MITOCW | Ses. 3-3 Lean for Healthcare: An Overview

SUSAN SHEEHY: So I just want to do an overview of healthcare, lean for healthcare, because you've learned a lot in the last couple of days. And how do you apply this at the front line-- at the front lines of hospital or healthcare? So just to give you a little bit of an overview of our company, our company's stationed-- or the headquarters is in Montana.

We've worked with about 115 healthcare organizations, mostly hospitals. We've had some other kinds of organizations like Johnson Johnson, Blue Cross, Penn State, some universities as well as medical centers, from 50 bed centers to 1,200 bed centers. So Lean works across the board in every department in every organization in the healthcare system, lean for healthcare.

Matthew May wrote a really nice little book. And I was telling Earl about it at the break. It's a little paperback book. You can get it on Amazon for $2. It's called *The Elegant Solution* by Matthew May, and it's about Lean, not only about lean for healthcare but it's an awesome little book. It takes about an hour and a half to read. And what Matthew May says is Lean doesn't light a fire under people. It lights a fire within people, because it's really an exciting thing to bring to a healthcare organization.

Why Lean? Because it's a great fit for healthcare organizations. It produces meaningful, useful, important results right away. And it provides a power to change an entire culture of an organization, if you do it right. One of the things we have to ask ourselves in healthcare is, is there a better way to do what we're doing? So I put this. This is my administration slide. And this is how we do what we do.

And the answer we always get in healthcare is because that's the way we've always done it. So lean is the systematic pursuit of perfection, and it's a discipline of incremental changes, one little step at a time. You're not going to come in and change the world in six months.

Taiichi Ono, who was the president of Toyota, said it's better to make a 2% improvement every month than a 24% improvement one month and none the rest of the year, because what happens is it doesn't embed the philosophy of continuous improvement and continuous change. So you have to intermingle your rapid improvement events with lean sustainability across the board as well, really important.

And in our experience, a lean transformation in healthcare organization takes four, five, six years at least, depending on the commitment of the administration and the ability to actually educate and train the staff. There's no quick easy way. People think of lean as a quick fix. It's not. It's a good fix, but it's not a quick fix. It's learned through experiences, clinical and operational experiences. It takes practice, practice, and more practice.

One of the questions that came up is it's too risky. If you take a risk, you might fail. Well, yeah. But if you don't take a risk, you are going to fail. So it's important to take some risks and give some new things a try. In order for lean to succeed-- and I'll intersperse it through my talk-- the entire healthcare team has to own it. It's really bad for a CEO to hire a consultant to come in and fix things for you, and then they leave.

Everybody has to own it-- the senior administrators, middle managers, and the front line staff. It has to be evident in everyday work. Somebody sees a problem. Let's do an A3 on that and fix it right now. It has to be embedded and practiced by everyone in the organization. And it has to be expected of everyone in the organization, not just one or two activities, but across the board.

I used to be a director years ago before I knew about lean. And someone would come to me with a problem. And I'd say, don't come to me with a problem. Come to me with a solution. And that is the absolute wrong thing to say. Come to me with what the issue is and background, and we together will work on the solution. That's how lean is. So managers are no longer dictators. Managers become coaches and barrier removers. That's how lean succeeds.

This is what we hear in healthcare, because that's the way we've always done it. And Mr. Einstein said the significant problems we face cannot be solved at the same level of thinking we were at when we created them. Why Toyota production system? Why lean for healthcare? They make cars. We take care of people. Well, first of all, they're the most successful manufacturer in the world, most people think.

Can it work for healthcare? Let's see. They have the best record of introducing new technology. Well, guess what? We have a technological imperative in healthcare. We have to do that. Best record of employee satisfaction. We have to keep our employees with us. Retention, happy-- employees who stay are important. Relentless commitment to eliminating waste. And heaven knows we have a ton of waste in healthcare.

One million suggestions a year Toyota expects from their employees, and they implement over 90% of their suggestions. And those employees feel very valued. And who better to tell us how to fix our system than the front line workers? Who better to tell us how to clean a bed than the cleaning lady? Who better to tell us how to prepare a tray than somebody from the cafeteria? Not somebody from here who says, I want you to deliver those trays better with hotter food. We need to go ask them, why is the food not hot?

Features of Toyota production system, a.k.a. lean-- management is not top-down. Healthcare has a traditional model of command and control. Can't do that anymore. Toyota also has a model of employees being on the value side of the ledger, and not on the expense side, even though they are an expense. Healthcare, we have just the opposite. We put employees on the expense side. We need to cut budget. We cut physicians. We need to think differently.

We need to take the people who are doing the work and recognize them as the experts. This is work we did at Mount Sinai in New York when they were implementing Epic, a big massive software, medical software program. They wanted to fix their processes first, their clinical processes, and then do the Epic builds based on their newly renovated clinical processes, rather than building Epic and then trying to fit the processes into those. So we asked the people who are doing the work to do the mapping of their processes, and we coached. We had 56 nursing units to work with, daunting task.

Imagine what would happen in a hospital if every employee in that hospital was empowered to do lean, to identify problems and issues every day, to identify barriers to them getting their work done, to allow them to make needed changes on a daily basis. It's the power of 1,000, or 2,000, or however many employees you have. Bill Bradel who's the CEO at Northern Arizona Healthcare calls lean the best thing since penicillin. He says it's the best thing that ever happened to him as a CEO.

Why Lean? Lean gives employees a purpose, a direction, a sense of belonging, a sense of contributing, a different way to think and work, and an opportunity to build a better work environment. I finished a project recently where a cleaning lady discovered $750,000 of waste, getting rid of hazardous waste material that really wasn't hazardous waste, a cleaning lady who came to my class and said, I don't think I have anything to offer. Hello. It was amazing.

Why lean for healthcare? We talked about this earlier. It's the largest industry in America. And the cost is going up, and up, and up. And by 2019, it's going to be almost 20% of our gross domestic product. We can't do that. It's not sustainable. What's happening is the reason this is going up so fast is we have job losses, and people who were originally insured are now gone, going out to Medicaid. And we baby boomers, some of us, are starting to retire and moving from Blue Cross to Medicare. It costs money to do that. And it's going to increase 7.4% annually, Medicare spending, between 2011 and 2017, the big baby boomer surge.

We also have to figure out how we're going to take care of these different populations. We've got baby boomers who pretty much believe anything the doctor tells them. And we take advice. Gen Xers are a little bit more skeptical. They're going to go on Google and look something up. Millennials-- I have a 26-year-old son who's going to come with information, and he's going to tell you what he needs done.

The digital natives who are the newest being born children want everything now at home, online. So we have to figure out how we're going to deliver healthcare. Why do I have to come into the hospital for my blood test? Can't I just stick my finger into my computer, and can't it just draw my blood and give me a read out? Think about these things. Why not? Why not?

Why does this work for healthcare, again, massive waste in healthcare? It's estimated that everything we do in healthcare between 50% to 60% of everything we do every day is waste, 50% to 60%. Excuse me. Lean is rock solid common sense. It's very easy to learn and teach at the front line. It's easy to apply at the front line where work is happening, and improvement occurs with the first application.

Quick example. I had a security guard in one of my classes. And I always say to them, pick something that drives you crazy every day when you come to work. That's going to be your project, not a person but a process. And this security guard says, OK, taking-- investigating lost false teeth. Sounds funny. Hospital's spending $3,000 a week replacing lost false teeth. And this guy was writing reports that went nowhere.

So the first thing we have them do is an observation exercise. He went to gemba, looked around, came back, and said, I think I figured it out. Every room is designed for a right handed person. So I'm in the bed. I'm the patient. I've got my bedside table, my over bed table, and the trashcan.

So I'm grandma, and I'm not really good at night when I take off my glasses, take off my teeth, go to put them on the table. They fall in the trashcan. Housekeeping comes in really quietly, takes the bag, throws it away, gone, never to be seen again. So he said, I moved the trashcans on the left side of the bed this week, and I watched. We found teeth on the floor, but we didn't lose any. Security guard.

Wasted time-- this is a study done by John Kenagy, who's Boston based. He actually lives in Belmont. Dr. Kanegy and his group looked at 1,000 hours of nursing work across a number of organizations. And what they found is only a third of nurses' time is spent at the bedside, one third. Another 24% or 25% is spent with administrative things, paperwork, medication reconciliation. And 43% was pure waste, clarifying, hunting, reworking, redundancy, checking, waiting.

Think what we could do with this time, if we could capture it back, if we can put it in here, and get our patients out of bed, and get them walking and do DVT prevention and pressure sort prevention, shorter lengths of stay, better outcomes. Everything we do in lean and our mantra, and it should be everything we do in lean must be patient focused. It's not about the physician. It's not about the nurse. It's not about the housekeeper. It's about that patient, because that's why we're there.

And the old mentality in healthcare is we worked in siloes. I worked in the ED for many years, and it's like, oh, my god, this patient is going to die. I just don't want him to die in my department. Let's get him to the OR. That was the old thinking. Now, we have to think this is our patient, all of our patient. So I have a little thing that I like. It's a piece of artwork called mandala, where every point in a circle is connected to every other point.

And this is why I like to think of how we need to think about healthcare, with the patient in the middle supported by every single department that's connected to every single department. So it's no more their fault. The ICU won't take my patient, because the nurse is on break. And we never get a break. And we haven't had lunch for three months, and they go to lunch every day. That's the kind of thing that's got to stop.

Another Einstein-- I love this saying. Everything must be made as simple as possible but not one bit simpler. So it needs to be a continuous flow without the workarounds. The nurse goes into the room to do something. The equipment isn't there. She has to go to the supply room. She goes to the supply room. It isn't there. She has to go call storeroom to get it. She comes back. She needs a medication. She goes to the Pyxis. It's not there. These are all called workarounds, which prevent us from that continuous flow. And that's what we're looking for in lean, continuous flow.

Paul Batalden was a professor at Dartmouth who recently retired. And he said that-- and this is absolutely true-- everyone in healthcare must recognize that they have two jobs when they come to work every day, doing the work and improving the work. So we all have to be looking for waste. What can we do with lean healthcare? Produce more defect free health care, eliminate waste, improve workplace appreciation for the people who do the work. And it also strengthens leadership, because you have a common dialogue.

I'm going fast because I want to show you some examples as well. So we need to ask ourselves everyday in healthcare, are there things happening to our patients that shouldn't be happening? We also need to ask ourselves, are there things not happening to our patients that should be happening? Every day, ask yourself this question. Now, what does defect free mean? Defect free means exactly what the patient needs when they need it, without errors and that it's safe for the patients and the staff.

The mudas are pretty similar. We've tweaked them a little bit for healthcare. And every organization that deals with healthcare has them a little bit differently, but these are ours. In my particular company, they're pretty close to manufacturing-- most manufacturing. And we've added the eighth one for us is matching people skills with the task, because a study done by the Wisconsin Nursing Intervention Outcomes Project over 20 years showed that 16% of everything nurses do clinically can be done by somebody else. So can we do that? Can we reassign some work to make the right people be doing the right things?

Confusion is a muda. In healthcare-- and these are just some examples-- clarifying physician's orders, medication reconciliation, which is such a headache. Patients come in, and we have to find out what medications they're on. This is grandma. She comes in with a shopping bag and pours her meds. Some are old. Some are new, from three different pharmacies, five different doctors. Who knows?

So you're spending hours. And the average med-surge nurse spends about two hours doing a med reconciliation on one patient, making phone calls. It's crazy. We have to figure out how to embed computer chips in people's ear, so that any time a medication changes it gets recorded on the chip or something.

Motion-- this is waste in healthcare-- looking for supplies, trying to find a chart, multiple diagnostic tests in various locations. So you come to get the patient. Transportation comes. Oh, they're in X-ray. Housekeeping-- or dietary comes to deliver their tray. Oh, they're in CT. Patients all over the place with no central scheduling way to see where they are.

Nonsensical staff assignments. I've worked in the ER for 34 years. There was never a match between the physician schedule and the nurse schedule. They were all different. And so trying to work as a team, it took so much time to get everybody caught up at all the different changes of schedule. And I have this really strong feeling about nurses working 12 hour shifts, but that's another band soapbox for me. It's horrible. And not having the equipment you need. These are all involved with motion.

Waiting-- healthcare waiting, waiting for appointments, waiting for transport to arrive, waiting for the surgeon to come, so that the OR case can start, waiting in an ED. What's wrong with this? Oxymoron-- emergency room, waiting room. It doesn't make sense. Does it? Waiting for discharge orders, waiting for meds to arrive. We wait non-stop.

Processing-- not having the things you need in the med container Pyxis, complex and redundant paperwork. Have you ever gone to a doctor's appointment to the hospital, and three people ask you the same question? Processing that incorporates workarounds. They're part of the plan. We don't even realize it. Insurance nuances, the worst.

Inventory-- big problem, too much of one thing, too little of another, expired items, not the right things or not in the right place. My ER had nine different kinds of arterial line trays. Every one had to be calibrated differently. I had 97 nurses on my staff. What do you think the expertise was in any nurse on any one of those trays? And the physician's complained. I said, OK, let's get together. You're going to pick one. Sometimes, you have to be a hard nose.

Defects or errors-- in the IHR report, over 100,000 hospital deaths each year due to errors that we make-- medication errors, failure to rescue error. My father went in for an outpatient procedure and died because something happened, and they ignored it and did something else, something that could have been rectified. Incorrect identifications-- two people with the same last name.

Wrong site surgeries, and it happens. Wrong leg amputated, wrong arm, wrong side, falls. Falls happen all the time. These are major errors. Healthcare is the largest industry in the world. It's also the least reliable. We have an extremely high defect rate. Hospitals may be hazardous to your health, seriously. You come in, and the chances of you getting an infection are not slim.

Medicare has developed what they call never events. If something happens during your hospital stay-- and there's a big list; these are examples-- they will not pay for that treatment of that particular thing. Urinary tract infection, pressure sores, hospital acquired pneumonias, different kinds of infections-- if this happens during the hospital stay, Medicare will not pay for that treatment. The hospital has to suck it up. And it's a good thing, because they should never happen. But why do they happen? Because people don't have time to attend to these things. Or we don't have standard ways we do our work.

There's another thing that's coming up that you may or may not have heard of. It's called value based purchasing. This is another new Medicare/Medicaid idea. It's scary, because what they're going to do starting next year is a portion-- every patient is assigned a diagnostic revenue group, or DRG, and you get paid a set amount for that diagnosis.

They are going to withhold 1% of the DRG payment from all hospitals, and then it's going to be-- there's-- and this was authorized by an act-- it allows a portion of that Medicare and Medicaid payment to be withheld. And then, it will be reimbursed to the hospital later based on performance. They'll get a score, a value based revenue score. And then, they'll get incentives to get that money back. So it's performance based.

It'll include clinical measures. 70% are clinical. 30% are age gaps. If you don't know what age gaps are, that's the patient's assessment of how their care went. So if the patient doesn't say you did a good job, guess what? You're not going to get your money. These are the big four that they're starting with in 2013-- heart failure, myocardial infarction, pneumonia, and surgical care.

And the list is going to keep getting bigger. These are the proposed things for 2014. They're going to look at clinical outcomes, patient safety issues, operational throughput, and mortality rates. Hospitals need to start to get better or continue to get better. It's the lean imperative.

I have CEOs who say, we really can't afford to do lean throughout the hospital. And our response is, you can't afford to not do lean, because as the number of metrics and complexity of measures increases, it'll be vital to learn to effectively design and manage overall delivery systems, rather than targeting just select things like door to needle time. That's great. Everybody does that, or door to cath lab. It's going to be the whole organization that's getting measured. So the whole organization has to figure out how to address this.

There's another, getting back to the mudas-- overproduction-- different people asking the same questions, multiple forms requesting the same information, unnecessary lab or diagnostic tests. We have this a lot in academics, and we reword everything, covering all bases. And overproduction, again, different-- oh, didn't I just do that? Sorry. Excuse me.

Ideal healthcare is exactly what the patient needs, no more, no less, on demand, exactly as requested with no waste. It's an immediate response to a problem or a change, if that happens. And it's physically, professionally, emotionally safe for patients and staff. Those are the ground rules.

Now, in the-- a lot of the lean sensible papers that have come out, there are some really good information. And Bowen and Spear, who are from this area, in their MBA work, looked at the lean-- the Toyota production system. They said, basically, there are four rules. Toyota has never stated them. But Bowen and Spear identified them. So here are the four rules about lean.

All activities of work must be specified, standard work. Content, timing, sequencing, outcome would standardize how you do an arterial line, how you admit a patient, how you discharge a patient, how you order meds. The second rule-- and we looked at this and said, how does this fit in-- every process in healthcare has a map, a value stream map. Across the top is the request for that process. And then across the middle is the delivery of that process. So we interpreted this as rule number two has to do with the request for the process. So in the request, all connections in the request or service are simple and direct.

Here's an example. Old way-- patient comes in. They want care in the emergency room. They come in to the ER. They wait. They sign in. They wait. They go to the waiting room. They wait. They go to registration. They wait. They see the triage nurse. Maybe they go to an exam room. Maybe they wait. That's the request before that patient even gets care. What we need to do is look at that request and say, how can we get that patient, comes into the ER, immediately through triage or back into a bed? So how can we eliminate a lot of these steps and make it less complex? Can we do that?

Rule number three has to do with the actual steps in the process itself. So rule number three is that all pathways in the process to deliver the request are simple and involve as few steps as necessary. Do we need all of these steps? Can one person be doing two tests instead of one? Can we consolidate some? Can we change the order? So again, this is the example I gave you of the nurse. If we map this nurse and how she's doing this procedure for the patient, look at all the workarounds. And how can we get rid of those workarounds and make it simple and direct?

And rule number four is that everything we do in lean needs to lead towards improvement. You don't change just for the sake of change. And we've all been through healthcares where we've done some changes, and nobody knows why we made that change. So direct response to a problem, as close to the problem as possible. Any change we make is first tested in a smaller area or for a smaller period of time to see if it works. And then, all the redesign is done by the people who actually do the work. And supported by a coach. This is huge in lean, need a coach who's not directly involved in that project to help coach the people along.

Now, you've learned about value stream mapping. And I'll go through it a little bit. We're also going to talk later today about A3 problem solving. And people get a little bit confused. So I say, OK, the forest is the value stream map. And the value stream map is when you analyze it, it is going to point to where there are problems. It's not going to tell you how to fix them. It just points to the problems. A3 problem solving is picking those trees or those problems and pulling them out and addressing each one. So you're dissecting your map and figuring out how you're going to address the problems.

We always use the scientific method in lean, where you always have to do an observation. You can't make it up in your head. And I always know when my students have made up their value stream map in their head, because all of their data is divisible by 5-- 0, 5, 10 seconds, not odd numbers. And change is always done first as an experiment or a test.

We also use the Socratic method-- which healthcare people, I'm sure you are used to as well-- when we ask why. And we ask, how do you know how to do your work? What's the next thing that prompts you to do it? Why do you do it that way? Are there clear signals that cue you to the next thing? Do all workers do the task the same way? So we are going to constantly be asking why, not only to get to root cause, but to help the people we're coaching learn critical thinking skills as well, so that they also start to ask why.

And the basic tenant of Toyota production system, or lean, is to deeply understand how the work currently happens before you try to fix it. This is really important. PDCA is the fix it part. We need a little preliminary discussion about how it is now before we go to what it's going to be. And I'll explain that a little bit better in a minute. You have to go and observe, bottom line.

I love Yogi Bear. He has some of the most awesome sayings. You can observe a lot just by watching. Taiichi Ono said he challenges-- he challenged people to go stand in one spot for 30 minutes and write down 30 things you would change that you're looking at. It's a challenge, but it's interesting. I did it in my kitchen, and I was so surprised at how many things I needed to change.

We talked about gemba, going to look and see at the site with your eyes, not only collecting data but using your qualitative sense of what's going on. Experience the environment. Immerse yourself in it. Ask questions of the people you're observing. Use an observation sheet. Use spaghetti diagrams, whatever works for you. And I'm going to show you a couple of different methods that we used.

We had a client hospital where they had seven phlebotomists and four floors. And they always had trouble getting their morning blood draws done. And a lot of decisions for the day had to do with the morning blood results. So we took a look at it. And what happened was the phlebotomists would come to the lab, pick up some pink slips, which were the orders for labs go to the floor.

So here's the-- lists phlebotomists who went to the second floor, drew three bloods, went back to the lab, picked up more slips, went to the third floor. Drew some bloods, went back to the lab. So you can see that these seven phlebotomists were all over the place. And until we actually drew this, they went, oh, no wonder it takes us so long. We need to figure out how to get all those slips together and one phlebotomist go to each floor, or maybe two if it's a busy floor. But it was just like a lot of these things are you don't even realize it until you look at it.

Here's another one. This is my very first on my own trauma-- lean project. And I was at a hospital where they wanted to look at trauma patient throughput. It was taking three to four hours to get a major trauma patient through the emergency department. So we did a number of things. But one of the things I wanted to look at is once we got the number of people in the room down to a reasonable number, what were they doing?

So in order for me to do this, so I had to look at six different trauma cases, and spaghetti map one individual at a time, and then overlay them. Spaghetti mapping can teach you a lot. What we learned-- what I learned from this is this a nurse in red. You can't see the colors to well. This nurse was all over the room and four times had to leave the room.

So every time she left the room, I said, why are you leaving? To get meds from the refrigerator, to go get a warm blanket, to get warm IV [INAUDIBLE], to use the phone because the phone's busy here. Looking at the motion, why did this nurse have to go over here? Because the supplies he or she needed was-- weren't here. Why was there congestion coming down here? Never noticed this before. We had one trash can, one phone, and one sink. Everybody was congregating to that corner. So spaghetti mapping can show you a lot.

And then, this was when we did a little bit different observation. A hospital in rural Maine was having difficulty getting patients through the nuclear treadmill test. It took too long. And these were the mandatory steps. And then the red is wait times. So the person who came in-- this is before and after. The person who came in first had the longest wait times from anybody. Now, why was that? They couldn't figure it out. And they had one nuclear medicine tech who was getting blamed for everything.

So they came to me. They weren't in the class I was teaching. But they said, can you help us? And they said, we did a value stream map. And they brought out this butcher paper that went around three walls of a room for their value stream map. I said, whoa, this is like input overload.

What we needed to do was take one patient, and what happens to that one patient, what has to happen to that one patient, because everything is timed in nuclear medicine treadmill. They come in. They get an IV. They get some dye. They get a picture taken at so many minutes. Then they have to wait. Then they go to the treadmill. They have so many minutes on the treadmill. Then they have to wait.

So we met one patient. And what would happen with one patient? When we put that second patient with the same steps next to it, we realized we-- you can't schedule them at 30 minute increments, because that's not the way it works, for that one tech to be able to handle these. So we started moving these things to stagger them. And what we found out is you do a little bit of a staggered admission, it works better and that some of the tasks, like up here-- where's-- on here, [INAUDIBLE] med tech right here had to be in four different places. No wonder he wasn't getting his job done.

So what we did was we looked at what job the med tech had that we could assign to someone else. So basically, it came down to three times during the schedule a nurse had to come down and start the IV. Everything else, he could do. What happened, if you look at-- and the interesting thing was this schedule was set up at the convenience of the doctor, because they wanted to read all the results sequentially, without thinking about the patients waiting around forever. So we met with the doctors as well and said, OK, if we spread these out a little bit, so you have a few minutes between, is that OK? And they want to try it.

Look what happened when we did this. It opened up all of this time. They were able to schedule five additional nuclear medicine tests a day, by just tweaking that schedule a little bit. It's an observation. We didn't have to change how they did their work. We just had to change how they scheduled their work and some help for the people-- the one person who was trying to do it all. So they thought I walked on water. And it wasn't rocket science. It was just sitting down and saying, OK, what did it take to get one patient through, and then how do we move the other patients through?

Then, of course, in the middle of all this with all the excitement of opening up scheduling spaces, because they had lots of patients in a queue, there was a worldwide shortage of isotope. So they couldn't put that many patients through. They couldn't get them-- the dye that they needed.

Anyhow, value stream mapping, we talked about. It's the view from 10,000 feet, the big picture, view. All activities in the value stream map, once you get it, are recognized as value or non-value added. And as I said, a value stream map doesn't tell you what to do. It tells you where to look for issues. And it's a springboard to a future state map.

So a value stream map-- as I said, what we do is we do-- we divide the value stream map into three. Across the top from right to left is the request. All the raise or request can be made for whatever the process is. Whether it's a phone call, an email, somebody coming and grabbing you in the hall, all the ways, a request can be made. The middle section is the actual steps to deliver the request. And then the bottom was-- is where you add your data on how long each of those process boxes takes.

So here's one that just shows you-- this is-- I didn't add data to this yet, but this was a patient going from the emergency department to a floor, once the decision was made for that patient to be admitted. So we mapped out the process of what has to happen or what is happening currently. And then, we went back, and looked at, and said, where are all the problem areas? We call these storm clouds.

So we identified problem areas-- delayed information to the nurse, delayed response, nurse not available on the floor. And each one of these storm clouds now becomes a topic for A3 problem solving. So we're going to look at why is there a delayed response? We're going to do, why is the nurse not available on the floor? So you can chip away with six or seven A3's to come up with a really nice new value stream map that works better.

Value stream map is going to identify every way a request can be made. So this is one that we did in a trauma system. This is how the patient comes to the hospital. There's a trauma patient needing care. So how do they get there? They come by helicopter. They come by ambulance. Helicopter radios into a medical control. Ambulance calls in or radios in to medical control. Medical control then calls the appropriate hospital, either by radio or by telephone. So the jagged line is an electronic communication. That's the request.

What we forgot to add in on this one was the drive by, where the patient just came in a car and they dropped off. And then, what you need to do is look at the request. Are there any problems with the request? Because a lot of times, your process is good, but the request is all messed up. And that's where the problem starts.

So remember that you have to go look at the process and capture it. I just take notes the first time I'm observing. I don't try to draw the map. I take notes. Then I go back to my office, draw the map, and then bring it back to the people and say, did I get this right? Did I miss anything? Validate your map with the people doing the work. That's really an important step.

So in this particular hospital, these were the steps that they identified. Here comes the trauma patient. Now, we're ready to do the process. So the patients go to the trauma room in the emergency department. They have assessments done. They have procedures done. They have blood work that's-- or blood that's coming. They go to imaging for a CT scan or X-ray. And then decisions are made about where they go. That's how they mapped out their process.

Value stream maps are very useful, because it helps you understand every step of the process, identify where there are problems. It helps you launch specific problem solving. If you have a current state map, you can use that to orient new staff. This is the way we do it. And it clearly describes the process to other departments, if you're going and saying, we have a problem with the OR and the ED. So let's bring the map together and take a look at it. And it also shows regulatory authorities, like Joint Commission loves these. If you show them your work in progress, they're so impressed.

So here's this map. Once we got it mapped, we looked at 10 trauma cases. And we like to do 30 sets of data. But to collect data on 30 major trauma patients would have taken way too long. So we thought 10 would give us what we needed. We looked at each process box, 10 patients. The highest in the trauma room was 235 minutes, almost four hours. The lowest patient was-- we could get through in 36 minutes. And the average of all 10 was 187 minutes. So we didn't make any judgments yet. We just went through and mapped how much time.

This time, we used upside down deltas. That's our own little quirky thing in Healthcare West. Delta means change. So we decided upside down delta means no change, when nothing's happening. So these are delays. We did the map, and then we put in the data. And then as a team, we looked at this map and said, OK where do we need to work? So I said, there's too much variability here. We don't know what we have to do yet, but we know we have to look here.

It takes too long. Too much variability in how the procedures are done or how long it takes that may be a factor of what procedures the patients need or not. We don't know that yet. Once the decision was made, it was taking too long to get the patients to a bed, more than an hour. When they said, this patient needs to go, it took more than an hour. So this gave us the basis for where we were going to do our problem solving.

Once you do your current state, you want to draw a future state map. What do you want it to look like? And this is where you really need to push people, to really push with, what do you really want? Don't just put a Band-Aid on a leaky trash bag and move that trash bag to somebody else's department. What do you want?

And I would say, if you were the emperor or the empress for the day, how would you want this to look? They're like, oh, we can't do it. I said just put it down. How would you want it to look? And then, let's compare your current state and future state and figure out what problems we have to solve to get you to your future state. Really important to have that vision and future state and to push, push for just not mediocre but really push.

So this is what happens. You draw a current state map with all the ways a request can be made and all the process boxes. Then you draw a future state map. What do you want it to look like? And then, you determine how do you get from here to here? By identifying problems you're going to solve, so that then, when you do that, you have a new current state map. And then, you start all over again. It's continuous. And you tweak it some more, and some more, and some more.

When you do particularly A3, value stream especially but particularly A3, it involves anybody who has anything to do with that A3, any department has to be at the table when you do the A3 problem solving. You cannot solve a problem and then tell another department, this is what you're going to do. They'll totally turn off, but if they're part of it, they come up with some amazing-- and I'll show you some work that we did where some amazing creative things happened.

And Matthew May-- we use-- what you have here, this is the A3 form that we use to do a problem. Matthew May says, if you can't fit your problem on one page, you haven't really done your thinking about what the problem is. And sometimes, I'll start doing an A3, and it's too big. And then I realize I have to do we call it the [INAUDIBLE].

And then we break it down into smaller ones, because you really want to dig into that problem to get to root cause and fix it. You're going to hear more about A3 later. So that's a two-day workshop for me that we do. And my corollary to all of this is if you ask the right questions, the answers will usually come easily. It's knowing how to ask the right questions to get to root cause, really important, and not going off on these tangents.

You heard about the Jefferson Memorial, but I'm going to tell you a little bit more in depth about this, because it's a true story. The Jefferson Memorial was having problems with cement falling, and they were worried it was going to injure tourists. Because it's part of the National Park System, every monument has a manager.

So the whoever was doing the investigating went to the manager and said, why is this cement falling here? We have other monuments in the area, the Lincoln Memorial, the Washington Monument, all around the same age, all made with basically the same material. They don't have a problem with the cement falling.

And the manager said, well, the reason the cement is falling is because the cleaning people are washing it all the time. And the soap is mixing with the jet fuel from Reagan Airport, which is right up the river. And we think that the jet fuel is causing the soap and-- the combination of the soap and the jet fuel to cause the cement to corrode. So he said, we either need to move the airport or change the soap.

So whoever was on this investigating team said, wait a minute. Let's go ask the people who are doing the work what's going on. So they went to the cleaning people. And they said, you're cleaning this really often. Why? And they said, because there's pigeon poop everywhere. It looks really bad. We have tourists.

So they brought in a bird expert, an ornithologist, and said, why is there pigeon poop here, not in the Lincoln Memorial, not in the Washington Monument, but here? And the bird expert looked, and he said, it's because the pigeons are coming to eat the spiders. So then, they brought in an entomologist or whatever spider people are called. And the spider people-- person looked and said, the spiders are here, because they're coming to eat the midges, these little gnats.

And he said, and the gnats hatch along the river. They don't have a very long half-life. They hatch in the afternoon. They fly around. They lay eggs. The eggs are fertilized. They have a little fun time frolicking. And then right around dusk, they die. And they're attracted to light. So these little midges saw these lights at the-- Jefferson Memorial floodlights came on. And they would fly there, and they would frolic, and then they'd die. And then, the spiders would come to eat the midges. The pigeons would come to eat the spiders. The pigeons poop. The cleaning people were washing. And the cement was falling.

What they found out was the lights on the Jefferson Memorial were coming on an hour earlier than any of the other floodlights on the other monuments. So what did they have to do? Change the timing of the lights. So this is the importance of getting to root cause analysis, really getting to root cause, because the initial reaction was we just need to change the soap.

So when I work with people, and they're going off on tangents and coming up with ideas without doing root cause, I would say, you're changing the soap. Be disciplined to go through the steps of A3 in the order they're presented, and it will lead you to the right answer. If you jump to a solution, it may or may not be the right solution. So be really careful about that.

Front line workers can do A3's. They're easy to teach. They allow the organization to experiment more, get faster results, because they're doing small projects every day. Learning occurs in the course of work. It generates ideas, and those ideas can start to be clusters of ideas. And A3's can be organization changing.

How do you select topics? A lot of times, from the value stream map. Sometimes, you just observe, and you see a problem. And you say, let's do an A3 on that. Identify specific issues, and then you just prioritize and begin. It's a view with a microscope. It's drilling down into variation. It's documenting problem solving. And it tells a story visually. So on an A3, you'll have words, and you'll have pictures. It satisfies the people who are very right-- left brain who want to see words and numbers. It satisfies the people like me who are right brain and want to see visual. So it's a combination of both.

And Taiichi Ono, I love him. He's like my favorite philosopher. And he was the president of Toyota. He said, always temper immediate knee jerk reaction with root cause analysis, always. Resist drawing conclusions based on emotions. This is me. I would say, oh, patients are dying. That was my line all the time, with why I needed what I needed. Question hearsay and draw from experience, but be careful not to rely on it.

We always, when we do A3, use a pencil and paper, pencil with an eraser. There are electronic versions. Save them for later, because if people start doing electronic versions, it becomes like a video game. And they're not really paying attention to the content. Focus on problem solving.

And also, if I do an A3, and I'm going to go meet with the blood bank, and I bring my A3 ideas on paper with pencil and eraser, it clearly gives them the message that we can change this if we need to. If I put it in electronic version, it almost gives a message, please try not to change it; I spent a lot of time on this. So pencil/paper, really important. I know that sounds crazy, but it works. It's a non-threatening tool.

Here's your A3. I'm just going to go through this very quickly. You have it in front of you. And the left side is all current state information. The right side is the equivalent to PDSA, or PDCA. So we always deeply understand the rights-- the left side. And I'll show you how to do that before you go to the right side.

In my classes that I teach, I make them fold it back. And no one is allowed to touch the right side until the left side is totally complete, because if you don't follow this incrementally with discipline, you're going to wind up changing the soap. So this will lead you to where you need to go if you have the discipline to do it.

Let me show you one. And so you'll see on the left side the first category's issue. Always state the issue through the eyes of the customer or the patient when you can. So here's an example. This was one that one of my clients did. The issue was they had fiber optic endoscopes that weren't available when they needed them, because they were either broken or being repaired. Problem, that's the issue.

The next area is the background. It's like, why is this an issue? So explain why it's an issue if you have some measurements, like 50% of the time or two out of four cases this happened. Put that here. So in their background about the fiber optic endoscopes, they said from-- in one year's time, they spent $48,400 repairing and replacing fiber optic endoscopes. That's a lot of money.

In the current condition, you draw a picture, stick figure, no rules. Just draw a picture of what the problem is. You don't have to be Picasso. So what they drew is here's the patient. Here's the doctor. Here's the cart with the endoscopes and big questions, looking for the endoscopes. Once you draw that picture, you go back and you add storm clouds. What's wrong with the picture? Endoscopes are broken when they're slammed in drawers or dropped on the floor. Bingo!

Anesthesiologists are searching for endoscopes. They don't know-- excuse me-- if they're clean or dirty, because they're put on the top of the cart. That's scary. And there's a potential danger to patients. So once you have your storm clouds, you can combine some of them that are alike. Then, what happens is you take those storm clouds, and they drop down into the problem analysis section. And each one becomes the topic for A3 problem solving. So you're chipping away at what the issue is here.

Now, they combined some of theirs. So in the problem section, problem analysis, you're going to ask the what's called five whys. Keep asking why until you get to root cause. You may only have to ask it twice. You may have to ask it 10 times, but you keep going. One of the things that I learned when you ask why is we indent. The anesthesiologist wastes time searching for fiber optic endoscopes. Why? Because fiber optic endoscopes are not always available.

For me, before I ask the next why, I say, why are fiber optic endoscopes not available? Because they're broken when they're slammed in drawers or drawers. Why are they broken when they're slammed in drawers and drawers? Because there's no designated place. You know you have a root cause when you have an actionable item. There's no designated place. On the other side, we're going to make a designated place. So you indent your whys as you follow that train of thought.

Now there's a second train of thought under the anesthesiologists wasting time. Why? Because they're placed on top of the cart before and after procedures. Why? Because there's no way to tell if they're clean or dirty. Why? Because there's no designated location. So sometimes, your root causes can come out to the same thing. Sometimes, you have different ones.

And then, it's a danger to patients, that storm cloud from above, because there's confusion as to which ones are clean or dirty. Why? Because there's no designated location for cleans and dirties. See what's happening here? You've got your driver for what you're going to do in your countermeasure on the other side. Root causes are actionable. And most of the time root causes are because of violation rule number one, not specified how we do it. I would say 80% to 90% of the time that's why you have a problem, not been specified.

So once you complete the left side, you go to the right side. Do not jump to the right side, because the left side is giving you information. Stupidity is having an answer for everything. The left side gives you the answer. Wisdom is having a question. The left side forces you to ask those questions. Remember, thousands of people saw the apple fall, but only Newton asked why. We need to start asking why.

So here's the whole A3 that they did. This was a real one. They had their counter-- their root causes over here. They drew a picture of what they wanted it to look like. And they put fluffy clouds about what's good about this new picture that what they wanted was a cart that had two separate places for endoscopes, clean and dirty. On the external part of the cart, they had dirty and clean were identified. They saved money. And it was safer for patients.

So the countermeasures-- how do you-- what are you doing with these root causes? They were going to put two tubes on the side of the cart and identify clean and dirty. They also had the contextual processing on how they would keep those tubes clean. Once you have your countermeasures identified, what's the plan to implement those countermeasures? What's going to happen? Who's going to do it, by what date, and what's the outcome accountability?

Then, you also have to say, OK, if we do this project, what is it going to cost? And if we do this project, what are the benefits we're going to get out of it? Because that's how you sell this to an administration. Then, how are you going to test it? So they decided they were going to test it for-- on one cart for a couple of weeks. The first day they retrofitted the cart, all the other anesthesiologists wanted the same thing. They didn't want to wait two weeks, because it was just brilliant. And the follow-up was for the next six months, they had zero broken fiber optic endoscopes. That's A3 problem solving.

Where can you use it? Use A3 thinking to do specific problem solving. If you're doing a redesign of a department or process, you can use it. You can document changes for regulatory bodies. I like this for capital equipment requests. Do an A3 and tell me what your current state is and why you need it. You can use it to run a meeting. What's the issue? What's the background? Let's get to some root cause and then come out with a plan. Facility design is being-- it's being used a lot now to redesign new facilities. And it's endless what you can use these for.

Here's an ambulance coming in with a trauma patient. Problem-- I've got two trauma patients. And look at the mob of people there. And if I had sound, there's all these people talking, and there's incredible noise and cacophony. It's horrible. This is my scene. I've got a problem. I have trouble moving these patients through the department.

So what we did was we did-- again, this is a different emergency department from what I showed you-- the requests for the service and then the actual service. In this department, they decided to have three process boxes-- the trauma assessment and intervention, moving them out to imaging, and then coming back to the ED for disposition-- and then disposition. So that didn't look too bad, pretty simple value stream map.

But then we started adding data. And holy mackerel. Look at this data. You're dying three hours. Then, you have to wait 37 minutes till the transport's ready to take you to X-ray. Then you get to X-ray, and it takes over an hour. Then you wait again for them to bring you back to the ER. Then you wait again for the docs to make a decision. And then you wait for the bed. So they decided that there were a bunch of things here-- I can't see this. Can this go down a little bit lower?

AUDIENCE: No.

SUSAN SHEEHY: OK. What we did then was we said we know we have a problem here. We don't know what it is. So we had to go back in and look. We did more observation. And what we found is there were too many people in the room. There were no defined roles of the people in the room. We had missing equipment. There were lots of students. We love students, but they were taking up space. So you couldn't move. Poor documentation, poor communication between the OR and the ICU, delays in getting O negative blood, John and Jane Doe patients that we couldn't do anything with until they were registered, X-ray delays.

So all of those things dropped down and became topics for A3 problem solving. And we systematically went through this, and waiting for an X-ray read became a topic for A3. Slow decision making became a topic. We had 14 A3's that we were going to do with this. And they involved all different departments. This is what we wanted it to look like. So I said, why does a patient come from ED into imaging and then back to ED? Make a decision in imaging, so they can go right to their bed.

So what they wanted it to look like was time in the ER, time in imaging, go. They wanted it to be under 60 minutes here, under 10 minutes here, for a total time of 70 minutes. That was their future state plan. How they were going to get there, we didn't know yet, but we were going to deal with those 15 or 14 A3's. And these were all the good things about this new map. So you have a vision about where you want to go to.

So I know you can't read these, but I just want to show you. This was registering a John and Jane Doe patients, one topic. Here's the patient. The picture was here's the patient, blood pressure 70 over 40. They're bleeding to death. Big stop sign. Because they don't have a hospital number, we can't get X-rays, lab, blood, or CT. And here's the nurse [INAUDIBLE] out there trying to find out the patient's ID. And here's a tombstone. I love dramatic pictures. The patient's going to die if we don't do the right thing.

We put in storm clouds about what's wrong with this picture, did root cause analysis. We worked on this A3 with legal and the admissions and registration people and the ED together and came out with a plan for preassigned trauma numbers. You didn't have to have a name. If you came in and you didn't have a name, you became trauma 101, and you had a piece of tape on your head. And every single thing that we process for you was trauma 101. Then, when we found out your name, we merged it with it. So it worked really well.

This is one with too many people in the room. So we had to figure out what to do. We wanted to have a team. We also wanted to figure out what to do with the students. So part of the process was to limit the number of people ir the room by team assignment and then have the students-- there was a classroom right down the hall.

We mounted an overhead camera over the top, so that they could see and hear what was going on. They liked it better, because they said they could see better, real time, watching the trauma patient. And we were able to get it down to five or six people most of the time. Everybody brought their buddies with them, though, when there was a trauma. We also had issues with overhead page when a trauma was coming in. So we did away with that, because the whole world would come, because they wanted to see. Yeah?

AUDIENCE: Don't you have a privacy issue with that?

SUSAN SHEEHY: With what?

AUDIENCE: [INAUDIBLE]

SUSAN SHEEHY: Yeah. We actually met with legal about that. We didn't videotape them. The students were allowed to be there. And so the room was locked, and they signed a privacy agreement. And then, every once in a while, we would tape the scenario, and we used it at morbidity and mortality rounds, which is legal. It's not discoverable in court, and then we destroyed the tapes afterwards. So we met with the legal department to give us advice on how to do this, because you can do a lot with teach it-- for teaching purposes.

This one was not the right supplies or equipment in the room. We met with this equipment people in central stores. And they actually agreed to put together exchange carts that they would manage, which was really cool. But because central stores volunteered to do the exchange carts, we didn't tell them to do it. It worked really well. Then we wound up having to have two exchange carts, because one made everybody still run all around the room. And we decided to divide the equipment into side A, side B. And they took it when it was done. They had backup carts. They stocked it. And they recorded everything they used. We never had missing stuff.

O negative blood, my favorite one, difficulty getting O negative blood. We had patients who were dying. This was a knife and gun club community. The blood bank was across the street. It was closed at 5 o'clock at night. And the nursing supervisor had to go get a key, and go in, and find the blood. It was a mess. So we sat down with blood bank. And they said, why don't we put two refrigerators, one on each of your trauma rooms?

We'll bolt them to the floor, because things had a tendency to walk in this department. We'll put four units of O negative blood in each refrigerator. We'll put a lock on it. And we will come every day and check it for an expiration date. And if it's getting close, we'll put it back into the main. Now, if we went to the blood bank, and said, we want you to put refrigerators in our room, we want you to put 4 negative-- 4 units of blood, and we want you to come and check it every day, they would say, go away. But because we sat at the table together, they offered to do this.

There were a number of other A3's about obtaining X-rays and communication breakdowns. And so what happened after all of this-- it took about six months of really intensive work-- almost six months to the day, we had our first trauma patient through in 60 minutes, not 70, 60. And there was a massive celebration throughout the whole hospital with every department that was involved in any of these A3's. We sent cakes to all the departments. They were just-- it was on the bulletin. It was everywhere. Pretty proud team that did this together.

What we didn't do, and which we should have done, was tracked outcomes. We did that later. But in this one, we didn't. I'm going to move quick. This is about rental isolettes in a hospital that had capacity for 12. They usually had an average of eight. So they had 10 of their own isolettes. And then, they had to rent two any time they had like twins or triplets born.

What happened was they rented the exact same isolettes, so everybody would be familiar with them. And they didn't mark them as rentals. So when they were done with them, they put them in the storeroom. And every day they stayed in the storeroom, the hospital was paying money for those rental isolettes that weren't being used. So they spent about $35,000 more than they needed to on rental isolettes. And we do that with bariatric equipment and Clinitron beds all the time. So they came up with a really nice method with biomedical engineering how to do that.

Lean for facility design-- I'm going to finish in a couple of minutes-- this is a new thing for us. In the last year and a half, we've been getting called by architects and designers, because in the request for proposal for new buildings, the hospitals are asking them to please have a lean component. Most hospitals don't know what that even means. But they said, we want it lean. So we've been getting calls.

So what happens is we have them-- we work with the hospitals in advance to identify their current problem areas, department by department. We map their current and future states of what they want it to look like and help them then design their A3's to fix it. And then that information informs the design team about how to make the design, rather than making a design and then trying to fit the work into the design.

So we have a process methodology where we do current state, interviews, utilization surveys. We identify problem processes in given departments. We map the states. We do future state. We do A3 problem solving with them. And then the future state maps inform the design team. And then the design team will take that information, create a design. And then they bring a big floor layout with puzzle pieces. And we allow the staff to move things around to see how it would work using their processes. It's pretty cool. And then, some of the design teams actually do-- rent a warehouse and do big gigantic real size mock-ups.

Here's an example in the emergency department, a bunch of problems that they identified. These are the big issues. So let's look at boarding and how that informs design. So with boarding patients, these are the A3's that they did. No patient beds, waiting for diagnostic results, in patient discharge scheduling was a problem, waiting for specialists, and equipment availability.

So then, with design, we picked one of those, no beds available. And we then did some more digging to see how design could support fixing this based on the A3 they did. So can we consider a transition to admission unit, do some care centered care, not everybody has to be in a bed? Can we do teleconferencing with consultants, because we're waiting for them to come in? Can we bring the computer in the room and do a Skype conference with the patient? Can we do some real time bed tracking, which wasn't happening? And then, can the design team also select finishes that led to quicker cleaning? So we take each one step by step and deal with it.

Here's another one with OR. Lots of issues in the OR. Then, the one that we highlight here is room turnaround time in the OR is huge. So what are the things that prevent the room from being turned around? These are all A3's that we worked on. So let's take the top one. Anesthesiologist is not ready. So how can we inform the design team about that? Well, because the anesthesiologist office space wasn't near the preoperative-- the perioperative and surgery suite.

The perioperative suite and the surgery suites were not close together. The proximity-- he always had to go to the family waiting room, that was not nearby. So how do you design that so that this person, not a-- a case cannot start unless this anesthesiologist is in the room. So how do we make the design make this happen? So this all informs design. It's pretty cool. It's a lot of fun.

And the keys in design are participation from everyone in the staff, valuing everybody's input. Anything goes in the room. We respect employees, patients' families, staff across the board, collaboration between departments. So if we're working on an OR thing, but it involves an ER transfer or transport, they come to the table and work on that same project together. And then, this becomes our patient, not your patient. And then, a total commitment from administration. We always do a report all at the end of each day with administration present to show them what they've come up with. And then, empowering staff to make those decisions, really important.

These are just some of the things we've done. There's thousands of them. But I want to just show you that it can go anywhere across the hospital with value stream mapping and A3's, from med reconciliation to we had problems with DNR orders, or fast-tracks, or lab turnaround times, or poor signage, or cluttered halls, wrong site surgeries, coding issues. We can work anywhere, anywhere. Let the staff tell you where their problems are.

One of the things that's really important is if you're going to prepare an organization for culture change, you really have to prepare the soil for those seeds. So that means working with senior leadership, we do lots of work with senior leadership, overview of what lean is. We spend a day just doing planning for rollout of lean. Who's going to be on that team? Who are the lean champions? You need to make sure there's some physicians involved. And they're the hardest group to get involved, not because they don't want to be, but because of time.

And then, who are the informal leaders? There are going to be people that start to rise to the service, managers and staff. So you need a lean coordinator. If you don't have a lean coordinator who's going to follow up on these projects and make sure they're working and make sure people have what they want, it's not going to work. So that lean coordinator, or one, or two, or 10, are really important. And instead of telling people what to do, we're now saying no one knows this job better than you do. How can I help you? Different way of thinking.

Healthcare has to be a place where good enough never is. When you ask for change, though, you need to know, because you have to be a little bit gutsy to be a lean proponent, make sure it's change that matters, because change is scary. And a lot of people are not going to like it at first. And I like this one too. This is an Air Force mantra. If you're taking too much flak, you know you're definitely over a high value target. So my advice to you is so when you're taking a lot of flak, either put your flak jacket on and stay the course or go choose another project. It's your call.

Why does lean fail in hospitals? Lack of leadership commitment is the biggest one-- when they just hire you to come in and do it, but they're not committed. Inadequate resources, incomplete lean education of the staff. This is so important that there are no expectations placed on the staff that this is the way we're going to do business from now on. And the absence of teamwork and the presence of siloes. This is why lean fails.

This is interesting. In 2004 Olympics in Athens, the US 4 by 100 relay teams, men and women, were projected to be by far and away better than anybody else in the world. They failed, both teams, because they were all good at what they did, but the handoffs were not good, the baton handoff. Missed timing, dropped baton. It's really important to synchronize those handoffs. No matter how good you are individually, if your team isn't working well, it's going to fail.

So ending with what I started with. Matthew may said, lean doesn't light a fire under people. It lights a fire within people. And it's so exciting to watch a kitchen worker, or a housekeeper, or a security guard come up with ideas and be so proud of the ideas they come up with and own it. And they become a part of that team. So I challenge you, because Walt Disney said, why do we do this? He said, it's fun to do the impossible. And I think that's what we're facing in healthcare. So let's fix what's wrong with healthcare.

Just to show you, we do have some resources. If you want to go to our website, we have some books, some training sessions. We have some courses coming up. We've got a conference. Please go on the website and check out anything. And I'll be here.

AUDIENCE: [INAUDIBLE]

SUSAN SHEEHY: I have them here if you-- Oh, and if anybody is interested in a facility design, I brought a few articles. I didn't have enough for everybody, but it's about St. Anthony's in Pendleton Oregon and how we did the facility design there. So if you want them, I'll just pass them on.

AUDIENCE: Thank you, Susan.

[APPLAUSE]