the waste

The key to waste elimination is to make things flow
FLOW PRODUCTION EXPOSES WASTE

From
Batch production
Push scheduling

To
Flow production
Pull

Objective is one piece flow

BUSINESS PROCESSES

• Order, Ship, Bill, Collect
• Purchase, Receive, Pay
• Production
• Product Development
• Hire, Pay
Some Office Kaizen Results

- **The Mail Room**
  - Space: from 5,220 sq.ft. to 837 sq.ft. (-62%)
  - Time spend on UPS shipments: from 6 hr/day to 3.5 hr/day (-42%)
  - People: From 4 to 2 (-50%)

- **Supplies**
  - Pens: from 8 varieties to 2 (-75%)
  - Envelopes: from 5 varieties to 2 (-60%)
  - Vendors: from 4 to 1 with JIT deliveries (-75%)
  - Inventory: from centralized to local
  - Spending: from $250,000/yr to $130,000/yr (-48%)
Some Non Manufacturing Examples

- Southwest Airlines
- Phoenix Home Life
- St. Francis Hospital
  - Cathology lab
  - Bed utilization
  - Laundry
  - Food service

Western Union

- Set up time for new agents reduce from 45 days to 10
- Credit approval time for new agents cut from 19 days to 22 minutes
- Company enrolled 3500 new agents – double the prior year with no new resources

Result: Over $1 million in increased annual revenue
What are the Key Factors?

• You have to see lean as your core strategy and company culture
• You have to understand that it’s a people thing
• It has to be led/driven from the top to be successful

CEO’s Role

• Out Front - Hands On - Don’t Delegate
• Lots of Leaps of Faith
• Set Stretch Goals
• Set Environment Where it’s OK to Fail
• Provide Air Cover for early adopters
• Eliminate Concrete Heads
Implementing Lean Thinking

Requires Major Change Management

It Will Be Traumatic For The Entire Organization

We Need to Focus More on The Fundamentals

• Change From Batch to Flow
• Improve Every Process
• Eliminate Waste
• Reduce Cycle Time

Change the Culture to Lean Thinking
Elements of Cultural Change

• Begin immediately
• Create a clear vision statement
• Include customer service and working capital reduction in incentive compensation formulas
• Flatten the organization, re-organize into product-family-based operational teams
• Hold weekly meetings between the entire senior staff and the operational team leaders to review demonstrated results and plans for near term improvement
### Differences in Culture

#### Traditional
- Functional Focus
- Management Directs
- Management Delegates
- Fear of Failure
- Blame People
- Us vs. Then
- Results Focused
- Internal Focus
- Status Quo
- Forecast
- Presentations

#### Lean
- Business Focus
- Managers Teach/Enables
- Management Supports
- Share Success
- Root Cause Analysis
- Real Teams
- Process Focused
- Customer Focus
- Change to Improve
- Make to Demand
- Key Metrics

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### Differences in Culture

#### Traditional
- Dedicated Equipment
- Slow Changeover
- Narrow Skills
- Managers Control
- Supplier is Enemy
- Guard Information
- Linear Design
- Volume Lowers Cost
- Local Optimization
- Complex Inventory Mgmt
- Labor Cost Reporting

#### Lean
- Flexible Equipment
- Quick Changeover
- Multi-Skilled
- Workers Control
- Supplier is Ally
- Share Information
- Concurrent Design
- Remove waste lowers cost
- Value Chain Optimization
- Simple Inventory Mgmt
- Prime Cost Reporting

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Differences in Culture

**Traditional**
- Shallow Process Knowledge
- Quality Inspection
- Hierarchy
- Short Term Thinking
- Internal Competition
- Drive for Results
- Complex
- Employee as a Cost
- Rewards: Individual

**Lean**
- Deep Process Knowledge
- Quality Built In
- Flat Organization
- Balance Thinking
- Internal Cooperation
- Process Improvement
- Simple
- Employee as an Asset
- Rewards: Group Sharing

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Differences in Culture

**Traditional**
- Expert Driven
- Expert Designers
- “Not Invented Here”
- Weak Respect for Standards
- Undetectable Process flow
- Independent MBO
- Hiding Problems

**Lean**
- Process Driven
- Product Development System
- Adopt Best Practices
- Standardized Work
- Visual Workplace
- Linked Organizational Visions
- Expose Abnormal Conditions
### Differences in Culture

<table>
<thead>
<tr>
<th>Traditional</th>
<th>Lean</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Reactive Maintenance</td>
<td>100% Preventive Maintenance</td>
</tr>
<tr>
<td>Functional Silos</td>
<td>Interdisciplinary Teams</td>
</tr>
<tr>
<td>Repetitive Mistakes</td>
<td>Lessons Learned</td>
</tr>
<tr>
<td>Dead-End Management Jobs</td>
<td>Periodic Management</td>
</tr>
<tr>
<td>My Production Job</td>
<td>Rotation</td>
</tr>
<tr>
<td>Reactive Quality (failure management)</td>
<td>Flexible Workforce</td>
</tr>
<tr>
<td></td>
<td>Proactive Quality</td>
</tr>
<tr>
<td></td>
<td>(assurance management)</td>
</tr>
</tbody>
</table>

### Differences in Culture

<table>
<thead>
<tr>
<th>Traditional</th>
<th>Lean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready, Aim, Aim, Aim….Fire</td>
<td>Ready, Fire, Aim</td>
</tr>
<tr>
<td>Price = Cost + Profit</td>
<td>Profit = Price - Cost</td>
</tr>
<tr>
<td>Benchmark to justify not improving: “just as good”</td>
<td>Seek the ultimate performance, the absence of waste</td>
</tr>
<tr>
<td>Batch &amp; Mass Production</td>
<td>Produce Value in single unit flow, pulled by Customer</td>
</tr>
<tr>
<td>Justify and Maintain Status Quo, most effort spent on routine/reporting</td>
<td>Encourage and support change, refocus resources on improvement</td>
</tr>
</tbody>
</table>
MANAGE THE PROCESS OF CHANGE, NOT THE PEOPLE

Lead With A Logical, Step By Step, Relentless Plan

USE EVERY WEAPON YOU HAVE
--WE DID

- Organize for flow
- Simple Strategy
- Lots of Training & Kaizens
- Everyone on teams
- Casual dress code
- Top 10/Bottom 10
- Profit sharing
- No layoffs
- Visual Control
- Wiremold shirts
- Broad pay bands
- Employee surveys
- Communications meetings
- Simple code of conduct
- Engineers on shop floor
- Suggestion system
- Values systems training
- Hard to hire, hard to fire
- Always be honest
Our Code of Conduct

Respect Others
Tell the Truth
Be Fair
Try New Ideas
Ask Why
Keep Your Promises
Do Your Share

What Does It Take To Go to Lean Thinking?

In The End, It’s All About People
Going Lean in Health Care

HOW TO PARTICIPATE:
Step 1: Log on to the IHI.org website at http://www.ihi.org/ihi. If you have not yet registered with the IHI.org site, you can do so by going to the Registration Page (link to http://www.ihi.org/ihi/users/register.aspx).

Step 2: From the IHI.org website home page, click on Community/Discussion Groups, located on the left hand side of your screen (http://www.ihi.org/ihi/forums/Default.aspx).

Step 3: Click the The Commons Discussion Group.

Step 4: Select The Calls to Action Discussion Groups link, select the Going Lean in Health Care discussion.

POST A NEW COMMENT OR QUESTION:
Step 1: Click Create a New Thread.

Step 2: Enter a topic name in the Subject field, and then enter your comment or question in the Message field.

Step 3: Click Preview to review your message.

Step 4: Click Post to post your message.

ADD COMMENTS TO TOPIC:
Step 1: Click the Thread title.

Step 2: Click Reply.

Step 3: Again, enter your comment in the Message field.

Step 4: Click Preview to review your message.

Step 5: Click Post to post your message.
HOW TO COMPLETE A CONFERENCE EVALUATION AND RECEIVE CONTINUING EDUCATION CREDITS:

Calls to Action participants can earn continuing education contact hours for participating in the audio conference call on *Going Lean in Health Care: Dramatic Results by Driving Out Waste* by completing an online conference evaluation. To complete the evaluations:

1. Go to: [http://www.ihi.org/certificatecenter](http://www.ihi.org/certificatecenter) and login if necessary.
   - If you are not registered with the IHI website, click “Enroll Now” and complete the required information. Repeat Step 1.
   OR
   - Click on “Generate and View Event Certificates”

2. Type in the appropriate code under “Confirm Event Attendance”
   - Nurses, Medical Doctors, and other health professionals: **Lean-call2**

3. Complete and submit the online survey then follow the prompts to request a certificate for continuing education contact hours.

*In order to be eligible for a continuing education certificate, attendees must complete the online evaluation within thirty days of the continuing education activity. If circumstances prevent you from completing the survey by the specified deadline, please email info@ihi.org before this period expires. After this period, you will be unable to receive a certificate.*

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The Institute for Healthcare Improvement is approved as a provider of continuing education in nursing by the Massachusetts Association of Registered Nurses which is accredited as an approver of continuing education in nursing by the American Nurses Credentialing Center’s Commission on Accreditation. This continuing education activity carries 1.8 Contact Hours.

**Upon completion of this program, participants will be able to:**
- Describe how the implementation of Lean Principles dramatically increased production while driving down costs.
- Describe the barriers experienced by organizations attempting to implement Lean Principles.