ASQ Lean Enterprise Division
Newsletter

Success Every Time as a Way of Doing Business

By: John J. Casey*

The Problem: How do we systematically drive Error Proofing?

In our modern industrial world, the universal objective is to provide products with ZERO DEFECTS to our customers. It is clear; it is simple and easy to understand but at times, is also extremely difficult to accomplish. People in manufacturing frequently rely on the hard work and dedication of the operators to be constantly vigilant and disciplined – which they do almost all the time. Then something happens; they forget something; they get distracted; a mistake happens and the defect finds its way to your customer. Your company's reputation is tarnished – it could be small or big – it doesn't matter how bad the impact was for that customer it means you did not deliver on your promise. You could blame the operator, but it won't do you any good, they are human, just like you and I when you start thinking; it could happen to anyone.

So what CAN YOU DO? The obvious answer is you need to error proof – but how? What are the steps and how can you systematically drive error proofing in a methodical and measurable manner? Especially, how can you motivate, measure and monitor your engineering teams to design an environment between your process, parts, tools

and equipment to help the operator succeed every time? How do you stimulate deployment of cost effective devices that help operators answer their fundamental question of – DID I DO IT RIGHT?

Error Proofing is a Way of Thinking

Strategic Error Proofing is a set of actions for engineers and management to surround operators with devices and mechanisms to confirm they did their tasks properly. There are dimensions to Error Proofing; the first is the positioning of the device relative to the operator's work flow. If you can place the device in a position prior to the operator starting the task; you have an ideal position. If they cannot start a process unless the conditions are right – you win. When you go to your Bank Automatic Teller Machine (ATM); before you can start a transaction, you need to insert your card and then type in your Personal Identification Number (PIN). At my bank, I need to insert the card and before I can enter my pin – the card is returned to me; I need to remove it from the machine before it will allow me to enter the PIN. This is Error Proofing in 2 dimensions. First, I am prevented from leaving my card in the machine and second, I cannot perform my transaction until I am confirmed. It is done upfront, it is very easy and user friendly to me and I don't even know I have been error proofed by the ATM.

There are two other places for device positioning. Devices that work during the operator cycle is the second-best location. A part that snaps into place where the operator can hear it, or markings and bevels in the parts to help line up things are examples of error proofing during the operation. We are looking for those simple and reliable devices that talk to the operators. Refer to the picture of windshield in Figure – 1 below.

Figure – 1: Lining up of blades with T-marks for correct location of blade during assembly process.

There are two white "T's" painted in the windshield black out to help the operator line up the blade when being installed. The operator places the base of the blade over the drive shaft and aligns the tip of the blade in the center of the "T". For the operator, it is target position and a gage all in one. To an engineer it is Nominal plus the upper and lower spec limits. The marking is simple, extremely user friendly and helps the operator Succeed Every Time. The last position for a device is a checkpoint after the fact or downstream. In the words of Shigeo Shingo, this would be a successive check; done after the fact and is an insurance policy to help protect the customer. The successive checks are a great last resort, but you still have the defect and now need to control and deal with the substandard part. So the positioning of a device matters; the strongest error proofing is placed before the operator can begin, the next best is in the station and the least desirable is after the operation.

The Concept of Creativity Before Capital

Engineers can develop all kinds of error proofing devices. There are limit switches, digital readouts, proximity sensors and many other devices that are fun to play with. However, the best ideas are the simplest, they are the most creative and least expensive, the idea is known as "Creativity Before Capital". In the 1980s, cars were equipped with a small bracket attached to the inside of the gas door

cover to help people remember to re-install the gas cap. For the engineer that came up with the idea, it was a simple and obvious solution to a common problem. That engineer was a sheet metal and stamping expert – probably the best in the world. Designing a die, figuring out how to weld on the bracket and then metal finish the visible surface was a piece of cake assignment. Total cost may have been $25 per car but it certainly was not a smart use of money. Based on concept of "Creativity Before Capital", three options for mistake proofing of gas tank cap are shown in Figure – 2 below.

Original: Bracket $25/car   **Better: Gas Cap Tether**

Best: No Gas Cap

Figure – 2: Three options for preventing loss of fuel tank cap (Copyright: Casey Success Every Time LLC)

The "Creativity Before Capital" solution was the simple plastic strap. It is simple, effective, easy to use and far more reliable than the bracket. An even more creative solution is seen in some of today's cars that don't even have gas caps at all.

The Best Error Proofing device of all time

When you have error proofing mindset, you see it everywhere. There is an overflow hole in your bathroom sink and bathtub that drains off the

water in case you forget to turn off the spout. You are also error proofed from overfilling the tub. It is a really great design that is always active – you don't know it is there and it works. The best device I have ever seen is the threads on a soft drink bottle and the cap. Soft drinks like Coke and Pepsi are carbonated and as a result their bottles are pressurized. A sudden release of pressure makes the drink foam up, bubble over and cause a mess. When you look closely at the bottle and cap – you see gaps in the threads, these are built in pressure relief mechanisms. When you twist the cap, you are relieving the pressure without extra work. If you hear the hissing, you instantly know the pressure is too high and will slow down the process and control the pressure preventing forming the foam. Interrupted threads inside a soda bottle are shown in Figure – 3 below:
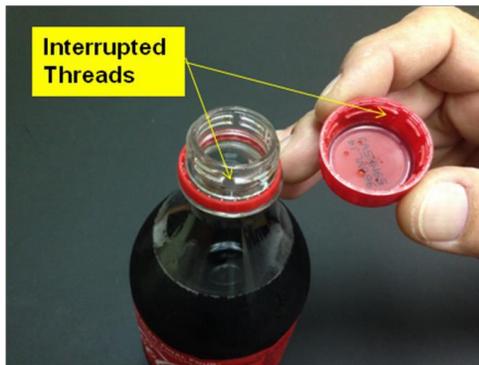

Figure – 3: Interrupted thread pattern is shown inside the red cap and outer surface of soda bottle.

Nobody instructed you to do so – Yet, you just do it. In addition to interrupted thread pattern, the cap has the perforated ring that stays on the bottle. If that perforation is intact, you know you are the first person opening the bottle. The cap and bottle are designed to prevent foaming and confirm no prior tampering – Free without special instructions or

extra work for you. The biggest advantage is the presence of gaps in the threads on cap and bottle are created by not using any additional material. It saves money for the soft drink maker in millions of pounds of material every year and, is the best error proofing device ever designed.

Measuring an Engineer's Error Proofing effort

So as we go to help out operators, we are looking to give them devices that work. Developing a numbering scheme to rate the effort of an engineer is best. In conventional quality methods, we use Failure Modes and Effects Analysis (FMEA) where we create a Risk Priority Number (RPN). We do the same with error proofing and can create a Success Every Time (SET) score number. You can see this in the examples below. It is easy to get SET. Figure – 4 below shows two examples of SET score numbers.
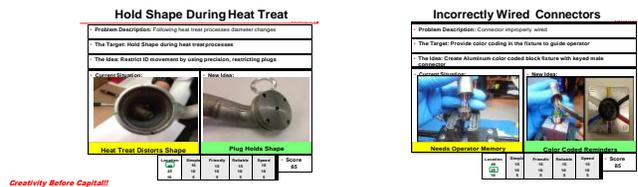
Figure – 4: Two cases of using SET scores for rating effectiveness of error proofing effort.

*About the author: John Casey is John Casey is the Author of Strategic Error Proofing (Productivity Press 2008) and an innovative Quality leader. John is a past Chair of the ASQ Automotive Division; a former Board of Directors of the Automotive Industry Action Group and past Director of Supplier Quality for General Motors, Chrysler (QAAT) and Honeywell Aerospace.   Currently John is a Senior Consultant for Shainin Red X. John can be reached at: johnandcindycasey@comcast.net

Message from the Chair

"If you are not doing what you love then you are wasting your time."

While it seems like just a moment ago we were beginning 2017, half the year has now passed and we are headed into our summer months which will bring next year's strategic planning for the division. Where did all of those months go? Somebody once said that time flies when you're having fun. I say it flies no matter what so you might as well have fun while it's passing. Being part of this division's leadership has been one of the most enjoyable times of my life. So far this year our leadership was able to enjoy both the Lean and Six Sigma and WCQI conferences which included meeting new and existing LED members as well as some of the friends we've made throughout the years. Both conferences followed SAC and TCC Member Leader Training events where section and division leadership not only learned about plans for change within the Society and the ways this will affect us, but also had the opportunity to collaborate together in an effort to better serve members. Together we are learning how to shape the Society of tomorrow. How much more fun can you have than that?

Like the Society, our division is evolving. Our vision is to create a world where everyone, everywhere works together to apply Lean principles and methods to achieve their personal and organizational goals. Our leadership teams works diligently toward that vision in all that we do. Our focus is always all of you, our members. The hard part is figuring out how we do that. To understand that, we need all of your voices. We need your participation as well. In whatever capacity, you can provide. Perhaps you're at the stage in your life where you need expertise on your resume. Maybe you find yourself in a place in your life where you

have some extra time to volunteer. Maybe you have no volunteer time available at all, but you could take a few minutes to help us understand what you need from us by filling out our yearly survey. All of these things and more help in so many ways. I love what I do within ASQ and within the Lean Enterprise Division. Come give us a whirl and see if you would too. What do you have to lose, wasted time?

Chris Hayes – Chair ASQ Lean Enterprise Division

Newsletter Editorial

Javed Cheema - 2016 Newsletter Editor

Recently, I have been working on preventing errors in manufacturing operations and decided to dig deeper into the psychology of why do humans make mistakes? Philosophically, I agree with Alexander Pope, "To err is human, to forgive divine". Yet, we live in real world where mistakes have serious consequences with no divinity around us to forgive. My journey of discovery fortified the belief that errors of omission or errors of commission; all errors are human errors and all are preventable by intelligent thinking. Mostly, occupational mistakes are made with good intentions, rarely people make mistakes knowingly.

Organizations that go through successful lean transformation are very sensitive to possibilities of making mistakes. The very basic premise of lean systems is, "Doing more with less" which inevitably exerts more pressure on people in the initial phases of transformation; consequently, probability of making mistakes goes up. As a lean practitioner, I recommend special emphasize on exploring "unintended" adverse consequences of improvement ideas before they turn out to be big problems – end of sermon.

In this issue, you will find a very interesting article by John Casey, a very distinguished and respected quality professional and ASQ Fellow titled, "Success Every Time as a Way of Thinking" based on his

book, "Strategic Error Proofing"; an interview of Pam Anderson, Ph.D. by our LED Chair-Elect Lance Coleman; and last but not least an interesting contribution by J R McGee, "Problem Solver or "Mother-In-Law"?" Well, Problem Solving and Mother-In-Law; that is a whole new paradigm!

Learning from Experience with Pam Henderson, PhD*

An interview by Lance B. Coleman, Sr. Chair Elect Lean Enterprise Division**

*__Pam Henderson, Ph.D__., is CEO of NewEdge, Inc. www.new-edge.com; a growth, strategy and design firm that advises companies across every industry from Fortune 500 to startups and non-profits. Pam pioneered Opportunity Thinking™ principles, a new approach to innovation that helps organizations create sustainable growth.

Formerly on the faculty at Carnegie Mellon University, Pam later worked with the national laboratory system and Washington State University to commercialize early stage technologies. Pam speaks internationally and has published widely on market insight, business and innovation strategy, and design and has received recognition in the Harvard Business Review, Wall Street Journal, and NPR.

Pam is also the author of a new book on Opportunity Thinking, titled, "You Can Kill an Idea, But You Can't Kill an Opportunity!"; "How to Discover News Sources of Growth for Your Organization" now in its second publishing by Wiley, a trademark of John Wiley & Sons.

**__Lance B. Coleman Sr.__ is the Editor of Perspective, an ASQ Lean Enterprise Division e-magazine. He is an ASQ Senior Member and CQE, CSSGB and CQA. Lance is also the author of two books – "Advanced Quality Auditing – An Auditors Review or Risk Management, Lean Auditing and Data Analysis" [Quality Press 2015] and "The Customer Driven Organization: Employing the Kano Model" [Productivity Press 2014].

LBC: What do you mean when you say in the title of your book that "you can kill an idea but you can't kill an opportunity"?

PH: Opportunities will always be there. Ideas are the solutions we create to address the needs in the opportunity. Those solutions can change but the opportunity will always be there. We need to hold our ideas loosely and our opportunities tightly.

An opportunity is the combination of needs plus the value platforms we can develop to meet those needs and the conditions that favor the needs and value coming together at the right time. We need all three to have an opportunity that is ready to be take hold of.

LBC: Can you draw a distinction for our readers between idea creation, innovation and opportunity thinking?

PH:

•<u>Idea creation</u> – brainstorming ways to solve a problem and building on those ideas [idea + creation = ideation]

• <u>Innovation</u> – turn an idea into something that is implemented.

•<u>Opportunity thinking</u> – seeing and understanding existing opportunity and using that understanding to build better ideas.

LBC: How do you tell good from bad ideas with respect to those which could lead to opportunity?

PH: Test as quickly as possible with key audiences or markets –

LBC: So in other words, allow for quick fails that an organization can learn from.

PH: Yes!

LBC: I found particularly interesting the thought that opportunities aren't stagnant; that they are a moving target. Can you speak to that thought briefly?

PH: When change comes – it closes opportunities for some and opens opportunities for others. Changes in organization and business environment to see what changes may future bring.

LBC: In your book, you identify six sources of opportunity. Would you briefly describe what each is and how they can be identified within an organization?

PH:

•Expression – how we tell the story of our solutions and the value we can create; we can create real [additional] value in how we help people understand the value of our processes and solutions.

•Technology – anything that we are developing that will create value for the customer – a product, service, internal process, tool etc. Linking different ways to create value increases our opportunities for impact.

•Market – markets that we are targeting – externally or internally – the groups of people who have needs and who we intend to serve. Thinking broadly about how to impact more people with our processes and products will expand opportunity.

•Organization – Our organization includes our people, resources, processes, problems, assets and culture.

LBC: How would we leverage problems to find opportunity?

PH:

• By remembering the definition of opportunity. Opportunity = need + value + condition

•Environment –– the environment is the natural, regulatory, cultural and economic environment. It brings us opportunity when we explore how to use best practice from other companies, when technologies being developed outside our company can help us, when the culture provides new ways to motivate people etc.

•Business model – the business model is how we measure and monetize the value we create for our organization from our processes and products. As we become more creative in looking at how to measure our impact we can often find new opportunities to drive improvement.

LBC: You have a quote in your book - "Looking to our capabilities rather than the future to guide growth is akin to the explorer looking to the rudders for direction rather than looking to the horizon." Can you give any tips or examples to an organization or even an individual for where to look to gain insights on future trends that they may be able to take advantage of?

PH: Outside-in looking. Taking a broad view of your surroundings to see what is changing in across each of the sources of opportunity – the technologies, environment, markets, business models, expression and other organizations. This will help you see what [leading] companies in other industries are doing. Learn from early adopters of practices you may be interested in.

LBC: How did your opportunity thinking journey begin?

PH: It began when I was teaching business and market research as a professor at Carnegie Mellon. [Based on this work,] I was asked to help commercialize early stage technologies for the national laboratory system and Washington State University. It was then I learned that there are always an abundance of ideas about ways to solve problems and solutions to problems we imagine exist but we are not as clear on how big and how urgent those problems are. We need to assess what the true needs are and whether the conditions are right to address those needs now before we focus on how to address those needs through new value propositions.

LBC: Are there any pitfalls to avoid when beginning on the journey of opportunity thinking?

PH:

•Tendency to think that opportunity thinking means lots of thinking and reflection as opposed to taking action. [With careful planning and looking at the full breath of opportunities in your environment] you will make up time in getting to bigger ideas.

•Not taking both short and long term view of breath of opportunities.

•Not selecting opportunities with biggest return.

•Avoid solely using "inside-out" thinking. In other words, "we are good at this so we will only pursue opportunities related to our core competencies".

LBC: What are the cultural enablers for an organization to develop a culture of opportunity thinking?

PH:

•Common language around what is an idea vs what is an opportunity

•Understanding that the definition of opportunity is Opportunity = need + value + condition

•Common view of key opportunities for the organization and their priorities.

LBC: To conclude, is there any additional wisdom that you would like to share with our readers relating to opportunity thinking?

PH: In some organizations, innovation has been focused on the groups of people developing new projects and not on the people running the business and ensuring quality outcomes for all involved. This is wrong. Every person can be an opportunity thinker. We each have both a right and responsibility to look for opportunity in the environment around us.

Being an opportunity thinker means that we understand the "why behind what we do" every day, and enrich the dialogue around ways to improve our impact by leveraging constantly changing world we live in.

Problem Solver or "Mother-in-Law"?

Problem Solver or "Mother-in-Law"?

How Does Your Leadership Team See You?

I am blessed to be able to meet and work with a wide diversity of quality professionals and teams in my travels each year. For the Quality and Operational Excellence community, by far the single greatest frustration I hear is getting support (be it resources, funding, or cooperation) for their efforts and initiatives. I hear stories about how we (or they) have to overcome resistance, passive aggression, and occasionally, open hostility from the very people we (or they) are there to help! Our budgets are often the first to be cut and the last to be funded. People give us the bare minimum information we request and often, we have to "pull" it out of them. There is a very clear pattern in all of these stories that we share with each other. What is the Root Cause? How can it be that management holds our expertise and skills in such low regard when our career field has so much to offer? Perhaps the key to this is in how we are perceived by leadership and the workforce.

When I was first married, I was quickly exposed to the bane of all young newlyweds…A visit from "the Mother-In-Law". It did not matter which mom visited, we were "afflicted" and the results and the distress was the same. We rushed around trying to straighten up everything and hide what we could. I knew that I could not complain or "just say no"; this visit was going to happen! When she arrived, I tried to be polite. But even with our best efforts, nothing ever seemed to live up to her standards, there was always something we should be doing differently, and the complaints were (seemingly) non-stop. Sound familiar? This was also my experience with the Quality and Operational

Excellence teams that visited me while I was a program manager and business executive! I could not help but notice that the activities and the results were strikingly similar to both types of visits. I am a member of several CEO forums and have informally discussed this situation with many of my peers. Unfortunately, our profession is far more likely to be viewed as a visit from "the mother-in-law" rather than as highly regarded problem solvers.

A good friend of mine, Mr. Eric Roden, recently gave me a great example of his experiences along these same lines. Eric started off by telling me about the new initiative Quality had implemented at his company (a large pharmaceutical firm) while he was a Director of Operations. "They created a new position called 'Quality Line Support', QLS's for short. It did not take us long to realize they were 'Quick Line Stoppers'! All they did was interfere with production without adding any value to our team or assist in helping to resolve any of the problems they wrote up. We were not impressed..." Eric then told me that he was later promoted to Manager of Quality and Compliance and was now responsible for the "Quick Line Stoppers". Eric spent some time learning his new organization and evaluating their deployment model. "When it was time, I gathered them together and told them they would be moving out of their offices and now 'living' on the line. In addition, they were now responsible for working with the team to do a true Root Cause Analysis of the problem and contribute to helping solve the problems they were finding. I forced them to stand and watch the Gemba until they truly understood the problem instead of just reporting it and walking away. This new change was not met with universal acclimation...in fact; one person quit because apparently, solving problems was 'demeaning'. But

we kept at it and soon changed the culture and our relationship with the work force. We were now there to help make product, not just 'throw stones'. The change in perception by leadership and management was significant. When we helped them, they were more than willing to work with us and everybody won!"

Eric's example is spot on target with my growing sense of how we can all become more Value-Added and viewed as skilled resources and less like a "Mother-In-Law". Many people have related their frustration at how an "outsider/consultant" can come in and say the same things they have been saying yet get a completely different reception. I believe this is in large part due to this perception that the "outsiders" are perceived as being there to help solve problems and we, the "insiders" are viewed as simply problem documenters. Remember...perception is reality! Think of your workplace as your home...people don't appreciate being told how to run their homes and it's the same situation for our work areas. We have been conditioned to view our objective as simply documenting problems and pointing out process flaws. But real value comes when we help the workforce solve the situation and eliminate the issues that are impacting quality and performance. Our skill sets are tailor-made for the role of problem solving and these skills and our toolsets have been honed by contributions from some of the finest minds in business. You only have to look at examples like Juran, Deming, Shewart, and Taiichi Ohno to realize that today, we have a rich history of problem solving to draw from. Would Deming even be remembered today if he only highlighted the faults and flaws of poor processes? Deming went far beyond this to show people what could be achieved and developed solutions that generated real sustainable results that not only helped his

industry, it changed our country! We talk about Root Cause and problem solving, but how much of what we do is nothing more than bureaucratic paperwork, documenting "Findings" that add no value to our products or services, and mimics typical "Mother-In-Law" behavior?

The answer to these questions can change how we are perceived and what we can deliver to provide greater value to our team and our organizations. We need less "us versus them" and more cross functional team work and engagement. We need less criticism and more rapid improvement efforts. How we are perceived by others is a function of our usefulness to them and how we are viewed as helping them obtain the objectives we are both pursuing. Are we simply trying to hit a certain number in our audits, narrowly focused on making our target metric for QA write-ups, or are we truly trying to help our organization make more and better products, provide better services, and win more market share? Each one of us needs to think this through and not just assume that we are doing our job because of our output. Some people tell me "I'm not allowed to problem solve, I'm only allowed to document". To them I would say "True Leadership Is the Exercise of Influence in the Absence of Authority!" © We can use our training and expertise to show people what is possible and how they can make the changes that are needed to achieve their full potential. As a program manager and business leader I did not care nearly as much about the fact that there was a problem as I did about what we were going to do in terms of addressing it and resolving it as quickly and as safely as possible. The people that took the self-initiative to begin the problem-solving process earned my respect and admiration.

Our profession has done a very good job in recent years helping our companies focus more on increasing Value-Added efforts from the perspective of our customers. I believe we should now use our own tools on ourselves to increase our own perceived Value-Added contributions to our leadership team. When they see us as true problem solvers, I believe we will have more support for our efforts than we can handle!

J. R. McGee

Founder and CEO

1248 Queen Street, Pottstown Pa 19464

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Lean Bytes

ASQ 2017 Lean and Six Sigma Conference

Conference Theme:

Leading the Culture of Excellence Through Lean and Six Sigma

This year we had another amazing Lean and Six Sigma conference. Once again, we had over 500 attendees. Of those, we had attendees from 46 states and 10 countries. The keynotes – Thom Singer, Jacob Stoller, Steve Spear and Jim Benson - were all inspiring as well as thought provoking, providing great takeaways. There were more advanced sessions than in previous years and they were all well attended. Overall, the sessions and workshop were very informative as always in addressing the focus areas of:

- Lean and Six Sigma Fundamentals

- Lessons Learned: Implementation of Lean and Six Sigma

- Doing More with Less

- Tips and Tricks: Sustaining Results

- Masters Series

The LED team had an opportunity to meet many of our 113 LED member attendees during our networking event, in addition to many new friends. In addition to having an exhibit booth and sponsoring a well attended and well received networking event, two of our leadership team also presented conference sessions in support of the conference.

- Mike Levenhagen - Success Factors for Creating a Lean Six Sigma Culture

- David Hicks/Hank Czarnecki - Coaching for Continuous Improvement

The call-for-papers for the 2018 conference should be opening by the end of this month at http://asq.org/conferences/ six-sigma/

Whether as presenter or attendee or both, I hope to see you in Phoenix in 2018!

LED Launches new eMagazine!

Glass half empty/full, failure/understanding (of what won't work), poor performance/opportunity for improvement. So often overcoming challenges put before us in life starts with attaining the proper perspective from which to attack the challenge. Successful and sustainable Lean implementation is no different. Having the proper perspective allows us to be forward seeking, not backward reaching, to see opportunities, not challenges, to believe you can help make a better future. These are the reasons that we chose PERSPECTIVE as the name of our new ASQ Lean Enterprise Division e-magazine.

So what's different between this new e-magazine and our newsletter that many of you have enjoyed previously, and which we will continue to publish? The PERSPECTIVE format will allow for more in depth coverage of topics of interest to our readers. There will be three-four feature length articles discussing the cultural underpinnings and related thought systems needed for successful and sustainable Lean implementation. PERSPECTIVE will also have more of an international flair and so will actively seek contributors as well as information on Lean related news and events from around the globe. Click on this link to find out more about our 1st issue

http://www.asqled.org/uploads/5/0/4/3/50437315/cover_and_letter_from_the_editor.pdf

Upcoming Events

Aug. 10th , 2017

- Lean Workshops, Chicago, IL
    - PDCA
    - Lean 101
    - Toyota Kata

Aug. 11th -13th, 2017

- Annual Lean Enterprise Strategy Meeting, Chicago IL

February 26th -27th, 2018

- 2018 Lean and Six Sigma Conference, Phoenix, AZ

April 30th – May 2nd , 2018

- 2018 World Conference on Quality and Improvement (WCQI) , Seattle, WA

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