Cyberseminar Transcript

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Session: Overview of the Millennium Cohort Study (MILCO): Opportunities for VA Investigators

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Heidi Schlueter: Once again, thank you everyone for joining us for today’s HSR&D Cyberseminar. Today’s session is on the Millennium Cohort Program. I just want to quickly introduce our presenters for today. Our first [inaudible 0:00:14] Rudolph Rull. He’s the principle investigator with the Millennium Cohort Study, Deployment Health Research Department with the Naval Health Research Center in San Diego CA. He is joined by Dr. Edward Boyko. Dr. Boyko is also with the Millennium Cohort Study in the Epidemiological Research and Information Center with the VA Puget Sound Healthcare system in Seattle, Washington. And they are joined by Dr. Aaron Schneiderman who is the director of the VA Post-Deployment Health Services Epidemiology program with the Veterans Health Administration in Washington D.C. Thank you for joining us Dr. Rull. Can I turn things over to you?

Dr. Rudolph Rull: Sure. Thank you Heidi. I really appreciate this opportunity to present the study, the research program. And I’d really like to thank Dr. Becky Yano and the VA Women's Health Research Network for organizing this upcoming series of Cyberseminars. And again my name is Rudy Rull. I'm a research epidemiologist at NHRC in San Diego. And I've been with the Millennium Cohort Study for the last six years. And it has the privilege of serving as the PI for the last three.

I'll start with just putting up my disclaimer as a government employee but also acknowledge the essential sponsors of the of the Millennium Cohort Research program from the DoD and the VA as well.

To start out I do want to make a distinction regard the Millennium Cohort Study or MILCO, which is the largest prospective study of service members that has been running since 2001. In 2011 Millennium Cohort Family Study military spouses was established and toured. The end of my time today I'll provide some additional information about this study. Together these two studies make up the Millennium Cohort program. And with our new ability to link with VA data that doctor’s Boyko and Schneiderman will describe and discuss further, it's my hope that you all consider ways that this research program could be a useful platform for your own research interests and activities.

I think that the best place to start is say with the beginning of the study. And I want to recognize that it's been over 20 years since the spark of that initial idea that led to the Cohort in the late 1990s. Public concern regarding service member and Veteran’s health following the Gulf War and Vietnam conflicts led to a recommendation for a prospective Cohort Study of service members. This public concern was taken up by the DoD and VA stakeholders as well as Congress. This quote here is from the testimony of one subject matter expert, Dr. David Schwartz, to the House Committee on Government Reform and Oversight in 1997. And here he makes the case for a longitudinal study that would go beyond taking snapshots of the health of the population, and to assess long-term impacts following military service.

In 1998 this public concern led to numerous recommendations from the DoD, the armed forces epidemiological board, the VA and the Institute of Medicine, to develop a prospective longitudinal Cohort Study of service members. And this recommendation became a part of the 1999 National Defense Authorization Act that directed the establishment have a study of Post-Deployment Health which became the Millennium Cohort Study or MILCO for short, as well as the designation of the Naval Health Research Center in San Diego as a DoD center for Deployment Health Research.

Following extensive planning that included Dr. Boyko as one of the founders as the Millennium Cohort Study was launched in July of 2001, a representative sample of about 250,000 service members from all service branches and components, including Active Duty, Reserve and National Guard personnel, was invited to enroll in the study and complete a baseline health survey. And fortunately about 77,000, or 36%, of those invited service members heeded the call and signed up to become our first enrollment panel. The terrorist attacks on September 11th occurred shortly after this launch. And really set in motion the large scale military operations in Afghanistan, Iraq, and other areas that involved the deployment of a substantial proportion of MILCO participants.

With a focus on deployments and other military experiences, is the objective of the Millennium Cohort Study is to prospectively determine the impacts of these experiences on the long-term health of service members and Veterans. And since the first panel enrolled in 2001, we have enrolled three other panels in 2004, 2007, and 2011. And have a total population of about 201,000 from these four panels. This past September, we started enrolling our fifth panel of current service members. And as of this morning well over 18,000 have completed their baseline survey. Our study participants complete an online or paper survey every three to five years, and this continues even after they leave military service. And in order to affectively capture the life course of service members, follow up of participants is planned all the way out through 2068. The surveys are designed to assess participants physical and mental health using standardized instruments and include questions on military experiences, such as combat and deployment, and other experiences including life stressors, alcohol-tobacco use, sexual trauma. These survey data are also linked to multiple military and medical databases including their military medical record. And most recently their VA record.

This timeline illustrates the longitudinal and multiple panel design of MILCO. From left to right are the waves of data collection with the enrollment panels going from top to bottom. And as you can see, in the current 2019 to ‘21 data collection you will be collecting the sixth wave of data from panel one participants enrolled in 2001. As well as the first wave of data collection for new panel 5 participants.

As I mentioned the total population of the Millennium Cohort from panels one and four stands over 201,000 service members and Veterans, with over 17,000 newly enrolled in panel 5. That number can be corrected to around 220,000 now and I hope that number will be substantially higher when our enrollment period closes in June of 2021. Among the methodological strengths of the Cohort is the intentional oversampling of typically underrepresented groups. And this includes women, Marines, and Reserves, as well as over sampling of married personnel in order to support the enrollment for the Family Study.

So this slide shows a glimpse of what the first four panels of the Cohort look like with respect to their demographic characteristics and military service. Due to intentional oversampling as well as higher response rates almost a third of our participants are female, and 30% are racial ethnic minorities. Most participants are from the enlisted pay grade as well as from the active component. Our participants largely come from the Army with almost 90,000 represented from panels one to four followed by the Air Force, Navy, and Marine Corps. As well as approximately 3,500 Coast Guard members. About 65% have had at least one deployment. And almost 70% of the code is no longer in military service. We also know that about 1.2% or approximately 2,400—2,500 of our participants are deceased. With respect to age, panel 1 participants were selected regardless of how long they had been in military service and thus were older at the time of enrollment than those in panel 4 who were selected within the first few years of their military service. The current age for panel 1 is approximately 52 to 53 years while that for panels 2 to 4 is about 36 to 37 years.

Given the relative youth of the Cohort, particularly for subsequent panels our research efforts have been focused on health outcomes such as quality of life, behavioral and mental health, cardiometabolic disorders, and respiratory conditions. However as this Cohort matures and age, we’re starting to look at other outcomes including musculoskeletal conditions, cancer, autoimmune disorders, sensory impairments, and neurodegeneration.

This Firefly Map illustrates the current distribution of our participants across the 50 states. But we do know from residential histories or residential updates that about 7,000 are also currently living outside of the United States.

This slide here lists many of the standardized instruments that we include in the surveys. We also ask about military deployment experiences as well as combat. And this is a 13 item instrument that asks about experiences such as being attacked or fired upon, being responsible for the death of an enemy combatant, or a noncombatant. I also want to point out that we have relied on the PTSD checklist civilian version or the PCLC that's listed here to screen for PTSD, but have since migrated to the PCL-5 that's based on the DSM-5 for the current follow-up survey, new enrollee survey, and we are currently conducting an analysis comparing responses between the PCLC and the PCL-5 as well.

While the core of the study is the survey data that's provided by our participants, we do actively link with numerous enterprise databases of military healthcare utilization and diagnosis, deployment, immunization, mortality, and other objective measures. Dr. Boyko will elaborate further on our new capability to link with VA records. And we also have an effort underway with the VA's Million Veteran program to enroll MILCO participants into MVP. And currently about 8,000 MILCO participants are also members of MVP. Over the last two decades analysis of survey data linked to these datasets have produced approximately 120 research articles, published in scientific journals by our study team of epidemiologists, statisticians, and psychologists, and have often involved collaborations within the DoD, the VA, and academic institutions as well.

Ultimately we do want to be able to translate our research back to the maintenance of a Healthy and Fit Force where our findings are used to inform prevention strategies, intervention studies, clinical practices, and improve training doctrine. And we ultimately want to be able to do this for the Veteran community as well.

Over the last two decades the breadth of research covered in the Millennium Cohort program has expanded beyond the initial focus on post-deployment psychological health, health-related behaviors, and physical health and chronic disease. The growth of the portfolio over the years has really led to our current programmatic research model with multiple program areas led by our senior researchers in addition to our survey operations core. And this portfolio is also integrated with the Family Study that extends the focus to financial and career wellbeing, child wellbeing, and relationship health.

Among these program areas our Veterans program works closely with the VA to examine numerous health concerns impacting Veterans. One priority has also been on the positive or negative transition from military service. Particularly on post-service economic wellbeing including underemployment and financial stress, homelessness, and healthcare access and utilization.

The other important aspect of our work is examining post-deployment health concerns particularly among Veterans with a focus on conditions with long latency periods that manifest later in life well after leaving military service. One of the things I do want to mention as well is that the first enrollment panel included about 9,000 Veterans from the first Gulf War in 1990 and 1991. So we are also doing work examining symptom clusters related to Gulf War Illness or chronic multisymptom illness. And as I mentioned this is all really done in collaboration with our colleagues at the VA. Specifically under CSP 505 that is chaired by Dr. Boyko along with the funding support from the VA Office of Patient Care Services Post-Deployment Health and the VA Office of Research and Development.

I've listed here some of our current collaborative projects with the VA. And these touch on a wide range of areas including homelessness, CMI, and mental health. Dr. Boyko is also leading a study comparing self-reported outcomes from surveys with VA health records. And we're also starting a new analyses focused on mortality in the Cohort with a focus on all cause specific and cancer mortality as well as a mortality study focused on Gulf War Veterans.

In my remaining time I'd like to describe to you the Millennium Cohort Family Study which was launched in 2011 and is led by Dr. Valerie Stander at NHRC. And the Family Study was created in response to DoD recommendations requiring increased focus, service and research, to improve military family readiness. And the objectives are listed here specifically to determine the long-term association between military experiences. Particularly combat deployment and the health and wellbeing of service members as well as their families. And provide evidence-based policy recommendations that inform leadership and guide interventions.

This study in 2011 recruited spouses of service members who enrolled in MILCO that year. And this recruitment effort enrolled over 9,800 spouses who completed a comprehensive survey on their experiences including family life and relationships, children and their mental and behavioral and physical health. And similar to the ongoing service member recruitment for MILCO the Family Study will soon within this next month recruit their second panel of military spouses. One new feature will be the enrollment of non-married couples and service members who are single parents.

And as with the Millennium Cohort there is a diverse research portfolio that addresses numerous aspects of family relationships and wellbeing as well.

And while this slide itself does invite questions; I really invite you to put those into the chat. And I can address them after Dr. Boyko and Dr. Schneiderman present. I’ll happily address any questions you may have, and I’ll go ahead and yield to Dr. Boyko. And here we go. Thank you.

Dr. Edward Boyko: All right. Thank you very much Dr. Rull for that great overview of the Millennium Cohort program. And let's see if I can advance the slides. Yes. Okay. So I'll be discussing the Millennium Cohort Study on the VA side. And it has an official number in the cooperative studies program, number 505. I am the chair which is the equivalent of principle investigator. So I'll start also by giving a shout out to Becky Yano, who leads the VA a Women's Health Research Program for organizing this series of Cyberseminars.

So I'll give a history of the VA role in the Millennium Cohort Study. I have been involved starting with planning in 1999 the then credo Jack Foisner [phonetic 0:21:40] asked me to work with DoD colleagues on designing this longitudinal study. And from the very beginning the study was designed with the plan to follow up participants using VA healthcare data after separation from the military. And this was actually included in the initial IRB application which was approved. And the recognition at the time was that the VA can provide objectively measured health outcomes and other information which is in addition to the survey, a self-report, that Rudy described as well as the ancillary data sources also that he described. And VA research leadership supports this study several ways. The VA Cooperative Studies program provides support for research staff based in Seattle. And the VA R&D program and Post-Deployment Health Service also provides support for Veteran focused research conducted at Naval Health Research Center by analysts who are supported by an Interagency Agreement between VA and the Naval Health Research Center.

So how do we follow up with Millennium Cohort participants using VA records and data? And it's an obvious answer is by sharing the data. So what I'll be describing is a DoD VA partnership.

Let’s see. So and the heart of the partnership is a data sharing agreement. And starting at the upper left hand bubble, approval was received for both the DoD and VA in late 2018 of a Data Use Agreement. Which are provided for—moving over to the right—bilateral Millennium Cohort participant data sharing between these two agencies. Moving down to the left—identifiers were sent securely from Naval Health Research Center to VA Puget Sound for matching. And then the Millennium Cohort participant identifiers were matched to VA care facility encounters nationally. So I'll show you some results of this matching on the next few slides.

So here are the results of VA utilization by Millennium Cohort Study participants. And the 141,133 Millennium Cohort participants who have separated form military service, approximately 95% have a VHA record. So this illustrates a comment made by Dr. Rull that about 70% of Millennium Cohort participants are now Veterans. We were surprised by the high proportion of Millennium Cohort participant Veterans who appeared in VA care records. Published data suggests that about 15 to 20% of Veterans use VA for healthcare. And this percentage of course is much, much higher. And it's not clear whether this is specific to the Millennium Cohort Study or whether there is now a trend across the military and higher percentage of registration with the VA. But anyway this result shows us that the VA will be an important resource capturing health events among the Millennium Cohort Study participants due too much higher than expected utilization of VA healthcare.

So I'll give you some information about the top 10 outpatient diagnoses among Millennium Cohort participants as recorded in VA health records. And there are two columns here. The one on the left shows the ICD 9 coding system diagnosis which occurred before October 1, 2015. And then on the right are the ICD 10 diagnoses which record after that date. And of course that date is the date of the transition from ICD 9 to ICD 10 coding in medical care systems in the United States. The number one most frequent outpatient diagnosis is post-traumatic stress disorder, followed by some broad and nonspecific diagnostic codes. Depression appears as well as low back pain in the middle of the top 10. Lumbago is low back pain. Then hypertension appears as well as number eight in both the systems. Anxiety and then appearing in the top 10 after 2015 is obstructive sleep apnea which was not present in the top 10 in the ICD 9 system before October 1, 2015. So we're seeing a lot of diagnoses associated with the age range of Millennium Cohort participants. Currently which Rudy mentioned was around 50 years of age for the earliest panel, panel one, and around 35 years of age for subsequent panels.

So here are counts of outpatient encounters shown on the Y axis by fiscal year which is shown along the X axis. The blue bars represent outpatient encounters the red bars represent a curious category—outpatient encounters while inpatient. So these are outpatient encounters occurring during inpatient stays. When inpatients are sent to outpatient clinics for example, eye clinic or to physical therapy, that generates an outpatient encounter while inpatient. And you can see that the number of outpatient encounters is steadily increasing since the beginning of the Millennium Cohort Study back in 2000 or so.

And shown here are VA inpatient discharges. Again fiscal years are on the X axis and the blue bars indicate account of discharges. And you can see that in FY 2019 there were about 3,300 or so hospital discharges among Millennium Cohort participants. And the red line indicates the number of unique participants who were hospitalized at VA. And it's around 2,300 in FY 2019.

Now I'm going to switch and show you VBA or Veteran Benefit Administration disability data. And so we not only have access to VHA data but also VBA data. And what's shown here is the percent service-connected disability rating on the X axis. And shown on the Y axis are the number of unique Millennium Cohort participants with that service-connected disability rating. As of June 10, 2020 and this was derived from the Vets Net database, the VA database. And you can see that the most frequent disability rating is 100% and there are 13,465 participants in that category. The next most is 80%. The 10% category is quite numerous with over 9,000. I'll just mention here that the 0% service-connected disability rating it does not mean no disability, it means that a medical event or injury occurred while in the military. That did not create any disability following military service. I'll just mention that there were 48,470 Millennium Cohort participants who are Veterans who have no service-connected disability at all and don't appear on this histogram.

So what are the next steps? So the merging of Millennium Cohort Study participants with VA data was only recently initiated. And overtime the plan is that more VA data will be matched to Millennium Cohort Study participants including information on service-connected conditions not just percent rating, pharmacy prescription fills, laboratory results, and other diagnostic and illness severity information. And the impact this data sharing will improve the ability to validate survey information obtained from the Millennium Cohort Study protocol using the subject VA data. For example the Millennium Cohort Study survey contains a listing of 39 health conditions. And we have a research project that's underway now to see how well VA data validates this 39 self-reported conditions. The data sharing will expand the types of health outcomes we can identify in relation to military service beyond. Which is what is available in the Millennium Cohort survey that is conducted every three to five years. And will also be able to capture health events that occur between the three to five year surveys cycle. And the data sharing will enhance the ability of the Millennium Cohort Study to assess the long-term health effects of military service.

So what is the current status as a resource for being investigators? Well currently VHA inpatient and outpatient data have been transmitted to DoD colleagues at the Naval Health Research Center. Veteran-focused research on this merge data currently must be conducted at Naval Health Research Center by analysts working there. Several Veteran-focused research projects are underway and Rudy Rull described several of these. And also I'll mention that two grant applications have been submitted by VA investigators. And these are proposing to study Melanoma and Parkinson's disease risk factors using the merged Millennium Cohort Study of VA data resource.

So we have future plans for this resource for VA investigators. Approval has been granted for transfer of Millennium Cohort data to VA CSP 505. And these data will be transferred to the team in Seattle or VA Puget Sound. And plans are underway to make these data available for analysis within the VA firewall. And our plan is that these data will reside on VINCI. We’re developing a data resource guide and dictionary to assist with identifying whether the data might be of value and how to access these data. Information and instructions for access are now available on the INVESTD-R website and will be updated as needed. The INVESTD-R website is a CSP website. It stands for Integrated Veteran Epidemiologic Study Data Resource. And the link is shown there. And when you obtain the PDF of this presentation you'll be able to easily access this website and obtain further information. The CSP 505 project manager is Amber Banerjee. And she is named on this INVESTD-R website.

So stay tuned to future HSR&D Cyberseminars for updates on Millennium Cohort research. Plans include presentations on Women's Health research and this will actually occur as a Cyberseminar I believe in January of 2021, not in December. There will be a presentation on the Millennium Cohort Family Study and the DoD birth and infant health registry also in 2021. And then practical guidance on proposing and accessing Millennium Cohort Study data inside the VA firewall for approved research. There will be a Cyberseminar on this after data are successfully transferred to the VA in hopefully early 2021.

So I want to thank you for your attention and I want to pass the presentation responsibilities onto Aaron Schneiderman. My colleague in Deployment Health Services at VA Central Office. So Aaron, here you go.

[silence 0:35:41 – 0:35:53]

Heidi Schlueter: Aaron, you are muted.

Dr. Aaron Schneiderman: Thank you very much. Apparently we have a double layer muting here and I was still hidden behind one layer. Took me a moment to figure out exactly how to advance the slides but I have that well in hand now. So thank you doctor’s Rull and Boyko for this excellent presentations. They're full of information. My role as Dr. Yano had requested was to be that of a discussant. So in essence I’m going to spend a few minutes to reiterate and summarize, emphasize and tell you a little bit about how we got here and why we think it's important, and why we're excited to be able to share this with you today. So as my colleagues did, I also want to thank Becky Yano for helping to organize the Webinar and to David Atkins in HSR&D for sponsoring this Webinar series that Dr. Boyko just laid out for you. And I want to give a shout out to Heidi Schlueter who is really an excellent host and has made this really, really easy and possible for us today. So this is the So What. And I've got to get back to where I can advance the slide. One moment. Here we go.

The standard disclaimer. My opinions and I have no financial stake in the presentation we're having today.

And here a moment of visual respites for you. Why would I show you this majestic peak? This is Half Dome in Yosemite Valley in my home of origin. You've been hearing a lot of didactic content that I thought that a little bit of a break might be helpful for your eyes. But it also serves as a metaphor for today's presentation. And I can't help it but both Half Dome and the content that we've covered today are very exciting for me. My colleagues doctor’s Rull and Boyko shared all this information and the supporting data about the Millennium Cohort Study, and the family Study. The process and results of the early collaboration between VA and DoD and how we got here. And I suspect everyone tuned in today knows that merging data across institutional borders is challenging. Some here have probably done this and had great success and thought it was easy to accomplish. But for many it feels like a daunting task, as daunting perhaps as ascending of peak like Half Dome. And like the origins of Half Dome, might measure that success in geological time. So in research though we know there's no quotes perfect study, but from my perspective and the work that I have favored I think that the Millennium Cohort Study and our collaboration between DoD and VA is as big and beautiful accomplishment as Half Dome. Okay, my arrow keeps disappearing. There we go.

So the So What, why does this matter? Millennium Cohort Study and Family Study obviously represent a tremendous resource for researchers as my colleagues described. The data collections include significant detail and depth across domains of health, risk factors for health, and disease, and other covariates. The large sample sizes that we see enable inquiry and interrogation of the data on a variety of different questions that you may come up with. The longitudinal design will allow for both longitudinal and cross-sectional analytic opportunities. And the Family Study is as Dr. Rull described it, provides the ability to understand the effects of military service and Veteran experience in the context of the family unit, possibly through dyadic analysis. This is so exciting for researchers who have questions about family, and about couples, and about how those outcomes or how outcomes might function within that kind of a dynamic.

So again why is this important and why does it matter? In the red banner across the top I say that this is an interagency partnership. And that is extremely important and extremely a great thing for us to be able to talk about within VA. A lot of the conversation I think that happens in leadership echelons above me at least there is that whole of government approach. That is when we leverage the strengths and resources across government agencies we get a lot more accomplished. And in this particular effort we have a tremendous opportunity. And that's recognized by congressional stakeholders. It's recognized by the executive branch. And it's recognized by the secretaries who lead our respective agencies. That we have an opportunity here to really understand the service member and Veteran lifecycle and their health outcomes. This study serves policy needs and really seeks to increase generalizable knowledge. Not only do we have an opportunity from the research perspective to better understand service members and Veterans, but given the scope and scale of the work we may in fact derive findings that help to expand generalizable knowledge about health and disease. In VA there has been discussion about the Veteran journey or the Veteran map. As we see a new electronic health record come on board that should allow us to bridge that transition from DoD to VA more seamlessly in the provision of care. I posit to you that this study is an opportunity for us to be able to ask research questions that span the experience of the service member to Veteran. To better understand that transition and the outcomes of that transition as the Veteran journey is followed.

So how did we get here? Well this, what we're talking about today, this is a new initiative in essence because we have breathed new life into a collaboration that actually has a long history. As Dr. Boyko pointed out, he has been a part of this study from the very beginning. And his patience has paid off, but I believe over the years it was sometimes tried. As it was difficult to really get the collaboration in data sharing in place. That does not mean the Dr. Boyko wasn't consistently productive with the Millennium Cohort Study all along. And he's got a very significant body of work to demonstrate that. So but what happened to make this possible? Well there were changes in the data security landscape. And anyone who's doing research in VA noticed that the data security picture has changed and seems to change on a pretty regular basis and we have to respond to that. Similarly trying to pass data across the institutional boundaries between our agencies has proven a high hurdle, but one that as Dr. Boyko described we have been able to surmount. And data exchange is now happening. The Office of Research and Development and Post-Deployment Health Services renewed this partnership with the Millennium Cohort Study over the last eight or so years. Restored funding to CSP 505 allowing Dr. Boyko to really build up the infrastructure at Puget Sound to allow for what we've been able to talk about today. This was made possible by two different things, one of which was described, and that’s the Data Use Agreement. Right now operating in one direction but soon to be a bilateral data exchange so that we can receive DoD data inside of VA. The other was an Interagency Agreement or an IAA. Essentially this is a handshake that is accompanied by funds. So with that we've been able to support several investigators who work at Naval Health Research Center making sure that the Veteran-centric questions that VA researchers and our DoD colleagues want to ask are handled expediently and well. And they have been handled well so I'm really very happy and very proud about that.

So what are the policy implications? Well I think Dr. Rull did a pretty good job of describing the success of Millennium Cohort but just want to summarize here that although DOD's initial impetus in developing the Millennium Cohort Study was to support Force health and readiness that resulted in information and evidence that helped to support congressional testimony, the development of legislation, supported clinical practice, and clinical practice guidelines, and the establishment of DoD policy. So if you look at the list that's on this slide you'll see that all of these issues are ones that are important to us within VA as we care for and conduct research about our Veteran population. Everything from military sexual trauma, to suicide, to chronic multisymptom illness or Gulf War Illness, substance abuse, sleep issues, mental health, TBI, Women’s health especially. All important and all also important to our DoD colleagues. So what we have is not only a body of literature to look back to but a cadre of investigators who understand the issues that we’re also interested in examining.

So just to point out, I know Dr. Boyko already mentioned this, but there are current collaborations that have looked at or are currently looking at risk factors for homelessness, chronic multisymptom illness and mental health symptoms, healthcare access, urban and rural differences in mental health and mental healthcare access, and the Million Veteran program, co-enrollment program that Dr. Rull described. Clearly an opportunity to really advance science with a longitudinal perspective in a way that is just tremendous, a tremendous opportunity for us in VA. And there is opportunity for growth. Something that we have been talking about within our collaboration is the development of a Veteran survey module. Dr. Rull describe that there is a web based or paper survey that's administered every three to five years. And our discussion has been about getting a little bit of real estate perhaps the equivalent of a page or so of questions that might be focused just on Veteran respondents to the survey. It's been a really interesting development process and there are a number of different topics that we have described and discussed as being important to both active duty and Veterans. And our process has been trying to narrow down what is it we really think is going to be most important from this panel of Veterans to understand. Looking into the long-term cancer ascertainment with the State tumor registries which are developing under the guidance of the North American Association of Cancer registries. They're developing something called the Virtual Pooled Registry. Which will be a process under which multistate applications may be simplified. So a very exciting opportunity with a Cohort of this size to look at cancer outcomes. And finally just kind of as a teaser something I think is extremely important and exciting is that under panel five we may have the ability to have a multi-generational Cohort within the Millennium Cohort Study. If we have parents and children who both served in uniform.

So finally our purpose here today was to introduce the collaboration, let you know that there are additional Webinars planned. The currently merged data is being worked at Naval Health Research Center but right now what Dr. Boyko is leading in Seattle is the development of the tools and infrastructure to support VA investigators working with this data. We’re also in dialogue with ORD about any specific funding mechanisms that would address Millennium Cohort analysis specifically. However it's our understanding that existing funding solicitations within ORD may be applicable. So if you ask a question, research question and want secondary data analysis, should you mention Millennium Cohort as the source of your data it would be understood that you're working with something that is available and recognized for its excellence. So with that I've reached the end of my comments. And I believe I'm going to pass the baton back to our host and we'll see if there are any questions. Miss Schlueter?

Heidi Schlueter: Thank you so much. We do have several pending questions here so we're just going to start at the top and we'll see how many we can get through. If anyone in the audience still has a question please use that question screen in WebEx to submit that into us. The first question that we have here, are Vietnam Veterans included in this Cohort? And are potential Vietnam exposures for example Agent Orange captured?

Dr. Rudolph Rull: The Millennium Cohort sample is really, since it started in 2001, is really focused only on members who were in service as of the prior year. Who were in service in 2000. I don't believe that we've done the check to see how many actual long serving service members who were in service during the Vietnam era, were still in service at that point that could have been included in the population. And we historically have not asked about Vietnam specific exposures including Agent Orange.

Heidi Schlueter: Great. Thank you. The next question here, did this study just use the CAGE or did they use the CAGE aid as well to screen for substance use? Or which tool was used for determining substance use or misuse?

Dr. Rudolph Rull: We have used the CAGE but not the CAGE only. We typically use the CAGE at the baseline and have also ascertained alcohol use from the PHQ. We also have the, I just wanted to add we have not considered using the CAGE aid at this point in time.

Heidi Schlueter: Great, thank you. The next question here, are there variables available regarding mild traumatic brain injury or inflammatory factors in the Millennium Cohort Study?

Dr. Rudolph Rull: As far as mild TBI we have asked about head injuries. And the severity of those conditions. And tried to apply an algorithm to distinguish between mild and severe TBI. I'm not sure about the question about inflammatory factors that we've ascertained. Like a clinical inflammatory factors, that I wasn't sure about for this question.

Heidi Schlueter: Okay. We’ll just move on to the next one. Is the MILCO currently linked to VA healthcare records?

Dr. Edward Boyko: So I'll answer that one. I mean it's not a real time linkage. If you're asking whether you can see Millennium Cohort data and VA healthcare records the answer is no. And when Millennium Cohort data becomes available on the VA side it will be on VINCI. And it will be available as a research resource, but won't be linked to the VA electronic healthcare record.

Heidi Schlueter: Great. Thank you. Okay, the next question here, do you know if it is common for them to get all of their care at the VA or as a perhaps they are more likely to go to the VA for mental health but utilize community resources for physical health? Just struck by how many mental health issues are in the top.

Dr. Edward Boyko: So we don't know whether they're getting outside care except for care that is paid for by VA. Which we will be able to access through different VA files like Pit and Fi. But it probably won't be possible to completely ascertain instances of outside care unless they somehow appear in the VA record and we figure out how to identify them there.

Heidi Schlueter: Okay. Great, thank you. The next question here, have you compared health outcomes among the MILCO participants against non MILCO participants? Such as instances of PTSD, TBI, cancer, hypertension, death. If so are the outcomes about the same in MILCO versus non-MILCO?

Dr. Rudolph Rull: Yeah we haven't done that in terms of a direct health outcome comparison but we have, you know in order to look at generalizability, have put that focus on demographic and military characteristics between responders and non-responders to the recruitment effort. We do have one study that's funded by the Defense Health Agency where we're looking at much less global conditions. And we will start looking at comparisons of injury outcomes within the military health system for MILCO versus non-MILCO participants. But that work is ongoing.

Heidi Schlueter: Great, thank you. The next question here, could be MCH be used to examine the association between military service, rank, and occupation, and self-reported exposure to burn pit emissions? Trying to better define those at higher risk of exposure to burn pit emissions in Cohort Study?

Dr. Rudolph Rull: Yeah we have had some, done some work looking at burn pit proximity and health outcomes including respiratory health. One of the caveats of about that is that under the current classification, or classified status and deployment locations, we've only had the opportunity to look at burn pit proximity to only to three bases in Iraq that had documented burn pits. That had documented burn pits but not have access to deployment information for other burn pits. This is expected to change you know within the next few years when the ILER, the Individual Longitudinal Exposure Record is made available for research. But at this point we really have more limited analysis that have been looking at a small subset of the Cohort that, where we know if they were near these three burn pit sites versus unknown.

Dr. Aaron Schneiderman: Right. The citation there is from Besa Smith in 2016. And is a great paper that looks at the anticipated distance from a burn pit. But it's extremely difficult with the data that are available to us to understand the components or the parts of the emissions of any burn pit. So it's really it's a very challenging question. Thank you for that, Diana.

Heidi Schlueter: Great, thank you. The next question here, if researchers were interested in a specific health condition for example [inaudible 0:58:05] amputation is there a mechanism to reach out to MILCO to determine the proportion of participants with the condition? To help in study planning if wanting to use this resource.

Dr. Edward Boyko: Yeah. So I would refer you to the INVESTD-R website link. And there is a lot of information about how to contact us to get more information. Or you can simply email any of us and we're happy to try to help.

Heidi Schlueter: Great, thank you. Next question here, how is blast exposure measured in the MCS?

Dr. Rudolph Rull: I believe in our combat measures there's a question about proximity to explosion such as IED's. And then we also, but one of the things that we're looking to expand on actually with our next survey in 2023 that we're currently planning right now is to really expand out the range of potential sources of blast exposures.

Heidi Schlueter: Great, thank you. We've got about one minute until we're at the top of the hour let's see if we can get through here. Are these data ever shared with State governments that are interested in their Veteran populations?

Dr. Edward Boyko: No. [laughs]

Heidi Schlueter: [laughs] That's fair. Okay, let’s try to squeeze one more question in then. The 95% VHA utilization is very high. This seems hit at the MILCO participants being very different from the population they come out of. What are the main sources of non-response bias?

Dr. Rudolph Rull: Non-response bias. I would have to take a look back because these, the last time we've done those was in really earlier panels. We didn't really find many significant differences between responders and non-responders. I don't know, Ed if you recall that?

Dr. Edward Boyko: Yeah. I'll try to recall. I think Marines were less likely to respond. I think younger individuals for less likely to respond. And I think that enlisted were less likely to respond as well. But not by to a huge degree but those were the notable differences.

Dr. Aaron Schneiderman: It's a great question. In our last survey out of Post-Deployment Health we have OIF Veterans that are the same general generation. We've found about 60% of survey responders were VA users, which is a little higher than some of our earlier findings for earlier Cohorts. I think what we find is that as people age they are more likely to come to VA because they have more health need and identify VA as an excellent resource. I think you asked a great question that we can examine in the Millennium Cohort data to try to understand what qualifies the users. Are they different in ways, demonstrable ways from other surveys for example for those who are users versus non-users. Thank you.

Heidi Schlueter: Great, thank you. And since we are just passed the top of the hour we are going to wrap things up. I just wanted to check with any of our presenters, if any of you have any closing remarks you'd like to make as we're ending the session.

Dr. Rudolph Rull: Well I'll make a remark that I'm really happy to see so many people interested in the work we're doing. And again it's early on in this collaboration and data sharing and we hope to make it a valuable resource for investigations on the health effects of military deployments and by investigations led by VA researchers. So we look forward to working with you all.

Dr. Edward Boyko: Yeah I just want to add that as DoD research it is really great to be able to share this work with the VA, with potential VA collaborators, and I look forward to seeing what comes from these from this ongoing series of seminars. And see what we could do together with this data resource.

Heidi Schlueter: Wonderful. And I really want to thank all of our presenters today. We really do appreciate all of the time that you spent preparing and presenting today. Thank you very much.

[ END OF AUDIO ]