

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

**THE US DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS (BSC)**

SEVENTY-FIFTH MEETING

September 29, 2020

**The verbatim transcript of the
Meeting of the Board of Scientific Counselors Meeting held on
September 29, 2020, 11.00 a.m.**

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

CONTENTS

September 29, 2020

WELCOME AND INTRODUCTION, MEETING LOGISTICS
EMILY NOVICKI, DFO, NIOSH

AGENDA, ANNOUNCEMENTS, AND APPROVAL OF MINUTES
DR. TERRY BUNN, CHAIR, NIOSH BSC

DIRECTOR'S OPENING REMARKS
DR. JOHN HOWARD, DIRECTOR, NIOSH

OCCUPATIONAL DATA FOR HEALTH: PROGRESS TOWARDS INCORPORATING OCCUPATIONAL
INFORMATION IN ELECTRONIC HEALTH RECORDS AND HEALTH IT SYSTEMS
DR. GENNY LUENSMAN, DR. EILEEN STOREY, BARBARA WALLACE, RHD, NIOSH

LUNCH

NATIONAL FIREFIGHTER REGISTRY UPDATE
DR. KENNY FENT, DFSE, NIOSH

HEALTH EQUITY AND THE PARADIGM SHIFT IN OCCUPATIONAL SAFETY AND HEALTH
MICHAEL FLYNN, DSI, NIOSH

BREAK

EVALUATION CAPACITY BUILDING, A GATEWAY TO NIOSH'S FUTURE IMPACT
DR. AMIA DOWNES, OD, NIOSH

SUMMARY & WRAP-UP, FUTURE AGENDA ITEMS, MEETING DATES, CLOSING REMARKS
DR. TERRY BUNN, CHAIR, NIOSH BSC

ADJOURN

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

PARTICIPANTS

(alphabetically)

- KYLE ARNONE - MEMBER
- LAUREN BARTON, MD - MEMBER
- TERRY BUNN, PhD - MEMBER
- LOUIS COX, PhD - MEMBER
- CRISTINA DEMIAN, MD - MEMBER
- MARY DOYLE - MEMBER
- KENNY FENT, PhD
- MICHAEL FOLEY – MEMBER
- MICHAEL FLYNN
- JESSICA GRAHAM, PhD – MEMBER
- JOHN HOWARD, MD - DIRECTOR
- GRACE LEMASTERS, PhD - CHAIR
- STEVEN LERMAN, MD – MEMBER
- GENNY LUENSMAN, PhD
- PAUL MIDDENDORF, PhD
- PATRICK MORRISON - CHAIR
- EMILY NOVICKI - DFO
- TIINA REPONEN, PhD – MEMBER
- ROBERT ROY - MEMBER
- MARC SCHENKER, MD - MEMBER
- EILEEN STOREY, PhD
- JUDITH SU, PhD – MEMBER
- BARBARA WALLACE

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

WELCOME AND INTRODUCTION, MEETING LOGISTICS

MS. NOVICKI: Good morning. Welcome, everyone. I'm Emily Novicki, the designated federal official for the NIOSH Board of Scientific Counselors, and I'd like to extend a warm welcome to our Board Members, the NIOSH staff, and any members of the public who've joined us today. There's some administrative issues to deal with on the front end of our meeting today. So first is a kind of a technology issue. The best way to connect your sound is to dial in the phone number, it's at the top of the screen in the audio information. It's also in the meeting invitation. And so, you want to have all of the sound coming through your phone. And so, you want to mute your computer's speakers. If you're hearing an echo, it's caused by the dueling sound sources. So dial in, and then mute your computer speakers. And then I'd also like to ask everyone to put themselves on mute when you're not talking. We heard a little bit of background noise earlier. So if we could kind of keep distractions to a minimum, I'd really appreciate it. So as far as emergency situations, I hope that wherever you are you're staying safe and I hope that you'll know how to exit safely from wherever you are in case of an emergency.

I also want to share that the NIOSH Board of Scientific Counselors is subject to all the rules and regulations of the Federal Advisory Committee Act. So we'll be following those for this meeting. As part of the procedures we have to develop minutes for our meetings. And so, we want to make sure that everyone is aware that the meeting is being recorded and a verbatim transcript will be developed and put on the BSC's website. Another part of our procedures are about public comments. The FACA rules are pretty formal about how comments can be received from the public. And so, one way is for members of the public to snail mail their comments to the NIOSH docket. So the address for that is in the Federal Register Notice for this meeting. It's also on the BSC's website. The other way is to sign up to present at the meeting during the designated time for public comments. Today, that's at 1:30 p.m., in the afternoon, Eastern time. No one has signed up to provide comments, but I want to give members of the public the opportunity to provide comments if they want. So if you'd like to ask for one of those five-minute time slots, go ahead and put that in the meeting chat. It's on a first come, first serve basis. And if no one requests to provide comments, we'll move directly into the next presentation.

So the next piece is the roll call. Under FACA rules we need to do a roll call at the beginning of the meeting, and we'll do that after each of our breaks to ensure that we have a quorum. So when I call out your name, please indicate your presence for the record. For this first roll call I also need you to state whether there have been any changes that would change your conflict of interest status since you last filled out the OGE 450 form a couple months ago. So that might be like a change

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

in employer or being awarded a relevant grant to something that we're going to talk about today. And if you have to leave at any point, I'd ask for the members to please let me know and let me know when you go, and then let me know when you return. We need to make sure that we keep quorum, which for the BSC is nine.

So let's go ahead and do roll call. So let's start with our Chair, Terry Bunn.

- DR. BUNN: Yes, I am here and I have no change in my conflict of interest.
- MS. NOVICKI: Okay. Thank you. Kyle Arnone.
- MR. ARNONE: I am here, and no change in my conflict of interest.
- MS. NOVICKI: Great, thank you. Lauren Barton.
- DR. BARTON: Present, without change in my conflict of interest.
- MS. NOVICKI: Thank you. Louis Cox. No? Okay. All right. We'll keep moving then. Cristina Demian.
- DR. DEMIAN: Good morning. This is Cristina Demian. I have no conflict of interest updates.
- MS. NOVICKI: Perfect. Thank you. Mary Doyle.
- MS. DOYLE: Hi, this is Mary Doyle. I'm present, and I have no conflicts of interest.
- MS. NOVICKI: Great, thank you. Michael Foley. Okay, I don't see him in the list, so we'll keep going. Jessica Graham.
- DR. GRAHAM: Hi. Jessica Graham, and no changes in the conflict of interest.
- MS. NOVICKI: Great, thank you. Steven Lerman.
- DR. LERMAN: Yes. Steve Lerman here. Present, and no change in conflict of interest.
- MS. NOVICKI: Great, thank you. Grace Lemasters. I see Grace is on the list. Grace, have you connected your audio? Okay, let's come back to her. Patrick Morrison.
- MR. MORRISON: Patrick Morrison here, and no changes in my conflict of interest.
- MS. NOVICKI: Great, thank you. Tiina Reponen.
- DR. REPONEN: Yes. Hi. Tiina Reponen is here, and I don't have any change in conflict of interest.
- MS. NOVICKI: Great, thank you. Robert Roy.
- DR. ROY: I am here, and no changes in my COI.
- MS. NOVICKI: Perfect, thank you. Marc Schenker. I see Marc is on the list. Marc, have you connected your audio? Okay. Tony Cox is here. Perfect. Okay. All right. What about Judith Su?
- DR. SU: Present, and no change in my conflict of interest status.
- MS. NOVICKI: Thank you. Okay, so for those of you who are having audio issues, you have to manually connect your audio which is a little strange, I realize, because you log on and you hear us speaking and you think you're connected, but in order for us to hear you, you have to manually connect your audio. The best way to do that is by dialing in the phone number at the top-right of the screen, and then muting your computer speakers. But we do have quorum. Michael Foley's in the chat. He says he's here. That gives us 13 which is quorum. More than quorum. So we are ready to go.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

So, I, at this point, would like to turn it over to Dr. Terry Bunn. And this is Terry's last meeting as chair, which is definitely bittersweet. We usually do like a certificate presentation which, unfortunately, we can't do online, but I would just like to acknowledge Terry's fantastic work. When I took over as DFO, Alberto just gushed about how fantastic she was as a chair and I've definitely had that experience as well. So, Terry, I've appreciated your fantastic facilitation skills during the discussions, and it's a little sad that it's your last meeting, but all good things must come to an end. So, thank you, Terry. I'll turn it over to you.

AGENDA, ANNOUNCEMENTS, AND APPROVAL OF MINUTES

- DR. BUNN: Well, thank you very much, Emily. And it has been a pleasure to serve the Board. I'm sorry that I can't see everyone in person this time for my very last meeting with the Board of Scientific Counselors, and I will continue to follow the great work that NIOSH is doing through review of the minutes in the future for the Board of Scientific Counselors.
- So today is our 75th meeting of the Board of Scientific Counselors for NIOSH, which is quite a remarkable accomplishment in itself; 75 meetings. Amazing. We do have a very exciting agenda today. We'll be hearing about the incorporation of occupational data into electronic health records and health IT systems. We'll also receive a short presentation on an update of the National Firefighter Registry, a presentation on health equity in occupational safety and health, and then wrap up with NIOSH evaluation capacity building. So it looks like it's a great set of presentations for all of us to listen to today and to provide a valuable input into these programs. So I think the first thing that we need to do as a committee this morning is to approve the minutes of the last meeting. So I guess my first question is, is there anyone who has any changes to the minutes that were provided to everyone? If you do have a change could you please raise your hand? The icon is in the top of your task bar for the Adobe Connect Meeting, and just raise your hand there if you do have a suggested change.
- MS. NOVICKI: Terry, I'm sorry to interrupt. It's been a while since we talked about this. So there's a change in procedure and we no longer have to do this step. So it's kind of nice that we have one less procedural requirement.
- DR. BUNN: All right. So I guess we don't need to approve the minutes. I'll just state again that they're all available, then, for everyone to review. So I guess now I will turn it over to Dr. Howard for his opening remarks.
- DR. HOWARD: Oh, thank you, Terry. Just doing a sound check. Can I be heard okay?
- DR. BUNN: Yes, we can hear you fine.
- MS. NOVICKI: Yes

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

DIRECTOR'S OPENING REMARKS

DR. HOWARD: Okay. That's one challenge down. Thank you very much, Terry, and thanks so much for chairing a number of our BSC meetings the last couple years. We really, really appreciate it, as Emily said. So just some introductory remarks. Our budgetary issues from FY 2020, as we close the year, we had an increase of 6.5 million from our FY 2019 year. So we had a total of 342.8 million. Of one million of that was allocated for the Education Research Centers and the AG Forestry and Fishing Centers; 2 million for the Total Worker Health Centers; 1 million for a Mining Grant to address mandates in the mine improvement, and New Emergency Response Act of 2006; and, 1.5 million for the Firefighter Cancer Registry, which we're going to hear an update later on. We also received in FY 20, as you can imagine, due to the COVID-19 pandemic, we received a total of \$32 million; 24 million of which we are actively spending at the present time. The president's proposed budget for FY 2021 is a decrease of 150 million. This is not a surprise. We've been seeing this the last few years. The House Appropriations Committee approved an FY 2021 budget for NIOSH of 344.7 million, which is an increase of 1.9 million from FY 2020. The difference is 1.5 million for a new Total Worker Health Center for Workplace Mental Health and 400,000 to continue our efforts to establish a Mesothelioma Patient Registry. As you know the Senate has not acted on the FY 2021 budget. And, of course, now, tomorrow is the end of the 2020 fiscal year and the House has passed a continue resolution, which we hope the Senate will consider today, tomorrow, and the present signs before midnight to avoid a government shutdown.

Just in terms of a couple leadership updates. Dr. Brett Green was named Deputy Director for HELD; Scott Earnest was named Associate Director for the NIOSH Office of Construction Safety and Health. And we have a couple Associate Directors of Science for the various divisions. Sara Luckhaupt for the Division of Field Studies and Engineering; Susan Moore for National Personal Protective Technology Laboratory; Ameer Schwitters for the Western States Division; and one of our long-time and very valuable employees, John Myers who was branch chief of Surveillance and Field Investigations in the Division of Safety Research retired in July.

So I just wanted to note that we have a new center, an intramural center at NIOSH, our eighth. As you know, some of you may remember the original explanation for doing intramural centers. As you know, we are in eight different states and the District of Columbia and four time zones, and sometimes it helps to coordinate between scientific projects and scientific researchers by doing these topical and important centers. So we have a new one on work and fatigue research, and this one really isn't new in the sense that we've had a number of

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

decades of research in fatigue and work, and we have a number of researchers that have really excelled in this area, but we brought them together under the leadership of Imelda Wong to look at these issues in a more coordinated way. So we're really happy about that.

So the next few minutes, and as you know, we give out a very lengthy document, which I hope all the members have, of all the various activities going on throughout NIOSH, but I'm going to concentrate, and you're happy to ask questions about those, but I'm going to concentrate on the COVID-19 response activities because they have, as you can imagine, consumed quite a bit of time at the Institute. And we've divided them for you into seven areas that sort of summarize what we've been doing. The first area is in assistance. Providing assistance in the field. We've had NIOSH staff returning to the field. They have traveled to a number of locations supporting 107 different companies starting in, actually, early April, right after we converted to a hundred percent telework. These have been across a number of industries. Some of you, of course, are well aware of the protein processing industry in beef and pork and poultry, and seafood and they've involved at least 25 different states. As you know, there are over 500 protein processors in the United States at a minimum, and a lot of them were having quite a bit of trouble in the early first six months of the pandemic. We've also awarded 47 interagency personnel agreements to 27 universities, and we really want to thank all of those folks that have stepped up to expand the scope of help that NIOSH scientists, and I say this from the extramural and the intramural perspective, everybody is NIOSH a scientist. And we asked our extramural partners if they were interested and, as you can see, we got almost 50 of them stepping up, and that's being coordinated as we speak. I think it really expands the capability of the occupational safety health community to provide assistance in these difficult COVID-19 mitigation strategies.

The second big area is in guidance. As you know, CDC has produced a—I don't know what the right adjective, noun—plethora, gigantic numbers of guidance. I always tell people don't print out the guidance from the website because it may change the next day or the next week, and you'll end up with a printed copy that is stale. But please go to the CDC coronavirus website and go to our page to find out the latest in either specific industries or specific activities. There's just almost nearly 800 guidance documents that have been published since the beginning of the pandemic in late December of 2019.

The third area is the Speaker's Bureau. We have done a considerable number of webinars and podcasts and calls, and actually in-person meetings, and we're really grateful to be able to do that, and even though we are largely sort of stuck at home, so to speak.

The fourth area is surveillance data. As you know, we've done quite a bit of work

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020

in the area of healthcare worker surveillance with others at CDC. And the issue of occupational transmission remains a significant one and we're working in that area, too.

The fifth area, which is a huge area of activity involving the National Personal Protective Technology Laboratory, is in respiratory protection. As you know, we have done quite a number of respirator approval decisions, exceeding last year's yearly total, just in August of this year. We've also had to deal with international respirator manufacturers. We've had to deal with non-traditional respirator manufacturers that you wouldn't think would be in this area, and we've had to help them out in helping them understand how to get a certified product to the market. We've had to come up with a lot of guidance in this area, decontamination, secondary to the shortage of N95 and other filtering face piece respirators. We've initiated a lot of research activities on elastomeric half mask respirators. As you know, we're trying to encourage the health care industry to become familiar with these items because they can be given to a health care worker and used for quite a length of time with replacing the filters on the elastomeric. They certainly address the issue of the shortage in N95s. We've responded to a large number of PPE questions through a number of communication outlets, and we have done science blogs, seven of them in this area. So there's a substantial number of public inquiries that happened. We've responded to over 5,000 of them which is nearly 20 times the number that we usually receive in an eight-month period.

Our sixth area is in source control where we've been looking at, again, fabric face coverings and face shields, and we have a research activity going on there in terms of providing guidance to the public in CDC guidance on fabric face coverings and face shields. HELD is doing research in that area also. The research, in general, that we've participated in with CDC includes, what's called, a Broad Agency Announcement. It's sort of a large competition funding contracts for extramural research to address COVID-19. We have five of those that we recommended and that were funded in FY20, 3 on respirators and two on face coverings. So we anticipate funding up to an additional 14 of them in FY21. We've also repurposed NIOSH funds that we traditionally use, for instance, for travel, which we're not doing a lot of, and we've repurposed those through intramural funding for disaster science research. It's the first time we've ever done that. And we're of course, very excited by the extramural community starting to do research in this area, and welcome any ideas and applications along those lines. So I'm going to end there, Terry, because, as I say, there's a nice handout that the members have, but I did want to go over the COVID-19 activities because they have consumed quite a bit of NIOSH's resources and activities of late. So happy to answer any questions, Terry, that you want to receive from the

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

members.

DR. BUNN: Thank you, Dr. Howard, for your updates, especially, related to COVID activities and for your leadership, especially, in regards to respiratory protection, providing that technical assistance and developing those invaluable guidance documents. So are there any questions from the members of the Board of Scientific Counselors?

DR. LERMAN: Hi. This is Steve Lerman. I have a comment and question, I guess, that, to be perfectly honest, I'm a little hesitant to make because it's probably controversial, but nevertheless I think it's important. NIOSH scientists and CDC scientists, more broadly, I think have been doing a superb job during this outbreak, during this pandemic, but we read more and more of inappropriate involvement by nonscientists in what should be scientific work. And as the Board of Scientific Counselors, would it be appropriate for us to make a statement urging that science not be hindered by politics? I think it's NIOSH's part of the government, and politics is the business of government. But I think as the Board of Scientific Counselors I'm feeling I need for us to make a statement, and I don't know if that would be welcomed by NIOSH or what the other members of the Board feel, but I want to put that out there.

Then silence.

DR. BUNN: Dr. Howard, if you're speaking you're on mute.

DR. HOWARD: Well, I'm not speaking. I don't think I heard a question. Is there a question for me?

DR. BUNN: Well...

DR. LERMAN: So to the extent that there's a question is, would that be helpful or disruptive to NIOSH's work?

DR. HOWARD: Oh, okay. Well, it's not very helpful for me or NIOSH. You know, CDC has a Board of Scientific Counselors, and I think CDC, probably their Board may be the one you want to direct that issue at. NIOSH has not experienced any of the issues that you refer to ourselves. So it isn't really an issue for me. It's not an issue for NIOSH. It may be something that the BSC of CDC may be interested in.

DR. LERMAN: Thank you, thank you. I'm very glad to hear that NIOSH has not experienced that.

DR. BUNN: Are there any other questions or comments? Okay. All right. Thank you, Dr. Howard, for your update.

DR. HOWARD: Well, thank you. Thank you very much.

DR. BUNN: All right. So we will move on to our first presentation then by Dr. Genny Luensman, Dr. Storey, and Barbara Wallace.

**OCCUPATIONAL DATA FOR HEALTH: PROGRESS TOWARDS INCORPORATING
OCCUPATIONAL INFORMATION IN ELECTRONIC HEALTH RECORDS AND HEALTH IT
SYSTEMS**

DR. STOREY: Good morning. This is Eileen's Storey. Can you hear me?

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

DR. BUNN: Yes.

MS. STOREY: Thank you. And I think, Emily, you just made me a presenter, is that right?

MS. NOVICKI: Yes, that's right.

DR. STOREY: Thank you. Okay. Well, we are delighted to be with you this morning to talk with you about the progress we've made toward incorporating occupational information in electronic health records and health IT systems. We refer to this information as occupational data for health to indicate its broad relevance to health in many contexts.

Now, Emily, I'm not sure how to advance it.

MS. NOVICKI: In the bottom left-hand corner you're going to see little arrows.

DR. STOREY: This project has been an institute-wide effort involving five divisions and the Office of the Director. Core staff are supported in the Respiratory Health Division and funding comes from the division and the OD. Additional funding has been secured over the years as NORA projects, housed in multiple divisions. Three of us will present this work to you today. I'm a physician trained in internal medicine and occupational medicine, and I used to be the branch chief for surveillance in the Respiratory Health Division from 2009 to 2017. So I co-led this effort with Captain Margaret Filios who recently retired. I'm hanging on as a contractor to try to see this project through, and you'll see why as we present this to you today. Dr. Genny Luensman joined us in 2011, and provides leadership in informatics and systems development, and Barbara Wallace joined us in 2016, bringing health information technology experience. I'm going to talk with you about our approach to this work in the landscape of health care and health IT in the us. Dr. Luensman will present the content that we have developed for occupational data for health and the informatics products that we have made to make ODH accessible to users and vendors, and Barbara Wallace will demonstrate a method for collection of ODH in healthcare settings. We then look forward to a discussion with you of the challenges we face moving forward with this work.

NIOSH undertook this effort to address the widely recognized limitations into occupational health surveillance in the U.S. As early as 2006 researchers at NIOSH recognized that an opportunity was being presented as the U.S. committed to electronic health records as the primary repositories of health information. Recently a report from the National Academies continues to emphasize the importance of electronic health records in building a system of systems to conduct smarter surveillance for occupational health and safety. The opportunity is time limited in the sense that systems are expensive to build and there is competition for space and attention in health IT.

As you know, in 2011 NIOSH commissioned a report from the institute of medicine to explicitly address the rationale and feasibility of conducting this work. That report has served as a roadmap for our efforts and we have accomplished

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

many of the goals laid out there. Our work requires engagement with multiple stakeholders and partners in the public and private sector. As you can see from this list, it's a very diverse group with multiple agendas, perspectives, and needs. They are involved in the development of policy, regulations — excuse me? Are you hearing me all right, Emily?

MS. NOVICKI: Yes, there's an echo. I'm going to mute everyone with a hot mic during your presentation, and then I will reopen the mics for the discussion.

DR. STOREY: Thank you. So all of these players are involved with developing policies, regulation standards, and practices in this landscape. The landscape of health IT is complicated, and it's been shifting throughout the decade of our work. The focus is on improving clinical care, empowering patients, and reducing costs. The regulations evolve. As Dr. Luensman will describe in more detail, we have worked closely with the Office of the National Coordinator for Health IT, or the ONC, to ensure that occupational information is considered in developing certification criteria. ONC defines the requirements for system certification and the Centers for Medicare and Medicaid, or the power of the purse to drive behaviors in health care. CMS and ONC work together to shape the structure and use of EHRs. Events in 2020 have led to a marked increase in attention to public health reporting with enormous leaps in the development of critical infrastructure in a majority of jurisdictions in the U.S. This makes inclusion of occupational information in the EHR even more powerful and its implementation more urgent. ONC recently issued a new regulation that included a progression for data to move into the requirements. The criteria are listed here. Applications for new data must include information on the use cases, applicable standards and technical specifications, existing use and exchange of the data, and potential challenges for development and implementation.

To advance the work and demonstrate need we have focused on three domains. ODH is designed to serve the needs of clinicians taking care of patients with a focus on primary care, where most workers receive care for conditions affected by work. It can be used to support population health within health care organizations, identifying groups of patients who share risks or opportunities for intervention based on aspects of their work. ODH also enhances public health case reporting by providing structured coded data about work.

We secured a large NORA award in 2014 to develop materials for Clinical Decision Support. Clinical Decision Support tools are used by health care organizations to provide information at the right time for the right patient to improve patient care. In order to build CDS one needs to go from the narrative of clinical guidelines to computable statements. We created three artifacts that can support building CDS consistently across primary care settings. We focused on three scenarios: improving recognition of work-related asthma in adults with

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

asthma, improving management of diabetes when factors at work may pose challenges, and return to work for a patient with low back pain who has temporary restrictions in activity.

At a community health center the documented occupation on all of their patients for one year, it became clear that a significant number of their patients worked as hotel housekeepers and as house painters. The health center had initiated collection of occupation in concert with their state health department. However, they could not access the data and use it on occupation until NIOSH partnered with them to code the data and provide aggregated information back to them. This demonstrated the critical importance of structured or coded data in the electronic health record. The clinic was able to provide targeted educational materials to these patients and to institute lead screening when appropriate. Infectious diseases can affect groups of workers. For example, in transportation, meat packing, residential care, and hospitals, including industry occupation and employer name and address, infectious disease case reports provided to state, local, and other public health jurisdictions would facilitate early recognition of disease spread within industry or occupation groups, and would help to evaluate efforts to mitigate spreads. Intensive efforts to improve data collection for infectious disease cases are underway with labor-intensive activities occurring at local and state health departments. Electronic case reporting is being implemented across the country but without the benefit of the inclusion of structured data on occupation industry and employer because of its absence in the electronic health record. Occupational data for health provides a mechanism to remedy this.

Much of our work aims to socialize the very concept of including occupational information in healthcare. For example, we participate in events that promote and demonstrate sharing data. This past summer we participated in four demonstrations of electronic data sharing that highlighted the value of ODH: electronic case reporting, electronic lab reporting, immunization registries, and opioid abuse and prevention. We provide informatics products so that others can build ODH into electronic health records, personal health records, and other applications. We are embarking on two projects to demonstrate the collection and use of ODH in a healthcare environment, and with this demonstration of proof of concept we hope to secure ODH and regulations for EHR certification.

Dr. Luensman will describe the content of occupational data for health and the associated informatics products that are now available.

DR. LUENSMAN:

Good morning. Our informatics products provide the structures for implementation and use of ODH in our health IT system. There are three parts to what we've done, and I'm going to briefly describe each. These products are based on input from many sources, as Dr. Storey mentioned, always keeping in

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

mind the goals of usability and usefulness at all levels.

We started with defining and organizing the most useful patient work data elements for inclusion in electronic health records, and we publish them as an information model. An information model is a systematic description of data and it tells software developers how to organize and group the data. Our ODH information model is organized into these six topics with each topic including one or more related data elements. For every ODH data element we made sure we had at least one user story to illustrate its value in patient care or population health, and many of the data elements also support public health activities. The topics are independent of one another and do not all have to be implemented for everyone's records, and not every data element has to be collected for a topic but, for example, usual work is used in cancer reporting, so implementation does have to be considered in a holistic way.

Most of the ODH data elements have defined vocabulary that is the set of possible coded entries for each one. This vocabulary is available through the CDC vocabulary distribution system known as PHIN VADS. It is most easily accessed by searching PHIN VADS for ODH. Defining and coding the data elements promotes consistency across health IT systems and makes it easier to share the data with the same meaning even across systems developed by different vendors. But defined and structured data are not enough.

The second set of ODH informatics products is interoperability standard specifications. Interoperability standards take advantage of IT system capabilities to share data such that it is understandable and usable by both the sending and receiving systems. It does not involve paper forms and hand-entering data received as a PDF or fax. It also reduces or eliminates the need to follow back for clarification or collection of additional available data. The banking industry is an example of an interoperable industry. It was about a 10-year process, but now regardless of where a person accesses an ATM, the financial transaction is completed and conveyed accurately across the participating institutions using interoperability standard specifications for each type of transaction. This is what is being established across health IT systems. As with banking, health IT interoperability standards provide a framework for data sharing, and specifications of these standards have to be created for each type of data sharing transactions. These specifications currently exist for many health data sharing transactions and are used to send some case reports, lab reports, and syndromic surveillance data to public health agencies. Some case notification data are also sent to CDC this way. The goal is to have all data sent this way in the future.

HL7 and IHE are the two consensus organizations that develop and publish health IT interoperability standards and specifications. There are three main kinds of interoperability standards and we have worked with HL7 and IHE to publish

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

ODH template specifications based on each one. The CDA ODH template has been tested at something called Connectathons, which are events where developers collaborate to test these specifications across IT systems to make sure they work properly. This template and the ODH FHIR template, that is Fast Healthcare Interoperability Resources, have been used in interoperability demonstrations, as Dr. Storey mentioned.

We have also worked to incorporate ODH templates in these relevant interoperability specifications that happen to be in development recently. As more specifications move through the HL7 or IHE development and renewal processes, we will continue to advocate for the inclusion of ODH as appropriate. It is particularly significant that ODH has been included in the consolidated CDA and cancer registry reporting specifications because these are mentioned in ONC EHR certification regulation. And so, we'll support our applications for inclusion of ODH data in future EHR certification requirements.

ONC EHR certification regulations have included requirements for the capability to use certain interoperability specifications and to collect certain data elements. In the past we suggested to ONC that key ODH data elements be included in the EHR certification criteria, especially, employment status, current industry, and occupation, and longest held or usual industry, and occupation. In the preamble to the 2015 EHR certification regulation, ONC explicitly recognized the value of work information, specifically industry and occupation. And at the time they noted that they were waiting for NIOSH to demonstrate successful collection of these data in a standardized way. So we have been focused on this objective.

There are some substantial differences in how industry and occupation are collected and standardized using text-based entries from death records, cancer registries, and surveys versus how these data will be collected and standardized in EHRs.

The text-based data collections involve two steps. First, the entry is recorded in a non-standardized way based on the respondent's understanding of the concept and desired response. Then that entry is translated into standardized categories for public health use. NIOCCS, the NIOSH Industry and Occupation Computer-assisted Coding System helps with this translation step. Selecting industry and occupation in EHRs is different. ODH facilitates a combined process from concept to standardized terms where system capabilities and recognizable vocabulary help a person identify and select their standardized entry in one step. In addition, data from EHRs have to be useful for patient care and population health, as well as public health. So the vocabulary consists of more granular terms that can be categorized. Here's an example of an occupation category from the Standard Occupational Classification System or SOCS. CDC sentences, which is often used to assess survey data, can be cross-walked to SOCS.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

However, SOCS categories do not provide sufficient detail for individual patient care. Here you can see some more detailed terms for carpenters that add value when considering the health of an individual. We knew it was important to also have this level of detail, but mapped to the categories. The terms here at the bottom are from the ONET alternate or lay titles. ONET online is a site sponsored by the Department of Labor that offers a variety of search options and data about the skills, abilities, knowledges, work activities, and interests associated with occupations. These lay titles are terms that people use when searching the site and also terms collected from text entries in various surveys. To create the ODH occupation vocabulary we devise codes for these terms that retain the hierarchical category mapping to SOCS. By leveraging this existing data set we can also benefit from an interim level of classification provided by ONET extensions of SOCS. These add a little granularity to SOCS, and might be useful in some instances for population health.

Similarly, the North American Industry Classification System, or NAICS, can be used to categorize a type of business and CDC census industry categories can be cross-walked to NAICS. Here, you can see at the bottom some more detailed terms taken from the NAICS index for this category. And as with occupation, the detail adds value when considering individual patient care and provides terms that a person can better recognize. To create the ODH industry vocabulary we devise codes for these terms that retain the hierarchical category mapping to NAICS. Ms. Wallace will demonstrate shortly what we have learned about collecting these and other ODH data using the ODH vocabulary and IT system capabilities, but, first, I want to mention the third part of our ODH informatics product instructions for health IT system developers to implement ODH.

Because ODH is a new concept to these developers, we've worked through HL7 to create a document that identifies important software functions or features that we anticipate will make ODH more useful. For example, features that will make the data accessible to care providers and available for system operations. This document will support making ODH useful in EHRs. Additional guidance for collecting ODH has been developed based on user testing of a series of ODH collection prototypes. Ms. Wallace will demonstrate the latest version for us now.

MS. WALLACE: Good morning. Emily, could you please have the PowerPoint for the prototype demonstration ready to go because I've had some instability with the VPN this morning. So if we need it we'll jump over to the PowerPoint.

MS. NOVICKI: Okay.

MS. WALLACE: Thank you. Okay. Can everyone see the prototype now?

MS. NOVICKI: Yes.

MS. WALLACE: Okay. Thank you. So this prototype uses the Occupational Data for Health vocabulary and complies with the conformance criteria found in the work and

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

health function profile. It's not meant to be shared or used in a production environment, but serves as a communication tool. The summary page that we're looking at was developed to provide a quick and easy landing page for a patient to review their work information that was previously provided, and to determine if any updates are needed. This is similar to a common workflow when a patient at check-in is asked to review their medication and problem list.

Now I'm going to walk through each of the ODH topics. The first is employment status and retirement dates. The ODH employment status value set aligns with the Bureau of Labor Statistics Classification. The concept of retirement and ODH is not linked to employment or to a specific job. It simply captures when a person considers themselves retired. The person may still be working in a different job or profession.

Now we'll go to jobs. Jobs are the backbone of ODH. This topic defines key data elements that could be collected to describe characteristics of a particular job.

Over time the history of jobs a person has worked would grow to provide a better understanding of the possible impact of his or her health. Now let's take a look at the individual job data elements collected.

First, is employment name and location. Work classification. Very easy read descriptions for many of the ODH concepts. Industry and occupation which are self-reported and classified by the patient. A classification of the amount of supervisory responsibility. And in the case of military work (inaudible @ 00:51:36) workers, this is captured through pay grade. Start and end dates of employment. Taken together these data elements provide critical information about the nature of the patient's work. ODH also provides the opportunity to collect information about a patient's work schedule. There's a classification of the normal scheduled work and the average daily hours and normal days worked in a week. Taken together, these provide the information about the patient's schedule.

And, finally, ODH provides the opportunity to collect self-reported text descriptions, duties and potential work hazards of the job.

Industry and occupation are the most difficult concepts to collect and standardize. So the prototype uses a simple keyword searching algorithm to present possible choices to a person from the ODH vocabulary, as Dr. Luensman described. Now, just to illustrate this I'm going to go ahead and just create the shell of a job, so you can get a sense of what that would look like for a patient. So we'll give this employer a name, AOK Security. And we'll just scroll down and we'll do a search for industry and occupation. So here we'll do a search and the patient would enter what they would feel would be a good way, kind of like doing a Google search. So when I click search it'll look through those NAICS indexes, and what we see here are some of the potential NAICS categories, and a person could click through. This is the description offered by NAICS. And then we see down below these are

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

the indexes that this individual could pick. So for this case we'll go ahead and pick security guard services. So now I've classified my industry, and I'll save that to the record. So now we'll do the same thing for a job. So what this person's job is, they're a security guard. Once again, now we'll do a search of the ONET SOCS occupation alternate titles. And then these are the potential ONET SOCS categories. And, again, there's a description. So we'll say security guards. In this case you can see there's more detail. And so, this individual we'll say they're an armed security guard. So now we're going to go ahead and save that to the record. We can pick a start date for the job. Let's just say they started last month in August of this year, and this is their present job. So we'll can go ahead and save it. Okay. So now we have this job here in their history.

Next topic would be longest-held work. Longest-held work is the occupation in which a person has worked the longest and the industry the person has most often held this occupation in. Start date is the date this work began and duration is the cumulative number of years worked in this occupation. Now, the prototype demonstrates a time-saving feature that could be used of a relatively complete history if jobs have been collected. So what we see here is we've gone through and we looked at their job history, and then we've organized it by the time worked in this occupation. And it's an easy way for someone to say, okay, actually this is the job I've worked the longest as a military police officer while I was in the Army. So let me take this. I'll copy it in. And it just saves the individual the time from having to research for industry and occupation, and they also have the option here to make any changes, if needed. So once they say, yep, that's it, it's saved. Next topic, volunteer work. ODH includes significant volunteer positions. The data collection for first responders and emergency services is like that of jobs. For all other positions of greater than 20 hours per week, just the industry, occupation, start and end dates are collected.

Next topic, are combat zone periods. These time periods delineate work in a military combat zone and are collected for both military and civilian workers. This work can present unusual health risks. The information about the work performed for this time period could be found in jobs.

And the last topic we'll look at would be appropriate for minors. Limited work information about household numbers of minors is also part of ODH. This information would be part of the child's medical record and could help identify health risks that could be brought into the home by a worker. The exact identity of a working household member is not recorded nor is there a link to another person's medical record. The industry and occupation of a current job and the longest held work are included.

I'm turning it back to Dr. Luensman now for a wrap-up. Thank you.

DR. LUENSMAN:

Thank you. Emily, if we can have the last two slides, please. Thank you. With

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

what we've shown you today we anticipate applying for inclusion of key ODH data elements in upcoming EHR certification regulations based on ONC's recently defined progression steps which are shown, again, here. Our next steps are to submit an application and to execute the two funded pilot projects for ODH collection in an EHR, and its use in case reports sent using interoperability specifications.

Our presentation today has mainly focused on the ODH informatics products we've prepared to support health IT system capabilities. We are looking forward to encouraging the adoption and use of these capabilities to improve worker health in patient care, population health, and public health.

This concludes our presentation and we have a few questions listed here that we would like to pose to the committee. Thank you for your time and attention. And with that, I'll turn it over to Dr. Bunn.

MS. NOVICKI: Okay. This is Emily. I'm going to unmute the mics now.

DR. BUNN: Hello?

MS. NOVICKI: Okay, everyone is unmuted.

DR. LEMASTERS: Okay, okay. Thank you, Emily. Was I muted before while I was speaking?

MS. NOVICKI: Yes, yes, I'm sorry.

DR. BUNN: Okay. All right. Well, thank you very much for the presentation on the inclusion of occupational health data into electronic health records. These tools that you have developed will be very, very useful in identifying occupations and industries, and potential risk factors. I mean, this opens up a lot of possibilities. So are there any responses from the members in regards to the questions that NIOSH poses? No questions?

DR. LEMASTERS: This is Grace. I have a question. Do you hear me?

DR. BUNN: Yes, Grace.

DR. LEMASTERS: Can you hear me?

DR. BUNN: Yes, I can hear you, Grace.

DR. LEMASTERS: Okay. Okay, very good. Well, the first question, how can NIOSH identify potential healthcare partners to collect and use ODH data? I was wondering if consideration is being given to like hospitals, emergency rooms. I mean, that would be the largest number of patients coming in like to a hospital setting. I think if I were going to pick a spot, to pilot test this, I would pick a couple of different hospital settings. Maybe one in the Midwest and one in the East, and maybe one in the West to just get a feel for ability to navigate through all those different parts. Like how will they know that they're supposed to type something in first and then pick a search? It might seem a bit daunting to a lot of folks.

DR. BUNN: Any comments to that?

DR. COX: This is Tony Cox. Might it make sense, do you think, to explore with someone like United Healthcare whether they'd be interested in partnering, with the potential

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

upside being that they could collect useful information to help them better manage risks and create policies, and so forth. So, in other words, I think it's good to go to the provider side, big, big hospitals, you know, Cedar Sinai, somewhere like that. But, also, there might be more willingness, more interest or, at least, as much interest on the payer side. So, as I say, a big company like United Healthcare might have some real incentive to experiment with the system because it could be—I think it can provide valuable information to them.

DR. LEMASTERS: How about some place like Kaiser Permanente?

DR. COX: Yes. Same idea.

DR. LEMASTERS: I think—

DR. SCHENKER: This is Marc. Go ahead, Grace.

DR. LEMASTERS: Go ahead, Marc.

DR. BUNN: Go ahead, Marc.

DR. LEMASTERS: No, I'm done. Go ahead, Marc.

DR. SCHENKER: Sure. Well, I would want to emphasize the issue about pilot testing because the workplace is changing, and you want to be sure you can capture that. This is a very traditional job focus and, yet, people hold less permanent jobs and more contract work, and less permanence. And I'd want to know that it captures that. Let me give one example. I did a study where we thought we would look at work shifts and the traditional three shifts, and it turned out there were thirty different shifts for this company. People work weekends and they worked afternoons. I mean, are you capturing that? The other major question I had has to do with language, and is there a plan for this to be translated into any language or what is the thinking about that? Because a significant percent of the workforce, I imagine, is non-English speaking.

DR. LUENSMAN: So this is Dr. Luensman. We have been discussing making it available in Spanish. At the moment we're trying to work through getting started with English, and then looking at the opportunities to translate further.

DR. SCHENKER: Well, I would hope you keep that on the program because I understand getting it refined in English, but particularly Spanish would be an important second language to be available in.

DR. LEMASTERS: I agree with Marc. And my concern was this really needs to be pilot tested among diverse population and different education levels because it's kind of long and people can get pretty easily frustrated, I have found in studies.

DR. SCHENKER: I agree.

DR. STOREY: So this is Eileen. I think these are really, really important points, and we're aware of this being a bit of a traditional tool. We actually struggled for quite some time with the changing workforce, the fractured workforce, and so on. We really couldn't find good language, good terminologies to capture that right now. And so, we put that on hold and went with this more traditional structure. The language

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

issue is right in our face every time we talk to potential partners they start telling us about the diversity of their patient population, and we fully understand that. We really need some experience under our belt to see just how difficult or not difficult this is for English-speaking patients to manage because if we put a lot of resources into translating this and we've built something that can't be used, it's a lot of waste. But we totally understand that an English-only tool is not very helpful. But what we want now is to get experience with this thing in a clinical setting, try to answer some of the questions that you're raising, see how patients respond, and we're very happy to do it in pieces we don't need to do the whole thing out the gate. But these are really good comments, thank you.

DR. BUNN: Thank you. Are there any other questions or comments, or responses to the other three questions that NIOSH poses? For instance, how can NIOSH best champion the collection and use of ODH in primary care settings? Or the next question, how can NIOSH socialize the value of ODH with workers, so they will enter the information in their records?

DR. LEMASTERS: This is Grace, again. What I felt was somewhat daunting is that, first, they had to enter something in, and spelling can be a big issue. And then they go to the dropdown screen. I was wondering if there could be more dropdown screens at the beginning, and then it could be fine-tuned on the second step. So, for example, the first dropdown screen may be like where do you work, hospitals, grocery stores, large companies. It might be kind of a large drop— but large, large sections, large sectors. And then once they get to that, click on that, then they get another dropdown screen. I mean, the more we can do with dropdown screens rather than having them spell out things, I think you'll get more—it'll be less intimidating.

DR. LUENSMAN: That is one of the many ideas that we have looked at and I wanted to be clear that while we've created this prototype tool to illustrate one way of collecting the data, any electronic health record that is choosing to collect ODH will implement it how they see fit, and one of those ways could be a drill down, the way you've discussed.

DR. LEMASTERS: You mean there's going to be different approaches depending on the location of this?

DR. LUENSMAN: We have no way of controlling the approach that is used to collect the data. We can provide guidance and we can make sure that they end up with the right data, but we can't control how they collect it. They do have regulatory ways to do that.

DR. LEMASTERS: But you are providing—you're providing the instrument though, right?

DR. LUENSMAN: No, we're providing guidance of what we have learned based on that instrument.

DR. LEMASTERS: But you're not asking them to use or try the instrument that you've developed?

DR. LUENSMAN: That's correct. That's correct.

DR. LEMASTERS: I don't understand that at all.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

DR. LUENSMAN: Electronic healthcare system vendors are going to have their own screens and their own way of doing it.

DR. LEMASTERS: They're not going to know how to do this at all.

DR. STOREY: Barb, Barb, do you want to address this since you were...?

MS. WALLACE: Yes. Yes. So there are many different vendors all using different technologies, and they all interact with SNOMED, ICD-9, and ICD-10. They're used to interacting with vocabularies and developing the capabilities to do that. And so this is, if you think about it like that, ODH is the vocabulary. ODH provides guidance for what could be collected, and not everything will be collected. Institutions will decide what's important to them and how to incorporate that into their workflows. This prototype was really developed to be able to show and explain the power of ODH and the vocabulary, and how it could be collected. The vocabulary for occupation, just to give you a sense of size, is 60,000 entries. Industry is 20,000. They're large value sets which is why we recognize and we've said, and we've explained, how we've done it. And there are certainly different technology objects and approaches available to EMR and healthcare IT vendors to interact with these value sets. What NIOSH could do is to work to develop some sort of a tool that could be incorporated into a healthcare system's ecosystem of applications. What NIOSH can't do is develop within an EHR. It's proprietary to them. So a SMART on FHIR app that could be used to help facilitate the collection is something we could go with based on lessons learned from this prototype, but the prototype itself was never developed to share. It doesn't have the security and the structure around it that would be needed to actually be used in the production environment. Does that help?

DR. BUNN: Thank you, thank you.

DR. LEMASTERS: I don't know.

DR. BUNN: Well, actually, I appreciate the clarification, and I was just wondering instead of approaching the health care providers, it might be worthwhile to approach the electronic health record vendors. We have done that before in Kentucky, ourselves and were able to convince some of the vendors to add additional data fields to the electronic health records for trauma centers here in the States. So I was just wondering if you guys have approached any of the vendors, themselves.

MS. WALLACE: Vendors are aware of this.

DR. BUNN: Like Epic.

MS. WALLACE: Exactly. Epic is aware of these data elements and, specifically, I can speak to Epic because I've worked with organizations with Epic. They move when their customers request. And so, if we find a partner that uses Epic and that partner is interested in this, they will certainly bring Epic to the table and Epic will then work with their customer and with NIOSH to figure out how best to do this for their customer, but what they're going to want to see is their customers request it or it

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

is some sort of a regulatory requirement that they know that their customers are going to need it. Those are the things that are going to drive the vendors, is customer interest.

DR. SCHENKER: My comment is, has anybody looked at the form in terms of usability of the data? In other words, it's a very complex form, but, personally, as an epidemiologist or occupational health person, part of resolution is far greater than I would be able to use. And I think in terms of your looking at acceptability of this to the vendors, if it's simpler, in some way, it's going to be more acceptable. In other words, has the creation of this considered the usability of the data that's being—

DR. STOREY: So this is Eileen's Storey. So I think one of the things we've been trying to work with is the notion that there's different users, and we emphasized in our presentation that our first audience has to be the clinician. And this is not a space that NIOSH usually occupies. We're much more about epidemiology and risk assessment, and risk reduction, but in order to play in this sandbox we absolutely have to be useful to clinicians first. So what we've built is something that we think is going to give enough granularity that a clinician can look at a job title and then begin a useful conversation with the person about what they're doing. And it instantly rolls to these broader categories. And we've also—I don't think we emphasize this today, but we've also created a crosswalk to CDC census categories, so that there's a seamless transition from this data collection to what we usually think of for public health purposes and analyzing industry and occupation.

So part of the reason it took us so long is working with clinical groups and people in clinical settings to find out from them what they wanted, what would make them excited. The Cambridge Health Alliance, for example that was that was just a wonderful charge for us because they got so excited to realize that they had all these patients they were seeing day in and day out with these shared risk factors, and they weren't addressing it because they were taking care of their hypertension and their diabetes, and all their health care issues they came in for, but then when they looked at their own data they said, oh, look at that, and they built their own website with educational materials, they wrote them in Portuguese because many of these people were Portuguese-speaking, and it fired them up about collecting more occupational information.

So you're absolutely right that the users are going to be—I mean, that's the next 10 years, is figuring out how to make this thing work, and then how to make it useful. And when the epidemiologist can actually go to a Kaiser and say we'd like to work with you on how to look at your patient population for work-related or work risk factors, then defining how you're going to look at that, how you're going to pull it out, how you're going to analyze it, that's all in the future.

DR. BUNN: Thank you. Are there any other questions or comments? Related to the last

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

question, once ODH is in the EHRs, what are the most important problems it can be used to address? Are there any thoughts on that? Okay. Are there any final—

DR. COX: Well, this is Tony. On that last point I assume that the one important problem would be to recognize and identify significant changes in patterns of occupational harm. So I think of particular industries where, for example, there have been dramatic changes in patterns of silicosis and, unfortunately, not so many changes in patterns of asbestosis. And I think this kind of integration could help, ideally, lead to a sort of automated vigilance that monitors these data for patterns that currently take special studies and lots of dollars to pursue. I think that this would facilitate seeing what's going on much better. So I think there are a number of important problems having to do with how are things changing that this will help to address. And that's why I think that big payers, as well as providers like Kaiser or like United, might be quite interested in partnering to get this implemented.

MR. FOLEY: Terry, this is Mike Foley. Can you hear me?

DR. BUNN: Yes. Go ahead.

MR. FOLEY: In addition to looking at the question of where injuries and illnesses are occurring across industries and occupations, is the whole issue of we know that the workers' comp system covers probably fewer and fewer or smaller, smaller percentage of the workforce over time due to the rise of things like more independent contracting gig work, and so forth, and so on, but also due to the fact that there's often significant barriers to accessing workers' comp, and people, sometimes if they have primary health insurance, they prefer to use that instead, and this would be a way for, at least, if a worker is injured or as has an illness and visits a clinic, occupation and industry could still be captured. Currently we are very dependent on workers' comp systems to give us a sense of the industry and occupational distribution of industry and illnesses, and I think this is really important for completing our picture, and then keeping it updated as access to workers' comp changes in our economy.

DR. BUNN: Thank you, Mike. Any other comments? All right. Well, thank you very much, Dr. Luensman, Dr. Storey, and Ms. Wallace for the excellent presentation. We are now at 12:25. Emily, what do you think? Should we break for lunch now, and then start back at the normal time or what are your recommendations?

MS. NOVICKI: I recommend that we break for lunch, just take a longer lunch, and come back at 1:30 when we have scheduled for public comment. I also know that Kenny Fent and Mike Flynn, two of our afternoon speakers, have pretty tight schedules. They have a lot of obligations with the pandemic. So I think it would be helpful if we could stick to the afternoon schedule as much as possible.

DR. BUNN: All right. So we will break for lunch now, and then return at 1:30 where we will, first, have a roll call when we return. All right. Thank you, everyone.

(Lunch.)

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

MS. NOVICKI: Hello, everyone. This is Emily. It's 1:30 p.m., Eastern time, so I'd like to go ahead and kind of pull everyone back together. So in order to get started again we'll need to do another roll call. So I'll just go down through the list again. If you can let me know that you're here. So first Terry Bunn.

DR. BUNN: I'm here.

MS. NOVICKI: Great, thanks. Kyle Arnone.

MR. ARNONE: Here.

MS. NOVICKI: Thank you. Lauren Barton.

DR. BARTON: Here.

MS. NOVICKI: Tony Cox.

DR. COX: Here.

MS. NOVICKI: Cristina Demian. Okay. We'll come back to her. Mary Doyle. Okay. Michael Foley. Jessica Graham.

DR. GRAHAM: Hi. Present.

MS. NOVICKI: Thank you. Steven Lerman.

DR. LERMAN: Present.

MS. NOVICKI: Grace Lemasters.

DR. LEMASTERS: Present.

MS. NOVICKI: Patrick Morrison. Okay. Tiina Reponen. Robert Roy.

DR. ROY: Here.

MS. NOVICKI: Marc Schenker.

DR. SCHENKER: Here.

MS. NOVICKI: Judith Su.

DR. SU: Here.

MS. NOVICKI: Okay. So let's go back through and see if others have joined yet. Cristina Demian.

DR. DEMIAN: Yes, I'm here.

MS. NOVICKI: Okay, great. Thank you. Mary Doyle. Okay. Michael Foley. And Patrick Morrison.

MR. MORRISON: Patrick Morrison is here.

MS. NOVICKI: Okay, great. Thank you. Okay, so we're at 13 again, which meets quorum, so we're all good, and I will then move to public comment, which I did not receive any comments or any requests for comment. So if there's anyone from the public who would like to speak this is your opportunity. Would anybody like a spot? Okay. Hearing nothing I am going to turn it back over to Terry Bunn for our afternoon session.

DR. BUNN: Thank you, Emily. And our next session actually is an update on the National Firefighter Registry that was established within the last year or so. So Dr. Fent, are you ready to present?

DR. FENT: Yep. This is Kenny. Can everybody hear me?

DR. BUNN: Yes, we can hear you.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

DR. FENT: Great, okay. Let's see if I have control here. Looks like it. Did that advance the slide?

MS. NOVICKI: Yes.

DR. BUNN: Yes, it did.

NATIONAL FIREFIGHTER REGISTRY UPDATE

DR. FENT: Okay. Well, good afternoon everybody. I have been asked to give an update on the NFR to the NIOSH Board of Scientific Counselors. And just to give you a real quick background information. So NIOSH created the NFR Subcommittee or NFRS to provide guidance and direction for the registry, for the NFR, and we held our first public meeting back on May 15, 2020, really, to discuss the protocol. And after that meeting the NFRS drafted a report of recommendations for Dr. Howard, and then met again on July 14, 2020, to approve that report. That draft report was then submitted to the NIOSH Board of Scientific Counselors for review back in July, and the BSC then modified and approved the report during an August 4th meeting that was specifically for that report. And the final report has been publicly posted on the BSC website. So the report really had three primary recommendations. There were some other suggestions as well in the report, but NFR team really focused on those three main recommendations. We discussed them as a team, and then we made some changes to the protocol, questionnaire, consent form. And, also, developed a draft response memo. And all of those have been submitted to NIOSH for review and approval, and are actually being reviewed right now by the Division of Field Studies and Engineering. So I'm just going to go through each recommendation, and then discuss some of how we decided to respond to each recommendation.

So the first recommendation was really focused on the Social Security number and, really, how to best communicate why we're asking for SSN and how it will be protected. And then, also, the importance of doing some pilot testing around those communications. So our response to that first recommendation, we've held multiple conversations with stakeholders, including firefighters and fire officers regarding SSN and why it's needed, and how to best communicate with those different groups of firefighters. We've also conducted a survey of fire chiefs from around the country about the potential barrier to participation from simply asking for SSN. And, as you can imagine, we did hear from a number of fire chiefs that this is likely to be a barrier to participation. We're also conducting focus groups with different groups of firefighters, including groups that are specifically mentioned in the Firefighter Cancer Registry Act, volunteer, female, minority firefighters about the best way to promote the registry and also the importance of SSNs.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

We're also in discussion right now with the International Association of Firefighters, which is the firefighters union, regarding their support for collecting SSNs. And so, really, all of this information that we're collecting right now will help us determine the best way to communicate to different groups of firefighters about why collecting SSNs is important and how we plan on protecting that information. We also plan to add a section on the SSN to the NFR webpage. We also heard from several stakeholders that it's best to be up front regarding the collection of SSNs. And so, we have decided to move the question regarding SSN to the end of the user profile. So it'll actually come before the enrollment questionnaire. And that would also still include information about why we're asking for this, so plain language details about why SSNs are important. And then, also, by asking for this in the user profile, it gives the participant an opportunity to provide that information at a later date. So, for example, if a firefighter during the initial registration process did not want to provide SSN, but maybe a year later came back and updated their user profile, they could provide their SSN at that time.

So we are currently asking for the full SSN, and if a participant were to not provide us an SSN they would see a pop-up that would, basically, ask again if they wanted to provide their SSN or, at least, the last four digits of their SSN. But based on some of the feedback that we've received from our stakeholders, we are considering only asking for the last four digits of the SSN, but we're still trying to figure out what the impact that would have on our ability to match to state cancer registries or the National Death Index. So, for example, right now NDI only matches with full SSN, and they won't accept anything less than a full SSN, but we also want to know how this might potentially increase participation rates. So there's still some decisions that have to be made around the collection of SSN. So the second recommendation, really, had to do with NAACCR and the Virtual Pooled Registry, and the committee, basically, felt that it was important that NIOSH work with the VPR to be able to match the state cancer registry is, essentially, streamlining that process. And we have already established several connections with NAACCR, including with the project coordinator for the VPR. And Dr. Siegel, who's the lead epidemiologist, has already given a presentation on the NFR at an NAACCR webinar earlier this month. And the bottom line is the Virtual Pooled Registry is definitely familiar with the NFR and we've already started discussions on how best to work with them to do some of these matchings. We've also held meetings with other CDC researchers who have successfully linked with several state cancer registries, for example, CDC's Division of Cancer Prevention and Control. So we're trying to learn from them about their experience. We also plan to devote considerable resources and personnel to linking to state cancer registries so we know that this is a lengthy

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

process, even under the VPR it can be quite time intensive and onerous, and there's a lot of paperwork. So we know that we're going to have to devote a lot of resources and personnel to doing that. And we have updated the protocol to provide even more information about the Virtual Pooled Registry.

The third recommendation was probably the most extensive recommendation and probably one of the most helpful recommendations as well, and it was really focused on the importance of getting more time-based information about when fire responses and exposures occurred across a firefighter's work history. Given the latency of cancer it's important not just to know how many fire responses, but when those fire responses occurred, as well as when certain control measures were implemented during a firefighter's career. And then, also, that it's important to pilot test our questions. The committee did think that it was important to keep the questionnaire short, but that we shouldn't sacrifice brevity for completeness of capturing as much information we can about exposures.

So we've made quite a few changes to the questionnaire based on this recommendation. We're collecting much more detailed work history information with exposure questions that are tied to each job title held in each department. So this should give us a much better understanding of the timeline associated with those exposures and fire responses. We also added questions about the approximate year in which different control measures were implemented. So, for example, if a firefighter has begun using SCBA during overhaul, we ask when approximately did that practice begin for that firefighter. We've also added a question regarding smoke exposure injuries which was a suggestion in the report. And we've held a number of phone calls and piloted different versions of this questionnaire with firefighters and other stakeholders, basically, trying to get the wording worked out properly and making sure that everything is understandable in the questionnaire. So far we've only piloted paper versions of the questionnaire, and because this is going to be a web-based questionnaire it will be important to pilot the web-based version because, in particular, there will be skip patterns and automatic entries done for the participants. And so, we definitely plan on piloting that web-based version of the questionnaire with several firefighters to evaluate their user experience as well as the time burden. And then, importantly, we plan to pilot the entire registration process with a small to medium-sized department or departments, and we've added details about the pilot testing plans to the protocol.

So what happens next is once we get the review back from NIOSH from the Division of Field Studies and Engineering we'll make any necessary changes requested by the reviewers, and once we have a NIOSH-approved updated protocol and response memo, we'll then post that to the NFR and BSC websites. So everybody on the NIOSH BSC and in the Subcommittee will have an

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

opportunity to see exactly how we have addressed the different recommendations as well as the general public. We also plan to submit the OMB package for the enrollment questionnaire which will then be posted to the Federal Register for 30 days, and then the OMB will also be reviewing the questionnaire and likely be meeting directly with our team to try to get that finalized, and that's a process that takes several months. We're also working on an assurance of confidentiality which we've already had some back and forth with CDC's privacy and confidentiality unit, and we anticipate within the next few weeks submitting the AOC to that unit and to CDC for approval.

We continue to work on developing our secure web portal and database. We do have a prototype currently, but we're trying to develop the final version of that web portal, and that is of an iterative process, a lot of back and forth with the web developer on that. We're also working on a communications plan and we're probably just a few weeks out from having that finalized, and then we'll begin working with our stakeholders to deliver some of those promotional materials to the different audiences.

Again, once we have that web portal finalized and making sure that we meet all the data security requirements we can then begin pilot testing the registration process with a small- to medium-sized department. We have begun the search for trying to identify different departments that would be willing to work with us on that pilot testing. And once we get that completed and get feedback from that department we can make those changes that are necessary, we'll then work on getting the NFR launched nationally, at least, for the open enrollment process. And then we'll work to promote the NFR through all the different mechanisms, but also at professional conferences. And we do plan on having dedicated conference booths, and at those booths firefighters would have an opportunity to, of course, learn more about the NFR, but they would also have an opportunity to register on site. So we'll have iPads and different ways that they can then register on site. Now, of course, with COVID a lot of conferences are not meeting in-person and they're having virtual conferences instead. And so, we're also developing plans to really promote the NFR at those virtual conferences. And then we'll start the targeted enrollment process where we'll start contacting the selected fire departments that are part of our targeted cohort to try to learn more about their workforce and get the process started on enrolling their members. So this is just a very brief timeline of the registry going through 2024 and, really, 2020 was just to make sure that we get all our ducks in a row, get all the approvals that we need, and meet all the requirements for data security and everything. We do hope that sometime in 2021 we will begin recruiting and enrolling firefighters, but, again, there's still a lot that has to be done, including pilot testing the questionnaire and the enrollment process.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

- DR. BUNN: So that's all I have, but I am happy, if there's time, to answer any questions. Thanks so much, Kenny. Wow, I'm really, really impressed with your quick responses to all of our recommendations in the report just since our meeting in, what, early August or so. So congratulations on that. Are there any questions from the Board Members for Dr. Fent?
- DR. LEMASTERS: This is Grace. I would like to concur. I think you guys have done an amazing job at following through on the recommendations. I just had one question with your timeline. Do you know when you'll be or have any idea when you might be giving the protocol back to the NFR Subcommittee?
- DR. FENT: Yes, that's a good question, Grace. We anticipate probably by this week we'll get the review back from our division, and we will likely have to make a few changes based on that review. I'm not sure if they'll then need to take that version and run it by the OD, they may have to do that, but I don't think we're more than maybe a month out to getting that back to the Subcommittee.
- DR. LEMASTERS: Well, Emily, this probably goes to you. If you can work out this timeline. You'll want to get it on people's calendars because a month out will put us like mid-October to late October, and by the time we read it, schedule a meeting. So, Emily, I would just advise to get back with all of us and see about setting up a group meeting again.
- MS. NOVICKI: Grace, we're not scheduled to have another NFRS meeting until the spring which, I believe, is going to be more focused on kind of the implementation or the pilot testing rather than the protocol itself. Kenny, please correct me if I'm wrong.
- DR. LEMASTERS: Well, Kenny, how will we get our—individually or how do you want comments? You're going to give us the protocol to review, and then what? Then we give comments back or what? What do you think?
- DR. FENT: No, I mean, my understanding is that you and the BSC, the Subcommittee and the BSC provided the recommendations to us and we have to come up with our plan on addressing those recommendations, but I'm not sure that there's another back and forth that needs to take place. I think we move forward with our plans based on those recommendations, and you will get to see the protocol and it will be posted onto both the NFRS website as well as the BSC website. The public will also have an opportunity to see the changes that we've made, but that's my understanding. I don't know if Paul Middendorf is on the line or not, but he would be able to tell you for sure.
- DR. MIDDENDORF: Yes, I am on, Kenny. And, no, you're correct. The Subcommittee and the BSC each get one chance at it. Actually, I guess, the Subcommittee had a couple chances at it, to improve it make the recommendations. And it then goes back to the program, the program makes its decisions on how it wants to move forward. Now, you may at some point decide that you want additional input on the protocol in a subsequent meeting, but it's certainly not required.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

- DR. LEMASTERS: Well, that was my original understanding until I saw your slide, Kenny, about returning it to the NFRS and the BSC. So then I was thinking, okay, if it's coming back to us what does that mean? Are you wanting any follow-up, but the answer I'm hearing is not really, right?
- DR. FENT: Right. I'm sorry if I confused that in my slides, but I only meant that everybody in the committees will get to see the changes that we've made, but that'll happen at the same time that it's posted to the websites.
- DR. LEMASTERS: Okay, gotcha. Thank you.
- DR. FENT: Mm-hmm.
- MR. MORRISON: Hey, Kenny, this is Pat Morrison. Kenny, just a question on the National Death Index. We talked about how important that is in regards to Social Security numbers and realizing that one agency that there was some discussion were they going to go to the last four digits of the Social Security number, and searching their database and how important that is, it's a big decision on the full Social Security numbers. Do we have any more information on the NDI, and are they contemplating moving to—in their search when you're searching their database—are they contemplating moving to a four-digit search feature or not?
- DR. FENT: Yes, I mean, that's a great question, Pat. So just to give a little bit more background on Pat's question, we can match to state cancer registries with the last four digits of a Social Security number. We believe that all state cancer registries would be able to accept the last four digits as well as other identifying information in doing their linkages, but right now NDI does not accept last four. It is a full SSN or nothing. And so now they can, they can take other identifying information for NDI, I believe, but our understanding is NDI currently does not have an algorithm that will allow them to accept the last four digits, but it doesn't mean that it's impossible to do. And so, we are optimistic that maybe in the future NDI would be able to accept the last four digits of the Social Security number in the algorithm that they use to do linkages, but at this time we have not heard any plans to do that.
- MR. MORRISON: Okay, thank you.
- DR. SCHENKER: This is Marc Schenker. Recruitment is, obviously, a key part of the success of this whole endeavor, and I wonder if you could elaborate on how you're pilot testing your recruitment methods, and are you specifically going to compare different recruitment approaches or just what are you doing to optimize your success and recruitment?
- DR. FENT: So we have a contract right now to develop the communications plan, and part of that contract was to evaluate the different ways in which firefighters receive information. So that would include social media, or directly from professional organizations, directly from their fire departments, etc., etc. We don't have that communications planned yet, but it is coming very soon. And I would expect that

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

once we receive that, it'll become clearer what is the best way to communicate with different groups of firefighters. I think your question pertains to how do we evaluate the success of the different recruitment strategies. We have a new contract to do just that.

It's definitely still, I would say, a work in progress, exactly what that's going to look like. But we do—I agree with you completely. The way in which we recruit different groups of firefighters is critical to the success of this project. And so it's one of the areas that we have devoted the most resources to this project.

DR. SCHENKER: Good. I'm glad to hear that. The big media companies have gotten very sophisticated at being able to project different messages, or different images, and look at response rates. It's interesting to think about using those techniques to look at optimizing recruitment for a study such as this one.

DR. FENT: Yes, and that's one of the areas under the new contract that we can do that. We do plan on doing that: tracking different messaging, different social media posts, and stuff like that. You can actually track to see how successful those campaigns were.

DR. BUNN: Thank you. Any other questions or comments? All right. Thank you very much, Dr. Fent.

DR. FENT: You're welcome.

HEALTH EQUITY AND THE PARADIGM SHIFT IN OCCUPATIONAL SAFETY AND HEALTH

DR. BUNN: Our next presentation will be on Health Equity and the Paradigm Shift in Occupational Safety and Health by Mr. Flynn with NIOSH. Mr. Flynn, I'm sorry—I don't see you listed here as a doctor. I apologize if you are and you're not listed as a doctor.

MR. FLYNN: No, no; I'm not a doctor. I'm just with my master's degree. Hopefully some day; I'm currently trying to finish up a PhD program.

DR. BUNN: All right. I'm looking forward to your presentation.

MR. FLYNN: Okay, great. Well first of all, thank you all for having me. Good afternoon, and I'm looking forward to presenting a little bit here on the overview of the with the Health Equity Program and the current paradigm shift in occupational safety and health.

As we know, not all workers have the same risk of experiencing work-related health problems, even when they have same job. One of the central concerns of this program is that how we organize society impacts the distribution of positive and negative work-related health outcomes. Some of the ways that social and economic structures can lead to occupational health inequities include the overrepresentation of workers from certain groups in dangerous occupations; differential treatment on the job; or limiting access to resources that help protect

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

workers on the job. So the mission of the OHE program is to promote research, outreach, and prevention activities that reduce avoidable differences in workplace injury and illness that are closely associated with social, economic, and environmental disadvantage.

As we're all aware, there are significant demographic shifts in the US workforce. There is a greying, or erasure, of the lines between traditionally gender-segregated occupations. The population overall is aging, and working later on into life. There is increasing racial and ethnic diversity. Indeed, minorities currently make up 40 percent of the US population, and it's estimated that by 2045 there will be no majority group in the US. And immigrants currently make up roughly 17 percent of the workforce, and they and their children are estimated to, will account for 88 percent of all the growth in the workforce in the next 30 years. Despite its historical roots in social medicine, occupational safety and health has evolved into a largely technical field that works on identifying and eliminating workplace hazards at the job. This work has tended to focus on the specific injury event or illness, and is driven or based largely on the biomedical model of health. But there are certain challenges to this current paradigm. First, we see a broadening of the understanding of the relationship between work and health, beyond what happens nine to five on the job floor, or the work site. We look at the restructuring of society and industries, jobs, and new technologies, and how they impact work. And there's also a growing recognition of the diversity in the workforce. So this needs to account for the wider social context, and expand and complement the reductionist view of cause and effect to include the social, political, and economic interactions that contribute to health outcomes. In short, I see this moving toward the paradigm, towards a biosocial approach to occupational safety and health which will complement the biomedical model traditionally having been used.

Now when we talk about social determinants of health and occupational health, specifically, we're talking about the idea of how we structure society along racial and ethnic lines, class, gender, nativity, etc.; how we organize industries and organizations through things such as the competitive bidding process, the distribution of work and tasks by business size, and subcontracting practices, externalizing costs and risks from larger companies to smaller ones as well as how we structure jobs—employment arrangements, shift work autonomy, etc. all impact the distribution of work-related benefits and risks.

The Occupational Health Equity Program focuses on three key areas of interest. First, it's promoting research targeting inequities in occupational safety and health outcomes. The second area is to work on integrating inequity perspectives across all of occupational safety and health as a field; and third it's promoting the relationship or an understanding of the relationship between work and other

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

health inequities in society.

So for the first area, there are three key activities that we do: one, work on identifying which disadvantages contribute to increased risk for which works—your basic surveillance and epidemiology. The second area of work we focus on is explaining how structural disadvantages materialize at the worksite, in the lives of these workers; so more along the lines of anthropology and sociology. And finally, we work on developing and evaluating interventions that address some of these health inequities; so, your health communications and translation research. Previously, occupational health equity research has focused on a single characteristic—for example, immigrant workers, women, a particular ethnic or racial minority. And this has given us a depth of understanding of how these particular elements can impact health inequities. But we also recognize that those are not monolithic. And the theory of intersectionality reminds us that individuals can belong to multiple groups simultaneously: so you're both a woman and an immigrant and can be a racial minority all at the same time.

So in 2015, we collaborated with the American Society for Safety Professionals to explore some of these structural overlapping vulnerabilities within the construction industry. Specifically, we looked at Hispanic immigrant workers, small business employees, and younger workers, all of whom individually we knew faced higher rates of accidents and injuries within the construction industry. And what we found is that indeed that Hispanic immigrants tended to be younger workers and tended to be overrepresented in small businesses. And so what we did see was a significant amount of overlap between two and three of these characteristics within the workforce.

When we looked at the occupational safety and health literature, what we found was that by and large, the articles tended to focus on only one of these characteristics at a time, resulting in a very siloed approach and understanding of the issue. Which then of course limits their intervention effectiveness because if you just account for or tailor your interventions for Hispanic immigrants, but not accounting for the fact that most of them worked in small businesses, the recommendations or solutions you propose, while they may be appropriate for immigrant workers, may not be appropriate for small business owners, for example.

And in a follow up study that operationalized this, we looked at how training for Hispanic immigrants may be influenced by business size in construction firms. We looked at both large and small construction firms, and found that Hispanic immigrant workers in smaller firms tended to have less access to required training, had less access to tailored training, and had less overall safety communication than Hispanic immigrants who were employed in large construction firms.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

Our next step, we just recently received a large NORA to help us identify overlapping risk factors. Specifically, we're going to be partnering with the Mexican Consular Network, which is in the United States, which operates a series of 49 consulates across the US. You can see the map there. And they serve up to 1.7 million people annually. Specifically, they have a health promotion program called Ventanillas de Salud, which operates in their waiting rooms. And this is a program that provides health information, health screenings, and referral services to people seeking help at the consulates.

The Ventanillas have an electronic health intake form, which currently collects data on demographics, health behaviors, and the health screening results given at the consulates. The NORA proposal we have will integrate work-related variables into this data collection system, for a period of two years, to begin to identify potential associations between health behaviors and health screening results as well as demographics with work-related variables, such as occupation/industry, but also work arrangements, part-time work, etc. And another area of interest for us are intervention studies. And basically, an overarching objective here is how can we reach workers with the existing infrastructure that exists? So again, we partnered with the Ventanillas de Salud at the Mexican Consular Network to evaluate and determine the most effective way of reaching their clients with occupational safety and health information. This resulted in us creating more tailored materials, basically a brochure, a poster, and a video, in the formats that were currently being used by the Ventanillas to disseminate health-related information. We rolled this out in the Los Angeles and Atlanta consulates, and conducted exit interviews with clients coming out of these two consulates, to evaluate one, if they saw the materials; if they trusted the information they received; if they changed their attitudes towards safety at work; and if it changed or had any impact on their behavioral intentions about addressing their concerns at work.

The paper on this is currently under review, but generally we found that the consulates were an effective place to disseminate this information. Even the brochures that were simply placed on the tables, 48 percent of the respondents reported having seen them. So even the most minimal method of interacting was proven to have a significant impact on reaching folks.

The second key area we focused on was integrating an equity perspective across occupational safety and health as a field, and particularly within NIOSH. The three main areas here that we work on, as we try and raise awareness and the capacity of our internal and external partners to address or incorporate this inequity perspective. We try and identify and address structural exclusions where we see them, and increase the adoption of inclusive methods.

As mentioned before, with 40 percent of the US population being minority, and

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

roughly 20 percent of the workforce being immigrants, we believe that all occupational safety and health efforts need to account for workforce diversity, not just those researchers or individuals who focus on immigrants or minorities as a central tenet of work. This is going to require a culture shift from the concern of some individuals for these topics to really the institutionalization of inclusion as a value across the field.

In the paradigm shift towards a more biosocial approach to occupational safety and health, the social determinants of health model and health equity is a central axis. Our program collaborates closely with the Total Worker Health Program here at NIOSH, which tends to focus largely on the expanded vision on the relationship between work and health. We work closely with the Future of Work Initiative that, in addition to looking at changes in the workforce demographics, looks at changes in technology at work, as well as the changing work arrangements, and how they impact health, and we're also working with the Blueprint for Action, which is NIOSH's diversity initiative, that's looking not only at increasing the diversity within the NIOSH workforce, but also helps in how can, in the way we do things, be more inclusive and more effective with the overall worker population. Largely, we raise awareness through publications and presentations as you can see here with the recent special edition of the Anthropology of Work Review dedicated to immigrants and occupational health, and we also have several topics on the health equity blog.

In terms of addressing structural exclusion, one thing that was recently highlighted by the National Academies Press Consensus Study Report was that social determinant of health variables such as race, ethnicity, nativity are also often absent from occupational health data collection instruments. The Health Equity Program is currently reviewing several data systems that NIOSH relies on to evaluate and document, basically, to what degree they incorporate items related to race, ethnicity, nativity, and language. The idea here is to identify gaps in data that is not being collected, and opportunities to analyze data that is being collected but may not be being analyzed along these axes.

Institutionalized exclusion refers to current practices that favor one group and unintentionally perhaps exclude other groups. A couple of examples here would be the reliance of anthropometric datasets for military recruits in the Fifties and Sixties to develop PPE. These tend to exclude women and minorities, and therefore can result in PPE that doesn't fit as well for these individuals. But we are also hearing about other, there's some good work going on at NIOSH with Hongwei and his group out of Pittsburgh that looks at computer-based modeling that are addressing the limitations of these anthropometric datasets. And so once of the things we are trying to do is also popularize that and make people aware of it.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

The other thing we are hearing about in terms of new technology, with robotics, is that several practitioners that we know in ASSP have come to us and talked about their experience with exoskeletons and how these are being designed without consideration—that are basically designed for the male body without consideration for female body shape and size. And therefore, the practitioners are finding that they aren't fitting their female workers very well. So that's looking at how we can correct some of these increased, better PPE.

But another issue we have is that looking at once alternate-size PPE has been created, is it being promoted? And so the Health Equity Program did an analysis of seven manufacturers' promotion materials on PPE. We did find that there was some alternate size PPE that was being created, but it was not being promoted very well. One example is that the images contained, in these promotional materials, only four percent were non-white, and seven percent were female. So one, it's developing better data to develop more inclusive sizing PPE, but then also promoting the fact that these exist when they are created.

Of course, a large part of the health equity too, is that we need to account for the diversity in the workforce, and the bias of research at all stages of researchers, and that inclusion isn't just an ethical consideration, it makes for better science. This is as not as easy as it looks, and it's more than simply just adding items on race, ethnicity, nativity, etc. to existing data collection instruments.

Here's an example from a study we did on a potential workplace outbreak of tuberculosis among Latino immigrants. So the interviewer asked the question in the survey to the respondent. "Did the results of your TB test come back positive." And the response was yes. The follow up was, "Are you taking your medicine?" And the response was no.

Had we ended the questionnaire there, the scientific finding would have been, "Latino immigrants testing positive for TB are noncompliant." But we did a follow up and asked, "When I say a positive test result, what does that mean for you?" And a common response was, "It's a good thing. It means I'm not sick. Why would I take my medicine?"

And so the result here, as we can see, is that this highlights how the same words can be understood in different ways. The problem is that if we leave the unexamined assumptions evidenced in the first slide are allowed to stand, what this means is that the perceptions of the investigator remain the de facto norm of the study, and eventually become realized as scientific facts, which can then influence resources dedicated to follow up studies or interventions that may be missing the point.

And so a central component to instrument development is ensuring conceptual equivalence from the researcher's intended meaning is to how it's actually being heard. And a key tool for doing this is using cognitive testing.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

The third key area of work that we do is really promoting the idea of the influence work has on health inequities in society overall. This isn't a new concept, but it's one that hasn't been really taken up much. And so we're promoting the conceptualization of work as a social determinant of health inequities. And we're also trying to evaluate current practices to highlight some of those limitations and areas for improvement.

So the conceptualization of work- and non-work-related exposures and outcomes creates an artificial line of demarcation that has traditionally separated occupational safety and health from community health and other areas of public health. We find that work-related variables are largely absent from health equity research. And one of the key messages that we have when we speak with other folks in public health or in health equity research is one, not only that work is a social determinant of health and impacts health whether to exposures on the worksite or how work can structure a person's life in terms of when they're awake, when they're sleeping, if they're with their family, on the road, etc., but also it's the principal mechanism in the social location that influences many of the other social determinants of health: the job you have can largely impact the type of community you live in, your access to transportation, the schools your children attend, etc. And so that's a message we try to get out when we speak to folks in public health.

Most of this work is largely done through papers and publications. Probably the most important one here is pictured; a recent article we did in 2018 in the American Journal of Public Health that looked at work as a social determinant of health inequities. We have also published other articles. And I guess I want to report is that there is a growing interest, it seems, in public health, with an openness to consider this. We've been invited to participate in two events that CDC has publicized, one Grand Rounds, looking at American Indian and Alaska Native suicide and work as a social determinant of health in that; and also the Social Determinants of Health Conversation with Authors, which is a CDC webinar. And then also, yesterday and today, there is an ongoing workshop sponsored by the National Institute of Minority Health and Health Disparities dedicated to the relationship between work and health inequities.

The Health Equities Program is also reviewing some key public health data systems to identify work-related variables to see if they have them, and to what degree they have them, and how they are capturing the work. And eventually, we'd like to develop a taxonomy of these work-related variables. For example, asking around industry and occupation/employment status, job satisfaction, or other areas of work. Eventually, we'd like to review if and how this data is or could be used to demonstrate the influence work has over certain health inequities that exist in society. We'd like to highlight actual examples of this being done, or

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

perhaps generate our own research that looks at it.

So as I start wrapping up here, a central challenge to security occupational health equity is that by virtue of how inequities are created in societies, the same social structures that contribute to health inequities also operate and are reproduced by public health organizations. And I think that what the next quote highlights that we often don't look at or explore how public health organizations reproduce these same structures. And it's by Edward Hall; it says, "Culture hides more than it reveals. And strangely enough, what it hides, it hides most effectively from its own participants. The real challenge is not to understand the foreign culture, but to understand our own."

And so when we talk about the dynamics of diversity, we're talking about more than simple differences. What we need is a conceptual model that incorporates or addresses the inequitable distribution of resources, injury, illness, and health based on asymmetrical power relationships along social axes such as race, ethnicity, class, nativity, etc. It needs to not only look at disadvantage and exclusion, but also account for power and privilege.

An essential component of this is that these are institutional arrangements and not personal flaws. These arrangements are embedded in social structures, and we need to focus on the impact, not the intention. So the individuals who created the anthropometric dataset based on military recruits were not really concerned whether they did that intentionally to exclude certain groups or include certain groups, or whether it was just simply a solution that they came up with that to a problem that they faced. What we want to focus on is what's the impact of relying on those data sets with the benefit of hindsight, and how can we change that. The goal here is to recognize and change these arrangements.

But implicit in that is an understanding in where we stand, or where we are located within a society or social position, impacts what and how we see things. Complicating this even further is that the perspective of the privileged is often the norm in society. It is sanctioned and reinforced by media, laws, and institutional practices. So for examples, the definition of "positive test" in the example from tuberculosis that I just gave: the institutional practices reaffirm the perspective of the privileged individual in that case, which would be the researcher.

And unfortunately, privilege is often unacknowledged and understudied. Where health equity research occurs, oftentimes it focuses on the underprivileged group, or the excluded group to understand and document their reality. But often, we don't turn that analytical lens back on ourselves to understand how our privilege and practices may be unintentionally excluding certain groups.

And the final key point here is that culture is dynamic. It's continually changed and reinforced. And so to the degree that we continually recognize and challenge existing practices that be exclusionary or that may favor over another, we can

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

actually change culture. And the degree that we don't, we're simply reinforcing those dynamics as we move forward.

There are three key elements in developing institutional capacity to adjust diversity and health inequities. The three key areas are one, in terms of personnel—one, we need to increase diversity within the field of occupational safety and health, both in terms of personal backgrounds of individuals, as professionals, but as well as professional backgrounds. If we are indeed moving towards toward the biosocial approach to occupational safety and health, we need to do a better job of incorporating some of the other social sciences and people with different professional backgrounds and bring them to the field. But simply creating diversity within the workforce isn't enough. You need to train the occupational safety and health workforce to acknowledge their own social position, and understand how institutions and structures circumscribe and influence their perspective and how they see things, and how others from different backgrounds, different perspectives or situations might see things differently and how we can account for those realities.

In terms of practice, we need to evaluate our current practices; from data collection all the way through interventions and how we do things, and how they may inadvertently favor some groups over others. This ultimately is going to require an institutional cultural shift, where equity and concern for the social determinants of health moves from being a concern of a few individuals dedicated to this area of study to institutionalizing the practice across the field. It ultimately needs to become a core value that permeates the entire field. Much like safety in an organization or company can't be the sole responsibility of the safety department, it has to be, the goal would be to incorporate it as a core value across all levels of the company. Similarly, we would see the same dynamic with health equity or social determinants of health.

And finally, a key way we have worked on doing this is through partnerships, to help overcome some of the limitations we currently have. One thing you notice—a way of looking at this is is oftentimes communities that are underserved by occupational or public health institutions are labeled as hard to reach, such as immigrant workers.

But the question that is being asked currently is that are they really hard to reach or are they simply hardly reached? And I think the difference here is similar but it's the focus that changes. If we label them as hard to reach, there is something inherent about that group we are suggesting makes them difficult to reach. But when you look at immigrant workers, for example, the consular network is able to reach 1.7 million of them annually, then are they really that hard to reach? Or is it simply something about how we as an institution have developed and have the practices and procedures that we follow, make them difficult for us to reach? And

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

so it changes the focus from the worker back on to the institution. And one of the ways, or a model that we have developed is to try and identify these existing infrastructures in these communities that have been traditionally underserved, and try and tailor occupational safety and health interventions and data collection efforts to the current activities that are occurring in this existing infrastructure. I think oftentimes it's too easy to come in with the gold standard of something we have designed in our offices, whether it be a data collection system or an intervention, get some funding for it, impose it, and then when the funding runs out, it tends not to stick around. If we can identify these institutions, and the current activities they do, tweak them to incorporate an occupational safety and health angle into it, it often reduces the burden on the often overburdened staff of the consulates or community organizations that are working in these agencies, and therefore it generates a higher return on investment for us, and also increases the likelihood that this will be sustainable and the efforts in this will continue long after the funding has ended.

And the third key element that we focus on is that each discrete project really needs to be about building a longer-term relationship. I think that there can be a dynamic where you can get funding for a study or an intervention, come in, find a partner, fund them, and then when the funding runs out, you move on. The way we look at these funding projects is there are simple steps that while we try and meet the goals of the specific funding request, there is a larger component of building a relationship with the organization that helps us develop our capacity and build our capacity to work more effectively with these groups over time.

And so, to conclude here, I guess we throw some questions out to you all, to get your advice and some help. The first is: how do we raise awareness of the need for a biosocial approach in the NIOSH researchers and professionals? How do we sell work as a social determinant of health to public health researchers concerned with equity? How can we leverage COVID-19 in the social discourse on inequality, as well as the importance of work in health, to further advance an equity perspective? And finally, how do we identify new partners and champions? So with that, I will introduce the OHE team, the leadership and the workgroup across NIOSH. And I will turn it over—here are the references, and I thank you for your attention and see if there are any questions.

DR. COX: This is Tony. Could you tell me a little bit about the definition of equity in this context?

MR. FLYNN: Yes. I think there are numerous definitions of health equity that are out there. But basically, we tend to focus on the health inequity and just how to prevent—how social structures mediate or influence the inequitable distribution of health outcomes and advantages and disadvantages related to work. So I think what you are looking at is trying to—yes?

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

- DR. COX: That actually answers my question. You are looking at equity of outcomes. How much inequity is optimal, taking into account differences in risk attitude, and difference in preferences for tradeoffs between risk and compensation and so forth?
- MR. FLYNN: I don't know if we have a definition of what's optimal. I think what we are trying to look at is to avoid these differences based on the social constructs of race, gender, ethnicity, etc. So I think we would argue that you don't want that to happen. So if you look, for example, one thing that comes to mind is men tend to suffer fatalities on the job more than women, for example, and oftentimes in industries, let's say, like construction that are compensated at a higher level. But I think from an equity and even an occupational safety and health perspective, we'd say that one fatality is too many. From our perspective, it's not only that one fatality is too many, but if those fatalities are disproportionately distributed and influenced by nativity or race/ethnicity, then we need to look at how those social factors are impacting that disproportionate distribution of those fatalities.
- DR. COX: I guess I'm questioning whether inequitable outcomes aren't desirable in a world where people are free to make different choices and have different risk preferences. Why would you expect equity? So suppose, for example, that some people enjoy the challenge of working on oil rigs or in forestry or in other hazardous areas and other people have very high aversion to such dangerous activities—wouldn't you expect that people who self-select into hazardous activities would tend to have inequitable, i.e. higher, occupational injury and fatality rates than people who self-select into less hazardous areas? And is that undesirable? And if so, why?
- MR. FLYNN: Well, I would argue that the goal of occupational safety and health would be to reduce all fatalities in all of those different industries. There may be some inherent risk in that there are also many of the ways that we structure jobs and industries and the social groups that occupy those jobs and industries often increase the hazards that exist there. So I would say that that isn't preferable.
- DR. COX: I would say that—economists who study this area often talk about equity/efficiency tradeoffs. And I think that equity in outcomes of risk implies an homogeneity in risk exposure that seems to be implausible. There are definitely occupations that are more and less hazardous compared to other occupations. I think that's just ground reality. I think that there may be some social structure contribution to that, but I think there's also a very large component which is like things like mining, which are intrinsically more dangerous than many other occupations. So given that—
- MR. FLYNN: Take construction, for example, and falls from heights relating in fatalities. While there may be a greater risk associated with roofers, because they're working at

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

heights, than someone that isn't working at heights, dying from falls from heights—I guess the argument from our perspective would be that should not be mediated by the fact of whether you are an immigrant or not an immigrant, or speak English well or don't speak English well.

And so if you go back to the study, for example, where we showed that Hispanic immigrant workers who worked in larger construction firms have greater access to training and knowledge that will keep them safe at work relative to those who are employed by smaller construction firms, then I think you would say that's a difference in risk that we should try to program out of existence.

DR. COX: Right. So there's some component that can be eliminated, and there's some intrinsic component that can't. I think that for all people, I certainly agree that you don't want to have risk mediated by social or other characteristics that shouldn't affect this. But this will be different across different occupations, and it will mean different for all sorts of people who work in those occupations. And I think therefore the target of, "Let's make outcome risk equitable"—there needs to be a denominator in there saying what is the unavoidable risk of this occupation, recognizing that construction and mining and so forth do have higher risks than many other occupations, regardless of who's working in them, and even after eliminating the undesirable social components of that risk.

DR. SCHULTE: Mike, this is Paul Schulte. Can I add something?

MR. FLYNN: Yes.

DR. SCHULTE: I think a lot of this discussion is devolving to the classic view of putting the blame on the worker for the outcome, when indeed what we're looking at in health equity research is to also identify those social determinants of health that are mediated through the actions of the employer to provide a safe and healthy workplace. So it doesn't depend solely, or even largely, in many cases, on the inherent characteristics of the worker; but that those characteristics are taken into account when employer interventions and workplace management and controls are practiced, so that they are equitably applied to all people in the workforce. I think that's the ultimate point to this.

MR. FLYNN: Thanks, Paul.

DR. BARTON: And this is Dr. Barton. I would like to add to that. I don't think that the people who work in grocery stores or all of these low-paying jobs that were deemed "essential workers" thought that their risk was going to be any greater. I don't think that they signed up for forestry, or high-altitude jobs. A lot of times these jobs are definitely related to the person's socioeconomic group, or where they came from. And these are the only jobs that are available. So to say that they signed up for a job that was high-risk, I don't think is an accurate assessment.

DR. SCHENKER: This is Marc Schenker. The construction example is a very good one, Michael. And there was an earlier study that looked at within specific jobs in construction,

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

fatal injury among Hispanics versus non-Hispanics and showing that the Hispanics that had higher fatality rates were roofers and for other specific jobs. So yes, it's a more hazardous industry, but I would totally agree that equity says that those characteristics of the individuals should not differ among those who are exposed to that higher risk. And I think that the task is to find out why that is: is it language ability, knowledge, training, safety equipment, etc., and work to address those issues to reduce the inequity.

MR. FLYNN: And I also think it's not just the individuals and groups where the workers come from, but also how are the industries and organizations socially constructed that increases risk. So for example, the larger corporations that may subcontract the riskier, more dangerous work to smaller firms as a way of saving themselves from legal liability, etc. And then if you end up working for one of those smaller firms that has fewer resources to dedicate towards safety or has to compete with other smaller firms to get that contract, and often are pushed to cut corners around safety.

So I think you ought to look at processes like competitive bidding, and externalization of costs, and subcontracting as a way that we structure the way dangerous industries operate such as mining, oil drilling, and whatnot, to look at how we can restructure the social inequalities that can contribute to these deaths.

DR. SCHENKER: Another issue is that creating independent contractors in positions that used to be salaried jobs, and doing it to avoid liability and other things that reduce injury and fatalities.

DR. GRAHAM: Hi, this is Jessica Graham. I also have a question. Are there ways that employees can request a safer environment without any fear of retaliation from their employers?

MR. FLYNN: Is there any way to do that, you say?

DR. GRAHAM: Yes, like—are there any organizations that work on behalf of employees? I mean, obviously, NIOSH—when I think of health equities, I think of who these folks can go to to request a safer workplace?

MR. FLYNN: Right. I think that traditionally, you see that our governmental agencies such as OSHA, NIOSH, and others that provide an—health inequities, among occupational safety and health, unlike many of the health equities in public health in general... we do count with the significant infrastructure that exists that theoretically should protect of all workers, regardless of background. And so you do have government agencies and organizations that work in preventing health problems related to work. You have worker compensations that provide compensation for folks once they are injured. You traditionally had unions. But also increasingly, at least with immigrant workers, you are seeing a growing reliance on community-based organizations like workers' centers, or immigrant-based community groups, that are getting involved in work-related areas that

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

provide workers with access to legal supports and information.
I'm not sure if that answers your question.

DR. GRAHAM: I guess it's kind of looking for that ideal world where someone can request additional safety precautions without their management knowing. Because I think that sometimes health inequities occur in occupational scenarios because folks might not want to be visible with regard to those requests.

MR. FLYNN: Oh, very much. And I think many of the groups we're talking about that experience these inequities are coming from groups with less social power, and perhaps a greater level of fear and vulnerability to a loss of a job.

DR. GRAHAM: Yes.

DR. SCHENKER: I want to just thank you, Michael, for addressing a really important issue, and NIOSH for supporting this. I think this is really critical to reducing occupational health and safety problems. And I'm delighted to hear what you are doing. I have a couple of general comments. One, you have certain alluded to immigration, and immigrant workers being more vulnerable. And within immigrants, documentation status creates an additional vulnerability from all the data.

My second comment has to do with your publications. Most of what you've presented were academic publications, but I think the general media should be benefiting from your findings—to move public opinion, to move regulations, to help educate people about this. And I wonder if you are thinking about that as well as the obvious academic publications which go to the academic reading populations.

MR. FLYNN: Well I think one of the areas - Do you want me to answer that, or do you want me to wait, Marc? Why don't you go ahead and finish and I'll respond? Sorry.

DR. SCHENKER: COVID-19 is a case study of social determinants of health impacting work as far as hazards. I don't know if you're the lead on that. John was saying that it's happening in a lot of places at NIOSH. But it seems like a primo example of social determinants of health impacting the most vulnerable workers, or as we call them, essential workers now.

And then I guess my last question was whether you feel like you have enough resources to tackle this issue, and what the BSC could do to help increase support for these efforts, whether it's from Congress or other sources.

Let me just end by answering a question about the last person who spoke about workers asking for more safety. This is a true story, and I'll be very brief:

I recently lectured on occupational health and medical students, and at the end there was discussion and questions. And one student, a Latina, told me that she had been working in the fields with her mother several years ago. And it was a hot day and they asked for water, and the crew boss fired them on the spot because they asked for water. It just struck me as how far we have to go in this to

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

achieve equity in what and where we need to be.

So I'll stop there, Michael, and take your comments.

MR. FLYNN:

Well, the last question is the easiest. Could we use more resources? Of course. But I think the way we're approaching it is really twofold: one, there is always the need for more resources and support for specific in-depth studies on these health inequities and how to address them, but also the approach we're taking in how to expand concern for social determinants of health and health equity across occupational safety and health is a way of leveraging existing resources so we can simply add an item or two in some of the standard surveys or data collection instruments that other researchers at NIOSH whose focus may not be immigrants or racial/ethnic minorities, etc., but should at least acknowledge or address some of those at least at a minimal level for some of those potential variants that have been shown to impact occupational health outcomes.

So one of the ways we're hoping to leverage additional resources is really by selling this to the current research community and practitioner community in occupational safety and health, and those coming up through the field. I have been working with Paul Schulte, who has been leading along with George Delclos at the University of Texas on the future skills that occupational safety and health professionals and researchers are going to need. And I think that one of the key areas of that is the ability to account for these social aspects of safety. And so the degree that the BSC can help out with any of that, both in terms of getting additional funding, but also just selling this idea to your students and colleagues and developing their capacity to address the social aspects of safety and collaborating with perhaps the underrepresented disciplines will go a long way of leveraging existing resources to account for some of the issues that I discussed today.

Oh, in terms of making this more popular. Many of our articles have been picked up by the press, and also that's one of the impetuses behind the Occupational Health Equity Blog on my NIOSH Science Blog post is to try to put some of this research in more layman's terms to get out there.

I think those were the two main questions.

DR. BUNN:

All right. Thank you very much. Are there any other comments or questions?

These are very important questions to ask, and I appreciate everyone's candid responses to NIOSH as far as this whole issue is concerned. So thank you very much, Michael, for an excellent presentation.

MR. FLYNN:

Okay. Thank you all very much. I appreciate you offering me the opportunity to speak to you.

DR. BUNN:

All right, so we will take—it's 2:54 right now, by my estimation. Why don't we take a 15 minute break, and we will begin again at 3:10. Thank you, everybody.

(Break.)

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

MS. NOVICKI: Thank you everybody. It's Emily. It's 3:10, so I am going to start unmuting mikes so that we can get started again. Terry, I just unmuted you in particular.

DR. BUNN: Good afternoon, everyone. Welcome back. Our next presentation is on Evaluation Capacity Building: A Gateway to NIOSH's Future Impact. Our speaker is Dr. Downes, with the Office of Policy, Planning, and Evaluation. Take it away, Dr. Downes.

MS. NOVICKI: Wait, before you start, I have to do annoying bureaucratic things, and do another roll call for quorum.

DR. BUNN: Oh, all right.

MS. NOVICKI: I'm sorry to make you guys go through this a third time, but just so we follow all the rules and procedures. If you could just say "here" when I call your name. Terry Bunn?

DR. BUNN: Here.

MS. NOVICKI: Thank you. Kyle Arnone?

MR. ARNONE: Here.

MS. NOVICKI: Thank you. Lauren Barton?

DR. BARTON: Here.

MS. NOVICKI: Tony Cox?

DR. COX: Here.

MS. NOVICKI: Cristina Demian? Mary Doyle?

MS. DOYLE: Here.

MS. NOVICKI: Thank you. Michael Foley? Jessica Graham?

DR. GRAHAM: Here.

MS. NOVICKI: Steven Lerman?

DR. LERMAN: Here.

MS. NOVICKI: Grace Lemasters?

DR. LEMASTERS: Here.

MS. NOVICKI: Patrick Morrison?

MR. MORRISON: Here.

MS. NOVICKI: Tiina Reponen?

DR. REPONEN: Here.

MS. NOVICKI: Robert Roy? Marc Schenker?

DR. SCHENKER: Here.

MS. NOVICKI: And Judith Su?

DR. SU: Here.

MS. NOVICKI: Okay. We've met quorum, so we can continue. Sorry for the interruption. You can take it away, Amia.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

EVALUATION CAPACITY BUILDING, A GATEWAY TO NIOSH'S FUTURE IMPACT

DR. DOWNES: Okay, thanks. Can you all hear me?

DR. BUNN: Yes.

DR. DOWNES: Well, thank you for the introduction, Terry. I realize I'm the last speaker of the day, so I hope my excitement for this new endeavor transfers over to you to keep us rolling to the end of the meeting.

So I'm Amia Downes, as Terry mentioned. And I came about a year and a half ago to this group to give a presentation on what we like to call the evaluation turning point.

And that really gets to the idea that we're at this point in NIOSH where we really need to take this next step toward integrating evaluation into the NIOSH culture. And so at the end of that presentation, I kind of told you that we were looking to build an evaluation capacity plan. And so now we have that plan drafted, and so I'd like to tell you a little bit about it today and get some feedback from you, but we also have a role that we need you all to play going forward as well.

But first, let me just take a step back and tell you a little bit about how we got there, for those of you who might be new to the Board since I last talked to you. And the first piece is why are we doing evaluation capacity building. And for those of you who recall the last five reviews that we did using contribution analysis, we got some pretty critical feedback. It didn't really matter what program we were talking about, if you look through any of the panel reports, you'll see some information about the importance of the panel's thought regarding our continued efforts in doing more program evaluation and doing more monitoring of what we were doing related to our strategic plan, related to each program, and social science in general, more intervention effectiveness. But there was also some feedback around translation science and doing more of that type of work.

And then when we were actually preparing for doing those reviews, we did a really rough evaluability assessment to determine which programs were ready to go through an evaluation using contribution analysis. And in our assessment, we actually got to a point where we found ourselves struggling to identify programs that really could go through that type of review. And when I say "that type of review", contribution analysis is really looking, hinges on being able to demonstrate impact through what we know as intermediate outcomes. And so being able to demonstrate those intermediate outcomes but then, even further than that, be able to substantiate those through some form of documentable evidence, which is really difficult for us because we've never really gone to that extent before.

So along with that, then we're set up in this matrix portfolio, so we have sectors and cross-sectors, so it's sort of, we're meant to overlap. But then when we put a

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

program through review, for example we have our construction and our musculoskeletal disorder program, whilst one was to go through review this year and another one was to go through next year, there's a good chance you're going to be evaluating some of the same research in each of those reviews. What does that mean in terms of resources we're putting in and the benefit that we're getting out of that? We don't really have a strategy for that.

And then the burden that it puts on the folks at NIOSH, from the staff that are working on the reviews but also, in particular, the program managers, who serve as managers for multiple programs but also as division directors, if they're having to do that in possibly back-to-back years, while also trying to run a division.

And then there's the Foundations Evidence-Based Policy Making Act which came out in 2018, and that's being looked upon very favorably among federal evaluators. It's not like the Government Performance and Results Act that most federal evaluators don't really want to be associated with at this point, but this is something really positive. So there is a lot of attention being given to this Act, and so much so that there are organizations that don't have to necessarily do anything as part of this Act, but they're voluntarily doing some of the things that are in this Act because it's being looked upon so favorably.

In fact, the Department of Labor actually coined the term "learning agenda" all the way back in 2010, and one of the things that's in this particular Act is that every agency—meaning, when I talk about "agency", I'm talking about HHS, DOL, Department of Transportation, those cabinet-level agencies—has to have an evaluation plan, which evaluators know as a learning agenda, which was developed by, first of all, by DOL, but they've been doing it for about ten years now. And what that is is essentially a list of evaluation questions that they want to answer over some period of time, and they have some dedicated money to do that, and some of that work happens with internal folks, some of that work they do through external contracts, but that's something that they've been doing for quite a while now, and they actually have a fairly big office to work on that. But they have all their umbrella groups under DOL, including OSHA, that feed into that larger learning agenda.

Then, just to go to show you how enthusiastically this Act is being received, NIH—who technically doesn't have to do anything under this Act because it's not a cabinet-level agency—has decided that they want to build their own learning agenda. And when I last heard, as of the end of May, they had developed a seven-step process to build this learning agenda, and they were already on step five. Despite all of the COVID chaos, they had kept this process moving. I can't speak as to where they are at this date, but I thought it was pretty exciting that they were already that far along.

So while NIOSH is a leader in terms of being able to collect intermediate

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

outcomes and speak about the impact that they've had, and we want to remain that way, there are some things that we have to do in terms of making refinements to our review process, and getting ourselves in a place in terms of capacity to be able to hopefully, at some point, develop our own learning agenda, but also contribute to document and improve our ability to demonstrate our impact.

So beyond just the Act itself, what's in it for NIOSH? Well, what you'll see here is sort of a diagram of the review process that we go through, as far as a typical program review as it looks now. And we can kind of talk to you a little bit about what benefits we're getting out of it and where we kind of see we need to make some refinements or changes.

So in terms of engagement of stakeholders, and this really even goes primarily for those within NIOSH. Right now, we currently, when we do these reviews, we engage mostly the program managers, coordinators and assistant coordinators, and then they pull in who they really think they need, which primarily you'll have maybe some branch chiefs or some experts who really are at a high level because they've been there a while, they know the area. But we're not getting a large number of people involved in these reviews, and we really need to because, one, that's going to help grow and help people learn about evaluations, but on the other end, as far as implementing the recommendations that come out of it, if they're not invested in it, they have no incentive or reason to then help or be involved or incentivized to eventually implement those recommendations on the other end. So we really need to get more people working on these evaluations, and preparing for these reviews going forward, and hopefully getting some more interaction with the panel, because we've heard some positive feedback from those people that participated in the reviews themselves.

Next, as far as choosing the program and setting a scope, currently, you know, we decide we want to do a program review, and we're selecting that year, okay, we're going to evaluate the Mining Program. And so for that next year, we're getting the Mining Program ready to go through review. Well, technically, evaluations is supposed to work is that you it up at, you know, the concept stage, and this is what we want to be evaluated on, these are our goals, and you kind of track your performance and what you're doing over time, at the outset, knowing what you're doing going into it. And kind of doing it like we're doing it is, we kind of have the ability to look in retrospect at what we did, and sort of, in some sense, cherry-pick what we want to present and go forward with, choose the goals we want to be evaluated on. And so, in a sense, we need to better tie our strategic planning efforts to our evaluation efforts. So maybe we're looking at a span of five years, ten years, to see how we've pre-chosen a goal and how our implementation has been of that goal over a period of time, as opposed to just

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

deciding on this year we're going to pick this program and we're going to give them a year to get ready, and evaluate it. We need to improve our approach there.

And not to say that in that five- or ten-year span there's not going to be time for course correction. We need to give ourselves—and do a little bit more process evaluation instead of just setting ourselves up to get to the end and realize, oops, we didn't meet our goal that we had set out, and we want to know more about why we didn't meet that goal, because that's very important for improvement going forward. So we need to take advantage of that opportunity.

And at this gathering credible evidence stage, while we might not be doing translation research at that stage, the whole idea is if we're doing translation research as we go, for example over this ten-year period or five-year period, we're going to be able to hopefully have those intermediate outcomes to better be able to document our impact. And hopefully we'll have a better idea of where to look for those intermediate outcomes if we're doing this type of research along the way, to be able to better demonstrate that impact, or at least, if we're planning to do this translation research, when we get to that point, we should have a better idea of what our path to getting to an intermediate outcome should be. There's a cartoon actually that, you know, you see these two men, a professor writing on a chalkboard, and it just looks like kind of like all this gibberish, and there's a blurb out somewhere that says, "And then a miracle happens." So we want to plan for these things instead of just expecting a miracle to happen at the end. And I think there's an opportunity for us to really do that if we can grow our capacity to do that.

And then we'll be working more with our review panels to have an opportunity to improve maybe the recommendations we're getting back. We've found that we are getting quite a large number of them per review, and some of them are rather broad, which, when you have a portfolio of 37-odd programs and the finite resources that we currently have, it gets a little difficult to really realistically implement all of those recommendations when they are that large in number and that broad in scope. So we really need to do a better job of hopefully narrowing down the focus of those recommendations, so when we do receive them, we have a better chance of being able to implement them fully and completely.

And also, in terms of what we can do as NIOSH to better utilize those is, you know, right now, we really do a good job at, obviously, receiving those. But we can do a better job at utilizing those. The first step is getting recommendations that we're able to feasibly use but, once we do that, we have to do a better job at actually utilizing them. And that means that we're going to have to think differently about funding opportunities and decision-making, and how we incorporate those recommendations into those opportunities, going forward, at every level of the

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

Institute.

And then, finally, the last thing is absolutely, we can better communicate the impacts that we're making to CDC, to HHS, and even to Congress. But there is another piece that we haven't even thought or maybe attempted to do, which is using that impact to maybe leverage further impacts. So for example, Company A, B and C have adopted X NIOSH intervention, but Company D maybe didn't know about this intervention, or maybe they just didn't want to adopt it. But once we say, well, Company A, B and C, your competitors, adopted it," maybe they feel somewhat influenced to adopt it. Maybe they feel guilty. Maybe it's just that they didn't know and now they're excited and they want to because their competitors have done it. So we've not really used that as a leverage point before, but we surely should probably try.

So there are some things in here that we could better leverage, better refine as far as this evaluation capacity building plan goes. And so we have big hopes, but we've got to start somewhere where we can hopefully see some early success and still be manageable for us.

So there's five topic areas that we really saw, became apparent to us as we implemented these reviews and prepared for them, but also based on the feedback that we got from the panel reviews. And again, as I sort of highlighted, looking at this process, they have to do with collecting and documenting intermediate outcomes, the implementation both of getting more feasible recommendations but then, on NIOSH's part, of utilizing those recommendations. Communicating the impacts or the intermediate outcomes, in this case, that we have. Planning longer term for how we're going to handle program reviews. And then better and more, doing a better job of implementing translation research at NIOSH.

So we came together and—with the idea of these learning agendas in mind. We developed this evaluation capacity building plan, and it was done by topical area. So with each of the topical areas that was on the previous slide, of which there were five, in this evaluation capacity building plan, you'll find a learning sheet, what we're calling a learning sheet, for each of those five areas. And you'll see a picture of it on the slide. And we actually took this format from a learning agenda that was developed by USAID, and we chose this particular format—there's no one format for a learning agenda, they kind of look very different—but we chose this one because it really kind of got to the point of what we were trying to do. It was really clear as to what our action items were, what questions we were trying to answer, what activities we needed to do to get there, as far as the key learning activities. And then the process that's really spell out—okay, for example the first key learning activity is to assess motivations and barriers to collecting intermediate outcomes. Well, how are we going to do that? Well, specifically, we

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

are going to conduct focus groups with specific groups, and then conduct interviews with division directors to find out what their motivations and barriers are so we can plan accordingly to try to improve that collection. What's going to incentivize them to do it? What are some of the barriers that we might be able to remove? And so better understanding these things from these different groups' perspective will hopefully be able to help us build the collection of intermediate outcomes into our processes moving forward.

So this is fairly clear, we hope, going forward, and which will hopefully make your job that we'll ask you to do a little later easier. And as you can see, the capacity building plan is to be implemented over a five-year period. So under the key learning activities, you can see by the end of Year 1, that first learning activity is to be completed. At the end of Year 2, the second one is to be completed. So you'll see that in each sheet, so you know when we're supposed to have each of these completed.

And each of these learning sheets within the plan is accompanied by a writeup that gives you a little bit more detail about which, what the activities in the learning sheet are, what are the process steps, what they are, in a little bit more detail. But we also wanted something that could just be a standalone sheet, so you actually just pull the sheets out of the plan and they can stand by themselves. So just briefly talking about each one of these sheets and sort of our thought process and what we're thinking with each one of them, the first question that we really want to look at is really straightforward and how can NIOSH incorporate the collection and documentation of intermediate outcomes into our processes. And again, the first step of that is what are the motivations and barriers in doing so. And then developing this further guidance on how to do that based on the information we get from those focus groups and those interviews.

For example, we still have some people that aren't quite clear on what an intermediate outcome is, and sometimes it's not even clear—it really depends on who the actor is—on whether it's a NIOSH activity or whether it's an intermediate outcome. So we need some further guidance on that.

We also need some more guidance—and this is the question of the day, even at the federal, across the federal government—is how do you find out whether people are using your stuff? How do you do that? And then there's always the Paperwork Reduction Act clearance you have to get to be able to do surveys and interviews to ask people about that sort of thing, so that's another hurdle we'll have to cross.

But then we want to do some sort of awareness and educational campaign. So once we've developed this guidance, we want to make people more aware that they should be collecting this information, why it's important, and really start talking about, from an evaluation standpoint, why it's important, and that they

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

should really start thinking about doing these things from the conception of their project planning, and not at the end when it's, you know, can be very late and almost—very challenging, if not impossible, to try to do at that point. So we have that planned in the first three years of the capacity building plan because we thought this is something we heard and we ran into over and over and over again, so we need to do this, we need it to be one of our first activities. Secondly, the use, getting recommendations and using them. You'll notice there's sort of a gap in the timeline here. We really want to do a better job of understanding what the review panels might be thinking, how we can utilize the review panels without impeding on their independence. So, interacting with them but again, and getting the most useful information in terms of recommendations, but we also know they have to give us a score in order to meet our Government Performance and Results Act or GPRA measure. So we don't want to trample on their independence to do that, but we also want to make this as useful as possible to us in terms of getting helpful recommendations. So we want to do some focus groups and some interviews with some people at NIOSH that are in different, represent different perspectives, such as researchers, those that have been through review, those who might have prepared for a review but because we stopped the reviews to do this plan, didn't go through review quite yet. And we even want to talk to some of the panel members, previous panel members, to get input from them. But because we don't want to overburden people and keep going back to those same people on different learning questions, we've decided to actually do one focus group for each of these different groups, and do it to answer questions from three different learning questions. So, in order to do that, because this particular activity will also relate to the long-term review strategy, which is going to be happening in the first three years of the evaluation capacity plan, we had to do this in the first year, even though this particular learning question, the real activity work won't be happening until 2024 and 2025. So we'll be doing the focus groups and information gathering in 2021, but we won't actually have an output which will be actually to refine how we're going to interact with the panel and what we hope to get out of those interactions, and are we going to limit the number of recommendations that we're asking for, is NIOSH going to continue to put questions forth to the panel to get answers to. That won't come out, that product from this activity, won't come out until 2025. So that's sort of why there's a gap in between this first activity and the last activity. And the same thing for this next question. Again, we're going to be doing that focus group, so that's why it needs to happen first, but in terms of answering the question of how NIOSH can better utilize those recommendations, it won't be until 2024-2025 because we need to have the long-term strategy for program reviews

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

in place first before we really can answer some of these questions about, well, how are we going to better utilize the evaluation findings and recommendations. We need to know what the strategy is first, and then we'll be able to produce a list of strategies to incorporate funding decisions and decision-making in general at all levels of the Institute, and come out with that strategy document in 2025. And then the next question is about communicating to our target audiences, and we have, we started at the end of the last five reviews, we took something that our Division of Safety Research did and tweaked it a little bit to develop these, what we call, the impact sheets, and they really kind of talk a little bit about specific activities that we did that led to specific outputs and intermediate outcomes that are really these one-page documents that we really targeted for policymakers. And what we'd like to do is, by the end of 2022, is to have those documents completed and reviewed by current and former Hill staffers. So we can actually get some feedback from them. Is this something that you would look at? Is it at a level that you can understand? Is it just going to go in that round receptacle without even being looked at? Because one of the things that we've found during these reviews that kind of confirm our claim of having impact is much of our communication material isn't evidence-based. So even if somebody adopted it, that's great, but if it's not evidence-based, it hurts our claim that it makes impact even if they adopt it. So we have to start doing a little bit more of that, and this is a way for us to even get something going to start that. We also want to do a little bit more in terms of looking at our audience, and analyzing who our audience is so we can develop more appropriate documents, or at least find out if the type of NIOSH documents that we have now are the most appropriate. And then really talk, again, to researchers, and do an educational campaign about what type of documents should we be developing for this type of target audience, and getting them to think about that as a forethought when you're developing your project, as opposed to an afterthought when you've sort of completed your project and you're thinking, okay, I have to do something other than just a peer-reviewed publication. What can I do? Something that's really going to be meant for that type of target audience based on what action you want them to take. So we are doing this communication effort as well. And then the long-term strategy for conducting program evaluation at NIOSH, we really want to do some benchmarking, to really see what other agencies are doing. We've done a little bit of this, but we want to do some more of it, so we'll be doing that in 2021. And then we want to develop a purpose statement and some objectives, because regardless of what program goes to review, the purpose and the objectives are going to be the same. The questions might be different, but those two things will stay the same.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

And then next, we want to develop a long-term strategy. So we're really going to be looking at program characteristics. What type of programs should be going through review? Again, we'll be looking at things like overlap, burden, how often should these programs go through a review based on cost/benefit? All those things will be considered in that long-term strategy.

And I'll just note that this will be for external review. In the future, we could do something for internal review or specifically for process review only. This is really for the purposes of external review.

And then finally, translation research, and this is an area that we'll be paying particular attention to, and the first thing we're going to look at is doing an environmental scan and a literature review of what's going on in this area right now. We have—there's a lot of things going on at the VA and at NIH that I think that Tom Cunningham and Rebecca Guerin believe that we can learn from and implement here. But then also maybe refining our definition of translation research, to really specifically how we're going to apply it at NIOSH. And then make sure everybody at the Institute has a shared understanding of what that is, and honing in on how that is related to r2p and not related to r2p. so we have some plans to work for the translation research program on the r2p office, for a team to work together on that.

We'll be doing some workshops to bring in some translation research expertise to come in and talk to some of our researchers, particularly those that we identify that we really think have interests in this area, or doing work in an area that we've identified as translation research based on our refined definition.

And then the last piece, we'll really be doing one or two pilot projects on a translation research topic, with one to two of our portfolio programs. What we really want to demonstrate is that this can be successful and—but it is feasible. Really, to just cement that we really should be, we really should be doing this. So I think that's something that everyone's really excited about moving forward. So, you've sat through all of this and you're probably wondering what's your ask of me, and previously when we went through the National Academy reviews, once we got, you know, the Committee reports back, we did some sort of follow-up with the BSC and asked them to assess our implementation of those recommendations. And you all did that, and we appreciated that, so we're coming back to you again, and hopefully this might be a little easier for you all, because of the way that we've tried to set this up.

And basically, what we'd like to ask is: The Office of Management and Budget requires us to have certain GPRA measures and targets, and we want to have one for program evaluation. Since we're not technically conducting program reviews for the next five years—we will be implementing this plan—we would like you to assess our progress implementing this plan.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

And so each year at your fall meeting, we'll come and talk a little bit about what we've done as far as implementing this plan, and you can really just look at those learning sheets and say, you know, what did they do? Did they actually complete this activity that they say they'd have done by Year 1 or Year 2? And we've kind of set targets up this way. So you can see that a score of a 5.0 would be "made very good progress with implementation and met all targets", with a 1.0 being "what were you doing, NIOSH, you didn't meet anything?" So hopefully they'll be very straightforward in that, and the Board can come to a consensus on what score out of five that you would give us for that particular year as far as implementing this plan.

What I'd like to ask of the Board is three questions. One has to do with how you would like that information so you could make that determination. And so when we come to you in the fall, do you just want a sort of quick, broad update of we did this, we did this, we did this. Do you want maybe just a broad, very brief, broad update and us to go into a little bit more detail on one or two activities that we've done, that we've done? For example this first year we're going to be doing some lit reviews and environmental scans on what's going on in translation research that we want to drive what our definition looks like, or some of the things that we've found in focus groups. Those types of things. Do you want that detailed information or you'd rather just have a high-level view of everything and keep moving? Would you prefer anything in writing or all just verbal? So that's my first question.

The other question is, you know, you hear the word "evaluation" and your immediate word—your immediate reaction is probably fear. So, rolling this out, do you have any ideas of how we can promote and demonstrate the value of the content within this, to researchers within the Institute? I really want to be able to show them the value of building evaluation into NIOSH's culture, and how that's going to help the Institute, and obviously them as being part of the Institute, moving forward.

And as far as barriers and facilitators to us implementing this plan, do you foresee anything that maybe we haven't thought about, to implementing this plan, that maybe we need to think about and possibly adjust the plan for?

So that would be my three questions to you all. Any feedback I could get would be very helpful. But I will turn it over to Terry and take any questions that you have.

DR. BUNN:

Thank you, Amia, and I have a few questions myself, but I will turn it over to the other members first for their comments and suggestions.

Okay, well, if there are no suggestions, as far as question number one goes, I will not be on the Board after this meeting but, in my experience, presenting progress to stakeholders, it's nice to give that high-level view but then also with a couple of

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

examples included in that. And that has served very well to really start the conversation, and to be able to provide input, and improve and enhance current processes, procedures and programs.

DR. DOWNES:

Okay.

DR. BUNN:

And I see we have a question right now from Grace. Go ahead, Grace. If you are speaking, Grace, we cannot hear you.

(Technical difficulties.)

DR. LEMASTERS:

Okay, I'm no longer muted. Well, how many programs has, have you done this whole process with this—you know, in the last year to two years? And what has been the overall feedback you've gotten? And I was wondering, are you getting ready to start this process with a new program? I wasn't clear about how far you are along with this process.

DR. DOWNES:

So we started reviewing programs using the contribution analysis framework in 2016, and we did review two that year, two the next year, and one the following year. So we've done five total, and we were about to do two more, but we kind of came to this epiphany that we should really stop and, based on the things that we were seeing and hearing, and tried to implement, or build and implement, an evaluation capacity building plan before we went any further, to try to address some of the things that we were seeing while we were preparing for these reviews, and some of the feedback that we were continually getting across the different reviews that we had done, the five that we had done so far before we put any more resources behind continuing doing more program reviews, which is what this effort is.

DR. BUNN:

Well, in the five that you've done, how did you all rate yourselves? Like, very good progress or not so much?

DR. DOWNES:

Well, we haven't done—we have not done this particular—we haven't had our progress discussed on the implementation plan or the evaluation capacity building plan, but the reviews of the actual programs for impact and relevance, they scored anywhere from a 3.5 all the way to a 5.0 in each category.

DR. LEMASTERS:

And I assume 5.0 is the highest, Amia, or?

DR. DOWNES:

Yes, it was on a basis from 1.0 to 5.0. And again, that was on relevance and impact. We haven't developed, or we haven't begun this capacity building plan. You are our last stop as far as seeking any input into the plan before we finalized it and began implementation.

DR. BUNN:

Thank you. Are there any other questions for Amia?

I myself think it's very, very useful for the programs to really know, and to really document what the barriers and facilitators are at the program level so that you're—well, first of all, aware of any potential barriers, and it really highlights the need for input into how those barriers can be overcome. And on the other side of that, with the facilitators, if there are certain facilitators that may be cross-cutting,

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

you know, through some programs, that's good information for other NIOSH programs to be aware of as well, and to be able to collect data on those intermediate outcomes.

DR. DOWNES: Thank you, Terry, that's good insight.

DR. LEMASTERS: This is Grace again. Did we do a progress—did we provide a progress update last year at the Board fall meeting? I mean, you provided a progress update, but did you provide it to us at last year's fall meeting? That's what I'm trying to recall, and how was that handled? You asked how we wanted it this fall but you'll have to remind me what happened last fall.

DR. DOWNES: I see. I think maybe there's a little bit of confusion, Grace. So this particular plan we have not begun implementing. The update I gave last fall was just that we were sort of at this point where we needed to try something a little different, instead of continuing with the program reviews as we were doing them, that we were at sort of a turning point and instead of continuing with those program reviews, maybe we needed to stop and take stock of where we were and refine some things, and build some capacity. And at that point, we were going to work on developing a capacity building plan. And so now we've developed that plan, and this is sort of our presentation of the draft plan to you, and once we've collected all the input on that draft plan—and, as I mentioned, the BSC is sort of our last group to get input from on that plan before we finalize it—then we'll go ahead and begin implementation. And next fall, we will bring the first update to you all on our progress with implementation. So, next fall will be the first update for the BSC.

DR. LEMASTERS: All right. Okay, not this year? No.

DR. DOWNES: Yes. My apologies.

DR. BUNN: Thanks for the clarification. Are there any other questions or comments for Amia? We have a very quiet group this afternoon, I have to say. All right, well, if there are no more questions, thank you very much for the great presentations.

DR. DOWNES: Thank you for having me.

**SUMMARY & WRAP-UP, FUTURE AGENDA ITEMS, MEETING DATES, CLOSING
REMARKS**

DR. BUNN: All right, so that wraps up all of our presentations for this afternoon—well, for this morning and this afternoon. I'd like to hear from all of you as to future agenda items that you would like to see or hear about in future Board of Scientific Counselors meetings.

DR. LEMASTERS: Terry?

DR. BUNN: Yes.

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

DR. LEMASTERS: I think hearing about what all NIOSH has done during the pandemic, you know, we keep hearing that they've been very busy, and I was wondering if we could possibly get a summary of what those activities are, what reports they've come out with, what worked, what didn't work, along those lines.

DR. BUNN: That's an excellent idea. Within the Director's Report that Dr. Howard produces, he does provide a good overview of those activities, but if there are certain, you know, topical areas within the COVID response that you would like to hear more about, I am sure that Emily would love to hear about those ideas.

DR. DEMIAN: Hi, this is Cristina.

DR. LERMAN: Well, I would—yes.

DR. DEMIAN: I do agree with Grace that the COVID-19 is a good topic, and I think in, probably in half a year, there is going to be a lot of progress in, even if we heard now from Dr. Howard, but would be good to get a, like, update on the activities in the spring.

DR. BUNN: Okay, all right, great. So someone else was speaking? Oh, sorry, Steve?

DR. LERMAN: Yes, it's Steve Lerman. Two things. One is a potential topic. Now that we have a new Center for Work and Fatigue Research, I'd be interested in hearing their plans, first of all. Since it's relatively early, I suspect they'll most have plans, but they may also have recent accomplishments. So I kind of would be interested in hearing about that.

And then the other thing, not related to the question is I just want to take the opportunity to thank Terry for her leadership and facilitation skills over the time certainly that I've been on this Board. Greatly appreciated.

PARTICIPANT: Hear, hear.

DR. BUNN: Thank you very much. Thank you very much. As I said before, it's been an absolute pleasure getting to know all of you in person, and to be able to hear more about all of the great work that NIOSH does. And actually it's been very informational to myself as well to really listen to all of your great comments on all of the work that is being done by NIOSH. So, thank you.

Any other future agenda items? Okay.

Dr. SCHENKER: I would say the issue of the workplace is still one very high in our minds, you know. How the fractured workplace is impacting health and safety, more temporary workers, more working from home for that matter. All these things that are happening, I think the impacts on health and safety in the workplace are profound.

DR. BUNN: I would agree. The whole change in the organization of work just in total, yes. Anyone else?

All right. I think the next thing to discuss is the future meeting date for the spring meeting. I'll have Emily take it from her as far as potential meeting dates, and whether that would be in person, hopefully, or if you would continue with a virtual

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

- meeting.
- MS. NOVICKI: Yes, it's very hard to say at this point. I mean, obviously we would prefer to meet in person but we'll just have to see how things play out over the next few months. So I think we're looking at kind of April or May for our spring meeting, and we will, you know, get in touch to survey you all for specific dates that might work for you. But that's kind of our plan right now. Hopefully in person and, if not, we'll do virtual again.
- DR. BUNN: All right, thank you, Emily. Well, this pretty much wraps up this meeting. Are there any closing comments that any of you would like to add?
- MS. NOVICKI: This is Emily. I would just like to let everyone know that we do have a Chair for next year. It's going to be Tiina Reponen. We really appreciate her being willing to step into some big shoes. So that's who will be chairing our next meeting and, once again, thank you, Terry, for your leadership in the past few years as Chair.
- DR. BUNN: Thank you, Emily—
- DR REPONEN: Well, I'll say that it's a tough act to follow but I am truly honored, and I look forward to working in that capacity next year.
- DR. BUNN: Well, Dr. Reponen will be a great Chair to carry on the Board of Scientific Counselors, so congratulations, Dr. Reponen.
- DR. LEMASTERS: Yes. We're looking forward to your leadership.
- DR. BUNN: All right. Emily, anything else before we close?
- MS. NOVICKI: No, that's it from me. Thank you all for coming and sharing your thoughts with us.
(Adjourn.)

**NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BOARD OF SCIENTIFIC COUNSELORS
September 29, 2020**

GLOSSARY

ASSP	American Society of Safety Professionals
BSC	Board of Scientific Counselors
CDC	Centers for Disease Control and Prevention
CDS	Clinical decision support
CMS	Centers for Medicare & Medicaid Services
DFO	Designated Federal Officer
EHR	Electronic health record
EMR	Electronic medical record
FACA	Federal Advisory Committee Act
HELD	Health Effects Laboratory Division
HHS	US Department of Health and Human Services
NAACCR	North American Association of Central Cancer Registries
NAICS	North American Industry Classification System
NDI	National Death Index
NFR	National Firefighter Registry
NFRS	National Firefighter Registry Subcommittee
NIOSH	National Institute for Occupational Safety and Health
NORA	National Occupational Research Agenda
ODH	Occupational Data for Health
OHE	Occupational Health Equity
PPE	Personal protective equipment
r2p	Research to Practice
SCBA	Self-contained breathing apparatus
SOCS	Standard Occupational Classification System
VPR	Virtual Pooled Registry

Certification Statement

I hereby certify that, to the best of my knowledge and ability, the foregoing minutes of the September 29, 2020, meeting of the NIOSH Board of Scientific Counselors, CDC are accurate and complete.

_____10/21/20_____
Date



Terry L. Bunn, Ph.D.
Chair, NIOSH Board of Scientific Counselors