Before we begin:

- Turn on the sound on your computer. There is audio to accompany this presentation.
- Audio will accompany most of the online presentation materials throughout the semester.

Week 14
Lean Six Sigma Basics: Control Phase

Lean Six Sigma Control Phase
Introduction
**LEAN SIX SIGMA PROCESS...**

Control

**LEAN SIX SIGMA TOOLS...**

Control

**CONTROL PHASE**

Control Phase Steps

1. Determine Process Control Plan
   - Pilot Implementation
   - Full Implementation
2. Recognize/Reward Team
3. Finalize ROI
4. Plan for Full Implementation
Lean Six Sigma Control Phase

PROCESS CONTROL STRATEGY

- What is a Process Control Strategy?
  - Real-time monitoring of output metrics following implementation
- Why?
  - Quantify the impact of process improvements
  - Provide real-time notification if protocol compliance drifts below targets
  - Identify additional opportunities for process improvement
**TYPES of CONTROL MEASURES**

- Performance/Outcomes Measures
  - Measurement of system/facility performance
- High Level Process Measures
  - Measurement of the process performance
  - More sensitive than outcomes measures
- Low Level Process Measures
  - Measurement of sub-process performance
  - Used for PDSA pre/post measures

**CONTROL PHASE**

Step 1: Establish Control Plans

- A plan for immediate and long term control of the process KPIVs/KPOVs.
- Frequency of control is critical.
  - Pilot recommendation: measure very frequently (hourly/daily)
  - Full Implementation recommendation: Reduce frequency as process stabilizes.

Step 2: Reward/Recognize Team

- Pre-pilot recognition
  - Celebrate project training completion
  - Build momentum and enthusiasm for pilot implementation
  - Ideas:
    - Training Completion Certificate
    - Lunch
    - Others??
CONTROL PHASE

Step 2: Reward/Recognize Team:
- Post-pilot recognition
  - Celebrate Pilot Success
  - Build momentum for full implementation
  - Include all participants, not just team members
- Ideas:
  - Results meeting with cake
  - Apparel with project logo
  - Others??

CONTROL PHASE

Step 3: Finalize the cost benefit analysis:
- Document the actual and potential benefits.
- ROI Analysis Tool

Step 4: Full Implementation Plan:
- Complete Full Implementation Checklist
- Find additional applications within the organization.
- Best Known Methods (BKMs)

Lean Six Sigma Control Phase
Control and Implementation Plans
What is a Control Plan?

- ‘Keep Score’ – Establish process measures that enable:
  - Real Time, Immediate Feedback
  - Pilot: Daily/Shift Feedback
  - Long Term: Daily/Weekly Feedback

- Establish regular meetings (daily/weekly) to review pilot process performance

Note that all KPOVs where solutions were applied should be monitored as part of the control plan.
The implementation plan is based around the future-state map and should include a detailed listing of:

- Activities
- Costs
- Expected difficulties
- Schedules
- Resources needed
- Responsibilities
- Plus any other information needed to implement the changes
### FULL IMPLEMENTATION CHECKLIST

**44. Full Implementation Planning Checklist**

<table>
<thead>
<tr>
<th>Timeline and Phases</th>
<th>Item Owner/Completion Date</th>
</tr>
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<tbody>
<tr>
<td>Y N</td>
<td></td>
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<tr>
<td>Review time and resource allocations</td>
<td></td>
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<tr>
<td>Y N</td>
<td></td>
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<tr>
<td>Budget and payment terms are approved</td>
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<tr>
<td>Y N</td>
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<tr>
<td>Regular (e.g., weekly) review meetings for project progression have been established</td>
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<tr>
<td>Y N</td>
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<tr>
<td>Implementations with defined staff have been established</td>
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<tr>
<td>Y N</td>
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<tr>
<td>New procedures are documented with flowcharts and written instructions</td>
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<tr>
<td>Y N</td>
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<tr>
<td>Other necessary updates (e.g., training materials) are prepared</td>
<td></td>
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<tr>
<td>Y N</td>
<td></td>
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<tr>
<td>Conflict Plan developed and outlined for approval</td>
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### FULL IMPLEMENTATION CHECKLIST (continued)

|  | [continue...](image) | Item Owner/Completion Date |
|---------------------|---------------------------|
| Y N                 |                            |
| Everyone involved in the new process understands their role and responsibilities |                            |
| Y N                 |                            |
| N Y                 |                            |
| N N                 |                            |
| ROI calculated by financial representatives |                            |
| Y N                 |                            |
| Anyone outside of the main stakeholder group, but impacted by the process, has been informed of the build-up and start of the process and changes |                            |
| Y N                 |                            |
| Data Collection |                            |
| Y N                 |                            |
| Procedures are in place to monitor both process and metrics |                            |
| Y N                 |                            |
| Data collection plan is allowed for analysis of changes to key indicators |                            |
| Y N                 |                            |
| Plans are in place for continual process metrics and procedures to respond effectively to changes |                            |

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### IMPLEMENTATION PLAN TEMPLATE

<table>
<thead>
<tr>
<th>Process Area</th>
<th>Task</th>
<th>Owner</th>
<th>Completion Date</th>
<th>Status</th>
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</tbody>
</table>
IMPLEMENTATION PLAN EXAMPLE

Example Pilot Implementation Plan

<table>
<thead>
<tr>
<th>Solution</th>
<th>Task</th>
<th>Owner</th>
<th>Completion Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Card Reader</td>
<td>Operate@100%</td>
<td>JI</td>
<td>06/01/06</td>
<td>Completed</td>
</tr>
<tr>
<td>Source Vendor</td>
<td>Select Vendor</td>
<td>JI</td>
<td>06/06/06</td>
<td>In Progress</td>
</tr>
<tr>
<td>Print</td>
<td></td>
<td>JI</td>
<td>06/01/06</td>
<td>In Progress</td>
</tr>
<tr>
<td>IF Integration</td>
<td>Vendor Selection</td>
<td>BI</td>
<td>03/12/06</td>
<td>In Progress</td>
</tr>
<tr>
<td>Data Entry Integration</td>
<td>Data Entry Integration</td>
<td>BI</td>
<td>01/01/06</td>
<td>In Progress</td>
</tr>
<tr>
<td>Validation Function</td>
<td>Validation Function</td>
<td>BI</td>
<td>01/15/06</td>
<td>In Progress</td>
</tr>
</tbody>
</table>

IMPLEMENTATION PLAN TEMPLATE

IMPLEMENTATION PLAN EXAMPLE
Lean Six Sigma Control Phase
Sustainability and Spread

SUSTAINABILITY and SPREAD

Improvement initiatives must be specifically designed to encourage sustainability and spread:
- Ongoing frequent measurement and reporting
  - Positive reinforcement for high performance
  - Accountability for low performance
- Strong leadership commitment and support
- "Early Adopter"/champion for each unit involved

WHAT is SUSTAINABILITY?
- Definition: The persistence of performance improvement over time.
- Philosophy: "The first rule of sustainability is to align with natural forces, or at least not try to defy them." Paul Hawken (author, environmentalist and entrepreneur).
EVALUATING SUSTAINABILITY

- **Excellent**: Fully implemented, sustained to goal for greater than 12 months
- **Good**: Significant or partial implementation, sustained to goal for greater than 6 months
- **Fair**: Some implementation occurred, but did not sustain to goal for greater than 3 months
- **Poor**: No implementation, and/or did not meet goal for at least 3 months following implementation or other sustainability issues

SUSTAINABILITY EXAMPLE

- **Standardized protocols, education and order sets in place**

SUSTAINABILITY EXAMPLE (continued)

- **Scales changed to make bed angle easier to determine**
- **Weaning protocol with RT driven algorithm implemented**
- **Multidisciplinary rounds with daily feedback to staff**
What does this process look like three months later?

SUSTAINABILITY STRATEGIES

- Make the process as intuitive as possible
- The natural default is the right action - the path of least resistance leads to the right action
- Change should be driven from the lowest level possible within the organization
- Change should be gradual, beginning with the lowest levels of implementation complexity and migrating to higher levels over 4-6 weeks

SUSTAINABILITY STRATEGIES (continued)

- Process performance data should be presented to the front line staff members on a regular basis (daily is preferred, reducing frequency as process stabilizes)
- Performance metrics should be monitored. Supervisors and front line staff members held accountable to low performance and recognized/rewarded for high performance
- Make sure everyone knows about successes
TEST of SUSTAINABILITY

Must answer “yes” to these questions:

✓ Is the improvement based on a robust/reliable process?
✓ Is the improvement driven by the people closest to the process(es)?
✓ Have you conducted small incremental tests of change?
✓ Have involved staff received regular (daily) feedback?
✓ Have performance metrics been monitored?
✓ Front line staff and supervisors recognized/praised for high performance and held accountable for low performance?

OWNERSHIP vs. BUY-IN

☐ The Goal is Ownership not Buy-In
☐ How to create Ownership:
  ☐ Front line staff involvement in the process.
  ☐ Let staff decide on changes – not an “outsider”.
  ☐ Give teams the tools and encourage solutions.
  ☐ Involve as many people as possible in the tests of change.
  ☐ Make owner’s accountable.

SPREAD

“The work is not done until everyone is either following the new system or in the process of improving the new system.”
SPREADING IMPROVEMENT

What is Spread?
- The application of tools and techniques outside of the original project focus area

The Spread Challenge
- Going from "proof of concept" success stories to wide-scale adoption
- Organizational barriers are formidable

Rate of adoption rests on:
- Perceptions of the innovation
- Individual readiness for change
- Organizational culture

SPREADING IMPROVEMENT

Characteristics influencing spreadability
- Clarity of advantage for change
- Compatibility with current system
- Ease of testing and implementing
- Visibility of impact
- Visibility of leadership support
- Frequent measurement and feedback

TESTS of SPREADABILITY

Must answer "yes" to these questions
- Is there dedicated staff to test in new unit?
- Is staff time made available to participate in testing?
- Is there leadership commitment and support?
- Are staff motivated to make the change?
- Will an improvement methodology be used?
Ortho Organization Team:
We Wish to Spread: Use There and Those

SPREAD TEMPLATE EXAMPLE

| Area | Spread | Impact on Change | Application | Change in Practice | Impact on Values | Outcome
|------|--------|-----------------|-------------|-------------------|-----------------|--------
| Area 1 | No | Role, expertise, budget | No change, role, budget | No change | No change | No change

EVALUATING SPREAD

- **Excellent:** Principles spread to other units with no outside assistance
- **Good:** Principles spread to other units with minimal outside assistance
- **Fair:** Some evidence of application beyond initial project area
- **Poor:** No evidence of application beyond the initial project area

Lean Six Sigma Project Close-Out
Many organizations create project databases to serve as repositories of Lean Six Sigma project results. If this is the case, the project report and the associated documentation will need to follow the repository's specific requirements.

A major purpose of a well-documented final report is to make sure that the improvement rationale is available for future employees and to interested parties.

**FINAL REPORT COMPONENTS**

**Champion:** A background of the project and the basis of its selection

**Define Phase:** Project Charter, VOC, SIPOC

**Measure Phase:** Potential KPOVs and KPIVs, baseline measures of performance and waste, summaries of key results

**Analyze Phase:** Results of statistical tests and conclusions, discovery of flow-impediments, root cause analyses and documentation

(continued on next slide)
PLAN for CONTINUOUS IMPROVEMENT

Before being disbanded, the project team should make the following additional contribution to help the future employees who will routinely run the improved process:

- Develop a plan for tracking the occurrence of problems
- Develop the basis for deciding the need for further improvement initiatives in the future

COMPLETE THE A3

At the minimum include:

- Future state process map.
- Main control charts, and other charts, that will be used for monitoring the process.
- Estimated figures on performance improvement and savings.
- List of team members and the name of the owner or manager of the improved process.

END OF WEEK 14 MATERIAL

Assignment:
- Presentation #4 Improve/Control Phase