Transcript for "Applying the Science of High Reliability to Improve Operations
and Increase Organizational Resilience—Especially in Times of Disruption," Webinar
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Valere Lemon: Thanks Brooke. Aside from my responsibilities as a product manager for Health Catalyst patient and safety monitor application, I also act as a clinical SME due to my background in pediatric hematology, oncology nursing, and several years in quality and safety and health care organizations. This is where I actually came to meet Fran. And I've learned from her experience as the co-developer of the global trigger tool. And when I took the trigger reviewer training through IHI several years ago, that's where I actually came to learn about her. And I've continued to learn and grow from her expertise of more than 20 years in healthcare, including years as a registered respiratory therapist, her oversight in quality and case management and numerous articles and white papers that are related to patient safety and quality improvement in healthcare. I'm excited for you all to learn from her today as well. And with that, I'll hand it over to you Fran.

Fran Griffin: Great. Thanks so much, Val, for that kind introduction and for the opportunity to join you and the Health Catalyst team for today's webinar. So good morning or good afternoon to everyone on the line depending on where you are. So today I'm going to talk a bit about what we've been learning over the years around high-reliability principles and how they really can be used to improve how organizations operate and stay resilient, particularly hospitals and healthcare organizations. And some of this is more timely than ever with everything that we've been dealing with in 2020 around COVID and how it has really stretched how we have to think about operating, learning, and improving. So I hope you will find this relevant to what we are dealing with in these rather tumultuous times.

So just a very quick summary of the objectives for today. We're going to talk about high-reliability practices and the difference between expected versus unexpected conditions, which has been an important learning point for me as I've delved into this over the years. Talk a little bit about some of the key concepts in what's called safety two. And then I'll talk briefly about some self-assessment methods that you might be able to use to assess where you are, including some questions that you could apply tomorrow if you were interested in doing so. And hopefully, you'll be able to identify some opportunities for using what I'm going to talk about for designing and redesigning processes in your own organizations. So going back to about 2002, Weick and Sutcliffe came out with a book called Managing the Unexpected, and many of you may be familiar with this book. There've actually been several additions and different versions. The first one though came out around 2002, and some colleagues and I became very familiar with it back then. And these characteristics may be familiar to many of you, what are the characteristics of HROs?

And for those of you who've not seen this before, what Karl Weick and Kathleen Sutcliffe did was they went and looked at industries that they called high reliability, and I'll use their definition of what that is in just a moment to try to learn why is it that these organizations function this way, what is it that they're

doing? And they came up with these five characteristics that you see here. Now, keep in mind, these are the characteristics of organizations that are already highly reliable. And so if your organization is not there yet, it will take some time to get there. And so we have to think about how do we get from where we are now to being more like this, and what does it all mean? So if we think about preoccupation with failure, for example, when we first started talking about this back when these characteristics were published, a lot of people in healthcare didn't feel comfortable with a focus on failure because it seems sort of counterintuitive and a little bit like the sky is falling type of approach.

The reality though is, it's thinking about the fact that anything can go wrong. And it's very likely that errors and breakdowns in the processes that we have are going to happen all of the time. And so always being mindful of this. So it's not being a pessimist, it's I would call being more of a realist and thinking about the fact that we need to expect failures to occur because we're human beings and be ready for them rather than being in a reactive mode, which I think is an important interpretation of this. The reluctance to simplify interpretations means we're not going to take the first answer when we're trying to understand why something happened. We're going to really try to dig down to get to all of the underlying factors, because it's easy to take the first interpretation. Unfortunately, if we do that, we're often taking the wrong one and we might be fixing the wrong thing.

Sensitivity to operations, I'm probably going to spend a bit of time on today because I think it's so relevant to some of what we're dealing with in COVID. And of course, that leads into this commitment to resilience, ensuring that when things happen, whether it's a bad event in our organization or something major disruptive occurs like we're dealing with right now, how does the organization not fall apart? How do we stay functioning and learning and improving? And then deference to expertise, which is really about ensuring that the decisions are being made at the right levels and using the expertise of everybody on the team. So these five principles have really been the underpinning of what many organizations working on high reliability for the past 20 years have been focusing on.

So what do we mean by a high reliability organization? This is the definition that Weick and Sutcliffe came up. Organizations that rarely fail, even though they encounter numerous unexpected events. And I'm really going to delve into what do we mean by unexpected events because as I actually went back and re-read this book several years ago, I took a different interpretation reading it on the second time after having been working on it with other organizations over the years. So that unexpected events and understanding what is expected versus not is very critical to thinking about how do we weave reliability into the way we do our work? And so why do these organizations have a large excess of unexpected events? Well, they have complex technologies, their constituencies vary in their demands, and people who are running the systems have

incomplete understanding. So this was their definition of the organizations that they went out to look at, which included nuclear aircraft carriers and nuclear power facilities and others.

And so when you read this, I'm sure you're thinking, well, that sounds an awful lot like healthcare, we have complex technologies, we can have variation in our constituencies and the demands being placed on us. And we have people in our systems who have incomplete understanding because our systems are so big and complex. So there isn't anybody who can have complete understanding of the entire thing. Yet in these HROs, they rarely fail, meaning the organization doesn't completely collapse and unravel even though they've got all of these conditions and they're having unexpected events all the time. So understanding unexpected versus expected really I think is critical to how we think about this. So let me kind of give you an example, and I use several examples from aviation because there are a lot of good things that we've learned from aviation in the patient safety work over the years.

So here's a copy of a schedule from the United Airlines website. So if I was thinking about getting on a plane next week and flying to Los Angeles, I would go in and pull up the flight schedule. And here's just a screenshot of what was in there the other day when I did this. And you can see, there are several flights, it's not the complete list, but I have several flights that I can choose from. And for every one of them, there's a departure time, and there's an arrival time. Of course, any of you who have flown frequently as prior to COVID I often did, we learn that the departure time tends to be more accurate than the arrival time. Although we've also learned that the departure time, if we don't take off right at 8:30, for example, I don't worry that I'm not going to get there on time because I know they buffer these times. They think ahead to what are the things that could impact the time.

So I know it takes less than six hours and four minutes to fly to LA, including taxi time and landing time, but I know that they've built that into the system. But when we look at this schedule, we have expected conditions for this schedule. There are certain assumptions that are being made. So if I were doing this in a live room as I often, I ask people, what are the expected conditions that United Airlines would have when they set the schedule? Well, they're assuming that the plane's going to be there and that it's going to be in working order. That when they do the checklist, everything's going to work. That the crew is going to be on time and ready to go, that the passengers are all going to be on time. That the boarding process will go smoothly, and that the weather is going to be relatively good, and that the taxi times won't be outside of normal range.

So they have all these expected conditions that allow them to make this schedule because they have to make a schedule so that they can sell tickets. So they're assuming certain things, but there are also things that can happen all the time. So we know a little bit of weather could happen that wouldn't adversely

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impact this. So if there was a little bit of rain, drizzle, my flight would not be really completely messed up. If the crew was a few minutes late connecting from another flight, that probably wouldn't throw things off too much. So there are little things that happen all the time that are sort of built in to the assumptions as they make the schedule. So that's thinking about the expected. What is the unexpected? So a different example, think about the Oscars from a few years ago.

So these are the definitions of the unexpected from the same reference, Weick and Sutcliffe where somebody has an intention, they take action and they misunderstand, and the actual events fail to coincide with the intended sequence. So the intent is proper, right on. The person takes action, but things just don't work out the way they were supposed to. So the Academy Awards from a few years ago was really interesting. I didn't watch it live, but of course it got so much press afterwards. And I think probably everybody knows what happens. They had the wrong card in the red envelope, and it didn't have the best picture winner in there, it had another card. This was despite having redundant systems. There was two people, one on either side of the stage as a backup so that they had a backup in place to bring the card out.

The two actors who were reading it though Warren Beatty and Faye Dunaway hadn't seen it before. So when they opened it, if you have seen clips of it, there was a pause. So Faye Dunaway opened it first, and there was a very interesting interview with her afterwards. When she opened it, she said she knew that something wasn't right, but she couldn't figure out what. And she was looking at it and she just knew something wasn't right. Now, what was not right was it was listing the name of an actor and the name of the movie that they were in because it wasn't the best picture card. And she didn't know what to do. And so she handed it to Warren Beatty and he afterwards said that he just thought she was being dramatic. And so he just took it and he looks down and he read the name of the film. And of course, the film that he read out was not actually the winner.

The people who made that film came up on stage, and they were the ones who discovered that they actually hadn't won. And by then somebody had come out on the stage. And so this whole series of things happened despite all of the efforts they put in place to not have it happen. So the intent was there, they took action, they misunderstood. They were looking at the card and didn't understand or realize that they were holding the wrong card. And so the actions did not end up lining up with what the intent was. So that's a big unexpected. When we go back to aviation though, what are really the unexpected things that could really impact this schedule in a big way? So unexpected are the things that really occur very rarely or cannot possibly be predicted.

So an example would be the computers for the entire airline go down. And we've seen that in the news where that has happened to some airlines where

something happens in their computers, everything goes down and operations come to a crashing halt. That's unexpected, that's going to severely impact the schedule. Severe weather like a hurricane or a blizzard can do that as well. Now, some of these unexpected conditions, the airline is already able to respond for because they've preplanned. So the expected things are the little things that can kind of happen every day. The unexpected things, they still don't want to be in a reactive mode. So for example, we think about in aviation, how do they identify that an unexpected situation is in front of them? And how did they respond to it? A lot of it is I'm sure you know, aviation is criteria based.

So for example, if we're having bad weather in the New York metropolitan area, which has three large airports, the airports don't have to call up the CEOs of the airlines to get permission to spacing out the planes, which does affect the schedule. They have criteria at which they just start spacing out the planes to make it safer to land. So those protocols kick in automatically because even though this is an unexpected condition, we know at some point it's going to happen because it happened before. And so we can learn from it, and we can use it. Some unexpected conditions may not have happened before. We may not have had the entire computer system crash on us, so we might not have the same level of response in place. The difference is in some organizations, how do you recognize that you're in an unexpected situation and how do you respond? Is it different every time?

So distinguishing the expected things that can happen all the time versus the big unexpected things that happen rarely I think it's an important distinction when we think about high reliability organizations. Really want to move towards the sensitivity to operations piece of this though. As I mentioned at the beginning, I wanted to emphasize because that is so critical. Think about COVID, we had a lot of unexpected there because there've been so many things around that that have been unexpected that we didn't know. Now, we've learned a lot, and so we can start moving into. And if it turns out that we are in this second wave, what did we learn in the first round that we comply to be ready so that we are able to identify and respond? And then also there's the role of managers in there.

So we look at managers in a high reliability organization, I thought this definition was particularly striking when I re-read it, that managers and HROs as identified by Weick and Sutcliffe take pride in the fact that they spend their time putting out fires. I had to go back and read that a couple of times when I saw it. I thought, they take pride in putting out fires? Most of us view that somebody who's spending their time putting out fires, you're putting out fires because things are a mess, we shouldn't have the fires. Well, to a certain extent, that's true. But it also helps them stay resilient and contain the unexpected. So what we don't want to have happen is that a little unexpected thing turns into a big thing.

So I was thinking about this before the presentation today and recalling a conversation that I had with a colleague last year. We were talking about hand hygiene in hospitals, which everybody has been working on I think as long as I've been involved in quality and probably being emphasized more than ever this year. And we were talking about who's responsible for what in hand hygiene, and what is the role of a manager in hand hygiene? So should a manager of a department or a nurse manager in a hospital or a CEO for that matter be responsible for holding people accountable to hand hygiene? And my colleague and I as we were talking about it, we both landed in the same place of, no, that's not the role of the manager, that's not the role of the CEO. Their role is to make sure that the people have the supplies that they need in order to practice hand hygiene. So it's the responsibility of the manager or the CEO to ensure that soap dispensers are full, alcohol gel dispensers are full, paper towels are there. If we think about PPE, that would be the same.

They're responsible for making sure it's there. So they have to be accountable for ensuring people have what they need to do the work because we certainly shouldn't be holding staff accountable for doing things if management is not holding themselves accountable for ensuring that the supplies are there. So a manager's job might be, as we think about hand hygiene and PPE, making sure that we don't have a little fire. If a little fire pops up of we're running low on supplies or we're out of supplies, that we address that issue before it becomes a big problem. So really thinking about managers being out there ensuring that people have what they need to do to work is a better use of a manager's time than perhaps being in, when I recall my manager days, all of the meetings that I was in, and then many times I was in conference rooms and not out at the place where the work was happening.

So slightly different view of thinking about how do managers operate in order to ensure that little fires don't become big ones and maintain resilience within a unit or a department. Another role where this comes into play is an expediter. The first time I saw an expediter in action, I was fascinated by it. It was about 20 years ago and a couple of colleagues from IHI and I were working on medication safety. And I proposed the idea that we go look at how they do room service at a hotel, because we were trying to figure out how to manage the pharmacy distribution system for medications when there was both the orders that were already known and changing the new orders coming in all the time. And I thought maybe a hotel that does room service might be a good analogy because, you know how if you stay in a hotel, you can fill out that little card that you hang on the door knob indicating what you want for breakfast and what time you want it to come.

So that's one method where you know in advance what's going to be coming. Yet some people don't fill out those cards, and they wake up in the morning and they think, "Yeah, I'm going to order room service breakfast after all," and they call the phone. Both people, those who put the card out and those who call over

the phone have an expectation for receiving it in a timely fashion. If you check off a window of time on the card, usually about 15 minutes, you expect it to show up in that time. If you order over the phone, you expect that it's going to come probably within 30 minutes or so. If they tell you it's four hours, that would not be very satisfactory. So how do they manage both? So we went to the Marriott Marquis Hotel in Times Square and got up at 4:00 in the morning to go watch them do their room service process, and it was fascinating.

I didn't know the person was called an expediter at the time, learned that from watching some of these cooking shows on TV. And it was really interesting to watch what this person has done. Actually when I Google searched for images of an expediter, this is the one that I found. So the job of the expediter is to just ensure that everything is moving along, that everybody has what they need and to make real time adjustments. It's usually a trained chef. So in this picture here, what you see is a trained chef who's not doing any cooking at all. This chef is just making sure as the orders are coming in that the line cooks are not getting backed up, that they have their supplies, that they've got dishes, that they've got adequate amounts of food, that thing are moving along, and that the orders are going back out.

Everybody who's got an individual responsibility focuses on that, so the line cooks can focus just on cooking at whatever station they're at, the wait staff bring in the orders, come back and pick them up, dishwashers are doing their thing. And the expediter is constantly just watching to make sure that it's all moving the way it's supposed to. And if the expediter see something like plates are running low and nobody's addressed it, then the expediter makes sure that that gets addressed. Or if one line cook starts to get backed up, then another one may get moved over to help so that the backlog doesn't cause a domino effect. And I thought, that is sensitivity to these operations. We are making sure that everything is moving and everybody has what they need. When I first worked in healthcare many moons ago as you heard Val describing, I worked in an ER, and I thought ERs could really benefit from expediters.

And when I was watching some of the stories that came out this year about what different hospitals were doing around COVID responses, I saw examples of what looked like people doing things equivalent to an expediter, particularly around PPE, ensuring that everybody had what they needed, where they needed it, when they needed it. So that's something if organizations haven't done might be worth thinking about if a surge occurs again and we have lots of COVID patients coming back into the hospital. How do we ensure that everybody has what they need? And that's really what leads to the resilience because things don't go off the rails. So I think an expediter is a fascinating method that is used in other industries that we might want to think about, how can we adapt this to work in healthcare? And can managers sometimes perhaps function as expediters where they're just focused on making sure everybody has what they need to get the work done.

So how do we assess our own processes or systems so that we know whether or not we're going to be ready to respond to expected things that happen or unexpected things that happen? So we really need to be thinking ahead, a lot of this has to do with being proactive. So questions that we often ... When I've taught this with some of my colleagues, we'll have people do group exercises at the tables, and we'll pick a process. So we might pick something like central line insertion or pre-procedural timeout prior to a procedure in the OR. And have the people at the tables thinks through these questions. So what steps should be standard? There are some things that we want to have happen the same way for everybody every time, what steps are they that should be standard because some steps maybe can't be standardized?

And then we want to think about, well, what are the expected conditions? So if we come up with this process that people are going to follow, what do we expect to be true in order for them to do this successfully? So what are our assumptions about staff and supplies and patients and the environment, and are those things really there? And then what are the unexpected events or conditions that often occur? So things that we typically plan for. So we expect that people are going to call out sick. Every place I've ever worked, we've always had staffing plans so that if somebody called out sick, we knew what we were going to do. In nursing departments, we've often had that happen as many of you probably still do with staff getting floated from one area to another or having a float pool that can fill in where there are sick calls.

When I worked in the respiratory department years ago, we had a temp agency that we used. And so we could call them if we had several call-outs in the same day, they could come in and they could backfill. So we know that call-outs are going to happen. And so we have a plan so that when they happen, we can put it right into place. What about unexpected things that maybe don't occur, how can we recognize them? How can we be ready for them? Some of them may be things that don't happen very often. And so those have always been the basis of drills and safety work, having people do simulations, for example. How are they also recognized? Do staff have the ability to recognize when we are moving into an unexpected situation where things are a bit worse than usual? Are we ready to respond to it? And do we have standardized responses or does everybody kind of make it up on their own when something unexpected happens?

So a quick little test that you could easily do to learn whether or not a process is designed for reliability, it's not a perfect test, but it can yield a lot of good learning. Go out and ask five people, take a very specific process. How do you complete this process, and what do you do if a step fails? And do you get different responses from the five people? If you do, then that process may not be very reliable and you need to then think about how can we make this more reliable? Do we need to add some standardization to it? And with the response as well, do we want to have a standardized response? One time I visited an OR, this was back when pre-procedural briefings in the OR were really becoming a

big thing. And I visited this hospital, they were really proud of the fact that they had added a verification right before incision as to whether or not the prophylactic antibiotic had been given.

I have, "That's really great. How often does it happen that you get to that point and discover that the antibiotic hasn't been given?" And they didn't know. And the look on their face was kind of along the lines of, "Wow, we never thought about that." And so what they did was they wanted to go back and then look at how often does it happen, because it's a very different scenario if that happens 10% of the time compared to 50% of the time. If it's 50%, that would tell them that the process isn't standardized enough and we're doing a lot of fixing at the last minute by administering the antibiotics. And that might not even be happening all in the same way because we don't have a standard process because we didn't think to look at it.

So thinking ahead to, if this step fails, what will people do? Having that process already in place, having it already defined so that if I'm the staff member and I go to get something to do patient care and it's not there, is there a standard process so that I know exactly how to get what I need or do I have to figure it out by myself? So those types of questions just by asking them in a little way can give you some insight as to where some of your opportunities might be. I've been using this slide for a really long time. It was created as you can see by Terry Borman at Mayo, and some of my colleagues at IHI have used this many times as well. And it's really a great way to think about the impact of not having one way of doing things.

So on the left side of the screen, you can see, we can have something that is within the standard of care, within the evidence-based yet we can still have four different ways of doing that. And I sure lived that world when I worked as a director of quality in the hospital because we sometimes would have protocols where we were within the evidence-based but each medical group or each surgical group wanted their own version. So we really ended up with everything being within the evidence, but yet we had different ways of doing it. And what that really meant was that we weren't getting to high levels of reliability because when staff encountered a situation, they had to pause and think about, "Okay, now, which standard am I following today?"

And that leads to a lot of opportunity for error. It also makes it really hard to learn when something doesn't go the way you intended it to do. So how do we redesign? It's much harder to do it when there's lots of different ways of doing it. When I was working on an infection prevention project years ago, and one of the doctors in one of the hospitals that was participating in this made a really insightful comment. And I thought about it this year in conjunction with all of the PPE stuff that's going on. The team was trying to get everybody to be better about hand-washing and contact precautions and using PPE where appropriate.

And when they went and spoke with one of the physicians in their hospital, he came back to them and he said, "Why can't you just put it all in the same place? Every unit I go to in this hospital, it's in a different place. On one floor, it's in the patient room. On another floor, it's in the closet in the hallway. On another floor, it's in a cart. If you just put it in the same place, it would be so much easier for me to do this all the time." And I remember at the time thinking, "Wow, that's really spot on advice." So do we still have that? For those of you who are working out there in hospitals, if you have people who move through the hospital to different areas, and many clinical professions do this not just the physician, but if you've got physical therapists, pharmacists, respiratory therapists, people who deliver things who are moving through the hospital and they go to different areas, do we have a similar setup for where they can find the supplies or is it different everywhere they go?

And if it's different, can we make it closer to standard? Now, probably not everywhere because the layout of the ICU, for example, might be different than a med-surge floor. But if we've got multiple floors that are physically designed the same way, can we make it easier for people by putting everything in the same place so that it's always there? And then ensuring that it's always there. Certainly is easier to train people when there's one way of doing it, the results typically get better. And then if something breaks down, it's much easier to study it and try to figure out, okay, what didn't go well here? How can we potentially redesign it? So thinking about, how can we get closer and closer to having one way of doing things and still be within the evidence?

That's what that standard of care in this slide from Terry really means. Those two bars are, we're not going outside what the evidence says. That's research, we're not doing that. But we want to ensure that within the evidence we've got one way of doing it whenever possible because it makes it easier for people to do what we want them to do. When we think about workarounds, are they good or are they bad? We often talk about workarounds as being a bad thing. Yet, if we look at how processes get redesigned and how organizations that are continually learning do that, I think sometimes workarounds are a good thing. How do we distinguish the difference? My stab at it here is that a workaround is good when it's a signal of an unexpected condition. So if somebody out at the front line encounters an unexpected conditions and they realize in order to do what I need to do, let's say for my patient, I need to do something a little bit different here because I didn't expect this to happen and the policy and procedure doesn't have anything about it.

And so I make a modification in order to get the work done, that then has to be used for learning. So the key for that being good is that I don't go off and do it by myself and not share it with anybody, but that there's a method for me to communicate that to leadership, to quality improvement, patient safety, whoever that might be. Maybe that would be during huddles on the unit or rounding when the managers and the senior leaders come around that we use it

for learning. Because if I experience it as a frontline person in one area, chances are other people are going to experience it at some point in their own area. And so maybe this could be a signal of our policy and procedure might not be up to date or hasn't thought of everything. And so now we've got a solution, do we want to design this into our process or do we want to design this as a standard response?

And we want to reward staff who do that because the frontline, as we all know, they're the best ones to know what it looks like. When is the workaround bad? Well, that's when people deliberately vary from the standard and there isn't really an unexpected condition driving them to do it. And we have to think about, how do we try to address the workaround? I put a picture in here just for a little bit of fun. People are going to do things the way that they need to do them to get the goal accomplished. So if we use this picture here, and this is from a website, baddesigns.com. It's a lot of fun if you want to go look at some pictures. But you can see sidewalks were laid next to a parking lot that ran in parallel, and people didn't want to walk that way. They clearly wanted to walk the shortest distance from the parking lot to wherever it was that they were going as we can see by the fact that the grass got all worn down.

So what's the solution there? Well, you can see the solution they came up with was they put up a big sign, please use the sidewalks. I'm sure that was not very effective. We do that type of thing all the time. So this was an opportunity to say, "Hey, wait a minute, we didn't design this right, and let's go back and learn. This is clearly where people want to walk, so why don't we just lay some cement down here and get rid of the sign and let people walk the way that they want to walk and not just try to force them to do something that they're not going to do?

Somebody suggested one time when we were showing these slides that even better would have been to not put the sidewalks down until after we saw where people want to walk. So really thinking about how can we learn and redesign? So here was an opportunity where they designed something, people did something different. And so that provides an opportunity to redesign and say, "You know what, we can make this better because the signal here is people are telling us this isn't the best way to get it done." So this requires being in a learning organization. So high reliability organizations are learning organizations. And it's funny when I present sometimes and I mentioned learning organizations, some people will immediately gravitate to learning organization means we do lots of continuing education and we offer lots of classes.

And that's really not what it means at all. It means that as an organization, we are constantly trying to learn what is happening every day, every shift, and learn from it so that we can adjust where we need to, that sensitivity to operations. And that we can ensure we are improving where the opportunities present

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themselves by designing new processes or by redesigning the ones that we already have, and particularly paying attention to what are the staff identifying as methods that we need to think about for redesigning the work as it evolves? So some questions to ask yourself, if you want to think about, am I in a learning organization? Are employees and managers learning from the work every day? Every day is there some opportunity to think about, what did we learn today? What did we learn yesterday? How is that going to inform what we do tomorrow? Are staff encouraged to identify the need to modify a process and share that for learning? Are we regularly encouraging and soliciting from the frontline staff, how can we make this better? How often do staff adjust a process based on changing conditions?

Do staff have the ability to adjust based on changing conditions? So when I think about the aviation example from before, the people who work in air traffic control. When the conditions change, they can adjust what's happening based on criteria. They don't have to start calling people and asking for permission. Imagine what would happen if they had to call every airline that flew into the New York city airports and asked for permission to stagger the flights because of wind or rain, nothing would ever get done. They have a criteria-based process that allows them to flex based on changing conditions that are unexpected when they happen, but they've happened before so we can be ready for them. How often do we ask why or encourage other people to do the same thing? How do we find external ideas?

So the best ideas might come from someplace else. We should always be thinking about what can we learn from what other organizations like ourselves are doing, what about other industries? How are we constantly learning how to improve what we're doing by looking outside ourselves? And when's the last time a frontline person suggested an idea that was tried? Now, if that's happening in your organization, then kudos to you, you are in a learning organization. These are the types of things to think about. A lot of discussion in the world of patient safety, and some of you may have seen this work because it's a few years old now has been around this concept of safety one to safety two. And it really overlaps significantly with thinking around high reliability. And if you read the work on safety two, and the link at the bottom of this slide to the paper by Hollnagel, it's free out there on the internet, has some interesting thinking in it.

And they've got several papers now. So if you go to that website, you may find some others. Just google Hollnagel, and you'll find an awful lot. The idea of thinking about safety one to safety two is thinking that in safety one, we're really focusing on we want as few things as possible to go wrong, we really are focusing on the failures. If you remember, when I had those characteristics of high reliability organizations at the beginning, that might be the place to start, that we want to start understanding where the failures are so that we can address them. Over time, though, we may need to think about how do we

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expand our view to not just focus on the failures? How do we also really think about, we want as many things as possible to go right? And I bolded some of the things in their definition.

And if you look in the assumptions box, when we're in safety one, we're really thinking about things going wrong through the components. And in some older ways of thinking, we think about people as the risk and the human error aspect is the risk. But in the safety two concept, they're really looking at it that performance is varying every day because people are constantly responding and adapting to varying conditions. It is expected that the conditions are going to be fluctuating and we've built in the flexibility for people to respond and adapt because we've taught them how to recognize it and we've built in the responses based on what we've learned. And that provides flexibility, which I would put in the sensitivity to operations bucket and resilience. And so it's really some very thought-provoking thinking if you read through these.

So I took a graph from Hollnagel's paper and they show the classic bell-shaped curve. And in a system, we have things that go wrong, things that maybe don't go great but the outcome ends up being what we want, things that go fairly well, and then positive surprises where we sit there and we think, "Wow, how did we accomplish that?" All of this occurs within the system. So I tried to think about framing this in a way that might make sense using a nonclinical example, so I used my golf game. So if I think about playing golf, the positive surprises over on the far right would be a hole in one, something that I know I will never achieve in my entire life. Sometimes when I go out, if I am approaching par score, I would consider myself to be pretty far down the bell-shaped curve. I'm on the positive side of the outcomes if at least my balls are on the fairway and I don't lose any into the woods or the water and my score is at least the same or maybe even better than before.

On the other side of the outcomes, which is more often than not, I lose some balls into the water or the woods, but, yeah, at least I complete each hole. So things difficult, but I get through the course and so I finish around the golf. But then there are other days where I feel a little bit like the cartoon there of Donald Duck smashing his golf clubs into the ground where everything just goes completely badly and I think I don't ever want to play this game again. If I want to improve my golf score, I can't focus on the things at the far left side of the bell-shaped curve because that's not going to help me improve my overall score. I do want to study them, I shouldn't try to learn from them. But the point that Hollnagel makes in his paper is we have to study all of these.

If we really want to understand how our system is functioning and learn where our opportunities are, we have to study all of it because the same system is producing all of these results. So when we think about that in healthcare, adverse events, thankfully when we look at the numbers end up being a very small portion of this curve. If we only study the adverse events, if we only study

sentinel events, we'll learn something, sure. But will we be learning enough? We need to study the entire system of care. So we need to think about doing root cause analysis not just on what went wrong, but what went really well. So I'm hoping that many of you who've been working in all of these changing conditions this year with COVID as you look back and get ready for what is looking like it might be a challenging winter, think about studying in places where it really went well, where everything went as you could have hoped for and where staff felt good about what happened.

Study those as much as if not more than the cases where it didn't go the way you wanted it to go. Think about how can we learn what we did well so we can replicate it? That is really thinking about getting to the next level. Not just learning from what went wrong, but learning from what went right and how we can replicate that for the future. So how might you assess where your organization is? So I took a stab at this when I was working on some reliability content for IHI a couple of years ago. And I came up with this work in progress self-assessment tool and looked at the key categories or designs. So how do we initially design our processes? How do we think about standardization? Who provides input? How do we address human factors? How do we do analysis? How do we look at both failures and success? What do we do with data? How do we provide feedback loops? How do we redesign?

How do we get into this continuous mode of learning and being able to adjust operations in a continuous way so that we're constantly redesigning but doing that in an organized way? And how do we respond when something happens, how do we get to be more proactive and less reactive? And how do we start thinking about standards for those recurring unexpected conditions that we know at some point are going to happen and we can be ready for it? So I have a document, and I'm happy to share it with anybody who wants to take a pass at it. This is just a snapshot to give you an idea. And it's far from complete because I've been building this over time. But the three columns are for thinking from moving from reactive to be getting ... So reactive being the old world, which hopefully most of you have already moved somewhat beyond.

We've got lots of work that's been happening in hospitals for the last 20 years in this area, so many of you have probably made changes to get you out of the reactive column already. First, we're going to get to the more proactive where we're managing the expected stuff, the routine stuff that can happen every day that we just want to make sure we're doing a good job of that. And then ultimately, we want to get to what's called generative, managing the unexpected much closer to the characteristics of HROs. I won't read all of this, you can see there's a lot of texts on here and the slides will be available to you. I actually added number 10 is around infection prevention because I was thinking a lot about the COVID stuff.

So in the reactive mode, the way we'd be thinking about it, precautions and isolation is done solely by physician order. In a more proactive mode, it would be implemented in a standard way and yet still there would be the physician order in there. The really ideal to get to, and I know some places are close to this and operating at this level already is that we've got criteria-based protocols. So positive lab result comes back, it's automatic certain precautions go into place. We don't have to wait to contact somebody for an order in order to do it. And that's the deference to expertise, that the criteria are built with the input of the appropriate clinicians, including physicians and infectious disease experts. And then the staff can do it automatically because the criteria indicates that we've met that.

So how do you get started? So these are just a few thoughts for how you might get started. Obviously, take advantage of your existing work, things that you might've already done around standardizations and responses and things like rapid response teams, early warning systems, protocols for pharmacists, nurse-driven protocol, respiratory-driven protocols, et cetera. And then plan for success by starting out on a small way, pick an area where there's somebody who's interested in working on this and then start looking at what is a process that we can standardize a bit better, how can we get the frontline involved? Think through those questions of what are the expected conditions, and what are the recurring unexpected conditions that we might have to deal with? And how are we going to design responses to ensure that we have a standard response to that?

So it's really about defining the expected conditions, understanding what assumptions are built into the policies and procedures that you already have, and how do we ensure that we've got everything to make sure those expected conditions are met? And how do we have a standard response when they're not? We want to continually be learning from any variation because that will help us understand what is an unexpected condition that we need to be thinking about. And we want to support the mindfulness of our staff. How do we help them recognize when something different occurs? Giving them the opportunity to say, "I can come up with the solution, and there's a mechanism for me to bring this to leadership so that we can think about this for continuous learning and adjustment."

So it is a journey, it's not something that's going to happen overnight. I cannot give you the checklist and say, if you do these 10 things, you will be an HRO, and it will take you about two years. It's really a never-ending journey. The organizations that Weick and Sutcliffe described as HROs do not call themselves HROs, it's really more about the culture of the way they operate and the way they're constantly trying to learn and adjust. So recognize as you start the journey or if you're already on the journey and you're thinking about what's around the bend, remember that you cannot change culture. It would be so easy if we could just go out and change the culture, but you can change things

that will change the culture. So providing responses for staff and ensuring that you've got standards in place that make it easier for them to share what they're learning would be great.

You want to become a learning organization, which of course has no end point and move to reliable processes and responses by understanding what's expected, and moving towards a more proactive, less reactive place and just recognizing that this really is a continuing journey that will evolve over time. So I will stop there and turn it back over to Brooke and Val, and then we'll have some time for questions.

Brooke MacCourtney   Great. Thanks Fran for the great presentation. If anyone would like to ask a question to Fran, now's a good time to submit that in your control panel, and we'll be jumping into that Q&A session in just a moment. Before we do that, I wanted to launch this poll question for you. Let's go ahead and launch. So while today's webinar was focused on applying sense of high reliability to improve operations and increase organizational resilience, some of you may want to learn more about Health Catalyst other products and services. If you'd like to learn more, please answer this poll question. And I'm going to go ahead and leave that open for a moment as we begin our Q&A. Val who you heard from at the beginning is going to be moderating our Q&A session with Fran. So I'll turn it over to you Val to start with our questions.

Valere Lemon: Thanks Brooke. The first couple of questions that we had were related to getting copies of the slide material that you shared Fran and also specifically the organizational self-assessment table, if you're willing to share that. And I know that you mentioned you were so. I think that's just to the ... Wanted to follow up on how the users or the attendees will receive that.

Fran Griffin: So anybody who's interested in testing this out, and I really do want to emphasize, it's a work in progress, I'm still learning from this. So my only ask would be if you try it that you send me some feedback and ideas for it. I'm happy to send that to anyone. And my email address is on the screen so people can email me or you can contact me through LinkedIn, and I'd be happy to send it to you.

Brooke MacCourtney   I want to just add, we will be sending the slides out to all registrants. So there will be a link there and Fran's email is on the slide deck, so you'll be able to access that later as well.

Valere Lemon: Great. So one of the questions we had is, how do we determine what is expected versus unexpected?

Fran Griffin: Yep. So I think that has to be a process where you get some multidisciplinary folks around a table and start having some conversations about that. It's not a real black and white that here are things that are going to go in the expected

column and here's the unexpected. So I would take it from the approach of the expected things are things that happen frequently, almost every day, at least every week. The unexpected things are the things that rarely happen or have never happened. And so thinking about what is something that is really unexpected that could completely derail the whole process. And having the people in the frontline process participating in that discussion I think is absolutely critical because if I was the director of quality again back in a hospital, I wouldn't know what all of the daily expected and unexpected things are that happened.

So it's not a perfect definition of this is expected and this is not. The little expected things, think about it from the aviation example, the stuff that happens all the time, crew being a few minutes late, indicator light coming on when you're doing the checklist. That little stuff happens all the time, and it doesn't usually completely throw off the schedule. So what is little stuff that can happen on a regular basis that we can just be ready for? The unexpected stuff is either things that don't happen frequently or things that can start out small and then really blow up on us. And so how do we deal with them while they're still small?

Valere Lemon: Thanks, Fran. The next question is, to what extent is there a trade-off between reliability and innovation, and how do you manage that?

Fran Griffin: Interesting question. I've never thought about this one before. Wow, that's a good one. I'd love to ponder this more. My initial reaction is that I think innovation can really help drive reliability. Some of the best solutions that have come up in not only healthcare but other industries have been the result of innovation. And sometimes it's somebody at the front line coming up with a way to do something different on the spot. Innovation can also be designed, there are organizations that do that and teams that work on coming up with innovative methods. I don't know that there's necessarily a trade-off between one versus the other. I would think that innovation might be a method to help achieve reliability. I don't see them as opposed to each other. I can see them really being complimentary. Very interesting question to whoever posed that.

Valere Lemon: Thank you. And the next is, can you give an example of how to study what went well?

Fran Griffin: Sure. Everything we do in root cause analysis can be equally applied to something going well as it is to something that has gone bad. In fact, there are people doing this. When I was doing some presentations on reliability for the CMS partnership for patients a couple of years ago and I got to travel around the country and first started talking about this. When I asked if anybody in the audience had ever applied root cause analysis to something that had gone well, I would get a periodic hands going up. So people are doing this. So it's all the same tools, it's asking the questions, it's using things like the five whys. It's

studying, what happened, and what did we do, and why do we think it's happened and talking to the staff. So it's the same tools can get you there, it's just applying it to the things that go well not just the things that go badly.

Valere Lemon: Great. Brooke, do we have time for any more questions?

Brooke MacCourtney   Yeah, let's do a couple more, maybe one or two more.

Valere Lemon: So how can we work on improving things when we're in the midst of a crisis like COVID?

Fran Griffin: Yeah. Great question, and this comes up a lot. I think there has to be a little bit of a balance there because we don't want to stress the system anymore than it is. Yet dealing with COVID, things are being learned every single day. In fact, one of the projects I'm working on right now is with VA hospitals because they started this whole HRO journey a couple of years ago. And one of the things that has come out in our discussions with them, there's a whole bunch of us working on this project. They have said some of the executive directors of the medical centers in the VA that what they've been dealing with during COVID has reinforced for them more than ever before the importance of having these approaches to reliability embedded into the way they do their work and that it cannot be set aside.

So I think it means making sure that deliberately things are being done to constantly be learning and adjusting. So managers, senior leaders, et cetera, getting out there as much as they reasonably can without putting themselves or others in jeopardy or disrupting the work to learn what is happening, what's going well, what's not going well, what can we do to adjust tomorrow? Those things should be happening all the time anyway, we can put the reliability label on them or not. Those are the types of things though that in an organization that's working well, even if it's dealing with a major disruption like COVID, we still need to be asking those questions, what went well today, what didn't? And maybe a five-minute huddle can help you get there, it doesn't necessarily have to be a one-hour meeting or extensive rounding through the whole hospital. But having mechanisms for people to feed that in and collecting that information. I think from what we're hearing from everybody, it's critical to be doing these things more so than ever before with everything that's happening with COVID.

Valere Lemon: Thanks. And then just to kind of wrap this up, we just had a comment from one of the attendees regarding the innovation question and said that they would add that for innovation the new systems that are being introduced as a solution to broken processes should be well understood by the same team working them so that they understand the system in which they're operating. Otherwise, innovation can add complexity that is not understood or complexity that is hidden making it more difficult to diagnose or see errors and issues as they are building.

Fran Griffin: Absolutely. Great comment.