NATIONAL QUALITY FORUM

Moderator: Jason Goldwater
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Operator: This is Conference #82818259.

Jason Goldwater: Thank you very much and good afternoon to everyone. Happy New Year. Good afternoon to everyone. Happy New Year to all of you. We are delighted to have you all on the call today. And we began to discuss the findings from our environmental scan. My name is Jason Goldwater. I'm the senior director of this particular project as well as the senior director of the National Quality Forum.

Today -- if we could go to the next slide -- today's agenda will be specifically (focused) and directed by the National Quality Forum as we will go ahead and review the results of the environmental scan that we've been conducting over the past couple of months. In future meetings, there will be a lot more involvement from our two co-chairs, Mark Savage and Rainu Kaushal.

But traditionally, NQF has always started its projects with the fairly comprehensive environmental scan and has reported the results out to the committee, particularly when it involves the development of a measure framework. Our agenda for today is we're going to recap the environmental scan methodology, the process we used to conduct the scan.

We'll go through the literature review of both the methodology and the results. We'll talk about the major themes of the literature. We'll talk about some of the measures that we examined as part of the methodology as we (told you) in the orientation call. This project has two parts of it.

One is environmental scan of the literature as well as an interview with select (inpartments). And the next part is the selection of measures that could be viewed as interoperability sensitive that would be included in the framework. We have done a very initial task of the existing measures.

We will talk to you about just the results of that initial cause. We'll talk about the relationship of the environmental scan to the measure of framework, and then we'll also then talk about next steps, as well as opening this up to public comment as this comment was most, if not all, NQF projects.

I'll now turn it over to our Project Manager, Hiral, who will be doing the roll call. Hiral?

Hiral Dudhwala: Hi, good afternoon everyone. So I'm just going to go ahead and call your name, so if you can just let me know if you're here. Julia Adler-Milstein?

Julia Adler-Milstein: Here.

Hiral Dudhwala: Thank you. JohnMarc Alban? OK. A. John Blair? Chris Boone? Jason Buckner? Hans Buitendijk?

Hans Buitendijk: Present.

Hiral Dudhwala: Thank you. Kimberly Chaundy? Sarah Dinwiddle? I'm sorry, Dinwiddie?

Sarah Dinwiddie: Here.

Hiral Dudhwala: Thank you. Mark Frisse? David Hirschorn?

David Hirschorn: Yes.

Hiral Dudhwala: Thank you. David Kaelber? Rainu Kaushal?

Rainu Kaushal: Here.

Hiral Dudhwala: Thank you. Terry Ketchersid?

Terry Ketchersid: Here.

Hiral Dudhwala: Thank you. John Loonsk?

John Loonsk: I'm here.

Hiral Dudhwala: All right. Terrence O'Malley?

Terrence O'Malley: Hi.

Hiral Dudhwala: Frank Opelka?

William Rich: Hello.

Hiral Dudhwala: Yes?

William Rich: I'm here.

Hiral Dudhwala: OK. William Rich, thank you. Robert Rosati? Robert Rudin?

Robert Rudin: Here.

Hiral Dudhwala: Thank you. Mark Savage?

Mark Savage: Here. Thank you. Sorry to be joining late.

Hiral Dudhwala: OK, thank you. Theresa Settergreen?

Theresa Settergren: Here. Settergren. Thank you.

Hiral Dudhwala: OK, sorry. Jason Shapiro?

Jason Shapiro: Here, thank you.

Hiral Dudhwala: OK. Thank you, Jason. Bruce Sigsbee?

Bruce Sigsbee: Right here.

Hiral Dudhwala: OK. Alan Swenson?

Alan Swenson: I'm here.

Hiral Dudhwala: Steven Waldren? Mariann Yeager?

Mariann Yeager: I'm here.

Hiral Dudhwala: OK. Is there anybody's name that I missed from the committee who just joined? OK. All right, thank you. Back to you, Jason.

Helen Burstin: And Hiral, its Helen Burstin. I just wanted to let you know I'm on the line as well.

Jason Goldwater: OK. Can we move to the next slide please, the environmental scan overview? We are going to discuss very briefly the methodology that we used for the environmental scan. As most of you know that have been involved with the NQF projects in the past, almost all of them start off with a fairly comprehensive environmental scan.

We use the environmental scan to assist in the development of a measurement framework that will address the extent to which interoperability is occurring, and how it impacts key priorities and outcomes, as well as supporting a learning health system which is both consistent with the national quality strategy as well as the ONC roadmaps interoperability.

The environmental scan identify key drivers and concepts to measure interoperability, where the majority of providers across the care continuum and individuals can send, receive, find and use essential health information to expand the settings across which interoperable health-related information should flow, which would include non-health care settings, emergency medical services and public health, and then finally the ways in which interoperability supports a learning health system.

Next slide. In order to come up with the environmental scan, we had to develop of a set of research questions which we did in conjunction with our partners at ONC, ASPE and CMS. The research question for how a measure framework can be developed that specifies places and settings beyond hospitals and physicians.

How a framework created that will develop new quality measures that will help evaluate the impact of interoperability. How the framework can be created that identifies existing quality measures which identify key processes and outcomes of interoperability in a logical, unifying and strategic way.

And finally, what implementation strategy will provide system-generated data to populate existing and new quality measures that can be enhanced through interoperable data exchange? Next slide. Before we move on, if everyone could please mute their phone, there is some background noise that we're hearing that might be disruptive to those that are listening in. Thank you.

In terms of the literature review, I'm sure a lot of you have experience in doing this. We identified existing terms and issues applicable to interoperability through the literature and ideas to facilitate what should be included in the measure framework and how to clarify it though specific domains.

It's important to know as the world of interoperability, as all of you know, is incredibly large and there is certainly a wide breath of literature and discussion on this process. But what we were specifically focused on was to identify terms and literature that really focus on helping us develop a measure framework.

Some of the sources that we used were comments and ideas generated by respondents to the ONC Request for Information on potential measures of interoperability; reports that were issued from the Agency for Healthcare Research and Quality, ASPE, as well as future reports and deliverables to the ONC that will provide information on different facets of interoperability and its benefits within both health information organizations as well as Health Information Exchange.

And then published studies by researchers, some of you may have noticed your own article being cited in the literature review, who have examined the utilities and benefits of both health I.T. and HIEs on outcomes of care. The focus really will be on the use of interoperability and how it has affected clinical processes and outcomes.

And that's important to know. There are, again, a lot of articles in interoperability, many of which are extremely technical in nature. And while we could have discussed all of those, what we were really looking for -- and I'll get more into this as we discuss our inclusion and exclusion criteria -- was really to look at the assessment and impact of interoperability on quality of care, whether quality of care process or an outcome.

Next slide.

Theresa Settergren: Excuse me. Can I break in for just a second? This is Tess. Do you want -- do you want comments now as you go through the slides or would you prefer that we wait until the end?

Jason Goldwater: I think we'll probably go through the presentation and then I can take questions.

Theresa Settergren: OK. All right. Thank you.

Jason Goldwater: You're welcome. In order to be able to classify the information that we had, we came up with four domains of information. Again, in consultation with our colleagues at ONC, ASPE and CMS, these four domains were measures of interoperability beyond the health care continuum.

Interoperability enabled processes or sensitive outcomes; system-generated or reported data sources for interoperability measures; and finally existing measures of interoperability or interoperability sensitive outcomes, and some of the potential information that could be included in each one of those domains.

There were some articles that were a clear alignment between what the information of the article contained and the domain of information that fell into, some that stretched across two domains and some that were a little ambiguous about what domain. We really looked at specifically evaluating what was being examined in the study and what its impact was on that outcome in order to determine, to the best of our ability, what domain it should fall under.

Next slide. The methodology, the timeframe that we use, we started for the articles from 2005 to the present day. Why did we choose 2005? There were a few reasons. The first is -- some of you know because some of you have been the authors of these -- there have been systematic reviews of literature that have already been done, and we didn't want to be duplicating effort.

Secondly, we wanted to focus on articles where the following had already occurred. There had already at least been a draft functional model of an EHR that has been created, which it had been done by HL7. We wanted to already talk about the impacts of high tech and the amount of money that was funneled into the health care industry, particularly health I.T.

The advancement of ONC with respect to Health Information Exchange; there are strategic health advance research project initiatives, the regional exchanges, information centers and so forth. We really wanted to focus on making sure we were getting articles and encompass all of that.

We went through a lot of keywords. And again, working with our colleagues, came up with a standard set that we then applied in order to retrieve the number of articles that we eventually came up with to score. We then took the articles that we were able to retrieve and scored them by combining the results of five very distinct criteria, with each criteria score ranging from zero to two.

If the criterion completely satisfied the article would be scored two, semi-satisfactory results were one, and dissatisfactory results incurred a score zero, articles receiving a total score below seven were excluded from the study.

We believe that those that were seven or above would produce the best results that would be the most beneficial in helping us move towards understanding the foundations of a measure framework. It was also very consistent with other systematic reviews of literature that has been done.

Next slide. The review criteria, again, we used five very distinct ones. The first is that the content of the paper fell into one of the domains of information. The results were proven in a relatively scientific manner, so with physical analysis, case study interviews with experts, et cetera.

The study help addressed one of the research questions. It had a real -- well articulated scientific method and well-defined research scope and that the goals of the study were satisfied with published results. Articles that were general discussions of high tech or of the health I.T. industry were excluded.

Articles that discuss the potential prototype of a standards or prototype of an idea that do not have any published results and do not discuss the impacts of that idea on outcomes of care were also excluded.

There were also the occasions where we would score an article above seven, and then as the report was being written up, we found that the article was redundant at the time, with the information that had already been presented, or was not adding the value that we initially thought. And those articles were also excluded.

We did use a couple of articles that would be considered in the (Gray) literature. One of them was very generously given to us by Mark Savage. And they were results of use cases that were discussed by the National Health I.T. Policy Committee. And another one was a study that has been completed.

I don't know if it's been officially released to the public, but it was done by Clinovations Government Solutions and Health, which also really looked at interoperability and its impact on health, and the way information is facilitated through distinct trading partners. From all of that -- next slide -- we reviewed over 417 references, 412 titles and abstracts seen from the electronic search.

Again, we used the theories of interoperability used cases provided by the Health Information Technology Policy Committee. Two systematic reviews that were conducted by the (AHRC) and the RAND Corporation. One report that was developed by the National Academy in Medicine and one report that was developed by Clinovations Government and Health for health and image services, which I just discussed.

From all of this, to all of this point, the team did the original scoring. As the senior director, I had the final review and made the final call on what articles would be included or excluded. But from all of this, we identified 65 papers

that scored a seven or above that were included in the report, which as you can see, fills the full 30 pages that we have.

Next slide. Let's talk about the results a little bit. The first domains that we talked about were measures of interoperability that really went beyond the health care continuum. And there were a number of areas where we saw papers fall into sub domains under that general domain and stuff. One of which was public health.

A number of the articles that we investigated, analyzed the impact of interoperable systems on reporting and developing comprehensive patient profiles for areas such as cancer, infectious disease, allergies and emergency surveillance. One article discussed a project between the Association of Public Health Laboratories and the Centers for Disease Control and Prevention to support and accelerate the development of a national laboratory standard based electronic data sharing network.

Another report talked about the University of Michigan health system and it's Information Technology Strategic Advisory Committee, which stored and maintained allergy information in a single data repository, which then became the central data source for coded allergens and reactions for the University of Michigan hospitals and health centers electronic medical records.

This article was of interest because the system it described converted pretext allergy information and decoded allergens and reactions using UMLS, or the Unified Medical Language System, and made this repository the authoritative report for patient allergy data.

One other study that we wanted to know is from the Reganstrief Institute in Indiana, which developed and standardized electronic registry of patients to better monitor the regional rates and practice spread of antimicrobial resistant bacterial infections.

Again, the study was (analogous) because the information of patients was entered on sub-standardized web form and sent to the registry using a Health Level Seven outbound ADT, or Admission Discharge Transfer, method and was uniquely identified using an enterprise master patient index.

E-mail alerts were used to notify, in effect, 12 personnel whenever a patient with a history of one of these infections was presented for admission in one of the 17 hospitals in the Indianapolis area.

Another subdomain with patient engagement, clearly the emphasis to provide patients with access to medical data has been increasing in importance over the last several years, for which a few studies demonstrated messaging with patients, family members or other caregivers can access data, transfer data to a provider of their choice or create a personal health record that will pull data from multiple sources, which would be valuable in assessing and evaluating clinical outcomes.

And one study that we looked at was from multiple hospitals in Taiwan that gathered and transferred information using the Extensible Markup Language or XML, also known as the language of the internet, and a template that was developed from the clinical document architectural, which is promulgated by HL7.

The patient would plug the USB drive into a laptop and open up the XML viewer, and they could view their data, which included demographic and vital statistics as well as medications, allergy and medical history data. 97 percent of all patients within a two-month period had the intent to use that and 68 percent found the technology both extremely helpful and very useful.

Another subdomain was care coordination. And really, the whole focus of this and the articles that we've talked about -- or the articles that we analyzed rather -- really talks about clinical documentation and clinical documentation standards, such as the continuity care document by HL7 or the Consolidated Clinical Document Architecture -- or C-CDA -- also supported by HL7; as well as other particular standardized ways of coding documentation.

Two particular studies really stood out that we examined. One was a CDA, or the Clinical Document Architecture, that we've used in the pilot study that standardized bidirectional communication between an electronic medical record and the EHR and the glaucoma registry based specifically on HL7 messaging.

It enhanced both clinical treatment as well as research projects. Another study was investigators from the Children's Hospital in Boston did a retrospective pilot study with patients diagnosed with a adult congenital heart defect to determine if there was duplication of blood laboratory testings and ancillary testings.

The two participating hospitals included Children's Hospital as well as Brigham and Women's Hospital in Boston where patients were often admitted. Both facilities use different EHRs and out of the 833 patients hospitalized within the two-year time period of the study, duplicate testing occurred in 32 percent of the patients who were admitted to Brigham and Women's immediately after a prior catheterization or an outpatient visit at Children's Hospital in Boston.

The study suggested the greater interoperability, which means two systems would allow multiple providers and members of the care team to view data, which would then both reduce duplication of effort as well as saving money.

The last subdomain under this area, we titled innovation because really in examining studies, it really showed innovative ways that interoperability was being used to affect patient care and how interoperable systems (defer) innovations, particularly around developing more comprehensive individual care concepts, better decision, support tool and providing needed resources for areas such as skilled nursing care.

One of the studies that we looked was in Germany. They modelled a prototype neonatology electronic feature record that models data through the openEHR archetype approach -- we'll talk a lot more about that a little later -- which structured the content and facilitated the exchange to various health care providers and interest groups.

They reduced the need to repeat documentation and allowed providers and caregivers to share a common record, which supported the care delivery model focused on a family centered approach that met the needs of premature infants. And that was the only article, out of all the ones that we reviewed and scored and used in the report, to really talk about that.

We felt that was the innovative approach that was being used to really be able to exchange information across the care continuum being -- in a way to improve care. Next slide. The next domain was really about interoperability enabled processes, as well interoperability sensitive outcomes.

A number of studies and reports demonstrated the critical role of data quality and consistency with regards to ensuring patient's safety, care coordination, and health care reporting.

These processes took into account various architectural frameworks to facilitate data exchange, data integration across multiple sources, the use of combined data to affect clinical outcomes of care as well as impacting clinical research, and using data standards to enable interoperability and improve data quality.

Again, there were subdomains under this area. Architectural framework was another one. And there were a number of studies that discussed several frameworks, of which I'm sure all of you are familiar with. One of which was the Cancer Bioinformatics Grid -- or caBIG.

The Electronic Primary Care Research Network -- or the EPCRN -- where they talked about the IHE -- Integrating the Healthcare Enterprise -- profile, the Xchanging XCS profile. They talked about the continuity of care records and clinical document architecture and the portable documents format.

It really showed where this information could be gathered, how the information could be disseminated, how the information could be transported. One particular project that we found that was interesting was the Bio Health Project, which is overseen by the European Council that focuses around the development of framework to facilitate standardization and interoperability in electronic health.

It leverages a number of varying technologies to facilitate data exchange such as public key infrastructure and smart cards, but also better privacy and security of patient level data using standard such as privilege management access control and security management with a specific emphasis on health.

This was one of the few models that we were able to gain from the literature that really talks about how privacy and security, particularly security, was built into the model very specifically. Another one of the subdomains was clinical outcomes because we noticed that there were some studies that demonstrated utility and interoperable processes to affect patient outcomes.

Lancaster General Hospital in Pennsylvania developed, implemented and then valuated interoperable intravenous medication program to advance medication safety at the bar -- at the bedside. An intelligent infusion device was integrated with a barcode with medication administration systems as well as an electronic medication administration record system.

It automatically populate provider order, pharmacist validate the parameters on intelligent infusion devices. The programming between a barcode and a record administration system is focused on weight based medications incorporated into what's known as the five rights verification process; right patient, right dose, right route, right drug and right time.

It would ensure that the dose and the weight match the physician order, and that the IID, or the intelligent infusion device, validated against the defined dosing units within an established drug library. This program resulted in immediate 32 percent reduction in monthly errors involving the I.V. administration of Heparin within the medical surgical patient care areas.

Another one with models of interoperability, this really focused a lot on what's being done globally and not necessarily within the United States. And a lot of this really focused on the semantic types of models, particularly the use of the openEHR and the use of the openEHR reference models.

One study that we noticed that we found incredibly interesting and certainly something that talked about a model of interoperability, even though we realized that the use of the semantic (web) is not something that has really been discussed -- or perhaps it has been discussed, but it certainly not been widely promulgated as the potential standard for interoperability, at least within the U.S.

But we did notice that the openEHR reference model we used to integrate data types from a regional EHR product in Sweden and several other countries and transport the EHR templates, which will allow a greater bidirectional exchange between the openEHR model and the regional EHR product in Sweden, that could cover both primary and specialist hospital care without compromising the data intent or what the data meaning.

Another one was data integration. We found a lot of this. This (had) integration covered two different domains. And a lot of the integration really talked about how to either use archetypes or mapping to take discrete data types and map them to a common form.

One particular study that we found interesting involved the operation of what was known as the digital operating room that had a standardized architecture and data library that was able to successfully integrate medical device data for documentation usage and clinical information system for standard reports for providers to query immediately.

We also looked at another study from Harvard Medical School that really showed that information fragmentation without a method for integrating various data sources placed patients at risk for medical errors, adverse events and increased cost.

By doing a retrospective observational study of adult patients with at least two visits or hospitalizations to the emergency department's in-patient unit -- in observation units over a five-year period -- 31 percent of those patients visited two or more hospitals during that period.

1 percent visited five or more hospitals during that time period. This totaled 57.5 percent of all (it's chief) care visits in which the patient's health care information from a previous visit was not available to the physician at the point of care. And then finally, under this particular domain, we did talk about standardization.

There were a lot of great articles about this and a lot of really good information. One of the ones that we found, I think, that was probably the most interesting came from a study from Mayo Clinic, IBM, and University of

North Carolina - Chapel Hill that proposed the combinations, the methods and standards targeting the harmonization of clinical terminologies given that one particular standard could not necessarily encompass and encapsulate all pertinent patient data.

Their proposed solution was known as LexGrid, which is a model of terminologies representing the content of (disparate) vocabulary sources, which could automatically map a proposed concept to a vocabulary with a common format using the tool such as HL7 common terminology services specification.

The next domain was the system-generated or reported data sources for interoperability measures. Data (interkinetic) exchange and interoperability between clinical information systems represent a crucial issue, obviously, in the ability to collect and generate data electronically.

For measures of interoperability, it is important and essential concept in the development and implementation of a measure framework. Being able to have system-generated or reported data sources reduces the workload of having to manually extract the data from a medical record and provide the mechanism to populate measures with real-time data that could increase quality outcomes as processes of care.

And again, there were a number of subdomains. The first -- and there was an abundance of articles on this -- and again, with the emphasis on many of these being global -- was the use of semantic data sources such as the Resource Description Framework, the Extensible Markup Language.

There was one study that used in XML Schema to represent a standard minimal record of patients that had end-stage renal disease who was developed in the context of a national program called the Renal and Epidemiology Information Network. They use the top level component called the ESRD event, which included the professional responsible for the patient information and the care units in which the ESRD event was observed.

The patient identification information, co-morbidities, medical observation event, and the context of medical causes in the event the patient's deceased.

Definitions of the concepts were represented by ICD-10, as well as the French Thesarus of Nephrology, local data systems could detain the ESRD patient data represented by the schema.

And it would securely send over to the web to a centralized database for data validation (then used) to enhance both research and innovation and care delivery techniques. Other studies talked about the use of the HL7 clinical document architecture aligning it to the schema using Unified Modelling Language as well as the Object Constraint Language.

There was one study that used this to model hypertension data sets from over 30 historical cohorts, spanning over 15 years to develop a brand new data source representing interactions between environment and clinical factors of hypertension.

There were also additional discussions with semantic sources such as the web oncology language, and then a semantic query language known as SPARQL, which is the SPARQL protocol and RDF query language, which is very similar to the Resource Description Framework.

Data integration also talks about as well -- what was interesting and what -- how this a bit differentiated from the other data integration that we discussed. But let's just talk about integrating data from multiple sources, not just EHR or from regional information system, but really also integrating data from centers or from other internet-based devices. And there were a number of studies that discuss multiple approaches of this that facilitate greater interoperability, consolidate data streams into one record.

There were researchers at the university in Germany that developed a prototype of a home-centered health enabling technology system which captured, stored, merged and processed data from various center systems located in individual homes. They collect the data such as physical activity, blood pressure and blood glucose, amongst several items, based on the medical condition of the individual.

They use an architecture approach based from data integration profile. They use templates. And the structure of the consolidated -- or CBA rather to

combine data stream and store them within a regional health information system which could then be accessed by authorized providers, patients and other caregivers.

In addition, NIH has also funded a project which is a human reviewed machine-readable and source linked catalogue of label indications for human drugs that's called (LabelIn). They focus on 250 drugs that's corresponded to over 8,000 drug labels. The technology was able to identify over 7,800 drug disease treatment relationships for drugs that were represented as a triplet of ingredients; dose, form and strength.

The tool was able to take textual content from pretext and labels and automatically identified drugs with indication specific to certain dose, forms or strength and included those within EHR. And then finally, there was data standardization. And this really just talks about the variety of the different data standards and how they will be used.

And again, our focus was really looking along how they were applied in a way affected patient care. It really -- most of the article talks about bringing data into a common format that would allow for collaborative care research launched, you know, in a WebEx, so sharing of the tool and methodology.

The College of American Pathologists produced cancer care summaries in a computer readable format, restructure data elements that served as templates for dictation data entry into the final pathology report. The use of these structured elements in these checklists increased the frequency of cancer biomarker testing and the management of patients with cancer by allowing pathologists to capture or retrieve, transfer and analyze diagnostic information.

And then there was the use of Health Information Exchange. There are, of course, a lot of studies on Health Information Exchange, a lot that has been run certainly since 2010. And again, the focus was not just on the utility of the Health Information Exchange facilitated in our other facilities, but really trying to look at it to determine its impact on outcomes of care.

One study that we looked at was, again, from Reagan Street that created a system that leveraged the Indiana network patient care of their HIE, and created an enhanced laboratory work for laboratory work content. The researchers that developed this identified much relevant data elements incorporated in this work, including historical laboratory data and relevant medications.

The data were extracted and aggregated from three different data scores within the HIE, the laboratory repository for historical information, the medication hub for medications and dispensing information, and the master encounter file which contained historical visits and related information.

That information was entered into the EHR using the HL7 laboratory results messages. And it could send a new report with original results plus appended contextual information through the new enhanced HL7 message that was sent via HTML so that it could be viewed by any provider on the web browser.

And then the final domain was the existing measures of interoperability or interoperability sensitive outcomes. And this really was one of the major (thrusts) of the project, which is the use of interoperable information -- excuse me -- is seen as a potential solution to providing data to fill in gaps of a patient's medical record.

It can help increase care coordination and remove the fragmentation of the patient data that imposes risk to patient. There are very limited metric tests currently to evaluate the impact of interoperability. But the literature did identify studies demonstrating how it can affect all of these here as a process or outcome.

There were a lot of different studies. There was some work that was conducted by the Joint Commission that documented the weaknesses in using an EHR to assess quality of care for outpatients with heart failure. And when we automated the review of the EHR data, it's similar to a manual review of electronic notes for items such as prescription of beta blockers or assessing left ventricular injection fraction measurement.

You would notice, when we lower in scenarios such as the prescription of warfarin for atrial fibrillation. The study opened up the possibility that adding additional information to medical records, other systems apart from the EHR may potentially correct that weakness.

There was a study -- a couple of studies, one of which became the foundation for how we collected initially measures to be essentially included in the framework. But there were researchers at Weill Cornell Medical College. They studied over 1,100 unique patients that were eligible in 2008 for 12 quality measures that were part of the meeting for this program.

The intent of the study was to identify how accurate the electronic reporting was on these measures, which included those on asthma medication, cancer screening, diabetes, influenza, pneumococcal vaccinations and IBD. It was also indicated, the sensitivity of electronic recording ranges to 46 percent to 98 percent per measure.

This variation and accuracy threatened the validity of electronic reporting. With the complexity of electronic measures increasing, it's is important to ensure that automated data elements are contained in the medical records without significantly interrupting workflow.

And this is why the information gathered in the three previous domains serve as a foundation for how to potentially tie that into a framework to potentially correct the problem. Another study from Weill Cornell Medical College and Columbia University -- again, which became the foundation for how we select and measure here -- developed a novel set of proposed metrics for electronic health recording.

Researchers identified quality metric tests, rated them under sensitivity to the potential effects of EHRs plus health information exchange, and the feasibility for electronic reporting. 70 metric tests containing over 1,000 individual metrics were identified. And after further requirement for evaluation elimination, there 80 final metrics that were chosen within the areas of asthma, cardiovascular disease, congested heart failure, diabetes, medication and allergy documentation, mental health, osteoporosis and prevention.

Additional de novo measures were also created to address test ordering, medication management, referral, follow-up after discharge and revisits. The 18 final metrics were chosen from a number of existing ambulatory care metric sets such as those develop by NCQA, and those in the physician quality reporting initiative, as well as NQF ambulatory care measure.

A common element on to many of these measures would certainly something that factor. And as we go forward in the framework of elements, it's a needed data for one to one source such as diagnosis data plus medication data or diagnosis data plus laboratory data. The potential novel metrics may be suitable to capturing the potential quality effects of EHR with Health Information Exchange, with the goal of accurately measuring and improving care.

And that methodology that was outlined in this table, we'll discuss shortly. Again, became how we initially decided to select a set of measures that will be internally discussed and discuss methodology which we're trying to come up with the final test to be included in the framework.

We did look at a number of other particular papers such as those, again, that Mark Savage gave us from the Health I.T. Policy Committee. Some reports that were developed by the National Academy of Medicine. But we do want to -- just before we get into the next slide, talk about the project Clinovations Government and Health.

And again, I'm not sure if this is public at this point. But we will be able to discuss at least the initial results of this. This organization developed a framework measure interoperable EHR utilization. It was designed to advance the measurement of the utilization of exchange health information by those providers who were not part of the incentive program.

It examined various training partners such as social service agencies. They will help providers in evaluating their capacity to stand and receive electronic information and what's the value of that data would be. They also examined what would be then the usual priority in the ONC interoperability roadmaps.

And if they were covered by the HIPAA provisions regarding personally identifiable health information.

That framework that they developed covers four distinct measures, behavioral health, changing conditions, care planning and management, electronic information exchange for patients with more than one chronic condition, and social services electronic information exchange for patients with a total social services and patient generated health data.

The project had recommendations for existing surveys to address the issue of health exchange and trading partners that participate in the exchange. The proposed measures that Clinovations developed could definitely have an impact on outcomes. But one of the conclusions they came up with was the technology was not always available between trading partners to facilitate the exchange.

However, the measure specification was flexible and adaptable to adjust with the current state of technology to allow for interoperability workflow. Why we're discussing this particular study is one of the elements of the framework. And we'll have to account for the fact that given that ONC's roadmap and the national quality strategy really has examined measures that go outside of just the normal care continuum.

The technical capacity for interoperability may not necessarily be present, but that should not hinder either the development of the framework or its implementation. Much that Clinovations discussed, that there are ways in making this flexible and modular in a way that could be used regardless of whether the technological capacity is there.

And those were one of the findings that we came up with that we need to consider as we move forward. Next slide, please. What were some other major things in the literature -- and I know I went through a lot of the data and there is certainly a lot of the data that is there?

A brief aside; we realize that we did send you this report in between Christmas and New Year's. And we do apologize for that. But when the project started and the project end date and the timeline that we had to work in

between, both to assure that we were able to give you the materials for review prior to them being sent out for a 30-day public comment period, which is required on all NQF materials, that is simply the date that we ended up with.

And I'm unaware -- as is our NQF team -- as to whether you've read the environmental scan or not. Certainly, I can imagine everybody had other things to be doing between Christmas and New Year than reading a 30 plus page environmental scan report on interoperability, but thank you to all of you.

We -- initially, we wanted the comments by January 6, but we are going to extend that timeline to January 9 to allow you all additional time to review, for those who may not have done so yet. And if you have any questions regarding the report after this particular conversation, you're welcome to e-mail the interoperability e-mail box and we will get back to you right as soon as we are able.

Some of the major themes, through all of the articles that we reviewed, one of which was the use of the Semantic Web may provide another means of interoperability that could provide data elements needed for quality measurement. Secondly, where data interoperability can be accomplished in a number of ways through the Semantic Web, through the HL7 Fast Healthcare Information Resource, or FHIR, standard or through the CDA or CCB also developed by HL7.

Data sources that may assist in the development of measures, they come from sources beyond Health Information Exchange and registries such as sensor devices. The measure framework that eventually will be developed should examine models of interoperability and data use that have been developed outside of the United States.

And we point that out again being as the large preponderance of articles. We've discussed these things that have been done on a global level, not necessarily within the U.S. There's a lot of work that has been done. We are using some of the same standards that we use.

That certainly would behoove us to be examining what is going on, technically how they're using those particular standards in an interoperability to facilitate better patient care. And then finally, the conclusion from the Clinovation study, with just a number of providers across medical disciplines and areas outside of the care continuum may not be ready to receive or exchange data across the space.

Next slide. The existing measure, review methodology. In addition to doing a review of the literature, we also wanted to look at existing measures, those that have been documented by and endorsed by NQF and those in the AHRQ National Measures Clearinghouse, those with meaningful use, as well other measures.

And then review them to see if they were interoperability sensitive. We are going to replicate the methodology that is developed by (Lisa Kern, Harold Pincus) and others, including Dr. Kaushal, who is on the phone, that focus on the examination of ambulatory care quality metrics that were sensitive to improvement in quality facilitated by healthcare interoperability.

We obviously were going to expand this methodology to not just simply focus on ambulatory care but also to hospital needs metrics to the current EHR adoption rate within (inaudible), which is currently exceeding over 80 percent. Next slide. How did we do this? There was an existing measure review criteria.

We reviewed the existing ambulatory and hospital quality measure tests. And again, we just focused on those that were eMeasures. I'll also should state ahead that this is not a defined set in stone. It's just what we use. Certainly we believe this will probably be refined to discussions with all of you, in addition -- there may be additional review of the measures and the results.

We applied exclusion criteria individual metrics, and articulation of assumptions, the conceptual model (on the days) for rating that were based directly on the work of (Lisa, Harold) and others; a qualitative rating that was assigned to measures by internal NQF staff.

We would then -- I think, once we got through all of this -- have this process validated by all of you. When we all can meet in March, there were already have been several discussions about the methodology and the initial cohort of measures that we will have. And then we will look at having all of you rate these measures to determine whether they are interoperability sensitive and should be included in the framework.

And finally, once we get past that, we would then develop the conceptual measure framework that would include these validated measures then. After we go through our initial path of measures, which we'll talk about in just a second, we would have them reviewed by our internal NQF clinical staff which would include Dr. Burstin, and have them determine what particular cohort of measures we should initially think about and have their ratings to determine whether they are interoperability sensitive or not.

We would then discuss those findings with you and what those initial scores were. And then once we convene again in March, we would have more than likely have refined essentially that methodology based on your discussion. We may have done another initial path of measures based on what we get from you.

And then have you all rank the measures as well. And from that then, we would compare what you have come up with to that which we've come up with internally by NQF. And hopefully by that point, we would have a standard measures which we look forward to.

Next slide. On the existing measure of new criteria, there were two domains used to rate each quality metrics. There will be, rather, sensitivity to the potential effect to EHRs, plus the use of health information from outside the EHR such as data available through a Health Information Exchange, but not fully a Health Information Exchange registry, to other resources as well.

And then the suitability of the measures for electronic recording, or course, these metrics would range from zero, not suitable, to six, extremely suitable. The first round of ratings will be conducted by NQF staff, which includes Dr. Burstin, our Chief Scientific Officer (in interim) and other NQF clinical staff.

Each metric will be reviewed by group of staff members. The scores will be added and averaged. Metrics receiving a combined score of nine or more would be considered high, would be considered interoperability sensitive, and would be considered for inclusion into the same month.

Next slide. We initially called all of the measure, electronic measures, process and outcome measures from a variety of sources including the AHRQ Clearinghouse, NQF, the Quality Positioning System. And for meaningful use, our initial review had over 700 outcome and process measures.

We did an initial pass by doing the following. Any measures that were redundant, we removed. Any measures that talk about provider, patient or health plan characteristic, we removed. All those initially that does not deal specifically with adult primary care, we removed.

And again, we followed the methodology that was developed at the Cornell and Columbia University. If we have to go back and review that, we will. But the initial methodology was to take out all measures that did not have to deal with specific -- specifically with adult primary care.

And it was a very cursory review and a very basic elimination. It was done by a member of our clinical team. And these were the measures that were left, and you can see the different categories that they fall into; a preponderance or behavioral health, cardiovascular disease, (some on) HIV/AIDS, neurology, obesity, (patio) care and so forth.

Next slide. That's the initial measure. Those are the initial measures. And from those initial measures, we will start meeting internally with our NQF clinical staff. Clearly, the measures that -- we have 700 measures that we discovered. After we went through the initial pass and then re-reviewed, what we ended up with was just over 300 measures.

Clearly, we don't have the desire to have all of you review over 300 measures. That would take far too long. What we will be initially doing is working with our internal clinical staff and talking to all of them about what measures out of those that are left that they believe would be interoperability sensitive as well as would develop any needed for a measure framework on interoperability.

We will then discuss with them, work literally down that list of 300 plus measures into a more workable cohort. We will discuss that with you in our next webinar call, as well as the methodology that we used. And then we'll discuss whether or not you agree with the cohorts of measures that we have discovered.

Whether the methodology is something that you think it sounds or needs to be that we developed, and any other adjustments that we need to make. But the goal is by the time that we convene at the end of March, that we have a set of measures that we can have you all evaluating for to determine which ones would eventually go into the framework.

With that in mind, with all of the technical information that we would be using the articles that we have covered, and how exactly this would materially tie into the actual framework itself. Well, and really looking at this to discuss amongst ourselves as well as with other NQF members.

What we came up with is just given the breath and depth of the information, the framework that we will initially can come up with and create has to be comprehensive in expansive enough to encompass both the short and the long-term goals of the ONC interoperability roadmap.

You have to incorporate a core set of dimensions and elements that are defined here with consensus to reduce possible variation in measured development over time. In other words, what dimension and elements are necessary in the framework. For future development of measures that we linked to interoperability, those dimensions and elements will be used.

In that way, it is our belief that we will hopefully reduced variation across measurements and we'll be using a common set of measures for interoperability that everyone will understand and everyone can relate to. The framework also has to be very flexible. And it has to accommodate changes in data standards, data transfer mechanisms and data sources towards consistently providing utility for those that you can measure and assess the effect of interoperability and its impact on quality of care.

If there's one thing that we all learned in reviewing all of the literature was that there were a variety of different ways dealing with this. There are numerous data standards that are being used both within the U.S. and outside of it. There are a variety of ways that data is being transported from one system to another.

And there were a large number of data sources. And those are continually being refined and changed. This framework cannot be so standardized that it only accommodates a particular standard of development.

It really has to be flexible enough to accommodate these changes in the standards, data sources, data transport mechanism, and also has to be able to accommodate those that might not necessarily have the technical capacity that other systems may have so that the full benefits of interoperability and its impact can be widely felt across everyone that is within and outside of the (the elk heart city).

Next slide. That is my extraordinarily long presentation. I apologize for my voice. I'm getting over a terrible cold. But at this point, I'm happy to open this up to any questions or comments that you may have. And we look forward to hearing what you have to say.

Bruce Sigsbee: Good afternoon. This is Bruce Sigsbee, American Academy of Neurology. And I think this is really great work. And obviously, a lot of work went ito the preparation. But I think one facet of interoperability and quality of measurement that you're missing -- and as a practicing physician, obviously this is my perspective -- is from the perspective of a practicing physician.

And why is that important? Because it really -- that's where quality of measurements is going to make a difference in care delivered and the outcomes. And as I think you know right now, there's a large movement among specialty societies to develop a clinical quality data registry with technology that can really reach into a diverse number of EHRs to extract the necessary denominator or numerator of information without adding to the burden of care.

And really, provide quality of measurement that is relevant to that practicing physician. And, one of the problems now are there are often few measures or no measures for diverse specialties or certainly some specialties particularly my own specialty.

And that the -- and that whole movement is really not captured here. And it's the key part of interoperability and some of the standards that you've talked about and how will those measures be standardized and captured.

And while the database being collected is typically specialty specific at this point, there are already discussions about being able to merge the status of data and these registries, and really, take the benefit of insights into care -- gaps into care and how can quality measures and outcome measures be better defined.

And this may be new enough that there may not be an awful lot of data available to really be able to capture it. But certainly, my own specialty and many others are punching ahead with this. I have experience in developing measures that can be effectively deployed in an electronic health record environment, and are getting more experienced and really being able to look at the criteria needed to have effective measures.

Jason Goldwater: Dr. Sigsbee, thank you so much for that. I really do appreciate that. And agree that we certainly did not incorporate that into the report probably because, as you stated, there's not a lot of literature that's readily available on that. I'm wondering if we might be able to schedule a call with you in the next two weeks or three weeks to discuss this a little bit more and how we might be able to incorporate those.

Bruce Sigsbee: I think that would be great. And, I know also Bill Rich has been heavily involved in these same issues, it'd be great to have him on the call and some of our staff members, I think would be beneficial to the conversation.

Jason Goldwater: Wonderful, terrific. OK. We will certainly work on that probably early next week. Thank you. Any other questions?

Theresa Settergren: Hi, this is Tess Settergren.

Jason Goldwater: Hi.

Theresa Settergren: Thank you. Can you hear me?

Jason Goldwater: I can.

Theresa Settergren: OK. I'm taking off speaker because that's not -- never good. One comment -- and really, I really appreciated this overview because it really helps fill in, for me, some gaps that I had after doing -- really not in depth review but a quick review of the environmental scan.

But I think there maybe one other aspect that we might want to think about. And so let me just give you a really quick overview of that. Many of the quality measures are more nursing sensitive than others. And just as an example, some of the patient safety measures; falls, for instance.

And then, pain, too, because nurses deliver medications that physician's order but there's also a lot of non-pharmacologic interventions that nurses do. And so from a nursing perspective, I think we also want to think about some of the nursing data. Nurses arguably -- someone might argue -- enter more data than any of the other clinical disciplines in electronic health record.

And those data are reused by lots of different folks in lots of different ways. And what we're -- as a national nursing collective, I guess, for lack of a better term -- working on is the information model and the coded data that will guide prior profile development. And what our intent is, also, that -- because the American Nursing Association has called for nursing care plans, or plan of care items, to be included in the CCDA, that we also need to code those components.

Because FHIR is awesome and it's really good to make a huge difference in Health Information Exchange, but you still have to have coded content. And we have IID, we have CPG, et cetera, a lot of the nursing data is not coded; and that's what this national working group is trying to deliver.

I understand now why none of our recent publications were included because we're not quite to the point of demonstrating use case of the result, for instance, of care coordination for pain management or something like that. But I want to just point out that the data format will be helpful.

But we also need to think about coding key data that are not coded. The standards in the U.S., for nursing data at least, is to code observations to link, clinical link, not laboratory links, but clinical links and then to inter code nursing problems and the value sets for the observations and outcomes to (slow med CT).

And I just didn't really see any of that included and I just want to have an out there so that we can maybe talk about it.

Jason Goldwater: OK.

Theresa Settergren: Thank you.

Jason Goldwater: That's very well noted. Thank you, Tess. And we will certainly go back and look at that. Good.

Julia Adler-Milstein: Jason, this is Julia Adler-Milstein. I'm wondering if you can help me connect to the environmental scan results to the measures in the interoperability set of measure piece. I guess my framework coming into this had been we're trying to identify process and outcome measures that if today, I could snap my fingers and interoperability would exist, those measures would improve.

And I heard a lot of the description of the environmental scan. I was just having trouble, I think, connecting it to how does that tell us which of those measures are going to move. I'm hoping that you can help me just understand that connection, which I think will then help me think a little bit more about the environmental scan while I'm reviewing it.

The second question I had related to your comment about focusing the evaluation of existing measures on adult primary care. And, to me, seems like critical decision and I'm just trying to understand the implications of it a bit

more. For example, if we were going to pick up a measure like redundant testing, is that going to be a measure that is only limited to redundant testing that would occur in primary care?

Or will it allow us to look at redundant testing as a measure and not redundant testing could happen in any setting? I think, obviously, my bias is that we don't want to limit it to particular care settings because the whole value of interoperability is going to be across care settings.

And so just to be sure that we're going to allow ourselves to include measures that would be sensitive to interoperability and the outcomes that it would impact as patients move across settings.

Jason Goldwater: Right.

Rainu Kaushal: This is Rainu. I might just jump in on that second question if that's OK. I think that the…

Jason Goldwater: That's fine.

Rainu Kaushal: If you could just focus on adult primary care, was a (residua) perhaps of the criteria that we had developed as part of this federally funded grant? And the reason we limited our work on adult primary care was because of wanting to have a scope of work that was comfortable in a given period of time and because of the study setting that we were looking at.

I agree with you, Julia. I think it's important to expand that and I would suggest that we broaden that criteria, otherwise we'll be really missing a lot of important, potential measures particularly across transitions of care, but also other patient population.

Jason Goldwater: Right. Starting with the second part of that question and just briefly because, Rainu, I think you answered it much better than I could. Again, Julia, we adopted the methodology exactly as it was written. And in that methodology -- and we did that not as the final solution, but just as a starting point.

And in that, as Rainu articulated, there was a desire to only focus on adult primary care. Certainly there have been discussions about that is at least limiting, and would certainly, potentially exclude the measures that could be highly valuable. The emphasis that I would make is that, again, it's a starting point, not the end.

And if the committee as a whole decides that we should remove that restriction and really look at all measures and not just focus on adult primary care -- and then again, we're happy to do it if the committee as a whole feels that's going to make a more valuable framework.

But I would also say is that obviously it's going to increase the number of measures, so we're are going to have to really be very specific about the code order of measures that we want to look at in a time that we have. And to make sure that we have an operational, number of measures that could actually be implemented within the framework once it was published.

Julia Adler-Milstein: Maybe it's important (system) between the measure and how the measure is calculated. If we could look at redundant testing as a measure, and you could measure that only within primary care or you could measure redundant testing across the scope of settings that a patient may visit.

And so, I think it's important to think about that distinction as well. That we don't want to just limit the measure for -- to just the utilization that occurs and the outcomes that are achieved just by primary care providers.

Jason Goldwater: Right, right.

Julia Adler-Milstein: The measures themselves may be fine. It's really about how we measure them and not limiting ourselves on that tension.

Jason Goldwater: Understood. And again, I think that that may also be something that we may include as we go about evaluating which measures to use. I think, to start with the first half of your question -- which I fully expected to get -- the number of article that talked about the impact of interoperability specifically on outcomes of care, like the research done through Cornell are far and few between.

And there are a large number of articles that really talk about interoperability across the number of areas, many of which, as I discuss, are highly technical. What we really try to do, as best as we were able, is to go through the large amount of research and really look at, specifically, articles that really talked about interoperability and different aspects of interoperability and its impact on quality and its impact on outcome because in that way we would be able to accomplish three things in the development of the framework.

We would be able to understand how information is sent, how information is received, how information is used, how information is disseminated and the different forms that information can take place. And if we're going to build the framework, that's eventually going to populate existing measures as well as serving the foundation for new measure development, then we must be able to have a foundation in place that really shows the different way in which information can be resend, received, used and disseminated.

And those articles that we found I think articulated that. The second one is where that data comes from. And, it was important and certainly as we were discussing this work with ONC and with ASPE and with CMS, one of their main priorities was that we were able to sort of identify different data sources of where that information came from.

So that if we are looking at, again, existing measures -- new measure development that there are data sources of where that information can be use to populate what those measures are. And so, again, focus on articles that really examine a variety of different data sources and not just that, but also how that data that maybe coming from different sources could be map into a common format.

And, again, that's aside from, I think, the great point that Tess brought up, which I think are the things that we need to dig at, perhaps a little bit deeper. And then, finally, I think by looking on what we examined that also serve as a foundation for how to expand the framework to be flexible and adoptable and not just now but into the future; by really focusing on the number of different ways that information is being standardized and used.

It really is sort of providing a foundation for how to accommodate a framework to be flexible to evolving data standard, evolving transport mechanisms and evolving data sources. It's really important that when we build a measure framework that it's not just focus on the measure piece, but it's also focus on how you're going to populate and build future measures.

And so that framework still accommodate sort of those elements that I just described and that's what we found in the environmental scan, as technical as some of those concepts could be.

We were surprised to elevate those higher enough so that we could see exactly how we're tying into care and care management and outcomes; and specifically focusing on how data is used, where the sources of data is coming from and how these different projects have been flexible enough to accommodate different types of data standards and transport mechanisms and data sources.

Julia Adler-Milstein: OK. I understood what you said. The environmental scan is not so much about informing which measures we should pick, but it's more about ensuring that when we evaluate a measure that it is going to accommodate sort of the range of -- I don't know, quite what is that sort of like, you know, the range of experiences and approaches that are out there. It's not that …

(Multiple Speakers)

Jason Goldwater: Right. Julia, I also I would say is keep in mind the environmental scan is in three pieces. There's a literature, which we just went over. The key informant interviews, which we are in the process of scheduling and conducting, which will fill in some of the gaps I think that are not in the literature, specifically really focusing on outcomes as well as some of points I think some of you have already brought up.

And, the third piece is the inventory of existing measures. They're all interdependent with each other, but they're all separate facets that build to the framework.

Julia Adler-Milstein: OK.

Hans Buitendijk: This is -- this is Hans Buitendijk. I'd like to build up a topic a little bit more, because from the documents that you shared in the discussion today, we would like to get some clarification around two dimension fits seem to be there. Part of the discussion in the environmental scan could fit very well if you're looking at how can interoperability be utilized to populate certain measures.

And there's not a part of perspective to take that, you know, just highlighted that said, which measures have a positive -- are positively impacted when interoperability is increase expanded otherwise improved upon. Those are two different ways of looking at interoperability and measures.

And through the scan, through discussion, I'm going to sense that we're going back and forth between those two types and I want to confirm or clarify and ask which of the two are we really trying to look at? Is it the one that Julia just highlighted of? Which measures are positively impacted by improvement increasing use of interoperability in which case number of the principles and otherwise that it would ask a question why do we need to look at that such as Semantic Web versus (C-CDA) versus (B2) versus (NCPDP), whatever, because any interoperability would help.

Or on the other hand, populating measures and things which ones can be better populated and provide a better poll of information from which to create that measure and populate that measure in which case I do care about potentially Semantic Web fire and all those other kind of things, because they indicate the kind of method that I can use to actually get that information in there. Which one of the two or both are we trying to focus on in this effort?

Jason Goldwater: Thank you Hans very much, and I'm going to apologize ahead of time that you're probably not going to like my answer, but the answer is both.

Hans Buitendijk: That's fair too, then it's clear.

Jason Goldwater: It's both of them. We're looking at how the measures could be better populated and they were also looking at which measures would stand to benefit the most from interoperability, because in that way we're supporting

the quality -- national quality strategy and the objectives of the ONC interoperability.

Hans Buitendijk: And what might be even helpful? I mean, this is great clarification. I think through the documentation, the presentation, it would be very helpful to make a distinction between those two because certain aspects apply to one and not the other, and vice versa.

Jason Goldwater: I've got it.

Hans Buitendijk: It can help focus the feedback.

Jason Goldwater: I agree.

Robert Rosati: This is Bob Rosati. I have a question because I think the impact of interoperability on outcomes is important. But, how do we deal with the dilemma where there isn't enough interoperability yet to produce those outcomes?

I work in the post-acute arena and there's been very little interoperability with acute settings, the post-acute settings. Even the literature you went through didn't talk much about that issue. How does that limit what we're doing in terms of these measures?

Jason Goldwater: I certainly understand and can appreciate the concern that the world that we inhabit at the moment is not completely interoperability. But it's the direction of HHS and certainly that ability to move more towards interoperability through a variety of mechanisms, both through the roadmap, through the leveraging of the national quality strategy and then through the promulgation of standard such as fire.

And so the framework that we are looking to create is sort of built on this evolution if you will of us moving more towards an interoperable environment. And once that is achievable through the efforts of ONC and others, then how can we -- excuse me, I'm sorry -- how can we best measure that effectively, particularly looking on at outcomes of care and understanding that there are certain settings as a long term care, post-acute care, behavioral

health, ambulatory surgical centers and others that may not have, again, the kind of capacity to be doing this?

That as we move forward in the development of the framework, we do have to really examine how those entities would be included in a way to measure interoperability to determined where it is lacking and determining what is impacts on quality of care would be.

There is not (inaudible) that we're all interoperable among this. The assumption is that we're moving in that direction through the efforts of HHS and others and that we want to create an effective framework that would be able to measure them.

Terrence O'Malley: This is Terrence O'Malley. I'm sorry, did I interrupt somebody?

Robert Rosati: No, I just was going to say I think that framework is good, I think, but part of what we need to do is kind of identify where the gaps exist because if we're going to see any movement in terms of more interoperability in the value of the work that's being done, it really is where we do this review of measures pointing out where there are not the existence of those pieces so that we can move in that direction of getting some of the areas that have been neglected to some degree to get onboard.

Jason Goldwater: OK.

Terrence O'Malley: Yes. This is Terry O'Malley. I just like to piggyback on that because I'm also from post-acute care side, very aware of where the limitations of interoperability exist. And we might want to think of another set of measures to really address filling that gap.

And that's to look at what are the basic pieces that need to be in place for one to even consider exchanging information that's potentially interoperable, what are the data standards, how should we be measuring, who's using standardized data in their data dictionary, who's using standardized transport.

We may want to develop a set of process measures that look to fill these gaps by saying, yes, here are the -- here's the roadmap to become interoperable. And then once you're interoperable, measure the impact of interoperability.

Jason Goldwater: I certainly-- Dr. O'Malley, I certainly understand your point. And I think this is certainly been a subject of discussion amongst all of us internally. So, I think this is something we'll continue to discuss and this is certainly something we can talk about.

I think there's probably another after this. And then when we convene again at February, we can discuss the results of that and how we may incorporate that into the measure. But I think…

David Hirschorn: It's David Hirschorn. I'm sorry.

Jason Goldwater: Yes?

David Hirschorn: This is David Hirschorn, if I may interject here. You mentioned that the framework is the one that -- should not get into, I think, into a corner that it should be extendable and flexible enough to deal with evolving standards. What about the other directions? What about going backward?

One of the cool things about interoperability is that it's allowing things to communicate with each other that didn't -- that hadn't communicated before. It's one thing to talk about. Well, for the radiology domain, it is today -- that in today's scan result is shared with someone else and that prevents, you know, someone else can get a rescan as a cost in radiation burden so that's clearly a positive outcome that we do the scanning.

But the same thing is achieved if I tell you about the (C.T. scan), they had last year. That was before we put these -- before we placed these interoperability, you know, measures in place. And the further you go back, the more -- the less standard things were years ago, and as general as a database of every patient who has ever walked through their door and (bringing them) since 1985.

You can -- the rest -- you're absolutely sure that you go back to 1985, there is way no standards going on a way to the store. And over time, obviously, get better and better and better. But especially the reality, there's a ton of unstructured data not just radiology report themselves even which decided to call an exam and all these kind of stuff as people invested all kinds of ways of describing things.

And are we focusing on the past as well? So, now that you're interoperable, now you're opening up your data stores that all these health care institutions that they've had for 10, 20, 30 years that has data in them that could potentially affect care today.

Is that going to be included in the measures that you're making to say not only if you get -- not only the positive things you share, data that you generated today, but also data that you generated 10, 20, 30 years ago. And if so -- how do you deal with that, but I think you're dealing with data that was so unstandardized.

Jason Goldwater: That's an excellent point. And I certainly think that's something we were not considering initially. We were really sort of forward-thinking about the framework and about sort of taking what's the figure now and evolving that for the future. But I think you make a couple of excellent points for a consideration. Thank you very much for those comments. And I think that's certain -- again discussing the call is concluded. Thank you very much.

Mark Frisse: This is Mark Frisse.

Jason Goldwater: Hello. Yes.

Mark Frisse: Maybe -- coming at this from a same issue perhaps for other but from a different direction. When I started reading this, I thought we were reading about measurement of interoperability. And indeed, that's on the first page. And then as I got further along, it looks like maybe this is more about the identification of interoperability sensitive measures but they might not be measuring interoperability percent.

And as we -- as I started thinking about the reading in different places it looks like in some ways we're trying to measure -- look at interoperability directly and somewhat places, we're trying to look at sort of side ways.

Wondering if you can -- wondering of you have any thoughts on that because it might help -- it would at least help me understand a lot of what you're trying to accomplish in this literature review.

Jason Goldwater: So, again, the literature review -- like I said is one part of a three-pronged approach to the environmental scan. And the idea behind the literature review was to scope out the literature that would help set out the foundation or how to framework should be develop, or at least to generate ideas for that.

And you'll notice as you're reading through the reports that the last section of it is how it ties in to the framework, both in the short intermediate and long terms to match the objective we don't see.

By viewing that -- and again, you know, if there was an abundant literature that really talks about the impact of the interoperability very specifically, on quality outcomes that would have been, you know, relatively easy to interpret and put into a framework. But the interoperability world is not focus on that exclusively.

The articles that we found -- like I said, there are a lot of them that were highly technical and it talks about pilot projects, some of them were just sort of general discussions of interoperability on that health I.T. world and some of them were actual studies.

And in fact of using interoperability and different facets to create an impact on a particular outcome of care whether it was cancer or cardiovascular disease or ESRB or chronic kidney disease or whole host of conditions that we've found as we reviewed the literature.

And so what we came up with from was -- all of that literature was to really look at three basic things which is how do we incorporate a framework that really talks about how data can be receive and to be use and disseminated in a way that impact outcomes of care quality of care rather.

And there's a number of -- a large number of articles that talk about how that can be done in public health, have innovated ways of doing that, a data integration of how to (set back).

We wanted to talk about how this framework can be flexible, how the framework can adapt to the evolving world of interoperability which when in compass data scan, in varying data standard, data transport mechanisms and data sources, particularly, especially the society is really build this extremely robust clinical registries for quality measurement, those become a data source of the framework how to accommodate and there are came of sources that we found in a literature that really talk about how this registry -- our registry data will be used effectively.

And then I think, primarily they thought -- talk about sort of the general idea of interoperability which is assuming that you are able to create an interoperable environment what would be the impact on outcome to care, how would it affect measures, how would it affect the quality of measure, and that what the literature get out.

If he inform an interviews, we're really fill in the gap of the literature review that talk a lot more specifically about really what they view in the world of interoperability and how the F.A. perceived be effect would be on quality of care.

And then the third part of that is the measure review which is given the measures that we currently have and there are quite a few out of all of that, can we wiggle that down to do thorough measure that are interoperability sensitive would be affected in a positive way to interoperability environment, (be ready) and with positive outcome or at least a way of evaluating on that care.

That's value how we approach the market and I think we just have to do a lot of thinking about this because it's the technical nature of the topic. We did not want to represent something that was so technical in nature that you just obfuscated what the overall objective was, so at the same time, we can ignore what the literature is.

It is what it is. It's there, published. And so somehow, what do we take from it to build a framework in a foundation from which to start.

Helen Burstin: All right. And if I could just add something, Jason, this is Helen Burstin from NQF. Just back to the original question and I think it's one I've struggled with as well as whether this is really about measures that assess interoperability versus the outcomes of interoperability.

I think at times they may wind up being measures that do both but I think -- I think the primary goal is to really be able to look at which measures actually would be the kind of measures that would be able to demonstrate but interoperability having in effect or a lack thereof.

And so, I think hopefully, we'll see some of them that do both but I think the effects on outcomes of interoperability is really what we're trying to do. And again, even with this measurement the literature and the environmental scan that's already been done by staff, the measurement framework is not completely limited to that.

And so, we really we do want you to think in your various hats of clinicians and providers and health plans and another spaces, to really help us think through what would a measurement framework ideally look like that help us look at being able to evaluate the impact of interoperability.

And then think about which measures by exist that could fit that and where there be maybe measurement gaps that are going to need to be filled.

Jason Goldwater: Thanks. That make sense to me and …

Helen Burstin: Yes, thank you.

Jason Goldwater: … and I agree that we need to be practical.

John Loonsk: OK. This is John Loonsk. Can I ask a question?

Helen Burstin: Sure.

Male: Certainly, John.

John Loonsk: OK, great. This is really directed at EHR interoperability and I've note it -- I mean, I heard FHIR mentioned several times, HL7, et cetera, and particularly since this is a specification and EHR certification 2014 and 2015, and part of meaningful use. I haven't heard anything about direct interoperability and I'm just wondering if as you do your interviews if that's going to be part of it.

Recently, I say that is -- and there's probably not much literature on it because it's only been up and running for a couple of years and just starting to get some traction, but it's -- I mean, it's now close to 1.5 million users and tens of millions of transactions now a month.

And so, it's -- and when I look -- when I think about an EHR and I think about interoperability, I think, first, I take first one system considered integrated delivery network and how they build their functionality for staff and provider communication. We may have -- they have functionality that allows the different employees medical staff to communicate.

And across different departments, different care settings et cetera, same thing on transitional care if you think about an epic system when you move from the inpatient setting and you go to clinic and you see the patient there's a summary there. Now, obviously, you can dig in deeper because it same system but there's a summary there.

So they have worked out within single vendor systems interoperability across different care settings. Now, if you take it to the next stage -- I'm just saying about the commercial market and how this works. If you take it to the next stage and you look at a single vendor like eClinicalWorks or NextGen or G.E. Centricity, they've done the same thing across their specific products.

You can communicate system to system as if you're on the same practice on ECW, you can do transition to care and everything, pretty smooth usability is pretty good. But the reason I brought up Direct is Direct was the first chance we've ever had to connect those systems.

Now, the problem is there is no usability there for different system and that's been the rob for the last three years that this has been going but as they've gotten better and better, that usability virtualizing EHR is allowed through that transport mechanism. The limitation right now is the work flow within EHR's.

I'm just -- it just -- I mean, listening about FHIR which is just on the horizon not widely deployed are closed to it yet, I just want to make sure that this other specification and usage is part of all this.

Jason Goldwater: John, it's a great point and a great question and you are right. There's not a lot of published literature about Direct. But we did incorporate questions about Direct with respect to (acute format). So we are going to get information about that. I would also, you know, ask you if you have any data on Direct, particularly how it's been used in your organization that you're going to share with us that we would potentially include in our report. We'll be more than happy to. But yes, I'm …

John Loonsk: And today I've -- and yes.

(Off-Mic)

John Loonsk: Yes. So that -- and that's what my point is. I don't think there going to be a lot of data yet because I can't imagine enough time for studies. And besides, it hasn't been used probably much. I mean, the last 12 months more and more so were actually had is more effective clinically.

But, I mean, we were two hats. One, we support a network but, two, we do a lot of work on practice transformation patient-centered medical home, coordination of care across the community. And in the last year, that has been -- Direct has been the mechanism.

We've been able to do that, particularly in CTC since we're faculty in New York and essentially run that in New York. I mean, we can give you examples of how it's now starting to be utilize clinically but we don't have any real data yet.

Jason Goldwater: That's fine, John. I think you need even anecdotal information, I think it's helpful. Again, because there's just not a lot of widespread information about that, but I think anything you're able to share would be helpful. And again, the main point I would (imply) we are talking to people about this and we're interviewing the people about it on Direct -- in a chart interview in our format.

Direct is going to be one of the topics. You're going to be recognized that significant gap in all literature. Thank you very much for that.

Jason Shapiro: This is Jason Shapiro. I was wondering, I just wanted to sort of echo back to maybe the different types of measures that we're considering with what Helen and Hans and Julia and others. I think just that, are there really perhaps three categories of the measures then?

It seems like the main focus right now is this, you know, specific process and outcomes measures that are potentially sensitive to increase interoperability where we'd expect to see improvement with increasing inoperability.

And then I think, what Hans was referring to is maybe quality measures where the measurement itself would be improved by the inclusion of inoperable data sources like health information exchange, which is what I've been working on looking at frequent E.D. user measurement and early E.D. returns measurement where I don't think inoperability is going to necessarily improve those things as outcomes, that are ability of measure those things are improved by using inoperable data sources like health information exchange.

And then perhaps, a third category is actual measurement of inoperability. Things like, usage or participation in a health information exchange or implementation of an EHR that provides inoperability, you know, is part of the implementation. And is that a way that we should be trying to differentiate measures, perhaps?

Jason Goldwater: I think -- yes, I think that's certainly something absolutely consider. And I think a number of you had brought that up that it will certainly be discussed by us offline and then discuss again I think with the larger group where we can beat again. I think it's an excellent point, Jason.

And, certainly, for those of us -- and I know there's many of us that have been working on this topic for a long time, I think we all understand the value of potentially measuring that. We do have to keep in mind that that the objective of this particular work is really to focus on interoperability sensitive outcomes but I certainly think that the way you're sort of describing that has three potential different categories of measures.

It's certainly something to potentially consider for the future because I would echo Helen's comment that we don't want to make something that's impractical and unusable. And that would not advance the field, because they're not undermines all of the effort so the (HHS) just put in to try to advance inoperability.

We do want to make something that is useable, implementable and actionable so that it is something the people will be able to understand the benefits of inoperability, see the improvements and quality as a result and be able to understand where improve interoperability needs to be approved in order to move us much further along into that environment.

I think there will be a variety of different ways of doing this. Certainly, the sort of precepts of the measure framework that would adopt are not the only ones that will be incorporated with the side of (that). And just from the literature that we we're in (hook) that's when the model, because as I said a literature is what it is and going through all of that. Those are the major themed that we came up with.

But it will continue to be refined and certainly the framework is going to be discussed and the dimension then element or we'll just going to be discussed heavily about how we would incorporate that to make sure we're getting the wide measures that can be used in a way that advances, be effect so that would see in it's roadmap, the national quality strategy and interoperability as a whole.

Jason Shapiro: Thank you.

Hans Buitendijk: This is Hans Buitendijk. I'd like to ask another question and a suggestion for clarification. Based on the literature of study and the criteria used for what's

include or not and the major themes that derived from that one could get the impression that interoperability and -- from one of the discussions as well that interoperability could only be achieved if you use FHIR, C-CDA, Semantic Web.

And we all know that interoperability can be achieved in many other ways and example that was suggest makes around Direct to say a mechanism of getting the information across, all the formats version 2 of 807 and the PDP script, for you describing. There are number of different transports and syntactical components as well as semantic components to that.

What might be helpful to avoid the impression that the measures that we're looking at in the impacts that we're looking at are only limited to considering Semantic Web, FHIR and C-CDA that some introductory notes could be made to recognize of while the literature might not have done a lot of investigation and some of those spaces that clearly is a variety of (tenders) in those three areas that enable exchange and that each in their own right impacts positively a certain measures for him.

Certainly, at times, certain times from more preferable or more preferred or desire but they all contribute to interoperability. I think it will be helpful to recognize that so we don't get the impression that interoperability can only be achieved if you are able to exchange C-CDA documents that would not be helpful.

Jason Goldwater: Yeah, excellent point, Hans. Thank you. We'll certainly look at that as we review the comments and start to edit the report. I think it's a very well-stated point. I know we are now almost at 2:50, and almost at the end of our time. I can probably take one additional question, does anyone has one?

Otherwise, we need to -- we move to next steps and see if there are any public comment -- public comments, I'm sorry. Any final question from anyone? If -- again, if you have and been able to ask a question or you think of one later you're more than welcome to e-mail the interoperability mailbox and we will answer the question as soon as we are able.

OK, with that in mind, I'm going to turn it over to Poonam Bal, Senior Project Manager to talk about next steps, Poonam?

Poonam Bal: OK, perfect. Thank you, Jason. As we mentioned earlier, we know we sent the report out last week, can you probably had a chance to really turn the review and provide feedback. We will be giving you the opportunity to provide additional feedback by December 9, which is next Monday.

After that, we will do final edit on the draft report that you have received and we'll put that up for comment from January 13 to February 13. During that public comment, we'll be meeting again for a webinar on the February 1. This webinar will really focus on -- excuse me -- will really focus on the key informant interviews, what -- who we've interviewed, what information we received, what themes have come out of it and so on.

And so that will be the focus of the February 1 meeting. And then we'll have a in person meeting on March 2 -- I'm sorry, 22nd -- 21st and 22nd. At that point, majority of this background work will be completed. The key informant interview will be done, the report will be created for that.

The environmental scan report will be considered (to be hopefully) finalized at this point and then we really be focusing on -- or this is what we've learned, now let's start moving toward that framework. Yes, and so that's the next steps. Were there any questions about that?

Jason Goldwater: OK, thank you very much, Poonam. I do also want to mention that when we meet via the web in February, Poonam is right, we will be spending some time talking about the key informants. At that point in time, we will also have discussions internally with our clinical staff about the measures, give you an up to date on that as well.

With that in mind, we do need to open up the line for public comment. Operator, can you please do so?

Operator: OK. At this time, if would like to make a comment please press star then the number one.

There are no public comments at this time.

Jason Goldwater: OK. We thank you all very, very, very much for taking the time out for your very insightful comments. And I think, for a lot of us -- a lot of information for us to think about. We really do appreciate all of you for volunteering your time for this extremely important project.

We are all really looking forward to meeting many of you in person at the end of March. We will certainly be in touch with any developments that occur and we look forward to meeting all of you in February. Happy New Year to all of you once again, I hope you all have a healthy and prosperous 2017. Thank you very much.

Male: Thanks very much.

Female: Thank you.

Female: Thank you.

Male: Thank you.

END