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Series: Using Data and Information Systems in Partnered Research

Session: Conducting a Needs Assessment for Infection Prevention in VA

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Moderator: Alright, hi everyone and welcome to “Using Data Information Systems In Partnered Research”. Today's presentation comes from a partnered evaluation initiative on building implementations science for VA Healthcare-associated infection prevention. The VA Healthcare Associated Infection Prevention Network, VHIN, is a frontline quality improvement network whose aims are to improve patient care and promote best practices for healthcare associated infection control. Today's session is titled “Conducting an Infection Prevention Needs Assessment”. Dr. Nasia Safdar is here to present the session. She is the principal investigator of the VHIN initiative.  She is also the Associate Chief of Staff at the Madison VA Research Office. She is the Vice Chair for Research at the Department of Medicine at the University of Wisconsin, and she is a staff Infectious Diseases physician. Dr. Nasia Safdar, thank you for joining us today.

Dr Nasia Safdar: Thank you very much, Hira. Let me just show my slides. Can everyone see my slides?

Rob: It looks perfect.

Dr. Nasia Safdar: Great. Good morning everyone. Thank you so much for having me. I’ll present today on an infection prevention needs assessment that we're very excited to share the process of developing and deploying with you. The work was sponsored by VA QUERI, Quality Enhancement Research Initiative. The partnered evaluation, our partner for that is the National Center for Patient Safety in VA, as well as the MDRO program office.  On the left hand side of the screen, you see the logo for VHIN, which is the VA Healthcare-Associated Infection Prevention Network, and HERO is the name of our patient safety center of inquiry which is on the right side of the screen. You'll see a number of abbreviations throughout this presentation that I will endeavor to describe as we come across them. So the objective of today's talk is to describe the process of developing and deploying a needs assessment and HAI prevention, to describe the data decisions and data sources that will be used for analysis and that were used in determining where to get the data from for this needs assessment. With the eventual goal to identify practice variations as it relates to HAI prevention between sites and to particularly discover what barriers and facilitators might exist to the effective implementation of HAI prevention practices across VA. So we have a poll question at this point. What is your roll in research and/or quality improvement? So if people can go ahead and respond to that.

Rob: Our poll is open, and our attendees are currently voting. We have about fifty percent. I'll let it run for a little while longer. And it looks like things have started to slow down in terms of voting, so I'll go ahead and close the poll and share it out. And you'll see that in the answer to the question, Principal Investigator slash Co-PI got eight percent response; Research Staff, meaning Project Coordinator, Data Manager, Statistician, or Programmer, was twenty four percent; Clinical Staff, twenty nine percent; Operations Staff, twenty four percent, and Other, sixteen percent. I'll turn it back over to you.

Dr. Nasia Safdar: Alright, thank you. So, what is VHIN, or the VA Healthcare Infection Prevention Network? So this is a QUERI-partnered evaluation, and the plan for VHIN is for it to really be a practice-based quality improvement network. It is very patient-centered. We have an established patient advisory council. And the idea was to take, not just the HAI prevention practices that are relevant to each facility, but also incorporate patient centeredness into the choice of which ones are chosen for wider dissemination and or implementation. The reason why we focus on healthcare-associated infections is because HAI's are a major cause of morbidity and mortality, not just in the US, but globally, and particularly in Veterans. They are considered to be largely preventable and are associated with significant patient safety impact in terms of increased readmissions, high mortality rates, there's an estimated annual burden of about seven hundred and twenty two thousand HAI's per year, and about seventy five thousand deaths in the US, in US acute care centers. This is all the more concerning, because as I mentioned, eighty to ninety percent of these are entirely preventable and these are costs in terms of life and dollars that we should be able to prevent. The VA being a leader in patient safety, prevention of HAI is incorporated into the VA Blueprint for Excellence as a performance component of the organization healthcare chain. We also have partnerships with Patient-Centered Outcome Research Institute, PCORI, through a Eugene Washington PCORI Engagement Award. The purpose of that award was to build a panel of older, rural Wisconsin patients and caregivers who have personal HAI experiences. We have since incorporated Veterans into this patient advisory council and they have been very instrumental in helping to inform the structure, process, and the expected outcomes from VHIN. Through all of this the underpinning of all of this work has been our partnership with the National Center for Patient Safety that provided us the funding to create our Patient Safety Center of Inquiry. The goal of our Patient Safety Center at the Madison VA is to undertake human-factors of engineering to prevent resistant organisms. This is what VHIN infrastructure looks like. Here you see are the funding partners, the VA NCPS, as well as the QUERI partnered evaluation, which provided a supplement to create VHIN. HERO resources and VHIN resources leverage each other very nicely with complementary expertise and complementary goals and outcomes. We have representation from implementation science experts for both HERO and VHIN, and the patient activation components have been key to helping us move implementation research in a patient-centered way forward. There's a multi-disciplinary Steering Committee that developed the agenda for both VHIN and HERO, and the Madison VA is the technical hub and support center for both initiatives. The ultimate goal of VHIN is to close the gap between evidence and practice as it relates to HAI prevention, which also includes a major component of antimicrobial stewardship, since that is instrumental to HAI prevention. The development of VHIN infrastructure began with the creation of our Steering Committee, which has members from five different VA facilities, as well as developing the infrastructure for the coordinating center.  What VHIN can do is to connect investigators that have a common goal of improving patient safety with HAI prevention and/or antimicrobial stewardship, providing technical assistance for QI projects, and helping to apply our human factors engineering model, which in this case we means the systems engineering initiative for patient safety, or the SEIPS model, toward HAI prevention approaches. The reason why SEIPS is particularly attractive for HAI prevention is that it allows you to take a comprehensive look at the entire work system. Too many times when we implement interventions for HAI prevention, they are implemented in silos and we often fail to take into account the impact of those interventions on the rest of the facility, because of course there are competing priorities, so if one thing is happening, is it possible that other things may not be happening as well, or as reliably. And so SEIPS allows us to take that three sixty view, to make sure that what we are addressing is not adversely impacting other things, but in fact complementing other existing initiatives or other existing priorities. VHIN can also help investigators, which includes people like PI's, but also research staff and operations individuals to help determine site-specific QI requirements.

So the first thing that VHIN undertook was to conduct an assessment of current practices for prevention of HAIs across VA. As this audience probably knows, the VA has made tremendous strides in reducing HAIs, but there's always a pathogen of the moment, or an issue of the moment that one needs to think about in terms of what the next emerging pathogen will be, and for many VA's around the country, as well as other types of healthcare institutions, C Diff has been the pathogen that has reared its ugly head and continues to pose major challenges to institutions. So the idea of completing a needs assessment was to, one, determine what the current practices were as it related to HAI prevention across VA, with eventually the plan being to assist the MDRO program office in devising an agenda for infection prevention QI that would complement their already-existing agenda on HAI prevention. VHIN can also, because it is VA-wide, it can serve as a tool for disseminating evidence-based practices. Even though most VA's have implemented evidence-based practices, for example, C Diff reductions, there is considerable variation in how those evidence-based practices are disseminated, and there are some centers that we can all learn from in how well they have done it, and others that are seeking assistance in how to do it better. So the idea for VHIN was to be a liaison or a conduit between the high performers and the ones that wanted to raise themselves to a higher level. So we wish to document and disseminate current HAI prevention practice. Our focus for this needs assessment is VA acute care facilities to start with, just to maintain a manageable scope, to identify practice variations between sites, and we wanted to really do a deep dive into the barriers and the facilitators that either impeded or helped implementation of HAI prevention practices. This will help VHIN also because it will inform future infection prevention QI projects for VHIN members, based on what they see as the greatest needs at their facility, and eventually set some strategic priorities for the network. The secondary goal for this needs assessment is to use this process to engage and recruit other VA facilities to the network to make this as comprehensive and as inclusive as we possibly can.

So we have three steps in this process. The first one was to develop an instrument for needs assessment, and then to use key informant interviews to refine it and to modify it, based on their feedback. This was then incorporated into developing the final instrument, which was self-administered online to all VA acute care facilities. And this is then to be followed by in-depth post-survey interviews to allow us to put more flesh on the bones of what the survey responses have been. This was all orchestrated to allow institutions to provide the information that they, the facilities to providing information that they felt was most important, but not impose an exceedingly large burden on them in terms of filling out a terribly long survey. So the interviews will fill in the gaps that we thought the survey was not best suited for.

So for the key informant interviews, the goal was really to ensure from our operations stand point, as well as from the QI assessment stand point, that online needs assessment really does what it’s supposed to do. Does it highlight the most critical issues of HAI prevention practices? And should we be asking the right questions about the issues that matter most to VA? We developed a phone interview guide which was guided by the principles in the SEIPS model, so again the Systems Engineering Initiative for Patient Safety, as well as the CFIR model that has been commonly used and widely used in VA and is very comprehensive. We sampled the VHIN Steering Committee and the VA-wide infection preventionists that had expressed interest in joining the VIHN network, and conducted thirty minute interviews after having provided the draft instrument ahead of time, so that interviews, interviewees could read it. The key informant interviews content areas that we explored were general facility characteristics, as that may have a big impact on how well or not well one might be able to implement HAI prevention practices. This included things like infrastructure, a facility for infection prevention, resources, credentials, and experience of the team that was leading HAI prevention, and what logistical and other operational supports the facility had. Next we focused on daily Chlorhexidine bathing. Daily Chlorhexidine bathing is an intervention that has been proven in multiple studies to reduce HAIs horizontally, so not limited to a specific pathogen, but is expected to have a marked decline in HAI across the board when used reliably, and we wanted to see how frequently that was used in VA and with what variation. As I said earlier, C Diff is a pathogen that is a priority, and not just to VA, but to other institutions, as well, and globally is becoming a major issue. So C. Diff was on our list for evaluation, and then from the emerging pathogens stand point, Carbapenem resistant or Carbapenem-producing Enterobacteriaceae are high priority pathogens that are also relevant in terms of being able to implement prevention practices with high fidelity. The reason that we were particularly interested in the barriers and facilitators as I mentioned before is that for infection prevention to really work well, the interventions that are proven to work have to be implemented with high fidelity, and sometimes that can be a challenge when there's multiple things going, or there's resource-constrained settings that might have to prioritize which interventions they may pick at a certain point in time. For each content area based on the SEIPS model there are five categories, so we looked at the characteristics of the people, and that included things like, or people like healthcare workers, or patients, or leaders of the facility. We looked at the tasks that one might have to do to prevent, for example, C.diff or CRE. We looked at the availability that facilities felt they had of tools and technologies, so the role of the electronic medical records system, or what practices they used to communicate results relating to C.diff or CRE. We looked at the environmental aspects of the units and the facility. This is all self-reported, so what facilities felt either helped them or impeded them from the environmental stand point. And then organizational, which included things like the availability of policies and procedures, leadership support, a culture that promoted HAI prevention, were all aspects that we asked about in the key informant interviews. So their responses then influenced the development and refinement of the final questionnaire. We wanted to acknowledge all the respondents that really gave very generously of their time, provided really terrific feedback, and it was clear that they were very thoughtful in their comments. For example, with Chlorhexidine bathing it was very important to clarify that this excluded surgical populations, where we certainly do Chlorhexidine bathing, but it’s done at a certain point and time for a few days, no more than five typically at a stretch, which is very different from daily Chlorhexidine bathing that is undertaken throughout the duration of the hospital stay, and we wanted to differentiate between those two. For C.diff infection prevention practices, one of our respondents mentioned the very critical aspect that we needed to add the lack of private rooms and bathrooms, which might happen in some facilities, as a major barrier to the use of effective C.diff prevention practices, such as gowning and gloving. And for ease of understanding, the need to combine CRE and CPE as one term rather than two, which we had originally distinguished. So those were things that we incorporated into the next version of the instrument.

The next step then was to deploy the instrument and this was the goal of our data collection, just to remind the audience, so daily Chlorhexidine bathing, C.diff, and CRE were the three main areas we focused on, and then the identification of key barriers to infection control implementation. The self-administered online questionnaire had 54 questions covering four content areas that I mentioned earlier. Most of these were multiple choice or yes no questions and the survey duration was 20 to 50 minutes. The target audience for this was infection control personnel or hospital epidemiologists from VA acute care facilities. We asked for one respondent per VA facility, but because it was likely that one individual would not have the answers to all the questions, we asked for individuals to confer with each other as necessary, but ultimately had one respondent. We also incorporated other feedback from our colleagues who helped develop the questionnaire and integrated their feedback to improve layout and programming and data quality, and reduce potential for response bias. The questionnaire was piloted within six VA medical facilities that you see listed there on the slide, and then in January 2017 it was deployed to all VA facilities with acute care settings. I want to acknowledge the Healthcare Analytics Informatics Group that really helped us tremendously to program the survey and then to deploy it in a very seamless, highly orchestrated way. This is what the self-administered online questionnaire that, this may look familiar to some of you, would have received. We had 127 respondents from inpatient acute care facilities, and you can see the breakdown across the various VISNs. So in order to correlate whether the self-described practices, and I'll just pick on C.diff as an example, so whether the self-described C.diff prevention practices correlated with C.diff results, one of the major advantages to working and living in VA is the availability of multiple data sources that can be relatively easily linked together that can provide a comprehensive organization-wide assessment. And one of those data sources is the IPEC data, which is the Inpatient Evaluation Center. And I just want to digress for a minute here to talk about IPEC and what its role will be, and then we'll bring it back to the VHIN needs assessment. So IPEC is particularly relevant to us because it contains self-reported data from facilities on infection and compliance with key infection prevention practices. It is not limited to infection, but also includes things like falls, and rapid response systems, and other things such as stroke, of major importance to VA, but from our stand point we focused on, on infections for this. And if we wanted to link the prevention data that we received from the needs assessment to the actual C.diff rate, which is something that hasn't been done in very many settings, the IPEC data seems ideal for that type of analysis, and so this slide just shows you what the IPEC data, this is for our site, the type of data that is collected and the types of things that would be important to us in terms of linking the prevention practices to the C.diff rate. So as you can see, the VA, for several years now, has implemented a CDI, or a C.diff infection prevention bundle, which has shown some gratifying results, with a decline in C.diff infections over time. However for many VA facilities, C.diff, I would say for most VA facilities, C.diff remains a challenge in terms of being able to accelerate the decline even further. And so on the left hand, on the Y axis, you see these are the number of positive CDI cases more than forty eight hours after admission, which are then attributed to the facility, as opposed to C.diff cases that are positive coming into the facility, which are not attributed to the facility and are attributed to the community. Those we have very little leeway to impact on because they're occurring in the community, at least at this point, but from the hospital acquired CDI rates, the infection prevention practices that a facility undertakes are expected to directly impact C.diff rates, and that's the question that we ultimately want to be able to answer, that IPEC data can help us with. If you look at through VISN 12, which is the VISN that the Madison VA is in, and look at the infection across sites, you can see that there's a considerable amount of variation in C.diff in the number of positive CDI more than 48 hours after admission. A lot of this has to do with the size of the facility, the volume of testing, and the complexity in patient population, but if the goal is to reduce CDI cases across VA, we can see that reducing this variation and bringing it lower will be an advantage. This is just shown in a different way with the absolute number of positive CDI cases more than 48 hours after admission, and this describes that across six years’ worth of data, and you can see from Madison, overall there's been fluctuations up and down, but the rates could use some accelerated decline. If you look at it with a different way [inaudible 23:00] with the denominator now being the 10,000 bed days of care, which I think is a better way of displaying the data in this instance, because it takes into account the patient volume at each facility, you can see that there still is considerable variation between the sites, but over time things have declined in some and have stayed static in others, in other facilities. These are the rates displayed in a different manner, if we look at the Madison, Wisconsin site. Again, there's been some variation. Overall, the rates have declined to some extent, but I think that this is all the more reason to explore, we have the ability to compare across sites, there are some that have lower rates than others, and what is it about those sites in terms of their infection prevention practices that we could then take and say, implement these in Madison or other facilities that are seeking assistance with prioritizing which infection prevention practices they should implement. The next step for the VHIN needs assessment then is to follow up with some of the responses that we received on the survey and to do some in-depth post survey interviews. These will also be conducted using the SEIPS framework as a guide. So for example, if we find that in the responses some facilities mention that they have employed innovative ways to increase environmental cleaning at their sites that would be an area of importance that other VA facilities might really benefit from. A subset of questionnaire respondents will be selected based on the need for more details, based on their responses in the survey. These interviews are currently in progress and we expect to complete them within two months of questionnaire completion. That, we feel, would help us get the qualitative information that we need about the barriers and facilitators of HAI prevention practices, including questions such as organizational leadership and culture of [inaudible 25:04] that are difficult to get at comprehensively in a single or two survey questions. We have developed these questions based on the key themes that were identified from the online survey and both SEIPS and CFIR will be used to structure the interviews.

So to summarize, the results of these needs assessments will help disseminate best practices across all VA as well as inform future infection prevention QI projects. We hope to assist the VA MDRO program in whatever way we can help move their agenda forward and we feel the results from this VHIN needs assessment will provide us the necessary data to do that. We also believe that completion of this needs assessment will build relationships within VHIN, will encourage other facilities to become VHIN partners, and will facilitate practice and resource sharing among VA infection preventionists in a way that is really only really possible within the coordinated system that the VA is. The ultimate goal of course is to improve patient care and to remove the adverse effects of HAIs.

So the lessons that we have learned is that the VHIN steering committee was this broad multidisciplinary representation, was very helpful in providing feedback on multiple drafts of the needs assessment. We were able to have the advantage of having access to other VA surveys, and looking at their development and layout to inform what we needed to do for ours. As I mentioned before, the Healthcare Analysis and Information Group was completely key to developing VHIN’s needs assessment as well as deploying it and moving it forward in a very seamless manner, as was the VA Organizational Assessment Sub-Committee. We had the resources of the University of Wisconsin Survey Center that provided initial feedback on comprehensibility, and will be helping with the follow-up interviews after the survey.  I want to acknowledge QUERI, without their support none of this would have been possible, as well as the VA National Center for Patient Safety for their support in the partnered evaluation. Dr. Evans, from the MDRO Program Office, who provided very generously of his time and continues to help us with the IPEC data, linkage with the survey results, as well as the VHIN Steering Committee, HAIG and the UW Survey Center. And I also want to acknowledge the members of the VHIN Steering Committee who were really instrumental in helping put the needs assessment together and developing strategic priorities for VHIN going forward.

My contact information and that of Research Health Scientist Chidi Obasi, who has been leading much of the VHIN needs assessment  work and will be providing the analysis once we're further along is listed on this slide. And at this point I'd be happy to take questions, and this is also the contact information of our patient safety center, Research Health Scientist Mary Jo Knobloch.

Moderator: Thank you Nasia, for your presentation. We still have plenty of time left in the session. To the audience members please do use this time to ask any questions. Nasia, is there anything else you would like to expand upon while we're waiting for some questions to come in?

Dr. Nasia Safdar: I think just in terms of to not underestimate how terribly important the pre-survey key informant interviews were to the development of the needs instrument, the needs assessment instrument. It’s very common for us to, in infection prevention, to take surveys that have already been deployed and to use those and modify them. But I think the pilot testing has helped us look at it from a completely different perspective.

Moderator: Alright, we still don't, we don't have questions right now for you from the audience. Please send those in if you think of anything, if you think of questions later, you can email Dr. Nasia and her colleagues at the contact information provided on the screen. I'll give you guys a few more minutes to come up with anything, otherwise we might conclude this session a little early. Alright, we have one question. Dr. Nasia, is this focused on acute in-patient only?

Dr. Nasia Safdar: So at this point it is. We hope to expand it in the near future, but at the moment it is acute care, that is correct.

Moderator: Do you have a timeline in place for that progression?

Dr. Nasia Safdar: Probably in the next year.

Moderator: Okay. I'll give the audience a couple more minutes to come up with any questions. Alright. When will the results be in?

Dr. Nasia Safdar: The analysis is currently underway and we're getting the IPEC data even as we speak, so sometime within the month of May we expect to have preliminary results available.

Moderator: Alright, so that's coming up pretty fast. Alright, the next question. What was the process to get the survey distributed to all VA facilities?

Dr. Nasia Safdar: So HAIG is the group that we worked with, and so the way this worked is, we had frequent phone calls with them to determine a timeline for when it would be deployed. They worked through the directors at each VA facility to deploy it, but that it would be sent through the director, and we expected one hundred percent response rate. We presented the project at both VISN calls and national director calls, to both let them know that this project was happening, but also get their approval to deploy it that way, and that's how it went out.

Moderator: Okay, thank you. Well, those are all the questions we have, so I think we will conclude this session early. Dr. Nasia, thank you so much for taking the time to present today's session. To the audience, if you do have other questions you can contact Dr. Safdar directly. Her contact information is in the slide deck. There are no VIReC Cyberseminars scheduled for May, but please do tune in for the next session in VIReC's Partnered Research Cyberseminar series in June. So this session is titled “Using VA Data to Characterize Health and Healthcare Disparities in VA”, and it is scheduled for Tuesday, June 20th. It will be presented by Dr. Donna Washington. She is the director of The Office of Health Equity-QUERI Partnered Evaluation Center. She will talk about the challenges and strategies for using VA data to measure characteristics of vulnerable populations such as race, ethnicity, and socio-economic status. We hope you can join us.  Thank you once again for attending. We will be posting the evaluation shortly. Please take a few moments to answer those questions. We really do take your feedback into account when planning future sessions. Rob, can I turn it over to you?

Rob: Sure, Nasia, one more question came in. I don't know if Dr. Safdar wants to address it. The question is will the data be risk-adjusted. Is it too late for that?

Dr. Nasia Safdar: Well, the data will be risk-adjusted I think, in a relatively minimal way, because we are getting it from IPEC so they'll be some risk adjustment in terms of facility size and characteristics, but not to the patient level stand point, just at the facility level.

Rob: Great, thank you for that last minute question here. And Hira, thank you for your stewardship. To the audience, when I close, please do stick around for a few moments and fill out the brief survey. We really count on you and your answers to continue to bring high quality Cyberseminars. Thank you everyone for your attendance today, and again, thank you to Dr. Safdar for an exciting presentation. Bye everyone.

Nasia Safdar: Thank you very much.

[END OF AUDIO]