A3 PROBLEM SOLVING

An Introduction

APCD

Value-Added

Quality

Root Cause

Standardization

Check

Act

Improvement

Theme:

Background

Current Condition

Cause Analysis

Target Condition

Cost:

Action Item

Implementation Plan

Resp

Due Date

Planned Results

Follow-Up

Actual Results

Prepared By: Date:

Theme:

Background

Current Condition

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Due Date

Planned Results

Follow-Up

Actual Results

Prepared By: Date:
Continuous Improvement
- Building a Culture of Excellence
- Operational Improvements
- Process Owner Development
- Team-building
- Training

Quality Manager – Fidelity National Information Services

Lean Certification: Toyota sponsored Lean program at the University of Kentucky.

Applied Lean in Production, Sales, Customer Service, and Administration functions.

Experience in plastic embossing, plastic injection molding, fabrication, machining, and assembly industries.
AGENDA

Introduction
Overview of A3 Problem Solving
Using A3 Problem Solving
Conclusion
AGENDA

- Introduction
- Overview of A3 Problem Solving
- Using A3 Problem Solving
- Conclusion
THE HOTEL

- New high-rise hotel receives complaints that the elevators are too slow.
- The manager instructs his people:
  “Find a way to speed up the elevators”
Elevator company: “cannot go any faster.”

Manager gives new orders: “Find a location and design a shaft to install another elevator.”
Fortunately, solution prevented because REAL problem discovered:
The guests were bored while they were waiting.
The manager then gave his final command:
Find a way to take customers’ minds off of their waiting.
A store was having difficulty selling the health food mix called Rainforest Crunch, which was a hot selling item in other stores.
RAINFOREST CRUNCH

- The instructions given by the store manager:
  "Lower the price of the item to increase sales."
- It still did not sell.
- The manager lowered the price further. Still no sales.
- After lowering the price two more times to a level that was well below the competitors', the item still did not sell.
Manager walked around store, saw the **real cause** of the problem.

- **Cause**
  - NOT high cost of the item
  - **real cause** item not prominently positioned in store.
- Once moved, sales shot up.
EXAMPLES

- How are these examples alike?

- How are these examples different?
RELATIONSHIP OF PROBLEMS, SYMPTOMS, AND CAUSES.

Root Causes are the specific circumstances that are the underlying source of the problem.

A Problem is when a condition varies from ideal and is not acceptable.

Symptoms are what we first become aware of. They are indicators and results that tell us about the current condition.
We must clearly understand the current condition through the assessment of all symptoms.
Once the current condition is fully understood, we can begin to look beyond the problem to uncover the root cause.
Root Causes are usually hidden.

- Resist the temptation to conclude too soon.
For each root cause, countermeasures can be identified to fix the root cause and, thus, prevent the problem from recurring.
AGENDA

- Introduction
- Overview of A3 Problem Solving
- Using A3 Problem Solving
- Conclusion
The purpose of A3 problem solving is:

- To understand a problem fully
- To uncover root causes of problems
- To determine solutions to fix the problems at their root cause
- To develop a plan for effectively implementing solutions
- To verify that the solutions solved the problem.
The A3 is done on the front side of an 11x17” (thus the name, A3) sheet of paper.
- Define the problem in a clear and concise way
- Convey the symptoms
- Do NOT suggest a particular cause or solution.
Describe any pertinent background information.

What is essential to understanding the extent and importance?

Remember: do not suggest a particular cause or solution.
- Convey the current state of the process
- Collect reliable data on process quality, cost, and delivery
- Anything that can be used to uncover the underlying causes of the problem.
CAUSE ANALYSIS

- To dig down into the problem to identify its root cause.
- The root of the problem should relate to waste, variation, or strain.
Define countermeasures to eliminate root cause(s)
Create a diagram that represents the condition we want to create.
- Summarize the steps needed to achieve target condition.
- Include task, who is responsible, and due date.
FOLLOW-UP

- Verify the improvement was effective.
- Follow-up later with appropriate measurements
EXAMPLE

Reducing Change-over time
Mission: Reduce the amount of distance required in producing Personalization batches

Background

<table>
<thead>
<tr>
<th>Batch No</th>
<th>Dist (Ft)</th>
<th>Load Min Per Batch</th>
</tr>
</thead>
<tbody>
<tr>
<td>19119</td>
<td>437.5</td>
<td>12.1</td>
</tr>
<tr>
<td>19123</td>
<td>419.8</td>
<td>12.5</td>
</tr>
<tr>
<td>19232</td>
<td>404.1</td>
<td>10.8</td>
</tr>
<tr>
<td>Avg</td>
<td>420.4</td>
<td>11.8</td>
</tr>
</tbody>
</table>

- During the production of three batches, the average distance traveled was 420.4 ft.
- Average # of plotter loads per batch = 12.7
- The average load/unload time per batch produced was 11.8 minutes
- 2007 Christmas season projected batch qty = 643
  (643 x 12.8 / 60 = 32.9 hrs to Load/Unload plotters)

Target Condition

Current Condition

Production Room
Personalization
Spaghetti Diagram
(Batch: 19119)

Average frequency of plotter loads = 12.7 per batch

Implementation Plan

<table>
<thead>
<tr>
<th>Action Item</th>
<th>Resp</th>
<th>Due Date</th>
</tr>
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<tbody>
<tr>
<td>Investigate Vinyl Racks from Vendors</td>
<td>KW</td>
<td>8/10/07</td>
</tr>
<tr>
<td>Investigate Custom Vinyl Rack Designs</td>
<td>TF/DV</td>
<td>?</td>
</tr>
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<td>Investigate PC Options (Placement, Mounting)</td>
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</tr>
<tr>
<td>Determine Optimum height of plotter tables</td>
<td>KW/BG</td>
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</tr>
<tr>
<td>Investigate Reducing # Colors offered</td>
<td>DC/BG</td>
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Cause Analysis

Too much time is spent producing Personalization batches

Why? - Too much time is spent loading/unloading plotters

Why? - Too much time is spent moving from one side of the plotters to the other side

Why? - The center table is very long

Why? - It must hold 2 plotters and a printer

Why? - Room was designed for these to be in center

Why? - The material is not close to the plotters.

Why? - Room was designed that way...

Cost:

Follow-Up

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
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<tbody>
<tr>
<td>Avg. distance per batch: 420.4 Ft</td>
<td>202.0 Ft</td>
</tr>
<tr>
<td>Avg. Load Minutes/batch: 11.8 Min</td>
<td>9.4 Min</td>
</tr>
<tr>
<td>Avg. time/color change: 0.9 Min</td>
<td>0.69 Min</td>
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Mission: Reduce the amount of distance required in producing personalization batches

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- 2007 Christmas season projected batch Qty = 643 (643 x 11.8 / 60 = 92.9 hrs to Load/Unload plotters)
Production Room
Personalization
Spaghetti Diagram
(Batch: 19119)

Average frequency of plotter loads = 12.7 per batch

Avg dist. per batch = 420.4 ft

Avg Load time = 11.8 min per batch
Causes of the Problem

Too much time is spent producing Personalization batches

Why? - Too much time is spent loading/unloading plotters
  Why? - Too much time is spent moving from one side of the plotter to the other side
    Why? - The center table is very long?
      Why? - It must hold 2 plotters and a printer
        Why - Room was designed for these to be in center
      Why? - The material is not close to the plotters.
    Why? - Room was designed that way...
## Implementation Plan

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Cost:
## Follow-Up

<table>
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<tr>
<th>Before</th>
<th>After</th>
<th>% Change</th>
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<tbody>
<tr>
<td>Avg. distance per batch: 420.4 ft.</td>
<td>202.0 ft</td>
<td>-52%</td>
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<td>9.4 min</td>
<td>-20%</td>
</tr>
<tr>
<td>Avg time/color change 0.93 min</td>
<td>0.69 min</td>
<td>-26%</td>
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Mission: Reduce the amount of distance required in producing personalization batches

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- The average load/unload time per batch produced was 11.8 minutes.
- 2007 Christmas season projected batch qty = 643 (643 x 11.8/60 = 11.9 hrs to load/unload plotters).

**Current Condition**

Production Room
Personalization
Spaghetti Diagram
(Batch: 19119)

Average frequency of plotter loads = 12.3 per batch

**Implementation Plan**

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**Follow-Up**

Prepared By: Kim Winar, Melinda Tomaro, Michelle Cacace, Maria Rivera, Dave Church, Tom Jules, Dhan Vayalur, Bill Giambra

Date: 7/31/07
PROBLEM SOLVING TOOLS

- Pareto Chart
- Flow Chart
- Identifying Waste
- Value Added Vs. Non-Value Added
- Brainstorming
- Fishbone Diagram
- 5 Whys
- Project Planning & Implementing
WHY USE THE A3?
FLASHING PHRASES EXERCISE

- In the following 3 slides, phrases will quickly flash on the screen.
- After each phrase flashes, write it down.

Are you ready?
Paris
in the
the Spring
Bird in the Hand
Jack in the Box
According to scientists at Johns Hopkins University…

…It takes about 550 to 750 milliseconds for the mind to recognize and understand a familiar situation.
Why use the A3?

- Following the A3 format slows down the mind and helps keep users from jumping to conclusions.
AGENDA

- Introduction
- Overview of A3 Problem Solving
- Using A3 Problem Solving
- Conclusion
Mission and Background
Assessing the Current Condition
Determining Root Cause
Defining the Target Condition
Developing the Implementation Plan
Follow-up
A Flow meter was installed at a chemical plant to measure the flow of a corrosive fluid. A few months later, the flow meter began to leak. Instruction: “Find a material to make a flow meter out of that will not corrode.”
An extensive, time-consuming search was conducted to find such a material that was still cost-effective. None was found.
FLOW METER

- Problem statement should have been: “Prevent to flow meter from leaking.”
- Solution: a preventive maintenance program that replaced flow meter on a regular basis before leaking occurred.
MISSION

- Define what your team is trying to accomplish in a clear and concise way
- Convey the symptoms of the problem
- Avoid suggesting a particular cause or solution.
- If considering metric target, a good rule of thumb is to reduce the pain by half.
Describe why we are trying to accomplish our mission.
Include pertinent background information.
Convey the importance of the situation.
Do not suggest a particular cause or solution.
IN THE BACKGROUND, CONSIDER INCLUDING

- how the problem was discovered
- why the problem is important to the organization's goals
- the various parties involved
- the problem symptoms, past performance or experience
- Metrics that may be used to measure the success of your project.
**ISSUE**

Patient's diagnosis and care was delayed by inaccurate 12-lead EKG.

---

**BACKGROUND**

November 1 to December 15, three 12-lead EKGs repeated due to incorrect placement of EKG leads. Average time of repeated EKG to MD = 31 minutes
USING A3 PROBLEM SOLVING

- Mission and Background
- **Assessing the Current Condition**
- Determining Root Cause
- Defining the Target Condition
- Developing the Implementation Plan
- Follow-up
WHERE IS THE OIL?

- A major oil company was getting a lower than expected production rate out of a well.

- Instruction: “Find ways to improve the oil production rate.”
WHERE IS THE OIL?

- They initiated studies costing hundreds of thousands of dollars over a 20-year period.
- Finally, it was determined that the original estimation of how much oil there was wrong due to a miscalculation.

The company did NOT have adequate understanding of the current condition.
ASSESSING THE CURRENT CONDITION

- When possible, observe the process first-hand and document your observations.
Sometimes, instead of seeing things the way they really are, we see what we expect to see or what we want to see...

Be careful to observe things as they are!
WHEN ASSESSING THE CURRENT CONDITION

- Illustrate the current condition of the process
- Draw a diagram representing the flow of material and/or information.
  - Simple stick figures and arrows will often do the trick.
- Show what is not ideal about the process.
- Show the extent of the problems.
- Include relevant information.
CURRENT CONDITION - EXAMPLE

Legend
- MD
- Charge Nurse
- Heart Patient
- Nurse
- 12 Lead EKG

1st EKG report inaccurate

2nd EKG report inaccurate

EKG

???
A **Problem** is when a condition varies from ideal and is not acceptable.

Therefore, to understand what a problem is, we must understand what the ideal condition is.
GOAL OF ANY LEAN PROCESS:

- Produce what the customer needs
- In the quantity the customer needs it
- When the customer needs it
- The first time (i.e. no errors)
- For a cost the customer is willing to pay
Once your process is diagrammed to show its flow, place storm-bursts on the diagram to indicate issues with the process.
CURRENT CONDITION - EXAMPLE

- Delay in Treatment
- Some leads placed wrong
- 1st EKG report inaccurate
- Upset MD
- 2nd EKG report inaccurate
- Nurse frustrated/confused
- Increased cost
- Pts in ED waiting for bed

Legend:
- MD
- Charge Nurse
- Heart Patient
- Nurse
- 12 Lead EKG
USING A3 PROBLEM SOLVING

Mission and Background
Assessing the Current Condition
Determining Root Cause
Defining the Target Condition
Developing the Implementation Plan
Follow-up
In 1990, the Bureau of Engraving and Printing set out to improve the quality of their paper money.

As part of the project, new printing machines were installed.

But the new process produced money with ink that smeared.
After 1-1/2 years of investigating this issue, it was determined to develop better ink.

A budget was created for this new development of better ink.

Before this new project got underway, the real cause was discovered:
PRINTING MONEY

- The presses were not applying enough pressure to drive the ink far enough into the paper.
- The budgeted money went towards buying new machines.
NOTE: HUMAN ERROR IS NATURAL

- Resist the temptation to blame the operator.
- We encourage workers to try harder to NOT make mistakes.
- But the root cause of the error is usually failure to account for the possibility of human errors in the system.
TO UNCOVER ROOT CAUSES FOR MISTAKES, WE MUST ASK:

“How does our current system allow operators to make mistakes?”
Before blaming the worker, consider the following in this order:

- Are methods/tools adequate?
- Are expectations clearly defined?
- Is worker properly trained?
- Was worker effort inadequate?
- Does worker have ‘spiritual’ issue?
- Does worker not care?
- Is worker not capable?
WHEN DETERMINING ROOT CAUSE:

- Identify sources of waste, variation, and strain.
ROOT CAUSE QUESTIONS:

- Are work activities sufficiently specified according to content, sequence, timing, and outcome?
- Are connections between steps clear, direct, and immediately comprehended?
- Are the pathways along which products/services travel simple, direct, and uninterrupted?
- Are all the steps value-added?
**ROOT CAUSE EXAMPLE**

<table>
<thead>
<tr>
<th>1) Delay in patient’s treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why? EKG needs to be repeated</td>
</tr>
<tr>
<td>Why? Some leads placed incorrectly on patient</td>
</tr>
<tr>
<td>Why? Leads aren’t clearly identified (marks worn off)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2) Increased cost to hospital and patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why? Redundant RN/ MD work</td>
</tr>
<tr>
<td>Why? Wasted materials/ use of EKG machine</td>
</tr>
<tr>
<td>Why? Other patients can’t be seen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3) Nurse frustration and confusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why? No clear signal for EKG lead placement</td>
</tr>
<tr>
<td>Why? Leads aren’t clearly identified (markers worn off)</td>
</tr>
<tr>
<td>Why? MD is upset</td>
</tr>
<tr>
<td>Why? Concern for patient/ delay in diagnosis</td>
</tr>
<tr>
<td>Why? Incorrect EKG</td>
</tr>
<tr>
<td>Why? Leads aren’t clearly marked</td>
</tr>
</tbody>
</table>
FOR LARGER PROJECTS:

- Some root causes may require validation.
- Experiment or analyze existing data before proceeding with the Target Condition.
BEFORE PROCEEDING TO THE TARGET CONDITION:

Consider if you want to add any additional storm bursts to the current condition diagram based upon your root cause analysis.
Mission and Background
Assessing the Current Condition
Determining Root Cause
Defining the Target Condition
Developing the Implementation Plan
Follow-up
ARRIGATING LAND

- New South Wales, Australia very arid.
- Gov’t wanted to grow crops.
- Dammed the Murray River.
- No new vegetation grew, existing vegetation died.
ARRIGATING LAND

- Cause of new problem: high concentration of salts in soil
- Now looking at projects for desalinating the soil.
PARADIGM PARALYSIS

- In 1968, Switzerland had 80% of world market in watch sales.
- Today, they hold less than 10%.
- They invented the Quartz Digital watch, but didn’t see the value in it.
- Swiss watch employment dropped from 65,000 to about 15,000 in a little more than three years.
STEPS FOR DEFINING THE TARGET CONDITION

- Create a list of possible solutions
- Evaluate possible solutions – Screen out impractical ideas or combine solutions
- Evaluate ideas on simplicity, amount of benefit, area of control, and timing
- Develop Consensus
- Prepare Target Condition Diagram
The next step will be to redraw Process Diagram on the A3 form, showing how the process will run with your proposed solutions in place.

Show your solutions in puffy clouds.

Kanban for packing mat’ls
TARGET CONDITION

Anatomical chart indicates corresponding lead placement

Accurate EKG report

Each lead clearly labeled

Patient receives prompt treatment
Before going further

- Your team will most likely want to gain Management Approval
- This is best done by presenting the results of your A3 problem solving activities thus far.
USING A3 PROBLEM SOLVING

- Mission and Background
- Assessing the Current Condition
- Determining Root Cause
- Defining the Target Condition
- Developing the Implementation Plan
- Follow-up
TWO TYPES OF COUNTERMEASURES

Short-Term Countermeasures
- Temporary containment solutions until Long-term solutions are implemented.

Long-Term Countermeasures
- Solutions that are either permanent or long-term and eliminate root causes.
PROJECT PLANNING INCLUDES:

- Defining the Project’s Scope
- Defining Project Steps, Stages, or Activities
- Defining Responsibilities & Due Dates
KEY IMPLEMENTATION POINTS:

- If improvement is large, consider a pilot implementation. If done, analyze pilot results thoroughly to verify effectiveness.
- Make necessary adjustments before implementing on a large scale.
- Aspects of the implementation plan can be broken out on separate action plans.
- Contingency plans should be considered for solutions that have not been tested.
- Include plans to give final ownership to the appropriate personnel.
- Assess Cost of implementation.
- Gain approval of Plan before proceeding.
IMPLEMENTATION PLAN SHOULD INCLUDE:

- A breakdown of major tasks with due dates and assigned responsibility – (Action Plan)
- Procurement of new materials and equipment
- Required Training and training materials
- Milestones and update reviews for large projects
- A measurement system for on-going assessment of performance of target state
- Creation or updating of SOPs
- Ways to involve workers in the implementation
- Plans for giving the improvement project visibility and those involved, recognition
- Plans to help affected workers deal with their changing environment
- Plans for follow-up to verify the effectiveness of the improvement
- Celebration upon successful completion of project.
Once the Plan is created, it is another opportunity to gain management approval.
## Implementation Plan

<table>
<thead>
<tr>
<th>what</th>
<th>who</th>
<th>when</th>
<th>outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Label EKG leads</td>
<td>Biomed. Eng.</td>
<td>Feb. 1/06</td>
<td>Clear signal to RN for lead placement</td>
</tr>
<tr>
<td>2) In-service for</td>
<td>Charge RN</td>
<td>Feb. 4/06</td>
<td>Staff aware of labeling/staff replacement process</td>
</tr>
<tr>
<td>3) System for label</td>
<td>Biomed. Eng. &amp; Charge RN</td>
<td>Feb. 2/06</td>
<td>Clear process for staff to ensure labels are kept readable</td>
</tr>
</tbody>
</table>

### Cost

<table>
<thead>
<tr>
<th>COST</th>
<th>COST BENEFIT / WASTE RECOGNITION</th>
</tr>
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<tbody>
<tr>
<td>Inspect/ replace labels for all EKG’s first time (labour &amp; materials) - $300</td>
<td></td>
</tr>
<tr>
<td>Inspect/ replace labels for all EKG’s - ongoing during routine servicing - n/c</td>
<td></td>
</tr>
<tr>
<td>staff in service - n/c</td>
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### Test

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<tr>
<td>RN does EKG on simulated patient w/ anatomical chart and marked leads</td>
<td>= 9 minutes</td>
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USING A3 PROBLEM SOLVING

- Mission and Background
- Assessing the Current Condition
- Determining Root Cause
- Defining the Target Condition
- Developing the Implementation Plan
- Follow-up
FOLLOW-UP

- Was the implementation executed as planned?
- Was the target condition realized?
- Were the expected results achieved?
FOLLOW-UP

- Compare metrics indicated in earlier stages of the A3 form as a before and after.
FOLLOW UP

Feb. 15/06 - March 15/06 = 0 repeated EKG's
A3 PROBLEM SOLVING

More Examples
Mission:

Increase customer satisfaction by improving packing and shipping accuracy.

Background

Analysis of production customer issues has determined about 50% of production related credits issued for order inaccuracy are packing and shipping related.
CURRENT CONDITION - EXAMPLE

- Pkg reqs. Vary greatly
- Traveler unclear
- RG orders not obvious - may need re-packed in EDI area
- Orders sent w/ mistakes

Pick List: Items missed or wrong qty
Pick List: MIA
Order consolidation adds complexity

Packers

Shipper

RG Orders

EDI
Travelers are not clear enough
   Why? - Packer must decipher information on traveler before knowing what to do.
   Why? - Traveler not designed for packing.

Pick List missed or not available
   Why? - Packer missed that Order has Pick List
   Why? - "Combined Order" is an unclear reference to pick list

Routing guide orders need repacked in the EDI area
   Why? - They were not packed correctly by the packer
   Why? - Packer not aware of RG requirements
   Why? - RG indication on traveler does not stand out enough.

Too much variation in store packing requirements
   Why? - Packing requirements are not standardized

Consolidation adds non-value added movement
   Why? - Packers must move tumblers from new orders aside while finishing another order
   Why? - Packers receive tumblers from one order before their previous order is completed

Wrong size Toppers are packed
   Why? - Topper sizes are too difficult to distinguish
   Why? - They are too small and they look alike
TARGET CONDITION

- Traveler: More clear on orders
  - With Pick Lists & Routing Guides
- One Order at a time to Packer
- Eliminate "web coupon" from PL
- Store Order
  - PKG Standardized
- Topper Bags
  - More clear on Sizes
- Packers
  - Sign Boxes w/ Empl. #
- Spot Audits to verify Pkg Accuracy
- Shipper
- [Diagram of process flow]
# Implementation Plan

<table>
<thead>
<tr>
<th>Action Item</th>
<th>Resp</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redesign Traveler: Pick List &amp; RG Designation</td>
<td>RD</td>
<td>TBD</td>
</tr>
<tr>
<td>Revise Order Flow at dec. (1 dec to 1 pakr)</td>
<td>JR</td>
<td>6/15</td>
</tr>
<tr>
<td>Standardize Store Order Packaging Reqs.</td>
<td>SO</td>
<td>5/2</td>
</tr>
<tr>
<td>Redesign size designation on Topper bags</td>
<td>MZ</td>
<td>TBD</td>
</tr>
<tr>
<td>Perform Spot Audits</td>
<td>JR</td>
<td>TBD</td>
</tr>
<tr>
<td>Packer signs boxes with Employee #</td>
<td>RB</td>
<td>5/2</td>
</tr>
<tr>
<td>Improve visibility of Pack/Ship issues</td>
<td>BG</td>
<td>5/18</td>
</tr>
<tr>
<td>Standardize Case Pack Qty</td>
<td>SO</td>
<td>TBD</td>
</tr>
</tbody>
</table>
As an alternative to listing improvement values, you may wish to ...

<table>
<thead>
<tr>
<th></th>
<th>Prior to Improvements</th>
<th>After Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issues: 97</td>
<td></td>
<td>84 (13.4% Reduction)</td>
</tr>
<tr>
<td>Issues per 1,000 Tumblers: 0.258</td>
<td>0.200 (23.3% Reduction)</td>
<td></td>
</tr>
<tr>
<td>Issues per 1,000 Orders: 8.43</td>
<td>5.59 (33.7% Reduction)</td>
<td></td>
</tr>
</tbody>
</table>
FOLLOW-UP

Follow-Up

…Show your improvements graphically

- Issues: 13.4% reduction
- Issues/1,000 widgets: 23.3% reduction
- Issues/1,000 orders: 33.7% reduction
**Mission:** Reduce the turnaround time of pathologist reports in the anatomical pathology lab.

**Background**

Anatomical pathologists’ reports often took up to five days to reach the treating physician. Previous attempts to improve turnaround time yielded no improvement and sometimes made things worse.

In addition, specimen volume increased by 40% because of marketing efforts and centralization efforts at IHC, straining capacity and compounding the problem.
CURRENT CONDITION - EXAMPLE

- **Diagnostic department**
- **Ward secretary**
- **Transporter**

**Low** - 9 min  
**High** - 144 min  
**Avg** - 45 min

- **Charge RN**

**Patient**

- **X-RAY**

**patient doesn't arrive during time available**

**no written message**
Problem: Backups in diagnostic departments
  Why? Patients arriving late
    Why? Transporter not called on time
      Why? Ward secretaries are busy and often forget.
      Why? No written message
      Why? No protocol
    Why? Transport unable to locate patient
      Why? Page does not include patient location (name only)
      Why? No standard protocol for transport paging
  Why? Patient not ready for transport
    Why? Nurses unaware of prescribed test
      Why? No mechanism to inform RN of scheduled procedure
TARGET CONDITION

Diagnostic Department
Should be able to do in Less than 30 minutes

Charge RN

Technician

RN and transporter will communicate patient care issue

Patient

less prep time

Transporter

X RAY
## Implementation Plan

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Implement Group Page</td>
<td>Bob</td>
<td>2/23</td>
</tr>
<tr>
<td>Coordinate with Charge RNs</td>
<td>Manager</td>
<td>3/2</td>
</tr>
<tr>
<td>Implement Tracking Sheet</td>
<td>Jane Doe</td>
<td>3/2</td>
</tr>
<tr>
<td>Cheat Sheet</td>
<td>Manager</td>
<td>3/2</td>
</tr>
</tbody>
</table>

Cost:
<table>
<thead>
<tr>
<th>Planned Results</th>
<th>Actual Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient xsport time 30 min max</td>
<td>March, 14.7 minutes</td>
</tr>
<tr>
<td></td>
<td>April, 11 minutes</td>
</tr>
<tr>
<td></td>
<td>May, 9.15 minutes</td>
</tr>
</tbody>
</table>
Mission: Reducing patient back-ups in the hospital’s diagnostic departments due to late arriving patients.

Patients in a hospital were not arriving to the diagnostic departments during their allotted time.

Because the patients were late, the diagnostic departments were getting backed up.
CURRENT CONDITION – EXAMPLE

CURRENT CONDITION:
Grossing Room: Cut & Dictate Diopsy 6am - 6 pm

SAMPLES PLACED IN PRE-PROGRAMMED PROCESSOR

Tech arrives to start embedding

(3Techs Arrive)
2 cut
1 embed

PAPERWORK READY

0530-0630
Dry Stain

0630-0730
Coverslip label with computer

0500

ALL EMBL complete
Courier available

1000
1100
1200
1230
Cutting Done
Stain/label Done

WASTE TIME

Arrives matches Req. to spec

0400

Transcription done at eve/night 8:00-8:30 at home

DELAY ONE DAY

3:30
Dept Closed
Courier last run

LAST SPEC MISSES COURIER

LAST COURIER DELIVERY 6 PM

1200
Transcriptionists take three to four hours a day matching paperwork to specimens.
  Why? - They match them manually.
  Why? - Paperwork and specimens are not presented in the same order.
Many specimens delayed in until the next day.
  Why - Specimens are delivered to the Grossing room @ 6:00 pm which is when that
department closes.
  Why - Slides get to pathologist from histology embedding 10:00 am @ the earliest
  Why - Histology embedding did not begin until 5:00 am.
Final reports often delayed
  Why - Transcription reports to the pathologists previously had a four- to five-hour
turnaround
Many labeling errors occurred causing further delayes
  Why - Work processes throughout were inconsistent.
TARGET CONDITION:

Grossing 6am to 10pm

Transcribe as samples grossed

Pathology Secretary matches req. to spec

ALL SPECS READY BY 6 AM

ALL SPECS GROSSED BY 2200, SAME DAY

1000-1300  →  0900-1200  →  0700-1000  →  0600-0900

EMBED CUT STAIN #5  →  EMBED CUT STAIN #4  →  EMBED CUT STAIN #3  →  EMBED CUT STAIN #2

RUN BATCHES ALL DAY

PROCESS

small
1200-1500 #1
1800-2100 #2
0100-0400 #3

large
1400-0200 #4
1600-0400 #5

0400-0700

EMBED CUT STAIN #1
## Implementation Plan

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</thead>
<tbody>
<tr>
<td>Modify print order on report</td>
<td>IT</td>
<td>2/2/07</td>
</tr>
<tr>
<td>Coordinate new Grossing Rm hrs.</td>
<td>GR</td>
<td>2/9/07</td>
</tr>
<tr>
<td>Coordinate new Histology hrs.</td>
<td>HD</td>
<td>2/9/07</td>
</tr>
<tr>
<td>Move transcriptionists area</td>
<td>TM</td>
<td>2/9/07</td>
</tr>
<tr>
<td>Document &amp; Standardize steps</td>
<td>PM</td>
<td>2/9/07</td>
</tr>
</tbody>
</table>

**Cost:**
<table>
<thead>
<tr>
<th>Planned Results</th>
<th>Actual Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two-day total turnaround</td>
<td>All Specs Grossed by 10 pm</td>
</tr>
<tr>
<td>Transcription turnaround &lt; 1 hr</td>
<td>Average: 47 minutes</td>
</tr>
<tr>
<td>Labeling errors: 4/year</td>
<td>1 in first 3 months</td>
</tr>
</tbody>
</table>

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AGENDA

Introduction
Overview of A3 Problem Solving
Using A3 Problem
Conclusion
BENEFITS OF THE A3 FORMAT

- A3 problem solving is intuitive and easy to learn and remember.
- The A3 form is both a template for problem solving and documentation of the efforts.
- The A3 process is satisfying to everyone who uses it, particularly frontline workers.
BENEFITS OF THE A3 FORMAT

- The objective nature of the A3 creates safe and acceptable problem solving; it is never critical of an individual's work.
- The graphic nature of the A3 contributes to deep understanding of the current condition and the target condition.
Creating the Target Condition is easy because we so deeply understand what’s wrong with the Current Condition.

Building accountability with a specific Implementation Plan occurs naturally as we outline the specifics of what needs to be done to make the countermeasures a reality.
QUESTIONS?
THANK YOU ...

...for your interest and participation.

We want your feedback

Please tell us if you found this training helpful.
Let us know how we can improve this information.