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Session: Data Use and Data Decisions in a Mixed Methods Study about Hand Hygiene

Presenter: Heather Reisinger, PhD

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Moderator: Today is the second session in our four-part series. We'd like to thank Cyber for providing technical and promotional support for the series. Before we introduce today's speaker, we'll take a moment to find out more about you. Our question is what is your role in research and/or quality improvement or other operations activities? Heidi, will you please read the options? Excuse me.

Heidi: And our options here are research investigator, data manager, project coordinator, clinical staff, or operations staff, and we know some people may fit into an 'other' category. Please feel free to use your question screen and GoToWebinar if you are an other, and I'll be happy to read those out as I'm going through the folder results here. I'll give everyone just a few more moments, and we will go through what I'm seeing here. And it looks like we're slowing down, so I'm going to close this out. And what we are seeing is 38% research investigator, 13% data manager, 30% project coordinator, 10% clinical staff, 8% operations staff, and then in other we received biostatistician. Thank you, everyone!

Moderator: Thanks, Heidi! We have a followup question to that. How many years of experience do you have working with VA data? Heidi, would you read those options?

Heidi: Our options here are one year or less; more than one, less than three years; at least three, less than seven years; at least seven, less than 10 years; or 10 years or more. And again, I'll give everyone just a few more seconds before I close it out and go through the results here. And it looks like we've come to a stop there, so I'm going to close it out. And what we are seeing is 20% of the audience being one year or less; 22% more than one, less than three years; 27% at least three, less than seven years; 12% at least seven, less than 10 years; and 19% 10 years or more. Thank you, everyone!

Moderator: Thank you. It sounds like we have a pretty well-balanced group of people from those who are new to VA data and those who have many more years of experience. Today's session is entitled Data Use and Data Decisions in a Mixed Methods Study about Hand Hygiene. Today's speaker is Dr. Heather Schacht Reisinger. Dr. Reisinger is associate director for research and a core investigator at the Center for Comprehensive Access and Delivery Research and Evaluation, or CADRE, at the Iowa City VA. She's an associate professor in the general internal medicine division of the University of Iowa, Carver College of Medicine. She's a medical anthropologist with experience in epidemiology and biostatistics, and she's co-investigator on two AHRQ-funded studies and PI on a VA HSR&D-funded CREATE project to reduce instances of MRSA and hospital-acquired infections more broadly. You may type your questions in the Q&A box at any time during the presentation. We'll monitor the questions for Dr. Reisinger during the talk and present them to her at the end of the session. As a reminder, a brief evaluation questionnaire will pop up when we close the session. If possible, please stay until the very end and take a few moments to complete it. I am pleased to welcome today's speaker, Dr. Heather Reisinger. Heather?

Dr. Heather Reisinger: Hi! Thank you, Linda, so much for the introduction, and I really appreciate VIReC for asking me to present on my research. And the title of my talk is really airing my dirty laundry, but VIReC folks have assured me that that's the whole point of this Cyberseminar series. And so really, about sharing our successes and our challenges of doing health services research in the VA and then how we make our decisions about data kind of along the way.

So to start with, my disclaimers are obviously that I'm in the Department of Veterans Affairs and these are my opinions. My anthropology colleagues around the country are probably kicking me or shaking their fists at me for listing medical anthropologist as a disclaimer. But I really see this slide or disclosures as a way of talking about your biases, or to put it nicely, your perspectives. And being a medical anthropologist has really shaped the way I think about research questions, what I bring to the table, and how I do my research. And I don't really touch on that throughout the talk, but I want you guys to keep that in mind as you're listening to the presentation. And I have no other financial disclosures or disclaimers to report that I am aware of at the time. So, you know, disclaimers are really about thinking about the audience evaluating your findings and what you're presenting and if your biases are affecting you, and I'm basically saying that being a medical anthropologist does.

So to move on, I really want to acknowledge the huge number of people that have been part of this study and the psych PI's and the research coordinators that have really made this happen. And when you list people, you always forget someone, and I realized that I forgot to thank Mike Jones on this slide, who is one of the biostatisticians that's worked with us. And I'm sure I forgot others, but thank you very much to the team who have worked on this.

So the specific objectives of this session are really to describe a mixed method study combining qualitative evaluation and a cluster randomized control trial. So which research questions are best addressed using qualitative methods, which questions does a cluster randomized controlled trial answer, and why even combine the two? Those are really threads throughout the presentation, again, that I don't address directly but are there. Really what I'm focused on, the concrete objectives, is to review the challenges, solutions, and lessons learned from doing the study, managing a large multi-site mixed methods study, and then making good data decisions as the study has evolved. And for me, it's really telling the story of how this depiction of the study design became this, and so I will talk about that throughout the talk.

So what I'm going to go through during this presentation is a little bit of background, really get into the qualitative design and methods. Rumor is that VIReC has not focused on qualitative methods in the past, and so this is an opportunity to do some of that, and then talking about the cluster randomized controlled trial that is part of the study and finally with lessons learned.

So this is about hand hygiene, and I'm going to move straight into that. And really the background is not your traditional presentation, research presentation background. It's really focused on data. I'm trying to really stick to VIReC's objectives for these Cyberseminars. So really, the background is the study design and aim. So this study is entitled Building an Optimal Hand Hygiene Bundle: A Mixed Methods Approach. And this project, too, as Linda already said, of advancing MRSA infection prevention CREATE. And this project is a sequential mixed methods study, so we start with a qualitative process evaluation to really understand the site that the cluster randomized controlled trial is going to be implemented in, and then focusing on the trials and then going back to the sites and doing a qualitative evaluation of how the interventions went.

So aim one combined with its methods were to identify combination of hand hygiene intervention strategies that optimize hand hygiene compliance and that could form an evidence-based hand hygiene bundle for VHA implementation. So as you might remember, CREATE was really about trying to help our operational partners in figuring out interventions that could help them. So you'll see that in the focus of this study. So really the message to support that aim, we're a clusterized, cluster randomized control trial that will sequentially test three individual hand hygiene interventions to identify an optimal combination of interventions to increase hand hygiene compliance.

Then aim two was to identify the institutional, organizational, ward [technical difficulty from 10:08 to 10:31] if we go back to the methods. There I wanted to point out that chronologically I'm not starting with aim one and then moving on to aim two and then going to back to aim, going on to aim one and back to aim two, so just keeping that in mind as we go through the talk.

So moving straight into the qualitative design method, so this is the original depiction of the study, and I'm going to stick with this one through most of the talk. And at first it started with the qualitative process evaluation at baseline. So for this evaluation, we did site visits, six site visits where we interviewed infection control team members. We did interviews with staff who were most involved in the hand hygiene program, and then we also did focus through the front line staff on two wards or units per site. And we did one during the day shift and one at night, during the night shift. And then we just did observations of current hand hygiene policies and practices hung out at the different hospitals. We also did phone interviews at four of the sites because we couldn't travel to all 10. So we did interviews of infection control team and then any staff who were specifically involved with the hand hygiene program. So these are the sites across the country. We tried to get geographic diversity, but we also focused on three in our VISN, in VISN 23, to get a regional perspective as well.

So moving into kind of how we, or what data was collected and then how we transformed that data to be able to do the analysis. So we start with audio recordings of the different interviews and focus groups which resulted in over 40 transcripts that we've analyzed. And then we also did field notes with Cassie Goedken, qualitative analyst, and my research coordinator went on all the site visits with me. And so we took our handwritten notes and integrated them together in a single field note Word document. We also collected all of the hand hygiene policies from the 10 sites that were involved and all of the hand hygiene observation forms. So how do they monitor hand hygiene and what form do they use to do that? And then we also asked staff for any other documents that would help us understand their hand hygiene program, so their hand hygiene compliance reports that went up to leadership, their training materials for whoever was doing the hand hygiene monitoring. So we collected all of that data as well. And I just wanted to note, particularly for the qualitative members of the audience, that we used MAXQDA and I listed [inaudible 13:35]. So we uploaded all the transcripts and field notes into MAXQDA. And I see it as, the software program as really a very large flexible responsive file cabinets, and I'll talk about that a little bit more as we go through the talk.

So who we talked to; in semi-structured interviews, we were able to talk to all 10 of the hospital epidemiologists at each of the sites, infection preventionists at each of them. Sometimes they had more than one, so we'd interview multiple infection preventionists. The multidrug-resistant organism coordinator at each of the sites, particularly if they were directly involved in hand hygiene. And then we found other staff were involved in hand hygiene, either in quality, patient safety, risk management, and so in total we had 39 individuals to participate in these type of interviews. And then we also did focus groups. Like I said, we tried to get a variety of front line staff, but when we, nurses were the ones that were most available to come to the focus groups, so that was predominantly who we talked to.

Now quickly moving into a little bit about analysis, and we do a very interdisciplinary team-based approach, and particularly on this project. Phase I starts with large chunk coding, a very elegant term that I will get into a little bit later, or in the next slide. Phase II really moves into the sub-coding and analysis and really starting to think about manuscript development from the data.

So in Phase I of the coding, the process that we used in this study and I tend to use in my research is that we have team members. And for this particular project we had five team members from different disciplines read three different transcripts independently, and then they note the structure of the interviews, look at the themes that are coming up in the interviews and items of interest, and kind of take notes on what's going on. And then we met as a team and started drafting a preliminary code book. And then from that, we assign another transcript for all of the team members, the same transcript, and we code it independently based on the preliminary code book that was developed. Come back again to review it as a team and revise the code book as necessary. In the work that I've done, we continue this team-based coding process throughout the whole time we're doing analysis because I think it helps the team stay on the same page and increases the reliability of the coding. But after, very quickly in the process, the code book starts to solidify, and then we can start breaking into pairs of coders as well to be a little more efficient as a coding process, and we test agreement and things like that during that time or for the coding pairs. And so for this particular study about, or portion of the study, about 50% of the transcripts were coded by the large team and about 50% were coded in pairs.

Moving into Phase II and III, I combined them here and used an example to really get into what we did and to kind of highlight the process. So after going through all the transcripts and doing these large chunks codes, two of them were hand hygiene strategies and hand hygiene monitoring. So at the different hospitals, what strategies were they using to try to improve the hand hygiene compliance and then how were they looking at hand hygiene compliance? How were they monitoring it, reporting it, the type of surveillance going on. And we really felt this could develop into a manuscript because a lot of the hand hygiene literature out there is about particular interventions to improve hand hygiene and whether they worked but not really getting at how hand hygiene programs are structured, really what goes into them. And we saw tremendous variation when we were doing our site visits as well as when we were looking at the coding that we were doing. So we thought that would be a particularly good focus of a manuscript. So we brought in the additional data of the data collection forms from the sites as well as the hand hygiene policies and brought all of that together.

So then for the analysis process was really going through that, and we actually developed an access database so we could systematically categorize some of these issues. But then we also got into more of the qualitative data and doing some sub-coding and looking at, in more detail, at these large chunk codes. And this is where MAXQDA is kind of that flexible responsive file cabinet. So we essentially query MAXQDA and say I want the file on hand hygiene strategies and I want the file on hand hygiene monitoring, and it goes in and pulls out any time we told it that this had to do with, this particular text had to do with that topic. So the sub-coding process is really narrowing it to those two areas and then thinking about the details of the sub-themes that had been going on there.

So to get into this example a little bit more, looking at the hand hygiene process, we looked at things, and this was in the access database. Who manages the program? As you can see, some are managed by the Infection Control Team, but several were also managed by Quality or Patient Safety Teams at their facilities. We also looked at who conducted the observations, how data was collected, who entered it, and then who reported the hand hygiene compliance data to leadership. One of the interesting things you'll see is that Infection Control Teams were all still responsible for reporting this compliance data to leadership even if it was not a program that they were managing.

And then looking at the hand hygiene monitoring data collection forms, we looked at what different things were on their forms, whether they marked what time, some sort of time marker on the form about when it was collected, and whether they looked at who actually did the observations, the type of people that they observed doing hand hygiene, hand hygiene opportunities, generally looking at entry and exit into a patient room. But the World Health Organization also has something called 5 Moments that are very widespread in hand hygiene and so some looked at those. And then others looked at unique combinations. And then also whether they track methods, so whether it's soap and water or alcohol-based hand rubs, whether there were isolation precautions on the room, and whether people used their personal protective equipment when they were entering the room, so whether there was contact precautions and whether they gloved and gowned when they went in the room. And then some places actually looked at why a person might not comply, why they might not do hand hygiene, whether they had things in their hands and couldn't do hand hygiene at the time.

So San Antonio healthcare system, thank you very much for allowing us to include this in the presentation. This is an example of one that's used in an operation or in the clinical setting, and you can see the different types of observers they looked at, and this is one of the examples of where they do track if they don't comply with hand hygiene, why they might not.

So I wanted to choose kind of a simple example of the sub-coding also. I'm not sure that we have enough around this language, just describe observers to write a manuscript, but I really wanted to share the data because it's very interesting. So this would be from the sub-code language just describe the observers. So a nurse in the focus group says well, they used to have people come along and look at you, you know. And I'd say they had observers? The secret shoppers I have not seen lately, and I interrupt and say secret shoppers, and the nurse comes back and says we just call them spies, and then there's laughter in the group. Another one, and I say and is hand hygiene monitored here? Yes. Yes! Big time! And how do you know? How is it monitored or if someone is watching secretly? Secretly? And yeah, big brother is watching, and then more chuckling. And then finally, so you have to wash your hands in the room and then you come out and there's a hand washing Nazi there. They catch you and say you didn't wash your hands because they don't see you wash your hands; chuckles. So who is the hand washing Nazi? Infection disease control. So they're very present? Not very, but enough. We don't see them every day. It's sporadic because, you know, they go to different wards.

So I think this is an interesting example of when you're doing hand hygiene monitoring, which is a type of surveillance, that you really get the surveillance language that comes out from those who are being observed when they're talking about that kind of behavior or that action. So this is just kind of a very brief, quick example of the qualitative work that was done on this project.

And now I'm going to move into the cluster randomized control trial that was embedded in this study. So just a reminder we're going back to aim one. So the primary outcome of the randomized control trial is really hand hygiene compliance. So I wanted to get a little bit into how we collected that, particularly since this is about data collection. So we trained observers at each of the sites in the standardized way, generally through online webinar training, and the process that we trained them in was that observers stood outside the patient rooms and they could stand outside two patient rooms if they could have a clear line of sight into each room. They would observe the hand hygiene behavior for 15 minutes, and this is based on the study that we had done looking at the Hawthorne effect and the optimal time of observation. And then they would record the behaviors on the structured observation template. Then after those 15 minutes, they would move on to another ward to help reduce the Hawthorne effect, and they would observe patients, another patient's room, and record it on a new observation form. For this particular study, we asked the research coordinators to observe for 10 hours a week or at least have 40 observation forms. We also gave them a cover story that if a healthcare worker asked them why they were on their unit, they would say that they were doing a study, that it was on patient flow of who was going in and out of patient rooms, so they were secret shoppers as the people in our focus groups talked about.

And then I just wanted to highlight how we collected the data, that we used TELEform to do the hand hygiene observations. The research coordinators would print out forms and then they would scan them and upload them to our VA SharePoint site, and then a data manager would upload it through the TELEform software and review the data to look for mistakes or see if TELEform wasn't reading handwriting correctly or if there's missing data. And so it was a nice process to collect all of this data.

So for those of you who are not familiar with TELEform, it's a computerized data entry system that uses optical character recognition to read data collection forms. And we use it because, for its accuracy, its quick and efficient data entry, and the double data entry that's achieved by just one operator.

So this is actually our data collection form. It is overwhelming, but it actually works very smoothly, and I just want to thank Cari Francis [phonetic] for all of her work on this over the years. It works very well. And this is a form filled out, and this is actually one we used for training, so it's not official form that we've used from the data. And you can see that we mark what site it's from, the day, the time period, the 15 minutes, the ward and room, and who collected it. So through isolation, and then you can see entry and when we collect when they go into the room, what type of healthcare worker, whether they were wear, their method of doing hand hygiene, whether they're wearing gowns and gloves, and then going through the WHO 5 Moments, and then exit from the room. So all of that data is being collected by the observers outside the room. And this is what contributes to our primary outcome measure.

So really getting into the randomized control trial, we started with baseline data collection for six months. And so I wanted to bring up another poll question to kind of get people more engaged in the middle of this talk and ask you in a systematic analysis of over 75 hand hygiene studies, what was the average baseline compliance rate? And I think Heidi will take this over.

Heidi: Yes. Responses are coming in. I'm going to give everyone just a few more moments, and we'll go through the results here. They're coming a little bit slow. I hope people are probably thinking about what to repond, so again, just a few more seconds. Looks like things are starting to slow down. Okay, so we'll close it out over here. So from the audience we're hearing 4% saying 92.3%, 38% saying 78.7%, 57% of the audience thinks 38.7%, and 2% of the audience saying 56, I'm sorry, 15.6%. Thank you, everyone!

Dr. Heather Reisinger: Right. Thank you, Heidi. So the majority of the audience is correct that it's 38.7% if you look at the combination of these 75 studies. So that's why we need to study and try to improve hand hygiene compliance in the hospital setting.

So our baseline data, we collected six months of baseline data, collection of hand hygiene rates, and we just collected on 59 wards at nine different sites, and we collected 19,500 observations. About half and half were entry or exit. And you can see our compliance ranged from about 14 to 66% on entry and 36 to 69% on exit. So a wide range, but probably very similar to the studies that were being done, those 75 studies that they reviewed. One thing I want to point out is that this has gone down to nine different studies, or nine different sites, I'm sorry. One of our sites had so many problems working with their HR that they were never able to hire a research coordinator. They were not able to participate because we needed the baseline data collected by the observers.

Now moving into Phase II of the trials and the first intervention that we implemented. So this was implementation of signs, and we looked at six months of an intervention period. What we really wanted to look at was if you changed the signs more frequently, would you have a better, more of an impact on hand hygiene compliance rates? We had done work on hand hygiene signs previously where point of use, where we put it near the hand hygiene dispenser so it would remind. It's a cue to action from the health belief model. And what we found in those studies were that positive messages that focused on the patient were, had the most impact or potentially the most impact. So we wanted to look at if we changed the signs, could we have more of an impact, but also at the ways that counter habituation. I've seen the sign before, it's not really changing my mind. Like my little sign by my door that says remember your PIV card that I've habituated to and can't remember my PIV card any more.

So these are the signs that we used, the same message but different colors, different pictures that really focused on the patient.

So then we moved into the block randomization. So we took the baseline compliance rates by their wards and units, and we ranked them by their compliance rates, and then we blocked those and randomized them into the different arms which would be changing signs, never changing the signs, changing them monthly, or changing them on a weekly basis.

So this is where the challenges begin. So besides the fact that we had moved down to nine sites, but we started the intervention period, but we didn't plan for a time for getting the dataset ready and then working with the statistician to figure out the randomization. And if you go back to the slide where we kind of depict how the study was going, you can see that the six months of baseline goes immediately into the six months of intervention. And so that process delayed us about two months. And then also during that time period, we had piloted signs at three different VA sites and encountered barriers in that process, that actually implementing, having to hang up signs in nine different facilities was a whole different story. I don't know if any of you have worked with your halls and walls committee at your VA's, but it is extraordinarily difficult to hang up a sign in the halls of a VA hospital. So that also delayed us as we were working out all the different ways that you could put signs near a hand hygiene dispenser, including the technology of Fatheads, which we used for some places.

In the middle of the hand hygiene signs intervention, one RA left for another job opportunity and they were never able to be hired again at that site for HR reasons. So then we were down to eight sites, another challenge, and only 51 units. And this brings up the concern of power calculations, which the statistician was raising, particularly after having a chance to really review and get into real data. And I would say part of this is my fault in even writing the grant and trying to describe the type of data that we're collecting and really get a chance to have a statistician understand where we were coming from when we did the power calculations. But those concerns really started to come up at this process or at this point in the study.

So now we move on to the wash-out phase. So after we implemented changing the signs at the different time periods, we went into wash-out phase. And during that time period we did qualitative interviews over the phone with Infection Control Team to get a sense of the, just kind of feedback on how changing the signs went at their facilities and barriers to facilitators, things like that. We also, during the wash-out period, needed to determine which frequency had the most impact and then have all of the sites change to that during the wash-out period, so everyone was doing the same thing at all of the sites.

And what we found were more challenges, and the effectiveness of the signs was not clear cut. There was not statistical significance between the different intervention groups. And so through that, we decided just not to change the signs during the wash-out period. Whatever sign was up stayed up for the rest of the study period. At this time we also decided to shorten the wash-out period to make up for some of the delays in implementing the first intervention phase. And then finally we got a chance to really analyze some of the problems with the power calculations, and this was part of the problem of having one year of biostats in my postop training, but I can't explain these in detail. But essentially, we had a lot of clustering within our clusters that we hadn't accounted for, and so we decided to extend the next intervention period to really try to collect more observations and deal with the power issue. And what's interesting is that we actually determined that this was a broader issue in hand hygiene intervention studies and something that people aren't fully aware of the assumptions that they're making in their power calculations. So we're actually working on a methods paper around these challenges in doing hand hygiene trials.

So now we're really getting into when this study design became this study design, and I'll really spell it out. But what I want to talk about before doing that are the other two interventions that we introduced in the next intervention phase. So as I said, the point-of-use reminder signs remained the same on all the units across the different facilities we were working with. But then we, again, randomized the sites to three different conditions. So if their head units had stayed signs only, they also had units that had individual hand sanitizer dispensers that we distributed to the healthcare team or healthcare workers, sorry. And that was really to address the fact that there's, it's often difficult to access alcohol-based hand rubs, particularly in patient rooms, and so we were trying to get at that. And then we used, the other intervention was signs plus healthcare worker hand cultures which you can see at the bottom of this slide. And what we did was come on the units with culture plates and asked healthcare workers to voluntarily put their hands on the culture plates, and then they would record a five-digit number of their choice and they could choose to keep it or not. And then they also estimated how much time it had been since they washed their hands or sanitized their hands. And so the one on the left is, you know, they had just sanitized their hands, and then the one on the right was, I think, a couple hours if I'm remembering correctly. Hopefully they were doing administrative work that day.

So then we took these images after they had been incubated, we took pictures and put the images up in staff areas so that they could see them and they could also track down their individual image as well because the number was listed there.

So now, really focusing on how this picture changed. And so the final intervention that we decided to basically not do because we were trying to get more power from the [inaudible 39:51] interventions was to bundle two strategies that were most effective and then bundle all three strategies and see if that was more effective. Besides wanting to increase the power in each of the arms and try to see which intervention was having the most effect, we also found that signs didn't have an impact, so that in many ways changed our ability to be able to do the last phase of this study. So that one went away. It became this intervention, this depiction of the study or this design. And then one thing I just wanted to point out because in writing the grant, talking about the different phases of the randomized control trial made them much easier to organize. But when we were actually implementing it, it was hard to talk about all the different phases, and what I would say or recommend to people as they're writing grants is only use phase for the interventions because it became two confusing otherwise. So now we talk about Phase 1 as the first intervention phase and Phase 2 as the second intervention phase.

So finally, more challenges and potentially solutions. The extension of the second intervention phase actually led to more barriers. We found that individual hand sanitizers were not being used by the healthcare workers. We had changed the data collection form so that we can mark if healthcare workers were wearing the sanitizers, and they were not. And then we had a lot of initial interest in the culture plates, but it waned substantially over time. Simply, we know by the number of hand hygiene culture plates we were able to get from the workers, but also just from feedback from those who were collecting the plates that people were just not as interested, and that potentially created more issues with power in looking at waning interest and whether, that the impact of the intervention may have been trickling off over time. And so we're still looking at that data right now.

So finally, we are in the currently in the last wash-out phase and the qualitative process evaluation, the post intervention phase of that. And so we're collecting the final three months of the hand hygiene observation data without interventions. So the signs have come down. All the culture plate images are not in the staff rooms, etc. We're also doing post intervention qualitative evaluation. We are going to the four different sites. Two of the sites that we went to have dropped out, and the four sites will do form interviews. And then just to touch on the integration of qualitative findings and the primary outcomes data that we're working on. So as we're looking to understand what kind of impact the interventions had, the qualitative data will really help us understand whether, why it did or did not have an impact, the different interventions. But also over time helping, if we do time series analysis, understanding why it might have waned over time and what were the contributing factors. We also, because we saw so many organizational issues and variation when we're doing the qualitative work on the hand hygiene program, we're also considering the possibility of looking at correlations with organizational issues that we saw qualitatively with actual baseline hand hygiene compliance rates and if those variations in hand hygiene programs impacted the compliance rates.

And now, finally, lessons learned. I have one slide that I kind of boiled them down into four areas. For study design, the more sites you add, the more challenges you're going to overcome. That was pretty apparent throughout. And obviously you need to plan time for the randomization analysis and time to clean the dataset, etc. I missed on that. But also planning extra flex time in your study design is very helpful because things aren't always going to go the way you think they are. Power calculations are obviously never straightforward. It's not easy to predict exactly how things are going to come together, but it was interesting to see the process where real data really revealed the false assumptions that you're making about your data when you're actually doing the observations or collecting the data. And then interventions, I was really thinking about my implementation colleagues here as larger trials really start to reveal the problems of scaling up an intervention. We saw lots of that throughout the study. Therefore, the importance of really tracking those implementation issues in case intervention is scaled up to a larger group of sites. Then study teams can obviously be its own series of webinars on how to create good study teams. But it did affect data collection, the focus of this one, and really thinking about HR issues and attrition and how that might affect your data collection and how to prepare and mitigate those issues. And then finally I put have fun because you're obviously going to run into issues, and if you don't have a sense of humor about it, it could be very challenging to deal with.

That moves me into my last slide. I want to thank you very much for taking the time to listen to this. But also the slide is from our microbiologist colleague that we worked with on the hand culture plates. And I realized I didn't thank her on the slides and add to my list. But what she did was took growth from hand hygiene plates from different sites and took that growth and actually created this artwork, so I wanted to share that with the group. And with that, I will turn it back over to Linda and hopefully have some time for questions.

Moderator: Thank you, Heather. Thank you for taking the time to present today's session. We've got about three resources slides. Could you...

Dr. Heather Reisinger: Oh, sure.

Moderator: ...do those for me please? This one has some quick links for VA data resources. Next. And some options for any specific questions you have, the HSR&D Listserv that VIReC manages, and the VIReC HelpDesk with the email address and phone number provided there. And next. The Good Data Practices Cyberseminar calendar, and we'll go to next. And we'll have some questions for you, Heather. If you're, okay, so I have several questions. The first one is over what period of time was this study done?

Dr. Heather Reisinger: So it's going to end up being over a 3-1/2-year period, and we're in the final, we have about eight months left on it.

Moderator: Okay, and the MAXQDA, is that similar to other qualitative analysis software such as NVIVO or ATLAS.ti?

Dr. Heather Reisinger: Yeah, it's very similar to those. We actually had NVIVO here and were having challenges using it on the VA network, and I can't remember how many years ago we switched to MAXQDA. Been a little more stable, but we have issues with that as well, but it's very similar.

Moderator: The MAXQDA is available inside the VA?

Dr. Heather Reisinger: We've been able to purchase it. I don't know the details of how.

Moderator: Okay, you have it locally, right?

Dr. Heather Reisinger: We do.

Moderator: Okay. So here's another question. Are there differences in reporting hand hygiene compliance if you collect the data by observational data versus if you conducted a survey. So what are the differences in reporting compliance?

Dr. Heather Reisinger: Yeah. So overall, people think that they do hand hygiene much more often than they actually do, so self-reported surveys would be, have higher compliance rates.

Moderator: Okay. So given the general, here's the next question, given the general pattern of how low compliance rates, of the low compliance rates, it seems clear to this inquirer that there are reasons why hospital staff don't comply with hand hygiene guidelines. So my question is why didn't they do more research initially to try to understand why the hospital staff don't comply with the guidelines?

Dr. Heather Reisinger: Right.

Moderator: And then he's got statement the way to create really effective interventions would be to create interventions that address the reasons for existing behavior.

Dr. Heather Reisinger: Right. Yeah. So there has been a lot of research on the reasons, and they are partly structural, like, you know, not having a shelf to put things down that are in your hands so that you can do the hand sanitizer. Lots of them are things like time, being in an emergency situation, things like that. But part of it, too, that I would argue is that we're still in the process of really understanding what are the most important hand hygiene moments or opportunities, and I think right now the denominator is just too big. We're expecting hand hygiene in time periods that may be putting too much burden on healthcare workers, and so that was outside of the scope of this particular study but something that we're definitely working on and thinking about in our group.

Moderator: Okay. I have two more questions. The first is how, can you describe the power issues that you encountered with respect to nesting? For example, patients within units or staff?

Dr. Heather Reisinger: Right. Yeah. So I can describe the clustering, but I probably, I can't describe how it impacted power. But the statistician would really, really want to be able to link hand hygiene behaviors throughout the study time period. So if I went in and out of a room multiple times across the study time period, it would be much better if we could see if my behavior is impacted as an individual. So the clustering that happens are clusters within, obviously, the facility. Then we cluster, we randomized at the unit level or the ward level, but then you have patient rooms, and you can think about the different patients that are in there and what impact that that might have, their severity, whether they have an infections, things like that. Then you have different healthcare workers and also different types of workers, nurses, physicians, and things like that that also cause clustering. I'm trying to think of other things that we've talked about. Those are some of the ones that I can think of.

Moderator: Okay. Thank you. We have one last question. If you have, to the audience, if you have another question we have maybe a minute to answer them. Heather, are you going to study the impact of this study in hospital-acquired infection? I think they mean in...

Dr. Heather Reisinger: Yeah. So that is a secondary outcome that we're going to look at. Hospital-acquired infections, thankfully, tend to occur at very low rates. So it can be difficult to show the impact of hand hygiene interventions on infection rates, but we will definitely be looking at that.

Moderator: Okay, I have one more. Are there differences in reporting for hand hygiene? Oh, nope. That was one I already answered. So I think that's all of the questions that we have today. Thank you to our audience for your questions. They were all very good. If your questions were not addressed during this presentation, you can contact Dr. Reisinger directly. You may contact the VIReC HelpDesk at virec@va.gov. Dr. Reisinger's email address is shown here on the slide. Our next Good Data Practices session is Tuesday, February 21st, at 1 p.m. Eastern and will be presented by Drs. Mary Vaughan-Sarrazin and Amy O'Shea. The title of their talk is Study Design and Data Decisions in a Study of Intensive Care Units Telemedicine Monitoring. We hope you can join us. Thank you, once again, for attending. Heidi will close the evaluation shortly. Please take a moment to share your thoughts. We really appreciate it. Thank you. Heidi?

Heidi: Thank you, everyone! I'm going to be closing this meeting out in just a moment. When I do, you obviously will be prompted with that feedback form. As Linda said, please take a few moments to fill that out. We really do appreciate all of the feedback. Thank you to everyone for joining us for today's HSR&D Cyberseminar, and we look forward to...

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