



MAYO CLINIC
LABORATORIES

LEAN Management System: Guiding Mayo Clinic Laboratories through the Pandemic

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Disclosures

Relevant Financial Relationship(s):

Nothing to Disclose

Off Label Usage:

Nothing to Disclose

Objectives

- Discuss the benefits of leveraging a management system for leadership
- Describe the positive outcomes of Huddles at various organizational levels
- Recognize the impact of visual management

Introductory Information

- Department of Laboratory Medicine and Pathology (DLMP)
- Mayo Clinic Laboratories
- System Basics
- DLMP Management System Overview
- Lean Management System and Components

System

- A system is an **organized collection of parts** that are **highly integrated** to accomplish an overall **goal**



Communication
Listen, think, react



Visual Management
“Go & See”



Problem-solving
An army problem-solvers

Performance Excellence

Lean Management System Integrated In Department Management System

DLMP Management System

Mission: To provide the highest quality laboratory and pathology services to the patients, physicians, and others we serve

Primary Value: The needs of the patient come first.

Core Values: Respect, Integrity, Compassion, Healing, Teamwork, Innovation, Excellence, Stewardship

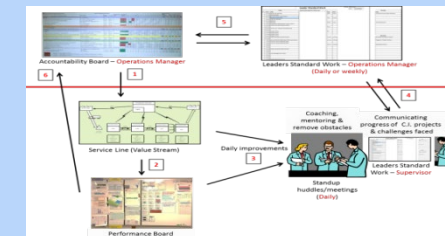
Strategy Deployment System



Quality Management System



Lean Management System



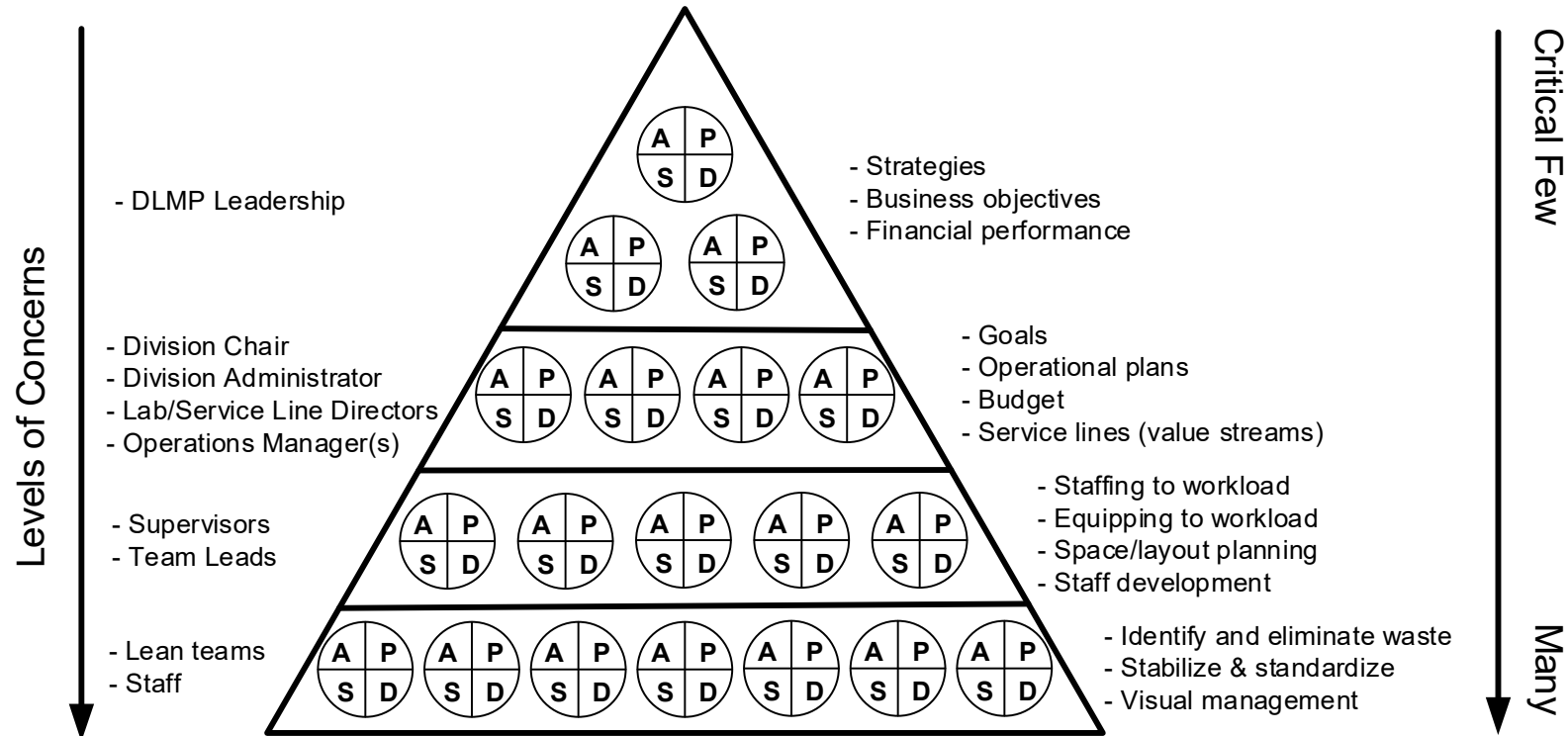
People System

Cultural Focus *Fair and Just Culture, Safe environment, Developing people, Empower and involve everyone*

Leadership Capabilities *Servant leadership, Inspiring values, Engaging colleagues, Bold and forward thinking, Driving Results*

Learning Organization *Create, acquire, transfer knowledge, and modify our behavior to gain new knowledge and insights*

Problem Solving at Every Level



Mayo Clinic Laboratories

February 2020

- A large complex Department consisting of ~4000 FTEs
- Annual volume 25 million tests; supporting Mayo Clinic and Mayo Clinic Laboratories Reference Lab customers
- Pandemic Plans updated; in place since 2011
- Mayo Clinic Healthcare Incident Command Center activated
- Department organized into 8 Divisions
- Monthly Leadership Communications Meetings
- Clinical Microbiology working on developing LDT assay consistent with FDA EUA

Mayo Clinic Laboratories

March 2020

- WHO declares pandemic; FDA allows modified EUA
- US States start to enact lockdowns and shelter in place orders
- Schools go virtual
- Many Healthcare facilities in US cancel outpatient visits and elective surgeries
- Demand for COVID-19 testing grows exponentially
- Significant supply chain issues, safety concerns

Mayo Clinic Laboratories

March 2020

- Our primary issues:
- Our volumes are decreasing and our staff are well; what to do with all the spare work force?
- Bringing up multiple platforms for SARS-COV-2 in short order; typically a controlled, lengthy process of documentation and forms (equipment purchases, validation, LIS Implementation)
- Significant supply chain issues daily (testing and collection)
- Many inquiries from Practice and external entities; how to respond
- Many other projects and initiatives in flight

How to Use a Lean Management System to Help Mitigate Challenges?

Problem Area	Symptom	Details	Timeline for implementation of solution
Lack of Clear Roles/Responsibilities	Everyone trying to help with everything	Identified ~12 focus areas that are lead by a Lab Consultant partnered with an Operations Administrator	10 days
Lack of Communication Plan	Not enough or the right information going to the right teams	<ul style="list-style-type: none"> • Daily Administrator huddle • Daily Roundtable with MCL Leadership • Weekly Lab Supervisors Meeting • Weekly Lab Town Hall • Weekly Lab Exec Meeting • Daily Lab Communications email • Identification of leaders to manage Public and Government Affairs 	1-5 days

Huddle at Lab Leadership Level

- Top Five Issues: Overview/Updates and Owner
- Daily Chain of Command: Lab and HICS Team
- Metrics Review: Incoming, Previous Day, Capacity
- 12 Focus Areas' Daily Report Out (red/yellow/green)
 - Sent to Institutional Leadership Weekly
- Reinforce Values – RICH TIES
 - Respect, Integrity, Compassion, Healing, Teamwork, Innovation, Excellence, Stewardship

How to Use a Lean Management System to Help Mitigate Challenges?

Problem Area	Symptom	Details	Timeline for implementation of solution
Integration with Clinical Practice Leadership	Lack of awareness of what is happening on the clinical side	<ul style="list-style-type: none"> Key members attend Clinical Practice Leadership; communication Daily Practice Call-ins 	Immediate
Logistics		<ul style="list-style-type: none"> Dedicated conference room Dedicated admin support 	Immediate
Lack of staffing deployment approach/plan for Mayo Clinic	Did not have a solid plan to support HICS Clinical or Lab resource needs	Development of web based tool for labs to estimate workload and estimate available FTE	2-3 days
Microbiology Lab Staffing	Lack of plan to support capacity ramp up	Identification of qualified staff and development of escalated testing plan	1-2 days

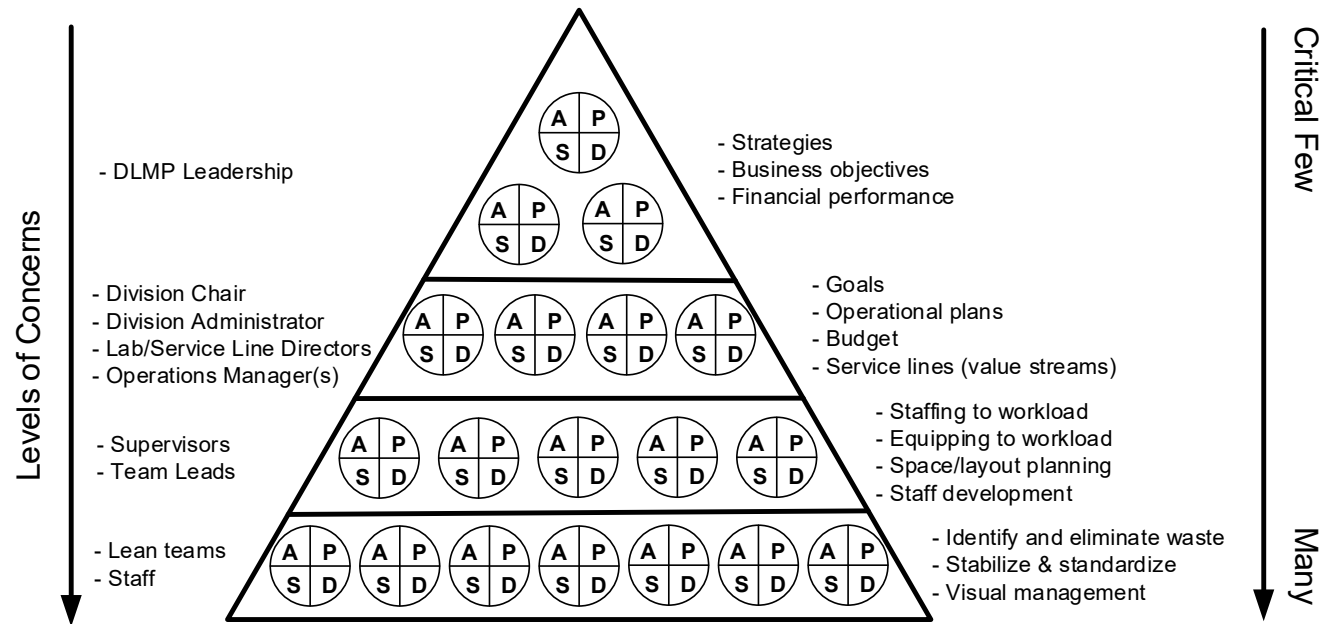
How to Use a Lean Management System to Help Mitigate Challenges?

Problem Area	Symptom	Details	Timeline for implementation of solution
Technology	Lack of intake process for questions/issues	<ul style="list-style-type: none"> Development of shared Lab Command Center in box Development of strategic email distribution lists 	<p>1 day</p> <p>7 days</p>
Lack of process to prioritize and manager all incoming requests for reports	Operational report and testing results requests to coming from multiple sources and being turfed to multiple report entities	<ul style="list-style-type: none"> Team developed that prioritized report needs Clear communication on who would be reporting out lab data 	7 days

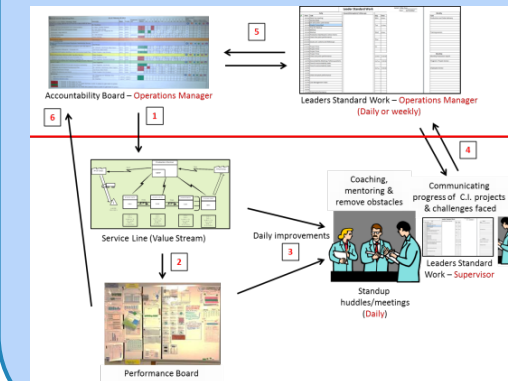
Mayo Clinic Leadership Team Today

- Real-time communication
- Maintain Lab Leadership shared e-mail inbox and daily on-call
- Leadership Administrator huddle 3 days per week
- Department Leadership huddle 2 days per week
- Virtual Meetings:
 - Lab Supervisor's Forum 2 times per month
 - Lab/Human Resources Forum Weekly
 - Lab Department Town Hall Weekly
 - All utilize slido.com for real-time Q&A and recorded

Problem Solving at Every Level



Lean Management System
 Daily planning / communication
 Visual management
 Problem solving & improvement
 Teamwork & engagement
 Coaching & mentoring



Huddle at the Front Line

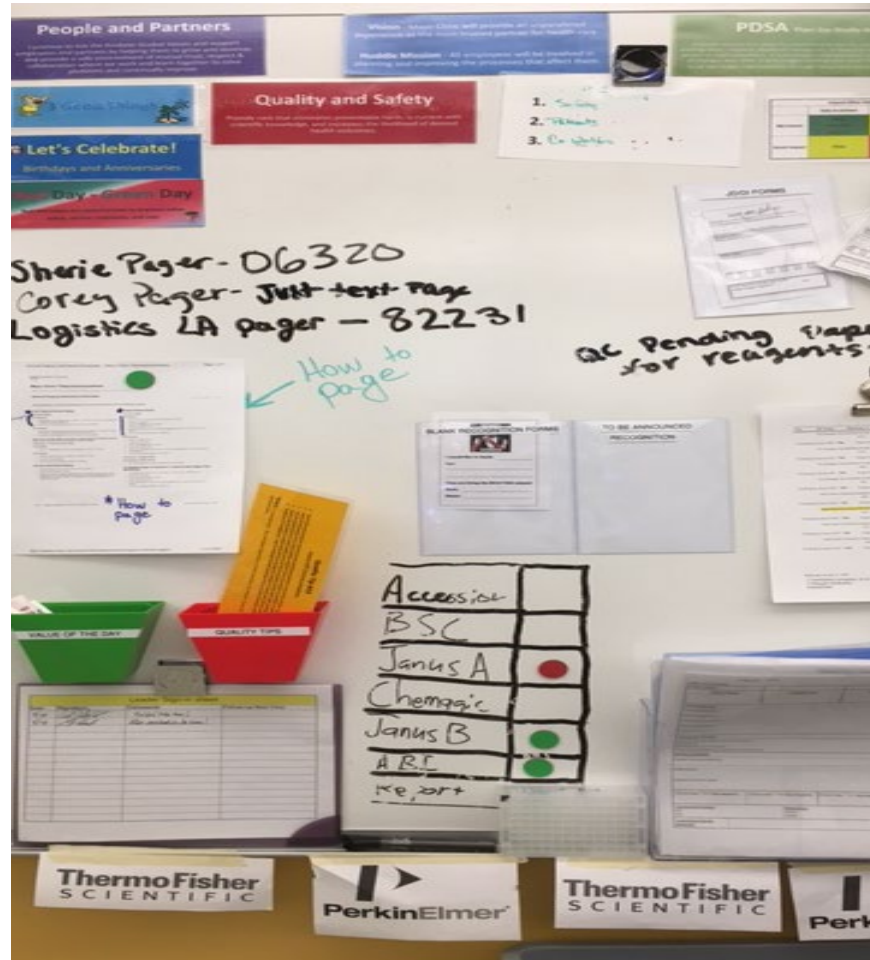
Standard Format in Use Prior to Pandemic

- Three Good Things
- Quality and Safety
 - What safety issues were there yesterday, are we at risk today?
 - What is the plan for today?
 - Continual Improvement – status of active PDSA
- People and Partners
 - Recognition and Introduction of new staff
- Reinforce Values – RICH TIES
 - Respect, Integrity, Compassion, Healing, Teamwork, Innovation, Excellence, Stewardship

Previous Lab Experience with Huddles

Reasons for Expanding

- Communication of Daily Plan
- Process Improvements
 - Performed volume increases
 - Reduced errors
 - Instrument maintenance issues
- Safety
- Engagement
- Introduction of New Staff



Huddle Board at Laboratory Pod

Standard features across all pods

Standard Work for Supervisor

Pre-pandemic had Two Daily Huddles

- Daily Lab Management Telephone Huddle
- Front Line Staff Huddles (6)
 - One at each of three shifts
 - North side and South side
- Gemba Walk – Daily AM and PM for Co-supervisors and Engineer
- Division Huddle – 3 days/week for Supervisors, Asst. Supervisors, Ops Managers, Administrators
- Material and Supply Huddle – 3 days/week for Lab Staff, Administrator, Supply Chain

Daily Lab Management Huddle

Communication between performing sites

- Daily Morning Tele-conference (15-30 minutes)
- Multiple Performing Sites
 - Lab directors, Supervisors and Technical, Quality, Educational specialists
- Standard Topics
 - Equipment / Standard Processes
 - Staffing
 - Safety
 - Materials
 - Regional issues / positive test trends

Daily SARS-CoV-2 Testing Goal = 18,000

Surge Goal = 25,000

- Instrument Platforms
 - Test validations, capacity, workflows
- Laboratory Space
- Staffing and Training
- Reagents and Materials
 - Supply Chain
 - Warehouse space

Achieving Testing Goal 1

- Instruments: Test Validation, Capacity, Staffing, Materials
 - Roche: In use - reagent allocation not sufficient to achieve goal
 - Abbott: Labor vs Volume, discontinued
 - Hologic: Supply quantity issues, redeploy to other performing labs
 - Vela: Started but discontinued due to EUA delay
 - ThermoFisher: In use
 - PerkinElmer: In use
- Laboratory Space: Space Management Team, Contractors
 - Available space not adjacent to existing laboratory
 - Increased from ~4000 SF to ~20,000SF
 - Also Mgmt cubes, Tech computer stations, locker room

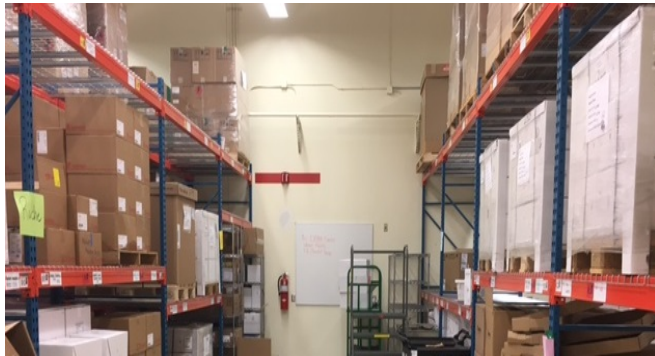
Achieving Testing Goal 2

- Lab Staffing Changes:
 - Pre-pandemic: N=21
 - Test Volume Ramp: N~270 + redeployed staff
 - Add: 1 Co-Supervisor, 1 Asst. Supervisor, 1 Quality Specialist, 1 Education Specialist, 5 Technical Specialists, Balance are Bench Techs and Lab Asst.
- Redeployed Department Education Staff: assist laboratory Ed Specialists to provide training for new laboratory staff
- Logistics Team: Created to manage materials in new warehouse space and deliver to processing areas

New Expanded Warehouse Space

Logistics Team formed

- Space Mgmt Team
- Supply Chain Team
- Logistics Team
- Note visual management examples





Specimen Input Visual Management

Visual communication between Operations staff and Lab staff

Standardized Shift Crossover Cards

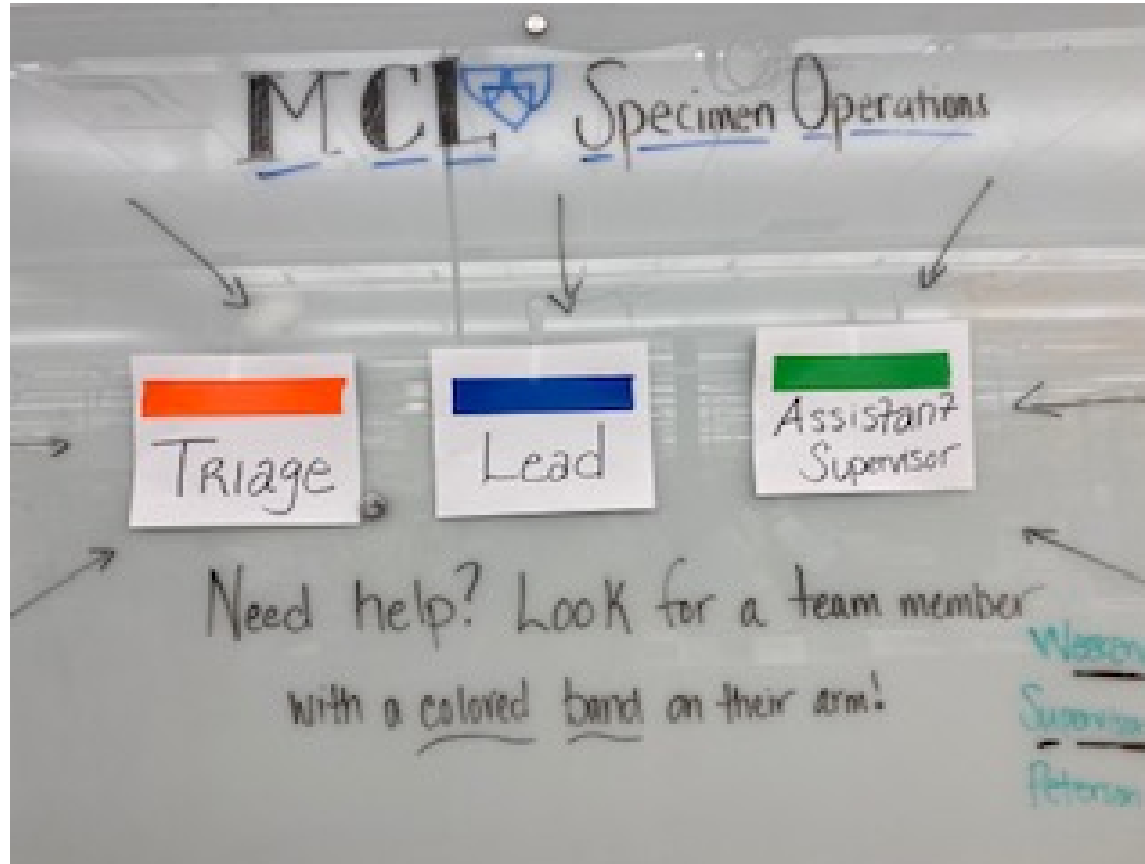
Aliquot Bench Example

- Cards developed for each process step and documented in SOP
 - 1) Priority Runs Needing to be Pipetted:
 - 2) Runs Ready to go on Instrument:
 - 3) Tubes to be Discarded:
 - 4) Process Changes:



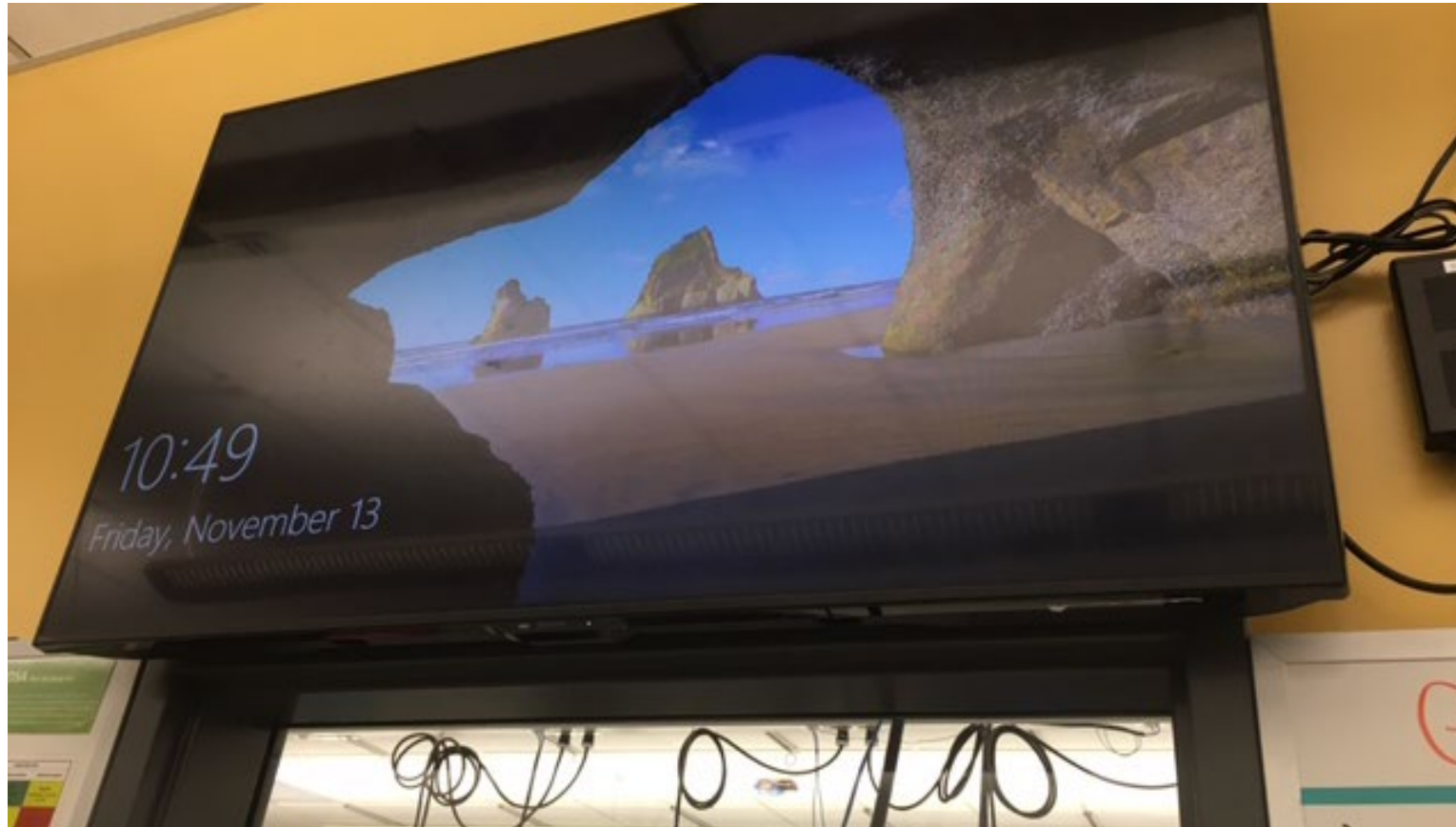
Samples in Queue

Distribution to two platforms depending on reagent supplies



New Staff Can Identify Team Members

Other work groups have implemented this good idea



Video Screen Communication

Future improvements to communicate Amp room status

Summary

- A LEAN Management System coupled with your Quality System has a direct impact on achieving your strategic goals
- Benefits of Lean Management System
 - Allows you to work smarter instead of harder
 - Results in improved communication
 - Fosters teamwork and collaboration
 - Builds trust

More Information

- Catalysis
 - catalysis@createvalue.org
- Shingo
 - <https://shingo.org/shingo-model/>
- Staffing to Workload Article by Michael Baisch
 - <https://www.medlabmag.com/article/1499>

QUESTIONS & DISCUSSION