Improving Diagnostic Quality and Safety/Reducing Diagnostic Error: Measurement Considerations Committee Web Meeting 3

Moderator: Kim Patterson
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(John McTilley): All right yes looks, like, we've got you on as a co-presenter which means (Michael) go ahead and get it started. So welcome everyone, good afternoon. This is (John McTilley) with NQF. And in the room here with me I've got…

(Caralee Latigua) (Caralee Latigua).

(John McTilley): And on the phone our Project Consultant.

Dr. Jesse Pines: Hi this is Jesse Pines.

(John McTilley): All right great. So I think today I'll quickly go over our agenda for today. So just, you know, obviously the last couple – what meetings we've had we've discussed the environmental scam supporting the project and the approach for the use cases. And, you know, the use cases that are going to form the bulk of the work on this project.

So in just a little while after we do a rollcall Jesse Pines will take us through the use case approach. And then our coaches will take you through just some reactions and discussions around the first couple use cases in a little bit more detail about that approach later.

We'll close with an opportunity for public comments and then a quick review of the timeline and some next steps including our next meeting on January 14. So with that I'll turn it over to (Caralee) to do the rollcall.

(Caralee Latigua): Great thank you (John). And first before we do rollcall just some housekeeping calls. First of all on behalf of the National Quality Forum and as Co-Chairs we'd like to formally welcome everyone to our third Reducing Diagnostic Error Measurements Concerns Web Meeting.

As a reminder this call is being recorded. So for note taking purposes as well as to share with anyone whom might have missed the meeting. With that all your lines are open so we ask that you please mute your phone lines and computers when you're not talking in order for us to have the clearest audio possible.

Additionally since this is a fairly large group it would be helpful for you to identify yourselves when you are speaking particularly as we get to learn your voices. If you have any questions or issues feel free to use the chat features and communicate with the NQF staff.

And so without further ado let's begin with our rollcall. First with our Co-Chairs (David Andrews), David Newman-Toker.

Dr. David Newman-Toker: Here can you hear me?

(Caralee Latigua): Yes thank you. (Slavia Catoy).

(Slavia Catoy): I'm here but I have to leave early I'm sorry.

(Caralee Latigua): Thank you for letting us know. (Karen Cosby). Sonali Desai.

Dr. Sonali Desai): Yes I'm here.

(Caralee Latigua): (Jane Dickerson). (Andrea Duhatsu). (Mark Graber).

(Mark Graber): I'm here.

(Caralee Latigua): Welcome. Helen Haskell.

Helen Haskell: Here.

(Caralee Latigua): (Cindy Ho). (John James).

(John James): Here.

(Caralee Latigua): Welcome. (Joseph Konish).

(Joseph Konish): Good morning I'm on.

(Caralee Latigua): Good morning. (Prashan Mahadran).

(Prashan Mahadran): Yes hi I'm on.

(Caralee Latigua): Welcome. (Cathy McDonald). (Lavinia Middleton).

(Lavinia Middleton): Here.

(Caralee Latigua): Welcome. (Craig Norclist). (Sean Prakaran). (Ricardo Canonas). (Raveta Reed).

(Raveta Reed): I'm here.

(Caralee Latigua): Welcome. (Pardeep Singh).

(Pardeep Singh): I'm here, thanks.

(Caralee Latigua): (Colleen Scout).

(Colleen Scout): I'm here.

(Caralee Latigua): Welcome. (Michael Woodruff) and (Ronald Pithe). Is there anyone – any other committee member who I did not call or just recently joined?

Helen Haskell: Hi this is Helen Haskell I just wanted to be sure you heard me because I didn't hear an acknowledgment. Can you hear me?

(John McTilley): Yes we can hear you Helen, sorry.

Helen Haskell: Okay.

(Caralee Latigua): Great. And now we also wanted to see if our federal committee members were on the all today. (Andrea Benin).

(Andrea Benin): Yes I'm here.

(Caralee Latigua): (David Hunt). (Marsha Smith).

(Marsha Smith): I'm here.

(Caralee Latigua): Great thank you everyone for joining us today. And now I will turn it over to Jesse who will guide us through the overview of the use case approach.

Dr. Jesse Pines: Great thank you very much. So let's go to the next slide here. So today we're going to be focusing on two use cases. The first one is going to be on (unintelligible). I'm going to be discussing sort of, you know, prototypical type cases that might come into the emergency department and/or other settings where people can have atypical presentations of dangerous diseases. So just to give you a sense there we're looking for, you know, not obvious presentations where someone is coming in and obviously having, you know, a heart attack or stroke.

But the more atypical cases where a diagnostic error can occur where people have symptoms that could potentially be similar to other less serious diseases. So, you know, there can be some cognitive errors associated with that. So we're going to work on trying to come up with some ways to resolve those errors both globally as well as for specific clinical use cases. And then we broadly think about how we can apply quality measurement to measure those errors and hold organizations accountable for having reduced those errors.

Our second use case is going to be on communication failure. Now this is really about, you know, failing to close the loop on diagnostic test results. So for example someone who might have a diagnostic test result that let's say comes back after they've already been discharged from a particular setting and it doesn't get communicated back to the patient. And as a result the patient may receive delayed care the then results in later problems or complications. So that's going to be our second use case.

And similarly we're going to be talking about global as well as specific solutions and how to apply volume measurements in that case. So the ones that are grayed out here are three other use cases that we're going to be addressing later in this project. So again these are ones we're not going to discuss today. But we're going to put these on hold for now.

The next slide. So the way that we're going to approach this is to first think about case exemplars. And I mentioned a few of those already. First time to think about specific case scenarios that we can use that describe these particular types of diagnostic errors.

And then from that again come up with some specifically describe the diagnostic challenge and some of the causal factors. So for example the reason why someone may have a missed stroke in the emergency department. Maybe that the provider is not aware of let's say the subtle signs of stroke or may miss a critical physical exam finding that could have been prevented.

So sort of think through what are some of the factors that might lead to that particular diagnostic error. And then move quickly into solutions to identify local solutions that will try to lower the likelihood of the patient have that error in the future. So how do we sort of globally take care of that and what are some things that health systems, clinicians, other stakeholders can do to try and reduce the likelihood of that error.

And then also focus specifically on the case exemplar and what are some specific ways that for example you could, you know, that you might train physicians differently so they may not miss that in the future or, you know, that's really specific to that case.

So we're looking at sort of global strategies to try to reduce the likelihood as well as specific strategies. So really, you know, getting back to our case exemplar, you know, deciding on which case exemplar or case exemplars in number one here is important because that would form these specific strategies. But the global strategies are ultimately going to be somewhat more general.

And then also importantly thinking forward on how we can apply quality measurement and specific performance measures that could be used either globally, what those would look, like, as well as for the specific case exemplars.

Next slide. So let me go ahead and turn it over to Dr. (Newman-Toker) who will be taking us through the first case of cognitive error. Or maybe stop for questions.

Dr. David Newman-Toker: Thanks Jesse. Oh no please take any questions.

Dr. Jesse Pines: Any questions before we start?

Dr. David Newman-Toker: Okay. So in these first couple of minutes really what we need to do is just brainstorm some ideas. We've got about five minutes or so to brainstorm some ideas that relate to this kind of case construct. And a few of them are listed there on the page.

And the purpose of doing this is not to pick one specific case that we're going to latch onto but instead to just identify a broad spectrum enough of the kinds of cases that we might be talking about that we are able to sort of fact check the subsequent steps about solution and measurements and so on and so forth against multiple different types of cases within this bucket of cognitive error related to formal presentations or atypical presentations.

Does anybody have thoughts or ideas about cases that sort of are good examples similar to the ones that are on there but that are not listed and that you'd like to sort of think through as specific exemplars?

(Mark Graber): David this is (Mark). These are all examples of can't miss diagnoses in an ER setting. Should we also be thinking about cases that are more chronic in nature, like, you know, misdiagnosis of rheumatoid arthritis in a patient with just one joint swollen, things, like, that?

Dr. David Newman-Toker: Yes I think we should. I think that's a good idea is to make sure that we have cases that are maybe slightly less secured and in more primary care type settings for sure, good idea.

Helen Haskell: David oh sorry this is Helen. I was just going to suggest that you include a cancer case in that – seems to be missing.

Dr. David Newman-Toker: Can you talk through that a little bit Helen in terms of what you mean by that? Can you give more details of a kind of cancer case that we should be thinking about?

Helen Haskell: Well I'm thinking of misdiagnosis of lung cancer which I think is the most common one. And I can't really – I don't really have a specific case in mind. I'm sure I could find one but...

(Mark Gruber): How about loss unexplained.

Dr. David Newman-Toker: So somebody with, you know, fatigue or, you know, with depression or something and it's from pancreatic cancer or something along those lines? In other words, like, a primary care – it's a subtle or atypical presentation of a cancer. Okay we can add that to the list of things we're thinking about.

(Lavinia Middleton): Hi it's (Lavinia Middleton). One thing we might want to consider in that scenario is a woman who's postpartum who comes in with an enlarged breast

and the thought is usually cellulitis. And what we not too infrequently see is pregnancy associated breast cancer that because the woman is postpartum the thought is that it's cellulitis and it's usually a delayed diagnosis.

Dr. David Newman-Toker: Okay that's a really good example because it gets us at this issue of the distracting sort of alternative diagnosis, the sort of common things or common that ends up being kind of the red herring that causes people to miss the underlying problem. So excellent. Other ideas just to sort of throw them out there?

(Prashan Mahadran): David this is (Prashan). One important – one idea related to case would be recurrent headaches with intercranial space occupying lesions, like, tumors. So that is a typical presentation but delayed diagnosis because of, you know, so that is one.

But other thought actually was as we pick up cases we should make sure that the gold standard for diagnosis is available right? So in the case of acute stroke or aortic detection there is a way to confirm that. But in sepsis to me even though it is more attractive given the, you know, controversy around it it is a very poorly defined condition. And different people are anticipating the terms sepsis differently. So you may want to pick up at least or cases that have clear gold standard for diagnosis.

Dr. David Newman-Toker: So can I just understand that a little bit better (Prashan). You're concern at some level is that because we're not taking in the end all of these cases are going to sort of just be examples – fall within this sort of broader group of the problem of atypical case presentations or subtle case presentations.

The piece of it that you're concerned about is that at some level we shouldn't think about cases where there is a problem with the gold standard diagnosis or is it a good idea that we should think how to deal with that difficult problem?

(Prashan Mahadran): Right. So I don't have a very good answer. But my concern is specifically in the terms of sepsis because the terms that says as routinely used in literature. For instance as compared to the accurate diagnosis, you know, of sepsis which is, like, organ dysfunction due to dysregulated immune response right?

So sometimes even though we are using a proxy for sepsis right? Whatever the sepsis criteria are which often do not reflect this. So I'm just wondering that the messaging that will come out from this clue might lead us down a different path or at least we should be cognizant that it could lead us down a different path. I just want to be a little careful about some conditions.

Dr. David Newman-Toker: I think you've highlighted an important point here (Prashan) which is that the gold standard problem is an important problem. And it comes up a lot specifically around this issue of sepsis. Although I sometimes think that maybe we've overblown the problem itself a little bit because often what people are arguing about is whether the patient officially meets criteria for sepsis or not. But this just means they should have infected sick patients. And often what we're talking about in practice is missing people before they are obviously septic, missing earlier infections that lead to sepsis.

And so in some sense I think it's a little bit less controversial and less difficult to think about a (Rory's) thought and type case where, you know, he clearly has some cellulitis. They sort of blow it off. He comes back with a progressive syndrome. And sort of arguing about when he was septic is not

the important part of the story. It's the hey how come the early red flags were missed that he was progressing toward sepsis. Does that help at all?

(Prashan Mahadran): No it helps a lot. But there I was drawing the caution David was and I don't know what the final outcome of the set of meetings would be. I didn't know what format this would come out. I just want us to be aware that it should not lead us to giving recommendations that certain things have to be done or certain items have to be met, you know, before an assignment of misdiagnosis or delayed diagnosis is made, that's it.

Dr. David Newman-Toker: Absolutely, okay. So…

(Michael Woodruff): (Mike Woodruff). I wanted to bring up one point along those lines. I'd love to see our choice of cases guided by some data around frequency. And to that so what sort of problem is this nationally. And so when I think about acute coronary syndrome I think that's one of our most commonly diagnoses. So an atypical presentation of acute coronary syndrome with perhaps nausea, vomiting or atypical location. And I think might be valuable.

And then when I think along those lines about aortic dissection, aortic dissection is an incredibly hard condition to diagnose. Some would argue that the standard of care there given our current state of available diagnostic modalities, the standard of care would be to usually miss an aortic dissection unless it presents with some fairly typical symptoms. And even with typical symptoms, you know, less than half the cases present with typical symptoms.

So I just worry that we're getting into a bit of a difficult to diagnose, really difficult to diagnose condition with aortic dissection.

Dr. David Newman-Toker: Good points. A couple of just quick thoughts and then we need to move on to kind of the next piece of this puzzle just because we won't get to the solution stage. And I just want to first articulate that the goal here is not to list every imaginable case or to make sure that everything's covered. There will presumably in the final report be some sort of a list of some examples.

But the goal is not to say, you know, these are the only examples or these are the specific examples that the committee's getting behind. The goal is to say that these are examples of a class of problem and here's what the committee thinks should be done to address this class of problems. So that's the first thing.

The second thing is it is a great idea to think about sort of public health relevance. But at least for the purposes of this exercise we mostly need to make sure that we've got kind of all of our bases covered just so that we're thinking about this problem of solutions in multiple contexts, like, the thing that (Mark) brought up at the very beginning which is hey look these are mostly things in an acute care setting.

Like in the emergency department maybe we need to think about the same kind of problems in primary care and how they're presented is a perfect example of the goal of this exercise which is to make sure we've covered enough bases that when we think through solutions we're not just thinking of one setting or just thinking of one disease.

And it is certainly the case that not all of these things would be equally soluble or not soluble. And that shouldn't dissuade us from sort of thinking about a solution set broadly across problems.

Any final thoughts before we move onto the causal issues.

(John Jay): This is (John Jay). I hate to slow things up. But I think one type case that's missing here is an acutely acquired condition. And I'm thinking here of electrolytes and those kinds of things where a medical record on the patient would be very valuable. For example to see if there's a change in the electrocardiogram from normal to the presenting electrocardiogram or the first one taken. I don't see that coming through in this list of exemplars. I think it may be important.

And the few times I talked to doctors about the importance of missing medical records they say yes sometimes that would have helped. So it's something to think about. I don't know how prevalent this is. I certainly have a case if one wants to listen to the details.

Dr. David Newman-Toker: Thank you that's a good example of sort of broadening our thinking. All right so and moving onto sort of the second question which is, you know, what are the typical diagnostic challenges or causal factors and how does that ultimately inform our understanding of the common causes of cognitive error and how does that ultimately then relate to countermeasures or solutions because really that's where the main focus of this is.

If I'm interpreting this correctly (Karen Cosby) has her hand raised. Do you want to speak up (Karen) or maybe I'm overinterpreting what I'm seeing?

(John McTilley): Hey (Caralee) can we unmute (Karen) if she isn't already?

Dr. David Newman-Toker: All right.

(John McTilley): She also did something in the Q&A on mesenteric ischemia being another common mischaracterization diagnosis. I think that was what her comment was about.

Dr. David Newman-Toker: I see (Karen) said my question in term atypical and sometimes the problem is mischaracterization of the problem or misinterpretation of the patient's objective symptoms. I agree I think that issue is sort of subtle as opposed to atypical may be a better way to frame that and then mesenteric ischemia. Okay great. We'll sort of add that.

So just for what it's worth in the documents that I don't know if these are the documents that got attached to the meeting, but if you look at the last set of documents that were sent out by email on Monday, the use case document has a breakdown of the causes of serious harm.

And most of the things that people have mentioned have fallen into that list including the mesenteric ischemia under the category of arterial thrombosis and there's a little figure in there about the relative prevalence of these malpractice claims of these various diseases. And I can tell you from work that you will hopefully see published in the next few months that it's pretty similar in epidemiologic data.

So in moving onto this issue of causal challenges and issues. The goal of trying to talk about this for a few minutes is to kind of get at what are the sorts of solution that we could maybe enact. So for example just to sort of put this out on the table. I have experienced a case where a patient came to their doctor repeatedly in primary care with headaches, new headaches – 75-year-old woman over and over again. And kept being told that it was sinusitis or a viral syndrome or this or that until she went blind from temporal arteritis.

In that particular case it's highly likely with giant cell arteritis which is an uncommon condition but people sort of know how to work it up. The training and medical schools probably are pretty good that you know to check a SED rate and give someone steroids. A diagnostic reminder type A whether it was

a checklist an (Isabelle) type decision support or something, like, that might be effective.

Whereas something, like, A, a stroke in a dizzy patient in the emergency department where everybody has got stroke on their mind as a scary idea in a dizzy patient, but the problem is that sort of next set of cognitive steps of differentiating common benign inner ear diseases from dangerous strokes is a fundamental problem. The diagnostic reminder system or the checklist wouldn't help unless it also gave some sort of instruction on how to differentiate between the two.

So that's the kind of causal distinction that relates to solutions that we want to sort of open up the discussion to. So let's take five minutes and talk about just a list of causes that might inform solutions.

(Mark Gruber): Well this is (Mark). I'll go ahead and provide you with this David and that is just a fundamental lack of knowledge about what is the next step.

Dr. David Newman-Toker: Okay and you think of that in the sort of sense of better education. Is that right (Mark)?

(Mark Gruber): Well there's a knowledge deficit. It doesn't have to be met through education. It could be met by just in time access to resources.

Dr. David Newman-Toker: Okay great. So either some form of either improved education in advance or just in time delivery of some form of knowledge whether that's a knowledge base, like, up to date or something, like, that or whether it's a more formalized sort of decision support. Okay other ideas. Try to list your cause or access to say again.

(Mark Gruber): Access to an expert.

Dr. David Newman-Toker: Or access to an expert yes. Great thinking. And just try to link whatever causes you come up with, you know, potential solutions, like, that so that we can kind of draw out that connection. Other suggestions?

Helen Haskell: This is Helen.

Dr. David Newman-Toker: The problems – sorry.

Helen Haskell: No go ahead.

Dr. David Newman-Toker: No please.

Helen Haskell: Well no I just wonder about the conundrum of guidelines and protocols that when particularly young diagnosticians who are presented with something that is unusual they default to the protocol and to the assumption that this doesn't happen for example in a young person, you know, without really being able to personalize it. And I don't know exactly what the solution is. But it's something that's been worrying me more and more.

And the other aspect of that I would say it's sort of the failure to listen to what actually concerns the patient and family. For example in the (Rory Staunton) case which you will keep citing his parents were frantic because the child couldn't walk. That was what they were really concerned about. And everyone else kept focusing on the gastroenteritis.

Dr. David Newman-Toker: Okay. So Helen just a little clarification there. On the conundrum of protocols. So is your concern at the getting people onto the protocol. That is not knowing to whom the protocol should apply or is it more of the I'm worried that the protocol itself is wrong a certain percentage of the time and I don't know how to deviate from the protocol in the correct place?

Helen Haskell: It's not necessarily that the protocol is wrong but that the clinicians are afraid to deviate to it. They tend to default to it instead of try to put people into it when they don't necessarily belong. They don't really look at individualization. I think there's a fear of saying you didn't follow the guidelines perhaps,…

Dr. David Newman-Toker: Okay.

Helen Haskell: …you know.

Dr. David Newman-Toker: Great. Other thoughts?

(David Hunt): Yes this is (David Hunt). I think that, you know, not to be trite but all of these fall into one of two categories. You didn't know about it or you didn't think about it. (Mark) already talked about you didn't know about it. But the tougher one is you didn't think about it. Many of us will be confronted with a scenario say on a board examination and it's listed out in a way that is common to the way we were trained. And it'll trigger that memory and you say oh this is giant cell arteritis or mesenteric ischemia.

The problem is patients don't present, like, that. So I think the big broad categories that we're looking for is you didn't even know about this which I think is relatively rare. But the more common is you didn't think about this.

Dr. David Newman-Toker: Thanks (David). So I think that's a really important point. It's similar to some of the stuff at the beginning we talked about this issue as sort of, like, how a diagnostic reminder system will help you if it's something you're not thinking about but you already know about. And I think that makes total sense.

I would argue that the didn't know about it part is probably more common that we give it credit for not in the sense of didn't know about it at all, like, had never heard of stroke. But in the sense of didn't now the details of how to differentiate, you know, ear disease from stroke or the subtleties of picking up a spinal abscess in a patient with fever and back pain. Not that it was the nuances were the pieces of the knowledge that we're missing rather than the kind of total big picture of the disease but the point is well taken. I think that's a good characterization. Other thoughts before we move to the next stuff.

(David Hunt): Just to follow on that line of thinking or what a lot didn't think about is the environment of care, you know, places that are, you know, overly busy or understaffed or, you know, where the diagnosticians are too stressed to really spend time to think, you know, that's where these errors are prone.

So I think, you know, as we think about this we should also talk about what are the environments that, you know, physicians are in that can lead to better thinking and better diagnoses and what does that look like? It could be sort of more global solutions.

(Mark Gruber): I agree.

Dr. David Newman-Toker: It's a great suggestion. Certainly it's the case that, you know, people have prescribed the emergency department for instance is a very sort of interrupt driven and chaotic kind of environment that is not conducive to thinking. So certainly those kinds of factors are absolutely relevant. And they apply in other clinical settings too, like, for instance in you know, a radiology department if you get a little bit – if you're on shift for too long or you kind of think about shift work and how one designs the workflow and the lighting conditions of the environment. Those have significant effects on cognitive

errors that are made in a narrower way around the interpretation of individual diagnostic tests as well. So it's a great idea.

All right one more comment and then let's move on.

(Hardeep): Yes this is (Hardeep). So just to add I realize (David Hunt's) comment about, you know, you didn't now about it, didn't think about it. And I'll add one more that you didn't realize you needed help. That's sort of what we've seen a lot of our work on sort of confidence and seeking our help.

And I'm wondering if all three of those can be put into the context of the health system where, you know, somebody made a nice comment that we need to think about the health system around in which we are practicing. Each of those has helped us in implication.

So you've got the cognitive and you can almost never separate the cognitive from the system issue because you want to think about causal factors or solutions. That might be a nice little simpler framework to think about.

Dr. David Newman-Toker: That's a great suggestion, yes.

(David Hunt): Can I add one more comment?

Dr. David Newman-Toker: Sure and then we need to move on because otherwise we're going to run out for the really meaty stuff.

Dr. (David Hunt): As an emergency physician I feel the duty to describe another category which I think is very common which is risk gratification and the cost benefit discussion of testing. So, you know, to diagnose rare diseases we can test

everybody who have even closely related symptoms. But that's a strategy of over testing and that leads to harm.

And so most of the physicians I know are going through an algorithm either in their heads or with some kind of decision support saying what's the likelihood of an aortic dissection in this patient and does the likelihood warrant me doing a contrasted CT scan which is time, money and some risk of harm to the patient. And that paradigm I think applies fairly broadly.

Dr. David Newman-Toker: Yes that's a great point in this issue of the tradeoffs and sort of appropriate decision making and having to deal with sort of the balance there I think that's a nice place to end this piece of the conversation.

Let's move us onto the next bit where we want to spend a little bit more time. I'm talking about solutions. So in the use case guide that was sent on Monday there are a few more examples. But there are a few specific sub examples but they were sort of framed into these three big buckets. They're obviously many different ways to think about solutions for a lot of these problems. So let's make sure that we've got a broad palate of ideas on the table.

Are there other things that you guys think of particularly that are promising strategies whether the sort of higher altitude level or at a more granular detailed level in a problem specific way or otherwise?

(John James): This is (John James). I'd like to bring up the idea again of access to medical records. The ER physicians that are online know better than I do. But I think certainly in some ERs and under some conditions knowing the patient's history in detail is going to help guide the diagnosis regardless of the presenting conditions but I could be wrong. I mean maybe that's just not the way it really is. But I think a good medical record would be very valuable and

the system needs to adjust to ensure the people can bring in their medical record if they want. Maybe they've got a lot of comorbidities and those need to be taken in account when assessing the symptoms and so on.

Dr. David Newman-Toker: So I think that's a great point and it's certainly the case that there are times where we for lack of access to prior records or information make errors including diagnostic errors. Could I just get sort of a sense from those who practice in these clinical settings in the emergency department or otherwise and have seen a lot of, you know, misdiagnoses happen or have dealt with malpractice plans cases?

To what extent do people think that is a very common cause of in this class of disorders? That is in patients with atypical symptom presentation where the problem is principally a lack of access to medical records as opposed to the problem is principally didn't know or didn't think about it the way (David Hunt) said or didn't realize you needed help as a deep set. Could we just hear a little bit of talk about that because I think it's an important question to answer.

(Prashan Mahadran): So David I can give you my perspective. But with the caveat that it is (unintelligible) emergency medicine. This is (Prashan). To me it is not necessarily the lack of access to electronic health records or prior records which is an important part.

But the fact that, you know, people either didn't think about it or did not know about it, you know, that is more common because detailed history taking and physical exams sometimes you can even get an indication that okay the patient had an MRI, you know, you may not get the results or the head scan but you could get an idea that the patient had some investigation done in a particular

direction. And that often does not prevent me from moving ahead with the diagnostic process.

Dr. David Newman-Toker: All right that's great (Prashan). But let's also hear from somebody in adult emergency medicine, very general medicine or whatever because kids of course have many fewer historical records to work from that are relevant. So how about somebody from adult medicine?

Dr. Sonali Desai: This is Sonali Desai. I'm a rheumatologist so we frequently are seeing cases that are coming from multiple other providers based over care and time. And I think that although the access to data is important I think it's the synthesis and digestion of that information development of the next steps which I think is more about spending the time with the patient and really even if you don't have access to all of the details of the information that has occurred to date, but really taking what the patient's telling you that moment in time in concert with some of that other data to then come up with the next steps.

Dr. David Newman-Toker: Okay thank you.

Dr. Jesse Pines: This is Jesse here. So, you know, in the adult emergency medicine side, you know, especially with complex patients they can have just a tremendous amount of, you know, medical records, dates to go through. So, you know, sometimes it may be in there but the usability of the system just does not permit immediate access to the most relevant information. So I think sort of, you know, in EHR usability especially for complex patients is important.

Dr. (Prashan Mahadran): I agree.

Dr. (John Hunt): That's perfect.

Dr. David Newman-Toker: So that makes a lot of sense. And just give us your sense of the frequency Jesse. Obviously the patients who are most likely to suffer from lack of access to their medical records or lack of presentation, quality of presentation of medical records are the patients who have the most complex medical histories.

But in a case where the principle cause is what we would consider a cognitive error in an atypical case to what extent do we think that the access to medical records is germane there as opposed to we're going to get to the communication use case in just a minute where obviously access to medical records is an enormous part of that story conceptually and how that stuff is presented. I'm just trying to figure out how big a problem this access to medical records thing is in this use case scenario.

Dr. Jesse Pines: I think, you know, it is one of many causes. But in certain cases it can be the cause where someone may have, you know, a list of you know, 10 different discharge summaries and other things, you know, there may be something buried in there that's incredibly relevant. But just given the limited amount of time and, you know, the way the emergency care structure that you just don't have time to read through, you know, all these reams of information. So I would say that I mean I've seen it happen. So it does happen. But I would say one of the many causes.

Dr. David Newman-Toker: Okay great. Other things that people want to put on the table as potential solutions. Obviously in the decision, the discussion guide we put a few different things down there under increasing expertise of current providers. We had education and training and feedback systems. Under supporting decision making we had sort of (unintelligible) into strategies, decision aids, computer-based decision support. Under enhancing teamwork we had increasing access to consultants, empowering nurses and allied health

professionals and improving patient provider communication. Are there other either specific sub strategies within those domains or other classes of strategies that you want to entertain to solve these…

(Mark Gruber): This is (Mark). Is that second opinion under that latter category?

Dr. David Newman-Toker: Yes I'll make sure that it expressly says that. I think it's sort of there but let me – I'll call it out. That's a good idea.

Helen Haskell: This is Helen again. I really would emphasize the patient input, you know, it's possible written patient input that at least concurring that you have – what the patient is concerned about is what you have written that you're on the same page.

Dr. David Newman-Toker: Like open notes for instance or did you mean something else?

Helen Haskell: Well open notes haven't gone there yet. Open notes don't have the patient input. I mean I think there needs to be and openness is also after the fact. But while, you know, the two sort of – I just shared decision making but shared diagnosis so that if the patient for example going back to the case of (Rory Staunton) if they had turned to them and said, you know, so here is gastroenteritis and the family said no but this child can't walk. You know we're really concerned about the leg pain. To have that as part of the record so that you have what the patient's chief complaint as they see it.

Dr. David Newman-Toker: Okay. So more reporting of the patient's words and the patient's perspective.

Helen Haskell: Or even just doublechecking with the patient before you, you know, when you write something make sure it's right.

Dr. David Newman-Toker: Okay.

(David Andrews): This is (David Andrews).

Dr. David Newman-Toker: All right co-creating the medical record is…

Helen Haskell: Co-creating the medical record thank you, yes.

Dr. David Newman-Toker: Okay (David) go ahead.

(David Andrews): Yes I just want to sort of second that and say that I think really with seriously underutilized resources the patient's knowledge about the patient not just the immediate presenting symptoms. But also the history there are often circumstances and I know a lot of them where something mildly obscure and probably not visible in the medical record but known by the patient is very pertinent to diagnosing a moderately difficult sort of problem.

So I understand the time pressure issue and all of that and the difficulty of physicians becoming sort of skilled interviewers. But I think that's a really seriously underutilized resource particularly one to help us get around the kind of premature foreclosure that's often the case with the cognitive errors.

Dr. David Newman-Toker: Okay great. Maybe time for one more and then we need to move ourselves probably onto the quality measurement and start to wrap up the case so we can have time for the second scenario.

Okay hearing none let's move onto the measurement piece of the story. So the goal here is to think a little bit about again about this specific class of problems. And think about what sorts of measurement strategies might be most appropriate. I don't – we don't have any examples here on the page but

if we go to the document from – that was sent out on Monday there's some examples listed.

Obviously there's lots of ways to think about measurement. But they're laid out in that document under structured process and outcome. So structure might be something, like, you know, availability to access consultants or neuroimaging or, you know, essentially access to additional capabilities that's been articulated or just in support systems and whatnot. Process would be things, like, documenting elements of an exam or rates of utilization of diagnostic tests or a match and a mismatch between the way in which we did a workup and the final diagnosis that's rendered.

And on the outcome side you could think about diagnostic accuracy, misdiagnosis related harms and a patient reported sort of understanding of their diagnosis. Are there other kinds of things that people in this particular scenario think would be particularly helpful from a quality measurement standpoint that aren't already on the list as potentials?

Helen Haskell: This is Helen. I will jump in here, you know, where angels shouldn't tread. But I'm thinking about long-term outcome to patient. Not just understanding of the diagnosis but, you know, what the diagnosis got to be. I'm not sure how exactly that is measured. But I think it can be done with the patient survey in some fashion.

Dr. David Newman-Toker: So similar to some of the work that (Kelly Gleason) and others have been doing is essentially that (Mark) has been suggesting for many years which is just ask the patient. But whether their diagnosis is changed or whether they got a new diagnosis as a method of measuring diagnostic accuracy in essence. Is that -…

Helen Haskell: Sure.

Dr. David Newman-Toker: …did I capture that right Helen?

Helen Haskell: Yes. Although I think that also, you know, sometimes it is years later that the patient gets the diagnosis.

Dr. David Newman-Toker: Sure.

Helen Haskell: But that's really long term.

Dr. David Newman-Toker: I will say this. Again, you know, I know this is a little bit of an artificial construct. But we have tried to kind of carve out these use cases as individual use cases. And this one at least in its initial construction was this notion of atypical presentations of dangerous diseases. And although there are some dangerous diseases that unfold over years or decades even, like, Whipple's disease or whatever, that are treatable and we wish they were diagnosed sooner.

The vast majority of these dangerous diseases unfold over the course either of minutes, hours, days or weeks in the case of vascular events and infections or months up to a year or two in the case of cancers. So hopefully at least for this class of problems that the measurement – the window doesn't have to extend out to multiple decades

Helen Haskell: Okay I really trust that part of it. A year would be great.

Dr. David Newman-Toker: Okay great, other thoughts. Well let me ask this specific question and then while people are sort of conjugating on this idea. So what do people think about this issue of match and mismatch between process measures and

diagnosis rendered? So we've tried to do some of this around dizziness for instance where you have, you know, a symptom oriented framework of saying okay look I want to know how my process is for evaluating dizzy patients. You do the same thing.

We do already do that in a lot of ways for chest pain and a few other symptoms occasionally. And you say well if the patient leaves with a diagnosis of benign positional vertigo but their visit included a CT scan of the head. Generally speaking that's considered a mismatch because it's a diagnosis that's supposed to be made at the bedside and not by imaging. And imaging is generally not required unless there's some other thing going on.

And if you look at two things documented in the chart one is that imaging by CT was obtained and the other of which is that there's nothing documented about examining the patient for BPV in the chart doing the Dix-Hallpike test or looking at their nystagmus or whatever. But that would be thought of as a mismatch between the process of diagnosis that was delivered in the care of the patient and the diagnosis that was rendered. It wouldn't be per se a measure of whether the diagnosis was actually accurate or inaccurate. But it would be a measure of something flawed in the way we arrived at that diagnosis.

How do people feel about that as a general construct? Not that specific example but the idea of identifying scenarios, like, that where we can pick specific measurable things in the Electronic Health Record or chart that can be markers for us of process failures that ultimately are associated with a particular set of diagnoses that are rendered.

Man: Yes, smart, that's a good strategy.

(John McTilley): Yes this is (John) (Unintelligible). I think that would kind of fall in the category of near misses or maybe lucky guesses. Yes I think that needs to be paid attention to.

Dr. David Newman-Toker: So in this case we wouldn't know actually whether it was near misses or lucky guesses or just missed diagnoses because you wouldn't be sure on the basis of that measure alone that (unintelligible) was the correct diagnosis. But you'd have to have other measures to figure that out, you'd have to ask the patient or you'd have to do some follow-up record analysis. Some of those things are harder to do than to analyze the process.

We're just curious to how people feel. Heard a couple of pluses, any other thoughts about that as sort of a general construct for measuring how we're doing at a process level with some of these diagnosis and these cognitive error and a-typical cases kind of scenarios?

(Andrea Benin): This is (Andrea) (unintelligible). Isn't that more of an overuse metric or an inappropriate use metric?

Dr. David Newman-Toker: Well it's, it could be both, I mean in some sense you're saying okay look we underutilize the bedside evaluation and we over utilize some lab tests. It doesn't have to be that way. It could have been the opposite in theory. So it's more about to what extent did the diagnostic process match what it was supposed to be given what you said at the end of the day was the diagnosis.

Woman: I think I had, this is (unintelligible), I think I have the same thought process. You know I'm trying to think about the choosing wisely efforts and campaigns to reduce unnecessary testing for common diagnosis. But then at the same time trying to identify triggers and ways to identify potentially missed diagnosis. And I think it's a tricky area because we're trying to find

say an electronic quality measure around this. I'm just trying to think through numerators, denominators and how you would actually measure this. But then you also mentioned chart review which makes ECQM's a little bit harder to validate.

So I'm just trying to you know kind of wrap my head around all of those different things to try and come up with a concise and accurate way to measure this. But I don't know if others are feeling the same way.

Dr. Jesse Pines: (Unintelligible) I think one way to think about this would be measures that are paired with you know in the emergency department, I think someone said earlier, we can test everyone and we're never going to miss anything. But (unintelligible) are tested the probability of misses may go up. So I think about pairing the missed measures with these, I don't want to say necessarily overuse measures but maybe sort of broad measures of how many diagnostic tests are you doing and how is that balanced with the miss rate to try to sort of find a smooth spot there. I mean is there some threshold below with you know the missing (unintelligible) same path. And you know things can be very typical and you know some people with the (unintelligible) you know if they've got other symptoms that are concerning that end up getting ruled out, you may end up with that diagnosis.

And so I would worry a little bit about that specific use case but maybe sort of broad measures with (unintelligible).

Dr. David Newman-Toker: So I think the issue of balanced measures is a really important one, (Jesse), I think it's one that we've been talking about a lot. Obviously and this was brought up earlier, I forget by whom, but the notion that you could solve all of the, if you will, under diagnosis problem by overusing tests. That is you could get to maximum reductions in the false negative, excuse me, in a false

negative rate of our workups if we just did every test on every patient in every scenario. But we would quickly break the piggy bank and we would harm a lot of patients with the tests themselves.

So I think having a balanced measure is critically important. If you've got some measure that's sort of pushing people to get, to be more accurate in their diagnosis, you also have to make sure that you're not simultaneously just pushing them to do more unnecessary work or create unnecessary harm. That makes total sense.

I guess this was something slightly different. We've done a lot of work in this space around you know trying to figure out kind of how to identify whether we're doing better at the bedside or worse at the bedside. And I do think that if you understand enough about a problem you can actually, you learn a lot of things right. You can say okay look we now know that the CT scan rate for dizzy patients in the emergency department should be somewhere down around 2% because we're doing live tele-consults to the ED and that's about how often we recommend them.

We know that we could easily set that bar at 5% which was the rate of CT's for ED dizziness in 1995. And since which there's been a steady increase of CT's out to 45% with zero increase in the diagnostic yield. There's been a steady decline in the diagnostic yield that exactly mirrors that increase. So we know enough data about the scenarios to sort of set parameters around that.

I do think there are places where you could do that very productively and use those as a balance measures or you know process outcome mismatches if you will.

Man: Okay, any final thoughts before we move onto the next case? I want to make sure that that gets its due time in the discussion today. Okay, (Jesse) is, is somebody else going to lead case two, or? I can't remember what we decided on this.

(Hardeep): This is (Hardeep):, (Andrew) asked (Mark) and I to lead the discussion.

Man: Great.

(Hardeep): Okay so this is (Hardeep): (unintelligible). So (Mark Graver) and I are going to tag team. I wasn't sure if I was going to make the call because I'm on the hospital service. So we're going to split up some of the talking responsibilities so that you don't have to keep hearing all of just one of us talk. (Mark), do you want to just go ahead with the first moderation and we'll come back to me for the second?

(Mark Graver): Sure, thanks (Hardeep):. So I think our first task was to see if we have adequate breadth of our use cases on closing the loop. Does anybody have suggestions for use cases that weren't presented? Do we have a slide we could show on the ones that have already been suggested? There we go.

So we're looking for use cases. One question I have is whether we're – we want to restrict our focus on communication breakdowns to lab related breakdowns. Or are we thinking about other instances where communication breakdowns occur outside of the lab?

(Karen): This is (Karen)…

(Mark Graver): What people think about that and other suggestions you might have.

(Hardeep): And (Mark) I think you mean lab, imaging, pathology, all of that, right? That's what you mean, the testing?

(Mark Graver): Yes, testing related, are we just talking about testing related breakdowns? Or do we want to be more inclusive?

(David Hunt): Hi this is (David). I think if we solve the, if we were able to have a comprehensive or very good set of things to say about testing, lab images, etcetera, I think that would be a huge you know going – I think I would count that as a win. Not that we would have to stick with just that but that would satisfy me.

(Mark Graver): Yes that may be the low hanging fruit, great, other thoughts?

(Lavinia Middleton): Hi it's (Lavinia Middleton), I think that the communication of labs and imaging results across the continuum of care is something that we could really speak to and address. I think that's a real breakdown especially when someone moves from the inpatient to outpatient setting.

(Mark Graver): Yes, or across organizations.

(Lavinia Middleton): Good point.

(Mark Graver): Yes, thank you for that. Other use cases?

Man: (Mark) did you have, just, I didn't fully understand your question in terms of the communication piece beyond test. Did you mean like provider to provider you know sort of talking to each other kind of failures where you know a nurse doesn't share some information with the doctor that would be relevant

to the diagnosis. Was that what you meant when you said non-test related communication failures?

(Mark Graver): Right. Right, well you know talking to the patient, talking to our colleagues, giving a diagnosis back to the patient like in the IOM definition of diagnostic error, literal communication breakdowns.

(Hardeep): Yes and also I would say you know I think initially the thought was to just be focused to test so maybe things like referrals because there's a lot of similarities and trying to you know solve the problem of test results, communication referrals, communication together.

(Mark Graver): Yes.

(Hardeep): But I think what (David Hunt) said about maybe focusing on just tests really answers the question that (Mark) was getting to.

Man: Hey (Hardeep): and (Mark), just one relevant example for this, as an example if you wanted was missing fractured, posterior rib fractures in patients with child abuse. And one of the issues that we had seen was that the (unintelligible) read was picked up not by the radiology resident, but the next day the attending would pick it up. But not communicate it to the ER or to whoever you know whoever it needs to be communicated to.

(Mark Graver): Yes, right.

(Hardeep): Excellent point of amended test results, you bring up a sort of (unintelligible) which is a high-risk. So I think for the purpose of this conversation just to clarify, I think we want to focus on what we call sort of sub-critical test results. That means not the ones necessarily that needs to be life threatening

you know potassium's at 7 where yes they may be a problem but it's less of a problem then this sub-critical test results where chest x-rays are getting lost, the fractures are getting lost to follow-up.

So I think if everybody could agree on that, that would be good because then that gives us a focus even further that's where the communication problems are.

(Mark Graver): So (Hardeep): this is (Mark). Why do we want to focus – I mean those problems seem to be much more easily solved than the other things we've been talking about. But as long as we have the opportunity to propose measures and think about ways to solve the problem why don't we think more broadly?

(Hardeep): Well the only thing with – the Joint Commission already does a lot of work on critical, the life-threatening communication. So…

(Mark Graver): Right.

(Hardeep): What we don't have is a lot of this focus on sub-critical. That's pretty much the reason. But I mean I'm open to (unintelligible).

(Mark Graver): Well I guess it's a question for (Andrew) and (Jesse). You know do we have the opportunity here to think broadly about the issue or are we trying to focus on something that's very actionable.

Dr. Jesse Pines: I mean I would say that I think it's ultimately up to the committee where we want to focus and maybe sort of you know talking through to the solutions you know we don't want to take on something that is so broad that the

solution becomes alluded. But you know something not too narrow where we don't have global solutions.

(Mark Graver): Thanks (Jesse). Good, other use cases? (Hardeep):, do you want to do the next section?

(Hardeep): Alright good. So just to sort of recap this section so we'll focus, I think (Jesse) I was hearing from you that I think sort of a little bit of focus point making sure that we address some high priority areas. I heard out patient, I heard inpatient and outpatient, (John) mentioned the emergency room especially with sort of the callbacks which happen. We can definitely include those things.

I think at this point in time, I think anything can be fair game in terms of whether it's lab or pathology or imaging, I think all three of those things get lost and probably more. But we, all our use cases can sort of diversify and tell us about these things. Does that sound fair? Like a summary of what we just discussed?

Dr. Jesse Pines: Yes, sounds reasonable.

(Hardeep): Okay, alright so let's go to the next slide. So let's talk about some causal factors. So one of the contributing factors that people think you know relate to these communication failures. I like to sort of just think about the communication failures that may happen from the diagnostic service to the clinician. So, like what (John) mentioned the radiologist didn't personally communicate the fracture to somebody, that would be a diagnostic service to the provider. The second type of communication breakdown also happens from the provider to the patient. You know often maybe they review the test.

So I think of both of those things. There is issues that have been described that I can talk about, the future of responsibility as to who is responsible for that follow-up comes up quite a bit. We've seen that the odds ratio of something getting lost to follow-up nearly doubles when it's sent to two people because one person thinks the other was going to follow-up.

And you know the problem with interoperability that has been described for some time, just don't get the test results for some reason or the other. But other than that if people want to discuss what are the other contributing factors and challenges in this area.

(Joe): Hi this is (Joe). I just wanted to kind of point something out. In this, I think there's a lack of you know the patient's responsibility also in this. And now especially in the days of having patient portals and communicating through that. Or say your PCP tells you, you know you have the elevated PSA you should follow-up, here's the recommendation for a urologist, make an appointment and go see him. And I decide as a patient I'm not going to do that, you know and then later on you know it turns out I have a prostate cancer, you know that lack of follow-up was partly on my responsibility also. And you know we do a lot of this in our organization of making sure you know especially critical results or infections that are followed-up.

But it's very difficult when you don't have contact information for the patient or sometimes you know we have a large homeless population and trying to go track those down. And we go to great lengths to try to get that information back to the patient. So there has to be some accountability also on the patient's part in this communication loop.

(Hardeep): Alright, thanks for that. What do other people think?

(Helen): Well this is (Helen), I would sort of say a flip side of that in that there should be better processes for following-up with patients, to making it clear to patients what's important. That a follow-up appointment should perhaps be made by the person who's recommending it.

And also using the patient as a possible go-between. Not putting the responsibility on the patient but for example when you get this responsibility for who's going to follow-up. Do you say to the patient the facilitator will follow-up on this and here's his contact information. There's things that you can do, the patient at this point is sort of the only continuous thread, if you give more information to the patient they can really be more (unintelligible).

(Hardeep): (Unintelligible)?

(Mark Graver): (Hardeep): this is (Mark), I have to, I wonder if there's, if we're a little too granular on our causes here. It seems to me a root cause of all – of many of these is if there's no expertise at the organizational level about thinking through how processes should be set up so that communication is assured. It seems like a lot of these things were just never designed to work well from the start. They were just piecemeal together and we have what we have.

(Hardeep): Yes and I think (Mark) we're going to get to that and the solution I think that what you're describing, organizations could definitely do that. So I think that's a comment and the next strategy should definitely be part of as sort of the solution point, yes.

(David Hunt): And I'll, this is (David), I'll…

((Crosstalk))

(David Hunt): Go ahead.

(Karen): This is (Karen). I think I'm finally unmuted. I'd like to add one element that we haven't actually looked at. And that can effectively communicating with a language that people understand. I still find lab reports that are ambiguous as to whether or not something's neoplastic or not. And I think patients have the same trouble with ambiguity with reports that these reports need to have actual items that's a part of them. And that would be an action item but it's also a problem.

(Hardeep): Yes so I think (Karen) what you're describing is some of the things that we're sending to patients. They may not necessarily understand what you know that means even though now they have access to the information.

(Karen): Well and clinicians don't always understand especially with the new testing. There's a lot of results that are difficult to interpret or that aren't – our past reports I honestly sometimes can't tell the difference between the pre-op and post-op or final diagnosis the way they are phrased. And when I ask people – I think there was a study that actually shows surgeons about 30% of the time didn't really understand the past report on their surgical specimens. So there's some communication and language between specialists and between specialists and patients and that actually is I think a more important thing.

(Hardeep): I think somebody's off mute. Sorry, go ahead (Karen).

(Karen): Well I think my point is that it's not assuming that people understand, it's redoing the templates and the language we use with one another to be very explicit in what we mean for the significance of the findings.

(Hardeep): Yes good point.

(David): This is (David). I'll echo and sort of add to this you know the clarity of the communication that of course there's always the language barrier issue in addition to just you know the medical problem of not understanding what somebody's saying in English but in foreign terminology. But there's also the issue of language barriers that sometimes get in the way of that as well.

I guess the thing I struggle with though with this question of how far you know of the risk of sort of scope for this use case is that sometimes you know we've seen some of our colleagues frame the entire diagnostic processes. For instance sort of a lab based thing. So it's you know (unintelligible) thought is the structure of not just you know pre-analytic, analytic, and post-analytic but the pre-pre-analytic and the post-post-analytic being selection of tests for pre-pre and interpretation and integration of test results in the post-post. A

And you know as a clinician the pre-pre and the post-post to me are the bedside encounter with the patient. They're not part of the total testing process per say, they're part of the bedside interaction.

I worry a little bit about if we get to the point where closing the loop refers to not only making sure that the test results get conveyed but that they're also cognitively, critically interpreted in a correct way into the process of care. Are we going beyond the scope of this particular use case and getting into more of territory of the first use case.

(Mark Graver): Well just so it's in one or the other certainly a very actionable category.

(John McTilley): This is (John), having gotten a little dip into some things, I went to a meeting a few weeks ago on diagnostic errors. One of the things that came through to me as a patient advocate was how to communicate uncertainties. And that

would certainly apply to diagnosis. I think (Karen) touched on that a little bit, you know there's kind of confusing or uncertain things may be coming out of the (pap) lab.

But overall the communication of uncertainty needs to be understood I think. And of course the idea is to resolve the uncertainty at the proper time down the road. But for the moment there's uncertainty about the diagnosis.

(Hardeep): Yes I think (John) you make a good point that we'll have to again think about the scope a little bit. But there is some evidence that the way the radiology report is written whether you would take action in a timely basis or not. And so I think that kind of thing can happen.

We could certainly think about these things and we can maybe say some of these things we found outside the use case, (David) as you mentioned that you know it may be covered we might go to case number four which I think hopefully will be our next call or three, and then we decide that maybe uncertainty communication is maybe better place than that one as long as it's addressed somewhere. I'm sure there will be a whole lot between these scenarios.

Anything else in terms of causal factors?

(Lavinia Middleton): Hi (Hardeep):, it's (Lavinia). I just want to add also the amended diagnosis or the uncertain diagnosis that the culture that comes back positive and then days later you have the sensitivity. I think putting a – it is impactful to be able to communicate uncertainty in diagnosis and knowing that an additional diagnosis may be rendered that may give more certainty. And if the clinician or the patient hears the first diagnosis, will they be waiting for or will they be

acting on something that comes later in the EHR or you know as a facts report that may add more clarity to the report?

And also who owns that clarified, amended or changed diagnosis?

(Hardeep): Yes so (Lavinia) were you thinking that there should be a better way to communicate that? I mean usually these things come through EHR and that makes me – reminds me of one more thing I need to mention. But were you thinking there needs to be better processes to communicate?

(Lavinia Middleton): I think communicating uncertainty and also communicating changed or amended diagnosis.

(Hardeep): Yes you know we developed some guides, kind of going into the solution, we developed some guides that actually (David Hunt) knows about (unintelligible) where we actually specify that if there is an amended report that makes a change of diagnosis or treatment, you need to personally call the treating physician as a pathologist and or a radiologist or as you know a lab person. The onus is on the person who amended it to make that call and make sure that it's followed-up. Just because we cannot rely necessarily on electronic communication that we do these days through the EHR to make that change happen or to make that action happen on the other end.

That also reminds me, we didn't sort of talk as much about the provider related you know oh I just forgot to communicate or I'm you know there's too much information. We've actually seen, some of you are familiar with the EHR inbox where there's an excess number of notifications that providers are getting, clinicians are getting in their inboxes and they just miss some test results based on that. So I think we should think about that as a causal factor as well.

Man: Well if it's anything like my email inbox, I can tell you that it happens all the time.

(Hardeep): There's about 125 or so messages we've quantified in several settings per day.

Alright, let's go to the next slide, I think (Mark) back to you for this one. I'll come back for measures.

(Mark Graver): Great, thanks (Hardeep):. So it's time to discuss possible solutions and I'm not sure the best way to organize this but maybe we should just focus on what's on the slide here. So start off with some general strategies and distinguish those from specific solutions. So what do people have in mind for general approaches for this?

(Colleen): This is (Colleen), hi, so per what we were just discussing and the sort of Electronic Health Record notification, I know we hear from pathologists all the time you know well our EHR takes care of that for us or you know I'm doing the best I can, I'm sending these notifications in the EHR, I just don't know if the providers are getting them or looking at them. And you know there are certainly health systems that are putting in place hard stops for this, that or the other thing for certain tests under certain circumstances like that. And I would just say I think in all cases in terms of notification and particularly in terms of hard stops to just be very judicious about the use of those and to not assume that notification in the EHR, a flag in the EHR or hard stop is a solution for everything.

I think that there has been a little bit of like the pendulum swinging towards that the way to make sure that the information was definitely communicated and it's becoming clear that like you were just saying sometimes things get

missed. So probably a more judicious use of those, I don't know exactly how you would implement that but a more judicious use of hard stops and flags in the EHR's would make them possibly more meaningful.

(Hardeep): Yes and (Colleen) you mean not just judicious use of hard stops which I totally agree with you but also judicious use of notifications. I mean…

(Colleen): Yes.

(Hardeep): I mean there's all sorts of notifications coming our way, right.

(Colleen): Yes.

(Hardeep): In the EHR. So it's judicious use of both would be the way to go.

(Colleen): Yes and maybe…

((Crosstalk))

Man: Keep going, sorry.

(Colleen): Oh I was just going to say like you know I know that this was created to solve like the notifications were created to solve a problem. And I would hate for us to like take a step back, but are there other ways to communicate this information that aren't just a flag that looks like every other flag that you get that is easy to accidentally skip half?

(Hardeep): Yes, I think you bring up a good point. There's also design, also a design issue in the HER so right now everything looks kind of the same. There's got to be a better way to design the EHR inbox so that things that are really important

stand out in some way and, you know, make sure we follow them up versus, you know, all the other things that we, you know, routinely add.

(David): This is (David). I just want to follow-up on this point a little bit, this issue of how our solutions may cause their own problems, right. Because I think it's really important. We don't spend enough time talking about it I think when we're developing them.

Email at some point for me anyway as an individual was a very reliable form of communication because I always had a record of everything, the transactions and I could keep up with them and so on and so forth.

At some point I reached the volume where I'm just missing stuff and I can't get back to it because there's just too many and it's overwhelming. We all are in that sort of risk around alert fatigue.

But we actually have to – the balance that needs to be struck isn't which important things should we ignore because they're less important than something else. In some sense we have to be able to go back to the Administration and say if you want X amount of safety then you need Y more personnel to deal with those things, right, when Pfizer does their quotes, you know.

(Hardeep): Yes. We had a couple of recent papers that talked about sort of this inbox overload. I'm happy to send it to the group. And one of the things we also talked about is some of this needs protected time.

So clinicians need, if they're getting so much volume of in basket messages that are clearly important, they would actually need to have some protected time given to them from as you said the Administration to take care of the task. And not just that, also team support.

So some of these tasks could be taken on by other people of the Healthcare Team including nurses, pharmacists, others where all the messages don't have to come to, you know, the clinicians. So I'm happy to send the papers to the group and then go over the five step strategy and as well as the paper if that would be useful.

(David): For sure and, you know, for instance Michael Kanter with their SureNet Program at Kaiser they have a fleet of, you know, they have a staff of 15 people that do nothing other than call people back on the basis of the stuff that they find in their Electronic Health Record with SureNet.

So that has to be part of the discussion around any solution that is…

(Hardeep): Yes.

(David): …to, you know, alert people more.

(Hardeep): Yes. So I'm going to talk about it a little bit in the quality measure part for a second.

But I think the point you're bringing up is we need to sort of miss less of these test results, number one. And number two, when we miss these test results we need a better organizational support system that can catch all these dropped balls if you will and then make sure that the patients are getting followed up.

So we need kind of both of them because we're never going to stop missing some of these test results.

(Karen): I have a comment. (Karen).

(Hardeep): Yes.

(Karen): One of the things I have – having watched this over time from the ED perspective we have a lot of methods to track (MMO) results. But both system wide and in the ED I think we make this sort of assumption. We let our self be convinced that the patient's responsible for arranging their follow-up. And all kinds of things get lost because they may or may not understand the significance or relevance of what you're asking them to do.

But systems that pull patients in automatically are more successful. A good example of this would be we had a horrible problem with getting follow-up for some of our cancer patients based on pathology from surgical specimens. And it's possible that in the peri-op phase they just don't understand what you're telling them.

But when we changed to a system where a positive biopsy populated, auto populated a field for your oncologist who then had a nurse to contact that patient to pull them into an appointment the follow-up rates went way up.

So I know you don't want to be too specific. And a lot of this depends on local factors. The systems that are designed to pull patients rather than require them to be the ones to kind of push things forward particularly in diagnoses that require a diagnostic trajectory over time that is, you know, more likely to be successful.

(Hardeep): Yes, great point (Karen).

(Fanelli): This is (Fanelli). We've actually been working on the same, sort of this model of Ambulatory Safety Net model after Michael Kanter's work.

And we've been focusing on lung nodules, colonoscopies, pap smears and PSAs each of which has its own challenges and opportunities.

But I think that having a system as you just mentioned which proactively identifies the right patients who do need some specific follow-up and then having some sort of an infrastructure in place to proactively average to the patient or the appropriate provider to clarify whether they need follow-up and then making sure it gets done is going to be really important just because of the cognitive overload that you mentioned or the – with all of the volume of results that are coming in and, you know, sort of the lean staffing pressure that we have in most of our practices.

But focusing on this across the company with care I think would be really important. And I think there's a lot of opportunity if we focus on lab, pathology and radiology because each one has its own nuances and challenges.

(Hardeep): Yes and great points. And, you know, did you mention mammograms as well, that you're doing something with mammograms as well? You mentioned pap.

(Fanelli): We're starting to work on BIRADS 3 but we found that for – because of a lot of the external regulations around mammography, a lot of the prefaces are rather high reliability for the most part.

But when you get to the BIRADS 3 that need the six month follow-up that's where we found a gap and so we are going to be working on that as well.

(Hardeep): Oh great. Yes. Because I just saw a paper that came about the terrible rates for follow-up for BIRADS. I don't know whether your group or somebody else did it. I can't (unintelligible).

((Crosstalk))

(Fanelli): Yes. But I think this is in the HRQ Weekly Update.

(Hardeep): Yes, yes.

(Fanelli): Yes.

(Hardeep): Yes.

(Fanelli): It's from our group. Yes.

(Hardeep): Oh excellent, great. I just saw it. I didn't see the whole paper yet so yes.

(Mark): This is (Mark). I'd just like to follow-up on that. So this is under the category of General Approaches and speaking a lot about healthcare organization policies and practices.

But at a more general level profession, the radiology profession has certainly a great deal to improve communication of mammography results. And I think we should look to them to do more and the pathology groups as well especially about how to communicate uncertainty and probability of disease and what certain findings mean or might mean.

(Hardeep): Yes. (Mark) I'm just wondering…

David Andrews: (Unintelligible).

((Crosstalk))

(Hardeep): …you said – oh I'm sorry. I think somebody else was saying something.

David Andrews: Well this is David Andrews. So I just wanted to say that actually I work quite a lot with radiologists. We're working very hard to try and get better connection with their patients and share their information with their patients as opposed to only sharing it with the other physicians.

And I don't want to in any way minimize the importance of the internal physician-to-physician communications, lab-to-physician communications.

But I think patient communication is an underutilized and underappreciated resource in a lot of these handoffs because it's very often the case that the patient gets data directly from say a radiologist or a lab. And has that information which may or may not have been picked up appropriately by the – another physician and carries the information across that gap.

So it's certainly imperfect transition. But I think it's an underutilized transition and we need to try and make sure we don't forget about that one.

Man 1: Yes. So David do you think the direct to patient reporting would be, you know, be more ubiquitous than it is? It's there for some things but not for others is the right way to go for a lot of – to try to help leverage that piece of the puzzle.

David Andrews: I think I'm going to – I may be too optimistic but I think it's inevitably going to go that way with the things like open notes and the kind of work that the

radiologists are doing now. And the way in which I get lab results, all of those things are such that I'm getting the information maybe even faster in some cases than my attending physician might be getting them.

So I think it's there. And I don't want to overestimate the capacity of patients to accurately carry the information.

Man 1: Yes.

David Andrews: But I think it's a resource that needs to be – we need to be aware of and try and utilize it better.

(Hardeep): Yes. You know direct reporting is already here. Most health systems are now releasing results fairly quickly after they are back.

But, you know, the mammogram exam already strikes you. And combining the comments that (Mark) made, you know, they've done a really good job of getting the results to patients. There's a Mammogram sort of Standards Quality Reporting Act. Radiologist is supposed to send letters to the patients directly.

But we're still losing quite a few mammograms. We've done a (unintelligible) study showing the same thing. We're still losing quite a few of these mammograms.

And where some of those breakdowns are and how you make that high reliability is going to be the challenge. And the way I kind of like to think about this is sort of the sociotechnical model where there's some technical things we could do. We could make the technology better. We can make the software design and usability better.

But then we'll also have to talk about all the things that, you know, that you mentioned about communication between people, workforce issues and other things that have come up, you know, as well.

So I think before we move onto the other one, I don't know if anyone else has any solution points but we have last I think 10 minutes or less left for quality measurement, any other comments for solutions before we move on?

Okay. All right, so what kinds of performance measures could be developed in this area?

(Mark): All right, if you thought a lot about this why don't you kind of suggest what you think should be in this and then we'll add anything we can add.

(Hardeep): Yes. So I'll give a little bit of background about some of the work. So the SureNet was it's – I think most people may be familiar. I want to give a background on that. But, you know, Kaiser sort of looks to see test results that have not been followed up and then proactively reaches out to those patients.

And I think the Harvard folks and (now your) group is doing something similar. We've done it more as a research mode where we actually identify patients through a large electronic health record data warehouse. Patients who have had normal tests such as a (FIT) test or a mammogram, they have not had an appropriate follow-up action with a certain length of time.

And we identify those patients electronically. Ours has been – we call them sort of e-Triggers. And one of the papers that was sent out I think included

some of the work that we've done in that area. That could be another way to do it.

And the concept is very similar to the SureNet and e-Trigger. We call it e-Triggers because they're based out of the electronic health record data warehouse. And they're a little more specific because we do validation reviews where, you know, we actually look to see if there's a positive (FIT) test or if somebody has anemia, do they actually get followed up within 60 days.

So there are ways to try to measure this stuff already. In addition, the VA has been doing sort of a pilot where they've identified some high risk tests based on some of the research including ours over the last decade or so. It includes pap smears, Hepatitis C, chest X-ray.

And they're created sort of this, you know, list of these tests that they monitor on a regular basis through chart reviews to see was there a follow-up action done according to the VA directive. It's a VA policy that sets guidance as to if there's an actionable test result it needs to be communicated to the patient within seven days.

So they're able to sort of push this measure data down to the facilities and the facilities are supposed to use that for quality improvement. It's not an accountability metric. It's a quality improvement metric. And so we've just started collecting data in the VA over the last year.

And so it's more like just started so it's not like, you know, we've shown any difference. But it's one way to do this is chart audit so selected high risk test results.

I'd be happy to take any questions regarding this project or anything else.

(Lavinia Middleton): (Hardeep), this is (Lavinia) again.

(Hardeep): Yes.

(Lavinia Middleton): One of the things I think that would be really interesting to study and perhaps you can do it in the VA System is charting the delivery of the test result and then seeing the time to the next order related to either an abnormal culture when the antibiotics were ordered or abnormal X-ray when the referral was initiated so an early outcome might be a measure of when the next actionable order was placed in the electronic medical record.

(Hardeep): Yes. (Lavinia) this is a great point. It was actually very similar to the rationale about e-Triggers. So we would say here's a chest X-ray or the CAT scan that's abnormal because we can see it as an abnormal.

And you would expect to find either upon reappointment or a referral to, you know, IR, intervention radiology for a biopsy or something. And we could look for those actions.

But a great point that all these could be – they're very process-based things and they can be measured really well.

And as long as we have the EHR data which I think is a problem at some places. But yes, totally can be done.

Man 1: So (Hardeep) you've done a lot of tremendous work in this space around process metrics.

(Hardeep): Yes.

Man 1: Could you talk a little bit about where you see sort of outcome metrics going? And, you know, we see a lot in the cancer world either people talking about, you know, the number of or percentage of late stage diagnoses or emergency presentations of cancer. Where do you see those as being potential sort of ultimate outcome measures to see whether our process changes that we're making in real time are having a long-term impact on patient's health from improving diagnosis?

(Hardeep): Yes, another great question. I hate to sort of dominate the conversation here. But Moore Foundation just funded one of the projects. It's a new measure development grant that we just received from the Moore Foundation and I think (Ken) is also on the line where we're going to try to develop a metric based on some outcomes including emergency presentations for cancer and late stage and sort of borrowing some of the work that UK has done.

So UK has done a very nice job in some of these. Studying these outcomes and figuring out how best to operationalize the metrics, both process and outcome metrics so we're going to try to borrow from UK and build on this work. I mean again I don't have it yet but I think is work under development.

(Karen): So this is (Karen). And I just would add to what (Hardeep) is saying is that actually this is a pretty cool thing. If you start thinking ahead to looking for outcome manifestations of either diagnostic delay or misdiagnoses, the only challenge to them is that many of these occur over different times and places.

So the question is always accountability and, you know, how do you actually map the full trajectory process in American healthcare system where things are so siloed?

But other examples of this same kind of thing could be looking at infection fraction or heart failure after MIs obviously that's relevant or at least likely due to delay in missed diagnosis or delay in presentation.

Other things like what is the functional recovery after diagnosis of a spine – of a chord compression or spinal epidural abscess where it totally depends upon the speed of diagnosis and the ability to intervene successfully?

I think those are really meaningful ways of measuring. The only question is whether or not it's practical in our system where it's hard to pin things down to one place at one momentum in time and one system of healthcare.

Man 1: Well maybe that's something that we should be doing. This group maybe should be saying, you know, that one of the fundamental constraints in measuring the impact of these improving diagnosis initiatives is the lack of some relevant data repositories or standards for gathering data whether it's data about symptom presentations that are kept separately from diagnosis fields or whether it's outcome data as you described of sort of critical functional outcomes in patients with particular kinds of problems.

And maybe that's part of the job of these use cases and start to articulate what kind of things we are missing that will – that are required for us to get to those points.

(Colleen): This is (Colleen). I would completely agree with that. So the College of American Pathologists has a number of quality measures obviously dealing with diagnosis.

And that kind of sort of data availability and therefore responsibility issue is something that we deal with constantly that, you know, we can design quality measures that seem great and seem like they would really, you know, make a change.

But if we're thinking about what is attributable to an individual clinician or, you know, what is in the control of an individual clinician unless you have measures that really span the entire process, it becomes this game of whose fault was this really.

And measures that span the entire process are incredibly hard to design because again it is a, you know, possibly multiyear process. So we end up running into a barrier very frequently that we want to design a measure that the pathologists can meaningfully affect but also actually have an effect on the outcome.

And those two things are sometimes in conflict if the pathologist says, you know, I'm not allowed to call the ordering clinician. The ordering clinician has to request a consultation with me.

You know the idea of like sort of the…

(Hardeep): Yes.

(Colleen): …availability of data is a big one in our current measure design.

(Hardeep): Yes. That's a great point. And I think we have to somehow capture it for maybe all use cases. Not just this. So this is something like this is a shared responsibility. You can't always sort of attribute to just one person. And

some of these are going to require you go out of your comfort zone and work with others, which we don't do very well in healthcare sometimes.

I think some way we're going to have to sort of bring this out very well. One more thing I was going to say before I think we should hand over back to the NQF Team is there is one patient measure on one of the questionnaires that some organizations use around communication of test results. I think it's on the a (Shep) Survey and I'm not sure that it's from – because I know every – there's a variation on the questions used.

But there is a question that some patients experience surveys around communication of test results. So we should look into that as well.

I think that, unless there anybody else has any questions, I think this would be time to go back to the NQF Team; hearing none, all right.

Dr. Jesse Pines: Great. Thank you, (Hardeep). (Unintelligible) I don't know if you wanted to talk about next steps.

Man: Thank you Jesse. I think actually first we will just quickly pause, see – and see if there's any public comments either on the phone lines or through the chat. I think we'll give it just another 10 to 15 seconds to fill. All right, and with that I'll turn it over to (Caralee) to do the next steps.

(Caralee Latigua): Great, thank you everyone for such an insightful discussion. We'll make sure to capture all of your notes for the next meetings.

So with that in the slide it's just the final dates and objectives for the upcoming web meetings. You should have hopefully received all the Outlook

invitations for these. If you have not please email us letting us know and we'll make sure to send you those.

Our next web meeting will take place on January 14th and it will be a continuation of today and the further refinement of these two use cases.

As a reminder if you have any additional feedback, questions or concerns about anything that was discussed today or in general about this project please don't hesitate to reach out via email at diagnosticerror@qualityforum.org or by phone. And for any information about the meeting materials you can check out the project page as well as the committee SharePoint page.

So I will pause there and see if there are any other parting questions.

Dr. Jesse Pines: Thanks everyone. It was a fantastic discussion today. I really appreciate everyone's time on this.

Man: Yes, great job everybody, strong work.

(Caralee Latigua): And.

(Shawn): Yes. This is (Shawn). Your discussions and your thoughts restore my faith in the system. Thank you for that.

(Caralee Latigua): Good. All right, so with that we'll give you all ten minutes of your day back. Thank you everyone.

Dr. Jesse Pines: Great, thanks everyone.

Man: Thanks a lot (unintelligible).

Man: Take care.

Man: Thanks. Bye-bye.

Man: Bye.

END