

NCIPC Board of Scientific Counselors

September 7-8, 2016

National Center for Injury Prevention and Control
Centers for Disease Control and Prevention
Atlanta, Georgia

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**DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
BOARD OF SCIENTIFIC COUNSELORS (BSC)
Centers for Disease Control and Prevention (CDC)
National Center for Injury Prevention and Control (NCIPC)**

Twenty-First Meeting: September 7-8, 2016

1600 Clifton Road, N.E.
Building 19, Auditorium B-3
Atlanta, GA 30329

Summary Proceedings

The twenty-first meeting of the National Center for Injury Prevention and Control (NCIPC) Board of Scientific Counselors (BSC) took place on September 7 and 8, 2016 at the Tom Harkin Global Communications Center (GCC) on the Clifton Road Campus of the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia. The BSC met in open session in accordance with the Privacy Act and the Federal Advisory Committee Act (FACA). Dr. Stephen Hargarten served as chair.

Call to Order /Meeting Logistics / Roll Call / Welcome

Stephen Hargarten, MD, MPH
Professor and Chair
Department of Emergency Medicine
Medical College of Wisconsin
Chair, National Center for Injury Prevention and Control Board of Scientific Counselors

Dr. Stephen Hargarten called the twenty-first meeting of the NCIPC BSC to order at 1:06 p.m. on September 7, 2016. **Ms. Tonia Lindley** conducted the official roll call of BSC voting members and *ex officio* federal liaison members. A quorum was present. The meeting attendance is appended to this document as Attachment A. There were no conflicts of interest (COI) identified by the BSC members. However, one of the *ex-officios* identified a conflict.

- ❑ **Dr. Wilson Compton**, *ex officio* member representing the National Institute on Drug Abuse (NIDA), disclosed long-term, minimal stock holdings in Pfizer, General Electric, and 3M Corporation. He indicated that he would recuse himself from any discussion related to those entities.

Mrs. Lindley discussed housekeeping items and reminded those present to send an email to ncipcbsc@cdc.gov to confirm their attendance.

Dr. Hargarten thanked the meeting attendees, acknowledged their busy schedules, and expressed appreciation for their participation in these vital discussions to make a difference in

injury and violence prevention and control. He emphasized that the advice of the BSC is valued by NCIPC leadership. He welcomed the newest BSC *ex officio* members:

- Capt. Kelly Taylor, Indian Health Service
- Dr. Lauren Lawrence, Agency for Community Living
- Dr. Amy Leffler, Department of Justice

Dr. Hargarten provided an overview of the two-day meeting. He explained that the BSC meeting would focus on several important NCIPC priorities, including follow-up and discussion of the Pediatric Mild Traumatic Brain Injury (TBI) Systematic Review and proposed clinical recommendations. The BSC would also discuss NCIPC's follow-up on translation and outreach related to the opioid guidelines and follow-up on the BSC recommendations regarding the Web-based Injury Statistics Query and Reporting System™ (WISQARS™) Portfolio Review. Dr. Hargarten encouraged the BSC members to ask questions, provide comments, and share concerns throughout the meeting.

He also noted that two opportunities for public comments would be provided during this meeting. One opportunity would follow the presentation from the Pediatric Mild TBI Workgroup to allow for comments before the BSC vote to provide recommendations to CDC based on the contents of the report. The meeting agenda, draft workgroup report, and workgroup presentation are available on the NCIPC website.

Approval of Last Minutes

Stephen Hargarten, MD, MPH
Professor and Chair
Department of Emergency Medicine
Medical College of Wisconsin
Chair, National Center for Injury Prevention and Control Board of Scientific Counselors

Dr. Hargarten presented for the BSC's consideration and approval the minutes from the January 7, 2016 teleconference meeting and the January 28, 2016 meeting.

Motion / Vote

Dr. Angela Mickalide moved and **Dr. Samuel Forjuoh** seconded to approve the minutes from the NCIPC BSC January 7, 2016, meeting. The motion carried unanimously with no abstentions.

Motion / Vote

Dr. Shelly Timmons moved and **Dr. Joan Duwve** seconded to approve the minutes from the NCIPC BSC January 28, 2016, meeting. The motion carried unanimously with no abstentions.

Director's Update

Debra Houry, MD, MPH
Director
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Dr. Debra Houry welcomed and thanked those present in person and via Adobe Connect. She reminded them that the NCIPC BSC meeting is public, and that additional participants from the public and the media are welcome. She said she looked forward to robust discussion and public comment.

Dr. Houry described key activities of the last six months, emphasizing that NCIPC staff continue to do excellent work across the center's topic areas to prevent injury and violence. NCIPC appreciates the support of BSC regarding the Opioid Prescribing Guideline. The entire January 28, 2016 BSC meeting was devoted to the guideline and included a powerful public comment period. Many of those present were touched by the voices and stories that were heard during that meeting, which points to the importance of NCIPC's work.

When the guideline was released on March 15, 2016, there was a significant amount of media coverage, most of which was positive. There were 929 mentions of the Guideline in non-social media outlets. The Twitter reach was 22.7 million, and NCIPC and CDC leadership did many media interviews. The guideline has changed the discussion regarding how to prescribe opioids safely, as well as the conversations between patients and providers.

The response from clinicians, professional organizations, and state health departments has been largely positive, as they have expressed gratitude for the information. Many of them are using the Guideline as a standard to follow. For example, in the summer of 2016, the Opioid Prescribing Task Force in Oregon approved adoption of the Guideline. Many other medical organizations and groups are considering how to integrate the Guideline into clinical practice.

To encourage this uptake, NCIPC continues to work to make the Guideline user-friendly. The BSC meeting would include a presentation about next steps for implementation, such as fact sheets for patients and providers and pocket guides. NCIPC has developed a free Webinar series. Several thousand people have participated in those trainings. Soon, a mobile app will be available for providers to allow them to have the Guideline at their fingertips, as well as tools such as a morphine milligram equivalent (MME) calculator and guides for motivational interviewing. NCIPC also is developing a communication campaign to raise awareness among consumers about the risks of opioids, and to increase the number of consumers who avoid opioids recreationally or medically for pain management. The campaign will be piloted in the fall of 2016, and a full campaign launch is anticipated in the spring of 2017.

In coordination with the Association of State and Territorial Health Officers (ASTHO), NCIPC will release a guide for state health officers on implementation of the Guideline through non-legislative strategies. Dr. Houry thanked BSC members for their time and advice regarding the Guideline and for their help in turning the tide of the opioid epidemic.

In Spring 2016, NCIPC released two technical packages to expand state and community efforts to prevent child abuse and neglect and sexual violence (SV). The Child Abuse and Neglect Technical Package includes the following five strategies:

- Strengthening economic supports for families
- Changing social norms to support parents and positive parenting
- Providing quality care and education early in life
- Enhancing parenting skills to promote healthy child development
- Intervening to lessen harms and prevent future risk

This work supports the goals of the Essentials for Childhood, CDC's framework for promoting safe, stable, nurturing relationships and environments. NCIPC is currently reviewing the Essentials for Childhood program. BSC would hear an update on this work during the meeting. NCIPC will also ask BSC to consider the establishment of an Expert Panel to review the findings.

The Sexual Violence Technical Package is called "Stop SV." It also has five main strategies:

- Promoting social norms that protect against violence
- Teaching skills to prevent SV
- Providing opportunities to empower and support girls and women
- Creating protecting environments
- Supporting victims and survivors to lessen harms

The package includes strategies and approaches that emphasize stopping SV before it starts. It represents different levels of the social ecology, as it is focused not only on individual behaviors, but also incorporates school, community, and social structures. The Center is working on implementation guidance so that communities can determine how to implement the package.

Two additional Technical Packages are being developed:

- Youth violence, to be released in Fall 2016
- Suicide prevention, to be released in late Winter 2016-2017

Many people do not think that violence is preventable. The Technical Packages provide tools for what can be done about violence. Many advocates at the National Sexual Assault Conference have embraced the Technical Package and its multidisciplinary approach. Tools such as these can be used by communities and states to help change conversations and to work in specific ways.

On July 6, 2016, a CDC *Vital Signs* release compared US motor vehicle crash rate deaths with other countries. The press briefing included 39 participants, eight of whom were journalists. There also were 16 government representatives and 3 health department representatives. The infographic was used widely, and the headline was picked up by most major media outlets, including the Associated Press, The Hill, The Washington Post, Newsweek, CNN, and The Economist. While the US has made significant improvements in road safety, the US lags compared to other countries with similar economic and social backgrounds.

NCIPC collaborates with the National Center for HIV, Hepatitis, STD, and TB Prevention (NCHHSTP) on CDC's first release of nationally-representative data on the health risks of lesbian, gay, and bisexual (LGB) high school students. The data show that approximately 1.3 million LGB youth in the US experience physical violence, sexual violence, and bullying at levels multiple times higher than their heterosexual peers, with very serious consequences such as suicidal ideation, missing school, and others. The partnership included joint media outreach with the NCHHSTP Director, Dr. Jono Mermin, with extensive national coverage. The issue was also shared on social media, notably on Hillary Clinton's Twitter feed. This endeavor was an opportunity for Dr. Houry to talk about NCIPC's work with Green Dot, Let's Connect, and other programs to prevent violence. The experience was a model for working across centers at CDC when there is an intersection of topics.

One of CDC's significant violence tracking tools is the National Violent Death Reporting System (NVDRS). NCIPC recently announced that 40 states, the District of Columbia (DC), and Puerto Rico are funded to collect and report violent death data. NCIPC recently released a *Morbidity and Mortality Weekly Report (MMWR)* summarizing the 2013 NVDRS data from 17 funded states. With the expansion of NVDRS to 42 states and territories, a great deal more data will be available soon. Simultaneously, the *New England Journal of Medicine (NEJM)* published a prospective piece by NCIPC's Alex Crosby and Bridget Lyons titled, "Assessing Homicides By, and of, US Law Enforcement Officers." This article was timely, given recent current events. In mid-October 2016, the *American Journal of Preventive Medicine (AJPM)* will release a special journal supplement about NVDRS, with many articles using NVDRS authored by CDC authors as well as state authors from states using the data to drive action.

Firearm violence is in the news. For the past three years, the President's Budget has included a \$10 million request to address the research priorities identified in the Institute of Medicine (IOM) report, "Priorities for Research to Reduce the Threat of Firearms-Related Violence." Congress has not appropriated this funding, however, and neither the House nor the Senate budgets for fiscal year (FY) 2017 include funding for this activity. Additional detail on budget, policy, and partnerships would be shared at the BSC meeting.

Despite limited resources, NCIPC has supported and will continue to support epidemiological assistance investigations through the Epidemiologic Investigation Service (EIS). One investigation took place in Wilmington, Delaware that focused on youth homicides and firearm injuries. NCIPC is also supporting surveillance analyses such as the NVDRS reports and special supplements. NCIPC supports other data collection efforts to document the public health burden represented by firearm injuries and deaths. There are still many unanswered questions in this area, and NCIPC will continue to make progress as circumstances evolve.

September is Suicide Prevention Month, and Falls Awareness Day also is in September. NCIPC will work in several social media and communication channels. The cost of falls has risen dramatically in recent years. A recent article by CDC authors in the *Journal of Safety Research*, titled "The Direct Cost of Fatal and Non-Fatal Falls Among Older Adults in the US," includes updated cost estimates of falls for 2015. The cost of fatal falls is over \$637 million in 2015, and the cost of non-fatal falls in that year was \$31 billion in Medicare spending. These figures are similar to figures for cancer.

Stopping Elderly Accidents, Deaths, and Injuries (STEADI) is a falls prevention initiative for healthcare providers. The Oregon Health Department and the Oregon Health and Sciences University have a collaboration to prevent older adult falls. Specifically, they are leading efforts to incorporate STEADI into electronic health record (EHR) systems. This work led to a

manuscript that was published in *Geriatrics* in the Summer of 2016 titled, "Lessons Learned from Implementing CDC's STEADI Falls Prevention Algorithm in Primary Care." Older adult falls will be featured in an *MMWR* on Falls Prevention Day, including updated data from the Behavioral Risk Factor Surveillance System (BRFSS) on older adult falls and how clinicians can use the STEADI initiative to help prevent them. It will also include state-level estimates of self-reported falls.

NCIPC has been very busy with data analysis, reporting, and dissemination, as well as with research on promising injury and violence prevention strategies. NCIPC covers all bases, doing deep data dives, studying promising evidence, and translating the findings to communities. NCIPC staff work tirelessly 24/7 on these topics.

Dr. Houry thanked BSC for their time and attendance. NCIPC appreciates their involvement with their activities.

Discussion Points

Dr. Hargarten asked about the process for requesting EIS assistance, such as in the Wilmington, Delaware example.

Dr. Arlene Greenspan replied that requests usually come to CDC from state health departments, although requests can come from local health departments. The investigations are usually carried out in response to a sudden increase in deaths or injuries from a certain cause.

Dr. Mickalide serves on the Montgomery County, Maryland Commission on Children and Youth. She has encouraged her fellow panelists to focus on the opioid epidemic, based on the recent work of NCIPC and BSC. She asked if the public education kit for the Guideline will include a Power Point presentation for an informed non-clinician who may want to go into schools to talk about these issues.

Dr. Houry said that the idea is a good one. There is a Power Point presentation available on the NCIPC website, but it is not geared toward schools; rather, it is a detailed dive into the Guideline. Some of the tools on the website are intended for non-clinicians to speak with patients about opioid treatments, management of chronic pain, and other related issues. The communication campaign in the fall of 2016 will be targeted toward consumers, and different resources will be available for different markets to utilize and modify as needed.

Dr. Grant Baldwin said that they are testing the tagline and calls to action to determine which resonate. They then will be pilot-tested in some of the hardest-hit communities where state-based prevention work has been expanded in 44 states and DC.

Dr. Houry added that NCIPC is working with 61 medical schools, as part of the pledge that many of them made to the White House, to tailor curricula around prescribing guidelines. There will be an 8-10 hour education course. NCIPC also is partnering with nursing and physician assistant (PA) schools.

Regarding the work with medical, nursing, and PA schools, **Dr. Duwve** asked about an updated list and about the kind of communication that went to the schools to solicit participation. She also asked about an official call for nursing and PA schools to sign the pledge.

Dr. Houry said that initially, the White House and representatives from the US Department of Health and Human Services (HHS) reached out to deans of medical schools to assess their interest in the pledge. There have been four calls so far with those schools, in which they have discussed the technical assistance (TA) that would be helpful for them and inventorying what they are currently doing in this area. NCIPC had a partner meeting with the American Association of Medical Colleges (AAMC) to discuss how to involve schools that have not yet pledged, but still want to act. When the curriculum is posted on the website, it will be available for anyone who wants to utilize it. Their work with nursing and PA schools is early in its development. HHS has been spearheading some of those efforts, and NCIPC has participated in quarterly calls. The American Association of Nursing Colleges (AANC) coordinated over 100 nursing schools to sign the pledge.

Dr. Duwve recalled BSC conversations regarding further investigation into opioid prescribing among pediatric populations, and she asked about continuing those discussions. This issue is high on her priority list.

Dr. Baldwin replied that those conversations are still active. NCIPC has been focused on the implementation and rollout of the guideline, but they are interested in returning to the issue.

Policy Update

Sara Patterson, MA
Associate Director for Policy
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Ms. Sara Patterson offered the BSC updates on the budget, NCIPC's activities on our work with partners, and updates on our work to educate congress., and issues associated with the upcoming Presidential and Congressional transition. NCIPC is expanding work in several programmatic areas. The FY 2016 appropriation saw significant increases, particularly in prescription drug overdose (PDO) activities. NCIPC also received new funding for illicit opioid surveillance. The center now has three funding announcements to support illicit and prescription opioid activities. The Rape Prevention and Education (RPE) program received a much-needed increase for evaluation activities, which NCIPC has requested for several years. NCIPC funded state health departments and academic institutions to conduct evaluation activities. The FY 2016 appropriation also allowed for the expansion of NVDRS.

The FY 2017 President's Budget includes increases in a number of areas. NCIPC requested an increase of \$10 million to support opioid guideline distribution activities. This request was within the PDO budget line. The House and Senate budgets both include increases that would support not only guideline distribution activities, but also expanded state-based funding.

The FY 2017 President's Budget has requested a full expansion of NVDRS in 2017. Approximately \$23.5 million would allow for all 50 states, DC, and Puerto Rico to participate in the program. The FY 2017 President's Budget has continued to request \$10 million for gun violence prevention research. This item has not received funding from Congress in the past, despite being included in the President's Budget, but it has provided the opportunity to communicate about the research possibilities in this area. NCIPC engages in activities in this area that are related to surveillance.

The FY 2017 President's Budget includes a \$30 million initiative for a suicide prevention initiative. It was requested as mandatory funding, which does not follow the appropriation process. There has been conceptual interest in suicide prevention activities, and there is potential for building future support to expand work in suicide prevention; however, mandatory funding is usually applied to Medicare, Medicaid, and other similar entities.

The President's Budget also includes a \$5 million increase for a concussion surveillance system. There is considerable support for this initiative, and NCIPC has engaged in a great deal of outreach to educate policymakers about the proposal to garner support. Language has been applied to encourage this work, but no funds have been tied to it through the appropriation

There is a \$28 million increase in the Senate Mark to allow for state-based activities and guideline work related to opioids. The House Mark was more prescriptive, with \$5 million for guideline implementation and \$20 million for state-based activities. It is not clear how the appropriation process will proceed, but the possible outcomes include:

- A full-year Continuing Resolution (CR), with level funds for program across the board
- An appropriation with an omnibus bill, which would include negotiations regarding budget increases
- A Joint Resolution, which is essentially a CR, with Congress increasing funding for a few programs that are deemed to be emergency or high priority

NCIPC is following the process closely. It is anticipated that Congress would adopt a CR through the election in November 2016 and then decide whether to implement a full-year CR or to engage in the appropriation process.

NCIPC has conducted a number of Hill Briefings in 2016. NCIPC engages in a great deal of Congressional education, having trained center staff in these interactions. This year, the center has conducted the most briefings with Appropriations Committee staff of any center at CDC, including infectious diseases. One meeting often incorporates multiple topics, but many briefings have focused on prescription drug issues and the opioid prescribing guidelines. NCIPC conducted a great deal of proactive outreach to the Hill throughout the guideline development process, as it was released.. NCIPC also has communicated plans for state funding activities and has released rolling announcements on all of the programs that received increased funding in FY 2016. Suicide prevention and concussion surveillance are two other important topics for educational activities.

Earlier in 2016, Dr. Houry did a briefing with Senator Capito, which led to a site visit with the Injury Control Research Center (ICRC) in West Virginia. They spent a day at the ICRC, learning about its programs. The Senate staffers were able to see what the ICRC does on the ground. There usually is interest in NCIPC's topical areas, but less interest in the ICRCs as they are not topically-based. This site visit could be a model for additional outreach to ICRCs and Youth Violence Prevention Centers (YVPCs) in the future.

NCIPC engages in a great deal of partnership work within and external to CDC. NCIPC staff participate on many inter-agency workgroups and signed a new Memorandum of Understanding (MOU) with the National Highway Transportation Safety Administration (NHTSA). This MOU was the second between the two groups and builds upon the success of the first MOU. NCIPC works closely with the Substance Abuse and Mental Health Services Administration (SAMHSA) on a number of activities, including the suicide prevention initiative. The mandatory proposal for funding for the initiative includes SAMHSA. NCIPC appreciates its federal partners.

NCIPC also engages with professional societies, medical schools, and other external partners. For instance, the American College of Preventive Medicine (ACPM) is releasing a journal supplement on NVDRS. NCIPC also has been working with them on falls-related activities, working toward creating a Current Procedural Terminology (CPT) code for falls, and they have been tremendously supportive of the opioid guideline work, among other activities.

Dr. Houry and the Policy Lead for NCIPC's Division of Violence Prevention (DVP) attended the large summit, the United States of Women. It was a celebration of women and a testament to the work that has been done by the current administration to support women. NCIPC has done a great deal of work in violence against women and other related activities.

ASTHO and Safe States have been strong partners over the years. The ASTHO President's Challenge will be focused on substance use and its precursors, incorporating Adverse Childhood Experiences (ACE), PDO activities, and other activities.

In addition to these and other external, non-governmental partners, NCIPC has partnered with businesses and foundations. NCIPC has worked with Walgreen's and CVS, presenting on the opioid guideline and engaging in prescriber- and pharmacy-related activities. They also are interested in working on falls.

NCIPC has a long history of working with foundations and the CDC Foundation. The new President and Executive Director of the CDC Foundation is a former CDC employee, and the center has a good relationship with her upon which to build.

NCIPC's opioid-related state-based activities in FY 2016 are:

- Prescription Drug Overdose: Prevention for States (PfS)
- Prescription Drug Overdose: Data-Driven Prevention Initiative (DDPI)
- Enhanced State Surveillance of Opioid-Involved Morbidity and Mortality

NCIPC is excited about the ability to expand NVDRS to all states, and they are hopeful to maintain support to continue to build it over time.

CDC does a great deal of work at all levels to prepare for a new administration. NCIPC's Policy team is working with the Communication Office on external-facing materials, adding content to the website in areas such as the state-based initiatives. When new members of Congress are sworn in, they can learn about activities in their states easily. NCIPC also is building fact sheets and communication materials that can be shared externally.

Internally, NCIPC is thinking through issues that should become priorities, or that should maintain momentum. How should the center communicate with a new administration and new members of Congress to identify new priorities and maintain momentum on important issues? It is important not to lose the good will that has been built around issues such as suicide prevention and concussion surveillance. It will be important to learn about the priorities of the new administration and how NCIPC can support its initiatives.

Discussion Points

Dr. John Allegrante asked how NCIPC approaches new partners, and whether there is a protocol for developing new relationships. There are other professional societies that potentially could be critical players, particularly regarding education.

Ms. Patterson answered that sometimes professional societies reach out to NCIPC, and the center sometimes reaches out to them proactively. The White House has convened a group of professional societies, which HHS manages, around the opioid issue. They meet approximately quarterly, and NCIPC is represented at those meetings to the extent possible. The center is in near-constant communication with a number of societies, including groups of emergency physicians and osteopaths, pediatricians, and psychologists. When there are certain initiatives, such as the opioid prescribing guideline, NCIPC is proactive in reaching out to any professional societies that may want to be involved, and they are involved in different ways throughout the process. Societies may reach out to NCIPC for one of their initiatives. The Injury and Violence Prevention Network (IVPN) is a group of advocates from different organizations that advocate for the center and for a broad set of injury and violence issues. Many professional societies are part of IVPN. She welcomed input from BSC regarding groups that should be “on their radar.”

Dr. Hargarten congratulated Ms. Patterson on her report. Regarding Congressional briefings, he noted the importance of including local people with Congressional representatives to enhance the stories being told, and to lend local granularity to the briefing. He strongly encouraged NCIPC to continue with the model of the West Virginia example with all partners. When a Congressional briefing is held with a Maryland delegation, for instance, Maryland constituents and organizations should be included in the briefing to provide their work and perspectives alongside the national work. This approach will build constituencies. The National Institutes of Health (NIH) does this work successfully.

Regarding the opioid surveillance enhancement and NVDRS, **Dr. Hargarten** noted that some violent deaths and suicides are opioid-related. With opioid surveillance, he asked about opportunities to work together to enhance NVDRS for opioid deaths.

Dr. Baldwin said that NCIPC is interested in using NVDRS for active surveillance. He explained the PDO PfS Program, which has evolved from its initial funding to fund 29 states to do four things:

- Enhance and maximize Prescription Drug Monitoring Programs (PDMPs)
- Implement community or health system interventions
- Conduct policy evaluations for state-relevant policies
- Engage in rapid response projects: on a year over year basis, states can move 10% of their funds to focus on a “hot button” issue

The program has expanded further. The DDPI is intended to bridge to more states. PfS funds states at the intersection of burden and readiness, but DDPI is separated into two components:

- Base component
- Enhanced component

States receiving funding for the base and enhanced components are essentially PfS-like, but states with less capacity receive less funding. NCIPC heard feedback that states need more funds to build out infrastructure and attend to the core priorities identified in the PfS program. This need is addressed through the supplement. The final component of PfS is the surveillance component. NCIPC is funding 14 states to improve the quality and timeliness of data capture, leveraging emergency department (ED) data and other emergency medical services (EMS) data to achieve a more nimble perspective on how the epidemic is evolving.

The Division of Unintentional Injury Prevention (DUIP) has engaged states, such as Utah, which are using their NVDRS system for PDO work. With colleagues in the National Center for Health Statistics (NCHS), DUIP is pushing to improve the timeliness of data for both fatal and non-fatal incidents. Improved data will allow for “hot-spotting” and ensuring that resources go where they are needed, for public health and for law enforcement. The connection between public health and law enforcement is improving, with stronger relationships with the US Drug Enforcement Administration (DEA), supporting eight of the high-intensity drug trafficking areas in the US.

Dr. Houry added that these examples illustrate collaborations across divisions within NCIPC. NVDRS is housed in DVP, which is working with DUIP staff on the role of opioids in undetermined deaths.

Dr. Timmons said that those who work in the clinical area of trauma are acutely aware of the public health burden of falls. The cost data are an excellent resource, especially as costs are increasing with the aging US population. The fiscal support for falls is very small compared to other initiatives. She asked about the potential for Congressional briefings and work with the new administration to increase support for studying these problems.

Dr. Houry said that falls is a challenging issue. Many people do not want to see themselves in the normal aging process, so it is difficult to engage people in the falls issue. She added that it is challenging to define public health’s role in falls and determining how to make the public health-clinical medicine intersection more seamless. DUIP has done an excellent job of building STEADI in different ways, such as considering how emergency rooms (ERs) can use the tool. DUIP also is working with other health systems to evaluate how falls can be reduced. Return on investment and cost savings are important elements of this work. Real data from programs can demonstrate how the programs can reduce falls, and by how much. This approach answers the question from Congress and communities, “What’s in it for me?” Appealing to the traditional public health framework has not been successful for falls. Tools should be easy for clinicians to implement. EHR prompts and real-world implications are important.

Ms. Patterson said that there have been Congressional champions for falls in the past. As those champions leave Congress, NCIPC is seeking others for engagement and education to garner interest in this area. Falls Awareness Day will have many activities on the Hill, which could cultivate additional interest. She recalled what when she joined NCIPC in 2007, falls was a priority. The issue has not grown, however, and a sense of urgency is more difficult to communicate and CDC’s role is more difficult to define, particularly in relation to the

Administration for Community Living (ACL), which is where the former Administration on Aging (AoA) now resides. NCIPC is refining its message to describe their falls work differently.

Dr. Baldwin added that the goal is to make older adult falls prevention a routine part of clinical care. STEADI is the avenue to reach that point. NCIPC has an end-to-end solution, working with federal partners to connect screening to assessment and treatment to referral to community-based programs, connected to ACL that ultimately provide access to high-risk populations. The work includes working with health systems and using EHRs to broker, track, and follow-up. With the aging of the US population, fall rates overall have doubled since 2000. The “silver tsunami” is more real than ever, and there is a public health responsibility as well as a reality of life to work in this space. Once an older adult experiences a fall, there are many impacts to many areas of quality of life, such as independence, physical activity, social connections, access to services, and more. There is interest among the general public in this area. A positive approach is helpful, working through adult caregivers to begin these conversations. Dr. Houry and Ms. Patterson are encouraging DUIP to help better make the case to do more in falls prevention. There will be a push on Falls Awareness Day, and a growth in interest. There is a responsibility to the American public to attend to this issue.

Dr. Hargarten asked about the status and possibility of a National Injury Prevention and Control Conference. The US has not hosted such a conference in several years, and the World Health Organization (WHO) World Injury Conference will be held in the fall of 2016.

Ms. Patterson replied that NCIPC has discussed a national injury conference in the past. Conference support has been challenging in recent years, and it remains challenging now. Some centers at CDC have hosted, and do host, large conferences, but those examples are relatively few and far between. It is unlikely that NCIPC could host such an event.

Dr. Hargarten agreed but noted that NCIPC has an extraordinary number of partners, and Congressional briefings are ongoing. The model of having only one agency support a national conference is not likely to resonate. Alternatively, a conference could be convened by a true partnership, engaging other organizations and partners. The field would benefit from a national forum, however it could be organized.

Dr. Houry said that NCIPC could consider the issue again. When she joined the center, she was aware of the limited nature of their budget. Injury and violence encompass so many different fields and topics, which make it different from a specific infectious disease. It would be challenging to define a single topic for an injury and violence conference. NCIPC supports other conferences by sending experts, and the center typically participates in Safe States and Society for Advancement of Violence and Injury Research (SAVIR) events.

Dr. Hargarten observed that the budget for ICRCs is flat. He asked whether that line will be examined critically in a “real money” sense, as a flat budget represents a practical decline in funding. Given the recent successful site visit to West Virginia, he asked about the policy status of the ICRC budget line.

Ms. Patterson answered that in 2016, the ICRC line was the only NCIPC line that experienced a small decrease. The effect of ICRCs becoming a stand-alone line item has been that they are subject to rescissions and any across-the-board cuts at the agency or governmental level. The effect has been a decline, and there also have been programmatic declines over time. It is helpful that an appropriator is interested in the program and accompanied Dr. Houry on the site visit. NCIPC is interested in building upon that interest in demonstrating the value of the ICRC program.. The 2017 President's Budget reflects level funding for ICRCs. The House and Senate Marks essentially had level funding for all NCIPC programs, except PDO and opioid activities. In the future, they will learn about the support of the new administration for ICRCs and similar programs, such as the Core Violence and Injury Prevention Program (VIPP). These programs tend to be more difficult for people to understand, as they are not topical. Anytime NCIPC can educate about these programs to increase understanding about the topical work that they do and the importance of how the work informs the field, it is helpful. Every Congressional briefing includes communication about what NCIPC grantees are doing in any topic. This approach is another way to highlight the importance of the ICRC program.

Dr. Houry noted that the Communications staff members have been working on the role and impact of ICRCs. The value of the program can be illustrated through telling specific stories.

With no further questions or comments, **Dr. Hargarten** expressed his gratitude for the presentation and strong discussion. He dismissed the group for a break at 2:14 p.m.

Call to Order / Roll Call / Introduction Pediatric Mild TBI Workgroup Presentation

Stephen Hargarten, MD, MPH
Professor and Chair
Department of Emergency Medicine
Medical College of Wisconsin
Chair, National Center for Injury Prevention and Control Board of Scientific Counselors

Dr. Hargarten called the group to order at 2:29 p.m. **Mrs. Lindley** conducted a roll call and established the presence of a quorum.

Dr. Hargarten commended the efforts of the Pediatric Mild TBI Workgroup, which has completed an extraordinary amount of work. The group of workgroup members, ad hoc experts, and other representatives have conducted an intensive review of the literature and provided thoughtful considerations. He thanked Dr. Timmons, the workgroup chair, and BSC member Dr. Gerry Gioia.

Pediatric Mild TBI Workgroup Presentation

Systematic Review and Draft Clinical Recommendations for Healthcare Providers on the Diagnosis and Management of Mild Traumatic Brain Injury Among Children

Shelly Timmons, MD, PhD, FACS
Penn State University Milton S. Hershey Medical Center
NCIPC BSC Member
Chair, Pediatric Mild TBI Workgroup

Keith Yeates, PhD, MA
University of Calgary

Angela Lumba, MD
Washington University School of Medicine, St. Louis

Dr. Timmons expressed gratitude for the opportunity to present the work of the active, busy, and hardworking workgroup.

He reported that pediatric mild TBI represents a significant public health burden, probably due to increased reporting, but also potentially because of increases in incidence. From 2005-2009, there were approximately 2 million outpatient visits and 3 million ED visits for mild TBI in the US. Children are at increased risk for mild TBI over other age groups. While most have a good recovery, some experience problems with physical symptoms as well as cognitive and psychological functioning. A subset of those children experience long-term problems in these domains.

At the time this workgroup began its work, no current evidence-based clinical guidelines existed on best practices for the diagnosis and management of pediatric mild TBI in the US. Clinical guidance for healthcare providers on the subject is critical to improving the health and safety of this vulnerable population. The goals of the workgroup were:

To improve the diagnosis and management of mild TBI among children ages 18 years and younger by conducting a rigorous systematic review of the scientific literature, and creating evidence-based clinical recommendations for healthcare providers in both acute and primary care settings

The workgroup consisted of 21 members, 21 ad hoc experts, and 6 Federal representatives. The group convened on numerous occasions. The members were selected based on demonstrated experience with mild TBI in the pediatric population. Expertise in a wide range of specialties and professional settings, including clinical work, research, healthcare systems, and work in schools and sports environments. The ad hoc experts were invited to participate in a consulting capacity and were selected using the same criteria as the workgroup members.

All workgroup participants were required to disclose financial and intellectual conflicts of interest (COI) in 2012 and in 2016. All participants completed standardized forms, including disclosure of potential non-financial competing interests, as well as financial interests; engagement in clinical practice overlapping with potential proposed clinical recommendations; and ongoing research. The participants all disclosed that they had no COI, and disclosure statements are available in the final workgroup report.

The workgroup report is the most comprehensive review of pediatric mild TBI scientific evidence to date, summarizing approximately 25 years of scientific research. It is the first US evidence-based clinical recommendations for healthcare providers that cover all causes of pediatric mild TBI. It includes guidance for:

- Primary care
- Outpatient specialty
- Inpatient care
- Emergency care settings

The workgroup report contents include:

- Executive Summary
- Overview of the Process:
 - Selection of the Clinical Questions
 - Literature Search Strategy
- Systematic Review
- Draft Clinical Recommendations for Healthcare Providers
- Appendices:
 - Rosters for Both Workgroup Members and Ad-Hoc Experts
 - Rationale for Clinical Questions
 - Literature Search Strategy
 - PRISMA Diagram
 - Classification of Evidence Scheme
 - Evidence Tables
 - Methodology of the Recommendation Process
 - Clinical Contextual Profiles

The process began with the development of a protocol, research strategy, and clinical questions. The group then engaged in a comprehensive review of the literature and abstraction of data. The systematic review was drafted, and the evidence was graded by the group. Conclusions were then developed. The workgroup developed recommendations based on the systematic review and then compiled the final report.

The Recommendations for Healthcare Providers were developed using the methods of the American Academy of Neurology (AAN). The process was compliant with the 2010 IOM standards.

The workgroup first formulated an agreed-upon definition of mild TBI. It is one of the most common neurological disorders, but there is not a universally-accepted definition of it. For the purposes of this report, the search strategy included:

- Concussion
- Mild TBI based on Glasgow Coma Scale (GCS) scores of 13-15
- Injuries with and without the complication of intracranial injury on neuroimaging
- Injury was included regardless of potentially requiring a hospital admission and/or neurosurgical intervention

The workgroup independently nominated pertinent clinical questions using the Patient-Intervention-Comparator or Co-Intervention-Outcome (PICO) format. PICO questions must have four components:

- Population affected
- Interventions
- Co-Interventions
- Outcomes assessment

Each question was evaluated by the group using a 9-point ordinal scale of importance using a modified Delphi process. After three rounds of voting, six clinical questions were selected:

- For children with suspected mild TBI, do specific tools, as compared with a reference standard, accurately diagnose mild TBI?
- For children presenting to the ED (or other acute care setting) with mild TBI, how often does routine head imaging identify important intracranial injury?
- For children presenting to the ED (or other acute care setting) with mild TBI, which features identify patients at risk for important intracranial injury?
- For children with mild TBI, what factors identify patients at increased risk for ongoing impairment, more severe symptoms, or delayed recovery (< 1 year post-injury)?
- For children with mild TBI, which factors identify patients at increased risk of long-term (\geq 1 year) sequelae?
- For children with mild TBI (with ongoing symptoms), which treatments improve mild TBI-related outcomes?

Dr. Keith Yeates thanked the NCIPC BSC for the opportunity to present information about the literature review and data abstraction processes. The workgroup report represents a team effort.

The literature search was conducted in two phases:

- The initial search incorporated the literature published from 1990 through November 30, 2012
- The search was updated by re-running the search from December 1, 2012 to July 31, 2015

The search encompassed all major databases to locate the most relevant literature, including MEDLINE (via PubMed), EMBASE, ERIC, SPORTDISCUS, and CINAHL. After abstracts and full-text articles were reviewed by two independent experts, agreement was required at each step of both the abstract review and full-text review processes. Data from each selected article was extracted:

- By at least two experts working independently
- Using a standardized form

Any disagreement regarding the extracted elements, classification of evidence, or assessment of effect size was resolved through consensus among workgroup members.

Dr. Yeates described the large efforts of data analysis and systematic review, which included review of more than 37,000 abstracts and almost 2900 full-text articles. More than 340 articles underwent full data extraction, and almost 100 articles were included in the qualitative synthesis.

- Question 1, which focused on diagnosis, began with 6849 research articles identified by the literature search. Of those, 787 full-text research articles were identified for full-text review, 108 underwent data abstraction, and 13 were included in the qualitative synthesis.
- Question 2, which focused on the use of routine head imaging, began with 6134 research articles identified by the literature search. Of those, 212 full-text research articles were identified for full-text review, 51 underwent data abstraction, and 30 were included in the qualitative synthesis.
- Question 3, which focused on identifying features that would put children at risk for important intracranial injury, began with 6134 research articles identified by the literature search. Of those, 375 full-text research articles were identified for full-text review, 29 underwent data abstraction, and nine were included in the qualitative synthesis.
- Question 4, which focused on identifying features that would put children at risk for increased risk for ongoing impairment, more severe symptoms, or delayed recovery one year post-injury, began with 7946 research articles identified by the literature search. Of those, 490 full-text research articles were identified for full-text review, 82 underwent data abstraction, and 20 were included in the qualitative synthesis.
- Question 5, which concerned factors identifying patients at increased risk of long-term outcomes, began with 7946 research articles identified by the literature search. Of those, 635 full-text research articles were identified for full-text review, 61 underwent data abstraction, and 16 were included in the qualitative synthesis.
- Question 6, which focused on treatment, began with 2879 research articles identified by the literature search. Of those, 395 full-text research articles were identified for full-text review, 14 underwent data abstraction, and four were included in the qualitative synthesis.

The findings from the literature review and data abstraction were compiled into evidence tables. In order to judge overall confidence in the evidence, the workgroup used a modified Grading of Recommendations Assessment, Development, and Evaluation (GRADE) process. This process explicitly considered:

- Risk of bias in individual studies, reflected in the level, or class, of evidence
- Consistency between studies
- Precision, directness, and magnitude of effect relative to the risk of bias
- Presence of an expected dose-response relationship
- Direction of bias

The risk of bias in each individual study was determined using the classification of evidence scheme for different types of studies:

- Screening
- Diagnostic
- Prognostic
- Therapeutic questions

All of the articles were reviewed and abstracted by a minimum of two independent experts at each phase, requiring consensus for inclusion. The evidence tables, which are available as appendices to the report, were constructed from abstracted study characteristics.

Conclusions were derived from the synthesized evidence for each clinical question. Each conclusion evaluated four types of information:

- Class of evidence
- Measure of association
- Measure of statistical precision
- Degree of consistency between studies

Dr. Yeates shared examples of key findings for the clinical questions.

Question 1: For children with suspected mild TBI, do specific tools, as compared with a reference standard, accurately diagnose mild TBI?

BLOOD/SERUM TESTING: S100B

Conclusions: There is insufficient evidence to determine whether serum S100B, a blood-based biomarker, is a useful diagnostic indicator in distinguishing children with and without mild TBI. This issue is highlighted because there continues to be no good evidence of any particular bloodborne or other body fluid biomarker that is diagnostically useful in this scenario.

COMPUTERIZED COGNITIVE TESTING AND SYMPTOM SCALES

Conclusions: The combination of computerized cognitive testing and Post-Concussion Symptom Scale is likely to distinguish children with and without mild TBI. Many findings in the literature suggest that a combination of tools may yield the best discrimination between children who have mild TBI and those who do not.

Question 2: For children presenting to the ED (or other acute care setting) with mild TBI, how often does routine head imaging identify important intracranial injury?

CT/INTRACRANIAL INJURY FINDINGS

Conclusions: Routine head CT on children in the acute care setting possibly identifies intracranial injury in 7.5% (95% confidence interval (CI), 6.0%-9.1%) of patients.

CT/CLINICALLY IMPORTANT OUTCOME

Conclusions: Routine head CT performed on children presenting to an acute care setting with mild TBI possibly identifies injuries with clinically important outcomes in 1.9% (95% CI, 1.3%-2.5%) of patients. These findings suggest the general trend that head imaging is not indicated.

Question 3: For children presenting to the ED (or other acute care setting) with mild TBI, which features identify patients at risk for important intracranial injury?

YOUNGER AGE (LESS THAN 2 YEARS OF AGE)

Conclusions: Age < 2 years at the time of the mild TBI is likely associated with a small increased risk of important intracranial injury (ICI), but is not likely associated with an increased risk of important ICI requiring neurosurgical intervention. However, the relative risk is relatively small.

GLASGOW COMA SCALE SCORE AT PRESENTATION

Conclusions: Children presenting with a GCS of less than 15 following mild TBI are highly likely to be at a moderate increased risk for ICIs (RD 7.5%, 95% CI, 6.2%-8.8%).

CLINICAL DECISION RULES

Conclusions: Validated prediction rules are highly likely to be useful in identifying children at low risk for important ICI, in part because no single risk factor was associated with a substantial increase in the risk of important ICI.

Question 4: For children with mild TBI, what factors identify patients at increased risk for ongoing impairment, more severe symptoms, or delayed recovery (< 1 year post-injury)?

PREMORBID FACTORS—NEUROLOGICAL/PSYCHIATRIC PROBLEMS

Conclusions: Pre-morbid factors such as neurological/psychiatric problems, learning difficulties, behavioral problems, and post-concussion-like symptoms are highly likely to be associated with an increased risk of persistent symptoms and behavioral problems 3-6 months post-injury in children with mild TBI who present to an ED and likely associated with an increased risk in children with mild TBI in general. The confidence level is high for children with mild TBI presenting to an ED and moderate for children with mild TBI in general, largely because the studies examining this question have concerned children who were identified in the ED. Far fewer studies focused on the general population of children with mild TBI.

PREMORBID FACTORS—PRIOR HISTORY OF mild TBI

Conclusions: History of prior concussion is likely associated with a longer period until symptom resolution and higher rates of medical retirement in high school athletes after concussion and may be more likely when the injury is sustained while playing football. Additional evidence is needed to determine whether repeat concussion is associated with prolonged resolution of symptoms or higher rates of medical disqualification in mild TBI in general.

Question 5: For children with mild TBI, which factors identify patients at increased risk of long-term (≥ 1 year) sequelae?

INTRACRANIAL LESION AND POSTCONCUSSIVE SYMPTOMS

Conclusions: The presence of an intracranial lesion on magnetic resonance imaging (MRI) may be associated with an increased risk of increased cognitive symptoms after mild TBI at 12 months post-injury, called “complicated mild TBI,” when it occurs in children of lower cognitive ability.

PRE-INJURY FAMILY FUNCTIONING AND PSYCHIATRIC OUTCOME

Conclusions: Poor pre-injury family functioning likely places children at elevated risk for novel psychiatric disorder 6-12 months after mild TBI. This conclusion reinforces the importance of looking at contextual factors in predicting outcome. Recent publications indicate that a combination of factors will probably best predict who will show persistent symptoms over the short and the long terms.

Question 6: For children with mild TBI (with ongoing symptoms), which treatments improve mild TBI-related outcomes?

AMANTADINE

Conclusions: In children with mild TBI with ongoing symptoms, there is insufficient evidence to determine the therapeutic efficacy of amantadine.

STRICT REST/POSTCONCUSSIVE SYMPTOM SCORE (SYMPTOM ASSESSMENT)

Conclusions: There is insufficient evidence to support or refute an effect of strict rest on symptoms in children with mild TBI. This is an ongoing issue of importance in the field as practitioners wrestle with how long, and whether, strict rest is required after a concussion.

The problem of insufficient evidence is reflective of the relative paucity of good research in the area of treatment of mild TBI and concussion in children. One of the workgroup’s recommendations focuses on the great need for more research in this area.

Dr. Angela Lumba described the draft clinical recommendations for healthcare providers. The goal of the recommendations is to improve healthcare for children with evidence-based guidance for healthcare providers on the diagnosis, prognosis, and management and treatment of mild TBI. If implemented consistently, recommendations supporting organized and consistent care following pediatric mild TBI are critical to recovery and reintegration into daily activity.

The workgroup created 46 draft clinical recommendations within three categories:

- Diagnosis: 11 recommendations
- Prognosis: 12 recommendations
- Management and Treatment: 23 recommendations

The categories were established upon consensus from workgroup members to encompass the broad, but key aspects of clinical care for children with mild TBI. The draft clinical recommendations were developing using methods from AAN. To provide a basis for these recommendations, existing evidence was analyzed in the systematic review, which encompassed a literature search from January 1990 through July 2015. Related evidence included studies on adult mild TBI, moderate to severe TBI in children, and studies involving

mixed age groups, to provide a rationale and support for each recommendation. Scientific principles and expert consensus inference also informed the development process.

The 46 draft recommendations were established upon four rounds of workgroup member voting following ad hoc expert consultation to determine consensus using a modified Delphi process. In the process, 80% of the workgroup were required to be in consensus for each individual recommendation.

Following AAN methodology, levels of obligation were assigned to each draft recommendation upon completion of the four rounds of voting. The majority of the draft recommendations are categorized as Level B.

- Level A: (Must do) Almost all patients in almost all circumstances would want the recommendation followed
- Level B: (Should do) Most patients in most circumstances would want the recommendation followed
- Level C: (May do) Some patients in some circumstances would want the recommendation followed
- Level U: No recommendation can be made
- Level R: Do only in a research setting

Three topical areas in the diagnosis of mild TBI were identified by workgroup members and ad hoc experts as being of particular clinical importance:

- Risk factor identification and diagnostic imaging, including head CT, brain MRI, single photon emission computed tomography (SPECT), and skull X-ray
- Neuropsychological tools, including symptom scales, computerized cognitive testing, and the standard assessment of concussion
- Biomarkers

All of these areas for the diagnostic, and the following prognostic, draft recommendations were directly related to the systematic review. The following five topical areas for prognosis of pediatric mild TBI were identified as being of particular clinical importance:

- General healthcare provider counseling of prognosis
- Prognosis related to pre-morbid conditions
- Assessment of cumulative risk factors and prognosis
- Assessment tools and prognosis
- Interventions for mild TBI with poor prognosis

Eight topical areas were identified as being of particular clinical importance for the management and treatment of pediatric mild TBI. They are grouped into two domains.

General areas of treatment for patients and families

- Patient and family education and reassurance
- Cognitive and physical rest and aerobic therapy
- Psychosocial and emotional support
- Return to school

Symptoms and/or problem-specific treatment and management

- Post-traumatic headache management
- Vestibula-ocular treatments
- Sleep
- Cognitive impairment

While these 46 draft clinical recommendations are important to aspects of the diagnosis, prognosis, and management of mild TBI in children, understandably, the scope and specialty of various healthcare providers make certain recommendations more applicable in certain settings. Dr. Lumba highlighted several key recommendations from the workgroup.

Example: Draft Recommendations on Diagnosis

Healthcare providers *should* use validated clinical decision rules to identify children at low risk for ICI, in whom head CT is not indicated, as well as children who may be at higher risk for clinically important ICI, and therefore may warrant head CT. Existing decision rules combine a variety of risk factors, including the following:

- Age < 2 years old
- Vomiting
- Loss of consciousness
- Severe mechanism of injury
- Severe or worsening headache
- Amnesia
- Nonfrontal scalp hematoma
- GCS < 15
- Clinical suspicion for skull fracture

The systematic review determined that there is strong clinical evidence that the use of clinical decision rules is effective in identifying children at low risk for ICI. The use of these rules may minimize the risk of failing to identify important ICI while avoiding unnecessary radiation exposure from head CT. There is moderate evidence that several risk factors utilized in clinical decision rules to identify children with mild TBI also identify those with increased risk for ICI. Many clinical decision tools are widely available and can be applied quickly and inexpensively, and assist in a mild TBI diagnosis in the acute setting.

Example: Draft Recommendations on Diagnosis

Healthcare providers *should* use an age-appropriate, validated symptom rating scale as a component of the diagnostic evaluation in children presenting with acute mild TBI.

While the systematic review included two specific symptoms scales, review of related evidence demonstrated the reliability of several symptom scales in the diagnosis of pediatric mild TBI at younger ages as well. Notably, symptom scales can be applied quickly and inexpensively in the diagnosis of pediatric mild TBI in the acute setting. The consequences of missing a diagnosis of mild TBI include failure to recommend appropriate treatment and management that may contribute to prolongation of symptoms and increased risk for re-injury.

Example: Draft Recommendations on Prognosis

Healthcare providers *should* counsel patients and families that the large majority (70%-80%) of children with mild TBI do not show significant difficulties that last more than 1–3 months post-injury.

Healthcare providers *should* counsel patients and families that although some factors predict an increased or decreased risk for prolonged symptoms, each child's recovery from mild TBI is unique and will follow its own trajectory.

These recommendations stem from evidence analyzed in the systematic review as well as related evidence demonstrating that recovery from pediatric mild TBI is variable, and no individual factors definitively predict recovery of symptoms or outcome, although the majority of children experience resolution of their symptoms by three months post-injury.

The cornerstone of healthcare relies on counseling patients and families. Evidence demonstrates that healthcare outcomes are optimized through patient health literacy, and the resulting behavior modifications.

Example: Draft Recommendations on Prognosis

Healthcare providers *should* counsel children and families completing pre-participation athletic examinations and children with mild TBI as well as their families that recovery from mild TBI might be delayed in those with:

- Pre-morbid histories of mild TBI
- Lower cognitive ability (for children with an intracranial lesion)
- Neurological or psychiatric disorder
- Learning difficulties
- Increased pre-injury symptoms (i.e., similar to those commonly referred to as "postconcussive")
- Family and social stressors

This draft recommendation is based on analysis of data from the systematic review demonstrating that certain pre-morbid histories are associated with delayed recovery. Eliciting this medical history is prognostically important to a child's clinical evaluation prior to participation in sports or risky play, as well as for those who already sustained injury. This recommendation is seeded in the principle that educating and counseling patients and their families is an important aspect of thoughtful and effective medical care.

Example: Draft Recommendations on Prognosis

Healthcare providers *should* use a combination of tools to assess recovery in children with mild TBI.

Several tools have demonstrated utility in the assessment of individual patients in their recovery from mild TBI, upon review of evidence in the systematic review as well as related evidence. No single assessment tool is strongly predictive of outcome in children with mild TBI, as patient recovery trajectories can differ across specific domains of assessment, including symptom report, cognitive test performance, and balance testing. Therefore, utilization of a combination of these tools is most effective.

Example: Draft Recommendations on Treatment and Management

In providing education and reassurance to the family, the healthcare provider should include the following information:

- Warning signs of more serious injury
- Description of injury and expected course of symptoms and recovery
- Instructions on how to monitor post-concussive symptoms
- Prevention of further injury
- Management of cognitive and physical activity/rest
- Instructions regarding return to play/recreation and school
- Clear clinician follow-up instructions

Public health campaigns emphasize the importance of patient and family education in mild TBI. Health outcomes in general are optimized through patient health literacy and the resulting behavior modification. Evidence analyzed in the systematic review and related evidence supports patient and family education and reassurance as key components of the mild TBI recovery care initiative and ED discharge instructions. Evidence demonstrates that standardized processes of evaluation and discharge instruction provide significant benefit to pediatric mild TBI patient outcomes.

Example: Draft Recommendations on Treatment and Management

To assist children returning to school following mild TBI, medical and school-based teams *should* counsel the student and family regarding the process of gradually increasing the duration and intensity of academic activities as tolerated, with the goal of increasing participation without significantly exacerbating symptoms.

There are limited specific recommendations regarding return-to-school processes for children following mild TBI due to a paucity of evidence. This draft clinical recommendation and those related to it in the full document aim to provide healthcare providers with further evidence and expert consensus-based guidance with patient management during their return to school. Because post-concussive symptoms resolve at different rates in different children after a mild TBI, individualization of return-to-school programming is necessary.

It is remarkable that after the systematic review of more than 37,000 over the last 25 years, research gaps remain that need attention. After review of the immense body of literature, workgroup members highlighted several areas in urgent need of quality clinical research. A few of these areas are:

- Evaluate the incidence and clinical meaningfulness of ICI findings on MRI, including “ultra-fast” MRI studies: while there is a developing body of research regarding use of MRI in the diagnosis and prognosis of pediatric mild TBI, there is insufficient evidence to support its routine use in the acute setting at this time
- Refine clinical decision rules for brain imaging in specific subpopulations of children with mild TBI
- Many published guidelines focus on sports-related injury or older patient populations: this literature review identified the need to assess the effect of gender and age at injury on early symptoms and impairment after mild TBI among children and youth
- Understand the relative effects of pre-morbid factors compared to injury factors on the risk for more severe symptoms or delayed recovery

- ❑ Examine the risk factors for long-term negative outcomes following mild TBI in children, especially over intervals extending beyond one year post-injury
- ❑ Assess long-term outcome in studies extending into adulthood to better examine the likelihood of negative outcomes during adulthood and the risk factors that predict them
- ❑ Without quality research on mild TBI treatments in the form of randomized controlled trials (RCTs), it is not possible to confidently interpret evidence that may translate to best practices in the care of children with mild TBI.

Dr. Timmons thanked Drs. Yeates and Lumba, noting that they performed the “lion’s share” of the writing and analyses for the document. She further acknowledged the workgroup members, ad hoc consultants, and government representatives. The document also acknowledges them. She thanked Kelly Sarmiento for championing the entire effort and thanked specific workgroup members for their guidance through the process of the systematic review and recommendation development. She indicated that the document has a detailed appendix of references.

Discussion Points

Dr. Hargarten opened the floor for comment from BSC members.

Dr. Gioia, one of workgroup members, recognized that pulling the literature together was a large task. Upon review of the final set of articles, a set of research gaps in important areas became clear. The workgroup was able to glean a variety of trends and make informed recommendations, but perhaps not with the greatest level of specificity and not in ways that would allow for comparison of younger children versus adolescents, boys versus girls, and the mechanisms of injury. With a focus on sports-related injury, there is a relatively sparse amount of research on other mechanisms of injury in mild TBI. The workgroup noted the need for additional research while trying to create informed clinical recommendations so that practice can move forward in an informed way. There is still a long way to go. The workgroup recommendation to strengthen funding mechanisms to understand these questions with greater specificity is critical.

Dr. Timmons agreed and added that another important conclusion is the need to understand the feasibility of the various tools that can be provided for diagnosis and prognosis in order to differentiate a patient with mild TBI versus another patient with other, pre-existing conditions that might require neuropsychiatric or cognitive testing. The availability of those resources is not universal. She hoped that one of the results of the workgroup document will be understanding what is required to diagnose this injury and to begin treatment paradigms that are yet to be identified.

Dr. Greenspan referred to the importance of age-appropriate clinical tools and the need for clinical tools. She asked if the problem is that the tools are not widely available, or that they still need to be developed and validated.

Dr. Gioia replied that the problem is a combination of both factors. Symptom scales, for instance, are now more widely available. He frequently receives requests for the symptom scale that he participated in developing, with CDC assistance. This injury involves a variety of functions. For instance, the vestibular-ocular-motor areas are relatively newer and have not been developed for children with these injuries. Even with computerized measures for cognitive tests, the tests have largely focused on adolescents and young adults, not on younger children. Cognitive tests for younger children are available, but they do not necessarily use paradigms with sensitivity to the problem of mild TBI in young children. Balance measures, for example,

have borrowed from the sports world. These measures began with collegiate athletes and then moved to the high school level. The measure has not been studied well in younger children. Some fundamental aspects of the injury's expression are lacking, especially for younger children. Some tools, such as some of the symptom scales, show reasonable sensitivity and validity, as well as ability to track recovery. It should be communicated that these tools are available and should be used more widely.

Dr. Duwve asked about the recommendation related to healthcare providers providing counseling about issues such as learning difficulties and family and social stressors. These terms can be interpreted and applied in many different ways. She asked whether the recommendation will be accompanied by more direction to healthcare providers about how to do that counseling. She hoped that it would not be implied that issues such as family and social stressors might delay recovery or have a chilling effect on children participating in sports. What are "family and social stressors" and which learning difficulties specifically might result in poorer prognosis?

Dr. Lumba answered that different aspects of family life and social stressors are related to prolongation of symptom etiology and overall poorer prognosis. For that reason, these issues should be discussed with the family. This document does not provide specific ways in which a physician might raise these issues with a family. The interaction will depend on the individual situation and relationship, but it should be discussed. For instance, if a high school football player is under a great deal of stress at school but wants to return to sports, this situation should be raised by the physician and discussed with the family so that the stressors can be ameliorated.

Dr. Yeates added that plans are in place to work specifically on various forms of implementation and dissemination of the workgroup recommendations. This step will presumably include the issues that had been raised in the BSC discussion thus far, such as raising awareness about the availability of standardized rating scales and providing guidance on assessment of pre-morbid status. Issues of implementation are important and are a next step after the vetting of the report and the draft recommendations. He agreed that it is important to "put the rubber on the road" and help all kinds of healthcare providers who work with children with mild TBI to follow the recommendations, when they are out of draft form.

Dr. Houry said that the discussion is helpful. The BSC is considering the workgroup report so that it can be honed and framed into a guideline, which will undergo the public comment process. She hoped for feedback from BSC about specific questions and thoughts about the workgroup report, including which tools should be developed and how, and whether the report is missing any issues or is too much for its audience. The process will lead to implementation. NCIPC supports providing tools that the field can use.

Dr. Baldwin said that NCIPC staff have thought about the potential point-of-care, clinically relevant implications of the workgroup report and draft recommendations. He also has questions about implementation of the recommendations, and the workgroup has also discussed these questions. The workgroup was tasked with commenting on issues that are supported by the literature, which is different from point-of-care, clinical decision supports, and clinically relevant information. Ms. Sarmiento, thanks to her experience with the Heads Up! campaign, is savvy regarding implementation and translation needs. There will be a suite of well-thought-out, grounded, sensible, practical tools that clinicians across practice settings can use.

Dr. Gioia added that in making these recommendations, the workgroup relied as much as possible on the direct evidence specific to the questions that were posed. In all areas, including counseling families and prognosis, they focused on the research evidence that can underlie translation into that domain. There was a paucity of direct evidence; however, related evidence was available. For example, there are data from Dr. Yeates and his colleagues on the effect of family functioning and its impact on outcomes in moderate to severe TBI. The workgroup used that related literature to apply to the treatment and management of a family of a child with mild TBI. The recommendations draw on both of those sources. The workgroup also reviewed literature on adults and asked whether it might apply to a younger population. They attempted to base as much as possible on direct evidence, but they had to cast a broader net to address important questions. From this work, various levels of intervention and management will materialize. The group focused on the Management and Treatment component of the report drew on a fair amount of related evidence. For instance, they knew that the issue of sleep is very important, and that headache management is a critical factor. Children's challenges with cognitive, social, and emotional factors are important factors. There is limited direct evidence to support these ideas, but it may be possible to draw on evidence pertaining to disorders of a similar nature. Ultimately, the recommendations are to research these areas to further validate their use and applicability to age, gender, severity of injury, and other factors. These questions are important and pose a challenge for translation to practical tools and strategies.

Dr. Timmons said that previous TBI-related guidelines have been developed with the same paucity of available literature. The greatest value in the development of the guidelines has been its effect of spurring research into the specific validation of those tools. She expressed optimism that these guidelines will provide a roadmap for future pediatric mild TBI research. They will also provide a roadmap for Ms. Sarmiento and her team to educate healthcare professionals regarding consultation with families about pre-morbid risk factors. The greater medical community may not be aware of these issues, which represent massive problems for all levels of providers at all levels of experience. The educational value and raising awareness of the issues and risk factors are of significant value.

Dr. Christina Porucznik agreed that some of the recommendation statements will be helpful in beginning conversations about several issues, such as why imaging may or may not be chosen. However, she expressed concern that because of a lack of evidence, there is a resulting lack of specificity in the recommendations. It will be difficult to evaluate the impact or implementation of the recommendations. It is not clear how to be more specific when so little evidence is available, but as the process moves forward, she encouraged as much specificity as possible to that evaluation can be conducted.

Dr. Timmons noted that the more detailed draft document has more specificity in the discussions of clinical decision rules and symptomatology for a workup that might be indicative of a more severe injury.

Dr. Gioia said that the PCARN decision rule on the use of CT is a good example of that point. He said that the cutoff date for the literature search was July 2015. A large study was released in 2016 by the Canadian 5P group that adds important information. It was considered as related evidence in development of the recommendations, but because of the literature search deadline, the specific evidence in that study was not included. The study has good evidence regarding early predictors of more prolonged recovery. It studied more than 3000 children out of an ED setting and considers clinical rules for counseling families. The guideline and recommendation process is evolving.

Dr. Timmons added that if the BSC decides to move forward with the draft report, the process will include a public comment period for more detailed input. There likely will be good information in the public record regarding such data.

Dr. Mickalide observed that the report has relatively little information about mild TBI among children under the age of five. She asked if the evidence is limited related to this young age group who are not able to report symptoms such as headache, dizziness, and loss of memory. What do we know, and should we be doing more research?

Dr. Gioia said that the tools that he has developed for mild TBI in children are for children aged five and up; they require a verbal participant. This area is clearly one of need both for research and for clinical practice.

Dr. Timmons said that the draft report notes even more of a dearth of information for children aged less than two.

Dr. Gioia said that parents ask, "What do I look for?" when a young child has bumped his head. His answer is, "You know your kid the best." He recommends watching for changes in how the child is functioning in various ways. There is little else to go on.

Dr. Valerie Maholmes applauded the workgroup for this wonderful effort. She asked the workgroup to describe the exclusion criteria for studies in the literature review.

Dr. Timmons said that age criteria were exclusionary, as were studies with mixed populations of adults and children and studies that included other, non-traumatic etiologies.

Dr. Lumba added that the review included only studies for which data could be abstracted. If the study was mixed, the outcomes needed to be clearly identifiable for children aged 18 years and less. A few quality studies were not included as evidence for the systematic review, but they were used as additional evidence for the recommendations.

Dr. Gioia said that the first gathering of 8000 articles came from using broad search terms. Some of the initial articles obviously were not relevant upon closer examination. A number of studies from good investigators had mixed groups of children and college-age individuals, and the population could not be split out to determine the effects for children alone. Other studies focused on more severe injury mechanisms than mild TBI or used such a vague definition for mild TBI that they could not be included. It was important, therefore, for two independent people to review the studies.

Dr. Timmons commented that the challenge facing TBI research in general was no different regarding outcomes assessment: longer-term outcomes, using the same types of outcomes measures to compare.

Dr. Lumba added that if the data were not clearly identifiable regarding whether it referred to mild, moderate, or severe TBI, the study was excluded. She noted that Dr. Yeates described the six clinical questions that the group used to hone the systematic review. If a study did not apply to one of those questions, then it was excluded from the systematic review.

Dr. Gioia said that the criteria also required a minimum of 15 participants in the TBI group. Very small studies were therefore not included.

Dr. Allegrante endorsed the report from the workgroup. He echoed thanks for the effort that the workgroup put into the systematic review. He thanked the group for considering longer-term implications for education, academic achievement, and school performance, given that these injuries occur at clinical moments for brain and social development. The implications for education are profound. While the focus of the report is on clinical and medical practitioners, he hoped that NCIPC would continue the focus on schools. School authorities and teachers also need to know how to deal with mild TBI in the longer term.

Dr. Timmons agreed and was pleased that the group focusing on that set of recommendations emphasized individualized treatment paradigms and working with teachers, parents, coaches, principals, and other important figures. As a clinician, she is frustrated by trying to explain that each child is different and will need a different plan. It is sometimes difficult to accommodate individual needs in school systems.

Dr. Lumba noted that the draft recommendations raise the idea of a level of obligation for the pediatrician and the school. Healthcare providers should ask about a child's social structures and school structures. Those conversations are not always held. These draft recommendations point out things that can bring parents, teachers, and healthcare providers into the same loop to support care for a child in school and at home. Many healthcare providers and school personnel inherently know what to do or would suspect what to do. The draft recommendations establish evidence to support those courses of action. By default, the recommendations can be tools for providers to use.

Dr. Gioia said that the school element of mild TBI was recognized as a critical outcome area for the report. There is still a need for additional evidence to support the recommendations, but the related evidence was strong enough for the workgroup to make guiding statements. More and more literature is emerging regarding returning to school after mild TBI. In his experience as a clinician, parents and students are more worried about failing in school than they are about returning to play. This area is very important in terms of creating individualized strategies and approaches not only with the students themselves, but also with the school systems at elementary, middle, and high school levels.

Dr. Mickalide described the Phoenix Society, which is an organization that helps burn survivors. That group has developed a toolbox for schools to help children who have experienced burns reintegrate into the school setting. The toolkit includes resources for teachers, administrators, fellow students, and for the children themselves. She asked about a similar toolbox for TBI and whether such a toolbox could be developed based on the outstanding workgroup report.

Ms. Kelly Sarmiento said that the action plan states that children should return to school before they return to play. NCIPC developed an initiative called "Heads Up to Schools," which was launched in 2010. Dr. Gioia contributed to the process. It includes information for school nurses, teachers, and other school professionals, given that school nurses often serve multiple schools and there are other designated health officials at schools. It underwent formative testing and evaluation, and it has received positive feedback from schools. The initiative includes general information as well as school-based strategies based on a child's individual symptoms. A "return to school" fact sheet is very detailed and utilizes a team-based approach. Information is also included for parents, with take-home handouts, and checklists for school nurses to monitor children at the point of injury and at time intervals after the injury. That checklist can be shared with the referring physician. The target audiences of "Heads Up" materials have historically been gatekeepers: parents, coaches, healthcare providers, and

school professionals. More recently, NCIPC is building materials for young people. A gaming app is in development for six- to eight-year-olds. They are using validated symptom information to determine what young children will understand about concussion. The app had positive pilot testing. Formative testing is ongoing, looking at messaging for students, peer-to-peer influence, and a “good teammates” hashtag, which focuses on being a good friend and teammate both in and out of the school setting. This aspect of the work incorporates the importance of reporting symptoms. Certain sports see high levels of under-reporting, and the reporting varies by level of athletic competition, gender, and other factors.

Dr. Baldwin added that the lead of the TBI Team at DUIP is also looking at the larger “return to learn” programs, such as programs in Colorado and Pennsylvania. He anticipated that CDC would take more interest, and devote more resources, to “return to learn.” They are in the process of doing avaluability assessment and feasibility of those programs.

Dr. Allegrante had been concerned about teacher preparation for students returning to the classroom after a head injury. He assumed that the workgroup report will lead to a series of peer-reviewed papers for specialty journals. If that is the case, he suggested that the workgroup focus on audiences of school leadership. A number of journals deal with school health and those issues.

Dr. Maholmes commented that the National Association of School Psychologists (NASP) could be a good partner. This group engages in neuropsychological testing and works with teachers on issues of behaviors in classrooms. They also communicate results of testing with parents.

Dr. Timmons said that there is a major appetite for that connection. The workgroup has discussed efforts to disseminate information with specialty societies, as there was broad representation from these groups on the workgroup. Formal feedback will be solicited from those groups as part of the public comment process as the report moves forward.

Dr. Gioia noted that in addition to schools, there is interest from physicians regarding how they can facilitate the return-to-school process. One of the largest unanswered questions is the level at which a student is sent back to school. He supports sending students back to school when they are still symptomatic, and having tools available to support the student in school. School psychologists, counselors, and nurses, and in some cases, athletic trainers comprise an internal health team in some schools. Community physicians also play an important role in the handoff from the medical provider who diagnoses and defines the injury to the health team in the academic setting. There are shared educational opportunities to make that transition smooth.

Dr. Deborah Gorman-Smith spends a great deal of time in inner-city schools in Chicago, where these issues are not part of the conversation. These populations have also been left out of the research, given the number of other issues that need focus. She wondered how to make return-to-school a priority within schools, integrating other populations and contacts into the work.

Dr. Hargarten agreed and added that healthcare systems play a role in partnering with the schools. In Milwaukee, the Children’s Hospital systems put nurses in school settings. Issues of resource maldistribution in public settings spill into the implementation phase of the recommendations and the challenges that lie ahead, even with the strength of the recommendations. How will they be effectively managed? Regarding settings of diagnosis and treatment, a focus on acute care settings will send a broader message to family medicine physicians or advanced practice providers in the urgent care setting that see mild TBI cases. A

broader audience should be informed by the guidelines. He suggested that the workgroup members and contributors should be explicitly described in the layout of the final report so that readers can understand the broad reach of experts that have informed the document. This broad perspective and dedication has stand-alone importance.

Dr. Timmons observed a lack of follow-up for many children. Often, children are assessed acutely after an injury and are seen three months later when problems emerge. Making the diagnosis early is important so that patients and families are connected to appropriate resources and so that children do not fail. The point regarding under-resourced school systems is important and valid. Parents and schools may be asking for help and not talking to each other, and healthcare providers may not be involved. The more that these ties can be cemented for this team effort between families, schools, and health systems, the more children will be helped.

Dr. Gioia said that this issue is a national challenge. Some areas may be making progress because of a node of experts in mild TBI who work with communities and schools. A great deal of work remains to be done, and implementation is a significant challenge. He recalled a CDC-funded study in which he participated, which studied what students and parents were told when they left EDs after a head injury. In this study, the majority of students were not going to their pediatricians for follow-up care. With simple, standardized discharge instructions, the study doubled the follow-up care. The study also included a "return to school" letter, which quadrupled the amount of support services that children received in schools. The rates are still low, having gone from 4% to 17%, but the study indicated that low-cost approaches can have dramatic effects on the care that children receive. The best benefits were for the more disadvantaged families that did not have available resources. When they were given resources, they acted on them, and children had more support.

Dr. Baldwin said that many lessons have been learned about guideline implementation through NCIPC's older adult falls prevention work. Health information technology (IT) is a strong avenue for implementation, through EHRs or other health system infrastructure that can ensure a standard of care and continuity of care across practice settings.

Dr. Hargarten said that healthcare systems want to see more and more standardization, especially as they are more engaged in population health. This population deserves a systematic approach, and the timing is good.

Dr. Timmons added that CDC will play an important role in this work. There is an important balance to manage between avoiding over-diagnosis and not alarming a population, and ensuring that diagnoses are missed and resources are not obtained for treatment. When a patient goes to the ER and has no structural injury, the message may be, "you're fine." The more that systems can play a role in education, there will be a chance to make a large impact in public health.

Dr. Houry thanked the workgroup and the BSC for their time and the good discussion.

Dr. Greenspan commended the workgroup for their efforts. She clarified that following public comment, the BSC would be asked for a vote to accept the workgroup report and for any recommended changes to it. She asked them to think about other considerations that the report should have.

Regarding acute care settings, **Dr. Hargarten** noted that the football field is often the acute care setting. A student sustains an injury and is told, "You're okay." These decisions are not necessarily made by healthcare workers. He asked how the workgroup took these ideas into consideration.

Dr. Timmons replied that the document includes language about helping individuals get into the system. The workgroup included representation from trainers, coaches, physical therapists, family medicine practitioners, neurosurgeons, and ED providers. The writers had focused intent on having inclusive language regarding what constitutes an evaluation and assessment of symptoms in an acute care setting.

Dr. Yeates agreed that the workgroup and ad hoc experts reflected multidisciplinary work with injuries. They were cognizant that the results of the review and the draft recommendations should be helpful to a range of professionals and not be specific to any one group. Some recommendations are more pertinent to some groups than others, but on the whole, the document is meant to appeal to a broad population.

Dr. Lumba said that the topic arose a few times in the workgroup deliberations, and the workgroup members were passionate that the draft recommendations should be used by a variety of healthcare providers, not just physicians. A number of professionals are important for care delivered at the scene of a child with mild TBI and for reintegration. This document also cast a wide net for the definition of mild TBI in general. The recommendations will have far-reaching implications for the spectrum of injuries that fall into the category of mild TBI.

Public Comment Period

Stephen Hargarten, MD, MPH
Professor and Chair
Department of Emergency Medicine
Medical College of Wisconsin
Chair, National Center for Injury Prevention and Control Board of Scientific Counselors

At 4:05 p.m., **Dr. Hargarten** opened the floor for public comment. **Dr. Greenspan** requested that individuals in the room or on the phone identify themselves and their affiliated organizations.

Nathan Kuppermann, MD, MPH
Professor, Emergency Medicine and Pediatrics
University of California, Davis
Pediatric Emergency Care Applied Research Network (PCARN)

Dr. Nathan Kuppermann introduced himself. He has been one of the Principal Investigators (PIs) of the Pediatric Emergency Care Applied Research Network (PCARN) for 15 years. He commended the workgroup for this impressive document that will greatly improve the care that is provided to children with head injuries. Although he works at the University of California (UC), Davis, Dr. Kuppermann addressed the BSC on behalf of PCARN. He was the PI of a very large study with more than 40,000 children with minor blunt head trauma that was performed a decade ago to create a prediction rule for who needs acute imaging. He noted that he had provided a written version of his comments to Dr. Lumba.

PCARN did not study concussion; rather, PCARN focused on acute brain injury and on identifying children with an acute intracranial hemorrhage that needed immediate intervention. When talking about mild head injury, it is important to make a clear distinction between looking at a child for acute hemorrhage and brain injury that needs to be addressed immediately, versus a child with concussion who needs follow-up and ongoing care. This document seems to lump these groups together under “mild TBI” and it is important to distinguish between the two.

PCARN’s prediction rule was published in *The Lancet* in 2009, and it has been implemented in many places in the world. Approximately 38 sub-analysis have been conducted, or are planned, many of which are salient to the workgroup document. Almost all were published in 2015 or before, which would allow for their inclusion in the systematic review.

He expressed concern about the risk estimates provided in the document for clinical Questions 2 and 3, between pages 23 and 30. The point estimates for positive CT scan, for clinically important injury, and for neurosurgery are all substantially higher than the PCARN study. The PCARN study just included children with GCS scores of 14 to 15, which are considered minor head trauma. He assumed that the risk estimates in the workgroup document are higher because some of the studies included GCS scores of 13 and even lower at times. The literature indicates that a GCS score of 13 after acute brain injury, the positive CT rate is approximately 20%. PCARN decided not to include those patients in the prediction rule because those children need acute imaging. In approaching this question in this manner, with over 40,000 children in the study, the risks of the outcomes are less. If the focus is on trying to create a precise estimate around minor head trauma for imaging, the PCARN estimates are probably the best, given the size of the study. He was concerned that clinicians could be scared by the results, which could lead to more ordering of CT scans than desired.

Regarding children younger than two years of age, Dr. Kuppermann’s said that although young children are at higher risk of brain injury, PCARN has a CT rule specifically for children younger than two. If a patient has none of the six risk factors, the risk of brain injury is less than one in several thousand. He was reluctant to list age younger than two as a risk factor, given that it is possible to stratify within that age group on risk factors. He hoped that children younger than two would not receive CT scans just because they are young, when an accurate prediction rule is available to identify children who do not need imaging.

Many children are imaged (CT scanned in EDs) based on signs and symptoms such as a history of loss of consciousness, vomiting, headache, et cetera. PCARN has six publications pertaining to children who have an isolated one of those factors. If a child has all of the risk factors, then they probably need imaging. An isolated loss of consciousness, for instance, without any other risk factors indicates that the child has a low risk of a clinically important brain injury. Observation for a period of time before CT decision-making is highly appropriate. The workgroup document was not able to tease out situations in which risk factors are combined. PCARN has published in journals on isolated loss of consciousness, isolated severe mechanism of injury, and other factors and how they are associated with brain injury. Isolated headache, isolated vomiting, isolated scalp hematoma, and an isolated history of the child not acting normally, even when the examination is normal. All of these papers were published in 2015 or before, and they might help tease out important distinctions of children with multiple factors, who are at greater risk of brain injury, versus children with an isolated risk factor who are at low risk of injury and can be observed for a period of time without CT scanning, before a CT scan decision is made.

A section in the document refers to a GCS score of 15 or less than 15. One of PCARN's publications has a robust examination that shows an almost-linear increase in the risk of acute TBI with hemorrhage with decreasing GCS score. As with many issues in medicine, there is a biologic gradient of GCS score with the outcome.

PCARN includes a great deal of important data about decision-making and management associated with acute trauma, and the notion of whether a CT scan is needed in the ED.

Dr. Greenspan expressed appreciation for Dr. Kuppermann's comments and asked that he forward his comments to her.

Dr. Kuppermann replied that Dr. Lumba and others could forward it to her.

It was noted that someone present at the meeting had the document and could forward it to Dr. Greenspan.

Dr. Greenspan asked for additional public comments. No additional public comments were offered. With that, the public comment period was closed at 4:18 p.m.

Vote

Stephen Hargarten, MD, MPH
Professor and Chair
Department of Emergency Medicine
Medical College of Wisconsin
Chair, National Center for Injury Prevention and Control Board of Scientific Counselors

Given the robust comments and discussion from the BSC and the public, **Dr. Hargarten** asked for a motion for the BSC to adopt the Pediatric Mild TBI Workgroup Report. He reminded the group that only current BSC members could put forth a motion and vote.

Motion / Vote

Dr. Angela Mickalide moved that the BSC accept the report from the Pediatric Mild TBI Workgroup as written. **Dr. John Allegrante** seconded the motion. The motion carried unanimously with no abstentions.

Guideline External Peer Reviewers for Consideration

Arlene Greenspan, PhD
Associate Director for Science
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Dr. Greenspan thanked the BSC for endorsing the workgroup report, which has been a "labor of love." She commended and admired their dedication. She then reviewed the next steps for the document. The TBI team within CDC will develop clinical guidelines based on the document. As part of the process for creating influential scientific material, it will undergo CDC and HHS clearance. It will be available for a 30-day public comment period, which will be announced in the *Federal Register*. Following that period, the public comments will be taken

into consideration as the document is revised. The document will be then sent for external peer review with experts in the field who did not participate in the workgroup. The external reviewers will review the guidelines for:

- Reasonableness of the recommendations, and strength of the recommendations, based on evidence and expert opinion, and whether they match the evidence
- Clarity with which scientific uncertainties are identified
- Rationale, importance, clarity, and ease of implementation of the recommendations

The third point is especially important, as NCIPC wants the recommendations to be actionable.

Three peer reviewers will be selected by CDC. Peer reviewers must have:

- Experience with TBI and pediatrics
- High scientific standing in TBI
- Appropriate academic training and relevant experience
- Proven scientific excellence in the diagnosis and management of mild TBI among children and adolescents
- Expertise in at least one of the following areas:
 - Pediatrics
 - Family Medicine
 - Internal Medicine
 - Emergency Medicine
 - Neurology
 - Neurosurgery
 - Neuroimaging
 - Neuropsychology

With these considerations, NCIPC has created a list of experts who might be good peer reviewers. Short biographical sketches of the suggested persons were included in the BSC notebook. The suggested experts are:

- Fredrick Rivara, MD, MPH
- Vicki Anderson, PhD, MA
- Mike McCrea, PhD, ABPP-CN
- Roger Zemek, MD, FRCPC
- Geoffrey T. Manley MD, PhD

Dr. Greenspan asked the BSC to reflect on the following questions:

- Do these nominees have the relevant experience?
- Are there other suggestions for nominees that meet the specified criteria?

Discussion Points

Dr. Mickalide asked about the rationale for naming three reviewers. All five suggestions appear to be qualified, based on their biographies.

Dr. Greenspan answered that NCIPC has used three reviewers for other guidelines. They wanted enough reviewers so that the responses would be varied, but not so many that it would be difficult to integrate their responses into the document.

Dr. Allegrante asked whether any of the members of the workgroup may have published with one of the suggested reviewers.

Dr. Greenspan said that the suggested reviewers were identified by staff within the CDC TBI group, and the suggestions were vetted with Dr. Timmons and the two main authors of the document, but not with the entire workgroup.

Dr. Forjuoh suggested his colleague Dr. Hank Weiss, who is experienced in TBI. He is the Injury/Violence Program Coordinator at the Wisconsin.

Dr. Greenspan thanked him for the suggestion. NCIPC hopes for a robust list of possibilities, as not everyone suggested will be able to participate in the review. The document is lengthy and will take time to review.

Regarding reviewing issues about implementation and feasibility, **Dr. Porucznik** suggested that only one of the reviewers should not be based in the US. The Canadian and Australian reviewers may not be able to comment on implementation and feasibility in the US.

Dr. Hargarten said that the ICRCs could be solicited for reviewers as well. Wayne Gordon, for instance, is the head of an ICRC. He expressed some concern regarding commentary from another neurosurgeon who may not have as global a perspective on TBI.

Dr. Greenspan replied that Wayne Gordon was on the workgroup, so he could not be a reviewer. She asked for other recommendations, noting that NCIPC hopes for broad perspectives.

Dr. Gioia suggested Johnna Register Mahalek, a trainer at the University of North Carolina (UNC). Her areas of expertise include implementation in communities regarding mild TBI.

Dr. Hargarten suggested Dr. Danny Thomas, a pediatric emergency medicine physician who has done intensive work on TBI.

Dr. Timmons added that they should consider reviewers' expertise in the process of evidence-based guidelines development.

Dr. Maholmes noted that if the suggested reviewers are too busy to conduct the review, they could be asked for recommendations for reviewers.

Dr. Greenspan said that NCIPC would move forward, learning more about the nominees and the additional suggested nominees. They will try to match people with different backgrounds and different perspectives.

Announcements and Adjournment

Stephen Hargarten, MD, MPH
Professor and Chair
Department of Emergency Medicine
Medical College of Wisconsin
Chair, National Center for Injury Prevention and Control Board of Scientific Counselors

Dr. Hargarten thanked NCIPC and the BSC for a productive day. He thanked them for their active participation, which makes the BSC robust and rewarding. He reminded those present in person and on the phone to send an email to verify their attendance.

Dr. Greenspan offered a few final “housekeeping notes” regarding transportation.

With no additional comments or questions posed, the meeting adjourned for the day at 4:36 p.m.

Day 2: September 8, 2016

Call to Order / Roll Call

Stephen Hargarten, MD, MPH
Professor and Chair
Department of Emergency Medicine
Medical College of Wisconsin
Chair, National Center for Injury Prevention and Control Board of Scientific Counselors

Dr. Hargarten called the second day of the NCIPC BSC meeting to order at 8:37 a.m. **Dr. Greenspan** called the roll and asked BSC members to declare any conflicts of interest. A quorum was present. She reminded those present on the phone to send an email to the NCIPC BSC email address to confirm their presence.

Extramural Research Program Office Update

Mildred Williams-Johnson, PhD
Director, Extramural Research Program Office
Office of the Associate Director for Science
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Dr. Mildred Williams-Johnson greeted the group and provided an update on the activities of NCIPC’s Extramural Research Program Office (ERPO). As the BSC serves as the body that conducts secondary review for the Center, she also shared an overview of the program, the 2016 program results, the current research portfolio, and future research plans.

ERPO sits within the Office of the Associate Director for Science (OADS) at NCIPC. It serves as the focal point for working with NCIPC division partners for the development, peer review, and post-award management of extramural research awards and cooperative agreements for NCIPC, the National Center for Environmental Health (NCEH), and the Agency for Toxic Substances and Disease Registry (ATSDR).

The ERPOs were established approximately 15 years ago across the CDC to:

- Standardize processes and procedures for extramural research and response to departmental directives for open and transparent activities in the extramural research peer review

- Ensure that the research funded at CDC is of high quality and meets the stated research goals
- Support the integrity, transparency, and credibility of the agency's extramural processes

The NCIPC ERPO works collaboratively with:

- Center Divisions
- CDC's Office of Grant Services (OGS), which is the fiduciary agent for CDC in managing all extramural program efforts
- CDC Administrative Offices

ERPO manages all activities throughout the grant cycle. NCIPC has one of the longest-standing formal extramural research programs in CDC. ERPO is focusing on enhancing activities related to tracking and evaluating, and translating and disseminating, outcomes.

The NCIPC BSC is the secondary review body for the center. The BSC looks at the results of the primary peer review, which is conducted with external scientists and considers the scientific and technical merit of applications received in response to Funding Opportunity Announcements (FOAs). In FY 2016, NCIPC mounted five new FOAs for research activities:

- Centers of Excellence in Youth Violence Prevention, Cycle 2
- Research to Advance Primary Care-Pharmacy Linkage for Medication Review to Reduce Older Adult Falls
- Research on Prescription Opioid Use, Opioid Prescribing, and Associated Heroin Risk
- Research Grants for Preventing Violence and Violence Related Injury
- Evaluating Practice-based Sexual Violence Primary Prevention Approaches from CDC's RPE Program

A number of applications were received for each of the FOAs, even for FOAs that were released relatively late and had a short development time. This response reflects great interest in the field. The "all in one" opportunities included child abuse and neglect, which had not been announced in some years. There was great interest in the PDO-related opportunity and the YVPC second cycle.

All received applications are reviewed for eligibility by the grants office. They are also evaluated for responsiveness to the program needs described in the FOA. The applications that are determined to be responsive undergo peer review. CDC utilizes the triage process when a large number of applications is received so that the review focuses on the applications that are the most meritorious. The number of applications approved reflects feedback from the BSC as well as recommendations from the program. All final decisions for funding are made by the NCIPC Director, who uses the results from the primary and secondary review to inform her consideration. The new awards in FY 2016 total slightly more than \$7 million.

In addition to the NCIPC FOAs, ERPO also manages the Small Business Innovation Research (SBIR) program for injury prevention and control and environmental health. This year, a Phase II project was funded, which was transferred from NIH because the program effort was germane to bullying prevention. A new Phase I SBIR project was also funded. NCIPC was successful in co-funding the SBIR with another CDC center. SBIR funds must support research applications that meet the center's program mission.

The new FY 2016 awarded activities address the following NCIPC research priorities:

- Prescription Drug Overdose
- Older Adult Falls
- Child Abuse and Neglect
- Youth Violence
- Sexual Violence

These areas were supported in FY 2015 or in previous years and are still addressed within the portfolio:

- Motor Vehicle Injury
- Traumatic Brain Injury and Youth Sports Concussion
- Intimate Partner Violence
- Self-Directed Violence

Dr. Williams-Johnson noted that the FY 2016 figures are an estimate, as FY 2016 has not been closed out. The program activities captured under the “other” category represent priority areas that are no longer a focus of NCIPC, such as acute injury care, exercise, home and community. As the extramural tracking system is updated, it will be easier to tease out the portfolio funding for SV versus intimate partner violence (IPV), for instance. The two areas are now captured together. The update of the tracking system will also reflect updates in terminology, such as “child abuse and neglect” as opposed to “child maltreatment.”

A robust program plan is underway for FY 2017:

ICRC Supplemental Awards for Translation and Policy-Related Research

The peer review and award for this supplement will take place in FY2017 to examine the scientific and technical merit of these activities, and their translation and policy-related research.

FY2017 FOAs Forecasted on www.grants.gov

- CE17-001 – Research Using Linked Data to Understand Motor Vehicle Injury Among Older Adults
- CE17-002 – Development and Evaluation of Sports Concussion Prevention Strategies
- CE17-003 – Research Grants for Preventing Violence and Violence Related Injury (R01)

Tracking and Evaluating Research Outcomes

The center is already receiving indications of interest about the forecasted FOAs. The NCIPC OADS is working to build a program to examine the intramural and extramural research portfolios comprehensively in order to report impact on all of the center’s efforts.

Disseminating Research Results

ERPO is working to enhance its contributions to disseminating results from funded extramural research awards. Two reverse site visits are scheduled for September 2016, managed by ERPO, in collaboration with NCIPC division sponsors. One site visit is with 12 research grantees, representing approximately nine years of research efforts over three cycles. Additionally, a SBIR awardee is visiting to discuss their Phase II work, the product’s viability, and the potential for commercialization. The product is a virtual exercise program that makes the STEADI platform virtual and useable in older adult facilities.

Discussion Points

Dr. Mickalide commended NCIPC for the terminology change from “child maltreatment” to “child abuse and neglect,” which is a more understandable term for what children experience. She asked about the rationale for the change.

An NCIPC staff member said that “child abuse and neglect” more accurately represents the full range of types of abuse that occur. “Child maltreatment” is used more frequently in scientific publications, but Dr. Houry and NCIPC prefer “child abuse and neglect.”

Dr. Hargarten added that perhaps scientific leaders will stop referring to non-accidental TBI.

Dr. Gioia asked about the status of the FY 2017 forecasted FOAs and how the forecasting might differ from reality.

Dr. Williams-Johnson answered that ERPO begins to work with Division partners to develop research concepts approximately 18 months before an announcement. ERPO projects the available funding based on the current portfolio, the projects that are coming off line, and the expected available funds. The forecast reflects an expectation for a published announcement for a research activity. The forecasts are formally posted and announced to the community before the FOA is developed. The process provides transparency regarding Federal dollars. The announcements of the forecasts specify that the actual FOAs are subject to the availability of funding. The funds are not available until the appropriation is received. Because of the time required to develop the FOA and conduct the peer review, ERPO does the program work well in advance to ensure that the center is in a position to make awards when the funds become available.

Dr. Houry added that NCIPC feels that these announcements can be supported, even if Congress enters into a CR.

Dr. Williams-Johnson said that ERPO considers when program activities come off-line and will no longer have funding. A new program activity will be able to be introduced. However, an appropriation can come for a new program activity, as occurred with the RPE evaluation opportunity. When that appropriation was received, NCIPC was able to develop the FOA.

Dr. Hargarten asked about centers that are not funded through NCIPC in terms of whether they are they part of the extramural research program, and if so, whether there is a report on their activities and outcomes.

Dr. Williams-Johnson replied that the ERPO website is being updated to be able to provide that information. The NCIPC Divisions work closely with grantees to support making information on research funding available. Centers that are not currently funded are still part of the network.

Dr. Gioia commented on the two new areas of focus in the CA “life cycle,” tracking and evaluating outcomes, and translating and disseminating outcomes. These elements are important for demonstrating effectiveness. He asked about the process of moving this work forward, and whether funding supports this work or whether internal staff are taking it on.

Dr. Williams-Johnson said that the work is multifaceted. Some internal ERPO staff are helping, and many Division programs are actively engaged in the work as well. For example, some CAs already have dissemination and translation built into them as part of the research funding. The work takes place in multiple phases.

Dr. Traci Green addressed the notion of reaching across to work with different agencies and CDC centers with similar interests. She has worked with the Patient-Centered Outcomes Research Institute (PCORI) and has participated in stakeholder events. Recently, they have focused on injury-related activities, including falls and prescription drug issues, and she wondered about working with external groups such as PCORI on all activities, from planning and forecasting to co-funding.

Dr. Houry answered that NCIPC is open to working with other agencies and groups on funding opportunities. They have considered how to work with NIH, PCORI, and the US Department of Housing and Urban Development (HUD), for instance. It can be challenging to find, within a topic, the right research questions that align enough for both agencies. There are difficulties associated with working with different agencies through inter-agency agreements and other mechanisms, but it is not impossible and NCIPC has done it in the past.

Dr. Tamara Haegerich added that NCIPC has worked with PCORI to help identify research priorities. NCIPC has attended some of PCORI’s meetings when they have generated ideas for new funding announcements. Even though the two groups have not co-funded projects, they have participated in generating ideas for their funding priorities. NCIPC has co-funded projects with other agencies, such as NIDA, in the past, and they envision continuing to build those collaborations.

Dr. Greenspan added that NCIPC has had a number of MOUs with other federal agencies, including the National Institute for Occupational Safety and Health (NIOSH), NHTSA, NIH, and the US Department of Defense (DoD).

Regarding tracking and evaluating research outcomes, **Dr. Greenspan** commented on the development of research on priorities. They are working on a mechanism to develop a database that will track all of NCIPC’s research, both intramural and extramural, by research priority. This approach will allow for tracking of outcomes, developing benchmarks, evaluate success of outcomes, and guide expansion of priorities or movement to different priorities.

Dr. Gioia addressed CAs. Informally, there has been translation of symptom scales and related results. A more formal process of tracking that translation and looking at tools’ use across the country and the world in broad ways would be good way to demonstrate the effect of what the injury field has built together.

Dr. Greenspan agreed. Traditional, academic ways to evaluate research include evaluating numbers of publications, for instance. NCIPC is interested in looking beyond the academic aspects of research to learn how the research is used and translated. She suggested that a future BSC meeting could include more in-depth conversations about ways to disseminate and track outcomes.

Follow-up on CDC Guideline for Prescribing Opioids for Chronic Pain: Implementation of the Guideline

LeShaundra Cordier, MPH and Jan Losby, PhD
Division of Unintentional Injury Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Dr. Jan Losby introduced herself and thanked the BSC for the opportunity to present on the dissemination and implementation activities for the CDC Guideline for Prescribing Opioids for Chronic Pain. Their approach is divided into four quadrants:

- Translation and communication: translating the content of the Guideline into easily accessible materials and content for clinicians and the general public, as well as funded states
- Clinician education and training
- Health systems interventions: what are the systems levers that represent opportunities, given the content and recommendation statements in the Guideline?
- Insurer interventions

Ms. LeShaundra Cordier explained the planned translation and communication materials. As part of the Guideline release, NCIPC developed a suite of user-friendly materials for distribution by health systems, medical professionals, public health departments, health IT, and providers and the public. To date, the center has developed approximately 22 products for the Guideline and more than 22 graphics.

The target audience was providers. The clinical tools include:

- A checklist for prescribing opioids, which walks providers through considering opioid use and reassessing after return visits
- Pocket Guides and in-practice materials
 - Tapering
 - Overview
- Fact sheets:
 - New Opioid Prescribing Guideline: An overview of the Guideline and recommendations, providing clinical reminders for providers and distilling the recommendations into simple action items and tasks
 - Assessing Benefits and Harms of Opioid Therapy
 - Prescription Drug Monitoring Programs
 - Calculating Total Daily Dose of Opioids for Safer Prescribing

NCIPC also developed educational resources for patients. Providers have these tools available for their patients when discussing opioid therapy. The materials raise awareness among providers and patients about the opioid epidemic and the Guideline itself.

- Graphics and messages

- Fact sheets, including a fact sheet on pregnancy and opioids and one developed in conjunction with the American Hospital Association (AHA) on what patients should know about opioids if they receive a prescription in a hospital setting
- Posters
- Podcasts with short information about the Guideline and why it is important for providers and patients
- Infographics on several topics, including: alternative ways to manage chronic pain, key concepts about the Guideline, and having discussions with a provider about taking opioids

NCIPC also developed several training resources.

The Clinician Outreach and Communication Activity (COCA) webinar series includes seven webinars to cover major topics in the Guideline and recommendations. Four have been held to date, in partnership with the University of Washington. Free continuing education is offered to all providers, including non-traditional public health credits and credits for nurses, pharmacists, veterinarians, and anyone who might prescribe opioids. Part of the work with the University of Washington to launch the series included development of content and case studies so that providers can listen on-demand or live. A CDC speaker provides basic information and an overview, and then case presentations are shared from the field. The topics addressed so far include:

- Overview
- Non-opioid Treatments for Chronic Pain
- Assessing Benefits and Harms of Opioid Therapy
- Dosing and Titration of Opioids

The remaining webinars will be held before the end of 2016. They will focus on:

- Risk mitigation strategies
- Assessment of opioid use disorder and referral to evidence-based treatment
- Effective communication with patients about opioid treatment

When NCIPC began developing the training webinars, it was decided that a full online course also should be designed. The course is in development. Training modules are being created for physicians to earn continuing education credits. The goal of the course is to educate medical, nursing, and pharmacy students as well as practicing providers. The content is likely to be similar to the content offered in the webinars and will follow that structure. The course will be an eight- to ten-hour module course, offered online, with a curriculum to provide self-directed study, learner-facilitated study, and additional resources for providers. Micro-learning resources will also be included, such as video components, so that the course will be highly interactive.

NCIPC has developed additional materials for dissemination and promotion of the Guideline. Social media tools include:

- Digital ads and graphics
- Social media posts
- Partner communications

CDC's social media handles have been active to promote the Guideline, and NCIPC is working closely with partners and key stakeholders to provide information. The intent is to continue the

conversation about opioids in the public space and to provide partners and CDC with opportunities to promote the products created by NCIPC and information about the Guideline. NCIPC has a strong digital presence through its website and other aspects of social media.

Additional resources are intended to disseminate the Guideline and to foster its widespread adoption and implementation. Additional materials and resources will be developed and released to help prescribers.

- The CDC Opioid Overdose Prevention Website covers all of the agency's opioid programs: www.cdc.gov/drugoverdose
- CDC Media toolkit: <http://www.cdc.gov/media/dpk/2016/dpk-opioid-prescription-guidelines.html>
- HHS Prescription Drug & Heroin Overdose Epidemic: www.hhs.gov/opioids
- Turn the Tide (Surgeon General's website): <http://turnthetidex.org/#>

NCIPC is creating a digital space and expanding and evaluating existing projects. One new project, a mobile app, is geared toward providers. It includes four topic areas in one app space:

- MME calculator
- Information about the Guideline recommendation statements
- Help having difficult conversations with patients about opioid therapies and prescribing opioids
- Links to websites and CDC resources

NCIPC also is moving into the patient space, developing information about chronic pain, pain management, and non-opioid therapies. The center is creating videos to help providers educate patients.

Dr. Losby said that NCIPC approaches health systems and insurers as having the potential to improve pain management and promote safer use of opioids through guideline-concordant care on a broad scale.

The Quality Improvement (QI) Initiative begins with creating QI measures that are tied or connected to the recommendation statements in the Guideline. A draft has been created of those measures, and NCIPC will work with a contractor to reach out to a broader group of stakeholders to test whether the measures are feasible and accurate, and whether health systems will have data available through an EHR to make tracking adjustments. It is not enough to have measures; it is important for health systems to implement the measures in their practice. To that end, NCIPC is developing an Implementation Guide document with support materials to help a health system implement the QI measures. Elements of the guide include identifying a champion, ensuring access to EHRs to track trends or get feedback from clinicians. When the measures and implementation guide are complete, they will launch with six large hospital systems to support implementation of the QI measures and to track their changes. Evaluation is a critical part of all of this work. NCIPC will engage with the six health systems to track their progress in prescribing, health outcomes, and their experiences with implementation barriers and facilitators.

Another area, Clinical Decision Supports, links the content of the Guideline to EHRs. If EHRs are an important part of clinical care, it is important that they include codes, artifacts, and alerts that are tied to, for instance, MME thresholds. NCIPC has a strong collaboration with ONC and HHS partners who have access to technical vendors who can break down the science of the Guideline into elements that EHR vendors can use. NCIPC is working with three hospital systems as pilot sites. They have different EHR vendors, which is important to illustrate different programmatic opportunities and challenges. Evaluation is an important part of this work as well in order to track outcomes.

Another part of the health systems intervention is the Coordinated Care Plan. Rigorous evaluation is underway with nine implementation clinical sites and nine comparison clinical sites where the plan is not being implemented. This work is taking place with MedStar, a hospital system in DC, Maryland, and Virginia. NCIPC's contractor has an established relationship with MedStar, so it will be possible to conduct tracking and to understand prescribing rates over time, as well as health outcomes. When the evaluation is complete, the *Chronic Pain Care Involving Opioids: A Coordinated Care Plan for Safer Practice* can be provided for broader dissemination. There are good opportunities with the QI work and Implementation Guide to have crossover learning to identify key interventions at the system level that are necessary to move work forward. The Division works actively with a number of states, some of which are working specifically in the health systems area. Linking the EHR with PDMPs and guideline uptake are elements of this work.

Another important system lever is insurers. A number of different entities operate in this space. The Centers for Medicare and Medicaid Services (CMS) is an important Federal partner. There is a need for harmonization of metrics, for example regarding MME thresholds. NCIPC has had strong collaboration with CMS regarding changing the threshold to be in alignment with the Guideline. CMS is pursuing ways to compensate or reimburse clinicians who check the PDMP, which aligns with one of the recommendations in the Guideline.

NCIPC also continues to explore ways to connect with commercial payers. Navigating this space is somewhat more challenging, but the center is working with the National Safety Council to conduct a survey of large employers. Thinking of these employers as a customer helps to understand what they seek for their employees regarding opioid-related issues. NCIPC is also pursuing work with Pharmacy Benefit Managers. These groups look at policies related to particular prescriptions that are available to individual insurers and at drug utilization reviews. The NCIPC focus is on the top three vendors with the greatest market share to understand their role in this area. Similar work is ongoing through state-level work and states' connections with their state Medicaid programs and Workers' Compensation. CDC is continuing its relationship with the National Council for Behavioral Health, which represents another way to connect with state Medicaid Directors and understand issues of prior authorization and state-level interventions. In the future, NCIPC will convene payers and continue to work with state Medicaid Directors.

The following slide illustrates the "asks" of insurers partners and how conversations are opening.

Discussion Points

Dr. Green was impressed with the level of coordination and thoughtful work in so many areas. There are a number of different products for different audiences. Pharmacists are large partners in the work focused on prescribing and on safer dispensing of opioids. She wondered whether the prescriber materials are assumed to be appropriate for pharmacists, or whether materials will be created specifically for pharmacists.

Ms. Cordier answered that NCIPC has developed pharmacist-specific tools, including a brochure. Some of the prescriber materials are appropriate for pharmacists, but additional tools are needed. A product will be released in the next month that was developed with the American Pharmacy Association and other pharmacy organizations. This product addresses the role of pharmacists, the care process, working with providers, and how pharmacists can communicate about the Guideline to patients.

Dr. Green observed that many of the patient materials are Web- and app-based. Many patients may not have access to the Web, and she wondered about different forms of conveying information to patients, such as a text message support system, that are not as “Web heavy.” Web- and app-based tools may be out of reach of patients with limited access to the Internet.

Ms. Cordier said while all of the products are accessible on the Web, a good portion of them are print materials that are designed for providers to distribute. Posters have also been created for posting in clinic and practice settings. NCIPC is working on a few different pieces related to a communications campaign that will launch in the near future. It will have messages in various landscapes, including billboards, digital spaces, print materials, and word-of-mouth-style messaging, as well as text and other messages. Some of the upcoming videos are patient videos which will be viewed in medical settings as well as online.

Dr. Green noticed that the CDC.gov/overdose site frames issues as “opioid overdose” rather than PDO. Reference is usually made in research to PDO. It would be helpful to keep the terminology consistent, with reminders that the epidemic represents a larger continuum. The CDC site is a helpful place to start conversation around the topic.

Ms. Cordier said that the website was overhauled with the release of the Guideline. It was only related to prescription drugs before the Guideline was launched, and now the movement is toward other opioids, including heroin and Fentanyl.

Dr. Green was excited to see progress in the QI Initiative and the “wave of the future” of EHR integration and working within the larger system. She sensed that EHRs are only as good as their documentation. It may be more difficult to document issues that are difficult to talk about, or that are stigmatized within the medical community. She asked how documentation, with a focus on these elements, will be integrated into the collaborative for QI and clinical decision tools. In particular, she could envision how MMEs and PDMPs could be connected, but it is more problematic to document that a conversation has occurred, or that naloxone was co-prescribed, or that medically-assisted treatment (MAT) has been discussed or referred. She asked about plans for ensuring that the full range of the continuum is integrated into, and properly documented in, these systems to track the Guideline fully.

Dr. Losby said that NCIPC is actively exploring with its clinical sites to understand the best way within the EHR to capture patient conversations accurately. There may be a “notes field,” but it may not be read or referred to. There may be a way to integrate these elements into clinical flow. There are good opportunities with the early pilot hospitals to learn about these

mechanisms with the different EHR vendors to allow for this information to be easily accessible by clinicians at the point of care to inform their decisions.

Dr. Timmons suggested ensuring that the contractor working with EHR vendors and hospital systems is involving clinicians from the beginning of the process. It is not uncommon for IT and quality departments to implement changes, and then practicing clinicians cannot use the tools. The tools must be integrated into providers' daily work flows in a seamless manner, or else they will not be helpful.

Dr. Losby said that the work at the three sites is being led by clinicians. IT personnel are involved for the implementation.

Dr. Hargarten added that clinicians should work in partnership with pharmacy. Increasingly, health systems have full-time pharmacists in the ED. They are invaluable partners.

Dr. Duwve thanked NCIPC for the updates and noted that their work is "paying off" in the field. Regarding the importance of incorporating the full spectrum of care beyond the EHR, she wondered about provider education. Based on her experience in Indiana, where prescribing rules were implemented in 2013 and final rules were implemented in 2014, she described a "mass exodus" of patients who were already over-prescribed. The prescribing rule did not help providers care for those patients who were already at the extreme end of the prescribing spectrum. The rule was helpful for prescribers newly initiating patients on opioids. The materials discussed by NCIPC seemed to be more relevant to the new opioid initiates. Some of this work may be in SAMHSA's domain, but in the spirit of multi-agency collaboration, she wondered if they might be "stopping short" with the provider educational materials, in that it is important for primary care providers not just to be able to refer to evidence-based treatment approaches. In many states, there are not enough evidence-based treatment options. Some states are prescribing buprenorphine for patients with opioid use disorders because no treatment providers are available. Treatment may be initiated when a patient enters the hospital, and there is a period of four to six weeks when patients can be followed up until they are placed with a provider. In Indiana, she noted some providers who were uncomfortable addressing opioid use, misuse, and abuse who discharged patients from their practices who had "nowhere to go." It would be helpful not to end the conversation at tools to help with evidence-based prescribing, but also to provide tools to assist providers who have identified patients who have been over-prescribed. How are these patients identified, and how does a primary care provider within the context of a medical home take care of them?

Dr. Timmons agreed and added that it is important as patients are being discharged from primary care practices, the over-utilization of healthcare in the system has dramatically increased. Patients see specialists or repeatedly go to the ER for prescriptions. It is important for providers to have strategies to help those people move away from the high opioid doses that they may have been on for years, and now they cannot get their medication.

Ms. Cordier said that they are hearing a call for these materials from providers and from patients. The next phase of product development will include these issues, helping providers have difficult conversations. NCIPC has worked on motivational interviewing and facilitating providers in discussing options, tapering, and reducing opioids across the board. The conversation will not stop at prescribing practices.

Dr. Baldwin added that there are tight collaborations with SAMHSA to ensure that the messaging that NCIPC has in place complements their goals in communication and programmatically.

Dr. Jinhee Lee confirmed that SAMHSA has regular communication with CDC on these topics. All of the HHS partners working on this topic are involved with CDC.

Dr. Debbie Dowell appreciated the comments and agreed that these areas are critical for educating providers. They can consider more ways to accomplish that education. They have considered, for example, referring to MAT in the Tapering Guide. One of the upcoming webinars is exclusively devoted to MAT and treatment of opioid use disorder. The series has already made a strong case for people to get training in buprenorphine prescribing, given the limitations on access in many parts of the country.

Dr. Gioia asked if the same dissemination and communication process will occur for other guidelines, such as the Guidelines for Pediatric Mild TBI. It would be helpful to track outcomes and to disseminate information as part of the cycle, for example

Dr. Houry hoped that the process would be the same. The pediatric mild TBI work is earlier in its process, and a guideline is not available yet. Implementing the guideline across the nation and in medical practices, and with patients, is exciting. The document should not “sit on a shelf” but should be used.

Dr. Hargarten said that it would be helpful to generate a list of indicators that individual states could refer to track their status and progress, and to learn whether the Guideline is penetrating to the desired level. Those categories would be helpful to compare progress over time and between states.

Dr. Losby said that an Indicators Toolkit fulfills that function. It looks at prescribing rates as well as morbidity and mortality within, and across, CDC-funded states that are tracking the data through their FOAs. The toolkit is also available to any states to track their outcomes.

Dr. Baldwin said that states are taking the work even further, developing dashboards to see progress and to find “hot spots.” States are using CDC-supported funds to create approachable and easily understandable data dashboards to prompt further action and to keep the programs on track. These tools could be shared with the BSC at a future meeting.

Dr. Duwve said that Pew Charitable Trusts released a report that Indiana had a 16% decrease in prescribing from 2013 to 2015, which is the period in which the prescribing rules were implemented. The information came from insurance data and does not include self-pay data. The increase is significant; unfortunately, there has not been a parallel decrease in overdose deaths. In fact, there are continued increases in overdose deaths related to prescription drugs and to heroin. There is under-reporting in these areas as well. It is not clear whether a decrease in deaths is to follow, or if patients are being driven “to the streets.”

WISQARS Implementation of Recommendations

Mick Ballesteros, PhD, MS

Branch Chief, Statistics, Programming, and Economics Branch (SPED)

Division of Analysis, Research and Practice Integration (DARPI)

National Center for Injury Prevention and Control

Centers for Disease Control and Prevention

Dr. Mick Ballesteros provided the BSC with an update on NCIPC's work to address the recommendations from last year's WISQARS™ portfolio review. In 2015, there was a presentation and discussion at a BSC meeting about the WISQARS™ portfolio review. The recommendations and findings from the review were framed around four evaluation questions:

- Utilization: are WISQARS™ data being fully utilized for scientific and programmatic purposes by key stakeholders?

The recommendations in this area focused on a plan for a new WISQARS™ experience, better-defined functionality for different audiences, and clarifying the vision for WISQARS™.

- Technology and innovation: how can modern technology and innovation be used to enhance the use of WISQARS™?

The recommendations in this area focused on enhancing the capacity to export data and graphics, accessing and aggregating across different data sets, improving visualization, and shifting to a mobile response strategy.

- Data sources: what are the opportunities to expand WISQARS™ data sources and data sets?

The recommendations in this area focused on identifying holes and gaps in data, bridging and linking to other data sets, and incrementally expanding to additional data sets.

- Tools and training: what tools, training, and resources could facilitate actionable data translation?

The recommendations in this area focused on raising awareness of WISQARS™, providing better guidance on using WISQARS™, and creating more examples of how can WISQARS can be used.

In response to the portfolio review report, the Division of Analysis, Research and Practice Integration (DARPI) established small, internal workgroups for each of the recommendation categories. Each workgroup met several times to discuss the recommendations and specific feedback and suggestions in the report. Some of the report content overlapped and applied to multiple categories. Most of the recommendations were good ideas, and DARPI had already considered and discussed many of them. Several of the recommendations are not feasible at this time for practical reasons: for example, linking data sets can be challenging without personal identifiers; different definitions for common variables are challenging; and restrictions on data use for individual data sets pose additional challenges.

One of the difficulties in addressing many of the recommendations from the portfolio review report is that DARPI envisions WISQARS™ as a tool for injury and violence surveillance rather than for research. DARPI's goal is to make the most up-to-date data available online and to identify opportunities to use current technology, strategies, and best practices to disseminate those data through queried reports, charts, and maps. In contrast, the users of WISQARS™ range from individuals with limited public health and epidemiological backgrounds to advanced academic researchers. It is challenging, therefore, to design and maintain a system that meets everyone's needs. DARPI acknowledges that queries on WISQARS™ can lead to important research questions, but the system, by design, is not a research tool. If an academic researcher is interested in conducting more advanced analyses, that researcher needs to download the data set when it is available and analyze it with software outside the WISQARS platform.

The division's discussions about the recommendations led to three current activities. In response to the recommendation regarding the mobile response strategy, the programming team, led by Kevin Webb, has been examining the mobile responsiveness of all of the WISQARS™ modules and web pages. There are three types of pages within WISQARS™:

- ❑ Landing pages, which give users information about different modules. They are static and essentially the same for all users.
- ❑ Querying pages are different for every module. Users select different parameters for their queries.
- ❑ Output pages give users the results of their queries.

The landing pages for all of the modules are mobile-responsive. The DARPI Communications Team converted these pages approximately one year ago, with assistance from CDC's Office of the Associate Director for Communications. Hyperlinks to individual querying pages are still at the top of the page, but the fonts have been readjusted and properly aligned to the width of the device that is being used. Users must scroll down to see the rest of the content, but the page is essentially readable on smaller devices.

The query and output pages, however, are not currently mobile responsive, which poses challenges. The issue with the querying pages is that they are hosted on NCIPC servers with their own design templates, but the output pages are created using Statistical Analysis System (SAS) software that is running in the background. The version of SAS being used does not easily allow for the desired formatting and conversion to a mobile-responsive design. Mobile-responsive design is a relatively new area for NCIPC, so the programming team is learning Hypertext Markup Language (HTML) 5 and responsive design coding languages, as well as methods and best practices.

Google's "mobile friendly test" is being run in all WISQARS™ pages. The outputs from this testing identify issues and solutions for every page. Solutions are applied when possible. Over 40 querying and output pages on WISQARS™ need to go through this systematic testing and review. Several months ago, NCIPC started this testing with a new cost calculator. Conversion has completed on it, so when it goes live, it will be fully mobile-responsive. NCIPC is in the process of reviewing and converting the Fatal Injury Module. The solutions and amount of effort for each module will differ, as each module was designed at a different point in time, using the most advanced technology available. They are all different now, however. When this process is complete for all of the WISQARS™ modules, and more data visual capacity is added, NCIPC will reassess the need to update and continue maintaining mobile apps.

In response to the portfolio review's recommendations on data sources, DARPI began by reviewing the inventory of injury data systems. These systems are online and consist mainly of injury and violence data that are collected and compiled by various federal agencies. DARPI assessed these systems and criteria for potential systems; any of the current systems in this inventory should be considered for addition to WISQARS™. Adding a new data set to WISQARS™ is a large endeavor. It takes a great deal of work to develop, test, maintain, and update the modules every year. If data sets are added, the addition should be for reasons that are well-thought-out.

The workgroup discussed criteria for data sets to add:

- The data quality is known to be good and strong
- There are no current online querying systems for those data that meet the injury community needs
- The data collection and management is ideally managed by the Federal government, and ideally by CDC
- There is internal and external demand and need for access to the data
- CDC has access and permission to use the data within the WISQARS platform

While none of the systems met all of the criteria, the workgroup discussions ultimately led to one of the key gaps in WISQARS™ identified in the portfolio review: the lack of state-level nonfatal data. WISQARS™ has the National Electronic Injury Surveillance System (NEISS) All Injury Program (AIP) data set, which is designed only to give national estimates for injury-related ED visits and hospitalizations. The Healthcare Cost and Utilization Project (HCUP) includes a series of healthcare databases and represents a Federal-State partnership. It is sponsored by the Agency for Healthcare Research and Quality (AHRQ). Within that family of databases, there is a state inpatient database, and there is a state ED database. States report the data to AHRQ voluntarily. While AHRQ does have an online querying system for HCUP, within CDC, there is direct access to some of the state-level data sets. CDC's Data Hub Office coordinates and supports all of the CDC HCUP users.

For the most recent year of data available, 2013, CDC only has access to 21 of 38 state inpatient data sets, and only 12 of 45 ED data sets. In the past, it was thought that the injury external cause of death data within HCUP was poor, but it may now be worth reexamining the data to see if the coding has improved. To maximize the number of states that CDC can work with, NCIPC initially chose to begin exploring the state inpatient databases for 2013.

NCIPC looked at these data in three areas:

- Injury case definitions
- External cause e-coding
- Comparisons to national estimates

With injury case definitions, cases could have been included with only injury listed as the primary or first diagnosis, or cases could have been included in which injury is listed as any of the diagnoses. Some states have up to 20 fields just for diagnosis codes. The number of injury cases would increase by 66% if the count included any injury diagnosis. NCIPC examined both sets of cases as they examined other variables. For cases with injury as a primary diagnosis, only 10% had missing or unspecified e-codes. That number increased to 40% for cases with injury as a secondary diagnosis. There were no substantial differences in e-coding by age, sex,

length of stay, primary care, and disposition; however, there were differences across states. Cases with injury diagnoses with injury as the secondary diagnosis were more likely to be injuries due to drugs, misadventures due to surgical or medical care, and abnormal complications or reactions to non-injury conditions. Additionally, for those with injury as a secondary diagnosis, the most common primary diagnoses were mental disorders or circulatory, respiratory, or musculoskeletal diseases.

NCIPC also examined the HCUP national inpatient sample and compared those national estimates of injury hospitalizations to national estimates within NEISS-AIP. The HCUP estimate for only those with injury as a primary diagnosis was approximately 1 million fewer cases than included in NEISS-AIP. If all injury cases are included, the numbers are closer, at approximately 2.5 million in 2013.

Because CDC only has access to data for less than half of the states that report to AHRQ, DARPI decided not to move forward with an HCUP-specific WISQARS™ module. There is a possibility for a new module in the future, if there is more access to more data. Further, there are more possibilities with better understanding of how the International Classification of Diseases (ICD)-10 Clinical Modification (CM) coding is being implemented in states. All of the data examined thus far are from ICD-9 data. It is still important to learn how NEISS-AIP estimates differ from HCUP estimates. DARPI has begun a more detailed analysis of a national ED sample and comparing it to NEISS-AIP estimates.

In response to the recommendation about the visual functionality of WISQARS™, DARPI began a Data Visualization Pilot for fatal injury data. There is growing interest in NCIPC and across CDC to work with and present data more dynamically, rather than in traditional, long tables. Data visualization is a relatively new area for the agency. One of the key short-term objectives of this pilot is to learn about the process and steps related to programming, technical needs, limitations, and to demonstrate the potential for an interactive querying tool.

DARPI is using experience gained from developing the WISQARS™ mobile apps, which have more graphics than the current WISQARS™ website, to think about what a data visualization application should do and look like. These requirements will be similar to what a user can currently do on WISQARS™, but the data will be presented with charts, graphs, and maps rather than with tables. The user should be able to query and change the parameters more by interacting with the visual tools than through traditional checkboxes. The objective is to use interactive data visualizations as tools to explore a data set, rather than to develop a tool for visuals to explain or communicate a key message or to tell a story.

The division is collaborating with a contractor and has begun meeting to discuss goals, requirements, and a typical WISQARS™ user to better frame what the new tool should look like and what it should do. The contractor began mocking up wire frames for what the visuals will look like. Over the last few months, the division has provided feedback on each iteration of the wire frames.

Dr. Ballesteros shared the most recent wire frame mockups, which are “about 90% of where we want to go.” He noted that the interactive aspects of the site have not been fully developed, but the images will give a sense of the project’s direction.

The initial view will show injury, intent, and mechanisms, which are the first elements in current WISQARS™ data module. The initial landing page will by default show injury deaths by all

intents and all methods. The deaths can be broken down further by different mechanisms within intentional and unintentional injury, and the size of the data boxes is representative of the burden. The user can change various data parameters, such as the years. The landing pages also shows maps with state differences, distribution by sex, and distributions by age groups, race, and ethnicity. Within each figure, users can toggle or change between showing numbers and rates. Users can also refine the visuals to show specific intents, mechanisms, states, and other parameters by clicking on a box. Data can also be displayed as a table, and the data can be exported. Users can drill down to specific demographics by filtering the data in a manner that is similar to the current WISQARS™ tool.

In addition to exploring data, it is possible for users to analyze and compare data. Users can select specific injury, causes of death, or states to compare directly. The data can be compared in a graph, chart, or map. The number of states and causes of death will be limited to five for functional reasons.

The next steps are to continue work with the contractor, who will build a custom prototype based on the wire frames and using synthetic data. The tool will then be linked to actual fatality data. Feasibility testing will be conducted internally among staff, and adjustments will be made. The tool will then be released internally within NCIPC to learn about staff experiences using it. DARPI will work with other offices to develop strategies for releasing the tool externally on WISQARS. There are a number of existing challenges with ensuring that visual tools are 508 compliant, which is a requirement for accessibility for Federal government Web content applications. There are potential challenges for individuals who cannot see, or who cannot use a mouse, and who would likely have difficulty interacting with the tool. As the prototype progresses, DARPI will work proactively with other parts of CDC to better understand their options. Programs across the Federal government struggle with these issues. DARPI knew that accessibility would be a challenge, but they did not want that barrier to keep them from creating a prototype.

The long-term goal for the project is for the experience to feed into a Center-wide data visualization strategy so when other programs within NCIPC are interested in building out data visualization, they do not have to “reinvent the wheel.” They will have a framework or process to help them start. There are other ongoing center-level data visualization processes, and they are learning from each other.

Discussion Points

Dr. Allegrante thanked Dr. Ballesteros, remarking that he had not reviewed the report. He noted that he had chaired the committee on the recommendations and realized having heard Dr. Ballesteros’s report that this was a fairly ambitious set of recommendations—perhaps even daunting to think about. He was impressed with the focus on the visualization of data. That was an important recommendation. In retrospect, he realized how challenging the recommendation about integrating other federal datasets actually is. That is clearly a longer term project to achieve. He said he seemed to remember that another recommendation, or at least a point that the committee made was not to worry too much about the mobile app. Given that there is a mobile app, he asked Dr. Ballesteros to say a little more about it. He also asked what happened to the logo from the first page.

Dr. Ballesteros replied that once the websites are all fully mobile and responsive, he thought the initial thought was to discontinue the mobile apps. However, they learned a lot from the experience of developing those because they are more graphical and interactive. He thinks that

experience is actually feeding into what they are doing currently. Long-term, they do not want to spend time doing things that they do not need to do. Once the digitalization components are fully developed, they will revisit the apps. Regarding the logo, some things occurred before his time and that was a rebranding.

Dr. Timmons offered congratulations on all of the work done, emphasizing that it is going to make the database much more usable and accessible than it already is. It has been a great resource for a number of years. She asked whether the work done with the mobile apps will help with the ADA requirements for access.

Dr. Ballesteros responded that it certainly could not hurt. It is a challenge trying to figure out what to do. They will use anything they can to move this forward. He is confident that they will find a solution, but they do not know quite what that is yet.

Dr. Hedegaard pointed out that Dr. Ballesteros had done a fabulous job and noted that there have been numerous conversations between NCHS and CDC on a lot of this. The transition to the ICD-10-CM is going to make a major impact on being able to monitor hospitalizations and ED visits from administrative datasets. They are beginning to receive some initial feedback from states in particular about what they are seeing and what is occurring in their states with regard to this change. One of the concerning issues is that the percent of injury records with an external cause code is actually going down, particularly in those states where the need for an external cause code is not regulated by the state and is done on a voluntary basis. There are some reports that medical records that previously took 15 minutes to code now take up to 45 minutes to an hour to code because of the number of codes that are currently available. Clearly, if not being reimbursed for external causes codes, hospitals are dropping it. That is going to be problematic in terms of thinking about other datasets. It might be several years before things have stabilized out and it is well worth keeping hospitalization and ED data based on ICD-10-CM in the mix. She also mentioned that NCHS also has been working on a data visualization pertaining to the injury mortality data, which just went through CDC clearance and will be posted in the next month or so. She did not see it as being as elegant as what Dr. Ballesteros proposed, but it was built in Tableau and part of the issue that they are running into is 508 compliance. This is a topic that needs to be dealt with. NCHS has explored a variety of things, and offline they can have additional conversation about what they have learned through their process of building a data visualization tool. She thinks there is a lot of benefit in seeing this modification to WISQARS™, and that it will be well-received and well-used.

Dr. Ballesteros indicated that they have talked to NCHS about the work that they are doing, including a conversation about whether they are doing the same thing. They decided to go ahead and move forward. Important to note is that CDC is not using Tableau or a specific software. The contract was to build a customized tool because they did not want to be limited in the future to the functionalities of the development software. He thinks that in general, Tableau is probably okay, but CDC made an executive decision not to restrict themselves to a specific software package. It has taken longer to develop a tool, but they believe it will be helpful.

Dr. Hedegaard noted that some of the visualizations that NCHS has put together was because they had access to Tableau. However, as they have moved on they have come to realize that 508 compliance was a larger issue than they thought it would be. They have learned from some of the tools they have built; however, it is unclear whether they will be able to maintain them. Clearly, the work CDC is doing is going to be very helpful.

Given the increasing lifespan of the population, **Dr. Mickalide** whether consideration has been given to portraying more granularity to the 65+ population. Prior to that, it is by 10-year age range except for young children.

Dr. Ballesteros replied that in the current WISQARS™ model, an individual age year can be entered. It has the capacity to choose a desired age group. What they are trying to develop basically mimics that. He insisted on having a new interface that basically would allow the user to continue exactly what they have been able to do with the current system without restriction. It may not be as user-friendly as some people would want, but it certainly is available.

Dr. Mickalide said she guessed it only becomes important if there are differences in morbidity and mortality for 65 to 75 year olds as compared to 75 to 85 year olds, et cetera.

Dr. Hargarten thought the question about granularity was very interesting. The same can be done for violence for ages 1 to 14, 15 to 17, 18 to 20, 21 to 24 where incrementally there are major changes in outcomes. He asked whether it is possible to get granular data within a state, such as urban versus rural distributions, distributions by agents of injury (kinetic energy, chemical injury) being the cause. That shifts the conversations within a state that is trying to implement local versus statewide programs. Wisconsin is similar to other states in that there are variations in rates that are significant. Having the ability to get granular within a state is very helpful. He asked Dr. Ballesteros to comment about that.

Dr. Ballesteros responded that for the fatal injury model, they are using death certificate data. There are pros and cons to that, but they are limited basically by those data. The reality is that they do not put all data on WISQARS™. There is a rural / urban variable that they have not put on WISQARS™; however, they could if they wanted to. The injury mechanisms they present are basically based on the matrix and the framework the field has been using for years. On the WISQARS™ model, it is possible to show the individual codes, which will give more specificity or granularity regarding specific mechanisms. This is a good point for CDC to move forward in terms of the opportunities / possibilities to drill down to more specific codes. They have the data at that code level, but consideration would have to be given to the level of effort it would take to include it.

A participant pointed out that all of these data also are on WONDER. It is important to be mindful that there already is a system that would allow one to look at county level data within a state. It may not have pretty pictures, but she assumed that someone getting down to the county level would have to have some level of experience and understanding of the numbers and confidence intervals needed to make comparisons with smaller and smaller numbers. WONDER does have the urban and rural classifications. It is possible to get down to the county level, and pick by individuals codes for underlying and multiple causes of death codes.

Dr. Duwve noted that there are a lot of individuals at the county level who would be very interested in seeing their data. They may not have the background to use a more sophisticated data analysis program. Having it on WISQARS™ would be valuable because it is extremely user-friendly. This would be a value-added. She agreed with the granularity issue. For example, from the poisoning data she cannot get drug poisoning data or even drilling down further to opioid poisoning data or multi-drug. Even the drug poisoning granularity might be helpful. She stressed that The Cost of Injury Module on WISQARS™ is extremely helpful because those data are not available for states. She requested more visibility about how those data are determined and what it means. What is a work / life cost? Where does that come from? She expressed gratitude for including this, because it is a great resource for states.

Dr. Ballesteros acknowledged that he owes Dr. Duwve an email pertaining to the cost information, which he promised to send to her that day.

Dr. Timmons echoed that. For trauma systems development, she thinks it is important for states and regions that are developing trauma systems to use WISQARS™ data. Many of them do, but some of them do not and are not even aware that it is a useful tool. In terms of promulgating the knowledge base of WISQARS™ to those who are in charge of designated agencies, it would be useful to have more granular detail about where people are being injured or even education level, occupation, et cetera in order to close the loop of using the injury data for community prevention efforts. She applauded all that has been done.

Dr. Hargarten echoed that and said they are thrilled with the work and would love to see more. He also thought they should be realistic in terms of Dr. Ballesteros's earlier comment. Thinking about the way injuries are being framed, nested in suicides are chemical injuries that resulted in an overdose death. The agent is chemical injury. Then it crosses intent, so it broadens the discussion to find common ground to address chemical injury regardless of intent. Having the information framed in a number of ways allows many sectors to respond toward a common goal. That is where it has increased utility. Kinetic energy is the most common, but kinetic energy from a bullet transcends homicides and suicides. Kinetic energy from a car may be opioid related. It is interesting to see the potential by adjusting the initial graph Dr. Ballesteros showed about intentional and unintentional injury, et cetera.

Dr. Houry agreed that there are a lot of datasets and that they do not want to be duplicative of them, but having some more granular information such as is in WISQARS™ allows a decision-maker's staff or a reporter to obtain information. She used it often when she was teaching, and it was very simple to obtain information.

Dr. Porucznik noted that one thing that might be a tweak instead of a complete redo would be that within WISQARS™, as someone queries something, to then have a sidebar or footnote that pops up to say "Hey, if you want to do this more deeply, go to WONDER" and then have it link out. Or, if they are in WONDER say, "If you want a pretty picture, go to WISQARS™." It would help people, because if all they know is WISQARS™, they do not know about WONDER or other resources that may be related. If they can show that the government can talk to each other, maybe people will too.

Dr. Ballesteros replied that they have talked about this, even on the level of if someone queries something on motor vehicle injuries, when they get their output, they also are shown other links to some of the other motor vehicle-related work that CDC is doing. That is in CDC's queue of other things to do to improve the usability and functionality for users.

It was noted that one way to think of this is like when someone searches something on Amazon and it indicates that other people are interested in X.

Dr. Hedegaard emphasized that prevention happens at the local level. To be able to get down as far and as deep as possible is great. However, after her years of being at NCHS, she also is concerned about very small numbers and the interpretation of small numbers. NCHS has some requirements in terms of its contracts. NCHS contracts with states to get the death certificate data. For confidentiality reasons, there are some limitations. While they all recognize that, it is important to recognize that sometimes there will be limits.

With no further questions or comments, **Dr. Hargarten** dismissed the group for a break at 10:35 a.m. Following the break, **Ms. Lindley** conducted a roll call and established the presence of a quorum.

Essentials for Childhood Program Overview & Portfolio Review

Overview

Melissa T. Merrick, PhD, Behavioral Scientist
Surveillance Branch, Division of Violence Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Dr. Merrick indicated that she and Dr. Fortson are subject matter experts (SMEs) in child abuse and neglect for DVP. She is in the Surveillance Branch, while Dr. Fortson is in the REB. They are both trained as Clinical Psychologists working primarily with children. She emphasized that they were excited to present on EfC and the portfolio review. EfC is a vision for all children in this country and in the world. It also is a framework of steps that are believed to be critical for communities, states, and countries to take to assure the health and wellbeing of children. EfC also is a funding initiative that has provided funding to 5 states, with over 30 additional states that are joining in this sort of initiative to implement EfC. Dr. Merrick explained that this portfolio review is somewhat different from others the center has conducted in that it is not a request for an entire review on everything that has been done on child abuse and neglect as a topic. Rather, it is a review of the particular framework and resulting initiative.

Child abuse and neglect are significant public health problems in this country and around the world affecting physical health, mental health, life, opportunities, and wellbeing. The child abuse and neglect field know a lot about what puts children at risk for being maltreated, abused, and / or neglected. A lot less was known about what protected children from that risk. It is certainly known through many years of brain science, trauma studies, and early child development that early experiences matter—both positive and negative. It is known that experiencing early adversity like child abuse and neglect and other adversities can affect health and wellness across the life course. In the absence of protective factors, this can repeat over generations. The idea of taking a dual generation approach in prevention is CDC's niche in terms of violence prevention, primarily—preventing violence before it occurs; thereby, stemming the flow of cases that touch other sectors such as social services, law enforcement, and criminal justice. Together with CDC's federal partners, everyone has shifted toward considering what we want to achieve for all children who are the parents and grandparents of the future—not just what we do not want and what risk factors we want to reduce.

This became the essentials for the childhood vision of assuring safe, stable, nurturing relationships and environments for all children. CDC has been moving toward this vision for many years. In the early 2000s, they first began talking in their division about safe, stable, nurturing relationships. Sometimes the environments got tacked on. That translated in research to SSNRs, but it was recognized that it was not plain language or very accessible to the public, other organizations, and such. A focus group was convened to develop the brand "Essentials for Childhood" that would resonate about what CDC believes to be the importance of these kinds of experiences and contexts for children. CDC has an Essentials for Childhood Steering Committee in the DVP, which is a cross-branch steering committee for surveillance, research, and evaluation that Drs. Merrick and Fortson are members of along with

representatives from other branches. It took several meetings for the committee to agree upon the words for the vision.

As the leading public health research organization for the US, CDC believes it should be leading the charge around the critical importance of safety, stability, and nurturing. These are key domains that have been found across the literature in this topic. Most of the agency's work has focused on relationships, primarily between parents and children. However, that has evolved to recognize other relationships such as support relationships between parents and environments (homes, communities, sociopolitical) for all children. This embraces this vision that is supported by and grounded in science that my children will do better if all of our children are doing better. This is the broad EfC vision. All of the intramural and extramural information that CDC puts out falls under this broader vision and portfolio. "For all children" is CDC's intentional integration of health equity into this work, which is really exciting and is new for this topic and the DVP in this very intentional, explicit way. They increasingly understand that in order to have safe, stable, nurturing relationships for all children, there are certain contexts that support children and families and certain contexts that do not. It is important to flesh that out to determine what that means for prevention efforts, priorities, and planning to achieve these sorts of essentials for childhood.

The purpose of EfC is to:

- Reduce the occurrence of child abuse and neglect and other adverse experiences
- Reduce the negative effects of child abuse and neglect and other adverse childhood experiences
- Influence many physical, cognitive, and emotional outcomes throughout a child's life
- Reduce health disparities / inequities
- Have a cumulative impact on health to assure that children are able to reach their maximum health and life potentials in order to be productive members of society and thrive

There is a framework for EfC, which are steps to create safe, stable, nurturing relationships and environments for all children. They tried to bring copies of "Essentials for Childhood," but they literally cannot keep it in stock. It is available online. It addresses the following goal areas as being critically important to be engaged in in order to prevent child maltreatment and child abuse and neglect and assure essentials for childhood:

GOAL 1: Raise awareness and commitment to promote safe, stable, nurturing relationships and environments and prevent child maltreatment

GOAL 2: Use data to inform actions

GOAL 3: Create the context for healthy children and families through norms change and programs

GOAL 4: Create the context for healthy children and families through policies

Essentials for Childhood encourages work in each of these goal areas. In terms of internal work in meeting these goals, Dr. Merrick noted that those in the room had a hard copy of CDC's

recently created and released technical package that is about the best evidence to support Goals 3 and 4. This also is available online to download. Goal 1 is about raising awareness and commitment for safe, stable, nurturing relationships and environments for all children. In this way, it is important to move beyond awareness alone.

Most people agree that children should not be hurt; however, the commitment piece is lacking. “Yeah, we know it’s a problem, but we don’t really see our role in the solution.” Some of the work DVP has been engaged in to get the messages out with regard to Goal 1 is through provision of some resources to support the dissemination of *Raising of America, Early Childhood, and the Future of Our Nation*, which is a 6-part documentary series that is the follow-up from California Newsreel, a production company out of Berkeley, California. Their first acclaimed Public Broadcasting Service (PBS) documentary hit a few years ago was titled, *Unnatural Causes: Is Inequality Making Us Sick? Raising of America, Early Childhood, and the Future of Our Nation* is a follow-up that addresses brain and early child development science and how that sets children on a trajectory to be productive and well and to thrive—or not. DVP has helped to disseminate the tools that the *Raising of America* platform has developed. The website is www.raisingofamerica.org. They have produced many materials and encourage people to put their own logos on them. The point is to make it user-friendly in terms of starting conversations with stakeholders or partners in various states or organizations. American Public Health Association (APHA) debuted the one-hour documentary series in their fall meeting last year. Many organizations are using *Raising of America* to address Goal 1, the critical area of importance of the childhood period for all children and bottom lines.

Goal 2 pertains to using data to inform primarily prevention action. DVP has done a lot of work in this space as it relates to the adverse childhood-related experiences data, for example. To date, 32 states and DC have collected adverse childhood experiences information on their Behavioral Risk Factor Surveys (BRFSs). BRFS surveys are random digit dialed (RDD), state level, public health surveys. There has been an optional module on these available to states to use since 2009. DVP provides technical assistance to help states use the data they have collected to prioritize the prevention of early adversity, develop partnerships, raise awareness and commitment, and speak to traditional and non-traditional partners about what it means for them. For example, many states have become very savvy in partnering with business or media. Some states have collected this information multiple times. For example, Wisconsin has collected the data 3 to 4 times so they are able to get county level estimates. In an executive summary they recently published, they reported finding 4 or 5 counties in which at least 20% of the respondents had an ACE score of 5 or more. ACE data offers a summed score that as one’s early adversity increases, so too does one’s risk for a host of health, wellbeing, and life opportunity outcomes. A score of 5 is very high. Most ill effects on health outcomes are seen at and ACE score of 3. For them to identify by collecting these data and prioritizing surveillance of this kind of information, they are able to target some communities that may need additional services and prevention efforts. These are some examples of Goal 2 with which DVP is assisting internally. CDC has an interagency agreement with the Office of Child Abuse and Neglect at ACF. There is a series of case studies on the new ACE web pages that discusses various states and how they even got to collect and prioritize these data, recognizing that this work cannot be done alone. As public health agencies, they need to be partnering across sectors. There are 3 states already, with a goal to have a series of those types of tools for states to access.

A great example of work that DVP is doing related to Goal 3 is called, “Essentials for Parenting Toddlers and Preschoolers.” All of the science known from psychotherapeutic interventions and behavioral interventions for child maltreatment prevention has been distilled into this free online

resource that is more accessible to a broader range of people. It presents the information in multiple ways through vignettes, expert accounts and advice, quizzes, et cetera in order to determine the best ways to access various types of information. This tool is currently being evaluated. Goal 4 is the newest area in which the SMEs and scientists within DVP are working. They have had a lot of policy trainings to increase their own expertise in this space. For example, some of their scientists have performed a lot of policy analyses to assess policies that may have impacts on reducing risk factors for child abuse and neglect. This goes beyond traditional policies. The technical package is a tool to distill the best available evidence pertaining to Goals 3 and 4. It begins with approaches that DVP thought could have the largest population-level impact, and then moved to those that are more tailored to preventing recidivism or future child abuse and neglect after child abuse and neglect have occurred. The technical package begins with policy level interventions, such as economic support for children and families. This is very exciting for the field and is backed by science to show that there are positive impacts on children's health and wellbeing.

This framework / funding initiative is now being implemented in the following 5 state health departments: California, Colorado, Massachusetts, North Carolina, and Washington. These states are currently in Year 4 of a 5-year award. What is really exciting and points to the momentum in this space of recognizing the critical importance of protective factors early and often across the lifespan is that there are over 30 self-supported states, meaning that they do not receive any CDC dollars, participating in the *Essentials for Childhood* initiative. They receive other resources and investments just because of the potential that funders perceive for this kind of intervention. There are a lot of components in *Essentials for Childhood* that require states to work across sectors, have partners, have at least one non-traditional partner (business, media), engage in each of the 4 goal areas simultaneously, and use a collective impact approach. An evaluation of the state component is being planned.

EfC Portfolio Review

**Beverly L. Fortson, PhD, Behavioral Scientist
Child Maltreatment and Sexual Violence Team
Research and Evaluation Branch, Division of Violence Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention**

Dr. Fortson indicated that the purpose of the portfolio review is to determine to what extent the current vision, purpose, and goals of EfC have performed in the following areas:

- Scope and reach
- Sustainability
- Monitoring, evaluation, and metrics to determine the impact of the work beyond rates of child abuse and neglect
- Impact
- Child abuse and neglect technical package uptake (Goals 3 and 4)

In terms of the organizational structure for the evaluation, the portfolio review is overseen by the Office of the Associate Director for Science (ADS) within the center. As part of that, an external evaluation contractor has been engaged (Battelle). Ms. Sally Thigpen is the Lead Evaluator. The Workgroup Co-Chairs are Drs. Merrick and Fortson. Other internal CDC staff members are involved, who are external to DVP and who are members of the Peer Review Workgroup.

Those individuals are consulted as needed, but they are not involved in the daily processing of this review.

The evaluation questions are as follows:

- Are there ways to refine or revise the vision or framework for EfC that will maximize potential for impact? They want to have the greatest impact they can, and if it means changing what they have been doing, they are willing to do so. Input will be sought from stakeholders, grantees, and other individuals who have been involved in this work to determine whether they believe changes need to be made.*
- What strategies / approaches can be used to expand and sustain the EfC Initiative to all 50 states?*
- The new Child Abuse and Neglect Technical Package supports EfC goals 3 and 4. What strategies can be used to increase uptake of the Child Abuse and Neglect Technical Package?*
- What else can be done to enhance the monitoring and evaluation of the progress of the EfC Initiative? Are the metrics appropriate? Are there additional ways to measure impact?*
- Assuming we have a clear and appropriate vision / framework, how can we increase the impact of EfC (e.g., communications, technical assistance, funding and other resources, training, partnering, infrastructure)?*

In terms of the methods for this process, a number of efforts have been made to gather information, one of which is a literature review. The literature review has focused primarily on metrics and measurement. Much is already known about the rates of child abuse and neglect; the impact of child abuse and neglect on children and families short-term and long-term, et cetera. However, they struggle often with how to measure impact. If they are doing something now that is impactful, it is unlikely that effects on child abuse and neglect will be seen until much later. Thus, consideration must be given to some short-term proxies that potentially could be used. Another method for this process is an environmental scan to assess current and past child maltreatment efforts with the division, as well as those in which individuals outside of the division and center have been engaged. The goal is to evaluate what has occurred in the field over the last 20 to 30 years to try to understand how that has impacted or influenced where they are now. Another method is through stakeholder interviews with grantees and individuals who have some information that would be appropriate to share. They are speaking with grantees, other experts, such as those who are experts in the collective impact framework and people with policy and / or practice expertise, measurement, communication, et cetera. The workgroup review is another method, and was one of the primary reasons for Drs. Merrick and Fortson to present during this meeting. Inputs include the following:

- EfC program data, DVP child abuse and neglect prevention research and program historical records
- Consultation with NCIPC senior leadership, project work group, project evaluators
- Evaluation contractor
- Evaluations that complement the Portfolio Review
- Workgroup meeting
- BSC

In terms of progress to date, a workgroup has been assembled, the literature searches have been completed, the evaluation questions have been completed, the interview questions / guides have been drafted, the environmental scan is in progress (current and historical internal documents, internal and external metrics review), and stakeholder interviews are in progress. The next steps are to complete the environmental scan, complete the interviews, analyze the data, draft the report, present to the external Expert Workgroup, and present the final report and recommendations to the BSC.

Discussion Points

Dr. Maholmes congratulated Drs. Merrick and Fortson on a wonderful presentation and thanked them for the hard work they are doing. She asked who the end users / constituents are at the state level.

Dr. Merrick replied that the funds are allocated to the public health department. The public health department has to be the backbone agency, but they are required to partner with other key sectors and partners, traditional and non-traditional (child welfare, social services, law enforcement, criminal justice, public health, law enforcement, business, media, et cetera).

Dr. Fortson added that the public health department is responsible for the funding, as well as collecting and gathering the various partners and other sectors to implement the work. Ultimately, the intended effect is to influence rates of child abuse and neglect within the communities in which these state health departments are working. It is supposed to be a statewide effort as well.

Dr. Maholmes said she still did not have a clear sense of how much funding the health departments receive and what their specific charge is once they receive the funds. It would be interesting to see whether there is a saturation effect with that funding throughout the state, what practices are institutionalized, how knowledge is generated, how communities are informed, whether the funding is administratively top-heavy or gets down to the programmatic level, et cetera. It was not clear to her whether that was codified in the evaluation process. If not, it might be something to consider.

Dr. Allegrante thanked Drs. Merrick and Fortson for their presentations. He thought the questions outlined for the portfolio review seemed entirely appropriate and reasonable. In terms of a broader discussion regarding EfC, he wondered whether there was a developmental period on which they might focus. The cumulative and now converging evidence about getting young children and their families started has to do with the first two years of life, and the various perturbations that can occur (malnutrition, lack of breastfeeding, et cetera) to help young people get a good start. In terms of the different levels of investment across the early childhood and adolescent lifespan, it is clear that for particularly disadvantaged children, those investments are critical in the preschool years. He wondered whether thought has been given to this in terms of the framework going forward, and where the emphasis might be placed.

Dr. Merrick replied that they have struggled with this internally as well. DVP believes that the science is clear—it is important to start early and continue often in terms of protective factors. Some would argue that it is not even enough. Certainly they share that prioritization as early as possible. What they do not want lost here is that they cannot stop providing safe, stable, nurturing relationships and environments once this critical period has passed. That all too often happens. Particularly in adolescents, it is known that there are still some scary empirical results

that show that physical abuse in adolescents can exact tremendous tolls on health and wellness across the lifespan, even if there were none earlier on in the life course. The reason they see safe, stable environments as their vision is because it is a catch-all. Who is going to say they do not want those things. However, there are limited resources in terms of time, personnel, and money. Therefore, it is necessary to prioritize. The other 30 states that are doing this without CDC funding are on CDC's webinars and are accessing the agency's resources. They have made the resources available to anyone who wants to join in those activities. They have the funds and permission to figure it out in terms of what makes sense for states. While they are giving funding to public health agencies and making them the leader, it is important to recognize that public health cannot do this work alone—not even at the state level. Another comment made earlier was that prevention occurs in localities at a much more granular level. This is their first foray. CDC has not allocated child maltreatment or child abuse and neglect funds in many years. This is a testing ground around this vision. They are hoping internally to learn a lot about where states were able to get the most buy-in from the most types of partners. CDC is partnering with the American Academy of Pediatrics (AAP) and the American Psychological Association (APA) to understand what everyone's role is in this. DVP is arguing that everyone has a role to play in preventing child maltreatment or child abuse and neglect for all children, but what is that role? She thinks too often, they are too vague and do not offer action steps. Those action steps will vary across development. EfC is about recognizing that these things are super important, but once this period has been missed, they cannot stop. They can still affect change, health, and wellbeing across the life course.

Dr. Fortson added that the technical package includes some of the things alluded to with regard to early childhood. She thought that one thing which could be taken away from the technical package is that the things that they are recommending as most important are changing social norms, implementing policies to support parents and positive parenting, et cetera. No matter what the developmental period is, those will be positive and impactful for all children and families in general. That is important to keep in mind as well.

Dr. Mickalide said that for many years, as a childhood unintentional injury prevention expert, she has been asked about failure to provide injury prevention interventions (helmet, smoke detectors, buckling up in the car, not leaving a child alone in a hot car, et cetera) to children and whether that is a form of neglect. A lot of reporters have asked her that question. She asked to what extent that crosswalk has been made between the unintentional injury sector and the work that DVP is doing.

Dr. Merrick replied that this had not been done well enough or intentionally enough. She added to the list drowning, co-sleeping deaths, et cetera. DVP needs to do this internally if they expect their grantees also to partner across these silos. They have heard from the states and others that it is about giving states the freedom to say they encourage those conversations. This is not about one sector. It is about recognizing that there are parallels across injury and all topics. One of DVP's main missions is to help CDC as a full agency understand how early adversity and child abuse and neglect lead to all of these topics. If you want to prevent cardiovascular disease (CVD), care about children. If you want to reduce incidence of cancer, care about children. Bridging these silos is a challenge, but the point is well taken and they know they need to do better.

Dr. Johnson pointed out that HUD houses 1 in 4 of the poor children in America. This is a good opportunity to think about who they are talking about when they are saying “abuse and neglect.” The children who are being abused and neglected are more than likely going to be children who HUD houses. HUD is undertaking a large data collection effort pertaining to homeless families, the impact of child wellbeing, the wellbeing of parents, IPV, and a host of other potentially useful variables. They have some interim findings that look at these outcomes. They are looking at 12 communities, 3 of which are in the 5 funded states mentioned. They also are working with the Health Resources and Services Administration (HRSA) in terms of their Early Childhood Comprehensive Systems (ECCS) program. They are in discussion with David Willis regarding home visiting programs, looking at effective models to begin thinking about who the young moms are in public assisted housing who can benefit from prenatal care. Dr. Johnson said he shared this with them because he thought of this as an area of opportunity where, given that HUD provides housing and CDC is interested in abuse and neglect, HUD could serve as a portal to the population of interest. This may be an opportunity to think about ways to test out models. HUD does a lot of work pertaining to collective impact. The Executive Directors who run the Housing Authorities cannot exist without doing collective impact. They have really good relationships with all of the service providers in their jurisdictions (public safety, health, social services, et cetera). This may be a good opportunity to begin thinking about what fellow agencies can demonstrate in working together. They do this a lot, but could be much more effective about it. He is very excited about what Drs. Merrick and Fortson outlined and would make the case that they have a lot of data amongst the agencies, and they should figure out how to use those data to build evidence and to make the case. He also enjoyed the comments about making these changes over the life course. The point that he would make about perhaps looking at their data is that they track children over the life course. One of the powerful things that they know about linked data is that data on programs that they launched in the 1990s may have shown that the impacts they were looking for were not there. But when they look 20 to 30 years later, they find that if they had just stopped there, they would have made some bad mistakes. Many of the brightest thinkers are saying that they really need to be linking data and tracking over the life course. That is 0 to 18, 0 to 40, and 0 to 50. Many of the things that have been done in terms of these studies with strong and rigorous designs, and the beauty of random assignment, is the possibility of tracking over the life course. Researchers are now realizing that they can make use of some of these data that have been sitting on the shelf. It is possible to look at the impact of mobility on falls among seniors, college attendance, incarceration, and a number of other things because of the way the studies were designed. Dr. Johnson encouraged everyone to look at some of the things that are sitting on the shelf.

Dr. Merrick replied that they would welcome the opportunity to partner more broadly with HUD, HRSA, and other federal agencies around this work. No one agency can do all of this work alone. This is about people’s lives and the complexities and interplay between risk and protective factors at every layer of the social ecology (individual, community, sociopolitical climate, et cetera). There is an intense amount of urgency in this work and for children’s lives.

Dr. Hargarten asked whether they had looked at health care systems. In his state, the Children’s Hospital of Wisconsin has a vision statement to have the healthiest children in Wisconsin. That is a sea change for health systems when 20 years ago they were talking about visits, operative interventions, et cetera. With the Affordable Care Act’s (ACA’s) changing health care systems to be attuned to community assessments, their engagement is different than it was 10 to 15 years ago. In the states CDC is funding and other states, this is a valued partner, particularly the independent children’s hospitals that are fiercely dedicated. Health care systems are a good partner to consider pulling in explicitly as are schools. Schools can be partnering to look at early identification, and pulling in psychology services if possible in those

school systems. His understanding is that Medicaid pays for this. These are two key partners that would complement the ones they have been working with.

Regarding the ACES work, **Dr. Merrick** indicated that they have engaged with the health systems and the Child and Adolescent Health Measurement Initiative to get ACES data in healthcare systems through partnering with Medicaid and such. There is so much work going on throughout the country at every level of organizational structure and every level of the state. It is about trying to bring it all together in a timely way when everybody is taxed with different priorities.

Dr. Gorman-Smith thanked Drs. Merrick and Fortson for all of this work. She punctuated the age issue. Everyone agrees that early childhood is important. There are some real sea changes; however, she worries that they are leaving many children out because they are so focused on early childhood and she appreciated the thoughtfulness around that. She also appreciated the focus on policy and thinking about other kinds of policy. She has been thinking a lot about housing, so she appreciated those comments as well. She liked seeing reducing health disparities as a major goal. She would like to see that even higher. It is known that there is a disproportionate burden of risk. Looking at the technical package, there are absolutely universals around parenting and family functioning, but also known is that context really matters around those things. The intersection between where someone lives and what it takes to parent is really different. In terms of uptake and reach, it will be important to have some more targeted kinds of materials in those contexts. It has not always been so clearly stated, so thinking more about those social determinants is really critical to move this forward.

Dr. Merrick responded that they are learning how to do this and how to do it well. She applauded their leadership for letting them push further than they traditionally have in terms of integration of social and structural determinants of health and figuring out what that means for children in a real way. A few years ago, they had a broad internal working group to integrate the health equity people with child abuse and neglect people. It got contentious. The comment was made that, "It's not like poor people don't provide safe, stable, nurturing relationships." Someone retorted, "Yeah, but if they're working three jobs and don't know where their next meal is, and don't know how to get to therapy, and all these other things, why does it have to be so darn hard for them?" It is recognizing all of the nuances and complexities that are the real life experience that they need to bring out in their more formal materials.

Dr. Duwve echoed that. She believes the discussion around social determinants and health equity is really important. Probably more important than them having that conversation is figuring out how to communicate this effectively to people at the state policy level. It is a really difficult concept to understand. Various people can sit around a table and not really get it. She is not sure she totally understands it, but it is really important to start that conversation, to keep it going, and to keep trying to figure out how to make it more meaningful to those for whom it is just a foreign concept.

Dr. Merrick replied that the feedback they have received from the states is they are so appreciative that CDC has called it out as a child abuse and neglect prevention strategy, so they can be engaged in policy work or in caring about structural determinants of health. It was as if they were limited before when CDC did not call those themes out as being critically important for children and families. They may recognize that parent / child interaction therapy is a gold standard, but not recognize that there are barriers to getting to treatment such as transportation issues. Parenting interventions would be more effective if they think about the context and recognize the contextual barriers that often exist.

Dr. Greenspan reported that she recently was on a staff visit to the Minnesota State Health Department, and was really impressed that the Deputy Commissioner there has made it a central part of their program to call out the issues of disparities and health equity. The more they can get state health departments to champion that, since everything is really done at the local level, the more success they would have. She would use that as a resource among other states.

Dr. Timmons asked whether any of the states are working teaching parenting skills in schools as part of their grant activities or otherwise.

Dr. Merrick replied that she did not know of this occurring, but thought it seemed like a good idea.

Dr. Maholmes said that she hears many of these types of conversations that are occurring in parallel. A lot of good work has been done in this area. She leads the NIH Child Abuse and Neglect Working Group, and there is a federal interagency working group as well. It probably would be useful to see how they can map on what CDC is doing with that work. NIH just released a centers grant initiative for research in child maltreatment. There should be ways that they can discuss natural handoffs. NIH's work is research. It is not policy. It is not the state level work that CDC does. But, it would be useful to have NIH's research be a foundation for policy-making. To the extent they can figure out how to target priority states and programs where they have shared interests, those might become high priorities for funding or co-funding. The issue has been pushed around the edges for decades and now has come back full circle, though they are using different language to talk about the same things. NIH often talks about incremental science and bemoans the fact that they do not have enough funding to get a handle on some of these significant public health issues. This is the way to make this a nice centerpiece to have some of these parallel discussions. There is a lot of science that has now made it into the common parlance of laypeople, news media, et cetera. Consideration should be given to how to build on that to address some of these issues and leverage the work and limited resources that the respective agencies might have to make an impact and call attention to this issue. She also would love to have that conversation with HUD. One of NIH's divisions partnered with HUD on poverty and the impact of poverty on child development years ago. They collected these data, made statements about the immediate question, but there are long-term questions that need to be asked. There are funding mechanisms to analyze existing data, and could create data repositories so that investigators can analyze those data and answer important questions. It seems to her that some of the issues that were discussed the previous day are inextricably linked with EfC. Other types of injuries could be linked and connected to child abuse and neglect as well.

Dr. Merrick said she thought what Dr. Maholmes was talking about was modeling good behavior. They need to work together and support each other to move this forward. She agreed that they are all saying the same thing.

Dr. Porucznik added that anti-bullying is being focused in schools. It strikes her that many of the ideas that would go into child abuse and neglect are about relating with people and conflict resolution that might translate into bullying or into someone's future management and leadership training. The more that they can synergize this and are teaching people about how to get along with each other and recognizing that it touches all of these things, the more efficient they might be.

Dr. Mickalide asked to what extent CDC has a partnership with the National Association of Social Workers (NASW). It seems that social workers are dealing with these issues all of the time, though she had not heard it mentioned during the day.

Dr. Merrick said that of all the groups, she did not know that they have anything specifically with social workers and some of the broader groups social workers would be a part of.

Dr. Johnson indicated that they have matched their data to the National Health Interview Survey (NHIS) and National Health and Nutrition Examination Survey (NHANES) data, so they have a lot of data on healthcare indicators on people who live in assisted housing, the poor unassisted, and the general public. If there is a need to have a discussion about what healthcare disparities and health equity look like, they could start there. HUD would be happy to set up a presentation where the teams from NCHS and HUD can talk about what has been done. That partnership took about three years to get done. The value and the power of the information that came out of it, not to mention the long list of articles, is very exciting. They are now renewing that Memorandum of Understanding (MOU) to include some additional data collection. HUD would be happy to discuss what healthcare disparity looks like, and it does not have to be about assisted households. When they link those data, they have assisted households, unassisted poor, and non-poor.

Dr. Maholmes noted that one group that used to be part of their federal working group was agriculture, and talking about food and security. One group was working with 4H and the land grant communities. These are really good partners because these issues intersect (food, nutrition, health, et cetera) at the level at which families are trying to provide fundamental basic needs for their children, which has implications for school readiness, et cetera. It is a continuum and feedback loop. There was discussion at dinner the previous evening about opportunities for workshops for the agencies. This might be one that is very cross-cutting where they could assess what they have, and where there are opportunities for leveraging the resources available and where there is shared interest.

Dr. Hargarten requested clarification about policy and whether they were talking about state and federal level policies that are legislatively initiated, or if they meant policies that inhibit or continue the progression of silos and not talking to each other. He wondered whether there were policies that could be examined and changed so that agencies could more easily work together. It will be important to link data to better inform programs in the evaluation of policies.

Dr. Fortson responded that it is the broad range, and not limited to any specific policies. It was mentioned earlier about all of the initiatives occurring in each of the states that DVP funded. They have information on that. The lead evaluator has encouraged the states that are receiving those funds to identify the lead for each of the initiatives and ensure that they know what each other is doing in order to avoid duplication of efforts, and where possible, inviting those people to be a part of the work that they are doing for EfC as well.

Dr. Hargarten said he was reflecting on the old saying that could be reframed somewhat, "Children should be seen and not hurt." He called for a motion for the establishment of the Essentials for Childhood Portfolio Review Expert Panel.

Dr. Greenspan clarified that NCIPC has decided to run the Essentials for Childhood Portfolio Review Expert Panel as an official BSC workgroup. The charge to the panel would be to review the findings from the portfolio review, and then develop considerations that they would present to the BSC. Based upon that report, the BSC would make recommendations similar to what they have done with regard to other reviews. She referred everyone to their packets for the specific charge, as well as a list of prospective members for that workgroup. She thanked the BSC members who agreed to serve on the panel: Dr. Hargarten, who agreed to serve as Chair and Dr. Mickalide who agreed to serve as the second BSC representative. Everyone agreed to remain on the BSC for an extra 180 days, which should be sufficient.

Dr. Duwve observed that no one among the proposed members appeared to represent state public health. She wondered whether someone from the Minnesota Department of Health, which is engaged in a lot of health equity work, might be added to the workgroup.

Dr. Merrick said that they agree that they would be a valuable addition, and many public health departments are included on the stakeholder interviews. The reasons the grantee states and other state health departments were not included is that they did not want to be perceived as or actually provide information that might make them more competitive in terms of future funding opportunities.

Dr. Duwve suggested adding someone from the University of Minnesota who works on this topic and has more intimate knowledge of the work that Minnesota is doing.

Dr. Merrick indicated that they would reach out in terms of key stakeholder interviews.

Motion / Vote

Dr. Shelly Timmons moved and **Dr. Samuel Forjuoh** seconded a motion to approve the request for formation of an Essentials for Childhood Portfolio Review Expert Panel as outlined. The motion carried unanimously with no abstentions.

With no further questions or comments, **Dr. Hargarten** expressed his gratitude for the presentations and discussion and dismissed the group for lunch at 12:00 p.m.

Call to Order / Roll Call

Stephen Hargarten, MD, MPH
Professor and Chair
Department of Emergency Medicine
Medical College of Wisconsin
Chair, National Center for Injury Prevention and Control Board of Scientific Counselors

Dr. Hargarten called the group to order following the lunch break at 1:17 p.m. **Ms. Lindley** conducted a roll call and established the presence of a quorum.

Overview of National Intimate Partner and Sexual Violence Survey Expert Panel

Jeffrey E. Hall PhD, MSPH
Lead Behavioral Scientist
Centers for Disease Control and Prevention

Dr. Hall expressed appreciation for the opportunity to present an overview of NCIPC's National Intimate Partner and Sexual Violence Survey (NISVS) in order to provide the context for NCIPC's request to establish an NISVS Methodology Working Group. The objectives of the NISVS are to:

- Collect information about experiences of sexual violence, stalking, and intimate partner violence
- Produce national- and state-level prevalence estimates of these types of violence
- Provide important information about who is most likely to experience victimization and the health consequences experienced

CDC is committed to making ongoing improvements in NISVS. The context for data collection and the field of survey methodology are constantly evolving. CDC wants to ensure that NISVS makes full use of the best practices for collecting accurate and timely data on these topics.

Two key aims of the Paperwork Reduction Act of 1995 (PRA) are to minimize the paperwork burden on the public, and minimize the cost to the federal government by reducing duplication of federal efforts. With regard to federal information collections, a critical way to minimize burden and reduce duplication is to avoid redundant data collection on the same population by different federal agencies. Collaboration across federal agencies is emphasized as a means of promoting scientific and fiscal stewardship.

In accordance with the PRA, NCIPC must request clearance from OMB to collect data via NISVS. OMB has requested a closer collaboration between CDC and Bureau of Justice Statistics (BJS) through the conditions required for clearance of the 2016 NISVS PRA-OMB package. Data collection for 2016-2018 was approved contingent on CDC's commitment to:

- Obtain advice from a panel of experts in survey methods regarding how to improve NISVS methods
- Continue to collaborate with the BJS
- Continue to incorporate changes to the questionnaire to reduce burden and increase utility (including adopting best practices for sexual orientation and gender identity questions)
- Keep OMB informed of the recommendations of the survey design experts and how CDC intends to address their recommendations.

According to the CDC Office of General Counsel (OGC), the use of a workgroup formed under a chartered Federal Advisory Committee such as the BSC is an appropriate option for obtaining expert consultation within a group context. Such a workgroup ensures that the agency remains in compliance with the Federal Advisory Committee Act (FACA) of 1972 (5 U.S.C. app.). NCIPC, OGC, ICRO, and OMB jointly decided that a formal workgroup is needed to provide guidance on identifying and implementing methodological enhancements to NISVS. To comply with OMB requirements, NCIPC requests development of a BSC authorized workgroup to address the methodological issues that have been identified with the NISVS survey.

The proposed charge for the NISVS Expert Panel is as follows:

- ❑ The proposed workgroup would provide guidance on improving NISVS methods with the goal of increasing response rates, reducing non-response bias, and maximizing collaboration opportunities across federal surveys.
- ❑ Input would be sought on questions such as:
 - Response Rate: How do we increase response rates in a dual-frame random-digit-dial telephone survey?
 - Non-response Bias and Other Sources of Error: What are some effective ways of dealing with non-response bias?
 - Sampling Frame: Is a dual frame RDD telephone survey the best mode of administration for a survey involving sensitive topics such as NISVS?
 - Survey Administration/Selected Methodological Issues: Are there ways to enhance the call protocol to enhance respondent safety, comfort, and disclosure?
 - Maximizing Opportunities for Federal Collaboration in Data Collection: How might federal surveys such as NISVS and NCVS be effectively positioned to operate interdependently?

The proposed workgroup would meet four times over the course of the next year in accordance with the following schedule: 3 (three) web-meetings of approximately 1 to 1.5 hours with the full panel; and 1 (one) day long, in-person meeting to be held at one of CDC's campuses in Atlanta, Georgia.

The workgroup would present a summary of its methodological considerations to the BSC for review and subsequent recommendation for action at the BSC meeting to occur in May or June of 2017. The BSC's recommendations would then be shared with NCIPC leadership in advance of finalizing the report that must be submitted to OMB. The activities of the proposed workgroup would be completed by Fall 2017. The deliverables would be as follows:

- ❑ Workgroup meeting notes / recorded meeting minutes reflecting agenda items, discussions, issues raised, decisions, identified action items, concerns, anticipated problems, and proposed solutions.
- ❑ A report describing the input received during the meetings and individual recommendations for improving the NISVS system.

Discussion Points

Dr. Houry thanked Dr. John Allegrante who agreed to serve as Chair the workgroup and Dr. Maria Testa who agreed to serve as the second BSC representative. Looking at the experts, she did not see a physician. Since some of the questions are related to health care or health-associated effects of SV or IPV, having an MD would be helpful.

Dr. Hall responded that they were trying to identify the first slate of members. The persons ultimately approached for participation have a pedigree that is very much steeped in expertise in

SV, stalking, or IPV in addition to being able to provide some very focused methods-specific expertise so that they would be able to show compliance with the request of OMB.

Dr. Houry indicated that she and Dr. Johnson were speaking the day before regarding the Census Bureau and the data they have. She noted that that they appear to have a lot of NCIPC, BJS, and NCHS references. She wondered whether they should consider other federal agencies. They may not need to be workgroup member, but instead could be brought in as an expert in terms of different methodologies or ways to collect these data.

Dr. Hall thought this was a great idea. He emphasized that they started from a blank page in terms of figuring out what parties needed to be engaged in this. For the most part, the parties listed were identified as critical in terms of initial conversations with OMB. He agreed that the more brains brought to table, the better the thinking will be. It is important to keeping in mind a few limitations. For example, they have a very limited budget with respect to being able to sponsor travel for those associated with the outside participants of the expert panel.

Dr. Hargarten called for a motion for approval.

Motion / Vote

Dr. Samuel Forjuoh moved and **Dr. Joan Duwve** seconded a motion to approve the request for formation of a National Intimate Partner and Sexual Violence Survey (NISVS) Methodology Working Group as outlined. The motion carried unanimously with no abstentions.

Future Agenda Topics

Stephen Hargarten, MD, MPH
Professor and Chair
Department of Emergency Medicine
Medical College of Wisconsin
Chair, National Center for Injury Prevention and Control Board of Scientific Counselors

During this session, **Dr. Hargarten** called for a BSC discussion of future agenda topics. The following suggestions were made:

- Public health impact of pornography
- Child abuse and neglect in terms of the framework being used to engage in discussions across the injury spectrum, and looking at everything injury-related through the health equity and health disparity lens with a view to additional partnerships at the local and national levels
- NCIPC's use of the health equity lens when looking at funding states and programs in order to avoid increasing the disparities that already exist in states that are healthier from an injury prevention perspective, compared to states that have not received much funding that continue to bear that burden
- Convening a national injury conference spearheaded by CDC

- ❑ Efforts to support CDC's budget
- ❑ Define ways to engage CDC's stakeholders on a more regular and more intensive basis
- ❑ Students who go off campus, travel throughout the globe, and sometimes find themselves in serious situations where injuries / fatalities occur in terms of incidence, how much is known about it, data collected in the past and whether they are valid now, what has occurred since earlier efforts
- ❑ Accomplishments of the Injury Control Research Centers (ICRCs) throughout the country, and a discussion regarding what more could be done or what different foci there might be moving forward
- ❑ Motor vehicle activities, particularly given that it will be the focus of one of the grant opportunities in the next year:
 - Texting and driving, which could be expanded to all devices in cars, and what is known about overall distractions while driving and prevention of injury
 - Child reminder systems
 - Safer cars
 - Marijuana, opioid, and other drug use and impaired driving issues
 - Impact of medical marijuana availability in this country in terms of how it is affecting injuries
 - Impaired parents who are unable to supervise their children
 - Impaired individuals who are driving
- ❑ Formal trauma systems of care that have a lead agency that directs the care that is being provided, many of which are state health departments
- ❑ Implications of the recent publication from the National Academy of Medicine (NMA) on the lessons learned from the Military's experience in injury care to their implications for civilian care
- ❑ How CDC and the US interact with similar agencies in other countries with regard to injury (leaders, followers, partners, collaborators, et cetera)
- ❑ If / how work is occurring together within the centers at CDC, and how global climate change is going to affect injury risk
- ❑ Linked datasets:
 - How it helps to better understand complex injury problems and better informs programs and policies
 - Better presentation of analysis of linkage to mental health services

- ❑ Civil disobedience as a public health issue in terms of:
 - The event itself
 - Post-event
 - Forensic epidemiology expertise that might be helpful in cities suffering from these event to prevent them or better manage them and understanding them after they occurred
 - Mass shooting events in terms of preventable deaths, delay of responses due to security of the scene
 - Mental health services
- ❑ Recreational injuries among adults and children
 - Promotion of health and wellness in terms of educational activities
 - Backlash due to concussion awareness promotion and recession from physical fitness activities
 - Encouraging children to participate in healthy athletic activities to prevent obesity, while maintaining safety
 - Bicycle riding in complex traffic environments, along with other mobility devices such as scooters
 - Targeting Baby Boomers who are much more active in terms of risk, what having an injury within that age group might mean in terms of quality of life and independence
- ❑ Outcomes from injury:
 - Post-Traumatic Stress Disorder (PSTD) in terms of managing in a more prospective manner
 - Place-based initiatives in terms of injury prevention and control within a place-based setting: fostering interagency work; demonstrating the results of convergence within a given space
- ❑ Training and capacity-building for injury research and related fields
- ❑ Mechanisms of injury related to kinetic energy:
 - Firearms research results and brining this issue out of the shadows so that it is not such a “hot button” issue and is viewed as a public health crisis
 - More global perspective instead of being hamstrung by the notion of American exceptionalism

- Sweden as model in terms of achieving its goal
- Consider convening a national conference of global partners in order to learn from other societies that have been much more effective at dealing with such crises than the US seems to be

Announcements - NCIPC BSC Members / Ex Officio Members

No announcements were offered from board members or *ex officio* members during this session.

Public Comments

No public comments were offered during this session.

Recognition of Retiring BSC Members / Closing Remarks

Dr. Greenspan acknowledged the following members who were due to retire from the BSC as they had fulfilled their term limits:

- Dr. Stephen Hargarten
- Dr. John Allegrante
- Dr. Samuel Forjuoh
- Dr. Deborah Gorman-Smith
- Dr. Angela Mickalide
- Dr. Sharon Molock
- Dr. Christina Porucznik
- Dr. Maria Testa
- Dr. Shelly Timmons

She emphasized that they had all been phenomenal BSC members, and offered her gratitude for all of the work they each put in. She pointed out that NCIPC had given them reams of paper and that they actually read it, for which she said she was thankful and impressed. She indicated that all retiring members would be mailed a certificate, and that there was cake to celebrate.

Dr. Houry expressed her hope that those retiring would not retire from working with NCIPC as a partner. She said that she values and appreciates all of their input. She recognized the difficulty in being prepared and arriving with ideas and discussion. She said she appreciated that as they shifted, the BSC members were very participatory and exceeded their expectations. Her hope is that they all will continue to reach out to her or other staff members, particularly given that they are still in the field and can tell NCIPC what is really important to do and help them maintain connections. She thanked all of the departing members, and said that it had been a great pleasure having them there.

Dr. Hargarten expressed his deep gratitude to departing BSC members, emphasizing what a distinct honor and pleasure it had been to serve as the BSC Chair.

With no further business posed or questions / comments raised, the meeting was officially adjourned at 2:35 p.m.

Certification

I hereby certify that to the best of my knowledge, the foregoing minutes of the September 7-8, 2016 NCIPC BSC meeting are accurate and complete:

Date

Stephen Hargarten, MD, MPH
Chair, NCIPC BSC

Attachmen A: Meeting Attendees**BSC Members**

John Allegrante, Ph.D.
Deputy Provost
Columbia University

Joan Marie Duwve, M.D., M.P.H.
Associate Dean for Practice
Indiana University

Samuel Forjough, M.D., M.P.H., DrPH, F.G.C.P.
Department of Family and Community Medicine
Texas A&M Health Science Center College of Medicine

Deborah Gorman Smith, Ph.D.
Deputy Dean for Research
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Acronyms Used in This Document

Acronym	Expansion
AAMC	American Association of Medical Colleges
AAN	American Academy of Neurology
AANC	American Association of Nursing Colleges
AAP	American Academy of Pediatrics
ACA	Affordable Care Act
ACE	Adverse Childhood Experience
ACL	Administration for Community Living
ACPM	American College of Preventive Medicine
ADS	Associate Director for Science
AHA	American Hospital Association
AHRQ	Agency for Healthcare Research and Quality
AIP	All Injury Program
APA	American Psychological Association
APHA	American Public Health Association
AoA	Administration on Aging
ASTHO	Association of State and Territorial Health Officers
ATSDR	Agency for Toxic Substances and Disease Registry
BJS	Bureau of Justice Statistics
BRFS	Behavioral Risk Factor Survey
BRFSS	Behavioral Risk Factor Surveillance System
BSC	Board of Scientific Counselors
CA	Cooperative Agreement
CDC	Centers for Disease Control and Prevention
CI	Confidence Interval
CM	Clinical Modification
CMS	Centers for Medicare and Medicaid Services
COCA	Clinician Outreach and Communication Activity
COI	Conflict of Interest
CPT	Current Procedural Terminology
CR	Continuing Resolution
DARPI	Division of Analysis, Research and Practice Integration
DC	District of Columbia
DDPI	Data-Driven Prevention Initiative
DEA	(United States) Drug Enforcement Administration
DoD	(United States) Department of Defense
DUIP	Division of Unintentional Injury Prevention
DVP	Division of Violence Prevention
ECCS	Early Childhood Comprehensive Systems (HRSA)
ED	Emergency Department
EHR	Electronic Health Record
EIS	Epidemiologic Investigation Service
EMS	Emergency Medical Services
ER	Emergency Room
ERPO	Extramural Research Programs Office
FACA	Federal Advisory Committee Act
FOA	Funding Opportunity Announcement

FY	Fiscal Year
GCS	Glasgow Coma Scale
GRADE	Grading of Recommendations Assessment, Development, and Evaluation
HCUP	Healthcare Cost and Utilization Project
HHS	(United States Department of) Health and Human Services
HRSA	Health Resources and Services Administration
HTML	Hypertext Markup Language
HUD	(United States Department of) Housing and Urban Development
ICD	International Classification of Diseases
ICI	Intracranial Injury
ICRC	Injury Control Research Center
IOM	Institute of Medicine
IPV	Intimate Partner Violence
IT	Information Technology
IVPN	Injury and Violence Prevention Network
LGB	Lesbian, Gay, and Bisexual
MAT	Medically-Assisted Treatment
MME	Morphine Milligram Equivalent
<i>MMWR</i>	<i>Morbidity and Mortality Weekly Report</i>
MRI	Magnetic Resonance Imaging
NASP	National Association of School Psychologists
NASW	National Association of Social Workers
NCEH	National Center for Environmental Health
NCHHSTP	National Center for HIV, Hepatitis, STD, and TB Prevention
NCHS	National Center for Health Statistics
NCIPC	National Center for Injury Prevention and Control
NEISS	National Electronic Injury Surveillance System
NEJM	New England Journal of Medicine
NHANES	National Health and Nutrition Examination Survey
NHIS	National Health Interview Survey
NHTSA	National Highway Transportation Safety Administration
NIDA	National Institute on Drug Abuse
NIH	National Institutes of Health
NIOSH	National Institute for Occupational Safety and Health
NISVS	National Intimate Partner and Sexual Violence Survey
NMA	National Academy of Medicine
NVDRS	National Violent Death Reporting System
OADS	Office of the Associate Director for Science
OGC	Office of General Counsel
OGS	Office of Grants and Services
PBS	Public Broadcasting Service
PCARN	Pediatric Emergency Care Applied Research Network
PCORI	Patient-Centered Outcomes Research Institute
PDMP	Prescription Drug Monitoring Program
PDO	Prescription Drug Overdose
PfS	Prevention for States
PI	Principal Investigator
PICO	Patient-Intervention-Comparator or Co-Intervention-Outcome
PSTD	Post-Traumatic Stress Disorder

PRA	Paperwork Reduction Act of 1995
QI	Quality Improvement
RCT	Randomized Controlled Trial
RDD	Random Digit Dialed
RPE	Rape Prevention and Education
SAMHSA	Substance Abuse and Mental Health Services Administration
SAS	Statistical Analysis System
SAVIR	Society for Advancement of Violence and Injury Research
SBIR	Small Business Innovation Research
SMEs	Subject Matter Experts
SPECT	Single Photon Emission Computed Tomography
SPED	Statistics, Programming, and Economics Branch
STEADI	Stopping Elderly Accidents, Deaths, and Injuries
SV	Sexual Violence
TA	Technical Assistance
TBI	Traumatic Brain Injury
UC	University of California
UNC	University of North Carolina
VIPP	Violence and Injury Prevention Program
WHO	World Health Organization
WISQARS	Web-based Injury Statistics Query and Reporting System
YVPC	Youth Violence Prevention Center