Unidentified Female: Hello everyone and welcome to the Research and EHR Synergy, a cyber seminar hosted by VIREC, the VA Information Resource Center. Thank you to Cider for providing technical and promotional support. Research and EHR Synergy is produced by VIREC in conjunction with the ORD Strategic Initiative for research and EHR Synergy, Osiris, and the VA Coordinating Hub to promote research optimizing veteran centric EHR networks Proven. And it focuses on helping the VA research community stay informed about EHR modernization.  
  
This series is held on the fourth Wednesday of every month at 12pm eastern. You can find more information about this series and other VIREC’s website. You can catch up on previous sessions on HSR&D’s VIREC Cyber Seminar Archive. A quick reminder to those of you just signing in, slides will be available to download. This is a screenshot of the email that you will receive with a link to download the slides.   
  
Today’s presentation is Evidence Review of EHR transitions, implications for VA’s implementation of Cerner Millennium presented by doctors Michael Winer, Esomi Myacali, Sapo Renee, and Peti Lacani. Dr. Winer is principle investigator of the VA Health Services Research and Development Center for Health Information and Communication and a professor of medicine at the Indiana University School of Medicine. He leads the health informatics core of the Proven EHR coordinating hub.  
  
Dr. Myacali is associate director of the VA Evidence Synthesis Program in west Los Angeles and a core investigator at the VA HSR&D Center for the Study of Healthcare Innovation, Implementation, and Policy. She is a co-investigator with the Proven implementation and training hub.  
  
Dr. Renee is a pulmonary and critical care physician and health services researcher focused on organizational factors, influencing health information technology uptake and use. He is a core investigator at the Bedford VA Center for Healthcare Organization and Implementation Research. And assistant professor at Boston University School of Medicine.  
  
And Dr. Lacani has practiced in both private and federal environments and she is currently the Executive Director of patient safety, quality, and value in the Office of Electronic Health Record Modernization, OEHRM. And thank you all for joining us today. I’m going to pass it off to Dr. Winer.

Dr. Winer: Great thank you very much. This is Mike Winer. Thank you for joining our session today. When we talk about EHR transitions we are talking about institutions that have made a transition from an electronic health record system to another different electronic health record system. We’d like to start out with a short poll with three questions so that we can understand our audience here today a little bit more. The first question for you is what is your role in research or quality improvement projects and you can see the options here. Please select one from your polling screen at this time.

Unidentified Female: So that poll is now open and the choices are A, investigator PICOI. B, statistician, data manager. C, project coordinator. And D, other please describe in the chat function. Alright so it seems the poll has slowed down so I’m going to go ahead and close that poll out and share the results. We have 11% said A, investigator PICOI. 18% said B, statistician data manager. And 13% said C, project coordinator. 15% said D, other and those are research assistant CHIO, clinical research nurse, pharmacists, and a super user. Back to you Dr. Winer.

Dr. Winer: Okay thank you. Alright it looks like maybe the audience is a little bit shy today and that’s okay, I’m going to go onto poll question two which is how many years of experience do you have working with VA data. And the options there are none, I’m brand new to this. One year or less. More than one but less than three years. At least three but less than seven years. At least seven but less than ten years. Or ten years or more. Please let us know. No pressure we’re just trying to learn about you.

Unidentified Female: So our answers are coming in quite rapidly. Folks just a reminder once you select your answer choice, also hit submit so that the answer gets recorded. Alright so it seems like things have slowed down so I’m going to ahead and just close that poll out and share the results. We have 10% said A, none I’m brand new to this. 6% said one year or less. 11% said more than one less than three. 15% said at least three, less than seven. 6% said at least seven, less than ten. And 18% said ten years or more.

Dr. Winer: Thank you. So pretty broad spread there. And we’ll go to our last question which is have you ever used a Cerner electronic health record. And the options are yes, at the VA. Yes, somewhere else. Not yet. Or not sure. So please go ahead and complete your response.

Unidentified Female: So the poll is open and our answers are streaming in. I’m just going to let that run for a few more seconds before closing it out. Alright seems like things have slowed down quite a bit so I’m going to go ahead and close that poll. And the results are 4% said A, yes at the VA. 11% said B, yes somewhere else. 48% said C, not yet. And 5% said D, not sure. Back to you.

Dr. Winer: Okay thanks. Well that was helpful and I appreciate those who completed the answers, that’s informative for us. So, first I’ll just give you an overview of today’s roadmap of this session. I’m going to give you a reminder about what the Proven hub is and talk about why we actually needed an evidence map and then the remainder of this session will go into how the evidence map was made, what we found so far, and some implications and discussion around patient safety.  
  
The coordinating hub to promote research optimizing veteran centric EHR is a Proven EHR coordinating hub. And the aims and functions are shown on this slide some of you may have seen this before. For those who haven’t, I’ll just run through what does a Proven hub do. First we support, promote, and enhance health services research and the EHR modernization that is underway in the VA. Second, we are overseeing the conduct of rapid or responsive pilot projects. Studying aspects of the EHR implementation itself. We started with five, we actually have expanded that somewhat beyond the initial five. Third is we provide methodological training, informatics expertise and methodological expertise to support investigators of EHR modernization.   
  
You notice here this is somewhat narrower than the informatics at large because we’re really focused on the transition and the modernization process in the Proven hub. Fourth is we’re serving as liaison between EHR and researchers and VA operational partners and implementation sites. Fifth is that we are communicating research findings about EHR modernization throughout the VA and also beyond. And sixth is that we are helping the VA to think about and plan prioritization of a research agenda for EHR modernization.   
  
These are some of the topics that we have outlined so far in work that needs to be done or is underway in EHR modernization itself. And these are research agenda topics you can see there’s a very broad array of many topics. Some of these topics have research studies that are going on now in these areas and others don’t. And so there is a great need for additional research and we hope that if you are an investigator that you’ll think about developing a proposal about EHR modernization and submitting it for funding or other kinds of support.  
  
So, why do we need an evidence map about this topic? There is literature in the fields relating to EHR transitions which is the topic for today and we don’t have such a great understanding about how that evidence applies specifically to the VA and what sorts of things need to be done next to pursue research and EHR modernization. What are the implications? What are the most important areas for investigation? And what have we learned and how is that relevant to the VA and VA research? So this is why we need an evidence map and need to understand work that has been done and findings that have emerged from studies in other institutions or sometimes in the VA.   
  
So, that is a general overview of our motivation for this project. I’m going to turn the session over to Esomi and she will walk through the next set of session here today. So Esomi remember to unmute and I'm going to pass it off to you.

Esomi: Great thanks Mike. So, to give a little bit of background, I am a bona fide Proven member but I’m also part of the evidence synthesis program that’s been around for quite a little while now and the goal of that synthesis program is to provide tailored, timely, and accurate evidence to decision makers within the VA. And so we are one of those sites, I’m in the Los Angeles Center. You can see on the map here but there are a few other centers and we do a bunch of things. We do classic systematic reviews, and we do rapid reviews and we also evidence maps. It’s been something that we have been trying to tailor to help support decision making much like Mike was saying, the needs of Proven. Meeting those needs and trying to figure out what the lay of the land is in certain broader, topical areas like EHR to EHR transitions. So, the wonderful confluence that I was going to get to bring the skillset of the ESP into help support Proven.  
  
Just quickly to talk about what this means. What do we do to make these maps? We wanted to get something together quickly and so we got two key publications. We had a narrative review, and we had a systematic review that we’re looking at EHR to EHR transitions. And between these two publications, there were 84 included studies and so we pulled and culled all those different 84 publications. We had a wonderful team through Proven of Proven affiliated folks listed here who really all jumped very quickly and did an amazing job getting through all 84 within a very short time period. Typically we take about a year to do this data screening and abstraction and all the things that go into an evidence map. And we were able to stand this up quite quickly within just a couple of months really once we got underway. Primarily because we had such a wonderful team of folks who are willing to screen and pull information out from each of these 84 publications.  
  
And then once we had some of the key characteristics from these 84 studies, we mapped them out. And so we took 36 publications were included from the 84. The 48 that weren’t included included mostly editorials and commentaries where there was no primary data or there’s mostly discussion based, there wasn’t any data there to be looked at. In 16, there wasn’t really a transition so they might have been talking more broadly about EHR or something along those lines and then a couple were not available.  
  
I’d also like to note that we’re also currently doing the update search of those two reviews so we looked at the search strategies that they used and they're not old but the searches definitely were conducted at least I think a year ago, now we’re getting closer to two years ago. So we’re updating those searches and currently screening I think the 70 something abstracts that we found. See that process that will be really up to date in terms of where our map is capturing.  
  
And what we have found thus far and part of why we did the update search is this is a growing body of literature as you can imagine. EHR folks are just starting to have pulled together and implement the EHRs not so terribly long ago and then to transition from one to another this is really only getting captured since 2008 is really when it started to come into a regular publishing, an area that’s being regularly published on and so we really want to make sure we’re as up to date as possible when we’re looking at this particular body of literature. So we’re doing that update search. And this is when the transitions were started. So, we pulled through and looked at when transitions started for all of our included publications and this is what was found. So, again 2008 is really when we’re starting to see regular transitions from one EHR to another EHR.  
  
We also took a look at what EHRs we’re talking about. The plurality here, our homegrown EHRs that are switching to an epic platform so you’ve got not quite half using a homegrown model to begin with. And then from a number of different types of EHRs whether it’s homegrown, sometimes it wasn’t reported. We had one instance of a Cerner as the base for prior EHR. Switching to 15 studies, looked at Epic. As you’ll note, there are quite a few that were not reported or that used a one off EHR so the other category captures all of the one offs.   
  
Various refers to there were a few studies where they would survey let’s say, they would have a national survey of physician organizations and so there were a number of different EHRs that were captured in that study. And then we do have one example of moving from a homegrown EHR to Cerner which is very much the same transition that we’re looking to make here in the VA and so we will be talking about that specific study later. But there was only one of those.  
  
We took those 36 publications and we also tried to group them to see what we have going on. And again this is the preliminary grouping. Once we’ve got our update search done, we’ll hone and refine and we’ll be able to speak with a little more specificity on these different topics. I’m going to talk really quickly about three of them that we’re not going to go into much more detail and then we’ll talk a little bit more in depth about the other four. And so the three that I just wanted to quickly walk through on this slide are the case studies. So this would be where there’s no formal data analysis. They didn't do any sort of formal data collection or presentation or analysis. But they told the story of what happened at their particular healthcare system or site. So those were nine of the studies that we found.   
  
There were an additional five that talked about the specifics of their data migration strategy and so those ones had a lot of specific details that we’re not going to get into today. And we also had one article that looked at the finances around EHR but given that we only have study there, we’re going to hold off on discussing that in more depth today.  
  
So, moving into those other categories. So for provider perceptions we found seven studies. All of them were cross sectional except for one. And this one study was a timed series that suggested that there’s a dip in provider perceptions. The positivity of provider perceptions right around the time of implementation. Across a number of different provider satisfaction domains and so this is an example from that one paper. And so in this one example, the one study that had a time series in provider perceptions they asked about a bunch of different things. Your overall satisfaction, this particular one with the L curve is around did the EHR improve patient safety? And so on the left hand side you see the data so they asked that one month before the transition, three months after, six months after, 13 months after, and 25 months after. And they asked a bunch of different clinical specialties.   
  
And what you see on the right hand side is what they call the L curve. And so an L curve is when you start with your baseline perception. It drops dramatically at that implementation dip. And then the L curve situation you do start to see a recovery over time. Now it might not actually make it up to the baseline level but you are seeing a recovery over time. So this is the example of an L curve. And also notes why it’s important to look at time series types of data for provider perceptions. For the other six studies we don’t necessarily know what this pattern might look like and so the one snapshot that they took might not fully capture this range and we’re not necessarily sure how their data is moving over time. And so it really becomes valuable to have this longitudinal data for a transition process so we’re trying to watch the change during the process.  
  
For clinical outcomes, most of these seven studies were from single sites. There was one larger Medicare study that collected data from 17 different hospitals. And they found no differences in 30 day mortality, adverse event rates, or 30 day readmission rates once the transition from one EHR to another EHR happened. So that’s heartening.   
  
And then the second study that we’re highlighting here is the one that I foreshadowed before. So Intermountain switched from a homegrown EHR to Cerner and this last study is from that transition. So we’re going to look in a little bit more detail about what they found and they also used time series to look at 41 different outcomes across a few different domains. So, this is probably the study that came closest to capturing what we might imagine the VA’s situation could be. There are some notable differences and we’ll probably discuss that towards the end of this hour because we have some folks who have a little more context about the Cerner transition that might come up. Let us know in the Q&A if you have questions about that. Dr. Lacani could probably speak a little bit to that and the applicability of this situation to ours. But what they did is they had 41 ambulatory and hospital based metrics including 11 quality measures, 20 different productivity measures, and ten patient safety measures and they collected monthly data for six and a half years. A little before, then during, and then after the transition. And they’re really looking to monitor longitudinal change patterns.   
  
If you take nothing else away from the little bit of nitty gritty in this evidence map is just how important this longitudinal data is. It’s going to be the recurring theme that you’ll notice. EHR to EHR transitions are probably not an area where we’re ever going to have something like a randomized control trial and so when we think about what study designs best help us understand a transition process, we’re really thinking about well collected, well done time series types of analyses.  
  
The patterns Intermountain found and didn't find. So in nine of their measures or 22% of their measures, they found a similar pattern across the different regions. So there was some consistency across regions and what they were seeing. In about the same number, so nine again another nine they found a mixed pattern where there was a similar impact in some spots but then different impacts in other places. So okay not quite as clear message being sent as for those with a similar pattern. And finally they found some where there was inconsistencies. So there really wasn’t any pattern and that was for really half of the measures. They couldn’t really figure out what the pattern here might be.   
  
So let’s take just a quick look at what that might look like. So here’s the similar effect idea. So you’ve got the dashed line, you’ve got four different regions here. Each has their own graph and this is for the emergency department wait times on all hospital regions. And so what you're seeing here is across time there’s a dashed line on each of the graphs where implementation is happening and we’re seeing somewhat similar data where wait times increased right at that implementation time and then decreased back down actually to almost below wait time. And so here you can see okay all these graphs are showing a somewhat similar effect. Similar pattern.  
  
For an example of a mixed effect, we are looking here at an infection rate across all hospitals. And again got the four regions. We’ve got the implementation time. And here we’re seeing that at couple of the regions have somewhat similar so if you look at the top right and bottom left region two and region four, they have somewhat similar slopes they have somewhat similar data. But then if we’re looking at the other two, they don’t quite fit the same pattern and so not quite as strong as message. We’re not quite as sure what we want to be seeing here.  
  
And then finally here’s an example of inconsistency. This is looking at asthma patients receiving control or reliever. And here we’re really not seeing any consistency across these four or five different graphs and so that’s the idea of what might happen for a little more than half of the measures they looked at. So just as a final note on this study, it was really wonderful for them to collect data across so many different metrics. It really helps paint a clear picture but also leave this big question of what is different at these different sites that is driving these different metric performances that we see. And so this, in my mind, raises the question of what’s the context? Why are we seeing differences across these different places? It seems like we might need to lift the hood a little more to better understand what makes medication for asthma in region five different from medication for asthma in region two. And Intermountain is not as large as the VA an so we’re going to have a lot of contextual geographic variation and contextual variation across our site. So understanding what drives these differences is going to be really important especially as we think about our even larger system that has even more variation.  
  
The next topic that we’re going to be talking about today, second to last is the medication safety, articles that talked about this the publications here. The concentration of work is from Lyle Cornell. And they had a number of publications so five of these medication safety publications from Cornell. And their transition to Epic. MGH also transitioned to Epic but the study in MGH found a spike in medication safety reports right at go live but things had returned to baseline by three months. So again that’s thinking about a similar story to some of what we’ve been seeing so far is that there’s this big disruption then things simmer down. But how important it is to note the temporality of when data is being collected.  
  
And then the final batch of articles that we’re talking about there are two articles that discuss patient satisfaction. They looked at, patients reported quality care and satisfaction with providers not as affected by this transition potentially that personal relationship that they had with the providers could be meliorating that. We’re not quite sure, we’ll have to take another look at that but we only have two articles in this bucket for now.   
  
The interesting this is so before we were talking about a U or L curve and now here we’re talking about a J curve. These are all a very similar idea where if you have a U curve, you’ve got your baseline, you’ve got the dip that comes with implementation, and then you're returning to baseline. So a U curve takes you from baseline to baseline. An L curve would suggest you start at baseline, you dip, and then you don’t quite recover up to that position from a U curve where at U curve you’re really balancing back out to baseline. L curve you're maybe not getting there. The J curve is when you start at baseline, you have a dip, and then you're actually able to surpass baseline so you end up doing better than you did at baseline in the end after experiencing your dip.  
  
So they found that the overall satisfaction and access followed this type of J curve. Thought I’d show just a couple examples of another time series set of data and this is from that article that looked at satisfaction and access and this is that J curve. So we see the dip and we see the satisfaction really outpacing the baseline performance there. And I just gave a couple of graphs, this paper had a number of different graphs of various patient satisfaction measure that they had taken. But a lot of them followed this very similar pattern of by the end outpacing.  
  
So a couple key lessons. This is probably no shocker but we really need to collect longitudinal data to best understand the process and the transition’s impact on key outcomes. The U, J, L curves seem to impact many types of outcomes and so having that kind of data will help us best see where a long that curve we’re at when we’re thinking about what we’re looking at for our different outcomes.  
  
The scale of the VA transition really has no parallels in the current literature. Again we’re doing our update search, we’re able to find some new things that would be wonderful but we’re really not expecting to see anything of our size and scale and so it’ll be important for us to think about how we adapt lessons from places like Lyle Cornell or MGH that are really smaller sites that are very well collected that are really early adopters if you think about their characteristics to places that may look very different within our broader VA community.  
  
And then finally the study focuses on moving from a homegrown system to Epic and that was the predominant pattern that we saw here. I think I’m going to hand the presentation back to you Mike so that you're able to talk through some of the other summaries that you wanted to mention here.

Dr. Winer: Great thanks Esomi. So I just will provide you with a quick overview of some of the types of EHR challenges that are emerging. Some of which are covered in the literature that Esomi has summarized here. And I’ll present just a few categories but the categories here are somewhat arbitrary and you might choose to categorize some of these issues differently. The first one is financial burdens and as you probably know the VA already has a contract with Cerner and so a lot of those finances are already arranged. But there is much to be learned about issues around cost effectiveness and utilities and other financial related factors as a transition unfolds and so there’s a lot of opportunity to study that area.  
  
A second one is technical challenges. And these are just a few examples of some categories of technical challenges. It’s not a comprehensive list. But access to legacy records is of course a very big one because there is a need to access those legacy records that are not necessarily fully represented in the new system but they exist and they need to be found. The second data integrity during the migration process security issues, issues around interoperability, both within the institution and across to other community based institutions and measurement of tracking of important factors.  
  
Third category sociological kinds of issues. There’s a lot going on with change management in the VA and there are companion sorts of issues around workflow changes, efficiency changes and expectations. And what do we really expect to happen and some of the work that’s been done in some cases expectations can be unrealistic. Satisfaction is one of the areas that Esomi touched on.   
  
For the training and support issues, obviously there’s a very large need for training. Not only at the outset but in an ongoing matter. And support and that includes both health professionals as well as patients who may be accessing the system through a portal or other kinds of channels.  
  
And fifth, of course very broad and not covered in detail here but clinical outcomes. There’s so much to be learned about the impact of the EHR transition on those outcomes whether it’s patient safety or many other kinds of things. So that might help get you thinking about how expansive the impact can be for the type of transition that is underway now. I’m going to turn it back to Esomi to talk about the evidence map a little bit further.

Esomi: Thanks Mike. So, we had been undertaking this. We had our whole big team that was looking through all these different articles and it so happened that the same time, we were posed a question from OEHRM and from Dr. Lacani’s group wondering about patient safety within this broader literature. So because we already had this wonderful foundation, we already had folks looking through these individual articles, we were able to do a really rapid turnaround product where we put together a three page document really honing in and looking in a little bit more depth at this one particular topic.  
  
So the map overall has really been looking at breadth across the EHR to EHR transitions. Here we were looking at depth in this one topic so we put together this three pager and we were able to provide it alongside some really crucial support from Proven investigators who do work in this area so they have a ton of content area expertise here in order to provide OEHRM with a pretty fast response. Again, a typical systematic review or evidence map takes about a year. And even with something like a rapid report we’re usually talking a month’s long timeline and this was really only a few weeks that it took for us to pull this together because we had this ongoing effort so it was really wonderful to see the evidence map allow us to be very timely in our response. And so I’m going to let Sepo, do you want to be the presenter or should I just hold onto this while you have this conversation or start this conversation for us?

Sepo: You can hold onto the presentation. I don’t need control of the slides. So, just as a way of a brief introduction to myself. As was mentioned earlier I’m a health services researcher and clinical informaticist and I co lead the empiric partnered evaluation initiative with George Sayer. This is an effort to understand front line clinician perspectives of EHRM. And in doing so I’ve developed some relationships with operational partners across EHRM and across VA more generally.  
  
I want to provide some context of the value of this evidence. And that is that to underscore something that Esomi said, there is really a paucity of literature in this area. One of the major review articles that was used for this evidence synthesis concluded that EHR transitions are remarkably expensive, laborious, and yet largely understudied. That paucity is a real challenge for VA not having a lot of prior evidence to base our efforts on but it’s also an incredible opportunity and it’s an opportunity for VA to lead the way but also those of you in the audience who are interested in this to take initiative and be involved in some cutting edge science.  
  
VA undoubtedly has some unique organizational and contextual factors. VA setting is different than non-VA. It’s a larger organization, the mission and purpose is different. It also is transitioning from CPRS which is one of the earliest EHRs and a homegrown EHR that was in many ways beloved, into a commercial system which creates all sorts of unique challenges. During the initial EHRM experiences, COVID was in full swing and a lot of the training and interactions had to be transitioned to virtual formats. So there are a lot of things that are unique about the VA but I think Esomi really appropriately highlight areas where we can learn from prior literature and also expand that literature.  
  
In my efforts of engaging operational partners and working with them, I’ve found that there is a real desire and thirst for understanding the evidence and applying best practices during EHRM. And that’s led me to some of the partnerships and relationship with Dr. Lacani. In the next ten, 15 minutes I’d like to engage Dr. Lacani in a conversation. Esomi and Mike feel free to jump in. But I wonder, Dr. Lacani, if you can unmute and introduce yourself a little bit more. I think you have a really interesting background it would be helpful to provide some of that context as well.

Dr. Lacani: Thank you Sepo thanks to the panel for asking me to be here. My name is Dr. Lacani, I’m a surgical podiatrist. I’ve practiced for 15 years and while I was practicing was turned onto ECW and Epic and then went back to school, got a masters. Practiced in east Africa, India, and Europe and really saw the transformative power of technology. Then came back and worked at Cerner actually for five years. And then was a chief medical information officer at Einstein in Philadelphia which is a thousand bed academic hospital, and then came to the VA and am serving as a director of quality safety and value at the office of electronic health record modernization.

Sepo: Great thank you. I know we’ve had a chance to talk about this evidence synthesis previously. Esomi reviewed our initial effort to be responsive to you and some of your questions about patient safety but I wonder if you could comment on general impressions of the evidence synthesis in general. What sticks out to you? What are some of the challenges and opportunities that you perceived?

Dr. Lacani: So, three things. So the first thing is I really am thrilled that we are drawing upon some real giants in the field. Doctors Hadeep Singh, Sedig, and Jimmy Scott, the VA has been a leader in research and in publishing for many things including the EHR. And so we’ve really set some good foundational standards which others have taken off on and used. I know you referenced Mass General and I have a good friend who’s part of that transformation. And so it’s wonderful to come to the place where the foundational work is being done. And also the innovation.  
  
So, here’s the issue and Esomi alluded to this in her conversation. Until recently we’ve really had no monetary or direct compensation in the private sector for assuring safety in a commercial EHR. And so I’m really heartened by there is an increased focus on this and that Medicare and HHS is going to look into using some really good behavioral economics looking to help us compensate or measure this. And as this evolves it will become an area which is focused upon. So that will also promote more literature. You can't change what you can't measure. And so the more measurement we can do, the more we can change or drive change.  
  
And then the last is, Esomi was such a comprehensive review. And what I’m struck by is that the focus is on what I would consider the jewels and the crown. Mass General was the largest Epic conversion, Intermountain was one of the largest conversions for Cerner and because these are what are called reference sites for these specific companies, what happens is the level of attention and resources they get far exceeds that which your local community hospital would get.

Sepo: That’s an interesting point because I think in many ways and you may be able to speak to this from a perspective of working in Cerner but maybe part of the reason that there is really limited evidence out there is because most of these EHR transitions are driven by commercial systems and they don’t always publicize their experiences. I guess that would be the most tactful way to say it. Another way to say it is maybe they don’t air their dirty laundry or really provide some of the insights. I don’t know if that resonates with you in terms of how evidence gets out but note that it’s really very large systems and very select systems where we’re seeing real evidence emerge.

Dr. Lacani: Yes and you could argue that correlation is not causation but the average life cycle of a chief medical information officer at a site that’s undergoing a conversion is three to four years. So, draw from that what you will.

Sepo: Yeah that’s impressive. One of the things that I have been impressed in interacting with you is you’ve consistently been open to and engaged in understanding the evidence and expanding that evidence. And that was really true when we started conversations about patient safety and how do we apply a framework of patient safety to EHRM and the VA. A couple weeks ago Esomi alluded to this that we generated a report and Esomi noted how it really came out in light speed. It was I think two weeks from the time that you said yeah let’s learn what’s happening and I contacted Esomi and she turned it around almost instantaneously. So can you talk a little bit about that specific report about patient safety in the context of EHRM what was valuable in that? Where you do you finding disappointment or frustration with the state of the literature.

Dr. Lacani: Okay yes absolutely. So, first thing’s first. I was really impressed by the thoughtful approach and the focus on human factors. You can imagine when this has been looked at in private sector their focus is really more on capturing revenue and perhaps even physician satisfaction. Which is important but my focus is always yes, physician satisfaction is important because it drives the downstream of patient satisfaction. But we also need to make sure we’re talking about physician patient satisfaction. So I was impressed. I continue to be impressed with the VA and their ability to put patients first.   
  
And what became clear to me in this approach in the patient safety report was that there was more of a focus on evidence mapping and configuration which I had not seen outside of the VA. And the VA is far ahead of private sector on many things. And in private sector as you know, we’ve heard a lot of about the patients that are in medical home, and even the surgical medical home. But that has really been difficult to operationalize in many ways or it’s operationalized on paper only. Very different than the packed team concept that exists in the VA which is a very cohesive communicative and collaborative approach. That’s one thing.  
  
The second thing is the impressive focus that the VA has on social determinants of health. The fact that the VA understands it’s hard to take your medications if you're homeless and let us help you with that. Third, I just looked this up. There were over a million tele med appointments for VA patients in the last year. We can only even to get to a tenth of that in private sector is considered significant for large enterprises.   
  
So, we’re leading the way and I think that commercial sectors can really learn from this. And the thing that really impressed me about the approach was the explanation of the process which I think is really quite absent in private sector.

Sepo: Yeah it’s really great to hear your commentary. We oftentimes done recognize how much VA is really a leader in this field. Especially in the HIT technology field and EHR so this is an opportunity for us to continue to lead the way. I’m aware of the time and I do want to open up to audience questions. And we can certainly come back and have more of a detailed conversation if there aren’t very many to address. But I wonder, I’ll go ahead and read the questions I think some will probably will probably be directed at Dr. Lacani but others will be for others on other presenters so I’ll try and direct those appropriately.   
  
The first question is, given the largest user of the EHR was any literature examined for those impacts? I think that’s an Esomi question do you recall if any of these are focused particularly on nursing?

Esomi: No. But that being said, we did clump all of that provider perspective literature together and so that’s a really great question given that we’re still doing this work I'm actually writing this down as something that we want to make sure to take a closer look at is exactly which providers were taught to, what was in that bucket of providers. So, very helpful comment thank you.

Dr. Winer: I just want to add, this is Mike, that some of our Proven pilot activity does focus on nursing and impact on nursing and includes nursing investigators. And that’s a very important area for future investigation as well on EHR impact so thanks for the comment.

Sepo: Yeah I’ll follow up there’s another question I think that Mike just answered but it says do you have any nurses on the team? If not will you be including nurses in the future? I think it’s very important to get the nursing perspective and Mike had highlighted how some nurses are involved with Proven research. I’ll also note that I’ve recently had a meeting with leadership of ONS, the office of nursing services. And there’s tremendous interest in creating separate evaluations that are focused on the impact of EHRM on nurses. So this is a great opportunity for people to get involved and contact ONS leadership or contact Proven so that we can help foster some of those relationships and the drum that I continue to beat is there’s not enough evaluation in this area for VA. We need to get more of us to be at the table and influence the direction.

Dr. Lacani: Sepo may I add something to that?

Sepo: Yeah please.

Dr. Lacani: One of the things that I also think we need to focus on I think nursing is underrepresented but also pharmacy. I think pharmacists are incredibly smart people that are detail oriented and because medication administration is such an area of high safety concern, pharmacists also.

Sepo: Yeah in many ways you can think of EHRM as virtually touching everyone in the organization. So there’s an opportunity to gauge everyone in this effort and certainly nurses and pharmacists should be at the forefront of that line. The next question says as our VA system more closely mimics some national systems in other countries, is there any applicable international literature? That’s I think a question to start with for Esomi.

Esomi: Yeah that’s a great point and so, one we didn't find a lot of literature from other countries and my guess is that this is because one, the VA was really early in adopting EHRs to begin with. And two, so I think other countries are more likely in some of the other projects I’ve worked on I’ve seen literature about transitioning from paper to an electronic record but not necessarily that EHR to EHR transition. This is a huge undertaking and I think at this large scale, the idea that you would switch from one to another isn’t one that I think a lot of other countries are experiencing. I could be wrong. That’s just a guess more than it is a well-informed answer. But that would be my guess as to why we’re not seeing that kind of literature. That type of transition is not happening quite as often on a national scale.

Sepo: Thanks Esomi. The next question is of the literature reviewed, was there any inclusion of human systems integration approach for the EHR to EHR transition? I think Dr. Lacani got to this a little bit in really highlighting the value of the EHR transition literature as it relates to bringing out more and more information on human centered design certainly within VA I think that’s a strength of the ongoing initiatives that a lot of what’s going on is aware and conscious of the human factors in the interaction with EHR and the change from one EHR to another. I don’t know if Esomi if you want to comment on what your perceptions of the ongoing previous literature or ongoing VA activities.

Unidentified Female: Esomi I’ll let you go first.

Esomi: No I think, yeah I have not much to add between what’s been said before by the various folks on this.

Unidentified Female: So, there is an article I think coming out in June 2022 in human factors and it is translating liability organization principles. Specifically what we know from other industries, aviation first and foremost. And that that concept of situational awareness incorporating the human factors concepts of perception, comprehension and projection and again this is straight out of the VA. So perception, what information do I need? Vitals, blood pressure, heart rate. Comprehension, what does it mean? Diagnose, what am I going to do with this data to diagnose this impact of the treatment? And then perhaps drug interactions. And then projection, and now what’s likely to occur and so prognosis is there going to be delay in treatment? Is there a chance for adverse events?  
  
So, the whole concept there’s tasks and some factors and this harkens back to how Esomi was able to break down the process of analysis. So this is, I really love that this question was asked because it shows that the sophistication of this crowd and understanding that human factors is a huge part of this and we’re working to incorporate it more and more.

Sepo: So we have just a few minutes left. I wonder, Dr. Lacani, Esomi, Mike, what are the next steps? When we think about what we learned here and were we want to move forward, where do you think there’s the opportunity for VA and for research in general? And maybe we can start with Dr. Lacani.

Dr. Lacani: Thanks. So, I think one of the things that we should talk about or take this to for the next step is how do we translate this? We’re data wonks right? How do we translate this into outcomes and how do we measure those. So, we know for example, it’s 99% boredom and 1% terror. How do we decrease that terror so that it’s 100% not boredom, at least decrease severability and surprises? And smooth out the workload. So, I think if we can take these lessons and translate those into an intervention, a simple performance improvement cycle, a PDSA cycle, that would be a fantastic way to use this. Esomi I defer to you to add to that.

Esomi: Thanks so much. Yeah what you just said would be my top line takeaway too. Having good data, knowing how to use the good data, how to analyze it correctly. I think we have some strong hints and answers from the literature but everything that we’ve seen will need to be tailored and adapted in our current environment and I think there are so many opportunities for this research side of the house to work with operations and like Sepo said evaluate. I think there are so many answers that we can provide even the broader community, the non-VA community, given that we’re going to probably end up being leaders in this transition process especially thinking about sites that aren’t the MGHs or the Lyle Cornells or the Intermountains. We’re really going to be doing a transition across a whole broad array of places and how exciting is it that we’re going to get to study those. Think about a broader set of not just providers as just physicians but as also physicians and the whole patients medical home concept too.  
  
So yeah I think there’s been so any awesome ideas raised and it’s just a matter of getting to dig in. Proven has this wonderful opportunity I think to hopefully help connect a lot of these folks if you're on this call if you're interested and excited. If you're a nurse and you want to be a part of our review team even, reach out. We’re looking for folks to work with.

Dr. Winer: This is Mike. I agree with those comments, all of them. And we need more studies as I said at the beginning. We have pilots underway in specific areas like community based care, referrals, even patient nursing, veteran engagement. And governance. But compared to the totality of issues that really need to be studied in depth, these are small numbers of studies. And so if you'd like to develop a project, we’re here to help guide you or give you some consultative advice and connect you to people if that’s helpful. So please get in touch.

Sepo: Great. It looks like we are at time. I guess is there any last words from anyone on the participant panel?

Dr. Winer: Thanks for everyone who attended the call.

Unidentified Female: Yeah thank you to our presenters and thank you to the audience. To the audience if you have other questions for the presenters, you can contact them directly. Please tune in for the next research and EHR synergy session, the use of scientific frameworks to advance patient safety research and implementation in the new EHR era on July 28th at 12pm eastern. Thank you once again for attending. We’ll be posting evaluations shortly so please take a minute to answer those questions. And please let us know if there are any additional topics you're interested in and we’ll do our best to include them in future sessions. Thank you so much and thanks again to everybody for presenting and for attending.