**AHRQ National Resource Center for Health Care Information Technology**
**First Consulting Group Inpatient and Ambulatory CPOE Assessment Tool**
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Brian Dixon

Good afternoon to everyone who has joined us today. My name is Brian Dixon and I am with the National Center for Health technology. I will be the host for this afternoon's prep conference. In just a moment, I will turn things over to our moderator, but before I do that I do want to start with a couple of questions we would like to ask folks to give us some feedback. So we will also have a short poll at the end of the question and answer session. So I ask that you fill out the second poll on your way out the door to the, and I invite you to respond to the questions -- these opening questions now because they really do impact future Web conferences like to this session. So with that let me introduce our moderator Carol came from the Agency for Health Care Research and Quality and she will introduce the rest of the panel.

Moderator

Thank you. This is Carol Cain. We are really excited that you were able to join us today for the first public teleconference in 2007. This is an occasional series that we have sponsored to talk about breaking topics in health IT, and we are very excited today to be talking with our panel about the computerized position order entry into electronic help record

evaluation tool. Our panel today has four members. I will introduce David Clausen at last. Let me introduce them, the panel sitting on the phone. Jane Metzger here is a Research Director in Emerging Practices, the applied research arm of First Consulting Group. Much of her research and consulting over the past 34 years has addressed the use technology for care, especially for physicians and critical decisions report giving -- they can be used to deliver such high-quality care more consistently. She has conducted a number of studies. She served as a commissioner on the Certification Commission for Health IT and worked as a member of the quality work group. Our second panelist, Allen Vaida, is from the Institute for Safe Medication Practices in Huntington Valley, Pennsylvania. He previously served as vice president of critical operations at Mercy Suburban Hospital in Norristown, Pennsylvania and prior to that appointment, he held positions of the director of pharmacy at suburban General Hospital in Norristown, Pennsylvania. He has served on various committees and as a board member for several health care organizations including as a trustee for ISMP.   He has given professional presentations on hospital and pharmacy systems and management prevention strategies, of care outcomes, its credit systems and interdisciplinary collaborations. Our third panelist is Emily Welebob. She has many years of experience in health care as a consultant, and in nursing leadership. She has played a principal role in the development of patient safety services at First Consulting Group, inclusive of medication management and computerized

physician order entry assistance and strategies. Recently, she was employed as a leadership role for the knowledge delivery functions of the health initiative providing technical assistance supporting states, regions and communities across the United States. She has mentioned the project you will hear about today, the valuation methodology for the leap from a group which provides a tool for hospitals and physician practices to solve test implemented CPOE practices in order to gauge progress in easing critical position support. Finally, our last panelist today and our presenter is David Clausen of First Consulting Group. He is a vice president at First Consulting Group and the chief medical officer there and leads the First Consulting Group safety and quality of health care initiative and consulting practice. Dr. Clausen is also an Associate Professor of Medicine at the University of Utah and a Consultant in Infectious Diseases at the University of Utah School of Medicine in Salt Lake City. He received his medical degree from the University of Virginia School of Medicine and a Masters of Science in Medical Informatics from the University of Utah School of Medicine. He is board certified in Internal Medicine and Infectious Diseases and was the chair of the Institutional Review Board at Intermountain Health Care's critical quality committee for shared use and evaluation and was the initial developer of patient safety research and peace and safety programs at Intermountain Health Care. He was a member of the Institute of Medicine committee and is an adviser to the leapfrog group and currently developing what he is calling a

CPOE flight simulator for leapfrog. So those are our four panelists. Without further ado I will invite Dr. Clausen to represent the leapfrog Computerized Physician Order Entry evaluation tool.

Dr. Clausen      Thanks very much and welcome everybody. Over about the next 40 minutes, I will go through the presentation on my own and then we have the rest to save time and we will have the panelists answer your questions for the next 45 minutes after that. So without any further ado, why don't we advance to page one if we could, Brian? About this project, this is now fortunately coming to a close but has been going on for about four years. The project has worked on creating a tool that would be useful in the evaluation of aspects of the electronic of record. The initial phase of this project was funded by the California HealthCare Foundation and the Robert Wood Johnson Foundation, but the final phase of this project was funded and overseen by ARC. And there have been a lot of dedicated people to this project from the very beginning. Peter was involved in Phase I, but the core team really has been through this and they are all on the call today. So they can answer questions. In addition, we have been really helped by ISMP in the form of Alan Veda. And he has really played a major role in bringing this project to conclusion. In addition, to ISMP, we have had the help of David States and mark over harsh. We have had the help from Cincinnati's Children's, Mark Frisse from Vanderbilt and Paul Nichols from the VA. And many organizations have helped us in

developing and testing this. By agreement we are not going to reveal who they are, but they know who they are and we are incredibly grateful for all the efforts of a number of organizations to I actually bring this test live. If we could go to page two, Brian, the purpose of this teleconference really is to present project background and an overview of this self assessment methodology that we have developed for the program. And then also we are to review how the work can be used by hospitals and clinics, medication related clinical this is as important in their impassioned and outpatient computerized physician order entry systems. And then also after the presentation we want to have an open discussion. So Brian, if we could move on to slide three, what we are going to do want to this teleconference has been organized in four basic areas. We will review the project background and our view and we will then review what the evaluation methodology, what I call the flight simulator actually does and how it works. And then we will review based on the hospitals and other clinics that have helped us develop the lessons learned. So what can we tell organizations based on our position of taking this test and what implications of which have for medication safety, clinical physician support and CPOE. So we will give some lessons learned. And then finally we will have about 40 minutes for discussion and questions. So, Brian, if we could move to slide four, we will start with the project background. And then why don't you just move onto five. We know that implementing EHR with Computerized Physician Order Entry is a very difficult task. We

know for a variety of reasons that this is probably the most complex

chemical change initiative that most hospitals have ever undertaken. Then

it is complex because of many reasons, security and stability issues,

controlled downtime and integrating multiple systems to make the CPOE

systems work. A vendor reliability and an application availability is also a

big issue. And the commission resistance, how do we get the physician

and other conditions to actually use it? So there are multiple reasons that

this is a very difficult and expensive undertaking. Nonetheless, when we

look at the current instance that your CPOE is probably going on at about

15% of U.S. hospitals and 10% of village were clinics. What is most

important is it is increasing at the back the 50% rate year on year. So this

is something that is having a major impact on organizations throughout the

country many of whom are in the midst of this right now. That was one of

the justices for the tool we are developing which was to help organizations

find the most safe and effective path for medication safety within CPOE.

So if we could move to slide six. CPOE was one of its release standards.

And for those of you who don't know leapfrog really, it is a part of the

Business Roundtable. It is a purchasing group that was developed in 2000

and its group of purchasers represents probably over 130 of the largest

public and private corporations in America. And they control benefits for

more than 31 million patients in the country. So clearly, from the purchase

point of view it is a significant force. Leapfrog has been very interested in

finding ways to report hospitals for improving patients' safety but also

ways to educate employee's retirees and families about success of hostile efforts. So if we cut to seven, the focus in terms of influencing purchasers to focus on key safety initiatives has initially been inpatient based and focused on standards around intensive coverage in the ICU, and the use incentives around evidence based hospital referrals and around in patients' computerized entry. And additionally, we have been very supportive and involved in QF and hospital proxy 56 practice survey in which CPOE is one of the SEC practices. So the test really has been on the impression sitting but we are now beginning to focus on the outpatient setting and has developed a series of ambulatory information technology standards one of which is around CPOE in the outpatient setting and will be addressed as well as the impatient CPOE issues by the tests that I will show you. So if we could move on to the next page, page eight, this pace is out once the initial leap frog CPOE inpatients standard which is three things. First, it required that physicians other providers in inpatient, out-patients and hospitals have more than 75% of medication orders the computer system. The next major requirement was that when providers use the systems they would document the acknowledgement that they had overridden and any potential problem in the system. And the third part of this requires is here was that the CPOE system that the hospital put in place would actually work and intercept at least 50 percent of current series prescribing hairs utilizing test cases and testing protocol specified by the Leapfrog Group which is the test we will be describing today and the test will be available

starting March 1st of this year. That was one part of the standard that had

not arrived yet but will be here as of March of 2007. That is what we will

be focusing on today. If we move to slide nine that particular test that we

are going to be describing today really is based on work that was done by

ISMP and has been worked  on by ISMP for the last six or seven years.

And teaches basic focus was the idea that Computerized Physician Order

Entry by subscribers could be informed by pharmacists Order entry using

Farsi competing systems and hospitals. And so ISMP developed a

methodology which we then used in developing this test to actually test

Order entry in hospitals Farci computer systems for a variety of our

supporters. And if you look down this list you can see a whole variety, six

unsafe orders, that ISMP recently tested in hospital based computer

systems. And you can see that a lot of those our said orders went through

and either not detected or went through with an ability to override and no

hard stop. So it is these types of operations that led to the interest in

creating this type of debt -- kind of test and is this kind of methodology we

use in our flight simulation test. If we could move to slide 10. The

LeapFrog extended, not only in the ambulatory setting,  has focused on

CPOE. It has also focused on the ability of each of the systems to perform

basic health maintenance guidelines reminding. Then that is also a part of

this test that will be peace in March. However, we do not have time on this

call to go into it. This will focus mainly only on medication safety

checking with a computerized physician or intersystems and we will not

talk about what makes sense in health guidelines. If we could move to the next slide, 11 and just talk about the purpose that this evaluation flows. Well, the purpose of it could be easily summarized if you imagine a five hospital system and integrated delivery system that has bit more than $70 million on electronic health records systems to both purchase and implement. Thereafter it is purchased and implemented that electronic record system, how does the hospital now that the system they have put in place actually meets minimum safety standards with respect to medication safety? The other question is, how does the public that uses that hospital know that after the hospital has spent all this money and implemented our system, how does the public know that the hospital is meeting minimum safety standards when it comes to medication safety? So this test was really designed from to perspective. One, it was designed to educate hospital and medical leadership and the ambulatory critical leadership about how they have done after they have lamented their each our systems with respect to medication safety. So provide feedback. The test was also designed to escape purchasers and the public how could a job this hospital is doing when it has spent all this money on the charge and put CP Kobe in place. Said the test is both the public accountability focus and a quality improvement focus. So it has those two perspectives. If we could move on to slide 12 -- and on page 12 you will see but the protests that we will be talking about today at the bottom of the page. This is a voluntary test that is part of the Prague standards which we are all falling to reporting. The

protest has actually been brought into and directly complements the National Quality Forum Hospital of such practices service. That's a practices survey which has been running for a number of years includes the practice of CPOE to read that say practices survey was recently updated and has gone through the approval process and is not directly tied to the standards that I will be describing. So those two standards are effectively linked. In addition, there are -- there is an effort through the certification Commission for health information technology to certify vendor products on the shelf. And that includes CPOE capability. In that particular initiative has been tightly linked with our initiative and that group will focus on vendor products on the shelf. Our evaluation will focus on products after implementation. And then there are other initiatives that the value of information technology capability as part of the paper performance in issues. And they currently do not use this approach, but it is our hope and believe that this will be adopted by a number of paper force initiatives as a way to evaluate information technology. If we could move on to a slide 13, what I am going to talk about now is what the valuation methodology was and how it actually works. We would go to a screen showing you what it looks like and what it is like to actually use it. With that we can move on to slide 14. And on page 14, it really shows the principles behind this CPOE flight simulator as we call it. First, there are a number of principles that we were absolutely insisted on. First, this test release should evaluate common sources of harm. So we were not

interested in just creating a test of the ability of the systems to intercept

medication errors. We were interested in the medication errors that

actually do harm. And we used our expert panel as well as the literature to

understand the sources, frequency and severity. The other part of this test

was we wanted to encourage quality improvement. So therefore the

feedback as you will see the ledger we give hospitals.

In addition, this test also provides advice about news as alerting. That is a

common problem in these systems where we put too many dollars in front

of health care providers so they begin to endorse them.  So the critical part

of this test is giving feedback to an organization. Are you overloading?

The third principle was to the century deposit. So in addition to focusing

on medication errors in the case in 60 years, we also built the test

capabilities to deal with problems of a mission and we treated in the test

the ability to evaluate effectiveness. What do I mean by the effectiveness?

It could evaluate the capability of a system who admits a patient with

acute myocardial infarction to remind the patient that they don't get

Aspirin. So we went far beyond the traditional focus half the distance to

offer concessions to the broader focus on the missions as well as a broader

focus on effectiveness. We move onto a slide 15 so this each R flight

simulator is self–administered, self-assessment tool that is accomplished

by the use of the web application. And hospitals and clinics will access

this through the web site. And it will offer separate tests for inpatient and

outpatient, pediatric an adult. And it will basically use flight simulation principles to create highly scripted test patients in areas and test orders that are applied to the scenarios to evaluate and organizations implementing an Electronic record system. And it will collect information in terms of the response of local each our systems to these test scripted patients and orders. And the feedback to the website will allow the calculation and presentation of an overall evaluation as well as highly detailed feedback to the organization that could be used for quality improvement. In the test includes about 12 different categories. Nine of them are focused on potentially dangerous errors of medication use and then three of them are focused on the more broad area of effectiveness in the use of the systems. So that forms the basis of the test. If we could turn to slide 16. So when organizations take this test, they will receive immediate feedback. That immediate feedback will be an overall score, aggregate score for public reporting. Then there will be an individual site performance or that is highly to tell by order category and organized by sensitivity and specificity. What we mean by that is that the scripted test includes a number of unsafe orders, sensitivity will be the number of unsafe orders in terms of percentage of the organization picked up. Specificity would be addressing the issue of misses awards which would be how many of the, if you will, normal orders were picked up. So we would get feedback on sensitivity, which will not be made publicly available. That will only be given back to the organization which takes the test. In addition, the test

will have an inventory Persian testing health menace prompting which we will not have time to go over to it. So if we could move on to slide 17 this logistically of was how the test works. Hospitals and clinics will log on through the Leapfrog. They will use a password and security through that with such. And then they will basically be asked in what kind of tests they are taking. And we had decided and found out through all of our testing that all organizations will take a sample many test first that will not count. That is so they analyze the systems and flow.  So before or as a state the real test there will be asked to take a quick sample test so that they understand all the issues required. An answer to five after they have taken the sample test  they will then go on and take the real test which will start by out money where they are taking an inpatient, outpatient, adult or pediatric test and then will continue after they have answered  those questions. They will be given a list of scripted test patients that they are expected to enter into their system and will be given a fixed time for that. Then after they have entered them in the system they will go back to the web site and they will be given a series of tests -- highly scripted test orders the unexpected this test patients that they will be asked to enter into their system. And as they enter into those, they will be asked to record what kind of system response they got. They will then be asked, the hospital or clinical to report the results on worksheets that they get from of such. You report that back and then you get scoring as we all went before. An overall score and then one in each of the categories. Said that is the

logistic of the test and the next several slots are actually the screens. Organizations will log on to the Leapfrog website and they will register themselves. After they have registered themselves, there will be given the opportunity to select which test they are taking. As you can see on the screen, page 18. And then if we go to slide 19 after they have said what kind of test they're taking, they will then be given a series of scripted test patients to download  and enter into their system. You can see a blood test suspicious on slide 19. And then after -- and there will be given a specific time period in which to accomplish the task. After they have entered the scripted test patients into their system they will -- on slide 20 will then enter those test patients into the system. They will be given a series of test orders that are highly scripted and blinked back to those test patients to enter into their system and then will be given a worksheet that they can record how the system responded when those tests orders were entered against the scripted test patients. And then come on slide - going back to the web site with their worksheet and enter into the web site for each order they entered what was the system responds. The system response will be measured and very specific ways based on the order. So as you can see in the first order it will ask to collect the system give advice on information on medication dose limits. And for the second medication, did the system give advice on allergies to medications? So in the feedback we will be very interested in specific advice the system gave for each order. So it will be for each order. It will ask very specific questions about what type of

device was given for each order injured. And then we can move on to slide 22. And after that his injured back into the web site, virtually instantaneously the organization will give feedback on how they did on the test. And that she back will be an overall score in the form of the program where you can see in the middle of the slide in says your total score reflects. And that will be a score for revocation checking, inpatient or out, is four for health maintenance. So it could be a variety of different course. And then underneath it will show the organization what the score means in terms of criteria. The overall score is the only thing that won't be publicly reported. Above that, one can see detailed oppression for each category of the test of how the organization did. That is outlined by Bill Spencer -- sensitivity and specificity. So that information will go back to the organization and will be used primarily for quality improvement at the local organization. And where there have been some really severe orders, dangers orders that when not picked up as a part of this test would be a little red after as you can see about single. And then at the bottom Dickensian read that the organizations that took this test except the following order which could have caused very severe harm. So it will also call out specifically orders that could cause potentially very severe harm that the organization did not pick up. Once again this is for quality improvement purposes. Why don't we move on to slide 23? We have actually run this test at probably over 70 different organizations around the country. And based on all the testing we have done, we made some

observations that we wanted to share with you in terms of, if an organization were to take this test of what the implications would it have for their medication safety approach is built into the EH hour system that they have implemented it. And I think what all the organizations have taken the test have felt is that the tests revealed some deficiencies they knew about and also in some cases, they did not know about. Indeed, we have been in situations where we have administered the test and organizations were able to order fatal orders and what all the way through the system even though the organization's top checks and balances were still active. And what we learned along the way it is these are very complex systems they are always getting upgraded and there are many difficulties to the system. What we found partially is these upgrades can often have the unintended benefit of turning off certain basic safety checking within the systems and the organizations would not be aware of it. So every organization we have tested this out has uncovered things that they knew about and other things that they did not know about. So based upon their experience we thought we might share with you how this test might impact clinical decisions board for medication checking at organizations. And why do we, go to page 24 if we could. What we have outlined here is based on the testing in a number organizations some of the lessons learned. I think one of -- and they are really summarized here and then you go into the details. One of the first things that has become apparent is the importance of becoming an expert in all the clinical

decision support for patient safety that one has available. We have been to many organizations where they didn't realize they have a lot of committees that they could be implementing and have not. Another approach that we found very valuable is the order categories from the test can form a patient safety approach for medication safety for the organization. And so a number of orders we have been to the end of the test and can use the older categories of medication drug interactions etc. and different order categories and how they've done it to actually form the basis for an ongoing patient safety program. I think the other issue we have pushed with this test is how important it is to have a coherent clinical support strategy. And then I think an extension of that is developing an overall strategy to manage clinical decision support on an ongoing basis. We will go into each of these individually. Brian, if you could move on to slide 25 that would be great. So it highlights the importance of becoming an expert in clinical support. If you look on this lot, clinical decision support can go far beyond that. And if you look on slide 26, I think it makes it even more clear and specific, all of the different categories of clinical decision support for medication ordering they could be taken advantage of. We only emphasize this because in many of the places we went to in the past, one or two of these categories but didn't realize the use all as a way to impact the safety of medication ordering within the system. So I would just encourage people to think far more broadly about clinical decision support than just rules and supports. If we could go to slide 27,

the second major category is the number of organizations that have used this test to basically create a patient safety initiative brought medication safety. How did they best utilize clinical decision support within the systems to reinforce their current efforts to reduce the adverse drug amounts? Where were clinical physician support allowed them to target additional types of potential adverse drug events and then finally, how do they accommodate the added tools for potential decision support formulary checking into how they organize and conduct their overall patient safety program? So I think one of the lessons learned here is this is not just about the HIT but understanding of a broader, more strategic approach to patients' safety. Slide 28 begins to look and reviews these categories to gain. These are the categories, if you will, of the test on page 28. To build an effective clinical decision support for American society. And these categories include therapeutic duplication. Can our system pick up an order? Select allergies, can our system pick up for instance, an order for medication for a person who is allergic to penicillin? Can our system easily pick up when an order is placed for Tylenol to be given intravenously to give drug interactions? Can our system pick up important drug interactions? And then on the next slide, it is more of the categories from this test began to move beyond medication safety. The first category at the top of the space is, could our system pick up a something based on diagnosis? Could this system take up a contraindicated dose of a medication based on the patients' age and weight? The sample of this will

be ordering an adult dose for a newborn. So a lot of the pediatric based testing would be critical here. Then another category here would be picking up contraindicated does that is based on laboratory studies. Could the system pick up the problem in ordering in normal adult those of the medication like an antibiotic in a patient who has an elevated number? So could the system be smart enough to alert doses of drugs that are to be altered for renal dysfunction automatically? And corollary orders, the idea here being, could the system remind us to order things that are important? Does the system prompt for a level? The more complex could be if a patient has an acute myocardial infarction, does it remind the care providers that the patient is on aspirin or does it remind you for the first dose of antibiotics within eight hours? And then finally, cost of care? Is the system capable of providing advice about the cost and duplicate nature of the interventions? So, can it pick up due to test workers for laboratory values, medications, even, can it evaluate different possibilities as part of the order interventions? So these are the categories of the test. And lots of users have used these categories after they take the tests to develop a more comprehensive patient safety strategy. If we could move to slide 30, the next major focus is developing a clinical physician support strategy for CPOE and the electronic record rollout. This is really all about building an effective clinical decision support strategy that is based on the overall safety and quality agenda of parties from the organization but the target, the focus, for areas of risk based on harm and gets a realistic appraisal of

the readiness for adoption and critical options of this. If I put too many clinical physician support alerts as reminders up front of a service – physicians will not use it. And then also dealing with the policies and approach about where our stops need to be put in the system. I think there is a lot to be learned about how a system be used most effectively to get care. And then finally, the importance of physician leadership and being involved in creating this critical strategy because it will impact many groups in the hospital. And then also at Slide 31, if you could move ahead assigning individuals or groups as possibilities to manage clinical decision support on an ongoing basis and to measure them creating a small group of people that understand goals and needs to get there. The number of places after taking this test have created clinical physician support portal. This provider is there to set up testing roll out and updates. And I found that this probably is a very useful tool because it gives some idea to the organization of how often these alerts are firing and how often physicians respond to them. So this becomes very much a living guideline, if you will, in terms of clinical decision support and there needs to be some way to evaluate it on an ongoing basis. And then another critical part of this is the timely update of third party reference databases that play a key role in this type of decision support. Slide 32, if you could move on to that, is very important to actually collect measures that represent the targets of clinical physician support. So how are we measuring their impact of outcomes and in every use of medication. And these are critical because if

one organization finds they are not making benefits of their clinical support system, they may have to opt out of it. This has happened a lot in organizations and initially started with fairly weak messages of the reminders now and then found they had to get much stronger and learn how to actually change. And then I think it is also critical to test new applications and to retest over the application as a critic. I can tell you the number of organizations we have been to where critical aspects of clinical support were turned off accidentally as part of an upgrade in some part of the system. This seems to be an ongoing fairly serious problem. Now, given all of that, what did we learn as we tested this and all the leading vendor products and in numerous organizations brought the country about what categories of clinical tests and support are either available or being used. And I think what we learned in this process is that we are still fairly early on in the process of developing sophisticated clinical support tools. For instance, the order category there to pay attention to, we have found that in most it is still available, it is often not used because it is so crude and time-consuming of the part of providers that many organizations turned it off. It is a very important part of medication safety as well. We also found in terms of selecting, to those of us that although that function is generally available with any vendor products, it is often not used because once again it requires an awful lot of time and is not for practically oriented and over alerts an awful lot. In terms of allergies and vendor products, we found that a good decision -- physician support is

generally available and used. In terms of contraindicated administration, we found that this is often not available in most vendor products which often does not exist. In terms of drug interactions, we found that most products are generally available. And then how about checking for age and weight? Often that is not available in many vendor products. Adjustment for renal function as a part of the order is generally not available to both inpatient and outpatient. In terms of the category of corollary orders, we find that within vendor programs it is sometimes available for individual medication orders but often not used. Sometimes, this is used when an order says, but generally this is not something with a major focus. And then, in terms of duplicate checking and cost issues, we find that this is sometimes available but generally not used. So these last two slides really outline what availability and use of these capabilities within inpatient and outpatient vendors. It does raise concern a little bit. But this is something we will be focusing on in future publications. So if we move on to slide 35, an overview of the self assessment methodology that we developed and to review how this work can help hospitals and clinics in implementing medication related decision support and inpatient CPOE and ambulatory EHR. We were not able on this call to review the health maintenance tests that we developed. That will have to be the subject of another call. And what we also wanted to do on this call was have an open discussion which we will get to very shortly. If we could move on to slide 36 for additional information about the US, one can visit

the leapfrog website. One can visit the AHRQ National Resource Center. George said. All of these have information about this particular tool. And then there are a number of publications about these tools that have already been published and hopefully will be coming. So I have listed here the information that is currently published about these tools, several of these represent papers that have been published quite recently. And these are currently available. The papers are summarized here. I will leave the screen up so that you can copy down these references and go after them. The reference -- the last reference on the list has just been published in The Journal of Patient Safety. It is in press this month. The other papers are already out and we have a number of other papers that are coming on the evaluation of different aspects of this test over the next two or three years, but the ones you see on screen are the ones that are currently out and can be accessed in journals. So with that, I think I will leave this screen up so you can copy down these papers and then maybe I will turn it back to Carol and we can start handling questions if that would be okay.

Carol          Thank you. That is really wonderful. Again, this is Carol. And I am seeing here that we have about 250 people on the call. So I hope we will have a lively discussion for the next 45 minutes. On the panel available to answer your questions are myself and we have Brian. You will be able to ask questions both by raising your hand and by using the chat functionality. So

I will ask Brian from the National Resource Center to walk us through procedure , about how we can do the question and answer.

Panelist          Absolutely. Thanks. So as Carol alluded to there are actually two methods to ask questions. The first is the chat feature. I have noticed several questions coming through. Please do feel free to use that. Just make sure you use the drop down box to indicate you want to send your question to our panelists. That way all of our panelists can see the question so that they can respond to it adequately. The second way that you can ask questions is by raising your hand. And over to the right-hand side of the screen, you will see the information about the number of participants and your name. You will also see a little icon that looks like a hand. If you click on that one time, you will raise your hand and if you click on it a second time, you can lower your hand. Please feel free to use either method and then our panel will respond appropriately. So would you like to take a text question or verbal question first?

Before I do that, many folks have asked whether the slides from today's session will be available to keep, yes, both the slides will be archived and will be available at our web site, you will see this on your screen. There is a question. Please indicate the number of French and other European or international organizations that have participated. And I'll ask the panel to answer that.

Yes. So far we have not had any international organizations, but we have had an awful lot of interest from the U.K. in helping develop a version of this for England. And we have also had a lot of interest in Canada for developing a version of this for Canada as well. But today nothing has been developed.

Carol          All right. And I will sort of go over a couple questions about the implementation timeline for the LeapFrog evaluation tool. And I think, in general, that there is a great deal of interest on the part of the audience of whether or not there would be able to use it and access it.

Panelist       Yes. Carol, this is stated. The test will be made available March 1st of 2007. And it will be accessed through the leapfrog website. And organizations that wish to participate in the leapfrog evaluation will be given access to the test assuming they meet minimal criteria and assuming they are willing to allow at least an overall score for the test to be posted on the side. The criteria for taking the test are currently being developed now. Clearly any hospital that has put in CPOE will be able to take the test. And this would be both the inpatient test, outpatient test, and some health maintenance test that will be available as of March 1st.

Carol          Brian, are you ready for us?

Brian            Yes, I am.

Carol            The first question comes from participant. Are you there?

Participant      Yes.

Carol            Go ahead with your question.

Participant      Well, great presentation. Thank you. You have talked about misses and
                 how crude the system sometimes is. Is there any work that has been done?
                 We are in the process of implementing our CPOE and I would like to
                 know how I plan to pass the test? How do I study for the test before I
                 implement it and maybe to do as well as I would hope to.

Moderator        I will turn that over to Jane who has focused a lot on this.

Jane             Well, I think that first of all, all of the things we have mentioned in the
                 presentation, you will influence where you decide to focus. We said, you
                 need to relearn the decision support tool set in your vendor product. I also
                 would advise you to look at one of the papers that David has listed up on
                 the screen as a recent paper that pretty much reviews category by category
                 the medication order categories that are in the test and can give you more

of a sense of what the state of the art is. We have also said that you should

be working closely with your patient safety and other committees to be

focusing on what the highest priority areas are for improvement in your

hospital -- most people tend to think that if you start with some of the

basics and get those under your belt that is really good. And usually that

definition of basics includes drug allergy and drug interaction checking at

a minimum. Anything else  to add to that?

Panelist          Thanks. Yes, I would say that there are the publications that are listed on

the web site. When we first looked at this call, we were looking at the

ability of pharmacy computer systems to check some of those orders. And

With our publications that we put out every two weeks in our acute-care

newsletters, monthly in our ambulatory newsletters, we actually hit upon

what are those errors that actually cause harm. And these are things that a

lot of the focus should be on. I think you could use some of the supporting

materials even if you go to our web site. We are looking at some of our

publications and the service that we did both back in the late 90's. These

are actually on there to give you a feel for what within those categories

you should be looking at.

Thank you.

Moderator          While we have you talking, could you talk a little bit about how do you

envision this fitting into CCHIT?

Panelist       Yes. I think it is important to realize that this self assessment methodology that David presented is complementary to the certification process. The certification process will eventually be moving the industry, but by requiring that vendor products to do certain things -- and it will include the area of clinical support. The certification is really focused on the vendor product. This self assessment is for hospitals who now are using a vendor or possibly a homegrown product and want to look at where they are relative to where they might hope to be in terms of using all of these tools in the interests of medication safety. So I think these two combined will move the issue forward. We should over time have products that have more robust tools, more flexible tools, more usable tools, but we also will be looking at how those tools are affiliated. So this is really looking at a different stage of all the different areas that contribute to medication safety. It is looking at the product and also the product as it has been implemented and is being used.

David          I will be stepping off. Thanks.

Moderator      Okay. Thank you, David. Brian, I am getting a lot of questions on the chat. So I will go ahead unless I hear from you. Actually, there is no one in the queue who's hand is  raised. So go ahead with the chat.

All right. Since so many of the decision support functions are generally not available, does this impact the testing results you describe in this presentation?

Participant

Actually, some sites, even areas that we have said are not generally available in products, there are signs that have done extra programming and have built site applications to do some of that. So this is it not totally available. You know, I think we are all challenged to move and make progress on a number of fronts. The combination of certification and this process that will make hospitals more aware of where they are on this continual and what public areas they are maybe not able to address. Presumably, they will turn to their vendors with request. Vendors are always evolving their products. And I think hospitals will be getting better and better at using these tools. The direct answer to that question is, no, it will be as David described it. And the panel of experts that has been working with us has taken into account prior question - what are the basic and advanced features that are more difficult to do today?.

Moderator

Let me add three questions that are related. One question is whether you are finding that vendors are listening to your needs in the process and the other question is, have they been participants in the development of these tests? And finally an optimistic question, when can we see improvements?

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| Panelist | Well, I think vendors are always improving with more and more focus on patient safety. They are paying attention. To be clear, our process as we were developing this tool, we have been going to quite a large number of implementation sites and learning about the tool sets and the extent to which they are being used by implementation sites. Because that is really what our interest was, vendors have been extremely helpful in opening doors for us and helping to identify sites and we are making pretty aggressive use of available tools created. I just want to make it clear that we have not been directly working with vendors, but rather implemented products. |
| Moderator | There will be a feat in whether researchers will be able to use it. I think my initial answer to the panel is that some of that is still being determined and that interested researchers can get directly in contact with us here so that we can figure out what those arrangements may be. But as far as I know these arrangements are still being determined. Is that your impression as well? |
| Panelist | Carol, this is on the money. |
| Panelist | Right. And leapfrog has been actually obtaining some data on CPOE type questions in their survey for the last couple of years. This is on where some of the hospitals are live. |

Panelist          It will just overall give us a better idea of how many folks actually could

                  test this within the first year.


Moderator         There is a question about, we are building a single CPOE system for our

                  multi hospital system. The clinical decisions system would be uniform

                  across all of our hospitals. So the question is, with each hospital should we

                  independently trigger the evaluation process and would you expect all the

                  sites to have similar results?


Panelist          Well, the second question is easier to answer than the first. If the sites

                  have the identical sets out in formulary, I would expect that they would be

                  similar as long as they have identical clinical decision support applied

                  across each campus. Then they should have the same -- they should have

                  the same result. As to whether all five hospitals would have to take the

                  tests -- this is an assignment that I'm not sure the group has thought of yet

                  in terms of the public reporting. I think the questionnaire has raised an

                  interesting issue for the prior to consider further.


Alan              Let me just add one thing to that. This is Alan. I would say it probably

                  would be a good idea to do it individually because when we go in the

                  health systems although they may have the exact same system across

                  three, four, five, six hospitals and they have the same capabilities across

the hospitals, oftentimes, there are some little nuances where individual hospitals may have something set up a little bit different or may not have something turned on. I think we heard Doctor Clausen that a lot of this is individual based on the hospital. So it will be something for leapfrog to consider, but it probably would be a good idea to look individually at each hospital because there may be a surprise.

Participant          ??

Panelist          That will really depend on decisions yet to be made by the front. As I'm sure everyone is aware; leapfrog CPOE is that physicians are directly entering orders. Since the order categories that were developed based on the literature and a lot of practical experience and unpublished information from our advisers, since those categories are public knowledge, people can actually do a lot of reviewing. What they have done today and actually do, I think, a lot of work in advance of taking the test.

Participant          All right. I have a question about how the score is reported. Where is it reported publicly and with what type of explanatory information is included? I think there was a little bit of discussion during the presentation, but maybe one of you would like to elaborate?

Moderator          Emily, do you want to take that?

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| Emily | Sure. Right now as we mentioned, there are two scores. There is the inpatient and ambulatory for medication ordering - you receive a percentage for each order category for medication orders which is yours. As you enter your results, you instantaneously receive the percentages. And then also on the inventory side, you also receive the specific percentages for health maintenance that were mentioned. Now, the second half of that is to the part of that is to benchmark against. And then still up for debate this, similar to the patient safety evaluation, that the process we are now using, that the methodology will have an overall score that would be reported whether that is on a leapfrog website or somewhere else. And also in thinking you know, how do we -- what is the meaning of that overall kind of thing? So there has been a lot of discussion and around where the public report could be. And also, what happens when a site may not complete the evaluation or self assessment? |
| Moderator | Emily, while I have you on the hook, is there a way to retake the test? What are you thinking in terms of helping an organization progress? |
| Emily | Well, right now the way the software works will allow you to take a sample test for medication ordering. So you are sort of coming into the actual test prepared and once you decide to take it as a very important. Now, when you take the test there are very specific areas of timing. Each |

process has a different time to it. If you go over that time we ask you to come back to take the test to gain over X amount a period of time. So you can't take the test every day. There is a certain time limit. You have an allotted amount of time to get. You come back to the application and receive the orders. You have to adhere to this time. If not, you get kicked out of the software and process and sequence and are then asked to come back within a certain amount of time which again, you can see some of the actual timing issues.

Moderator

I'm going to tack on to this another question about whether there is a tool for people who are beginning to make sure that the CPOE is as safe as possible. There are tools during pre-implementation, but is there a possibility for organizations to use this tool during implementation?

Alan

Right. And this is Alan. There is information even within some of the literature that was put up an on our web site and some of the other web sites on the orders that have caused harm, orders that have been fatal. So if you go through the literature and look at some of the patient safety information, there are things that hospitals could do to test some of those orders.

Moderator

Alan, there was a question about whether a hospital should focus on this tool versus the ISMP tool. Do you have an opinion about that?

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| Alan | I think they should look at that as a baseline. This will see how they're doing. |
| Moderator | Continuing all in the vein of the test, there are some questions about how often the test will be updated? |
| Panelist | Well, there are a number of areas of updating that need to be considered here. There is one that the leapfrog intends over a period of time to raise the bar on scoring. They have said that from the beginning. |
| Panelist | Both of those will need to be refreshed and expanded over time so that there is constantly a group of new orders of the same type for hospitals -- for it to be sorted into the test order service for individual hospitals. Over time, you know, there are always new medications. Some go off and are no longer used. So as the test orders are being updated the same advisers who have been so invaluable in developing the test so far would help to ensure that we are staying current on that front. Obviously at some point there could be a whole new category of problem orders identified that could be addressed through decision support. So, should that happen, obviously the order categories might be updated. Immediately, there will be updating of the test orders. Some of the others I mentioned are probably longer term. Alan, do you have anything to add to that? |

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| Alan | No. I think he handled it. The advisers and those of us that have been involved with this do have plans to stay actively involved because we know it is going to have to be maintained and there is going to have to be updates to it. There also has not been, as Emily said before, the time period of when you can retake the test. That really has not been decided. Can you retake it in nine months or 12 months? So even within that, once we start getting into retesting times, there is going to have to be updates. Even our development of the order content, we pulled out orders because the drugs will no longer be available. So it meets a review pretty often. |
| Moderator | I am going to jump in here broke. I just want to do a quick time check. We are just past the hour. We still have 10 minutes for discussion, and I know that there are some other questions that need be answered, but I want to go ahead and open the poll and ask our participants to complete that. |
| Alan | Sure. There is a question about how you account for user variants in taking the test. And I know that for this phase of the work, the folks on the panel and the folks at leapfrog have been a really excellent about technical assistance for those taking the test. So maybe if you want to answer sort of how you predict you handle users in terms of people who are taking the test, well, I think we have bent over backwards to address the reliability of the tests and the design. We have mentioned several times about how we |

actually run through the test. We have also run through the test orders. And now all the test orders -- not just these subsets that the hospital would get when it was actually taking the test. And we have done a formal reliability and validity tests on quite a large scale that resulted in eliminating some orders that were -- it was difficult to describe the order in a way that users taking the test could reliably interpret as intended. We have done things like take out medication orders that were not consistently on formularies of all the many sites that we have visited. So the plan is that there will be a help desk, but as Emily mentioned, the practice tests which is built into the process since -- this really is not very complicated. You have a set of patients to set up, test patients set up in the system. And then you have a set of orders to enter against those patients and you have scoring sheets to use. And we have really cut through all of our reliability and validity testing. The sample test is going to be, I think, important because it allows the site to get a sense of this process before actually -- before actually doing -- before actually doing the test.

Participant     As a lead into the next question, I just want to congratulate this group here for all of the work that they have done getting this test and tool and the whole approach. And I think I could characterize this as sort of a beginning of starting to make people aware of this methodology. So the question I am getting into is whether there has been interest from the

World Alliance of Safety or have other major organizations expressed interest?

Moderator    We are a little bit handicapped in that David is no longer on the call today. He mentions there have been quite a number of inquiries, and unfortunately he would be the last word on whether that particular group is aware of the tool. Even through this web cast today and certainly as the tool is released it will become more widely known. And I would not be at all surprised if there are inquiries, whether they have happened already or not. Unfortunately those of us on the call cannot say.

Alan    This is Alan. I could only mention from our personal experience. We do a lot of International work. And we put our ISMP up in Canada and Spain. So just from our organizational experience David would know a lot more about specifics. But I know that there is an international interest.

Participant    I have a quick question and a more in-depth question and then we will close it out. The question would be, what criteria we're used to choose the hospitals that participated in this first phase, the test of the test?

Panelist    Well, all of this activity over the last four years has involved actual implementation sites. And the criteria used were always that we needed sites that had employed CPOE and were really aggressively using clinical

decision support - these would be good test sites for our purposes. We identified many of those in conversations with the vendors. Sometimes it was through our knowledge here but the major criteria, are they -- have they been using it and have they been at it long enough they are really getting into decision support? Another criterion was that we did need to include some pediatric hospitals to help us with the pediatric push of the test. For the reliability and validity testing, we needed hospitals that could give us enough test sites that were using the same software. Finally we needed sites that were willing to delegate the time and energy to set up test patients. But those are the criteria used.

Panelist                The leapfrog test is not just looking at work categories that involved as the medication order itself. But it includes decision support that requires factoring in the patient age and sex and diagnosis. So we keep saying medications here, and that was the focus of the orders, but it actually does require obviously that this information -- other information about the patient is available for other categories.

Alan                    That question on the drug information vendors -- work from what we have seen more and more is that many of these drug information vendors are actually giving the availability to make individual changes and a lot of the alerts that you may get is for the individual drugs or drugs categories. What this does is it makes a tremendous amount of work for the individual

hospitals to actually go in and look at all of these and to maintain it. But that is one thing that the majority of these vendors know to give the hospital the ability. So they just want to say that, we are going to look at category three alerts, but even within those categories, we want to make some more specific recommendations to giving the hospitals the ability to do that.

Panelist        If I could just add a little bit more to what Alan said, there is actually quite a bit of attention being focused on how to get this all working better.  I know it has been the subject of a number of conversations at various times. One of the articles that David referenced that recently came out in actually has recommendations for each order category for the implementation.  So I think in answer to the question there is growing awareness.

Moderator       So we cannot thank you for being on this call, but I hope that you will join me in sending waves of gratitude toward our panel for being here today and for doing this important work. We invite you to also attend future teleconferences through the National Research Center for Health IT. And I will turn the teleconference over to Brian at this point.