The Learning and Action Network Guidebook for Quality Improvement
Acknowledgements

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Disclaimer

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Quality improvement is defined by the Centers for Disease Control and Prevention (CDC) as “a continuous and ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality services or processes.”

In 2002, the Institute of Medicine (IOM) published *Crossing the Quality Chasm*. In this publication, The Institute of Medicine outlined six aims that a healthcare system must meet to deliver quality care. These aims are:

1. **Safe**: Care should be as safe for patients in health care facilities as in their homes;
2. **Effective**: The science and evidence behind health care should be applied and serve as the standard in the delivery of care;
3. **Efficient**: Care and service should be cost effective, and waste should be removed from the system;
4. **Timely**: Patients should experience no waits or delays in receiving care and service;
5. **Patient centered**: The system of care should revolve around the patient, respect patient preferences, and put the patient in control;
6. **Equitable**: Unequal treatment should be a fact of the past; disparities in care should be eradicated.

These aims fit in perfectly with the CDC definition of quality improvement. **Healthcare quality improvement** aims to achieve measurable improvement in each of the six aims identified by the Institute of Medicine.

As **Quality Improvement Organizations (QIOs)**, we recognize that there are always opportunities to achieve measurable improvements like those outlined by the CDC in their definition of quality improvement and the IOM’s six aims for delivering quality care. CFMC, the Colorado QIO, and the Learning and Action Network National Coordinating Center (LAN NCC) developed this Learning and Action Network Guidebook for Quality Improvement to be a resource for professionals that are forming, facilitating, and managing Learning and Action Networks (LANs) across the country. LANs are, by definition, an improvement initiative that brings together healthcare professionals, patients and other stakeholders around an evidence-based agenda to achieve rapid, wide-scale improvement.

The objective of this guidebook is to centralize useful quality improvement information and resources for LANs and make the guidebook readily accessible to those individuals or organizations that are using LANs to drive quality improvement initiatives. It is critical for these LANs to use quality improvement methods on their own activities to ensure they are continually improving – just as their participants are striving to improve.
Change is inevitable. When conducting quality improvement, change is necessary to make improvement and it must be discussed. In healthcare, this change can be very complex and often occurs frequently. This change is based on four fundamental things:

- The needs of a population or customer
- The resources available
- The competitive landscape
- The level of innovation that is occurring

LANs act as change agents – the definition of a Learning and Action Network is an improvement initiative that brings together healthcare professionals, patients and other stakeholders around an evidence-based agenda to achieve rapid, wide-scale improvement. LANs operate under the idea that in order for improvement to occur, the system in need of improvement, and those involved in that system, must somehow change.

In order to grasp an organization’s readiness for change, two critical questions must be asked:

1. What are the limits of human performance responding to the change?
2. What is the capacity of the organization to handle the change?

There are two orders of change that occur within most organizations.

<table>
<thead>
<tr>
<th>First Order of Change</th>
<th>Second Order of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small and easy steps for change</td>
<td>Complex change</td>
</tr>
<tr>
<td>Requires little effort to accomplish the change</td>
<td>Requires significant change in behavior</td>
</tr>
<tr>
<td>Does not significantly impact systems</td>
<td>Requires much more energy, effort, and work to implement this change</td>
</tr>
<tr>
<td></td>
<td>Significantly impacts systems</td>
</tr>
</tbody>
</table>

Stop and think. What order of change do you think LANs represent, first order change or second order change? Is the work that your LAN is conducting complex? Does the LAN require a lot of energy from your team? Is your LAN meant to significantly impact the participants involved?
Many people have studied change and the methods that organizations should take to foster change in a positive manner. In this section, we will highlight two of these change models: Galpin’s Human Side of Change Model and Kotter’s Heart of Change Model.

**Galpin’s Human Side of Change Model**

Galpin believed that an organization should focus on the human side of change and that change had the greatest opportunity for success if it was planned. Figure 1 highlights the 9-step process that Galpin recommended in his model.

1. Establish the need to change
2. Develop and disseminate a vision for change
3. Diagnose and analyze the current situation
4. Generate recommendations
5. Detail recommendations
6. Pilot – test recommendations
7. Prepare recommendations for rollout
8. Roll out changes
9. Measure, reinforce, and refine changes

**Kotter’s Heart of Change Model**

John Kotter developed his model for change based on the ideas that people need to fully accept change and incorporate it into their belief systems. He created an 8-Step process for getting to the “heart of change”.

1. *Increase urgency*
   - Shake up the current situation
   - Create a sense that change *must* happen
   - Share compelling stories and things that people can see, feel, and touch
   - Show evidence that change needs to happen

2. *Build the guiding team*
   - Create a team of influential and effective leaders
   - Ensure the team is diverse
   - Verify the team is fully committed and able to drive the change

3. *Get the vision right*
   - Clear vision is *critical* to success
   - Team must focus on the change and implementation
   - Leadership must set the direction
   - Allow for opportunities for brainstorming about the change
4. **Communicate for buy-in**
   - The team and leadership must communicate
   - Establish a gut-level buy-in by being clear and credible
   - Be simple and sincere
   - Get to the “heart” of the message
   - Communicate constantly

5. **Empower action**
   - Remove barriers to allow action
   - Removing barriers to action allow for confidence in the change

6. **Create short-term wins**
   - Show immediate success and inspire people
   - Seeing a win shows change can be implemented successfully

7. **Don’t let up**
   - Change is not complete until it is a reality
   - Maintain full support
   - Build momentum from short-term wins
   - Maintain the excitement and urgency

8. **Make change stick**
   - Ingrain the change in the organization
   - This takes time
   - Don’t stop at Step 6!

There is a lot that both of these change models share. Four themes should become particularly evident:

1. Communicate, Communicate, Communicate
2. Be authentic
3. Have a clear vision
4. Follow through until the change is ingrained in the organization

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Stop and think. Does your team practice these four themes as LAN facilitators? How do you and your team members ensure that your participants feel the same way? One idea is take a poll of your participants to learn their perspective of your team’s performance.
There are many ways to reduce fear and resistance to change. When planning to make change:

- Set goals, measure performance, and coach the people not willing to make change
- Ensure that those affected by the change have the right tools and training to perform
- Clearly communicate
- Be flexible and adapt as needed
- Be proactive vs. reactive

It is imperative that LAN participants are provided with useful training and the tools needed to conduct their improvement projects. As LAN facilitators, it is your responsibility to communicate to participants what the expectations are of the LAN and ensure that the training and tools offered to participants help them work toward the LAN’s goals.

There are also many ways and factors that lead to the acceleration of change:

- Strong leadership
- Simple strategy
- A clear understanding of mission and vision of the organization on all levels
- Constant customer focus
- Valuing innovation
- Improvement is daily work
- Systems focus
- Social responsibility
- Allowing decisions to be made at the lowest level possible

Having a strong understanding of how change is created, managed, and maintained is a key step to leading quality improvement initiatives in your learning and action network. This knowledge can be applied to every aspect of the quality improvement work being conducted internally within your LAN facilitation team as well as externally with your LAN participants.
The Model for Improvement (Figure 2), developed by Associates in Process Improvement, offers a framework to guide and accelerate improvement projects. There are two major components to the Model for Improvement: asking critical questions and then conducting Plan – Do – Study – Act Cycles, or PDSA cycles. Not only will LANs frequently work with participants to educate them on the Model for Improvement, LANs can benefit from following the Model for Improvement in their own activities.

Forming the Team

An African proverb states “if you want to go fast... go alone; if you want to go far... go together.” Quality improvement is similar to that proverb. Creating significant quality improvement also requires a team approach.

As you form the improvement team, be inclusive of many different roles in the organization and the process that is in need of improvement. Team members can include managers, line personnel, receptionists, assistants, and even patients in some cases! When forming an improvement team for your LAN, you may look to your immediate team as well as a participant in your events or an individual that is part of a different LAN team. Improvement team members that are outside your immediate team may offer the opportunity to get a different perspective on your work. Keep the team to a reasonable size to avoid slowing progress and be sure to identify a leader that respected by the other team members.
Step 1 – Define the Aim

After the team is formed, the team members can begin working through the Model for Improvement. The first step in the Model for Improvement is answering the following question:

**What are we trying to accomplish?**

The answer to this question is frequently defined as an *aim statement* – a statement that defines what a quality improvement team is trying to accomplish through their project. This aim statement should be developed by the team, remain focused on the project, and push the team to make significant and achievable improvement. Some good characteristics of good aim statements are:

- The aim statement aligns with an organization’s improvement mission
- It defines what a team intends to improve
- The aim statement should include numbers to quantify the improvement effort
- Aim statements should include deadlines for the improvement project
- The participants that are involved in the project should be documented

Here is an example of a strong aim statement:

“Our team would like our LAN participants to use the chat function available during our virtual LAN events. Part of our team’s performance improvement plan is to communicate with our participants through multiple channels – which include the chat function. We intend to engage our participants through chat and increase the use of chat by our participants by 20% from our current levels in three months.”

Step 2 – Identify the Measure

After establishing the team’s aim statement, the next step is to identify what measures the team needs to watch. These measures answer the question posed in the second step in the Model for Improvement:

**How do we know that a change is an improvement?**

There are three types of measures that a quality improvement team should identify when using the framework of the Model for Improvement:

1. **Outcome Measures** – these measures are results-oriented and measure the results of system performance. An example of an outcome measure is the number of participants that attend your LAN events or the level of satisfaction participants have after an event.

2. **Process Measures** – these measures are system-oriented and focus on the measurement of the processes that lead to, or support, system performance. An example of a process measure for LANs is conducting pre-presentation and post-presentation participant knowledge for every virtual LAN event. Another process measure may be a pre-LAN event checklist that is to be followed for each event to ensure the LAN event runs smoothly.

3. **Balancing Measures** – these measures are outside of the system or process being improved. The improvement team must ensure that creating improvement in one system or process does not lead to worsening of a different system or process. An example of a balancing measure is LAN participant satisfaction. If a team decides to make a change to the date and time of virtual LAN events, the team needs to ensure that this change does not significantly affect participant satisfaction in a negative manner.
Step 3 – Identify what to change

The improvement team needs to identify what changes they should test to answer the third question in the Model for Improvement:

**What changes can we make that will result in the improvements we seek?**

There are two major ways for an improvement team to identify possible changes to implement in their project – generating ideas or using change concepts.

Generating ideas requires the team’s original thinking. Frequently, a team can generate a significant number of ideas for change through the following methods:

- Brainstorming – spontaneously generating ideas as a group
- Observation – generating ideas based on what team members see
- Ideal Design – generating ideas based on the “perfect world” scenario
- Shared Experiences – generating ideas based on personal experience with the issue

Change concepts come from the work of Langley, Nolan, and Nolan in their book *The Improvement Guide*[^2]. These concepts offer topics to discuss as a team that may spur ideas for change. Examples of change concepts include:

- Eliminating waste
- Improving work flow
- Optimizing inventory
- Changing the work environment
- Enhancing the producer/customer relationship
- Managing time
- Managing variation
- Designing systems to avoid mistakes
- Focusing on a product/service

Stop and think. How can your team use these change concepts to improve your LAN? Have you already implemented some of these concepts in to your LAN event planning? If you haven’t, you may consider choosing one to test during your next LAN event.

After identifying the changes that can be made to result in improvement, the team needs to move from ideas and strategies to actionable solutions.

Step 4 – Implementing the PDSA Cycle

The PDSA cycle (Figure 3), which is also called a Shewhart Cycle or Rapid Cycle Improvement, is where the improvement team can take their change ideas and strategies and turn them into actionable solutions, test those solutions, and then monitor and act based on the results of the tests.

There are four steps in a PDSA cycle:

1. **Plan**
   - Ties in with the three questions in the Model for Improvement
   - Identify the purpose of the project and what you think will happen
   - Outlines the plan to carry out the test of the team’s proposed change
   - Explain the change idea and show how the team will measure to ensure improvement occurs

2. **Do**
   - Team carries out the improvement plan
   - Team begins to document what occurs when the change is implemented
   - Data begins to be collected and measurement begins

3. **Study**
   - Team begins to analyze the results of the change implementation
   - Identify if the change led to the results originally predicted and intended
   - Summarize the results of both the “Plan” and “Do” phase

4. **Act**
   - Act on the findings of the study
   - Decide whether the team needs to implement a new change, continue with the implemented change, or remove the implemented change
   - Spread the change if it resulted in significant improvement
Conducting Multiple PDSA Cycles

Conducting one PDSA cycle may provide an improvement team with the results hoped for at the beginning of the improvement project. However, this is typically not the case. Frequently, an improvement team will need to conduct multiple PDSA cycles (Figure 4) to drive significant improvement in their project.

As a team conducts multiple PDSA cycles, the ability to scale and spread the PDSA can also be tested. The improvement team should begin conducting the first PDSA on a small sample group. As more data is gathered and more information is learned, the team can grow the sample size and test the change on a broader scale.

In the chapter titled Breakthrough Collaboratives, we will discuss how the Institute for Healthcare Improvement uses their “Breakthrough Collaborative” model to conduct multiple PDSA cycles around an improvement initiative.

Case Study on PDSA (Care Transitions in Arizona)

A problem was identified by the team leading the No Place Like Home campaign in Arizona. This campaign is run through the ICPC Aim team at HSAG – Arizona. The team identified that there was a problem with how they ran their in-person LAN events and decided to conduct a PDSA on the problem. There were two learning sessions split by lunch. Many LAN participants were leaving immediately following the lunch and not attending the second learning session. The LAN team created a PLAN to keep LAN participants engaged. They decided that they would change the schedule around so the two learning sessions took place before they released their participants for lunch. They implemented (DO) this schedule at their next event. Then, they STUDIED their results from that event. With the new schedule in place, 100% of the LAN participants attended both learning sessions, stayed for lunch, and attended the closing of the LAN event. The LAN team ACTED by maintaining this new schedule for all upcoming in-person events based on the positive results of their test.
There are many ways to document and display the data that is measured during quality improvement work. In this guidebook, we are going to focus on three charts that can be used to display and monitor data:

1. Pareto charts
2. Run charts
3. Control charts

**Pareto charts**

Pareto charts are meant to help with problem solving during quality improvement projects. By using Pareto charts, quality improvement teams can track the frequency at which problems occur. These charts are extremely beneficial when conducting root cause analysis and in the PDSA cycle when the team must identify an opportunity for improvement. In Figure 5, you will see that the most frequently occurring cause of tardiness is listed with the highest bar at the start of the graph. The bars then descend from there. At the same time, a line graph of the percentage of total occurrences leading up to 100% is laid on top of the bar graph.

![Figure 5 - Pareto chart for tardiness causes](http://www.transtutors.com/homework-help/industrial-management/total-quality-management/pareto-diagram.aspx)
A quality improvement team can use Pareto charts to identify the leading causes of a problem and work to identify changes and solutions that work to reduce or eliminate those causes. The Pareto chart allows a team to identify what areas will potentially lead to significant improvements. This is all based on the Pareto Principle, which states that 80% of problems typically come from 20% of the causes.

You can use Pareto charts to solve problems within your LAN. If you’re experiencing a decrease in attendance, you can conduct a simple questionnaire to identify the top reasons participants miss LAN events. Conversely, you can also use a Pareto chart to identify the functions of your LAN that participants value the most.

Run Charts

Run charts (Figure 6) are a tool that can be used to graphically display data over time. Using a run chart for quality improvement activities allows a team to identify changes over time as improvement activities are conducted. The team can then use the run chart to identify trends, shifts, or outliers in the data. When these changes are identified, further investigation should be conducted to analyze what caused the change. Teams can begin to look for these trends, shifts, and outlines after at least 10 data points are plotted.

![Run Chart](http://www.pqsystems.com/healthcare/HealthcareArticles_p-chart.php)

Run charts are a great tool to use when conducting PDSA cycles to measure the results of a change implemented in a system. Improvement teams will be able to track the process in need of improvement prior to implementing the change to get baseline data. Then, the team can implement the change and monitor the data that is gathered after implementation to compare it to the baseline data and look for trends, shifts, and outliers in the data.
**Control Charts**

Control charts (Figure 7) are similar to run charts as they display data of a process over time. However, in a control chart, control limits are set above and below the mean measure of the data. It is understood that processes have variation and the control limits in a control chart are meant to capture that variation. These control limits are established based on the historical variation within the process being investigated.

![Control Chart](http://asq.org/learn-about-quality/data-collection-analysis-tools/overview/control-chart.html)

Improvement teams can use control charts to monitor systems where improvement projects were conducted to ensure that the changes made sustain the improvement. The team can also identify items that fall outside of the control limits set by the chart and investigate what caused the variation.

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**Case Study on Using Run Charts (LANs in Illinois measuring participation)**

Telligen, the QIO in Illinois, uses run charts in each of their LANs. They frequently use these charts to measure LAN participation and attendance. They are also using run charts to measure the difference in participant satisfaction between in-person LAN events and virtual LAN events. The teams monitor their participation, satisfaction, and attendance over time to identify opportunities for improvement and promising methods of further engaging their target audience.

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**Helpful Hint:**

- Your team may have the ability to monitor the amount of attention paid by participants during your virtual LAN events. There will be natural variability within that attention. Using a control chart to monitor participant attendance at your virtual LAN attendance will help you identify the times when more attention or less attention is paid, which may provide insight into creating more engaging virtual LAN events.
In 2003, the Institute for Healthcare Improvement (IHI) published *The Breakthrough Series* on quality improvement learning collaboratives. This white paper provided a framework for the structure of large learning collaboratives to conduct multiple PDSA cycles around specific improvement targets for healthcare providers. Figure 8 provides the outline used for these Breakthrough Series Collaboratives.

**Breakthrough Series Collaborative Model**

To begin the collaborative, leaders must select a topic that is applicable to the healthcare organizations in the potential collaborative and ensure the topic is ripe for improvement. The mission of the collaborative must also be identified.

Next, leaders must recruit and convene experts in the topic that is selected. Once the experts are recruited and roles are defined, this group will create the framework and changes that will be tested in the collaborative.

Then, the collaborative leaders will either recruit organizations to participates or allow organizations to apply to join the collaborative. Ideally, the number of teams in a collaborative is greater than ten. The organizations that join the collaborative will conduct pre-work prior to the first meeting of the collaborative.

**Figure 8 - IHI’s Breakthrough Series Collaborative** ([http://harmfreecare.org/learning-sessions/](http://harmfreecare.org/learning-sessions/))
The first learning session is conducted to share the framework and change that is recommended with the collaborative participants. The participants also learn about the Model for Improvement and how to conduct PDSA cycles.

After the first learning session, the participants break away and return to their respective organizations. This is called the “action period”. During this time, the participants implement the framework and change introduced in the learning session. Data is gathered through the implementation of the PDSA cycle.

The strength in Breakthrough Collaboratives comes after the first action period. All collaborative participants come back together for another learning session where they can share their results and receive guidance, coaching, and ideas from the experts and other participants. The information learned in that second learning session is then applied to another action period. The participants go through a third Learning-Action period.

Through the Breakthrough Collaborative, participants go through at least three PDSA cycles on their route to improvement. There is significant amounts of data that show the improvement participants saw as a result of participating in this type of collaborative.

**Case Study on Breakthrough Collaboratives**

TMF Health Quality Institute, the Texas QIO, created a Performance Improvement Accelerator (PIA) group to improve physician practice performance. Practices were invited to the group and were offered assistance on improving specific quality measure and customer service measures. The first meeting was to provide the framework for the groups to begin working on. Over six learning sessions, TMF will provide a platform for providers to learn about quality improvement methodologies, come together to share what is working in the field, and learn more about the challenges that are blocking potential improvement. After each learning session, the participants in the PIA group have time to implement and test what they learn in their practice. The framework for this group is extremely similar to IHI’s breakthrough collaborative model where groups come together to learn about improvement and then test their education in real world scenarios.

You can download the IHI whitepaper on the Breakthrough Series Collaborative model here: [http://www.ihi.org/knowledge/Pages/IHIWhitePapers/TheBreakthroughSeriesIHIsCollaborativeModelforAchievingBreakthroughImprovement.aspx](http://www.ihi.org/knowledge/Pages/IHIWhitePapers/TheBreakthroughSeriesIHIsCollaborativeModelforAchievingBreakthroughImprovement.aspx)
**Lean production** is defined by the Lean Enterprise Institute as “a business system for organizing and managing product (or service) development, operations, suppliers, and customer (patient) relations that requires less human effort, less space, less capital, and less time to make products (services) with fewer defects to precise customer desires, compared with the previous system”.

The term “Lean” was coined by John Krafcik in the late 1980’s while he was a research assistant at MIT in the International Motor Vehicle Program. However, Lean production happened much earlier than the 1980’s.

Toyota Motor Company pioneered Lean production, called the Toyota Production System (TPS), after World War II. Taiichi Ohno is credited as being the father of TPS. He focused on “respect for humanity” as a guiding principle for building the TPS. This respect for humanity was critical in Japan, where the government and companies were working to maintain lifetime employment for their key positions.

A lean enterprise focuses the vast majority of its efforts on eliminating waste and focusing on activities that add value for their customers. James Womack and Dan Jones, in their book *Lean Thinking*, outlined a five-step thought process for lean thinking:

1. Identify value from the eyes of the end customer.
2. Map all steps in the value stream.
3. Make all steps in the value stream flow toward the end customer.
4. Let customers pull value toward them from upstream activities.
5. Seek perfection.

You may have seen the following image to display these steps, outline in Figure 9:

![Figure 9 - Image from www.lean.org](www.lean.org)
Identify Value from the Eyes of the End Customer

How do you define value? That’s a great question. However, if you’re working to implement lean thinking in your organization, perhaps you should ask what your customer finds valuable? This intense focus on the customer is a cornerstone of a lean organization. You must constantly work to understand the needs of your customer. You must find what they value. Frequently, you will find what your customer values and what you produce don’t perfectly match up. It is critical that your organization maintain a consistent focus on the customer.

Stop and think. What is the value of your LAN to your “customers” and participants? Do you and your team regularly ask your participants what they are finding to be valuable and what isn’t adding value? This questioning attitude will lead you to create value for your LAN participants.

Map All Steps in the Value Stream

A value-stream map is a visual representation of all processes that come together to bring a product or service to a customer, including value-added processes and non-value-added processes. When you draw out every step in the delivery process, you will focus on three items: steps that directly add value to your customer, those that add value to your business, and those that add no value to the business or the customer. When value-stream mapping, it is best to map the current process, and then map the “ideal state” of the same process.

Make All Steps in the Value-Stream Flow Toward the End Customer

After you map the “ideal state” of the value-stream, the organization must work to immediately remove waste in the process and ensure that the process flow is toward the customer. The goal of this process is to create the most efficient path from the start of a process to the customer at the end of the process. This truly optimizes processes to produce the most value for the customer.

Let Customers Pull Value from Upstream Activities

Efficiency is critical in an organization using lean principles. After the creation and implementation of a new, more efficient, value-stream, it is critical to ensure that the pace of the process is set by the customer. Inefficiencies in the pace of production of a service or product in various stages can lead to bottlenecks, excess inventory, and waste. Essentially, allowing upstream-activities to be pulled creates a model of just-in-time production where there is only enough inventory for the next process to flow efficiently.

Pulling value can occur in many different ways. LANs frequently offer tools and resources for their participants. Consider housing all of these resources and tools in one easy to find location. Then, allow your LAN participants to download the documents as they need them.

Seek Perfection

Creating and implementing a new value-stream will most likely not create a perfect process overnight. It is critical that the organization pursue perfection. Take note of problems or new inefficiencies identified in the new value-stream, and then work to remove them.
Webster’s Dictionary defines a benchmark as something that serves as a standard by which others can be measured.

**Benchmarking** is the process by which you compare yourself or your organization to that standard.

Benchmarking is a great way for individuals and organizations to discover new processes, areas for improvement, new ways to strive for excellence. Benchmarking should also be a methodical and continuous process.

There are numerous benefits to benchmarking:

- Adoption of industry best practices
- Performance improvement
- Comparison to competition
- Further understanding of customer requirements
- Process improvement
- Optimizing use of resources
- Setting aggressive organizational goals
- Comparing to the best of the best
- Identifying best practices across industries

An organization should consider benchmarking when:

1. There is a need for an internal change
2. A new process is to be implemented
3. There is a drive toward performance excellence and improvement
4. The organization is part of an industry that is undergoing a significant change in business landscape

Stop and Think. How can you use benchmarking in your LAN? Have you compared your processes and other outcome measures, such as attendance, to other LANs? Could you benchmark against other LANs within your own organization? While not every LAN is the same, there are functions that are similar in each, such as the need to have participants attend events. Consider this benchmarking an opportunity to drive excellence within your own LAN by learning from others.
The four methods of benchmarking are highlighted in the below table:

<table>
<thead>
<tr>
<th>Benchmarking Method</th>
<th>Explanation</th>
</tr>
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</table>
| Internal Benchmarking        | • Organization learns from different divisions, units, or companies under the same ownership  
|                              | • Low cost to conduct benchmark study                                        
|                              | • Gather needed information quickly                                           
|                              | • Easier knowledge transfers                                                  |
| Competitive Benchmarking     | • Focuses on specific products, processes, and methods used by direct competitors  
|                              | • Gain insight into markets                                                  
|                              | • Focuses on improvement based on competitive landscape                      
|                              | • Opens up opportunities for potential future partnerships                    |
| Functional Benchmarking      | • Focuses on similar functional areas in an application or industry         
|                              | • Develops a deep process understanding                                      
|                              | • Provides industry trend information                                         |
| Generic Benchmarking         | • Uses information on process performance outside of organization’s industry  
|                              | • Great opportunity for breakthrough                                          
|                              | • Innovation and discovery frequently occur                                  
|                              | • Highlight reliable information due to non-competitive nature                |

Once an organization decides on the method of benchmarking it intends to use, it should follow the five step process of benchmarking highlighted in Figure 10:

Figure 10 - [http://www.tutorialspoint.com/management_concepts/benchmarking_process.htm](http://www.tutorialspoint.com/management_concepts/benchmarking_process.htm)
Step 1 – Planning
An organization must select a process and identify the objective of a benchmark study. Then, a cross-functional team should be formed and a study sponsor should be established. The team will begin by identifying the complete flow of the process that is to be benchmarked. Finally, the last step in the planning phase is to identify the organization or organizations that the team intends to benchmark against.

Step 2 – Collect information
The team will begin to gather information related to the process that it is benchmarking from the organization that the team chose to benchmark against. This may include exploratory research, market research, quantitative research, questionnaires, or interviews. If the team has the opportunity to actually see what it is attempting to benchmark against, the opportunity should not be passed up! The most critical part of collecting information is that you collect your data in a legal and ethical manner.

Step 3 – Analyze the data
In this step of the benchmarking process, the team compares their organization’s performance data to the benchmark. It is critical to ensure that the data is normalized to be comparable. Performance gaps can be identified from the two sets of data. The team must then identify the best practices and other factors that led to the benchmark organization’s outperformance. The team must then develop an action plan to implement these identified best practices to eliminate the identified gaps.

Step 4 – Implement change
The team must then work to communicate the action plan across the organization. It is critical to gain acceptance, support, and commitment to the plan. By identifying areas where changes will occur, the team can focus their efforts on those areas and staff members at first to get buy-in where the change will occur.

Step 5 – Monitor progress
After implementing and communicating the change with the organization, the team must continually monitor the results of their implementation. The team needs to be focused on identifying if the changes are working as they should or if the team must adapt the change. Finally, when the organization is experiencing success, it must celebrate and share that success!
Root Causes are the fundamental reasons for the occurrence of a problem. Root Cause Analysis (RCA) is a collective term that describes a wide range of approaches, tools, and techniques used to uncover causes of problems.

Root cause analysis requires an in-depth analysis of a problem and a high level of effort to investigate the situation. A team conducting a root cause analysis must work diligently to reduce and eliminate any bias in the investigation.

There are four key reasons to conduct a root cause analysis:

1. To determine what, how, and why something happened
2. To better control the process that was affected by a problem
3. To identify what corrective action(s) to take that will eliminate negative effects of a problem
4. To benefit from learning the results of the root cause analysis

There are many benefits to conducting root cause analyses. These benefits include, among others:

- Saving lives, time, and money
- Eliminating problems from continuing to occur
- Application to other business areas in addition to the area investigated in the analysis
- Improving communication
- Improving long-term performance

Stop and think. Could your Learning and Action Network benefit from conducting a root cause analysis? Does your LAN experience problems from time to time that you wish could be eliminated or better controlled? If you answered yes to either of these questions, your team should consider conducting a root cause analysis of the problem your LAN is experiencing.

It is critical to note that a root cause analysis must be blame free. Root cause analysis should have a systems focus and identify how the system design led to a problem occurring.

Conducting a root cause analysis is an eight step process. These steps are:

1. Identify the problem
2. Form the RCA Team and take immediate corrective action
3. Gather data and create a list of possible causes
4. Create an event and causal factor tree
5. Ask “why” until the root cause is identified
6. Create solutions to address the root cause
7. Implement and monitor permanent corrective actions
8. Follow-up and celebrate
Step 1 – Identify the problem
Root cause analysis takes place because something happened in a system that was unexpected or unintended. Root causes analysis investigations require significant investments of time. The problem identified should be significant enough to warrant a root cause analysis.

Step 2 – Form the RCA Team and take immediate corrective action
Bring individuals involved in the problem if possible. The team should be interdisciplinary in composition and of a smaller size. Identify a sponsor for the analysis and investigation. Be sure to set clear expectations of the roles team members will take on during the RCA.

The team must ensure that immediate corrective actions are put in place to eliminate the chance of the problem occurring again. The issue should be isolated and the team needs to make sure that the immediate corrective action is effective at mitigating the risk until permanent corrective actions are put in place.

Step 3 – Gather data and create a list of possible causes
The RCA team must create a timeline of events that led up to the problem occurring and the fallout from the problem. This timeline can be created through interviewing the individuals involved in the system that produced a problem as well as through the collection of data that may be present from the system that experienced the problem.

Step 4 – Create an event and causal factor tree
Event and causal factor trees (Figure 11), or fault trees, show a top-level event and the conditions that may lead to the event occurring. These trees have two types of “gates” that exist: “and-gates” and “or-gates”. “And-gates” indicate that all the factors must be present in order for an event to occur. “Or-gates” indicate that just one factor must be present for an event to occur.

![Figure 11 - Event and Causal Factor Chart](http://www.cfmc.org/integratingcare/toolkit_rca.htm)

Step 5 – Ask “why” until the root cause is identified
A questioning attitude is very useful when conducting a root cause analysis. In this step, the team needs to use what was learned in the event and causal factor tree, interviews, and data analysis to identify the root cause of the problem.
Two methods that are frequently used to identify the “why” of a root cause are the Five Whys method and cause-effect diagrams.

**Five Whys**

As its name suggests, using Five Whys involves asking multiple rounds of “Why?” questions until the team arrive at the ultimate root cause – meaning that if that cause is corrected, the problem will be eliminated. Identifying the root cause may not require asking why five times, every time. By following this cascade of questioning, a person is able to look objectively at the processes that exist in a system and identify what can be improved. Here is an example of using five whys:

1. Data shows that virtual LAN participant attention is low. **WHY?**
2. The participants are distracted and conducting work while listening to the LAN event. **WHY?**
3. The participants are in the middle of their work day and in their office for the event. **WHY?**
4. The LAN participants are not aware that the events are recorded for later viewing by participants if they aren’t able to attend the live virtual event. **WHY?**
5. The LAN team does not communicate that the events are recorded and does not send reminders to participants of the ability to download and watch the event at a later time.

**Cause-Effect Diagrams**

Also called Fishbone Diagrams or Ishikawa Diagrams, cause-effect diagrams (Figure 12) allow teams to organize and sort their ideas about problems. Cause-effect diagrams show how different factors can lead to the outcome, or problem, that led to the root cause analysis. Using these diagrams increases communication and teamwork in the RCA team.

![Cause-Effect Diagrams](http://www.cfmc.org/integratingcare/toolkit_rca.htm)
Step 6 – Create solutions to address the root cause
After the RCA team identifies the root cause through the use of the techniques in steps 3, 4, and 5, the team can begin working to identify solutions to eliminate the root cause. After identifying possible solutions, the team should develop a permanent corrective action plan to implement the changes identified. This fits in with the Plan portion of a PDSA cycle.

Step 7 – Implement and monitor the permanent corrective action plan
Implementation of the plan developed in step 6 occurs here. The team defines actions, responsibilities, and deadlines for implementing the change. The team measures and monitors the implemented change to ensure that the problem is eliminated. This is the Do-Study-Act in the PDSA cycle. If revisions are needed, the team makes them based on feedback, data, and observation.

Step 8 – Follow up and celebrate
The team needs to follow up on any ongoing action items that are identified in step 7. Make sure that the RCA team thanks everyone that was involved in making the project a success and highlight the work that was conducted if it is appropriate! The team can also work to identify if there is the potential to share and spread their findings within the organization for additional improvement.
Process mapping is a method of documenting every step that occurs within a given process. It is can be used for many reasons. In organizations that use lean methodologies, process maps will frequently take the form of a value stream map, where the organization looks at the flow of value through every step of a process. When a root cause analysis is conducted, the team conducting the investigation will frequently map how the process is supposed to work and then compare that to how the process actually worked – thereby identifying where the problem stemmed from.

Teams running LANs can use process maps to outline the steps needed to prepare the event. The process map can begin at the time initial planning begins for the LAN event and end on the day the LAN event starts. The processes that take place in between those events can be documented on the process map. Documenting this process will allow the team to identify areas for improvement and provide a framework for preparing for subsequent LAN events.

Process maps can take many different shapes - some are created via computer through various software programs, while others are drawn on paper. Regardless of how an organization creates their process maps, there are many useful tips to getting started. Here are just a few:

- Identify one process to map
- Assemble the team
- Define the purpose of the process
- Define where the process begins and ends
- Clearly identify the level of detail to be presented
- Outline each step
- Have other team members help with the process

Process mapping uses general symbols to help users understand what each process step means. Here are some symbols frequently used in process mapping and what they mean:

- **Ovals** – signify the inputs (start) that begin a process and the outputs (results or end) of the completed process

- **Boxes or Rectangles** – signify a task or activity that is performed in the process.
• **Diamonds** – signify that a yes/no question or decision is required to proceed to the next step in the process

• **Circles** – signify a break in the process map and will point to a location where the process map continues

Figure 13 shows a process map of the patient discharge process at a healthcare provider setting:

Figure 13 - Process Map (http://www.cfmc.org/integratingcare/toolkit_rca.htm)
References

Introduction

Change

Model for Improvement
1. http://www.ihi.org/knowledge/Pages/HowtoImprove/default.aspx

Charting and Graphing

Breakthrough Collaboratives

Introduction to Lean
1. http://www.lean.org/WhatsLean/Principles.cfm

Benchmarking

Root Cause Analysis

Process Mapping
Resources

Change
- Tip sheet on Planning and Implementing change - http://www.hr.salford.ac.uk/development/toolkit-docs/top%20tips%20for%20planning%20and%20implementing%20change%20effectively.pdf
- Great TEDx TALK with Harvard Business Professor Rosa Moss Kanter on leading positive change - http://www.youtube.com/watch?v=owU5aTNPIbs

Model for Improvement

Charting and Graphing
- IHI’s run chart template (must log-in) - http://www.ihi.org/knowledge/Pages/Tools/RunChart.aspx

Lean
- Blog related to lean methodologies and implementation in numerous industries, including healthcare - www.leanblog.org
- Lean Enterprise Institute offer many articles, templates, and other information on lean - http://www.lean.org/
- Lean Healthcare Exchange’s tools webpage offers many templates for implementing and executing lean practices in healthcare - http://www.leanhealthcareexchange.com/?page_id=300

Benchmarking

Root Cause Analysis
- Mobile Application that helps create Cause-Effect Diagrams (Android, $3.00) - https://play.google.com/store/apps/details?id=com.kalees36.ishikawadiagram&feature=search_result#?t=W10

Process Mapping
- Free process mapping software provider - http://www.smartdraw.com/
- Full list of process mapping symbols - http://www.processma.com/resource/process_mapping.htm