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DON WRIGHT: I would now like to introduce Carter Blakey, the Acting Director of the Office of Disease Prevention and Health Promotion at the U.S. Department of Health and Human Services. Carter, please go ahead.

CARTER BLAKEY: Thank you. And welcome to everyone. We're delighted that you've joined us this afternoon for our first healthy people 2020 webinar. Today's webinar will focus on healthcare-associated infections. We are joined today by several speakers who will share current activities healthcare-associated infections including healthcare-associated infections prevention initiative and the Healthy People 2020 healthcare-associated infection objectives. They will also provide action steps that healthcare and public health professionals can take to prevent and reduce healthcare-associated infections.

So first I'd like to run through who our speakers will be this afternoon. Our first speaker will be Dr. Donald Wright who is the Deputy Assistant Secretary for Healthcare Quality in the US Department of Health and Human Services. In this role, he provides leadership in enhancing the quality of healthcare provided to all Americans.

Rani Jeeva is the Team Leader for Healthcare-Associated Infection Prevention at the Office of Healthcare Quality in U.S. Department of Health and Human

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Services. She currently focuses on developing the Department's strategy to reduce healthcare-associated or non-socomial infections.

John A. Jernigan is currently the Director of the Office of Prevention Research and Evaluation in the Division of Healthcare Quality Promotion at the Centers for Disease Control and Prevention. He is also a Clinical Associate Professor of Medicine at Emory University School of Medicine in the Division of Infectious Diseases.

We also have James B. Battles who is a Social Science Analyst for Patient Safety in the Center for Quality Improvement and Patient Safety at the Agency for Healthcare Research and Quality. Dr. Battles is the AHRQ project officer for the national implementation of a project to eliminate central line-associated infections in ICUs throughout the United States.

Christine McMullan is the Director of Continuous Quality Improvement at Stony Brook University Medical Center, and she serves as an adjunct faculty member at the Harriman Business School and School of Professional Development at Stony Brook University.

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Dr. William Green has served as the Chief Quality Officer of Stony Brook University Hospital since 2008. He is also the Senior Associate Medical Director for Quality Management and as an Associate Professor of Clinical Medicine.

Then finally Wendy Berg who is an infection preventionist at the Children's Hospital and Clinics of Minnesota, after having spent ten years there as a bedside nurse in the newborn intensive care unit. She is also part of a strong multi-disciplinary Infection Prevention team who works closely with bedside staff to improve patient outcomes by reducing healthcare-associated infections. So for more information about today's speakers, I invite you to go to the <http://healthypeople.gov> website where you can download their full speaker bios on the "Stay Connected" events page.

So right now I'd like to again thank our speakers for joining us and I'd like to give you all just a brief introduction to Healthy People. The Healthy People has been around for about 40 years. In December of 2010 the U.S. Department of Health and Human Services launched the fourth iteration of the initiative, called Healthy People 2012. And for these decades Healthy People has provided a national agenda that communicates a vision for improving health and achieving health equity.

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It's also unique in that it provides a set of science based, measurable objectives with targets to be achieved over a ten year period, so in this decade we're shooting for achieving our targets in the year 2020. It has created a comprehensive strategy framework uniting health promotion and disease prevention issues under a single umbrella and it's a framework that has been mirrored at different levels of government, whether it's at the federal level, state or community level. Businesses have framed their health plans around the Healthy People objective.

Within the federal government it also serves to align and coordinate various prevention initiatives. For example, across the federal government Healthy People helps to align the Affordable Care Act national prevention strategy. Within sister agencies we have similar efforts going on, including the Centers for Disease Control and Prevention's winnable battles efforts and healthcare-associated infections is one of those winnable battles.

Healthy People measures required tracking data. If you don't know where you are with your data, you don't know where you want to go, so every objective in Healthy People must have a data source. Next slide, please. Healthy People because it is so encompassing and has served as a framework that's useful to

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many different sectors it really has provided a terrific way to forge partnerships across different levels. It has guided research on public health; the data really eliminates areas where further research is needed in public health as well as other health arenas.

We actually use it within the Department of Health and Human Services for accountability. We have several different measurement systems that keep our performance in check by tracking progress on achieving our Healthy People objectives. Every public health service grant applicant must demonstrate in their application how the project will support the achievement of these national goals and objectives.

Now I've talked about these goals and objectives, there are with Healthy People 2020 about 1,200 individual measures that eventually will have targets. Those measures or objectives are organized within 42 topic areas, including healthcare associated infection. Next slide, please. Something that is new Healthy People 2020 is that we are entirely web based. What you see before you is a screen shot of one of the tabs, landing pages on our <http://healthypeople.gov> website.

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Can you advance the slide? Thank you. And this arrow now points to healthcare associated infections. Healthcare-associated infections is one of 13 new topic areas that were added to the Healthy People initiative with 2020. In addition, to finding the topic areas and objectives on the <http://healthypeople.gov> website you can also navigate the site to connect with resources and interventions to help achieve the targets. There are ways that you can use the website to stay informed, joined our Healthy People consortium, and just stay connected with what's going on in the public health world.

So with that brief introduction I'd now like to move onto the real substance of our webinar this afternoon and invite Dr. Donald Wright to lead us in the first presentation this afternoon on healthcare-associated infections. So Don I'll turn it over to you.

DONALD WRIGHT: Thank you, Carter. Let me say that it's a privilege to lead today's discussion on healthcare-associated infections. For those of us at the Department that have worked very diligently on reducing these infections over the last several years we are truly pleased to see that this is a focus area for Healthy People 2020, a new focus area.

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The next slide. Initially I wanted to take just a minute and give you a brief overview of where we'd like to go over the next 90 minutes. Initially I'm going to talk a little bit about healthcare-associated infections and give you an idea of the burden of this particular public health concern. From there I want to talk about the national quality strategy and the partnership for patients and the intersection with those two initiatives and the reduction of healthcare-associated infections.

This will be followed by an overview of HHS's initiative to reduce healthcare-associated infections and from there we'll move on in and discuss the Healthy People 2020 objectives of where we would like to be at the end of this decade. Certainly we'll want to discuss the changing landscape that we've seen in the areas of healthcare-associated infections over the last decade and we'll hear from both the Centers for Disease Control and the Agency for Healthcare Research and Quality during this part of the program.

From there we'll move on in and discuss some over federal resources and tools and we have two presentations from outside groups that have had great success in reducing healthcare-associated infections in their particular institutions. We want to finish the presentation with some action steps or next steps moving forward. And despite that ambitious agenda we hope to have time, 10 to 15

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minutes at the end of the presentations to take questions from the audience that can be submitted electronically.

Next slide, please. I wanted to talk a little bit the burden from healthcare-associated infections. It's been estimated that one out of 20 patients hospitalized in a U.S. hospital will acquire a healthcare-associated infection. Next slide. We know if we use some data that was accumulated in 2002 we know that there are about 100,000 lives lost each and every year from a healthcare-associated infection. To gain some perspective on that number that would be the equivalent of a 747 jet going down crashing each and every day, 365 days a year.

Next slide. I think it's helpful to compare the burden from this particular public health concern with some of the others that we address each and every year. As I mentioned the deaths per year from healthcare-associated infections are thought to be about 100,000 per year, based on 2002 data. If we look at those that have died from motor vehicle accidents it's about 42,000, from breast cancer about 40,000 every year and from HIV AIDS around 17,000 each year. So clearly this is a significant public health concern and worthy of consideration.

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Next slide. Not only is this issue important in human terms, which the data certainly supports that. I maintain that it's also important in economic terms. It's estimated that the healthcare-associated infections that we have are responsible for 29 to 33 billion dollars in excess healthcare costs each and every year. Next slide. If we'd break that down by infection every time there's a surgical site infection it increases cost of that hospitalization around \$21,000, for blood stream infections \$16,000, ventilator-associated pneumonia \$21,000 and a catheter-associated urinary tract infection approximately \$1,000.

Next slide. So clearly in human terms this is a significant public health concern. And we also know from an economic perspective this is a very important issue to address. But there is good news. Studies have told us that many HAIs are preventable. In fact, in the area of central line associated blood stream infections implementation and close adherence to existing infection control practices will reduce these infections up to 70 percent.

Next slide. I want to move at this time into two new initiatives that have been released from HHS. The first is a national strategy for quality improvement in healthcare or better known as the National Quality Strategy. This particular strategy was mandated through the Affordable Care Act. And as most of you

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know the Affordable Care Act seeks to increase access to high quality affordable healthcare for all Americans.

Next slide. There are three major aims of the National Quality Strategy: better care, more affordable care and healthy people in healthy communities. Next slide. Within that there are seven different priority areas. And one of the priority areas is making care safer or certainly addressing patient safety concerns, of which healthcare-associated infections is one. I think it's important to note that the Michigan Keystone Intensive Care Unit Project was enumerated in the National Quality Strategy under the making care safer component.

Next slide. More recently the Department released an initiative entitled Partnership for Patients, Better Care and Lower Cost. This particular initiative was launched by Secretary Sebelius on April 12th of this year. And it's a public/private partnership to improve quality safety and affordability of healthcare for all Americans. It would result in potential savings of up to \$35 billion, including \$10 billion for Medicare.

Next slide. There are two major goals of the Partnership for Patients, and many of you may have already heard of these, the first is keep patients from getting

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injured or sicker during their healthcare experience. More specifically we were trying to decrease by 40 percent all preventable causes of hospital-acquired conditions. The second goal focuses on helping patients heal without complications. And our goal under this particular area is to reduce by 20 percent preventable complications during a transition from one care setting to another, and reducing all 30-day readmission rates to hospitals by 20 percent.

Next slide. Under the area of preventing all, or reducing all preventable harm in the hospital we are focusing on nine specific areas to really benchmark our success in reducing preventable harm. And you'll notice on this slide highlighted in yellow are four healthcare-associated infections. So four of the nine areas that we will be monitoring moving forward to determine our success in reducing preventable harm will be the major causes of healthcare-associated infections in the healthcare setting in the hospital setting.

Next slide. Well, at this point I want to move from our new initiatives to provide a little background on what the Department has done over the last five to six years in the area of preventing healthcare-associated infections. Next slide. Without question the Department has been committed to reducing healthcare-associated infection for the last several decades. However this report, the GAO Report on

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Healthcare-associated Infections in Hospitals helped to rekindle our interest, refocus our efforts on reducing these infections.

As you can tell from the name of this particular document that was released by Congress, it was felt that we could do more to provide leadership, national leadership and national dialogue to reduce these infections. Next slide. If you read the 80-page document, the GAO Report, you would see that there were areas of recommendations for the Department of Health and Human Services.

Certainly one of the central themes of their criticism and recommendation that we need to improve our central coordination of all HHS activities to ensure that what the various operating divisions, Centers for Disease Control, Agency for Healthcare Research and Quality, the Center for Medicaid and Medicare Services and others that all those efforts are working in a concerted fashion to reduce these infections nationally.

They also encouraged us to identify priorities among the CDC Guidelines to reduce these infections to really promote implementation of the high priority practices among those guidelines and that we needed to consider inclusion into

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the CMS Condition for Participation, some of these high priority practices enumerated in the CDC Guidelines.

The third area of recommendation was that we exploit health information technology maximally to reduce these infections that through health IT we can reduce these infections and that we needed to use health IT to increase a reliable national estimate of healthcare-associated infections that would benchmark our success and our progress moving forward.

Next slide. Out of this GAO Report a senior level steering committee was created by the Deputy Secretary to focus on reducing these infections nationally. And this resulted in a national action plan to prevent healthcare-associated infections, really a roadmap to elimination. Next slide. When the senior level steering committee was created it was charged with developing an action plan to reduce, prevent and ultimately eliminate healthcare-associated infections. We were further asked to establish some nationwide goals that would benchmark our success and serve as a report card on our efforts moving forward.

We were instructed to improve our central coordination to ensure that we leveraged all the resources that the Department has at its disposal to reduce

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these infections. And we were encouraged to engage partners both within the federal family and external stakeholders to help maximize our efforts across the nation. Next slide. The action plan, the initial action plan that focused on acute care hospitals was released in final form in June of 2009. We were committed to maintaining this document as a living document that would be revised and updated periodically to reflect the evolving science and the identification of strategies that are most successful in reducing these infections. And we hope that it's served as a national roadmap to efforts to reduce these infections across the nation.

Next slide. As I mentioned the initial action plan that was released in June of 2009 focused on acute care hospitals only and furthermore we limited our efforts to the major causes of healthcare-associated infections, catheter-associated urinary tract infections, central line-associated blood stream infections, surgical site infections, ventilator-associated pneumonia and two organisms, specific infections, that of clostridium difficile and methicillin-resistant staph aureus.

Later in today's presentation you're going to hear more about our efforts to reduce these infections in the highlighted areas of central line-associated blood stream infections and methicillin-resistant staphylococcus aureus. Next slide. As

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I mentioned we were asked when we were given the original charge to create a report card or create some national targets that we could follow moving forward to benchmark our success and to see if we were moving in the right direction.

To that end a stakeholder group that included governmental officials, academia and individuals in the private sector met in September of 2008 to set some ambitious but achievable goals to reduce these infections. And those are listed on this slide: a five-year reduction in central line-associated blood stream infections of 50 percent, of invasive MRSA infections of 50 percent in reduction, a surgical site infection of a 25 percent reduction over this five year period of time.

We recently met to review our success to-date to see if we were on track to meet our 2013 targets. We were very pleased to learn that we are on track to meet our 50 percent reduction in central line-associated blood stream infections that we were on track to meet a 50 percent reduction in invasive MRSA infections and that the process of measures associated with surgical care improvement project out of CMS were on target for adherence to those recommendations.

We learned that we still have work to do in the area of clostridium difficile, they seem to be continuing to emerge. And although a significant progress has been

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made in reducing surgical site infections, we were progress, but not quite to the extent that would allow a 25 percent reduction over five years. So overall, we're moving in the right direction and there's still data on some of these infections that will help garner our progress moving forward.

At this point I want to turn the presentation over to Rani Jeeva who will talk about the Healthy People 2020 goals and what we hope to accomplish over the next decade.

RANI JEEVA: Great. Thank you, Dr. Wright. As part of the increasing focus on and investments in improving patient safety that we are seeing over the last few years Healthy People announce that a new topic area on healthcare-associated infections would be incorporated into Healthy People 2020. Next slide. This new topic area includes two objectives, as you've already heard, the first is to reduce central line-associated blood stream infections. The topic area's second objective is to reduce invasive healthcare-associated MRSA.

Both objectives include a ten-year goal or a 2020 target of a 75 percent reduction. These two objectives and their associated data sources and ten year targets are aligned with the national action plan to prevent healthcare-associated

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infections, the Partnership for Patients and other healthcare-associated infection prevention initiatives across HHS.

Next slide, please. These two objectives were initially chosen because of the increased availability of data from national systems to establish baselines and track progress. Also there is science to support preventing both, especially available science for how to prevent central line-associated blood stream infections. Objectives that are focused on reducing surgical site infections, ventilator-associated pneumonia or catheter-associated urinary tract infections may be included in the topic area in the coming year.

Now we will hear further on both objectives from two experts at HHS. First, Dr. John Jernigan from the Centers for Disease Control and Prevention will present on CDC's healthcare-associated infection related program as well as on MRSA prevention. Then you'll hear from Dr. Jim Battles from the Agency for Healthcare Research and Quality who will discuss the national prevention program aimed at eliminating central line-associated blood stream infection. Dr. Jernigan.

JOHN JERNIGAN: Thank you very much Rani and it's a pleasure to be with you all today. I'd like to take this opportunity to review with you some of CDC activities

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related to these two Healthy People 2020 goals; that is specifically preventing MRSA and also central line-associated blood stream infections. I'll also be pleased to give you a little more detail and update on the progress that we are making towards these goals.

Next slide, please. I'd like to outline for you the major components of activity that CDC is putting forth towards these goals, and I think it's reflective of what we're doing as an agency in general HHS wide. And these include three sort of major areas. One is providing data for action. As we all know if you can't measure a certain problem, then you really have little hope of preventing it. So we need to have actionable measures to work with to track our progress and to see how well we're doing in approaching our objectives.

The second is you have to know something about how to prevent these infections, and that's where prevention science comes in. We have to have recommendations for public health practice to actually prevent the infections and we need ongoing research to continually inform these guidelines to make them as effective as possible. But that's not enough; we also have to have support for implementing these recommendations.

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At CDC we're very heavily involved in supporting implementation through state health departments and other bodies, and as you'll hear later from Jim Battles, AHRQ has also been very active in this area. And we think these three interdependent areas are our key to meeting our goals.

Next slide. With regards to providing data for action we at CDC are providing the measurement systems for these two particular goals. And we do that through two means. One is our national healthcare safety network, which is a national system that's been in place for many years now that's available for tracking and preventing healthcare-associated infections and healthcare. They provide metrics to allow us to demonstrate progress, both at a national level, but also at a local level so that individual facilities can track how they're doing and compare themselves to other facilities into national trends to know what sort of progress they're making.

We can also use these data to aggregate rates across states so that health departments and other individuals can track progress at the state level. We can also use these data for CMS to attach to their payment policies. Another important surveillance system and measurement system is operated through what's known as our Emerging Infections program. This is a system of ten states

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throughout the United States in which we do population based surveillance for certain health conditions.

And not all these healthcare-associated infections, but some of the healthcare-associated infections we track include MRSA and also CLABSI and certain multi drug resistant bacteria. We're using this particular system to track the rate of invasive MRSA in the United States. And that's the measurement system that we're using for this particular goal.

Next slide, please. In terms of prevention science CDC plays an important role in creating guidelines for prevention of healthcare-associated infections. And these guidelines have provided the basis for some of the checklists that have been so successful, particularly in preventing central line-associated blood stream infections. Our guidelines development process is performed through a federal advisory committee known as the Healthcare Infection Control Practices Advisory Committee.

They assess the literature through systematic review of scientific evidence and produce guidelines that address specific infection types. We try to use a transparent process. We publish the methodology that we used to come up with

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the guideline so it's very clear to everyone who might be interested in using these. And we try to provide accompanying tools to prioritize the interventions for implementation.

Next slide. These are just two examples of the HICPAC guidelines that are most relevant to the topics at hand today. On the left you see a guideline that was published in 2006, Management of Multi Drug Resistant Organisms in Healthcare Settings and within this is included guidelines for controlling MRSA infection. On the right is our newly-updated Guidelines for the Prevention of Intravascular Catheter-Related Infections that was just updated and published this year.

Next slide. We also think there's an important role for ongoing prevention research. As Don pointed out in his slides even with our current best practices we can't prevent we think all healthcare-associated infections, although we do have the goal ultimately of eliminating them and driving those rates to zero. But to do that we need additional prevention research to enhance and improve upon our current guidance recommendations.

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We at CDC do this through our prevention epicenter program, which is a program in which we collaborate with leading academic centers to identify novel candidate prevention strategies in healthcare settings and in patient populations.

Some of the recent examples of projects that have been performed through the epicenter's program that are relevant to today's topic include regional interventions to prevent MRSA, the use of chlorhexidine bathing to prevent MRSA infection, transmission and also central line-associated blood stream infection, exploring novel environmental cleaning strategies, identifying virulence (ph.) factors for MRSA that might be helpful in identifying vaccine targets, and also, in a very nice example of interagency collaboration, we helped design a multicenter trial to determine the comparative effectiveness of three different MSRA prevention strategies and partnered with ARQH to fund this trial, which is underway and actually almost nearing completion. And we look forward to the results of that trial very soon.

Next slide. We at CDC also provide prevention support through state health departments. We provide funding to develop the infrastructure for HEI prevention control in state and local health departments to improve the quality and quantity of HI reporting, including electronic data capture. We have 26 states that have

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developed or expanded HI prevention initiatives, including those focusing on CLABSI and MRSA. We have 18 states that have received funding through the Recovery Act to support prevention collaboratives for CLABSI in particular, and we see promising results at the year end one and year two data are pending.

There are an additional 15 states that have received funding through the Affordable Care Act to support ongoing prevention initiatives. And we think that these prevention initiatives support enrollment and complement other prevention activities, such as the cost (ph.) prevention collaboratives that Dr. Battles will tell you about in a few moments.

Next slide. These are just two examples of prevention tool kits that are available to state health departments, but also to anyone who's interested. We have other tool kits as well, but I've highlighted specifically the ones that are relevant to our topic today, CLABSI on the left and preventing MRSA infections on the right. And there's a website there that you can access those.

Next slide. The good news is as was alluded to, is that we are making progress towards these goals. And that's very encouraging. Next slide. Just to review with you again, to reiterate what Rani said the MRSA objective is to reduce

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healthcare-associated invasive MRSA infections for the baseline, which was reported through our EIP system of 26.24 infection per hundred thousand persons to a target of 6.56 infections per hundred thousand persons, which represents 75 percent reduction.

Next slide. If you recall we had intermediate targets, a 2013 target of a 50 percent reduction in the incidence of healthcare-associated invasive MRSA infections. And this slide shows the progress to-date through the EIP program that I mentioned. Again the baseline was 26.24 per hundred thousand persons, and current through the calendar year 2009 was down to 22.72 infection per hundred thousand persons, representing a 13.4 percent reduction over a relatively short period of time. So this is very encouraging, and, in fact, suggests that we are on track here.

Next slide. I will point out through this slide that there are different kinds of invasive MRSA infections that are associated with healthcare. This shows the different categories. In the gray part of the pie there that's labeled 27 percent is the proportion of all invasive MRSA infections that had their onset in the hospital. But you'll see there's a large piece of the pie, the 59 percent blue part that are also healthcare-associated, but don't have their onset in a hospital, rather they

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have their onset out in the community somewhere, they may be related to what happens in a hospital or in another healthcare setting but they have their onset outside.

The biggest reductions have been seen in the hospital onset portion, and that's good but I show this slide to highlight that we need to make progress as well in some of these other areas that are equally as important. And that's one of the reasons why we need ongoing research both to inform better guidance, but also better implementation strategies in some of the non-hospital settings to help us continue to move towards this goal.

Next slide. The CLABSI objective that has been mentioned before, we measure through the National Healthcare Safety Network and we use a measure that's called the Standardized Infection Ratio. The Standardized Infection Ratio actually is a way of controlling for differences in risk of infection across various unit types, various hospital types, etc.

And so this ratio actually controls for that and it compares the observed HEI occurrence during whatever reporting period you're interested in with the predicted occurrence based upon the baseline period rate, so that our baseline is

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considered a 1.0 Standardized Infection Ratio from that baseline period of 2006 to 2008 and any improvement would be represented in a reduction of that, somewhere below 1.0. And our target ultimately is to achieve a Standardized Infection Ratio of 0.25, which would represent and correspond to a 75 percent reduction.

Next slide. Again the intermediate 2013 target was a 50 percent reduction in CLABSI as measured through the Standardized Infection Ratio. And you can see from that slide that compared to the baseline period of 2006 to 2008 the SIR or Standardized Infection Ratio through calendar year 2009 was down to 0.82, which represents an 18 percent reduction from baseline. Again suggests that we are well on our way and on track to meet these targets.

Next slide. And finally I met draw your attention to a recent publication through CDC's morbidity and mortality weekly reports journal of what we call our vital signs that were centered around progress for preventing CLABSI that went a little further back then even this 2006 to 2008 baseline. And what that showed is that when we've been tracking these rates in 2001 we've seen fully 58 percent fewer bloodstream infections occurring in hospital ICU patients with central lines in 2009 compared to 2001.

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We also because we had detailed information on these infections we've observed that CLABSI is caused by some germs have decreased more than others. Again, that's important information to know so that we can look at some other germs and find out what additional measures can be taken to keep us on target to meet our goals.

We also discovered that many of the CLABSIs occur in hospital wards outside of ICUs in other areas of the hospital that are non-intensive care units, but also even outside of the hospital in hema dialysis centers. And we need to continue to refine our prevention recommendations and strategies for implementation in these areas as well to continue our progress.

But finally I'd just like to sum up by saying we're making good progress, we need to continue to be diligent and at this point I'd like to turn it over to Dr. Jim Battles from the Agency for Healthcare Research and Quality who will describe for you some very important activities that AHRQ is undertaking for prevention of CLABSI and other HEIs. Jim.

JAMES BATTLES: Thank you, John. It is a real pleasure to be here. I'm going to talk a little bit about what we're doing on a specific intervention program for CLABSI.

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The CUSP for CLABSI or what is known as on the CUSP stop BSI. Next slide. I think one of the most important things I wanted to frame what we're doing is that if you're really going to eliminate or mitigate CLABSIs it requires more than just measurement.

There's an old Midwest saying that a pig never gained weight just standing on a scale. You really actually have to do something to intervene. Next slide, please. So you have to begin to focus on actually changes in clinical practice. In those practices you need to focus on at the unit level in the ICU or the hospital unit. And the other aspect sort of philosophical that infection prevention control is not just a problem of the infection control professional. You really have to have activities that engage all front line professionals; everyone needs to be involved in solving these HAI problems from the CEO of the hospital down to housekeeping personnel.

And it also requires a bit of a culture change, or actually a major culture change too. Next slide, please. Our change intervention program is called the Comprehensive Unit-based Safety Program or CUSP. Originally developed at Johns Hopkins by Peter Pronovost (ph.) and his colleagues in the ICU and other units at Hopkins, we then moved the concept of CUSP to a large scale test in the

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state of Michigan in a project that was referred to earlier, the Keystone Project, which was funded by ARHQ beginning in 2003.

Next slide. This slide shows kind of the breakdown between those generic activities that are the clinical change that are generic, the CUSP activities. And there are five components: the education of staff on the science of safety; identifying defects; assigning executives to adopt the unit and get the top level engagement; learn from defects; and then implement teamwork and communications and safety culture.

Now the specific activities, the interventions directly related to CLABSI would be washing hands prior to the procedure, maximal barrier protection, preparation skin with chlorhexidine, again avoiding femoral lines and obviously remove unnecessary lines. So a CUSP program, depending on the nature of whether it's an HAI or other activities would have generic activities of change and then specific activities for the individual intervention.

Next slide. Obviously with the results from Michigan we were faced with a question well will this work elsewhere outside of that one state. We believe that the progress rate was such that other states would benefit. So we launched the

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national implementation of CUSP for CLABSI and that is known as On the CUSP Stop BSI. Next slide. The project goals for Stop BSI are to reduce BSI's to one per one thousand days. Obviously in some states we view, they view CLABSI's elimination is the goal to get to zero.

We wanted to have the program reach all 50 states and the District of Columbia and Puerto Rico and include both ICUs and other units with BSI risk. We also wanted to make sure that we included critical access hospitals and that we would improve culture. Next slide, please. The leadership for this project, the contract with ARHQ is with the Health Resources Education Trust, which is a component of the American Hospital Association. The HRET and the American Hospital Association would work through the network of state hospital associations to organize activities at the state level.

Obviously JEHU and the Quality and Safety Research Group under Peter Provonost's leaderships are playing a major role as well as the Michigan Hospital Association, the Keystone Center, which is handling the data for the project. Next slide. For a variety of reasons we approached this project in a phased roll out across the country in groups of cohorts. And this particular map color coded represents the different colors of the cohort as we moved across the country.

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Next slide, please. Well, the important bottom line question was how are we doing? Well, we have 46 hospital associations and one umbrella group participating and that represents 1,055 hospitals and 1,775 hospital teams, obviously some hospitals have more than one team participating in the project. Twenty two states began the project in 2009, 14 states, the District of Columbia began in 2010 and nine states and Puerto Rico began this year in 2011.

Next slide, please. Well, we do have results from the first four of our cohorts. Cohorts one through four, starting 2009 and 2010, they had a baseline rate at the beginning of when they started of 1.87 per thousand days. After 10 to 12 months the rates decreased to 1.25, a reduction of 33 percent. I think the other important piece of data is a percentage of units with zero quarterly CLABSI increased from 27.3 at baseline to 69.5.

Next slide. And this graph shows you that length of getting to zero. And I think this is a major conceptual change is that in fact the goal of zero CLABSI's may very well be obtainable in some hospitals and units. Next slide. This last slide shows by type of hospital their reduction over the period of time. The very dramatic purple line, if you can see the color, is from critical access hospitals,

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where they went from a fairly high rate to basically zero over the period of time, pretty dramatic change.

So the different colored lines you can see as people are beginning to get closer and closer to well below one and some are going to approach to zero. So we are extremely pleased with the results of the project so far and the possibilities of virtually eliminating CLABSI. So I will now turn this over back to Don Wright who will talk about the changing landscape of HAI prevention.

DON WRIGHT: Thank, Jim. At this point we wanted to take a little bit of time to talk about the changing landscape associated with healthcare-associated infection prevention. And there has been an increased focus on reducing these infections not only at the national level but at the state and local level over the last five to ten years. Next slide. The Affordable Care Act which was finalized about 18 months ago has a direct link to healthcare-associated infections.

In particular, the Affordable Care Act links payment to quality outcomes under Medicare called Value Based Purchasing. The Secretary was given a great deal of latitude in what areas she chooses for linkage between quality outcomes and payments. However there were five areas that were prescribed that must

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included, and one of those was healthcare-associated infections, as measured by the prevention metrics and targets established in the action plan that we discussed earlier in this presentation.

Next slide. Certainly one of the, there's been a great deal of interest at the state level in healthcare-associated infections and if you went back to 2004 there were only four states that were mandating reporting, public reporting of HAI rates: Florida, Pennsylvania, Illinois and Missouri. But if you fast forward until 2011 the landscape has changed dramatically. Next slide. We now have 28 states that are requiring public reporting of HAI rates, and the ones that are covered with a star using NHSN as their reporting vehicle bore the public reporting effort.

So you'll see over that seven year period of time there's been a market increase in healthcare-associated infections at the state level. And this is a trend that we anticipate will continue in the upcoming years as well. Next slide. Not only has there been public reporting at the state level there's been an increased interest in reporting HAI rights at the national level through the CMS, IPPS rule. On this there will be reporting of CLABSI rates and surgical site rates moving forward, and we have more on that in the next slide.

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Next slide. You'll notice on this slide we've enumerated what infections will be publicly reported through hospital compare and the IPPS rule moving forward. This year hospitals that want to be a part of the paper reporting program will be asked to report central line-associated blood stream infection rates. And moving into 2012 the focus will shift to cancer-associated urinary tract infections and surgical site infections. There's some interest in 2012 as well of reporting HAI rates and process measures in end stage renal dialysis centers, as well as in long term facilities.

If we move into 2013 there's an interest in MRSA and clostridium difficile infections as well as immunization rates of healthcare workers for seasonal influenza. Next slide. As I mentioned earlier in the presentation we released a national action plan in June of 2009 that we felt served as a national roadmap. Earlier in 2009 through the funding bill Congress required every state to create a state action plan to reduce healthcare-associated infections that cascaded down from and was completely consistent with the national plan. And these were further incentivized by linking the state action plans to CDC prevention block grants.

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I'm very pleased to say that all 50 states, the District of Columbia and Puerto Rico all submitted for review by the Department state action plans. Additionally they were required to follow two metrics that supported the HHS action plan moving forward. And if you look at the next slide you'll see through this histogram what particular hospital-acquired infections are most followed at the state level. Clearly central line-associated blood stream infections are being followed longitudinally by 42 of the 50 states. And that's followed closely by surgical site infections and MRSA infections.

Next slide. Let me say there's been an effort to increase the state capacity at the state level. Now each state has an HAI coordinator that's focused on and responsible for implementation of the state action plans that I just discussed. In addition to that each state has created a multi disciplinary advisory committee to work collaboratively on HAI prevention and this includes healthcare institutions, healthcare providers, as well as healthcare consumers.

Let me also say that many states have enhanced capacity to monitor HAIs using the CDC's NHSN or other systems moving forward. To increase the dialogue and to learn from best practices there is a state level partner's meeting

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scheduled for Dallas, Fort Worth from September 15th through 16th focused on collaboration around eliminating healthcare-associated infections.

The list of topics that will be discussed in that particular conference is indeed lengthy but includes alignment of state level prevention programs and resources, will look at the impact of federal legislation and initiatives at the state level and conversely the impact of state legislation and reporting requirements on the national scene and will focus on achieving reduction goals in the national and state action plans in an era of limited funding, which is certainly a challenge not only nationally, but locally as well.

Next slide. I wanted to say that the Centers for Disease Control has really taken a lead at publishing and following national data of HAI rates as well as state specific data. They recently have summarized CLABSI and SSI reporting rates not only nationally but also for the states across the country. Their most recent report focused on data from July to December of 2009 and we're using the data that they are presenting to measure our success in achieving the goals in the action plan.

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I'm very pleased to say that as it relates to central line-associated blood stream infections they documented a 17 percent reduction in central line rates as well as an eight percent reduction in surgical site infections. If you're interested in your particular state data, the website is provided on this slide to allow you to access that information.

Next slide. I want to also say that a great deal has been done in the area of research. As Dr. Jernigan mentioned clearly we have gaps in our knowledge in preventing these infection and I'm very pleased to say that there has been resources to help fill some of that knowledge vacuum. There have been \$34 million to expand our efforts to fight healthcare-associated infections. Clearly we want to help expand efforts to fight HAIs in hospitals, ambulatory care settings, end stage renal disease facilities and long term care.

ARHQ has worked very collaboratively and closely with the Centers for Disease Control in Atlanta as well as CMS and other HHS stakeholders to try to identify the gaps in our existing knowledge base and to fill those through funding additional research efforts moving forward. And there's a website here that will allow you to look at what projects have been funded moving forward.

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Next slide. As I finish up my discussion I want to mention the Center for Medicare and Medicaid Innovation Center. This was a new center that was established through the Affordable Care Act, established to revitalize and sustain Medicare, Medicaid and the CHIP program moving forward. And certainly there is going to be a focus on the (unint.) better healthcare, better health and population health and more affordable care through reduced cost.

Next slide. At this point I want to turn the program back to Jim Battles who's going to talk a little bit more about the federal resources and tools as well as a continuing discussion from some of those that are in the trenches of reducing these infections at the hospital level. So Jim.

JIM BATTLES: Thank you very much Don. Next slide, please. One of the things that we're doing at ARHQ is to expand what we've done with CUSP that I talked about earlier to other HAIs and other hospital-associated conditions; namely what we're doing with catheter-associated urinary infections, ventilator-associated pneumonia, surgical site infections and perinatal safety. Next slide, please. Our first major and probably most important initiative is the expansion of CUSP for CODI (ph.). We are using the same state based structure and expanding our CUSP activities to include CODI.

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We just completed a pilot test of the CUSP for CODI in ten states with ten hospitals in each state. We are now expanding that effort nationwide. And this expansion began yesterday with the effective date of the contract to move CUSP for CODI on a national level. And that project is also with the same teams that are bringing you the CLABSI activities. And this activity is known as On the CUSP Stop HAI. So stay tuned and recruiting is beginning now.

Next slide. The next logical move is to develop the resources and materials for CUSP for VAP (ph.). We have just, we will be initiating a contract for the development of that, there will be a three state pilot and we will begin national implementation of CUSP for VAP in fiscal year 13. Next slide, please. The third area is working on a version of CUSP called surgical unit safety program or SUSP which will focus on SSIs as well as other surgical complications.

With a unit based approach we wanted not to just separate the surgical site infections but a deal with all surgical complications simultaneously. It builds on the lessons that we learned for CUSP with HAIs, incorporates the WHO checklist, involves our teamwork with team steps, safety culture and learning from defects. The SUSP project begins on September 1st of 2001 (?). Next slide, please. The next major focus of applying a sort of CUSP focus really isn't

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an HAI but rather a major HAC, and that's our perinatal safety improvement project.

Birth injuries and obstetrical adverse events are really severe and important events and are one of the nine primary HACs that are part of the partnership for patients. ARHQ is building on its evidence in labor and delivery to initiate the patient safety, the perinatal safety improvement program or PSIP. Also this will begin in September.

Next slide. The components of PSIP include again culture of safety, teamwork with team steps, and a heavy focus on what is being known as in situ simulation where you actually take simulators right into the labor and delivery room. Checklist, again sense making and learning from other defects. So it's now my pleasure to turn the presentation over to Rani Jeeva and some interesting training materials that are just coming to be released. Rani.

RANI JEEVA: Thanks Dr. Battles. There is a wide array of healthcare-associated infection prevention resources and tools available on the various components of the Department of Health and Human Services or HHS. These resources and programs will be highlighted here. The first is a computer based video simulation

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training program called Partnering to Heal, Teaming Up Against Healthcare-associated Infections, which was launched in May of this year.

The training program permits viewers to become one of five characters who would make decisions that impact health behaviors and risks and then view the results of those decisions and learn from the outcomes. The training is designed to be used by students in the health profession, early career clinicians and other healthcare personnel as well as patients and families. We are also hearing from folks across the country who are using the training in their infection control and prevention programs and orientation sessions at their institution.

The training program promotes a team based approach to reducing preventable infections and focuses on principles of team work, communication, hand washing, vaccination against seasonal influenza and the appropriate use of antibiotics and medical devices. Partnering to Heal is available online at no cost and can be accessed at the address listed on the previous slide. And in order to appropriately introduce the training we have a video clip which we will play here.

(Video clip)

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Another HHS sponsored program is the National Awards Program to Recognize Achievements in Eliminating Healthcare-associated infections. Last year HHS partnered with the Critical Care Society's Collaborative to develop and implement the awards program. The Critical Care Society's Collaborative is a multi disciplinary organization comprised of leaders in medicine, nursing, pharmacy and respiratory therapy who serve the nation's acutely ill patients.

The initial phase of the awards program recognized critical care professionals and healthcare institutions that have achieved success in reducing central line-associated blood stream infections and ventilator-associated pneumonia.

Awards were conferred at two levels according to specific criteria tied to national standards. The outstanding leadership award went to teams that had sustained success in reaching their reduction targets for 25 months or more.

The sustained improvement award level recognized teams that demonstrated consistent and sustained progress over an 18 to 24 month period. In May of this year we were pleased to announce the initial group of 37 awardees in the program's first year. Awardees represented the diversity of institutions in which healthcare is delivered, from small to large bed sized hospitals, adult and pediatric facilities, as well as institutions in urban and rural populations. The full

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list of awardees is available on the HHS, Office of Healthcare Quality website at the web address listed on the slide.

And in coming years we hope to expand the award's program to other areas and to non-hospital settings. Two of our outstanding leadership award winners to have achieved success in reducing central line-associated blood stream infections in their organizations have graciously agreed to joint this webinar and present their stories. We hope that these stories will serve as examples for how teams and institutions have approached healthcare-associated infection prevention and have overcome various obstacles in their journeys.

Wendy Berg from Children's Hospital and Clinics of Minnesota and then Christine McMullan and Dr. William Green from Stony Brook University Medical Center will present their success stories. And now I turn things over to you Wendy.

WENDY BERG: Thank you Rani and thank you for having me. Next slide. Children's Hospital and Clinics of Minnesota is a two hospital system. We have 106 intensive care beds for newborns located on two campuses in St. Paul and Minneapolis, Minnesota. In the early 2000s roughly one in four of our very low birth weight infants acquired a hospital-associated infection at some point during

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their stay. And with those kind of odds infections really were seen as inevitable and just part of life in the NICU.

Next slide. So in order to address these high infection rates we took some action; we formed multi disciplinary infection prevention teams, which was a little bit of a change from our more broadly focused quality improvement teams of the past. And we had to do some work to address our culture change. We just needed everyone to believe and to buy into the idea that infections were actually preventable.

So we accomplished this in a number of ways, starting with the nurse at the bedside and we provided them all with four hours of infection prevention education. And then our infection prevention teams started doing focused event reviews on each and every infection. And the result of each focused event review included a patient impact vignette which was published in the unit newsletter. It included this little sad looking baby that said it's more than an infection to me.

And the vignettes outlined the patient's status before, during and after the infection and really revealed the stories behind the numbers on the graph. But

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like many hospitals we implemented the insertion and maintenance bundle including the use of chlorhexidine and audited and we continue to audit for compliance with that. And then in order to keep staff invested we needed to share our progress regularly; we posted days since last CLABSI along with rate graphs publicly, which added a new level of transparency and a sense of accountability among staff.

And all along the way we were mindful of message fatigue, we can't just present the same graphs in the same way month after month and expect people to still be interested. Next slide, please. So as a result of all this work we saw some nice decreases. This is a graph of our central line blood stream infections and have sustained quite a bit of a lower level over the past four years.

Next slide. But beyond just CLABSIs we've seen a reduction in all bacterimias (ph.) and other infections as well. This graph depicts the Vermont Oxford Network's definition of Nosocomial (ph.) infection which includes all bacterimias and meningitis. And by this definition, and this is just for our very low birth weight infants, by this definition we've gone from one in four infections to fewer than one in ten in 08 and 09 and the 2010 numbers are not in yet, but they are looking promising as well.

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Next slide. So as a result of all this hard work if we compare our 2005 rates to our 2009 rates we estimate that we're preventing 64 hospital-associated infections each year. If we multiply the \$13,000 per infection in an NICU that's a total estimated treatment cost savings of \$864,000 per year. Previous work has estimated that it costs about \$116,000 a year to participate in quality improvement activities, because it does take time away from the bedside and work to implement all these improved practices, but if you subtract that out it's still a net savings of about a \$750,000 in estimated treatment costs saved.

We also know that very low birth weight infants are more likely to develop cerebral palsy than those who've had infections than those who have not had infections. And we estimate that by preventing those nosocomial (ph.) infections we are also preventing five cases of cerebral palsy and the long term challenges that go along with it each year.

Next slide. So what have we done that has caused us to be able to sustain these over the past four years? One main key is collaborating between the two NICUs within our facility and also collaborating with the broader neonatal community through the Vermont Oxford network. We of course have engaged multiple disciplines, everybody has a piece to this puzzle and we've also been very

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successful in engaging our family advisory board so that everybody works on their pieces to the puzzle.

As I mentioned we make frequent tweaks to our communication processes and are constantly soliciting feedback from staff, does this graph mean anything to you, what would be meaningful to you, how can we present this in different ways and really trying to change up our communication techniques frequently just to capture people's attention and sustain that.

And one of the really big steps forward I think was when we married up with the patient impact vignettes with the data and the graphs. So in the context of educating our staff of what each of us can do to prevent infections, the vignettes really connected the individual staff person's actions with patient outcomes.

And then lastly, and very importantly, we have enjoyed continued strong support from all levels of leadership within our hospital. And they've made reducing hospital-associated infections an organizational goal and have clearly defined the measures so that we know if we are meeting the goal and have offered resources needed to work towards these goals. So with that I will turn it over to Christine McMullan from Stony Brook University Medical Center.

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CHRISTINE MCMULLAN: Thank you Wendy. Next slide, please. Just to give you some background information Stony Brook University Hospital is located on the east end of Long Island. We're the only tertiary care hospital located in Suffolk County and we're a teaching hospital physically linked to the State University of New York at Stony Brook School of Medicine as well as four other graduate special schools.

Next slide, please. Our journey for decreasing central line infections actually began back in the fall of 2004 when we joined the IHI or the Institute for Healthcare Improvement critical care collaborative. And the collaborative incorporated the use of the central line and ventilator-associated pneumonia prevention bundles as well as multi disciplinary rounding and daily goal sheets to improve patient outcomes.

And we incorporated actually the review of daily necessity of the central line into the daily goal sheet, which helped to really have the team evaluate whether or not the patient continued to meet that line. We also created a centralized standard insertion kit, which included all the bundle elements that were needed for insertion. Next slide, please. So we continued, we did that for a number of years and we saw our rates decrease, but they were not where we felt that they

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should be. So we really took a look at our resident education and when we surveyed our different services we found that each one of them really had their own credentialing criteria for credentialing new residents in the insertion of central lines.

So expanding on the standardization concept we decided to create one standard protocol and credentialing program for our residents to make sure that they were all receiving the same information and they were all following through on the same steps for insertions of the central lines. And at this point in time we actually did that mid 2007, so now all residents are expected to review an educational module, achieve a passing grade of 80 percent in the education module, demonstrate competency in central line insertion on a simulator prior to in the patient and at bedside prior to credentialing.

Next slide, please. And just to tell you it really initially we were a little apprehensive because we thought that this program would cost a lot of money but we found that there really, you don't have to reinvent the wheel or you can steal shamelessly, what we did is we found about Duke's educational module and we decided instead of creating one ourselves we would actually lease theirs, which we continue to do at this day.

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We also identified one of the best practices for the insertion or the competency of insertion of central lines as Henry Ford's health systems. And we asked them for a copy of their competency checklist and we modified it for our personal use. So really if you can learn from other best practices at other hospitals and then really take them back to your hospital and adapt them for your own personal use it really is the way to go.

Next slide, please. So we continued to see a reduction of central line infections but we still were not happy with the outcome and we decided to do a root cause analysis for every infection that occurred. And after further review of this data we realized many of our lines became infected after day seven of insertion and when we started to dig down we realized that the line maintenance process was not really where it needed to be. Our nursing staff were not accessing the lines using the same level of sterile techniques as our physicians during insertion. So as a result a central line maintenance protocol was developed and deployed in our ICUs.

And now I'm going to turn it over to Dr. William Green who's our chief quality officer. He's going to review the outcome of the data.

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WILLIAM GREEN: Thanks Chris. On this slide I will just call your attention that this consists of the adult intensive care units, which in our institution includes separate units with coronary intensive care units, cardiothoracic medical and surgical. The baseline unit you can see this is a month by month graph. The rate is expressed traditional as per 1,000 central line days as in this. And you can see that between the baseline period, which we established over the course of 06 to actually 06, the 12th month, and 07, the 12th mean of improvement was 83.4 percent.

Next slide. Here are our pediatric results. Again per 1,000 central line days the current 12 month mean shows a 72 percent improvement over the 2007 baseline period. Next slide. Early on we saw very good compliance with the central line insertion bundle. But this was preceded from 2006 by multiple developmental efforts towards putting together a central line insertion cart, which had all the components to it, a central line insertion bundle audit sheet that was filled out by the nurses in conjunction with the physicians, as well as the resident training program that Chris McMullan previously described, which included the full gowning and so forth for the central line insertion bundle.

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So the earlier portion of this slide would have shown significantly decreased compliance with these various elements. But for the past five years we've had very good compliance. Next slide. Here is a somewhat different expression in terms of per 100 patient month for a central line-associated blood stream infection. And you can see that in the coronary intensive care unit for the past three years we've had essentially no central line infections where the rate was low to begin with. And there's been a very dramatic decreases in the other intensive care units.

And one thing I should call attention to is that we did initiate this effort on pediatric hematology oncology which is not an intensive care unit, but obviously uses central line infections extensively. There was sort of chaos of management of these infections. And when this was regularized there was a very substantial decrease in central line infections on that service.

Next slide. This is a kind of summary slide for the institution as a whole. And as you can see we've had a 59 percent decrease in central line infections in the 2008 to 2010 period compared to the baseline in 2007. If you look off to the right hand portion of the slide you'll see that our most recent decrease over the past approximately year of the most recent year which coincided with extensive

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deployment of the central line maintenance bundle has really come down to a substantially lower average than for the preceding period.

We've estimated that we've decreased 1,144 patient days with an estimated seven and a half million dollar cost savings for the three year period. And this was used, this was making use of a Johns Hopkins website estimator for central line infections. Next slide. So in conclusion the interdisciplinary team collaboration obviously impacted patient outcomes and decreased length of stay and costs. One thing I would add is that it was very important to make it clear who had individual unit responsibility in each of the units both at the physician and nursing levels, so that there was leadership responsibility and identification.

Obviously minimization and variation around best practices ensures consistent application of those practices in the insertion and maintenance of central lines. And we obviously need to continually reevaluate the barriers so as to move from sort of status quo to the next level as we did when we evaluated resident education and then subsequently the central line maintenance bundle. And now I will transition back to Rani Jeeva. And thank you very much.

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RANI JEEVA: Great. Thank you Dr. Green. Now we've heard from clinical and public health expert on what are healthcare-associated infections as well baseline and progress data, prevention programs and success stories regarding healthcare-associated infection prevention. But what can you do? And really what can we all do to ensure further progress in reducing and preventing healthcare-associated infections?

First for hospitals we can make patient safety goals a priority of all staff. We can support clinicians and staff working with us to engage patients and families in order to make care safer and we can learn from and share with others our experiences with making care safer. Next slide, please. For clinicians and other care providers we can engage with patients and families again to implement practices that foster more patient-centered care and again we can learn from and share with others our experiences in making care safer.

Next slide, please. For consumers, community and patient organizations we can raise public awareness and educate patients, families and consumers about the importance of safe care. We can develop and provide information tools and resources to help the patients, families and consumers effectively engage with their care providing team. We can also encourage providers to work in

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partnership with everyone, patients, families and consumers to implement safe practices.

Next slide, please. For state and local health departments we can identify safety and quality champions among state level entities. We can work with and convene partners as was already said. We can create state specific resource guides for patient safety from existing resources. And we can work with state officials to raise the importance of patient safety issues, like preventing healthcare-associated infections.

Next slide, please. For employers, unions, health plans and states we can use market based incentives to promote improvements in safety and other dimensions of quality and value. We can work with private payers, states, and federal government to align efforts to measure performance on quality and safety so that patients and clinicians have the best possible information and that the burden that hospitals and other providers is minimized. We can share information with employees, members or beneficiaries so that they can engage as active partners in receiving better safer care.

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Again these are offered as very general suggested actionable steps, but what we really want to hear is how you, within your unit, within your organization, within your institution how you are succeeding at preventing healthcare-associated infections. And with that I turn things back to Dr. Wright for closing the webinar.

DON WRIGHT: Thank you Rani. We don't have as much time for question and answer as I hoped we'd have, but we do have time for one for two. John there's a question here from Maine. It said Maine will begin public reporting of nosocomial (ph.) MRSA and CDIF (ph.) infection next year. I'm concerned that only 27 percent of those infections are nosocomial, shouldn't our state be reporting all MRSA?

JOHN JERNIGAN: Thanks, Don for the question. And I think that's alluding to the slide I showed that demonstrated that a lot of our invasive MRSA infections are, have their onset outside of the hospital. Right now the only way we have of measuring that is through these population based surveillance systems that aren't available in every region of the country and they are quite extensive. And furthermore we need a little more work to determine exactly how to prevent those community onset healthcare-associated infections. And they probably represent a heterogeneous group.

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There are probably a lot of dialysis in there. There are probably a lot of patients that might have had CVC inserted during a hospitalization went home with that. We might have to do with home healthcare. There are additional research that needs to be done on exactly what the best approach to those particular infections are. So I think for now it's best to stick with the National Healthcare Safety Network Module to allow individual facilities to monitor those infections that have the onset within their particular facilities until we come up with a way to direct our interventions best for those community onset but healthcare-associated infections.

DON WRIGHT: Thanks John. Unfortunately we've run out of time. So at this point I'll turn it back to Carter Blakey to close the presentation.

CARTER BLAKEY: Thank you all and I apologize for not having enough time for Q&A, but we do have an option for you. Anyone on the line is welcome to submit their questions via email to the following address. It's o as in Oscar, h as in Harry, q as in quick at HHS.gov. We will receive your questions and we will develop written responses to your questions and then post those on our website at <http://healthypeople.gov>. So again thank everyone, many thanks to everyone for participating in this first of our coming series of Healthy People 2020 webinars.

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OPERATOR: Ladies and gentlemen this does conclude today's webinar. We thank you again for your attendance you can now disconnect.

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