**Podcast Transcript: QSE: Continual Improvement**

**Slide 1**: **QSE: Continual Improvement**

Hello, my name is Fazi Amirahmadi, and I am a Systems Engineer for the Department of Laboratory Medicine & Pathology. In this segment I will be talking about the Quality System Essential or QSE: Continual Improvement.

**Slide 2**: **Core components**

What are the core components of the QSE: Continual Improvement? The first one is participating in quality improvement activities. The second one is using a defined strategy for continual improvement. I will be focusing on how to use a defined strategy for continual improvement projects.

**Slide 3**: **Triggers for Continuous Improvement (CI) projects**

What are the triggers for continuous improvement projects? An improvement project can be initiated for a number of reasons. One of the most common is an event. Something went wrong or nearly did; such as a wrong tissue on wrong slide or reporting wrong test to a patient. As Mr. Bennett stated in the earlier podcast, quality goals help ensure everyone focuses on the same things.

The next reason is, if a quality metric begins to slip outside of the pre-defined acceptable range, it requires investigation and may ultimately lead to an improvement project. Regulatory changes could also create a situation that requires action to improve our processes. Customers have their own needs for quality as well, such as fast service or quality of reports they get. We encourage you to listen to their concerns and ideas, then take action.

The above examples are reactive and acting after something has happened. There are also opportunities to be proactive. Employees are another source for improvement ideas. When an organization supports a culture of quality, employees are encouraged to offer ideas to improve workflow, eliminate waste in the process, increase productivity and ultimately improve engagement and job satisfaction. Leaders and managers just have to ask from their staff and they will quickly point out the pain points in their daily work.

**Slide 4: Prioritizing improvement projects**

Now that you know where the opportunities are, the leadership needs to make some decisions. There are not enough resources to do everything needed or wanted. Here are three ways to prioritize projects:

* First, how well does a project align with the organization’s strategic initiatives?
* Second one is, what is the risk for not taking action? You can consider the frequency of the concern as well as the potential impact to patient care to help estimate the risk.
* Finally, how much time and resources do you have available to work on the project? What other projects are in progress?

**Slide 5**: **Managing an improvement project**

How to manage an improvement project. There are many process improvement methodologies: Six Sigma, Lean, Total Quality Management, Just-In-Time, Kaizen, and using PDSA, which means: Plan, Do Study, Act or Adjust. I am going to focus on the DMAIC framework, which is associated with Six Sigma. DMAIC stands for Define, Measure, Analyze, Improve, and Control. DMAIC is data driven. As scientists; we rely on data every day to help us make decisions.

There are 5 phases in this methodology, and you will see that we have added a “check in” box at the end of each phase. It is important to check in with all the stakeholders to ensure that the improvement team in on the right track. It is also important to ensure those impacted are aware of the progress of the project. Allow stakeholders an opportunity to provide feedback before proceeding to the next phase. This helps to build buy-in for the change, because employees need to know what is happening. On the following slides, I will use a hypothetical project to provide a high level overview of the DMAIC framework.

**Slide 6: Define**

The define phase is the first step in any process improvement project. The goal of this phase is to identify the gap in quality, establish a numeric value for improvement, and create a timeline. Examples of gaps in quality include: defects, errors, variations in a process.

First you need to form a cross-functional team to address the problem. The members may only be aware of their steps in the process. A simple solution for this potential knowledge gap is for the team to go out and look at the process from start to finish.

Next you need to identify the key stakeholders, those who will be impacted by the change, and get their inputs. Talk to people responsible for performing key tasks rather than assuming you know the who, what, when, where and how for each step.Read the related documents such as policies, procedures and even training materials, if appropriate.

Now you are ready to create an aim statement that will guide the team through the next phases of the project.

An aim statement should start with an action verb, be specific with numeric values for improvement, and should include timeline for completion. Here is an example of an aim statement: Decrease the number of pediatric redraws in the outpatient settings by 10% within 90 days.

**Slide 7**: **Define, Measure**

In our hypothetical lab, lab provides second opinions on pathology cases from referring physicians. The cases include pathology reports, slides, tissue blocks, and other related materials. When the referred case is reviewed by a pathologist and a report generated, all the materials are returned to the client in a timely manner.

The gap in quality was identified through customer complaints and via quality metrics which showed a delay in returning the case materials. According to the data, there have been 8 delayed returned case materials in the month of January. Based on this information, the team created the following aim statement: Reduce the number of delayed returned case materials from 8 in January of 2017 to zero by December 2017.

**Slide 8**: **Measure**

The next phase is measure phase. This phase is important because it provides baseline datafor the problem.

Data is powerful, provides a numeric value for the current gap in quality. It helps to confirm how bad the situation is. It is also objective, and decreases potential personal bias. It can also be used for comparison, to ensure there has been real improvement in the process and not just a change.

As scientists, we collect all types of data, and we have access to databases that may contain the information we need. If the information we need is not available, we need to provide clear and specific instructions on what information needs to be collected and how it should be done.

**Slide 9**: **Analyze**

The team has gathered a lot of information during the define and measure phases. Now it is time to analyze the data and define the key factorsor root causes for the gap in quality. Think of it as developing a hypothesis.

**Slide 10**: **Analyze**

In our hypothetical scenario, the team used a **fishbone diagram** to categorize the key issues of concern regarding the delay in returning case materials to the clients. They looked at 6 different categories (we call it 6M) for the causes of the failures. Causes or factors could be related to **Manpower** (or people); such as someone taking a personal shortcut. It could be related to machine or instrument such as instrument is set incorrectly or is not stable. Another category is **Material** or supply: such as using the wrong supply, differences between old and new lot for a reagent. The next category is **Methods**, those are the things related to the way we do things or SOPs are not easy to follow, or issues related to training. The next category is **Measurement** systems. These are the things that are related to accuracy of the tools we use to measure such as accuracy of the pipet to get the right amount of the sample. Next is **Mother Nature**, anything which is related to environment such as pollution, light, noise, humidity, or contamination.

In our example, the team identified two major factors. The first was a non-standard filing system of case materials. Some cases were filed based on the pathologist’s last name and others used the patient’s last name.

The second cause was inadequate communication among staff. This was related to sending tissue blocks to labs that just needed the slides for additional staining. The other communication issue was proper instruction on where to return the tissue blocks once additional slides were created. Now it was time to move into improve the current situation.

**Slide 11**: **Improve**

The improve phase is the time to verify that the team has identified the correct contributing factors before implementing a full scale change. This can be accomplished through several cycles of PDSA, or Plan, Do, Study, and Act or Adjust. It starts with:

**Plan:** plan to implement the proposed change or interventions.

**Do:** Implement the change.

**Study:** Observe the results. Study what has happened after the change. Identify any intended and/or non-intended consequences. Finally,

**Act or Adjust:** Reflect on lessons learned. Decide what modifications are needed before starting the next PDSA cycle.

Repeat the PDSA cycle until the team is satisfied with the results. We need to measure to see if we have achieved the target set in the aim statement. A PDSA Cycle Template is available from the Resources Tab.

**Slide 12**: **Improve**

The team created a standardized filing system using PDSA. In the first PDSA, they filed the case materials using the consultant’s last name. For the second PDSA, they used the patient’s last name for filing. In both cases, they measured the number of delayed returned case materials for each month. After comparing the results from both scenarios, the team decided to file the case materials based on the patient’s last name.

While the team was working on improving the filing system, they were also working on staff communication. The team mapped the process and met with all the labs involved with providing a second opinion. The goal was to improve the communication in order to reduce the delay in returning the case materials. As a result, the team eliminated sending the tissue blocks to some of the labs that did not need the tissue blocks. They also created a better visual system to return the tissue blocks from the labs that needed the tissue blocks.

**Slide 13**: **Improve**

This graph shows the progress of the project while they were implementing the two interventions. As you can see, there were some spikes and dips along the way until they ultimately met their goal of zero delayed cases by the end of the year.

Those spikes and dips are normal. Because of the PDSAs cycles used by the team, some of the changes worked (they had positive influences) and some of them created negative effects. The other reason for spikes and dips is people need to adjust to the changes and become competent in the new processes. It is important to explain to the employees that spikes and dips in performance measures are normal, so they do not become frustrated and return to the old process.

In this phase, ongoing monitoring of the performance measure will help to decide if additional changes are needed. We may have missed other contributing factors to the quality issue.

**Slide 14**: **Control**

Control is the final phase of DMAIC. Once changes have been fully implemented, it is easy to just forget about it and move on to the next project. This is the danger, because without ongoing monitoring, there is a risk that people will slip back into old habits and the gains will not be sustained. The team needs to identify the long term process owner, who will be responsible for ensuring the ongoing success of the new process.

Ongoing metrics should be established, their frequency, an acceptable range, and a plan if those metrics fall outside of the acceptable range. This is also a time to share outcomes with others. Perhaps this improvement can be replicated in other areas, within the larger organization, or even externally. Finally, the team should pause to reflect on what they have learned, and apply the new knowledge to their next project.

**Slide 15**: **Control**

The team members became the long term process owners. They will continue to collect data on delays in returning case materials, and the results will be included in the quality report. All employees have been empowered to take immediate action if they discover a delay in returning the case materials.

The lessons learned include: The team members appreciated the opportunity to see the entire process from start to finish. It helped them to learn what happens outside of their areas of expertise, and how their duties fit within the full process. Also, the project raised employee awareness of the frequency of the problems by sharing monthly metrics. They learned also the importance of open communication with all team members, so the individuals felt safe to speak up if they had concerns or ideas. Everyone was held accountable to perform their steps in the process. Standardizing the filing of case materials not only reduced delays, it also reduced the time spent searching for them.

**Slide 16: Thank you for listening**

Thank you for your time today. I hope this presentation has helped with your understanding of Continuous Improvement.

**End podcast**