Session 22 - Getting An ROI Out of Your Healthcare Analytics Projects

[Anita Parisot]

Welcome. My name is Anita Parisot and I work for Health Catalyst® and I'm here to host this session today, Session number 22, Getting an ROI in Your Programs. We are very happy and very grateful today to have three wonderful speakers joining us today. I'd like to introduce them if I could please. Our first speaker is John Henderson, who joins us today from Texas Children's Hospital, which as you know from seeing Dr. Macias's presentation this morning, is a top-ranked pediatric hospital in Houston, Texas. John currently oversees and serves as the Director of Enterprise Systems. Our second presenter today is our very own Health Catalyst's Bobbi Brown, who is the Vice President of Financial Engagement at Health Catalyst. And last but very not least, one of my favorite people in the world, Leslie Falk, who is also a Vice President today at Health Catalyst.

So without any further ado, I would like to introduce Leslie Falk. Thank you.

[Leslie Hough Falk]

Thanks Anita. How many people recognize the music when they walked in? Okay, good, because I was getting a lot of flack about the age group around that music, Pennies from Heaven, so if you didn't recognize it, just know we were doing retro, and if you did recognize it, thank God, because there's other people in the room like me. That's good.

Okay, so I want to cover three things today in the ROI session. The first thing that we would like you to leave here knowing is how to do goal and aim statements, so really understanding the value of goal and aim statements. And I don't see the person, although the light shines right on you so the person maybe in here, but somebody came up to me yesterday and you know how somebody says something to you and you're like "Wow, you get the gold star," because the person said to me, you know, "When you're talking about return on investment, you really got to know what it is that you started out to measure and whether or not you achieve those goals," and a lot of people don't get that, right? They think it's a formula. So we're going to start with how do you set a goal and an aim statement, because if you don't know where you're going, how do you know if you ever got there.

Second thing that we want to do is walk through the return on the investment in terms of the formula, and then also just talk about -- it's been interesting to me as I listened to the speakers in the general session -- and, you know, I'm a nurse by background, worked in Pieds ICU; I'm also a businessperson and an engineer, although my husband says "Les, just because you have an engineering degree doesn't mean you're an engineer," but I do have an engineering degree and I worked in biomedical engineering, and so I have all those aspects of it, and so when people talk to me, they say, you know, "We're about quality" as though cost is a four-letter word, and I'm like "They're not opposite ends of the spectrum. There are costs and there are, you know, things that you can factor in as you're looking for your return on your investment, so just because your initiative is quality doesn't mean that there isn't an ROI associated with that."

And then the third thing that we want to do is talk about how to communicate your results. I don't know about you, but oftentimes what I see, and I think it happens more -- and I'm guilty of it -- when you're a technical or an engineering mind, which is you achieve great things, but nobody in the organization knows about that, and I think we're all aware of the fact that it is more and more transparent, our society, and we're a social environment, and so being able to communicate the results that you achieve internally and externally is extremely important. So those are the three objectives. So we're going to start with the first one.

I know some of you have already heard of this analogy. I happen to be taking one of these nursing leadership classes and they talk about the concept of crawl, walk and run, so if you're a parent, you know about those stages, and even if you're not, you probably have friends and family members and you know about that. At Health Catalyst, we use this concept of seeing something and then teaching something and then doing something, so you all will have an opportunity to be able to go through all those steps with us today and you're going to get an opportunity to do some of the work with us.

So we have a poll question, but I want to tell you something about the poll questions real quick and also set you up for our first exercise. So on the poll questions, we're probably going to do something that no other session has done and which we were told over and over again "Are you sure you want to do that?" But we do. We're going to go through the poll questions, but we're going to save the results and we're going to have them when we give our insights, so we're not going to do poll, results. We're going to do polls, get all the results for the different polls that we do and then we'll share those.

So first poll question, Session number22: Does your organization require a goal and aim statements for all of its improvement initiatives? A: Never; B: Not often; C: Sometimes; D: Frequently; E: Always; F: Unsure or not applicable. And I know some of the clients

that we work with, people call them different things. If you don't use that word aim statement, but you use something like key initiative, goal or something like that. It's not the word so much as it is the essence of do you have a goal and do you have an aim statement.

Okay, so why do we talk about goals and aim statements when you're in here wanting to learn about return on investment? Because frankly, like I said at the beginning, if you don't have a goal, how do you know that you've ever achieved it, and the likelihood is you won't achieve it. So I want to talk about three things. What. What is a goal and an aim statement? Two: why are they important? And then three: how do you do it?

So number one, what is a goal? It's an explicit description of your long-term objective. What's an aim statement? Well, aim statements are individual projects that help you get to that goal. And I've gone round and round with people who will say to me "Well, you know, we just need to have this long-term goal." Have you ever taken coursework and you've got to final at the end of it and you have no evaluation along the way in terms of how you're doing, so you don't have a milestone like at the first eight weeks. So the whole idea is that if you know about project management professionals, they have in the PMI -- they talk about projects versus programs. What's a project? A project has a defined start and a defined stop. A program is an umbrella and it's ongoing. Most of what people do as far as performance improvement, it's an ongoing process. We all know that. And so what you do is you look and you define what is my long-term goal and what are the projects that I can do in like a three-month period that'll allow me to achieve that long-term goal.

So why are they important? Again, if you don't start with an aim statement -- you're going to hear this from Bobbi who works on our finance side of it -- you want to have team members that are made up of operations, of IT people, of finance people and of clinical people because you want to, from the very beginning, define what your financial objectives are around what it is that you're doing. And it's also important to start with baselines. I think most of you probably know, and I have a perfect example of a client that I work with, they wanted to do a project around antenatal steroids. This is one of the TJC perinatal core measures, and they thought that their rate based on what they were getting out of their EHR was about 40%. In reality, when they went in, used the enterprise data warehouse and had their analytics application, it was really closer to 98%. So you got to know what your baselines are and what your accurate baselines are before you start anything.

Okay, so talked about the what and the why, now the how. For me, one of the things that I find most useful when I'm thinking about goals and aim statements is this

acronym SMART, and I'm going to give you a nonclinical example. So what does SMART mean? Specific, measurable, attainable, relevant, time based. So if I think about the fact that I want to run a marathon, if I say "I want to run a marathon," but I don't give any date by when I want to do that, it's not very specific. If I say "Well, I want to do good when I run the marathon," what is good? Is that three hours? Is that one-and-a-half hours? What is it? Attainable. If I say I'm going to do two back-to-back marathons and I haven't even started training yet, probably not likely, not if you're a person who knows what Pennies from Heaven is, anyway. Okay. Relevant. So my favorite food is ice cream, which doesn't go very well with running marathons, but if I were to have an aim statement around, you know, not eating ice cream, I don't know that that is all that relevant. I would probably be better off to be doing something focused on training that got me to a certain point at each step along the way. And then time based. So if I want to run my marathon in 2014, I'm going to make darn sure that my aim statements are getting me to that date that I want to achieve.

So, again, I talked about this concept of see, teach and do. So this is the teach part. I wanted to give you an example of what I consider to be a good example of a goal statement and some aim statements that would support that. So the goal here is to achieve and sustain a 20% reduction in 30-day all cause readmissions for patients with heart failure by a specific date, and I want to sustain that reduction, very important, in readmission. But you know what? I didn't stop my aim statement there, right? Because I said I also want to have a financial component associated with it, which is I want to lower my CMS penalties by a certain percent. Okay. That's my long-term goal. How am I going to get there? Well, I'm going to get there by doing my first project, and my first project is probably going to take me between 60 and 90 days. I want to first of all establish a baseline for my readmission rates and I want to validate that data. And, again, I'd love to have a conversation with anyone in the room after our presentation because oftentimes I hear from people, you know, "That is not a very robust aim statement. What do you mean establish a baseline? We already know what our baselines are." I can tell you from experience you might be surprised at what your data really is. And so we almost always start with get your baseline validated.

So what's the second aim in this example? Well, we want to identify our high-risk patients and we also want to do a risk stratification model so that we can predict the likelihood of other patients that could be susceptible to being readmitted. Those are the first two. So, a baseline, identify the patients, do a risk stratification. Okay? I've done that. But now what am I going to do for my clinical intervention perspective to mitigate having readmissions? That's what aim number 3 and 4 are. So, aim number 3 is I want to make sure that I follow up with all my heart failure patients, and aim number 4 is I want to do a med rec. I want to establish a med rec baseline and then look at

compliance to make sure that I have a certain compliance rate with the clinicians in my facility. So that's an example of "Good." So, now I'm going to ask you to take two poll questions: Session number 22 poll number 2 and poll number 3. And I'll tell you before I read the question because I always kind of get this wrong, so 1 is the lowest, 5 is the highest. So, question number 2: On a scale of 1 to 5, with 5 being the highest, how would you rate this aim statement? To reduce 30-day, all-cause readmission rates. That's your aim statement. How good do you think that is, if you think specific, measureable, attainable, relevant, and timely? Question number 3: On a scale of 1 to 5, with 5 being the highest, how would you rate this aim statement? To establish a baseline C-section rate and validate data by a certain date. 1 being the lowest, 5 being the highest.

Okay. Now, I'm going to ask you to participate with me by being loud. You ready to be loud? Okay, good. I like that. Alright, so, I would like you to work with me and just shout out as I give you some different examples and tell me how good you think they are and what could be improved. So, let's start with the first one. To achieve and sustain a 30% reduction in 30-day, all-cause readmission rates, scale of 1 to 5. Who wants to be brave? What do you think it is? Why? 2 or 3. Good. Why? Right. No baseline. Not specific. Don't know when you need to have it done. Great. Love the next one. Heard it many times. To improve patient care, 1 to 5.

[Audience]

Zero.

[Leslie Hough Falk]

Not very good. You guys got the gold star. Okay. Number 3, to establish a baseline C-section rate and validate the data by a certain date. Yeah, I think it's a 4 or 5. Okay. Number 4, to improve variation in outcomes while lowering our costs. What outcome? What do you mean "improve our costs?" To go from a 100 to 50? What do we mean? And the last one is unfortunate, but probably the most common that I've experienced, which is, there wasn't one to begin with. Anybody experience that? Okay. A few people.

Alright. So we've gone through a good example. We've gone through kind of looking at some that are good and some that could be improved. And now this is your opportunity to do the due piece of it. So you'll see that we have six easels set up here, and what we

would like to do is we would like to have folks be in one of these six groups, so if you could kind of stay at the table that you're near, and if you're in the middle, if you could move over to one of the groups, that would be great. And we're going to give you a scenario, and I'll show it to you in a minute. What I'd like to ask you to do is pick somebody who would scribe for you on the easel there, and then somebody who would be willing to share out. And we'll pick one group. We won't have time to do all, but we'll pick one group.

Now I've got to tell you, I was recently at this patient safety and quality conference in the state that I live in, Idaho, which oftentimes and most times is confused with Iowa, when you talk to people, because they have no idea where Idaho is. Anyway, I was at this patient safety and quality conference and we were trying to figure out who the moderator was going to be and we all picked this one person, and then the person that was leading the conference said, "Okay, the person who was designated now gets to pick somebody else from the group to be the one to present out." I promise I won't do that to you, because it really caught me off guard. I was so vocal in nominating somebody and then I got picked. Okay. So, we're going to do five minutes, but before we start timing it, let me share the scenario. And if you like, if you're a person who kind of likes to hold stuff, we also printed them out on your table, so you have two of them that are printed out.

So here's the scenario. You live in California and you decided you want to take your family of three persons for a visit to your grandparents, and they live in New York. You want to do it in June of 2015, and you're going to do it for seven days. You've allocated a budget of $5,000 to cover all your expenses, and guess what? After the vacation, you want a thumbs up rating from your family. So, what I would like you to do in these groups of six is to define your goal and then develop, depending on how much time you have -- we'll give you five minutes -- three to five project aim statements. And, again, we'll pick one person to kind of report out, and then all of us will have a conversation and give some feedback around it.

Now just so you don't feel like you're lost, we have a couple of folks that are helping us as well, so you'll see them helping you out at the different easels. So, we have Kathy in the back, she's right there. And we have Dr. Haughom, and I think most of you heard the applause for him this morning and the incredible work he's done on the handbook. We have Kathleen Kimmel. We have Jane. And we have Michael. And so they will be helping you. And any questions? And if not, we would like you to take your scenario and work, and then we'll have a report out. We'll give you five minutes. I'll let you know when two minutes are remaining, and then when the time's up.

Just a time check. We've got two minutes left.

[Leslie Hough Falk]
Sounds really good to me. I think that was excellent given the time that we had, so thank you for doing that. And when you get the slides, we came up with kind of an answer sheet, but again, like you said, lots of different aim statements that you could have come up with, things you could have chunked, but again, just remembering as you're developing those to do those from a smart fashion. So that was objective number 1. And now we're going to move to our second objective in terms of determining return on your investment. But again, don't ever think you can do that without having your goals and your aim statements. It won't happen.

[Bobbi Brown]

Okay. Yesterday we heard a lot of things about definition, and your investment truly makes a difference, and I often think about how do I value now? How am I going to value from what I'm doing? Does your organization focus on results? And we're going to talk a little bit about ROI, the formula, the categories of waste, and then talking about direct and indirect benefits. The important thing, though, is that you measure something. It may not always be financial. I would also urge you, I'm a finance person, so make a friend with the finance people, and they can help you. We really can. That's what we're there to do. And you shouldn't have any great fear of ROI. Does anybody have a fear of ROI in here? You probably wouldn't be here if you did. You'd probably run away. You do?

So, I always, when I ask -- people used to come to me a lot, people always thought I had -- there's a misconception about finance people that we have, like, money in our drawers, or something, you know, like pull out your desk drawer and find me an MRI. No, we don't have that, but we can help you formulate your issues and put some facts around them and turn those facts into dollars. And like I said, it's not always dollars, but we do want to measure something. I just want to talk about two quotes that I have. Lou Holtz, the Notre Dame coach said, "When all is said and done, more is said than done." And I used to often feel that way when people would come to me about projects. And in the Wall Street Journal, there's a gentleman, you're going to hear more about him today, Dr. Shetty, "In health care, you can't do one big thing and reduce the price. We have to do a thousand small things." Which is probably very true, and you probably know that.

Oh, we have two poll questions.

Okay. Question number 4: How often does your organization include as part of a multidisciplinary team the finance department? How often is finance included? Never, not often, sometimes, frequently, always, unsure, or not applicable. We also have another question there. Does your organization currently include ROI on its improvement initiatives? Again, never A, not often, sometimes, frequently, always, unsure, or not applicable. Okay. I often say to people, you know, they come to me and I don't even use a formula, I say you're going to do it faster, you're going to do it better, you're going to do it cheaper. And then show me the money, you know. So, I'm really not that tough, but I do try to boil this down. Now there's a lot of formulas. This is the formula for ROI: Take the total benefit, take away the cost of the benefit so you're getting a net number there, and divide it by the cost of the benefits that you see. And again, in order to do this you have to have some numbers to do it.

So, your organization may measure -- I don't know why it is we have these little three-letter, IRR or NPV, ROI, one of those your organization may use. You need, again, to ask your finance team, which one do we use in our organization? Which one is the one that will help me sell a project? And there's often some ideas if I don't have a positive ROI or if it's showing that the costs are greater than the benefits, does that mean in my organization it won't get done? No, it doesn't, but every project can't lose money or, you know, what would happen? So some projects make, some projects you go ahead and you approve even though you know they are either for safety reasons. But again, you want to try and measure something and say, this is what's going to be happening if we complete this project. You have far more data than you think you have. And you can do a lot of useful observations that are there and you can just go ahead and do them. We were working with a client and "No, I don't have any ROI," but then they were telling us all these hours that they saved, and then you're charting and the abstraction process.

Well, how would you -- you know, all you have to do is try to say, okay, how do I convert that to some dollars and then talk to my finance team. So, you would focus on a unit of measure, in this case it was the hours. How much does that unit cost me? And then what was the change in unit pre and post, before the project and after the project? And then multiply it all out and come up with an annual amount and you can say "Gee, this is what this particular improvement saved my company." Okay? So, again, don't make it more difficult than it is. You've seen this screen a couple of times. The ordering waste. We've done some work and figured out on some of our clients that about 40% of the waste right now is coming out of that ordering waste, where it's not adding value.

And I hate to say this. I hate to use a personal example, but I am waiting for my doctor to call me. I was in the hospital with sepsis, and I'm supposed to have an MRI tonight at eight o'clock, so you can all be thinking of me tonight at eight o'clock, and the one doctor, the surgeon, said to me, "You don't need another MRI. What are you going there for?" And the infectious disease doctor said, "I want to see you at eight o'clock," so I'm like, now what do I do? And I don't know who to call. And I don't know who to talk to. So I'm waiting for the phone to ring. And I never do that, but it shows -- you know, I'm thinking I'm part of the ordering waste, but I can't do anything about it. Believe me I don't want to sit there for two hours with an MRI tonight. So, workflow, you know, what variation, the handoffs, the delay. Right now, it can be very manual to say we had a savings in workflow. Again, that's where observation can come in, and you can help yourself with just doing some simple observation. And then just see if bounce it off people in that department and see if it makes sense.

I was working with a team and they did just this great job on breastfeeding, and you may think, okay, the first thing that came to me was we're going to save pacifiers, you know, the cost of pacifiers. Right now, I've got to count pacifiers and babies, you know, so I'm like, oh no. But then they sat down as a group, and they kept going with it and they kept exploring a lot of different issues and that shows the power of a team. And they talked about, gee, the weight of a baby. What about the incidence of hypoglycemia? So then we started to get into some things that represent real cost in organization and real cost that we can avoid, such as the defects, or that we can take out of the system and workflow. So, it was just a really great example of people getting together and working and trying to come up with an answer. And it does happen if you get the teams together.

Okay. On the workflow, we estimate about 60% of the waste is there on the defect. It's a small number, and I'm sure you heard Dr. Burton say that. Another thing to think about is direct and indirect. You know, everything in the indirect -- in the direct I'd put a lot of things in there. If you can't quantify it, that's where you would put it. Some examples could be not buying something, an opportunity cost of not doing something. Another thing, reduction directs are easy, reductions in FTEs, those are easy. I don't know how many of those there are anymore. We have seen some over time go down as we've been able to improve processes on the billing cycle. We've seen some supply chain savings with some of our clients, and we have seen some other things, like increasing departmental capacity, because we actually have some clients, believe it or not, who are at capacity in some of their facilities. So, again, when you're thinking about waste, think of the different categories and just force yourself how can we ask more questions? How can we use this project to try to show some savings? Okay?

I'm going to set the stage here. We had a radiology, a couple of years ago we put in the EHR and the radiology operations group, they lost their access to the analytics metrics that they used to have. We have an enterprise data warehouse, and we created a lot of measurements for them, like cycle time as referrals, but they didn't start out with aim statements. So, now they're going to try to define their ROI. And we're going to do a role play, for a finance person, this is like death to me. This is like death. So, I do not role play. I just say no, so I'm needless to say I am the finance person in this. Leslie is our -- and we have to wear tags so we know who we are. Leslie is the Vice President over our group and John is the IT manager, so.

[Leslie Hough Falk]

Okay, well Bobbi and John, congratulations on launching your radiology analytics application. You have worked really hard for that. You know, I have a meeting in a couple of days with our executives, and I wanted to highlight what you guys have achieved, and they want to look at the goal and aim statements that you had, look at targets, and then look at what you actually achieved. So Bobbi, maybe you could start us off by going through the goals and the aim statements.

[Bobbi Brown]

Nope. Just can't do it. I'm not sure I even knew about the project. But I definitely want to help. I would want to help.

[Leslie Hough Falk]

Okay, so you weren't really sure about the project. You wanted to help. John, did you…? I know you guys had a team, and was finance included in it?

[John Henderson]

Well, you know, you know finance. We've tried to work with them, but they couldn't get us what we needed, so we just had to move on.

[Bobbi Brown]

I gave you data. I gave him data. Lots of data. Lots of paper.

[John Henderson]

Well, yeah, kind of. It just wasn't really helpful, and it just wasn't timely. So, we just had to kind of move on.

[Leslie Hough Falk]

Okay. Well, John, since you didn't have finance involved, did you guys have goal and aim statements? And how did you do in terms of the project versus what you set out to achieve?

[John Henderson]

Well, we just wanted get back what we had, so that was really our goal.

[Leslie Hough Falk]

Okay.

[Bobbi Brown]

Okay, did this sound familiar at all in your organization? Yes? What good is it? Okay. Well, we're going to do another exercise now, but before we do the exercise, I want to show you some of the results of what happened when we put in this analytics application for the radiology department. These are some of the graphs that finance was able to give them. Cycle times. Really got into cycle times, able to track that over time and watch that. They wanted to monitor that, obviously very closely. Looking at the turnaround times, specifically focused on anything that was coming out of the ER. Outbound referral rates over time. As you can imagine, if you're losing volume to another entity that should be staying within your entity, that's not easy money, but it's something that you want to look at and make sure that it's not happening. We looked

at the volumes to see if our volumes are changing over time, and look at different modalities within the imaging department. And then we looked at our anesthesia utilization to see how that was tracking over time.

And now we have a little exercise for you. Now, what I need you to do is look on your chair, on your chair, some people behind the chair, behind the seat there should be -- some people should have a card that says "show me the money." Show me the money. Please tell me they didn't disappear. Oh, you see it. Okay, okay, okay. Alright. Yeah, look at an empty chair, because obviously I didn't know where you were going to sit. Okay, so let's look at revenue. Who has 1A? Anybody have 1A? Over there? Okay. What is it? And did you get money? You got a dollar. Oh, wow! Okay. So, everybody understand why referral leakage to me that -- why that has some example -- oh, I keep pressing these. Okay, who has 1B? Yes, go ahead. Shout it out.

[Participant]

Bill more quickly.

[Bobbi Brown]

Okay, bill more quickly, we were able to reduce the cycle time for billing, and able to increase, you know, the dollars coming in faster. So, again, good ROI. 1C. Yes?

[Participant]

Increase throughput.

[Bobbi Brown]

Increase throughput. Great. And how much did you get? A dollar! Oh, my heavens! Okay, 1D. Anybody have 1D? Oh, okay. I wonder if the hundred-dollar bill is going to show up. I got you.

[Participant]

Finance people can do those.

[Bobbi Brown]

Yeah, we can. Thank you. Jane is a finance person, so yes, Jane and I work together. She works at Health Catalyst, so.

Okay. Waste reduction. What is it, 2A? Okay, yes. Okay, yeah, that's me. Only use that MRI if you really need it. So, 2B. Okay. Okay, again, reducing the time, time to go faster, get people out of the hospital faster, getting them home at night, that's all very important. 2C. Okay, we definitely want to reduce that. Efficiency, productivity savings. 3A. 3A. Okay. Okay, yeah, this is a good one. This is often an easy place to start, especially when you put in an EDW. A dollar? Okay. 3B. So, yeah, if you can automate. Oh, a hundred dollar. Yay! 3C. Okay. Use of flex time, this is the overtime, you know, they're able to -- and this is true, they are able to reduce the overtime in their department and the amount of usage of temporary or contract employees.

Okay, opportunity to your indirect savings. Some of these, again, you may be able to put a dollar to it, you may not. They're important to measure. They can be balance metrics. They can be things that you want to watch as you're going along, such as satisfaction. Okay, 4A. Okay, so they didn't have to buy something that they might have had to buy, so they researched and realized we can get this data out of the EDW, so why are we buying another system? 4B. Okay. Oh, wow! Oh, wow! And 4C.

[Participant]

Improving employee satisfaction.

[Bobbi Brown]

Okay. Okay. Alright. So, we have employee satisfaction and patient satisfaction, all of these things work together. And again, they are measurable, you can do it before, you can do it after, and you saw some of the real visualizations that were up there from this project.

If you go to our Health Catalyst website, we have a tool out there that, it's much longer than this, but to put it on a slide, and It has a lot of ideas about places to look for our

ROI, so just go to Health Catalyst and stick in ROI and it'll come up. It's an Excel Spreadsheet, and it does ROI, IRR, and NPV, all of those for you, gives you a benefit to cost and also a payback time on it. So that is out there, and I wanted to put up another resource for you. There's a book called How to Measure Anything, and it's actually pretty statistical, but it's www.howtomeasureanything.com, and they have a website, and there are, again, some tools out there. They have Monte Carlo simulations, they have probability, they talk about value of, you know, information. It's a good book. It's not related specifically to health care, but it is a very good book. So, just wanted to leave you with that. And I now am going to -- we can talk about it, but we have someone in the room with us who has actually done it. He's from an organization where this is just engrained in his organization. Texas Children's and John, they were the winner of the CHIME award, and they were also an American Hospital Association winner of a Transformational Leadership Award. So, he's going to tell you how they incorporate all this into their day-to-day operations.

[John Henderson]

Thank you. So, to give a little bit of background about Texas Children's, we're in Houston, Texas in the Texas Medical Center. We have pediatric practice, but we also have a women's services for women's care that's part of our integrated delivery system. We've been on this journey from an enterprise data warehouse and analytics perspective about three and a half years now, and we have a lot of focus on how we improve quality, clinical outcomes, but also how do we impact operations at the same time. So, one of the things we in the organization are really focused on is really maximizing the investment that we've put into this infrastructure. I was at a presentation yesterday where it talked about the different models. So, we've gone down the path with Health Catalyst and develop our enterprise data warehouse platform, but at the same time we are leveraging our EHR subsystem, very strategically. The EDW is our single source of truth, but we are taking advantage of what our EHR has to offer and incorporating that into our platform.

We have about 13 or 14 additional systems outside of our EHR into our platform, and it's really becoming more and more robust. And to talk a little bit about governance, we have a pretty robust governance model that really determines what we focus on. So, from an IT perspective, that's like gold, because typically we just get handed tons and tons of projects run to maintain, whatever a particular department may want. We really get that determine how we're going to deliver that. With our platform, our governance model really does a rigorous prioritization each year and really it determines what we're going to focus on and what we're going to tackle on next. So, our data architects who

really do all the heavy lifting to make the visualizations happen, take place, really appreciative of that approach. It's been really transformational for us. Prior to this, no real governance and no real prioritization around what we are doing from an IT perspective. It's who can scream the loudest and who has the right relationship to get what they need to have done.

So, I'll share a couple of examples from an operational perspective of how we've delivered value and delivered some return on investment. Not all of them will have hardcore savings, some of them will be indirect, but one of the things we wanted to do from an IT perspective is really understand what value we're bringing to the table. As I mentioned before, we leverage our EHR system, and for the longest time, we were what you would consider a report factory. We get a request, we generate the data, no real validation going on with that, and we just constantly churn.

With the EDW platform we said, well let's look at what's the time to deliver with our other reporting technologies versus what it takes for us with this analytics platform. So, we went down the path of understanding what it took from an IS perspective to deliver the legacy reporting tools and those systems, compared with our analytics applications. And what we found was significant increase in productivity. We thought we might see 20 to 25% improvement in productivity, but by establishing the baseline and understanding where we were coming from, and then measuring the results of that, we really found a significant improvement in the delivery time. So, as you can see, we went from, on average, 97 hours for EHR reporting tool reports to just over 30 hours to deliver an analytics application.

Now, 60 hours may not seem significant, but from 97 hours, that's not dedicated time, so that's just almost two and a half weeks of effort. That's someone who's completely dedicated. In our organization, we don't get to work sequentially, we work on many things at the same time, so that could really translate into four, five, six months before a customer receives that end product.

With our analytics platform, 30 hours, that really translates then to roughly maybe four weeks. So, significant improvement in the delivery time. So that means the customer has not only an analytic application that can be sliced and diced, but they also have more autonomy with the information. So they're not constantly contacting IT to say, well I need this different view of this report; they can slice and dice and do all that themselves.

Faster delivery times, as I mentioned before, but just being able to measure and manage those requests and manage that demand is a much, much easier task with the analytics

platform. Once people see the information, they're much more willing to -- if you can't get to them for four or five weeks, they're much more receptive to that as opposed to the old reporting tools, because they know that's going to be a four, five, six-month process, and not sure what that result is going to look like.

Another example, and I'll show a few slides of some of the applications we've built, but the one I want to share right now, I don't have a slide, I didn't put that in. We have a fundraising arm of our organization. We do a lot of fundraising to help support our mission of taking care of the sickest of the sickest kids. And they came to us and said, well, we want to have access to some information out of your EHR, because what we're trying to accomplish is, we believe that there're some possible opportunities, from a fundraising perspective, we can identify some donors that may want to participate and help fund some of this, whether it's research or fund some of the clinical activities going on in our organization, but we need more information.

So, we sat down and put a team together to work with them, took their information from their fundraising system, moved that into our platform. They came up with their goal. They want to identify one to two potential donors that would actually result in an actual gift being provided to the organization. It took our data architect about eight weeks to develop something for them and get it into their hands. It's been about a year and a half since we put that out. Since then, they've identified in six donors that's actually provided gifts to our organization. They were only thinking they might get one or two per year. While I can't share the specific denomination, I will say it's in five to six zeroes per donor, so it's significant value for six to eight weeks worth of work from one of our data architects.

So the ROI, that one was actually tangible and hard. As I mentioned, not all of them have that type of return, but this is one of the scenarios where we got some hard dollars and returns from a relatively small investment. And the team really loves it, because now they get gifts from the fundraising department. At least two or three times a year, they'll just show up and they'll say thank you for continuing to support us and supporting our mission, and so they've become one of our favorite departments to work with because they bring gifts.

So I won't go deeply into each of these, but I'll just touch on a few and I'll spend a little bit more time on a couple of them. From our women's services outpatient perspective, we've built some applications, primarily around operational throughput, and really how to manage the practice. So, we built this application around volume, so they can really understand what's happening from a day-to-day perspective, hour-to-hour, really

looking at their utilization of their scheduling templates as well as looking at staffing models to make sure that they're appropriately staffed.

One of the things that they discovered with this application was they're having some bottlenecks with certain days of the week as far as the number of patients they were able to get through the care process. Even though they had the schedule well in advance, they knew the volume that they were going to have, but for some reason the clinic was lasting longer. Typically clinic closed at 5, they were seeing 6, 6:30 pretty regularly on very specific days. So, they were able to really deep dive into the data, understand what was happening using this application to really understand how could they improve the experience of the patient, but also make sure that the clinic is not consistently running past the normal hours of operation.

So, what they were able to do was take this information, look at the check-in time from a patient, the time they arrived, the time they get roomed, to the time they're actually discharged from the outpatient clinic. Look at that information and see if they could identify any patterns. What they found was really not that they weren't scheduled appropriately, but their staffing wasn't aligned to the number of patients that were being seen. So, they really just adjusted their staffing model, not new FTEs, but really just adjusted the staffing to really support the days where they expected to have the highest volume.

Now the way they really got to that, we have another application that's called the Labor Productivity Application. Our organization uses that to really measure work RVUs, understand what we expect our volumes to be on any given day and what our staffing should look like. So, there was really a disconnect between using that particular tool and the one we're showing here. So they really have to use both of those to really understand what's the right staffing model based upon their expected volumes.

Bobbi talked a little bit about radiology. This application, financially and operationally driven, one of the key things with this application, they can really understand modality across all of our facilities. They can understand what kind of margin are we achieving by facility, by the different modalities, and really understand what areas they need to improve in. One of the things that came out of this, we've got presented with a problem from our emergency center. We were sending stat image or CTRs up to radiology; they weren't coming back in a timely manner from the EC's perspective. Well beyond one hour from the time the order was placed and the patient was actually imaged to the time it was actually returned back to the EC physicians for them to actually diagnose and move forward with the care of the patient. What they are able to do with this application is figure out what was causing that problem. They looked at all

the different providers, what was the staffing associated with it, and really was able to come up with an approach where they were able to get the results from those CTs back to the EC with less than one hour of the time it was ordered.

So, what that translated into from an EC perspective was they could determine what disposition the patient was in, whether or not they need a more aggressive course of treatment, or really there was no issue and they could move them forward and really get them released from the emergency center. It also translated into faster turnaround in EC, which allows them to see more patients, which has a direct implication to our bottom line in the market that fuels our mission. So direct impact to the bottom line, but also improving patient satisfaction, getting the patient seen quicker, and getting them to the right disposition so they can get the right care.

Yes, I'll just briefly touch on this. Outpatient referral rates. We knew we had a problem with the number of referrals for images leaving our system. So, our team used this application to target a 10% improvement in keeping referrals internal. They were able to achieve that by really understanding which providers from throughout our system was referring the most externally, and understand the why to that, and then really focus on getting those referrals kept internally. So the 10% we looked to achieve and keep, we were able to achieve that, generated almost a million dollars annually to back to our bottom line.

So, I've talked a little bit about the goals and the return that you can receive. Our last learning objective is really around communication. How do you communicate the results? So I'll walk through mostly on the far right side of communications. Externally, we did a really good job of communicating externally what we were doing by me presenting here one form of communicating all the great work that's happening in our organization. We've done tons of articles, tons of whitepapers marking what we're doing, how we're improving outcomes clinically as well as operationally.

One of the things that we weren't doing such a great job of initially is how do we share this information internally. The way our structure works, if you're on a clinical team, it's a very lean team, it may have six to eight people that's focus on a very specific goal. Operationally, it may have the same number of people. However, the number of people that are involved in that particular care process, it may be 50 or 60 total. So we are an organization of 10,000, so those 50 or 60 people, they understand what's going on and the barrier that's coming, but the rest of the organization may not know because they're not a part of that program.

So, one of the things we began to do, we have monthly leadership meetings. And so we began to share what's happening from, not only operational perspective, but also from a clinical perspective. So, we'll have a physician that'll present a very specific case around an improvement effort and what kind of benefit we receive from that and also on our operational side. So that's on a bi-monthly basis, we get an opportunity to present and share what's going on. Another thing that we're doing from an IS perspective talking about the value that we're delivering, we have a monthly newsletter, we highlight certain stories whether it's a clinical outcomes perspective or from an operational perspective.

Lots of different ways to communicate internally, but really think about how you're going to tackle that at the beginning, because you can get caught up in moving things forward and not necessarily thinking about how you want to share the information out to the organization as far as all the great work that the teams are doing and the value that's bringing to the organization.

So, now I'm going to turn it back over to -- oh, my key takeaways, final, goal in mind, you guys got to be great with the exercise, you got to start with that goal in mind, just like in real estate, location, location, location. ROI, ROI, ROI. Establish the baselines is really important. You have to know where you're coming from. You have to measure it, and then you have to communicate out how things are going.

[Anita Parisot]

Okay, I'd like to thank Leslie, John, and Bobbi for showing us the money. Can we get another round of applause for our three wonderful presenters? I'm also very happy that Bobbi survived the role play, because we would miss her if she didn't. So, we only have time for like one question, because we're coming up on the end of the hour. So, as I was going through the questions that were being submitted throughout the presentation, this one was kind of repeated over and over and over again. And so it was the question about how did you -- and this could be for John or Leslie or Bobbi -- how do you get engagement from the entire team to the aim statement so you don't come up with the letter "e" that says we never got anywhere, we didn't get consensus, and at what point in that engagement process do you bring finance in? While you're still brainstorming? During the process? Or after it's already over?

[Leslie Hough Falk]

How do we get people to engage, I think that we talk about in terms of confidence, employment and analytics. So the point as far as this, what we do for clients is we talk about these multidisciplinary teams, and typically they involve IT, operations, clinical, and finance. And then the second part of the question was when do you involve finance?

[Bobbi Brown]

Most finance teams are just like everyone else, we're pretty stretched, so it'd be great to sit through everything, but it may be after you've done your brainstorming to try to bounce ideas, try to get, you know, work with the team. I think it's important that you get to know each other, so I would say, you know, maybe not every meeting, but after you've had some ideas to down on a handful of paper.

[John Henderson]

We take two approaches. If we're looking for funding for our capital projects, then we bring finance in them on the front. When it's focused on improvement, whether it's operationally or clinically, we typically bring them in after we've developed the aim statement and goals, because primarily it's a resource constraint issue, so our integrated teams will typically meet two or three times per week until they get that goal finalized. And then once we get to that point, then we bring finance in and share with them what you're doing, and then they bring the tools to try to figure out what their return is going to look like.

[Anita Parisot]

Great. So, our time is up for this particular session. I'd like to thank everyone again for attending. Just to let you know that Bobbi, John, and Leslie will be available in the Speaker's Corner, which is right outside the grand ballroom, from 4:45 to 5:15. I would encourage you to please complete your feedback survey for us so we can give you even a better session next year. And then in about 15, 20 minutes I'd ask you to join us back in the grand ballroom for Dale Sanders and our keynotes for the rest of the afternoon. Thanks very much, everybody. Have a good rest of your day.