

NCIPC Board of Scientific Counselors June 19-20, 2018

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

Table of Contents

Summary Proceedings.....	4
Call to Order / Roll Call / Introductions / Meeting Logistics	4
Approval of Last Meeting Minutes	5
CDC Director's Update / NCIPC Director's Update / Budget Update	5
CDC Director's Update	5
NCIPC Director's Update.....	6
Budget Update	8
Discussion Points	10
Opioid Prescribing.....	18
Methodologies for Estimating Rates of Opioid Prescribing.....	18
Discussion Points	24
Establishment of a Workgroup to Estimate Rates of Opioid Prescribing	28
Public Comment	31
Discussion Points	35
Motion/Vote	37
Opioid Research Overview.....	38
The Opioid Overdose Epidemic in the US: NCIPC/CDC Research Priorities	38
NIDA/NIH: Advancing Addiction Science to Address the Opioid Crisis	49
Discussion Points	54
Research Gaps / Research Priority Considerations / Recommendations: the BSC recommendation was to update the research priorities, with a 3 to 5 year time horizon for addressing them, with a cross-cutting focus, leveraging CDC's strengths, power, and expertise in communication.....	54
Conclusion / Adjournment	55
Call to Order / Roll Call	56
Web-based Injury Statistics Query and Reporting System (WISQARS™) Data Visualizations: Implementation, Lessons Learned, & Future Plans	56
Discussion	61
CDC's National Centers of Excellence in Youth Violence Prevention (YVPCs): Lessons Learned, Impact, and Future Directions	65
Objectives, YV Defined, History & Evolution of YVPCs.....	65
YVPC Accomplishments & Impacts	67
Current YVPCs & Future Directions for YVPCs	70
Discussion Points	72
Follow-Up Items / Portfolio Reviews / Agenda Setting.....	77
Public Comment Session	79
Conclusion / Adjournment	79

Attachment A: Meeting Attendance80

Attachment B: Acronyms Used in This Document85

Attachment C: Pre-Decisional Proposed Experts for the NCIPC BSC OPE WG Informing the
CDC Opioid Prescribing Estimates Project (Modified 5-31-18).....88

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

Twenty-Fourth Meeting
June 19-20, 2018

CDC Chamblee Campus
Atlanta, Georgia 30341

Summary Proceedings

The twenty-fourth meeting of the National Center for Injury Prevention and Control (NCIPC) Board of Scientific Counselors (BSC) was convened Tuesday June 19, 2018 and Wednesday June 20, 2018 in person. The BSC met in open session in accordance with the Privacy Act and the Federal Advisory Committee Act (FACA). Dr. Christina Porucznik served as chair.

Tuesday, June 19, 2018

Call to Order / Roll Call / Introductions / Meeting Logistics

Christina A. Porucznik, PhD, MSPH
Chair, NCIPC BSC
Associate Professor, Department of Family and Preventive Medicine
University of Utah

Dr. Porucznik called to order the twenty-fourth meeting of the NCIPC BSC at 8:30 AM on Tuesday, June 19, 2018. She requested that Mrs. Tonia Lindley, NCIPC Committee Management Specialist, call the roll.

Mrs. Tonia Lindley conducted a roll call of NCIPC BSC members and *Ex Officios*, confirming that a quorum was present. The roll also was called following each break and lunch to ensure that quorum was maintained. Quorum was maintained throughout the day. A list of meeting attendees is appended to the end of this document as Attachment A. The following conflicts of interest (COIs) were declared:

- Wilson Compton, MD, MPH reported that he has long-term stock holdings in General Electric, 3M Companies, and Pfizer.
- The remainder of BSC members and *Ex Officios* reported no COIs.

Dr. Porucznik welcomed the BSC members and *ex officio* members, thanking them for their continued commitment and willingness to attend the meeting in-person or via telephone. She emphasized that she continued to be impressed to their dedication to injury and violence prevention, as well as good and efficient use of the country's resources. She indicated that participants who wished to follow along with the presentations could access them on the [NCIPC BSC webpage](#), and that the minutes of the meeting would become part of the official record and would be posted to the [CDC Management Analysis and Services Office \(MASO\)](#) website once completed and approved. In addition, she reviewed housekeeping / logistics and requested that members participating via teleconference or Adobe Connect send an email to

ncipcbsc@cdc.gov acknowledging their participation in the meeting. Dr. Porucznik thanked members of the public attending the meeting in-person and via telephone. She expressed appreciation for their interest and their voice and indicated that time would be allotted at 11:10 AM should anyone wish to provide public comments so that the NCIPC BSC could take them into consideration during their deliberations.

Approval of Last Meeting Minutes

Dr. Porucznik referred members to the copy of the minutes from the February 26, 2018 NCIPC BSC meeting included in their binders. With no revisions proposed, she called for an official vote.

Motion / Vote

Dr. Hedlund made a motion to approve the February 26, 2018 NCIPC BSC meeting minutes. **Dr. Duwve** seconded the motion. The motion carried unanimously with no abstentions.

CDC Director's Update / NCIPC Director's Update / Budget Update

CDC Director's Update

Anne Schuchat, MD (RADM, USPHS)
Principal Deputy Director
Centers for Disease Control and Prevention
Via Video

Dr. Schuchat thanked the members for their hard work on the NCIPC BSC and for providing insight to the NCIPC and guidance on important and challenging public health issues in injury and violence prevention. She offered special thanks for members and *Ex Officio* members from across the Department of Health and Human Services (HHS) for all of their efforts to provide feedback in the development of the 2016 [CDC Guideline for Prescribing Opioids for Chronic Pain](#). She pointed out that this NCIPC BSC meeting would address another key area connected with the opioid epidemic, stressing how important this is to the health of the nation and how grateful CDC is for their expertise and time.

She explained that this meeting's agenda would include an important discussion of a project that is just beginning titled *Methodologies for Estimating Rates of Opioid Prescribing*, which would include a request of the NCIPC BSC to establish a workgroup (WG) to review existing guidelines, highlight several guidelines based on promising evidence, and estimate or provide reference points for opioid prescribing for acute and chronic pain. The opioid overdose epidemic is a priority for the Administration, HHS, and CDC. Dr. Schuchat expressed appreciation for the NCIPC BSC's guidance as CDC moves forward on this important work, underscoring that this epidemic did not begin overnight—it is a complex, dynamic problem that will take comprehensive commitment and effort to stop. In conclusion, Dr. Schuchat emphasized that the NCIPC BSC's contributions have been and will continue to be a vital part of the solution.

NCIPC Director's Update

Debra Houry, MD, MPH

Director

**National Center for Injury Prevention and Control
Centers for Disease Control and Prevention**

Dr. Houry expressed her gratitude for the NCIPC BSC members' expertise and guidance as NCIPC works to advance injury and violence prevention. Before sharing some recent highlights from NCIPC, she shared an update on CDC leadership. In March 2018, Dr. Robert Redfield was appointed as the new CDC Director. NCIPC has already met with him and engaged in in-depth discussions regarding NCIPC's work. Dr. Redfield has been very engaged, asked great questions, and expressed a deep professional and personal connection to several of NCIPC's topics. NCIPC looks forward to his leadership and continuing to engage with him proactively with regard to injury and violence issues.

Turning to some of the injury and violence topics NCIPC addresses, focus has been placed on the following three priorities since last fall that are high-burden, high-impact, and preventable:

- Opioid Overdose Prevention
- Suicide Prevention
- Adverse Childhood Experiences (ACEs) Prevention

In March 2018, a CDC *Vital Signs* on opioid overdoses treated in the emergency department (ED). That effort allowed NCIPC to focus on using its syndromic surveillance data on non-fatal opioid overdoses to drive action in communities. It also generated discussion about how being seen in the ED is an opportunity for intervention. Dr. Houry and several of the NCIPC staff co-authored a publication in the *Annals of Emergency Medicine* targeted toward emergency physicians. NCIPC also collaborated with the Office of the Director (OD) at CDC to assemble a suite of materials and dissemination channels ranging from an infographic and podcast to a webinar featuring the Surgeon General and the Acting CDC Director. Overall, these efforts were a tremendous success. The *Vital Signs* publication was covered in 995 news articles. The webpage received almost 250,000 views in the first month alone. There was social media reach of over 9.9 million and expansive coverage by medical organizations/outlets such as the American College of Emergency Physicians (ACEP), *New England Journal of Medicine (NEJM)* Journal Watch, Medscape, et cetera. These are examples of the impact that this work has in recognition of how data can be used to drive action.

In April 2018, CDC and particularly NCIPC, had a strong presence at the [National Rx Drug Abuse & Heroin Summit](#). Dr. Schuchat provided remarks as part of a plenary federal panel. CDC's subject matter experts (SMEs) also helped plan, present, and moderate a range of presentations, a few of which are highlighted below:

- Takeaways from the High Intensity Drug Trafficking Areas (HIDTA)/CDC Heroin Response Strategy and an Assessment of 911 Good Samaritan Laws*
- Faster Data: The CDC-Funded Enhanced State Opioid Overdose Surveillance Program*
- Using Electronic Health Record (EHR)-Based Clinical Decision Supports to Affect Opioid Prescribing Behavior*
- CDC Guideline: Implementing Clinical and Practice-Level Strategies*

The National Rx Drug Abuse & Heroin Summit also was a great opportunity to catch up formally and informally with old and new partners who are essential to CDC's work on the opioid epidemic.

With regard to NCIPC's recent work in suicide prevention, the Utah Department of Health invited CDC to assist with an epidemiologic investigation of suicide among youth 10 through 17 years of age during the years 2011-2015 to identify precipitating factors. This Epidemiologic Assistance (Epi-Aid) was published in November 2017 and was followed in March and April 2018 by two additional *Morbidity and Mortality Weekly Reports (MMWRs)*. The first examined the characteristics of and circumstance surrounding suicide among these youth in Utah and found that about two-thirds of these adolescents had multiple precipitating circumstances. Interestingly, 1 in 10 had experienced a family conflict that resulted in or was the result of technology restriction before their death. The second *MMWR* published in April examined suicidal ideation and attempts in students in 8th, 10th, and 12th grades in Utah. This analysis found that about 20% of youth in Utah had considered suicide and about 8% had attempted suicide. The report from the Epi-Aid sparked statewide conversation and engagement on this urgent issue. In his January State-of-the-State speech, Utah Governor Gary Herbert spoke about this rise in youth suicide and then launched a new task force to develop solutions.

CDC's first ever *Vital Signs* on suicide prevention, [*Vital Signs: Trends in State Suicide Rates — United States, 1999–2016 and Circumstances Contributing to Suicide — 27 States, 2015*](#) was published. Unique about this *Vital Signs* is that it reported changes in suicide across time over all 50 states and assessed those with and without diagnosed mental health conditions. This analysis pulls from two CDC surveillance systems, the National Vital Statistics Systems (NVSS) and the National Violent Death Reporting System (NVDRS). NVSS pulled from all 50 states and helped to highlight trends, while NVDRS pulled from a subset of states and helped inform the discussion pertaining to context, comparing those with and without mental health problems, and better understanding the circumstances and precipitating factors. Overall, the *Vital Signs* publication is meant to bring greater awareness to suicide and help connect people to some of the resources in CDC's Technical Package on Suicide Prevention. There were many exciting rollout activities, including a telebriefing for the media; a Twitter chat; and a virtual town hall hosted by CDC's Office for State, Tribal, Local, and Territorial Support (OSTLTS). On August 27, 2018 Medscape will release a commentary featuring NCIPC's Dr. Alex Crosby in which he will discuss the implications of these findings for clinicians. Dr. Houry said she was heartened to see the prevention messaging and the hotline number prominent in a lot of the news stories during the week the *Vital Signs* was released. Much of this was due to the work NCIPC has done on media and appropriate reporting on suicide deaths. Although there were critical incidents, the timing of the *Vital Signs* helped to inform the suicide prevention conversation.

To highlight some of NCIPC's ACEs work, the *Essentials for Childhood* Notice of Funding Opportunity (NOFO) closed on June 18, 2018. Awardees are asked to implement statewide comprehensive strategies and approaches designed to reduce ACEs. For this NOFO, there are anticipated to be up to 5 awardees. Total funding of \$7.75 million is expected with the average annual awards being \$225,500. The award date is September 1, 2018 and the period of award will be 5 years. NCIPC looks forward to reviewing the applications and continuing this important work.

Regarding other recent releases, NCIPC's Division of Unintentional Injury Prevention (DUIP) and the Division of Analysis, Research and Practice Integration (DARPI) published two important papers in May 2018 related to older adult falls. The first was an *MMWR* article, [Deaths from Falls Among Persons Aged ≥65 Years — United States, 2007–2016](#), which described the trend in fall death rates among older adults by select demographics and by states. Overall, the death rates from falls increased more than 30%. If this trend continues, about 59,000 older adult deaths from falls can be expected in 2030. That is 162 deaths per day or 7 deaths per hour in the United States (US). A second study was published in the *Journal of Public Health Management and Practice (JPHMP)*, [Estimating the Economic Burden Related to Older Adult Falls by State](#), which describes two methods to estimate state-level direct medical spending due to older adult falls and explains their differences, advantages, and limitations. States are now able to use these methods to quantify their own state-specific expenditures on this very important public health issue.

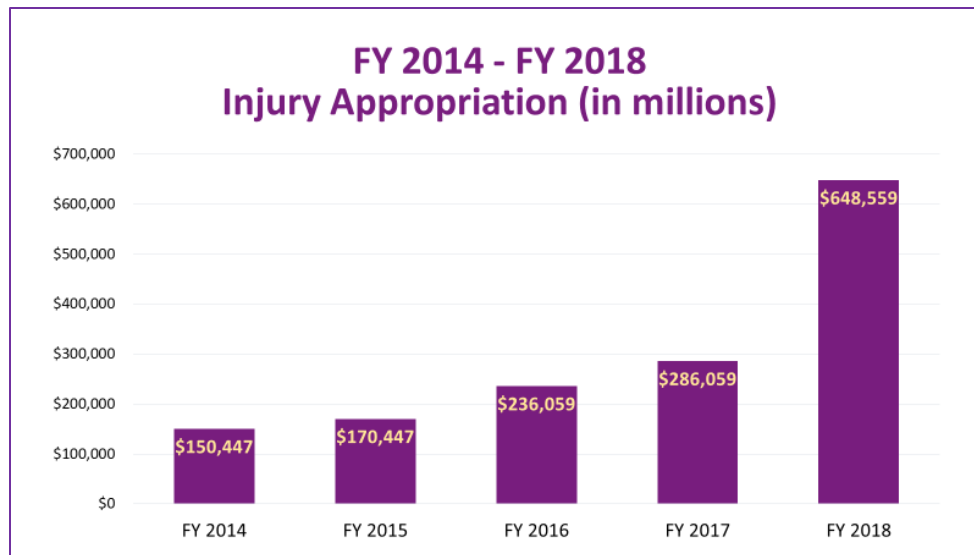
In May 2018, NCIPC's Division of Violence Prevention (DVP) released two new resources related to sexual violence (SV). The first was a brief report on data from the National Intimate Partner Violence and Sexual Violence Survey (NISVS). NISVS is an ongoing nationally representative survey that assesses SV, stalking, and intimate partner violence (IPV) victimization among adult women and men in the US. The [current report](#) highlights striking findings related to SV, stalking, and IPV victimization. In collaboration with the National Sexual Violence Resource Center (NSVRC), DVP also developed a new media guide called [Suggested Practices for Journalists Reporting on Sexual Violence](#). Reporters and journalists are in a unique position to help raise awareness of SV and promote appropriate prevention responses when reporting on it. This media guide provides all of the relevant information in one concise document so that the media can communicate more effectively with regard to SV.

Moving into summer and early fall, NCIPC is gearing up to allocate its Fiscal Year (FY) 2018 Omnibus funding. As part of that effort, a number of new staff members are being onboarded. Simultaneously, an organizational assessment is underway with the help of Price Waterhouse. This effort will help NCIPC determine how to maintain continued progress and not lose track of all of the great work it does. The assessment will review NCIPC's overall effectiveness, including processes, procedures, tools, and structure. Additionally, NCIPC will continue to explore creative ways through scientific analysis and partner engagement to better understand how ACEs, opioids, and suicides interact and what levers might work to prevent all three.

Budget Update

Elizabeth J Solhtalab, MPA
Associate Director for Policy (Acting)
Office of Noncommunicable Diseases, Injury and Environmental Health
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

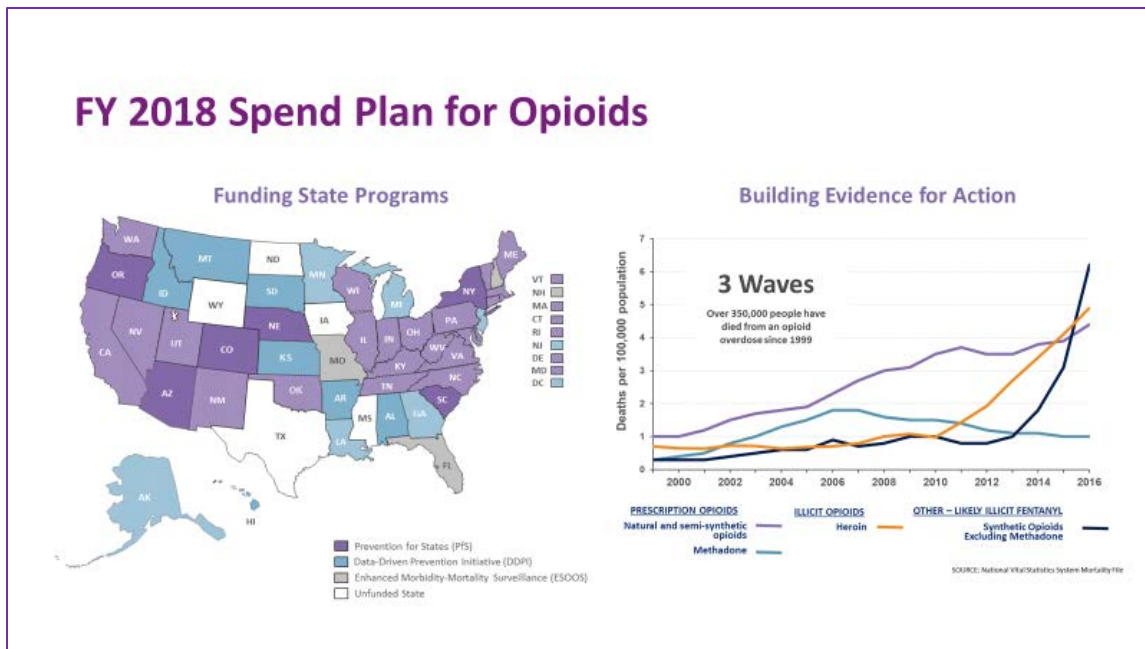
Ms. Solhtalab provided a brief overview of NCIPC's budget. The following chart depicts the growth of NCIPC's budget over the last several years:



In FY 2014, there was an increased appropriation in the NVDRS of about \$8 million. In FY 2015, increases included about \$20 million of new funding for opioid prevention activities. In FY 2016, there was an increase in rape prevention and education (RPE), NVDRS, and unintentional injury and opioid overdose prevention efforts. In FY 2017, there was an increase of \$50 million for opioid overdose prevention activities. Overall, CDC program funding increased by \$1.1 billion for FY 2018 compared to FY 2017. Of that, NCIPC received a considerable portion. There was a major increase in NCIPC funding for FY 2018 of \$362 million above FY 2017, more than doubling NCIPC's budget from FY 2017. This included a \$5 million increase for RPE, a \$7.6 million increase for NVDRS, and \$350 million for opioid overdose prevention and surveillance. All other budget lines for FY 2018 remained level with FY 2017, which includes older adult falls and the Injury Control Research Centers (ICRCs).

The \$5 million increase in RPE funding continues building off of the increase received in the FY 2016 appropriations, which also was \$5 million. The RPE program provides funding for state health departments in all 50 states, the District of Columbia (DC), and the territories. This increase will be allocated to the state health departments to continue the great work they do to prevent SV. The \$7.6 million increase for NVDRS will be utilized to expand that system. NVDRS is the only state-based surveillance reporting system that pools data on violent deaths from multiple sources into a useable anonymous database. When it was created in 2002, it began collecting data from 6 states. By 2006, that number had increased to 17 states. In 2016, it had increased to 32 states. NCIPC is currently implementing NVDRS in 40 states, DC, and Puerto Rico (PR). The \$7.6 million increase allows NCIPC to fund all 50 states, DC, and PR for a truly national system.

In terms of the largest increase of \$350 million for opioid overdose prevention activities, NCIPC has developed a strategic spend plan with a goal to obligate the majority of the funding by the end of September 2018:



The plan is to provide close to three-quarters of the funding via awards to states, territories, tribes, and public health partners. The remainder will be used to support efforts to build the evidence and support specific projects to address CDC-wide activities related to opioid overdose prevention. NCIPC also plans to spend more to support tribes; enhance partnerships, including partnerships with public safety; enhance healthcare provider (HCP) education and training and health systems improvements; integrate the data collected through NCIPC overdose surveillance systems; and continue to conduct research on evidence-based interventions. NCIPC also is exploring activities to prevent ACEs, which are a known risk factor for opioid misuse, abuse, and overdose. Work is well underway to award this funding, and NCIPC is working diligently to ensure the best use of the funding.

Discussion Points

Dr. Porucznik emphasized the importance of this opportunity for those attending the NCIPC BSC meeting in-person and via teleconference to ask questions, think about things that may drive the strategies of NCIPC in the future, and provide input. Beginning with some praise, she said she particularly enjoys seeing materials that have been developed such as the infographics and hearing about the efforts to work at better communication—not only communication to the public, but also communication that can be used to teach students who are the next generation of public health professionals and the education being provided to the media. Many people are concerned about the contagion of issues such as suicide or school-related violence. Helping people in the media understand how to disseminate messaging that may be more useful for prevention and less useful for copycats is a wonderful use of expertise and resources. Dr. Porucznik turns to CDC infographics with her students a lot not only to convey information, but also to talk about how to communicate information. As scientist, if they cannot share what they have done, they might as well have not done it.

Dr. Compton observed that in the map shown with regard to the spend plan, some states have no funding. He also wondered whether some of the funding would be specifically targeted to address the known issue that a large percentage of death certificates do not specify the drugs involved in an overdose. He recognized that the National Center for Health Statistics (NCHS) has done wonderful work to address this and there have been improvements, but he wondered if it would be possible to move from 15% to closer to 2% to 3% where it should be.

Dr. Houry responded that some of the state programs are not funded because states have to apply to receive funding. However, with the FY 2018 increase a funding announcement is anticipated to be published shortly. The goal and strong hope is that all 50 states will apply for opioid and NVDRS funding. They have spoken with all states about this. Previously when there were less funds, funding was based on competition. Some states had not applied, so NCIPC has engaged in a lot of outreach to states through appropriate channels to make them aware of these opportunities given the increased funding and hope to fund all states. NCIPC agrees with the death certificate issue and has worked closely with the NCHS and through the Association of State and Territorial Health Officials (ASTHO) to contemplate how to increase the specificity of death certificates. Through its Opioid Response Coordinating Unit (ORCU), NCIPC has considered projects across the agency they could fund. NCIPC is funding NCHS in two specific areas to increase integration with Medical Examiners (MEs) and increasing electronic access and better drug specificity on death certificates.

Dr. Hedegaard from NCHS said her understanding was that some of the funding allocated to the states also is oriented toward funding to Coroners and MEs at the local level to help pay for toxicology testing. A major issue has been that some counties may be unable to perform the toxicology testing due to financial reasons, which can contribute to why information is not available on the death certificate.

Dr. Houry confirmed that in FY 2017, NCIPC was able to fund Coroners and MEs through states. They had a preliminary call with states earlier in the week to discuss how states can best support their capacity needs.

Dr. Duwve noted that Indiana is the recipient of some of that funding and has conducted a pilot project with its Coroners and increased capacity to specifically identify opioids as the cause of death (COD) on the death certificate. This has led to policy change such that Indiana Coroners will now be required to perform this testing across the state. Having been one of the bottom three states for specificity of reporting, she expressed gratitude to the CDC for helping Indiana make improvements.

Dr. Comstock also praised CDC for receiving a budget increase. She always has believed that NCIPC does more with the amount of money it spends than virtually any other federal entity. Observing that the substantial increase in opioid funding is impressive, she also recognized that it is part of their responsibility as members of the NCIPC BSC to question and challenge. With that in mind, she wondered what budget line item funding is available for intentional or unintentional firearm violence prevention research. She emphasized that she wanted the minutes to reflect formally that she believes that NCIPC should be requesting a dedicated line item for firearm violence research. It is well-known that NCIPC does great work within the auspices of other areas such as suicide prevention and NVDRS, but quite frankly, intentional opioid overdose also could be done within the auspices of NCIPC's current suicide mandates. Therefore, if specific funding is being pulled out for opioid overdose prevention surveillance, it is far past time to pull out specific funding for firearm research. As a member of the committee,

she emphasized that she wanted it on the record that she believes that is a research mandate that should be funded through NCIPC in the future.

Dr. Houry replied that Congress appropriates the budget and did not appropriate any funding for firearm violence research. NCIPC received an increase for RPE, NVDRS, and opioids. To clarify, NVDRS is not a firearm injury surveillance system. However, it does collect the manner of death for suicide and homicide. Firearms is certainly one of the most common means for both suicide and homicide, which NCIPC continues to report on regularly. In addition, they continue to publish surveillance papers. She was aware of two papers around firearm work that were making their way through clearance. Should NCIPC receive an appropriation from Congress, they would be prepared to allocate it.

Dr. Johnson inquired as to whether and how much of the opioid funding would be used to further analyze data regarding the trend lines reflected in the map Dr. Solhtalab shared with respect to the spend plan.

Dr. Houry responded that NCIPC has taken an agency-wide approach, developing 5 strategic pillars for this work. They evolve as the epidemic evolves and they do not want to be behind the curve—they want to be predicting and advancing. One of the key areas is surveillance. Syndromic surveillance is key because it allows them to respond in a very short timeframe to communities that need naloxone, public education, linkage to care, et cetera to provide that information to states and local communities. With the FY18 increase, the goal is to increase surveillance to all 50 states and increase the timeliness of those data. The NVDRS is also used to have a module on opioid fatalities called the State Unintentional Drug Overdose Reporting System (SUDORS), which allows them to perform a “social autopsy” of what led up to a death. This includes examination of law enforcement, ME, and Vital Statistics data to determine whether an individual was recently in treatment, whether they were incarcerated, what their housing situation was, et cetera. This will be available in all 50 states. The second pillar pertains to increasing state, local, and tribal capacity. With the FY18 funds, the goal is to reach all 50 states and include local community responses as part of the state health department work. Some of this work is focused on Prescription Drug Monitoring Programs (PDMPs), because it is known that these clinical tools can keep people from becoming addicted in the first place. Because they know that this is not enough, another pillar of work is with public safety because they are on the ground and will know what is occurring with fentanyl and drug seizures. NCIPC has actively worked with the Drug Enforcement Administration (DEA) and other law enforcement agencies to acquire their National Forensic Laboratory Information System (NFLIS) data pertaining to forensics and drug seizures. And, where there are increased fentanyl drug seizures, there are increased overdose deaths. It is important to get those data to communities. NCIPC also is funding local community projects to pair public safety with public health so that there are informed, sustainable community efforts on what communities need. The fourth pillar focuses on empowering consumers, so NCIPC has an Rx Awareness Campaign so that the public is aware of the risks of opioid misuse. This campaign is being utilized by 27 states currently. The fifth pillar is focused on educating HCP, for which there is the *Guideline for Prescribing Opioids for Chronic Pain*. Dr. Houry noted that one of the items NCIPC planned to propose to the BSC during this meeting regarded benchmarking and other indication-specific guidelines in thinking about ways to engage health systems. NCIPC also has developed coordinated care plans and quality improvement metrics. The short summary answer is that NCIPC is addressing all three: preventing people from getting addicted in the first place, making sure that when spikes are noted that community resources are available, and working with federal and community partners to address this epidemic.

Dr. Frye echoed the comments made by Dr. Comstock and added her voice to those who call for specific funding lines pertaining to firearm research and prevention activities. She noted that there is an emphasis on better understanding ACEs, particularly as these overlap with the opioid epidemic. In addition, she drew attention to the fact that the mission of NCIPC is to prevent injuries and violence through science and action and that the vision is supposed to extend to everyone, everywhere, every day. Currently, there is a federal policy that is actively enacting an ACEs on children who are being brought across the US-Mexico border into the US. Separation from their parents is actually identified in the CDC documentation and articles along with a description of the resulting trauma. This can include incarceration of a family member, domestic violence, and the absence of a parent due to divorce or separation. Thus, separation of children from their families is actively being enacted by the US government on children in the US. Dr. Frye inquired as to whether CDC had any comments on that and called for support for specific funding on institutional violence being enacted as a focus for NCIPC and called for her fellow BSC members to support her on this. Also important to consider are racial disparities and opioid addiction and a cost-analysis so that as lawsuits are brought against pharmaceutical companies, there is a good evidence base for estimating how much their products have cost society.

Dr Houry replied that with regard to ACEs, she spoke with ASTHO's board the previous week. While the focus was supposed to be on opioids, almost all of the discussion pertained to ACEs for many reasons. For one reason, ACEs is such an important piece of opioid overdose. NCIPC is examining this closely, particularly as it links with opioid overdose and suicide. That is why NCIPC assessed its priority a year ago and chose those three because they thought that these are really linked. Regarding specific federal policies, Dr. Houry emphasized that she cannot comment on policies of the federal government, other than to say that NCIPC follows the evidence and tries to promote the appropriate practices around ACEs, opioid overdose, and suicide as well as its other violence topics. With respect to racial disparities, NCIPC has been invited to speak in the fall during a session specifically focused on African American health and opioids, and this is a topic they will be examining more closely. DARPI published a cost analysis on opioids about two years ago and the White House released a publication with even larger numbers last fall. Those are probably the most up-to-date cost analyses and they have been very well-utilized and cited. So, there are good estimates for the cost of this epidemic. The cost can be broken down by employment, work losses, incarceration, and medical costs. Regarding the idea of a specific NCIPC focus on structural-, institutional-, or state-sponsored violence, Dr. Houry indicated that she would take this back to the SMEs in the various divisions. There is a Race and Violence WG and that division has provided trainings for their staff on this topic.

Dr. Porucznik recalled that in the past, the BSC has tried to think of ways NCIPC can be rapidly responsive to changing conditions. One of the challenges for funding research is that the NOFO process is long and somewhat Byzantine. It is not as if a surveillance system could be put in place in a week to measure how current events are affecting children throughout the country. It is important to keep in mind how to remain flexible within the constraints of the systems in order to be responsive to changing conditions, whether it is a concern about an apparent outbreak of celebrity suicides, institutional violence, school shootings, et cetera. This is a continuing challenge.

Dr. Greenspan acknowledged that the processes for funding can be slow. It takes a long time to develop a funding announcement. It is a thoughtful process and can take a while to get the funding out. CDC does have some processes in place for rapid response, one of which is the Epi-Aid. If a sudden response is needed for a pressing issue (e.g., hurricane, Ebola, Zika), CDC works with the health departments. State health departments can call upon CDC to perform rapid assessments. She encouraged everyone to work through their own state health departments when these types of rapid responses are needed. This must be requested by state or local health departments.

Dr. Coffin offered his support as well for Dr. Comstock's comments regarding the call for specified funding for firearms research. He also noted that he found the terminology around the PDMP somewhat troubling. As a clinician, he would prefer to determine what medications are discussed with his patients. However, PDMPs do not do that. They are Controlled Substance Monitoring Programs as they are called in states like California. That is the legislature's terminology for it. He requested a move from referring to these as PDMPs and call them what they are, given that it is more accurate and not euphemistic. Most PDMPs are not designed for clinical care. They have more of a regulatory and oftentimes legal intent.

Dr. Compton said he was struck by Dr. Frye's comments about racial disparities in terms of overdose. He expressed hope that they would all pay attention to the shifting demographics with regard to overdose related to African Americans, particularly with the increasing rates related to fentanyl and heroin in the last couple of years. He also pointed out the longstanding disparities related to American Indian and Alaskan Native (AI/AN) populations and the difficulties of both studying those issues and of bringing services to diffuse and diverse populations that are represented by AI/AN groups. The National Institute on Drug Abuse (NIDA) and the National Institutes of Health (NIH) at large are making this a major priority. They recently participated in a listening session related to opioids during a meeting in Minnesota and hope to bring from that the opportunity for additional research. He encouraged CDC to consider partnering with them. The Substance Abuse and Mental Health Services Administration (SAMHSA) has additional funding for the equivalent of the State Targeted Response (STR) grants for American Indian Tribes. These are new federal opportunities with which CDC might be able to link.

Dr. Houry responded that CDC would very much welcome that partnership and is participating in a Tribal Advisory Committee with SAMHSA in July. CDC has had several listening sessions as well. She visited a reservation last year and had an opportunity to learn what some of the issues are with the Tribal Epidemiology Centers (TECs). NCIPC will have more opportunity with the FY18 funding to fund tribes, and they formed a Tribal WG in the center to examine opioids and violence topics as well.

Dr. Austin congratulated NCIPC on the reach of the dissemination and the *Vital Signs*. Reach is something the National Highway Traffic Safety Administration (NHTSA) is also working to improve. He asked whether NCIPC evaluates or knows the effectiveness of messaging at actually changing behavior, which is something with which NHTSA struggles.

Dr. Houry said she thought it depended upon the behavior and awareness. NCIPC's Rx Awareness Campaign was focused on awareness, but based on a pilot study they did see significant changes in being more likely not to take an opioid or more likely to tell family members. With the FY18, they hope to evaluate more behavior changes. With publications such as *Vital Signs*, her understanding was that the call center line achieved a new record due to the numbers being promoted widely. That is certainly evidence of impact.

Dr. Hedegaard pointed out that based on the mortality data, there are some states where deaths from cocaine and methamphetamine are on the rise more than deaths from opioids. There also is the issue of the novel psychoactive substances that are coming to the forefront. Because the programs are helping to create infrastructure in the states, they will be well-primed to monitor other drugs in addition to opioids. In addition to finding the best methodology and search terms for conducting syndromic surveillance on opioid-related events, she encouraged NCIPC to be mindful of the entire spectrum of drugs that are causing problems in the US, and to encourage states to monitor secondarily for these other substances, recognizing that the funding is directed toward opioid surveillance.

Dr. Green emphasized the importance of extending from surveillance and thinking about related drug injury and harm to conceptualize also some of the prevention for state efforts, whether there is co-use or within a day's span of opioid use at one point and then cocaine at another point of one's day and the importance of the connection of the two and the need to think about injury over an entire 24-hour period not just the point at which people are using an opioid. It also is important to reach those who are experiencing a fentanyl or fentanyl analog-exposed contamination, which is a very different messaging intervention and approach. The Midwest and New England states are struggling with this and could use some help thinking about it and working for interventions. She has been very impressed with the media guides put forward for suicide and SV. The NCIPC website completely changed in terms of thinking about how to describe "opioid overdose" and to use a "words matter" approach for thinking and talking about opioid use disorder (OUD). She wondered if there might be some media guide components for destigmatized language and continuing to promote consistency in reporting to remove sensationalizing from that reporting and be more evidence-based. That might help to be more consistent in approaches.

Dr. Duwve said she was struck by the learning around the Child Fatality Review (CFR) and wondered whether NCIPC had thought about an Overdose Fatality Review. Her state is starting to do this. In addition to the NVDRS overdose module, the opportunity to perform a "social opportunity" is valuable by trying to drill deeply into overdose deaths in terms of understanding the socioeconomic context, what the ACEs are, and what drugs might be circulating in the community. She encouraged CDC to perhaps help define the process for doing that, such as a reporting module, and work with states to implement it. She thanked NCIPC for talking about the intersection between ACEs, suicide, and opioids. She requested additional input about NCIPC's vision for moving forward with that.

Regarding the fatality reviews, **Dr. Houry** indicated that NCIPC supports states to do this through grant funding. Another opportunity is specifically through the funding to other CIOs such as one this year, focused on maternal mortality and supporting mortality reviews specific to opioids in a few key states. This should help inform a specific population subset. Regarding ACEs, suicide, and opioids, NCIPC is planning work specifically around ACEs as primary prevention. Some of that will be around local communities, such as the work that is being done in Martinsburg, West Virginia through the HDTAs. NCIPC hopes to expand more community demonstration projects such as that, because it is important to have that system-level in terms of wrap-around services and evaluation. NIH is going to put a fair amount of funding into communities around opioid overdose, but ACEs certainly plays into that. NCIPC's research priorities regarding opioids might address the intersection as well. In addition, several WGs are assessing the shared risks and analysis. DARPI has developed a toolkit focused on shared risk and protective factors. NCIPC is thrilled with its budget increase, but in the context of the significance of the issue the center deals with, NCIPC still does a lot with a little. Therefore, it is always about shared risk and protective factors overlapping conditions in order to find

interventions that work for more than one thing. DVP has released several technical packages on different types of violence and is now examining which are central to many of the technical packages to highlight the key areas to also prevent ACEs, suicide, and hopefully opioids as well.

Dr. Hedlund asked how much attention NCIPC pays to poly drug use or drug/alcohol combinations. In terms of motor vehicles (MV), about half of dead drivers are poly users in some way or another. He also wondered whether NCIPC's messaging deals with poly use.

Dr. Houry replied that this depended upon whether it was morbidity or mortality. NCIPC gets at this several different ways through its fatality data, SUDORS, that is based on toxicological results and ME/Coroner reports. NCIPC is funding MEs and Coroners to increase toxicological testing. This year, NCIPC will be funding more fentanyl reference testing and expanded laboratory testing, as well as incorporating laboratory testing into syndromic surveillance more, which should help. A variety of surveys are conducted at CDC such as those through the Behavioral Risk Factor Surveillance System (BRFSS) and the Youth Risk Behavioral Surveillance System (YRBSS) that capture more on different types of use. NCIPC's messaging to this point has focused more on opioids in particular because that was what the appropriated language asked them to focus on. However, with additional funding they will be able to consider additional messaging. She works in a medication-assisted treatment (MAT) clinic and talks to the patients because she learns so much from them and enjoys maintaining patient care, and has learned that many of them started with opioids before using other drugs. Some start with marijuana first, but many move from prescription opioids to heroin, cocaine, or other substances. NCIPC's emphasis at this point has been on primary prevention and stopping people from getting addicted in the first place.

Dr. Crawford endorsed the comments made by Drs. Frye and Comstock regarding firearms funding and research. He appreciated the clarity and courage that it took for them to say what they did. Speaking for himself, he said he thought too many times they had a conflict between their hearts and their heads around these types of issues. He expressed his hope that the heart always would prevail. Something Dr. Compton said that related to what Drs. Frye and Comstock mentioned sparked a question to which he did not know the answer. However, his assumption was that in each of these areas of surveillances, all relevant demographics are tracked (race, gender, age). He asked whether this was accurate and if not, how disparities are identified and addressed.

Dr. Houry responded that to the best of their ability from death certificates, ME/Coroner reports, and law enforcement, NCIPC generally has good data collection on race and ethnicity. She would say that where this breaks down is with respect to tribal populations. That is why NCIPC has been working closely with several TECs to increase reporting and classification, and to assess specific tribal populations that might not be reporting.

Dr. Schwebel said that as a scientist, he fully appreciates the value of both surveillance and understanding risk versus prevention. However, if they talked to the public and especially the victim's families, they would want a considerable portion of the budget allocated to prevention. This led him to the question regarding how NCIPC is making decisions regarding how much of the budget should be allocated to risk and surveillance versus prevention efforts.

Dr. Houry replied that NCIPC tries to strike a balance such that they have accurate data that can drive action, and not just collect data to have data. As an ED doc, she does not need pages and pages of data. What is important is what are those data used for. NCIPC is very focused on

translation, or the research to practice and practice to research loop. With many of their grants, they ask recipients how the data are used in their communities to drive prevention. As she recalled, approximately two-thirds is allocated to prevention versus surveillance in terms of opioids. The NVDRS is truly a surveillance system, but reports are generated from it that states are able to utilize to drive prevention methods. The Essentials for Childhood (EfC) work is largely prevention-driven. It is a combination of when there is flexibility, they try to make sure the data collected are timely and action-oriented and that there is prevention. When possible, they try not to develop new systems because that requires a lot of resources. For example, NCIPC's syndromic surveillance is based off of a syndromic surveillance platform in another center, but then NCIPC fine-tunes it and includes definitions that they are working on for opioids. They are now looking at this platform for suicide as well, because even that can drive prevention if they start seeing suicidal ideation increasing in one area. The NVDRS platform is being used for SUDORS.

Dr. Porucznik emphasized one of the challenges is staying in their lane so that they do not wind up duplicating efforts that are occurring in other agencies or elsewhere that have more of a prevention focus.

Dr. Eckstrom noted that one topic which had not yet been addressed was the ability to support non-opioid and non-pharmacologic strategies for chronic pain management. As mentioned earlier, one of the biggest places people get started in opioids as a controlled substance and then move on to other drugs stems from the first one or two prescription they received. Finding non-pharmacologist strategy to support patients is difficult. She has been practicing primary care for about 30 years, and she struggles to find the time and ability to refer to physical therapy, acupuncture, and all of the alternatives that are known to have evidence behind them to support treatment of chronic pain. In order to have a well-rounded discussion about this topic, consideration must be given to ways CDC and everyone can enhance the ability to provide good chronic pain management for all patients which is a very important piece of the puzzle.

Dr. Houry replied that NCIPC agrees. CDC funded a review through the Agency for Healthcare Research and Quality (AHRQ) pertaining to non-pharmacological treatments because one of the things they heard that insurance companies need is the evidence-base. They also have partnered with the Assistant Secretary for Planning and Evaluation (ASPE) and NIDA to assess back pain and various treatment coverage for that.

Dr. Whitaker asked whether NCIPC is requiring states to use evidence-based programs or strategies, and wondered what kind of challenges they may be facing in getting states or the public to understand that sometimes preventing opioid use requires doing things that have nothing to do with drug use.

Dr. Houry replied that NCIPC prefers evidence-based strategies where possible. With some topics such as opioids, the evidence is still being generated in which case they will say promising strategies. For some violence topics, they will point to specific lists of evidence-based requirements. Regarding ACEs and opioids, ASTHO really understands what they are seeing in states. It is more difficult with the general public to message the 10-, 15-, or 25-year impact that some of these messages might have. It is like acute trauma in the ED. You want to stop the bleeding immediately, as NCIPC is being asked how to stop deaths immediately. The numbers are striking and that is what people are focusing on. It is about having a balance. A lot of NCIPC's work is focused on PDMPs, surveillance, and data for action. But, they are also trying to build in the longer-term prevention because they know it would stem some of the deaths and break the cycle.

Dr. Gioia pointed out that it was not clear what “non-pharmacologic” means. This is a nebulous statement when many times they are talking about good behavioral health types of strategies that actually do have a fair amount of evidence behind them. They need to do better about specifying what they mean, because that will help to articulate to communities what they need to do and how they need to go about doing it. He emphasized that it is the behavioral health elements that matter regardless of whether it is opioid use, ACEs, or suicide prevention.

Dr. Porucznik emphasized the importance of the comments made with regard to words mattering. If they want to convey their messages clearly, they may need to abandon acronyms such as ACEs and keep saying “adverse childhood experiences” instead because it is not as sanitized. That may help people remember how important it is. She agreed that timelines are difficult and that as scientists, part of their communication challenge needs to be helping people understand that the work being done today may not be evident until so far in the future it cannot be measured because it is beyond the scope of an R01 grant or a legislator’s term of service. That does not mean it is not important, but if people are expecting that changing things that are happening with regard to high quality preschool or foster care are going to change the number of drug overdoses tomorrow, they are going to be disappointed. Therefore, it is important to continue working to have very strong communication that helps people understand more about the scientific process and the way things will play out in society with behavior change, et cetera.

Opioid Prescribing

Methodologies for Estimating Rates of Opioid Prescribing

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Dr. Mikosz indicated that she works in opioid overdose prevention, particularly in clinician education and safer pain management as it relates to opioid prescribing. As an internist, she has cared for patients and also prescribed opioids in inpatient and outpatient settings. Given her clinical background, she is well aware of and sensitive to the need for the collective commitment of clinicians to ensure that their patients are receiving the best possible care. In particular, as that relates to pain management, this means listening to patients and working with them to understand their level of pain, decreases in physical function, and any changes in quality of life that they may be experiencing, communicating with them about the best possible pain management strategies that are available to them, discussing the benefits and risks, and working with patients together to construct a pain management plan that ensures the best possible outcomes.

During this session, Dr. Mikosz presented information regarding a new project the Centers for Disease Control and Prevention (CDC) is proposing that aligns with the agency’s efforts to prevent opioid misuse, abuse, and overdose. While this proposed project is undertaken by CDC, Dr. Mikosz acknowledged that this project has been informed and supported by the Assistant Secretary for Health (ASH) and other leadership in the Department of Health and Human Services (HHS) for which CDC is very grateful.

As noted by Dr. Houry, Dr. Mikosz reiterated that CDC has [five pillars of work](#) that frame its work in opioid overdose prevention, which are to:

- ❑ Improve data quality and track trends to better understand the epidemic
- ❑ Strengthen state, local, and Tribal capacity to respond across the agency's funded programs
- ❑ Work with healthcare providers (HCP), health systems, and payers to reduce unsafe exposure to opioids and reduce addiction
- ❑ Coordinate with public safety and community-based partners to rapidly identify overdose threats, reverse overdoses, link people to effective treatment and to reduce harms associated with illicit opioids
- ❑ Increase public awareness about the risks of opioids through CDC campaigns, such as [RX Awareness](#)

The new project Dr. Mikosz presented on during this meeting is meant to inform upstream health strategies to curtail this troubling epidemic. While there are ways in which this project can stretch across all five of these pillars, it primarily addresses the first pillar in terms of harnessing the use of data to monitor the epidemic. That capitalizes on the scientific expertise of the agency.

This epidemic is often spoken of as occurring in three waves. The first wave was the rise in deaths due to prescription opioids that began in the 1990s. Deaths due to heroin represent the second wave, which began in about 2010. The third wave, deaths due to fentanyl, especially illicitly manufactured fentanyl, began in the past several years. While illicit drugs in the second and third waves have been driving the epidemic in recent years, it is important not to lose sight of the fact that the death toll due to prescription opioids is still high and that many users of illicit opioids began with prescription opioids. However, regardless of opioid source, continued development of prevention and response strategies is strongly needed to prevent deaths and injuries from opioid overdoses.

Turning specifically to prescription opioids, research has shown that opioid prescribing in the United States (US) peaked around 2010 and overall has begun to decline. In fact, a CDC study published in 2017 noted decreases in a few parameters defining opioid prescribing, specifically the annual opioid prescribing rate; the rate of prescriptions written for less than 30 days; and the average daily morphine milligram equivalents (MME) per prescription¹. Considering the potential risks of opioid treatment, these changes are noteworthy. However, in 2015, opioid prescribing rates in the US still remained three times as high as in 1999² and almost four times as high as the amount distributed in Europe³ [1Guy GP Jr., Zhang K, Bohm MK, et al. Vital Signs: Changes in Opioid Prescribing in the United States, 2006–2015. *MMWR Morb Mortal Wkly Rep* 2017;66:697–704; ²Data from 2015 represents the most recent data on prescribing practices currently available; ³International Narcotics Board; World Health Organization population data. By: Pain & Policy Studies Group, University of Wisconsin/WHO Collaborating Center, 2017].

CDC's overarching goal as the nation's health protection agency is to ensure that pain is treated effectively and safely. Opioids do have a place in medicine. In certain clinical situations where the benefits outweigh the risks, they can be quite effective. To help inform decision-making among clinicians and patients in the safer use of opioid medications, multiple entities have developed clinical guidelines for opioid prescribing for both acute and chronic pain in recent years. Though by no means a comprehensive list, the following are a few examples:

- ❑ Government Agencies: *CDC Guideline for Prescribing Opioids for Chronic Pain, 2016*
- ❑ Medical Professional Societies: *American Pain Society Guidelines on the Management of Postoperative Pain, 2017*
- ❑ Health Departments: *New York City Emergency Department Discharge Opioid Prescribing Guidelines, 2013*
- ❑ Other Regulatory Agencies: *Medical Board of California Guidelines for Prescribing Controlled Substances for Pain, 2014*

Despite these multiple guidelines, recent research has highlighted several discrepancies in opioid prescribing practice, one of which is the amount of opioids prescribed versus the amount actually taken by the patient. In many studies particularly looking at post-operative settings, patients are not taking nearly the amount of opioids that are sent home with them. This leaves excess unused pills sitting on bathroom shelves and posing a potential danger to others in their household and in the community. Also, some research notes a disconnect between amounts of opioids prescribed versus subjective reports of pain by patients. In some instances, the pain reported could potentially have been effectively treated with non-opioid treatment modalities. Lastly, there is marked variation in opioid prescribing practices by clinicians for certain diagnoses or following certain medical procedures. In some health systems, there are predetermined order sets or algorithms that might guide the number of opioid pills that a patient receives per prescription. In other settings, there may be wide variation in opioid prescribing practices across specialties as well as between geographic regions of the country.

There are likely numerous explanations for these discrepancies. Some ideas that have been borne out in the literature are gaps in existing guidelines in clinical research, a lack of clinician awareness of the research and the guidelines that exist, a goal of improving patient satisfaction scores, and other reasons. Collectively, this research raises three questions:

- ❑ *What is the current opioid prescribing rate in the US for various diagnoses and procedures?*
- ❑ *What would the opioid prescribing rate in the US be for various diagnoses and procedures if best practices were followed?*
- ❑ *How much should opioid prescribing change in the US to bring prescribing rates in line with best practices?*

CDC proposes to answer these questions in the new proposed project titled the "Opioid Prescribing Estimates Project." First, the project will analyze medical claims data to estimate the current opioid prescribing rates for various medical conditions and procedures. Existing clinical opioid prescribing guidelines and research studies can be used to estimate what the best-practice prescribing rate would be for certain diagnoses and procedures. Those figures can be used to calculate how much the current opioid prescribing rate would need to change across the US population for these diagnoses and procedures in order to better align with best practices as defined by existing guidelines and research. Ultimately, the aim is to disseminate the findings of the project via a CDC scientific publication in a peer-reviewed journal and through the development of translational/communication materials designed for clinicians to highlight indication-specific guidance from existing guidelines to treat acute and chronic pain caused by various conditions and procedures.

Dr. Mikosz emphasized that this project is not proposing to establish a new opioid prescribing guideline, create a set of standards or set of recommendations for opioid prescribing, or provide an update or extension to the previously published 2016 *CDC Guideline for Prescribing Opioids for Chronic Pain*. This proposed project is a descriptive study that is examining opioid prescribing patterns at a population level. The prescribing estimates used in the analysis are not meant to represent new prescribing recommendations on the individual patient level or for specific medical conditions. Pain management is a very individualized process that belongs with the patient and provider. These prescribing estimates cannot take into account the individual risk/benefit calculation that is needed to construct a pain management plan for individual patients based on their individual needs and their unique goals for pain and function. As part of this work, however, CDC aims to identify and highlight existing best practice guidelines for different clinical educations that could be used now by providers.

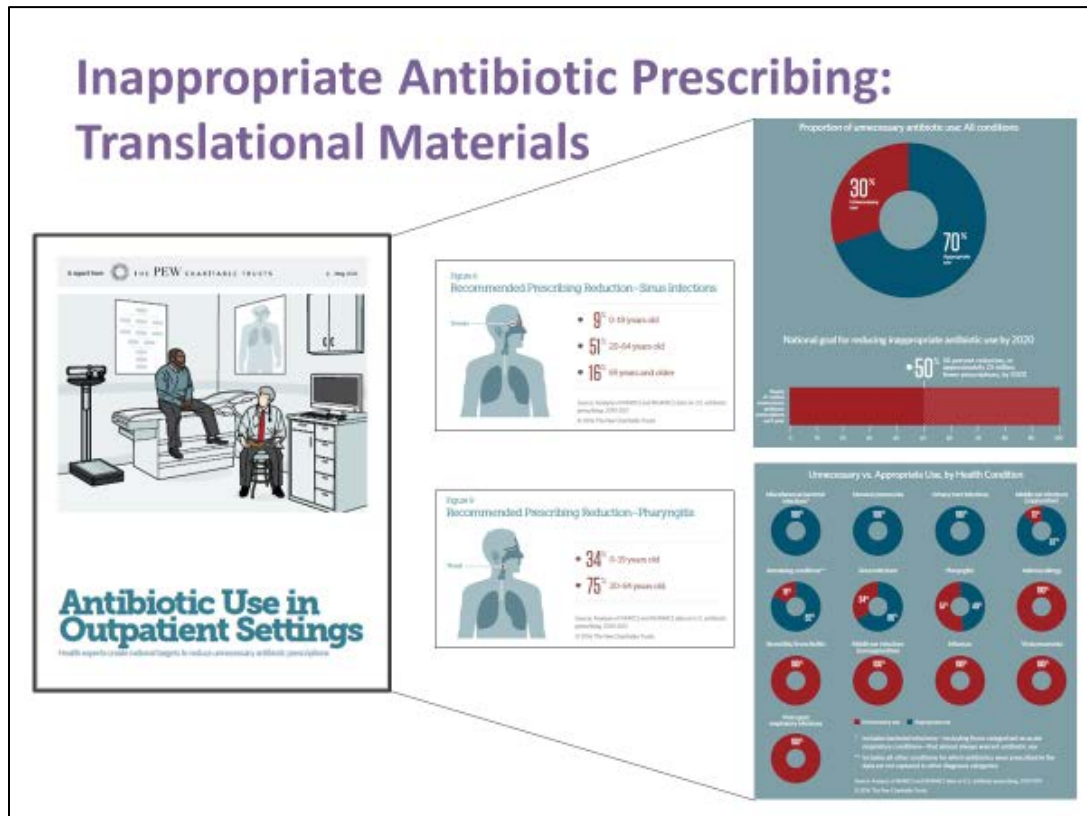
In thinking through and initiating this work, CDC's efforts in large part were informed by precedence of similar work conducted by colleagues within CDC. For instance, CDC's Division of Healthcare Quality Promotion (DHQP) published a study in 2016¹ that examined rates of outpatient prescribing of oral antibiotics, calculated by age and diagnosis, in order to estimate portions of antibiotic use that may be considered inappropriate. To conduct this analysis, the investigators used national guidelines and regional variation in antibiotic prescribing to derive diagnosis-specific prevalence and rates of antibiotic prescribing, both total and appropriate using 2010-2011 data from the National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS). Following the work conducted by these CDC colleagues, an external partner organization, the Pew Charitable Trusts, convened a multi-specialty WG to help determine the estimates that best represented appropriate antibiotic prescribing. This table is one example of the study's results:

Table 4. Mean Annual Antibiotic Prescribing Rates in 2010-2011 US NAMCS/NHAMCS vs Estimated Appropriate Antibiotic Prescribing Annual Rates per 1000 Population by Age Group and Diagnosis

	Rates per 1000 Population		Potential Reduction in Annual Antibiotic Prescription Rates, %
	2010-2011 Weighted Mean Annual Rate of Antibiotic Prescriptions (95% CI)	Estimated Appropriate Annual Rate of Antibiotic Prescriptions ^a	
0-19 y			
All acute respiratory conditions ^b	421 (369 to 473)	278 ^c	-34
Sinusitis	65 (51 to 79)	59	-9
Suppurative otitis media	154 (131 to 177)	138	-10
Pharyngitis	91 (76 to 105)	60	-34
Asthma or allergy; bronchitis or bronchiolitis; influenza; nonsuppurative otitis media; viral URI; and viral pneumonia ^e	90 (71 to 108)	0	-100
Pneumonia	22 (16 to 27)	22	0
Other conditions ^d	225 (197 to 252)	180 ^f	-20
Urinary tract infection	23 (17 to 28)	23	0
Miscellaneous bacterial infections	20 (13 to 26)	20	0
Remaining other conditions ^g	182 (160 to 205)	137	-25
Total ^h	646 (571 to 721)	458	-29

¹Fleming-Dutra KE et al. Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011. *JAMA*. 2016 May 3;315(17):1864-73

For the diagnoses in individuals 0 through 19 years of age, the percent reduction ranged from 0% suggesting that all antibiotic prescribing for those diagnoses during this time period was in line with guidelines, to 100% indicating that all antibiotic prescribing for those particular diagnoses was not appropriate. The category at 100% included asthma, allergies, and viral illnesses. Pew utilized the results from this analysis to publish very user-friendly translational materials visually depicting the take-home points of the study in an easy to read format:



In the upper righthand corner of the above illustration is a pie graph showing the proportion of unnecessary antibiotic use across all conditions, with the 30% of unnecessary use easily visible in red. In the lower righthand corner is unnecessary versus appropriate antibiotic use broken out by diagnoses. For example, this shows that antibiotics for urinary tract infections (UTI) and non-viral pneumonia were 100% appropriate as shown in green, while antibiotics for asthma, allergies, and influenza were 100% unnecessary as shown in red. In the middle of the illustration are simple, easy-to-follow diagnosis-specific graphics listing the recommended percent reduction in prescribing. For example, for sinus infections in the top graphic, it is recommended that antibiotic prescribing in individuals 20-64 years of age be reduced by 51% to follow recommended practice. Antibiotic prescribing for pharyngitis, the lower graphic, should decrease 75% for the same age group.

The information from this study was disseminated widely in the field, with one outcome being the signing of a pledge to commit to use antibiotics appropriately. The pledge was signed by multiple stakeholders such as clinical/professional societies as a way to signal recognition of antibiotic resistance (AR) as a growing public health threat. For the “Opioid Prescribing Estimates Project,” CDC intends to follow similar methodology, recalibrating as necessary to make this applicable to opioid prescribing. Dr. Mikosz noted that if there were any questions

specific to DHQP's work, several CDC colleagues from that program were on the bridge line who could address them during the discussion period. She then presented the steps of the proposed opioid analysis.

To address the first question regarding current indication-specific rates of opioid prescribing in the US, CDC proposes to use health insurance claims data from OptumLabs®, a large national dataset of the commercially insured and Medicare Advantage population in the US. This dataset contains information on both prescription claims and medical encounters, allowing linkage of opioid prescriptions to diagnosis down to the patient and the medical encounter level. In other words, opioid prescriptions can be linked to patients at specific visits to which certain diagnoses can be associated. These data also can be characterized down to the region of the country as well as to the state. An advantage of this dataset is that there is little lag time to its availability for analysis. CDC anticipates being able to analyze data from the first quarter in 2016 through the first quarter of 2018.

CDC proposes to examine the data for opioid prescribing rates across a number of diagnoses and procedures associated with acute and chronic pain using International Classification of Diseases-10-Clinical Modification (ICD-10-CM) diagnosis codes, ICD-10-Procedure Coding System (ICD-10-PCS), Current Procedural Terminology (CPT) codes, and Healthcare Common Procedure Coding System (HCPCS) codes. This analysis will focus on outpatient prescriptions only, with an ability during the study period to calculate dosage in MME, duration in number of days, and total MME. Here are a few examples of the many diagnoses associated with acute and chronic pain that will be included in the study:

ACUTE PAIN	CHRONIC PAIN
<input type="checkbox"/> Post-Operative	<input type="checkbox"/> Osteoarthritis
<input type="checkbox"/> Kidney Stones	<input type="checkbox"/> Chronic Low Back Pain
<input type="checkbox"/> Migraine	<input type="checkbox"/> Fibromyalgia
<input type="checkbox"/> Fractures	<input type="checkbox"/> Neuropathic Pain
<input type="checkbox"/> Sickle Cell Crisis	<input type="checkbox"/> Sickle Cell Disease
<input type="checkbox"/> Gallstones	<input type="checkbox"/> Rheumatoid Arthritis
<input type="checkbox"/> Sprains/Strains	<input type="checkbox"/> Interstitial Cystitis

Pain associated with active cancer, palliative care, or end of life care would be analyzed separately from prescriptions for acute and chronic pain. This is because opioid prescriptions for these indications are always considered to be in line with best practice. These categories will be included in the analysis to estimate the proportion of total opioids that are prescribed for these purposes on a population level.

To address the second research question regarding best practices for opioid prescribing, CDC would turn to the NCIPC BSC for recommendations and to request the formation of an Opioid Prescribing Estimates Workgroup to provide input and expertise to this area of the study.

CDC will then construct best practice prescribing estimates based on available guidelines and research, using BSC Workgroup input. Then, the difference between current opioid prescribing and best practice opioid prescribing rates could be calculated. This difference will define the change in current prescribing practices that is needed to align existing standards with best clinical practice.

Once the analysis is complete, CDC would aim to publish it in a peer-reviewed scientific journal, develop translation/communication materials that highlight the study findings and noteworthy guidance from existing clinical guidelines, and disseminate of all materials to targeted audiences in the hope that the results of the study will be of use to the field.

The stakeholders for this undertaking are numerous, including the following:

- Scientific community
- Patients
- Clinicians
- Health systems
- Healthcare quality improvement experts
- Public health agencies and public health professionals
- Other organizations involved in addressing the opioid epidemic

In conclusion, Dr. Mikosz reiterated that this proposed study does not represent a new prescribing guideline. It is not a set of recommendations for opioid prescribing. Instead, CDC envisions that the results of the study will help those in the field obtain a better understanding of the state of current opioid prescribing practices and how those practices align with existing guidelines, balancing patient safety and patient needs. As mentioned earlier, materials also would be developed to highlight existing guidance for acute and chronic pain management derived from sources that already are available.

Discussion Points

Dr. Porucznik observed that the ability to link prescriptions to diagnoses would be a major advance and is something that has been attempted in various settings. However, depending upon the data available this can be very challenging. This is something she is looking forward to from this descriptive study.

Dr. Mikosz indicated that they chose this particular dataset specifically because of that advantage. In addition to being able to make links, this dataset also provides very timely data all the way through 2018.

Dr. Hedlund asked whether it would be possible to break down the results in any way by patient type, geography, physician type, physician organization, et cetera.

Dr. Mikosz responded that they do have the ability to break data down by region of the country and by states. They have information on physician specialty as well.

Recalling that Dr. Mikosz pointed out in her presentation that opioid prescription rates are significantly less in Europe than in the US, **Dr. Schwebel** expressed surprise that none of the study plan address issues of international rates and the possibility of learning from their counterparts in other countries.

Dr. Mikosz explained that the aim for this study specifically is to examine one angle of what current opioid prescribing looks like in relation to best practices in the US.

Dr. Compton found this to be exciting and timely. He expressed appreciation for the use of a large-scale commercial database as the primary source of information, given that it will provide a wealth of information. He pointed out that “post-operative” is a broad category, which he imagined they would break that down into various types of surgeries. The general surgery group has finally been turning their attention to prescribing patterns and are finding out that writing a two-week prescription is not necessary as people typically take only 10% to 15% of their pills. Even when the number is reduced, they still take only 10% to 15%. It is not clear what the lower number is for many of these procedures, but it will be nice to break it down. While he recognized that this is not going to be a guideline, he emphasized that they would have to have best practices as the comparison. This is going to be tricky. He recalled that the BSC had a very lively discussion a couple of years ago on the guidelines for chronic prescribing, and the guideline on acute care that had about the least evidence. This has to be solved because there have to be best practices of some sort. He wondered whether the lowest regional prescribing rate was the correct choice when there is not consensus or some other approach and there are no data. He expressed his hope that they could come up with something stronger than that if possible. He also thought it might be a mistake to globally rule out all cancer pain, given that there are some types of cancer for which opioids are not necessary. For example, a basal cell carcinoma removal is an acute surgical procedure that should not be given a free pass for a two-week opioid prescription.

Dr. Mikosz agreed that “post-operative settings” is an exceptionally broad category, stressing that she was just providing a few examples of the areas of work that would be included in the proposed study. There is a very exciting growing body of research that focuses on post-operative prescribing in particular across all surgeries. This includes obstetrics/gynecology (OB/GYN women’s health surgeries) orthopedic surgeons, et cetera. At the health systems levels, in-house guidelines are being developed to help define that based on research. The hope for the proposed WG is to draw on a significant amount of surgical expertise in order to capitalize on the amount of research in this area. In terms of this not being a guideline, recommendations, or prescribing standards, the plan is to use existing guidelines already available in the field to drive the proposed study. The hope is that the BSC WG, comprised of experts in their specific specialty-driven fields, will help to define best practices in their fields based on existing research. “Lowest regional rates” reflects the methodology that their colleagues in DHQP used for their study examining inappropriate antibiotic prescribing. The rationale is somewhat different for the DHQP study, with a broader understanding that antibiotics may be over-prescribed. For the proposed opioid study, CDC would look to the BSC WG to help define the analytic approach for those areas where there are no clinical guidelines or there is no research. She emphasized that they are going into the proposed study with no preconceived notions of the relationship and direction that current opioid prescribing needs to move to align with best practice. It may be that current prescribing is more or less than best practice would dictate. With regard to cancer pain, non-melanoma skin cancers will be excluded. For example, a basal cell carcinoma that is excised in the office would not be lumped in with this broader analysis of cancer.

Dr. Gioia pointed out that in pain medicine, best practices are not just pharmacologic. Children in his practice who have migraines are not simply being prescribed medication. They also may be prescribed exercise, cognitive-behavioral therapy (CBT), medical acupuncture, and/or a variety of other therapies. He wondered if there was a way to examine these other types of therapies along with medication prescriptions. This gets down to the point of eventually educating the medical community as to the variety of strategies that should be used to manage pain. To have only one set of data on one particular modality will be restrictive and ultimately not

beneficial in the future. At the very least, thinking about a secondary study that could follow up from the proposed study would be very helpful.

Dr. Mikosz stressed that the proposed project is in the early stages and they are still scoping out how to approach the analysis, especially to tackle the difficult questions. Pain management is a complicated process and there are therapies other than opioids to treat it. The focus of the proposed study is specifically on the opioid piece. For chronic pain diagnosis for which someone may be treated over time, it may be difficult to track in the OptumLabs® database exactly what treatments they tried before opioids were prescribed to them. As a way to approach this, patients who have chronic pain may be divided into two categories: 1) those who enter the study period already on opioids; and 2) those who receive a diagnosis of chronic pain during the course of the study. There will be a better ability to assess the course of prescriptions during the study period for the second group, given that the data can be linked down to the patient to see what else might have been tried for them during the study period. However, non-pharmacologic therapies are probably not going to be captured in this database.

Dr. Hedegaard observed that in describing the proposed study, Dr. Mikosz began with a description of the antibiotic project that was done using the NAMCS and NHAMCS. While she understood why CDC moved to the claims dataset for the proposed project, she suggested also looking at the National Hospital Care Survey (NHCS) data that are now available. It contains a huge number of electronic health records (EHR), which would allow them to move away from claims data to work with a different data source. The NHCS could be used to conduct some confirmatory studies. Regarding the ability to stratify the findings by different population groups, some people already have a baseline tolerance for opioids and need a higher prescription and she wondered whether that would be factored into the analysis. For example, someone with an already high tolerance level may have surgery and require a higher dosage of opioids than their baseline. This may look egregiously high, but the reality is that is what is needed for this period of pain control.

Dr. Mikosz responded that this is one of the questions CDC has in terms of scoping out the way that they will approach the proposed study. They are in the early stages of tackling the ways in which patients might present with their pain during the course of the study, how their treatment might be managed, and what can be gleaned from the data to better understand how pain management was approached for the patients in the study. They will have the ability with the OptumLabs® dataset to recognize those patients who have been taking opioids on a long-term basis. While they are still working out the details of how those patients who receive an opioid prescription on top of that will be approached, they do understand that this is a subpopulation to whom they will have to pay close attention who might not fit into the same category as other patients. They also will keep in mind the potential of the NHCS and how it might compare to the OptumLabs® dataset.

Dr. Dowell added that CDC is wrestling with the key question regarding the difference between people already on opioids and people being newly started on them. They did try to tease this out in the CDC guideline. This is very different from antibiotics due to the tolerance factor. The risks might be said to outweigh the benefits for having someone take 400 MME for someone starting opioids for chronic pain. However, that might be too low for a patient who has been receiving 900 MME. CDC would like input from the proposed WG on how to factor in those considerations.

In terms of demographic patterns across the data, **Dr. Johnson** inquired what analyses might be performed that would include breaking out the data by race, sex, et cetera. Given that they have data down to the patient level, he also wondered whether there would be a way to get a sense of rural/non-rural breakouts and poverty/non-poverty by patient and provider.

Dr. Mikosz replied that breaking down the data by race is not scoped out for the initial analysis as it stands, but it might be possible. Regarding rural versus urban populations, it is possible to link the clinical encounters to the regional and state levels. However, it will not be possible to get down into smaller geographic areas.

Dr. Coffin expressed his excitement about the project, with one of the primary caveats being how to address the people on long-term opioids. The slow decline witnessed in prescribing may actually be appropriate in the context of the high levels of prescribing seen before and the need to avoid patient abandonment issues and the limitations of the availability of other pain management strategies and substance use disorder (SUD) treatment in many parts of the country. As an infectious disease clinician as well, Dr. Coffin thinks that antibiotic stewardship is much simpler in many regards because there is not an inherent risk in prescribing antibiotics for conditions in which they are not beneficial, where there is some risk in this with opioids. Regarding the statement that this will not be a set of recommendations, he worries that it will be taken as recommendations. The CDC guidelines on prescribing have been considered rules by many payers and clinical groups as opposed to being guidelines. The results of the proposed study likewise could be taken as rules, especially if it does not take into account people who already are on opioids. It is important to tease that out separately and emphasize that prescribing going in the right direction is successful stewardship as opposed to identifying some artificial arbitrary cutoff.

Dr. Eckstrom observed that the sample is somewhat biased in that it will not include fee-for-service (FFS) Medicare or some of the Medicaid populations. This will leave out some important populations who use opioids. It is very important to recognize this and ensure that the study population is as broad as possible. Regarding the comparison of opioids and antibiotics and the list of example diagnoses put forward, she expressed hope that for some conditions CDC might put forward a recommendation that opioid use go all the way to zero. For example, low back pain might look like the fully red antibiotic circle in the antibiotic prescribing translation materials. Perhaps the best practices and rates mentioned by Dr. Compton might need to come from the European literature. It is not clear that any of the US rates have truly appropriate numbers. Oregon has been grappling with this for a while, and it has been very helpful to practitioners to have state regulations to help them. For example, a few years ago practitioners were basically told that they had to get everybody below 120 MME. As a practitioner in the office thinking with her patients about prescribing opioids, this enabled her not to be the “bad guy” who was being mean to them. Instead, she was able to say that they had to comply with the state regulation. Oregon is now down to 90 MME, so the public policy in Oregon has helped bring everyone in line.

Dr. Duwve reiterated the concern about identifying best practices and wondered what it means. Is it European best practice? Is it best practice from the 1970s when she had her wisdom teeth removed and was not prescribed opioids? Is it best practice that has resulted from pain as the fifth vital sign and the acculturation of pain in the US? If that is used as a comparative best practice, is the best practice that will be defined by the proposed study going to reflect what is truly a best practice or what we have come to accept as pain tolerance and best practice in the US based on the past decade to decade and a half of pain management? Second, in terms of post-operative pain, it is important to assess what occurred pre-operatively as both will affect

the pain level a person has and the expectation for pain when they are discharged. Third, with palliative and end-of-life care, opioid prescribing is the best practice and is considered the standard of care. However, patient choice is not always brought into the question. Some patients may prefer multi-modal methods in order to be with family at end of life rather than be influenced by opioids. When writing their (whose?) chronic pain prescribing rules in 2013, they focused on functionality. Pain management varies based on the individual and functionality is critical. They need to reframe the modality for pain management to focus on functionality (ability to return to work, ability for patients to do what they love, et cetera) such that opioids are not the “go to” modality.

Dr. Green observed that while race and ethnicity may be hard to capture in the claims data, it is known from previous research that gender differences exist in prescription opioid dispensing and use, misuse, and otherwise. It also is known that pain levels will be perceived differently culturally and biologically. Given that there is an aging cohort currently, consideration should be given to adjusting for age and cohort effects. In terms of vulnerable populations, the acute setting of post-partum and people with SUD should be included and followed in the collection of diagnoses. Though these may be difficult diagnoses to find in the dataset to be used, perhaps separate consideration of people who are taking buprenorphine and their outcomes could help to advance the field.

Dr. Mikosz responded that it is possible to look at age and they intend to do this, because they also want to capture pediatric populations adequately. It is not clear whether the analysis will be able to capture opioid use disorder (OUD) adequately, but it is good food for thought.

Dr. Greenspan noted that she also is a Physical Therapist (PT) and that PTs have moved away from considering pain on a scale of how severe one’s pain is to assessing functionality. A lot of the PT research now on chronic pain is focused on improving function.

Establishment of a Workgroup to Estimate Rates of Opioid Prescribing

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

Dr. Greenspan presented for BSC consideration CDC’s rationale for the establishment and composition of a workgroup (WG) on Estimates for Opioid Prescribing to be known as the “Opioid Prescribing Estimates (OPE) WG.” As Dr. Mikosz discussed in her presentation, recent research has demonstrated discrepancies in opioid prescribing practice, including differences in the number of opioids prescribed versus the number of opioids taken, differences in the amount of opioids prescribed versus self-reported chronic pain, and variations in prescribing practices following certain medical procedures and specific diagnoses. Based on these discrepancies and their public health impact, CDC will be performing analyses to better describe opioid prescribing on a national basis, consider best practices based on current guidelines and research, and examine discrepancies between current practice and best practices.

To guide the agency in this process, CDC requested that the BSC approve the formation of a WG to provide expert input from the clinical, scientific, patient, and ethical perspectives on existing opioid prescribing guidelines and prescribing estimates for specific acute and chronic diagnoses, conditions, and procedures. The draft charge of the WG is to:

- 1) Identify key recommendations from evidence-based guidelines for prescribing opioids for acute and chronic pain conditions, on which to develop estimates and goals
- 2) Identify key diagnoses and procedures for which opioids might be prescribed to manage acute and chronic pain
- 3) Identify key clinical and epidemiological studies that provide information for estimating opioid need for specific diagnoses and procedures (identify additional sources)
- 4) Provide expert input on methods for generating opioid prescribing estimates and reference points
- 5) Identify guidelines and recommendations for acute pain that could be further communicated by CDC through translational materials
- 6) Identify other activities needed for the development, interpretation, dissemination, and implementation of opioid prescribing guidelines, recommendations, and reference points

In response to the high rate of opioid prescribing, several entities (the federal government, professional societies, health departments, and stakeholders) have developed clinical guidelines for opioid prescribing. In particular, CDC is interested in recommendations within guidelines that apply to primary care management for acute and chronic pain, emergency department (ED) management of acute pain, post-operative management of acute pain, dentistry management of acute pain, and other relevant settings and procedures in which opioids may be indicated.

In terms of the second charge to identify key diagnoses and procedures for which opioids might be prescribed, sickle cell crisis and osteoarthritis are examples of acute and chronic diagnoses CDC could examine. Management of pain following orthopedic or dental procedures represent procedures that could be included in this analysis.

Regarding the fourth charge to provide expert input on methods for generating opioid prescribing estimates and reference points, using published clinical guidelines and related research, CDC will identify best practices for specific indications and for specific settings. Examples include management of acute pain due to kidney stones or fractures or management of chronic pain conditions such as low back pain, fibromyalgia, or osteoarthritis.

With respect to the fifth charge to identify guidelines and recommendations for acute pain that could be further communicated by CDC through translational materials, CDC has identified a number of promising guidelines for chronic and acute pain, but more may exist. Members of the OPE WG will be asked whether they are aware of any additional guidelines and recommendations from guidelines that CDC has not yet identified. As mentioned earlier, this project will not be developing a new guideline or updating the 2016 *CDC Guideline for Prescribing Opioids for Chronic Pain*. This is not meant to present new prescribing recommendations for individual patients. Instead, the project will be examining the patterns of prescribing on a population basis and comparing these to existing guidelines and research

recommendations. Translation materials will be developed using existing guidelines and research.

In determining estimates, CDC would like to use the expertise of the WG to help answer a number of key clinical questions. Examples of possible questions for the OPE WG include:

- What is an appropriate length of time for opioids for an acute diagnosis or procedure not already defined in the literature?
- What is an appropriate dosage of opioids for a specific acute diagnosis or procedure?
- In your clinical experience, what percentage of the time are opioid prescriptions aligned with best practice for chronic diagnosis?

The proposed OPE WG members CDC is considering and would like for the BSC to consider as part of the OPE WG include the following:

- Those who represent a wide range of clinical specialties that may treat acute and chronic pain:
 - Dentistry
 - Pediatrics
 - Obstetrics/Gynecology
 - Oncology
 - Hematology
 - Neurology
 - Internal Medicine/Family Medicine
 - Emergency Medicine
 - Pain Medicine/Anesthesiology
 - Surgery (including subspecialties)
 - Palliative Medicine
 - Physical Medicine & Rehabilitation
 - Patient representatives
 - Other federal partners as consultants to answer questions and act as a resource, such as the Food and Drug Administration (FDA) and the Veterans Administration (VA)
 - Bioethics
 - NCIPC BSC representatives
- Those who demonstrate clinical interest and expertise in pain management, especially in opioid prescribing
- Those who demonstrate a strong record of academic scholarship in pain management, especially opioid prescribing
- Those who are recommended by medical professional societies, when applicable:
 - American Dental Association
 - American Society of Hematology
 - American Academy of Pediatrics

The WG would be assembled to ensure maximal breadth of expertise and diversity in clinical perspectives. In alignment with existing CDC guidance, all potential OPE WG members will be vetted for possible conflicts of interest (COIs) to mitigate any undue influence. If formation of a WG is approved, CDC would propose convening approximately four to five WG meetings to be conducted in a webinar format that would be subject-focused (e.g., not all specialties in attendance at each convening). The OPE WG would be responsible for a final report that summarizes the expert input obtained during the webinars. This report would be presented during the next NCIPC BSC meeting, with a target date of November or December of 2018.

Dr. Greenspan then presented the names and specialty areas for the proposed OPE WG members. The table from which she presented was provided in hard copy to BSC members during the meeting and includes specialty, proposed experts, brief biographies, and recent relevant publication(s). [*Note: This table is appended to the end of these minutes as Attachment #3: Pre-Decisional Proposed Experts for the NCIPC BSC OPE WG Informing the CDC Opioid Prescribing Estimates Project*].

Two members from the parent BSC will serve on the OPE WG. One of the BSC members will serve as Chair of the OPE WG. CDC proposed two BSC members with specific expertise in opioid management: Dr. Phillip Coffin to Chair the WG and Dr. Christina Porucznik to serve as the second BSC member.

Public Comment

Mark Pew Preferred Medical

I am also known as the “RxProfessor.” I speak and write about this particular subject in workers compensation. Preferred Medical is a pharmacy benefit manager in workers compensation. We’ve had an acute understanding of opioid use and overuse for a long period of time, because we own the care for the duration of that person’s claim. So, we are very aware of the issues, especially the polypharmacy issues. I appreciate all of the comments that have been made and really appreciate the fact that you’re doing this particular WG, because it’s a continuing conversation. With my social media platform, I’m often engaged with people who think that the CDC guidelines have become very rule-oriented and very restrictive. They obviously didn’t read the guidelines. They don’t say “no.” They say to “start low and go slow.” To your comment about the word that cannot be mentioned anymore, the non-pharm alternatives, I will offer a word called “biopsychosocial-spiritual treatment model.” This is something that workers compensation is trying to do to combat the overuse of opioids from a chronic standpoint. I’ve seen first-hand where patients who have been on an egregious list of opioids do not need those opioids anymore by being replaced by other alternatives, so I know it’s possible. Although, there is a role for opioids. I appreciate the fact that the WG is trying to understand that. I do want to mention, in regards to what’s next, because I think that everybody gets the fact that opioids are dangerous at this point. I don’t think that’s an issue in our country right now. But, we need to figure out what’s next. I know that’s not within the scope of this particular study and this WG and I appreciate the fact that you’re trying to understand best practices and what truly best practices are, but I think this is a continuation of the conversation about what is next in regards to opioids. If opioids aren’t appropriate for everybody, then what is? We need to figure that out as a society, so hopefully what will come from the WG is an understanding of the comparison of best practices and what’s actually practicing. I hope it will be a continuation of the conversation in regards to if it’s not opioids, what’s next? That is that biopsychosocial-spiritual treatment model. Thank you.

**Sharon Nieb, PhD
Program Director
Injury Prevention Research Center
Emory University**

Good morning and thank you so much. I have very much enjoyed being here today. I am the Program Director for the Injury Prevention Research Center (IPRC) at Emory, which is an Injury Control Research Center (ICRC). I also wanted to note that we have a statewide Drug Safety Task Force. One comment, please remember your ICRCs and the expertise that they provide as you're looking at this issue. Secondly, I notice that we have some representation on our task force that wasn't mentioned in your specialties that you're looking at. One of those specialties is toxicology. From our Georgia Poison Control Center, we have toxicologists involved. Secondly, we also have pharmacy. I think pharmacy is really important. We have social work and we also have nursing involved in our specialties, along with behavioral health. So, these are just some thoughts and suggestions moving forward. Again, if you want to reach out to us, we're very very interested in talking to you. Thank you.

**Lee S. Newman, MD, MA, FACOEM, FCCP
Professor and Physician
Colorado School of Public Health
Colorado School of Medicine
University of Colorado
Colorado Consortium for Prescription Drug Abuse Prevention**

Thank you all for organizing this and for the activities that we heard about here today. I am a Professor and Physician in the Colorado School of Public Health and School of Medicine at the University of Colorado, and Part of our Colorado Consortium for Prescription Drug Abuse Prevention, which is a 400-member organization that cuts across all of the different stakeholder groups and has for years been addressing these issues and appreciating the work that you all have been doing. I want to highlight a couple of points, one of which I already heard a little bit earlier. One is a focus that we've had has been around the workplace. Very clearly, we see not only that there's a high frequency of chronic pain, but also a large literature related to the issues of workers and opioid prescribing practices. I note that in the proposed WG you do not have occupational medicine represented, and I would urge you to correct that and add occupational medicine. We have guidelines, which have been out there for many years and which I think would be a perspective important to include. My second point is that in terms of participating organizations, there is the American College of Occupational and Environmental Medicine (ACOEM), which has its guidelines and a very strong focus in this area as well as a potential participant. My third point is that with regard to the opioid prescribing estimates project, I didn't hear that you would be able to wrap your heads around the prescribing that's related to workers comp claims. If I missed that, it's because the phone cut out a few times. If that's absent, I would urge you to give strong consideration to how to incorporate that substantial body of opioid-related data into your work plan. Otherwise, you'll be "missing the boat" in terms of that channel for opioid prescribing practices and adherence or non-adherence to best practice guidelines. Those are my main points for today. Thank you for your time.

**Jenna Ventresca
Director, Health Policy
American Pharmacists Association (APhA)**

APhA thanks you for the opportunity comment to the CDC's Board of Scientific Counselors regarding the upcoming project on opioid prescribing estimates and the workgroup. APhA members provide care in all practice settings, including community pharmacies, hospitals, long-term care facilities (LTCF), community health centers, managed care organizations (MCO), hospice settings, and Uniformed Services. APhA appreciates CDC's efforts to provide transparency and the opportunity for public comments regarding the upcoming project on opioid prescribing estimates. As the Board of Scientific Counselors considers workgroup membership, APhA urges the board to include pharmacists. Pharmacists are medication experts who work with patients, including those suffering from acute and chronic pain at different points along the care continuum. APhA nominates Dr. Chris Herndon for workgroup membership and would be willing to provide additional recommendations. Dr. Herndon is a certified pain educator and pharmacotherapy specialist. He is recognized by the pharmacy profession as a pain palliative care expert with significant experience reviewing clinical guidelines related to pain management. APhA believes Dr. Herndon will provide valuable insight and experience to the workgroup. Going forward, APhA recommends that the Board of Scientific Counselors provide an opportunity for stakeholder input orally and in writing and regularly updated information regarding the workgroup's progress. Thank you.

**Arlene Remick
Manager, OB Practice
American College of Obstetricians and Gynecologists**

Thank you so much. I appreciate it. My name is Arlene Remick. I'm with the American College of Obstetricians and Gynecologists (ACOG). We would like to thank CDC for the opportunity to provide comments. As the Board of Scientific Counselors considers this project, ACOG makes the following recommendations:

- 1) Therapy should be individualized based on the patient's condition. For many clinical circumstances, including post-partum pain management, there is little data on an optimal number of tablets or duration of therapy that addresses pain control and reduces the number of unused tablets. Federal opioid prescribing limits can be detrimental to patient access to care and interfere with the patient/physician relationship. Further, pregnancy alone is not a reason to deny pain medication with opioids.
- 2) Guidance on pain management for different clinical indications is best developed by the medical specialties who care for these patients with those conditions. ACOG is pleased to hear that OB/GYNs are included the workgroup.
- 3) Specific to the early post-partum period, pain and fatigue are the most common problems reported by women. Pain can interfere with a woman's ability to care for herself and her infant. Untreated pain is associated with a risk of greater opioid use, post-partum depression, and development of persistent pain. A shared decision-making approach to post-partum discharge opioid prescription can optimize pain control based on the amount needed.

- 4) When examining prescribing rates, ACOG requests that you separate opioid prescription and use for pain management versus treatment of OUD, both in pregnant women and in the general population.

Thank you again for the opportunity to give public comments. Please consider ACOG a trusted partner and let us know if we can provide any assistance. Thank you.

Rachael Cooper
Senior Program Manager
Substance Use Harm Prevention
National Safety Council

Thank you for hosting this call. I represent the National Safety Council (NSC), a non-profit with the vision to eliminate preventable deaths such as drug overdoses. The CDC is a critical partner in addressing this epidemic. NSC strongly supports the *CDC Guidelines for Prescribing Opioids for Chronic Pain*, which is invaluable to educate prescribers in effective pain management. Similarly, NSC is sponsoring a systematic review of interventions for acute musculoskeletal pain. Results from this review will be provided to the American Academy of Family Physicians (AAFP) and the American College of Physicians (ACP) to use in the development of a guideline for acute pain treatment, which we expect to publish in 2020. Today, I offer a few recommendations for your consideration as you identify prescribing rates and compare them with best practice:

- 1) First of all, we recommend that you review the Department of Veterans Affairs (DVA) Cochrane review stating that 1 acetaminophen and 1 ibuprofen when taken together provide more effective pain relief for acute pain than oxycodone at all levels.
- 2) Second, we recommend that you engage the employer community in these efforts. Seventy-five percent of people with a substance use disorder are employed and opioids are often prescribed after a workplace injury. You could inform this process by consulting with the National Institutes for Occupational Safety and Health (NIOSH) as well.
- 3) We lastly recommend that you track alternative non-opioid pain treatments, including non-pharmacological treatments and share this information as part of your work.

Again, we thank you for this effort. Please consider us a trusted partner as well. We stand ready to work with you. Thank you for your time.

Lauren Canary
Concerned Individual

My name is Lauren Canary. I am informally representing an organization of cancer caregivers who wanted to express difficulty in accessing opioids among those with late-stage cancer. We hope that this group is included and in mind when formulating guidance. Oftentimes, guidance would make exceptions for persons with cancer but in practice it has, indeed, been much more difficult for patients to access pain relief opiates, specifically in regard to pharmacies and their restrictions around patients being able to fill prescriptions. So, we just ask that you keep this group in mind. Thank you.

Discussion Points

Regarding the comments about the ICRCs, **Dr. Houry** explained that the ICRC are funded universities through one of NCIPC's grant mechanisms that address a range of topics. She used to be an ICRC Director when she was at Emory University. This is an opportunity for the ICRCs to participate and to send forward different clinicians who are part of this group. On brief scan of the table of proposed members, she saw the University of Pennsylvania, which is a current ICRC, as well as Michigan. It will be important to make sure that these clinicians remain in contact with their ICRCs. The BSC has had a session on ICRCs before and would be talking about Youth Violence Prevention Centers (YVPCs), which NCIPC supports.

Dr. Crawford observed that the proposed members did not appear to include any behavioral health expertise to address issues such as compliance and the resource people have in particular environments to support their efforts toward pain management, or advocates within a certain setting who might look for interventions other than pharmacological ones. He suggested adding expertise in this area. Thinking about the concept "nothing about us without us" there is a definite bias toward education and credentials. It is important to do the right thing for patients and others, and he noted that the proposed membership included a patient representative who appeared to be a consumer as well. In looking at estimates of opioid assessment, he wondered whether they were considering the impact on patients of prescriptions beyond the question of whether there is abuse, over-prescribing, et cetera. In order to understand the patient's perspective, it is important to understand not only population-level statistics, but also, they should be looking at Ns of 1 also to be able to better understand the connection between the two.

Dr. Mikosz indicated that a psychiatrist is among the clinicians who are proposed to serve on the OPE WG, so behavioral health may be represented in that way. Regarding how the research could translate to action on the ground, it is not necessarily a specific focus of the study per se, but that is one way they hope the study could be used. It could be applied to local or state jurisdictions to highlight hotspots in their own opioid overdose prevention efforts. They hope that clinicians and health systems might be able to use it to inform their prescribing practices on the population level.

Dr. Comstock echoed some of the public comment callers in saying that she would love to see someone from pharmacy and someone from occupational medicine on the OPE WG. Unfortunately, it is known that many adolescents and young adults first are introduced to opioids due to a sports or recreational injury. Therefore, a sports medicine clinician or orthopedist would be another good addition. She recognized that these groups can become very large. She would rather see fewer representatives in each specialty, with more specialties represented if possible.

Ms. Castillo offered NIOSH's voice for having occupational medicine represented on the OPE WG. Many of the conditions put forward are very prominent among injured workers, such as back pain. As Dr. Newman noted, there are a number of prescribing guidelines that Workers Comp has put forward, so that is useful fodder for looking at best practices. Regarding the question Dr. Newman raised regarding whether Workers Comp systems are within the database CDC plans to use, it would be ideal if they are. If not, that is something to look at. NIOSH would be happy to provide support in identifying an occupational medicine representative or making connections with ACOEM.

Dr. Hedland requested clarification regarding the relationship between the OPE WG to be established and the project Dr. Mikosz described earlier. The description of the proposed WG has “estimates” in it, which he read initially to mean that the OPE WG would be reviewing data. But it actually seemed that they would be an opioid prescribing guidelines WG to describe what is available in terms of guidelines, recommendations, and so forth as input to the estimates project. The word “estimate” suggests data, so if that is not what the WG is to do, he suggested that CDC give further thought to the name.

Dr. Mikosz clarified that the hope is for the OPE WG to help inform the second question to be addressed in the course of the proposed study, which is to determine what best practice opioid prescribing looks like in the US currently. They are trying to draw together and assemble a BSC WG that represents a broad range of specialties that would prescribe opioids. They hope that those experts can help them identify the key recommendations in place that are useful for folks in the field, help alert CDC to research studies which they may not be familiar with that can speak to best opioids practices, and also provide input on how to tackle the thornier questions in terms of approaching the analysis. The word “estimate” suggests data, so if that is not what the WG is to do, he suggested that CDC give further thought to the name.

Dr. Greenspan added that they have already hit on some thorny issues in their discussions in terms of best practices, so they will be looking to the OPE WG to provide expert input into those areas. She emphasized that they are trying to stay away from calling the analysis a “guideline project” because they are concerned that people will jump to the conclusion that CDC is developing a new guideline. Instead, they are trying to look at what is already available to help in the effort to examine what is currently being prescribed compared to best estimates. The WG has been called several names in its iterations. CDC is trying to hit the right balance so that folks will understand that this is not a guideline WG.

Dr. Duwve appreciated the recommendations by the public commenters about including additional representatives on the WG, and had a few additional ones to add. One would be adolescent psychiatry. Addiction is an adolescent brain disease and pain is interpreted in the brain, so the inclusion of the one psychiatrist, who is a well-known pain management doctor, may not be sufficient. She also appreciated the sports medicine/athletic training suggestion. The list does not appear to include a family physician. She likes family medicine because she is a family doc, and also because family physicians actually care for the entire spectrum from pediatrics through geriatrics and can inform the conversations from multiple perspectives, including family dynamics because they do treat multiple members from the same family.

Dr. Porucznik pointed out that they may end up striking a balance between including people as members of the OPE WG versus calling them in as subject matter experts (SMEs) or consultants for particular items.

Dr. Compton found the list of proposed OPE WG members to be comprehensive and was happy that he recognized a number of the names. He agreed that occupational medicine would be a terrific addition and suggested considering Dr. Gary Franklin in Seattle, Washington. He is both a government representative from the state who has been very active in writing extensively about workers comp prescribing, and a leader in this field early on. Additional federal partners to consider include the Indian Health Service (IHS) and the Centers for Medicare and Medicaid (CMS). CMS may have the expertise in terms of the analyses of some of their own datasets. As a potential consumer of the product, it would be great to include CMS early on so that they might implement some changes based on what CDC develops. The National Institutes of Health (NIH) would be happy to help if CDC thinks of a role for them.

Dr. Greenspan noted that *Ex Officios* can participate as part of the WG. Federal partners who are not in the BSC charter, they can serve as consultants or resources. She liked the suggestion to include a member of IHS and invited Admiral Taylor to put forth any suggestions for IHS representations.

Dr. Eckstrom observed that there was no one on the proposed list from geriatrics. Chronic pain is a major issue among older adults, and opioid use becomes increasingly risky with advancing age. There also is no one from PT or integrative medicine. Those two areas are important parts of a means to reduce opioids.

Returning to the goals of the WG, **Dr. Schwebel** reiterated a point he made earlier that the goal of identifying the best practices would be shortsighted without considering the practices in other countries. He urged the OPE WG to think about gathering some data, at least public information, about what is done in Europe, Canada, Australia, New Zealand, Asia, et cetera.

Dr. Greenspan requested that members of the public who spoke submit their written comments to ncipcbosc@cdc.gov. She emphasized that all of the suggestions regarding potential membership on the new WG and pertaining to the analysis itself would be taken into consideration. She encouraged BSC members, members of the public, and other interested parties to submit any additional suggestions for the proposed analysis and/or OPE WG membership to her by the end of the day on June 22, 2018 at the same email address.

Motion/Vote

Before entertaining a motion/vote, **Dr. Porucznik** requested that Dr. Mikosz summarize her ideas about main take-aways. She emphasized that the motion/vote would be to approve the establishment of the proposed WG versus ratifying the list of proposed specialties and members.

Dr. Mikosz took a moment to summarize the proposed project and reiterated its need in this space. All Americans experience pain at some point—acute, chronic, or both. It is CDC's overarching goal for patients to receive safe, effective treatment for their pain. Opioids have a place in medicine. In certain clinical situations where benefits outweigh the risks, it is known that opioids can be effective. For the proposed project, CDC is committed to generating analyses that are drawing from the best available existing resources and research that support acute and chronic pain for various indications and diagnoses. Again, the aim is to bring together all of the existing best practice guidance to develop prescribing estimates—not just the current prescribing estimates, but best practices that demonstrate what they could strive for in terms of best clinical practice. She reiterated again that this is not a prescribing guideline, it is not a set of standards for how opioids are prescribed, and it is not to make recommendations. The goal is to draw from existing resources in the field. CDC knows that pain management is a very individualized process and that clinical decision-making lies with a clinician and their patient to come together to develop a strong pain management plan. They hope the study can be used to inform the field about best practice prescribing habits, and to inform ways in which current prescribing practices can change to align with best practices.

Motion/Vote

Dr. Duwve made a motion to approve the establishment of the NCIPC BSC OPE WG that will inform the *CDC Opioid Prescribing Estimates Project*, with flexibility for CDC to select members and consultants following the BSC's recommendations of specialties and within the restrictions of COIs and federal regulations. **Dr. Crawford** seconded the motion. The motion carried unanimously with no opposition and no abstentions.

Opioid Research Overview

The Opioid Overdose Epidemic in the US: NCIPC/CDC Research Priorities

Tamara Haegerich, PhD
Associate Director for Science
Division of Unintentional Injury Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Dr. Haegerich presented NCIPC's research priorities in the area of opioid overdose prevention and discussed NCIPC's successes and how they might move forward in the area. NCIPC is happy to have the benefit of having a scientific advisory committee that can provide feedback on the center's work. She first reviewed CDC's overall opioid strategy to set the stage for the conversation, presented NCIPC's opioid research priorities, and reviewed some of the activities in which NCIPC has been engaged over the past several years to provide a summary of progress. With those successes in mind, she then talked about how the epidemic has evolved since the center set the priorities in 2015, which has motivated an interest in possibly integrating new priorities given the changing epidemic.

CDC's strategy can best be reflected in the context of each of the following five pillars, which are to:

- Conduct surveillance and research
- Build state, local, and tribal capacity
- Support providers, health systems, and payers
- Partner with public safety
- Empower consumers to make safe choices

With regard to the area of surveillance and research, CDC conducts analyses to estimate the burden of opioid-related morbidity and mortality, track trends in the populations at greatest risk, identify modifiable risk and protective factors, evaluate the effectiveness of preventive interventions, and target the best ways to disseminate and implement promising strategies. For example, CDC released a *Vital Signs* in the *MMWR* on opioid overdoses treated in EDs which highlighted a 30% increase in ED visits for opioid overdoses overall across the US within a one-year time period. This analysis showed how syndromic surveillance and medical claims data can be leveraged to illustrate how fast-moving the epidemic is.

In the area of state, local, and tribal capacity through the Overdose Prevention in States Initiative funded through three state funding opportunity announcements (FOAs), CDC is currently supporting 45 states and Washington, DC with funding and expertise to conduct activities such as reporting on fatal and non-fatal overdose, increasing comprehensive toxicology testing, supporting MEs and Coroners, enhancing PDMPs, implementing and evaluating strategies to improve safe prescribing, and implementing CDC's Rx Awareness Communication Campaign. Work is underway to further scale up these activities across the nation with the funding increase described earlier in the day.

CDC's Guideline for Prescribing Opioids for Chronic Pain is the hallmark activity in supporting providers, health systems, and payers. There is a sophisticated four-pronged strategy to support implementation of the recommendations through clear translation and communication guidance; development of clinician education and training; support for health systems, such as development of quality improvement (QI) measures and electronic clinical decision support (CDS); and partnering with payers to identify guidelines, current benefit design, and formulary management.

In terms of partnering with public safety, CDC has engaged with HIDTAs as part of the heroin response strategy to make strong public health and public safety connections. For example, CDC is supporting some community projects to evaluate innovative local responses to overdose spikes that integrate both public health and public safety approaches. The Rx Awareness Campaign is the benchmark of CDC's efforts to empower consumers to make safe choices. The campaign tells real stories of people whose lives were torn apart by prescription opioids. The goal is to increase awareness that prescription opioids can be addictive and dangerous and decrease the number of people who misuse them. The campaign leverages video and television advertisements, billboards, and social media to communicate the key messages. CDC is supporting states in their efforts to support rollout across the nation.

With that general overall perspective of CDC's approach in mind, Dr. Haegerich discussed NCIPC's opioid research priorities. In 2015, NCIPC released [research priorities](#) to guide the center in innovative research and identifying solutions focusing on CDC's public health expertise. This document was intended to demonstrate progress or impact within the next 3 to 5 years. The priorities guide intramural research and form the basis of Notice of Funding Opportunities (NOFOs) for extramural research. Four priorities were identified in the area of opioid overdose, which are shown here along with the key research questions for each:

- ❑ Evaluate the impact of insurer mechanisms and pharmacy benefit manager strategies to change prescribing behavior, inappropriate use of controlled substances, and patient outcomes.
 - Which insurance and pharmacy benefit manager interventions change prescribing behaviors most effectively (e.g., drug utilization review, patient review and restriction, prior authorization)?
 - Which of these interventions are most cost-effective?
 - What are the effective ways that state public health departments can engage insurers and pharmacy benefit managers to foster adoption of these interventions?

- ❑ Evaluate the impact of state policies and strategies that facilitate PDMP use, improve prescribing practices, educate patients, and encourage overdose treatment and response.
 - What are the impacts of innovative, untested policies and strategies at the state level on prescribing rates and prescription or illicit drug misuse, abuse, and overdose?
 - What are the potential unintended consequences (e.g., encouraging transition from prescription opioid misuse to illicit drug misuse)?
 - What are the impacts of harm-reduction strategies on drug overdose?
 - Which PDMP strategies (e.g., mandatory registration) enhance use and produce the greatest impacts on prescribing and health outcomes?
 - What are the cost implications and cost savings of identified policy changes?
 - How can communication campaigns influence physician opioid prescribing and patient opioid use?

- ❑ Identify factors that increase risk for prescription drug-related mortality, and identify risk and protective factors related to the co-use of prescription opioid pain relievers and heroin.
 - How can PDMP, coroner, medical examiner, and law enforcement data be used to identify risk and protective factors for drug overdose?
 - What are the patterns of co-use of prescription opioids and heroin, injection of opioids, and overdose?
 - Does controlled substance prescribing, including opioid pain reliever prescribing, increase risk for heroin overdose?

- ❑ Evaluate the adoption, implementation, and impact of clinical practice guidelines, clinical decision supports, and coordinated care plans within primary care practices in health systems.
 - What are the clinical decision support needs, barriers, and effective approaches to promoting guideline adherence in primary care?
 - What factors facilitate adoption of coordinated care plans in health systems?
 - What are the patient and health system impacts of guideline, clinical decision support, and coordinated care plan implementation?

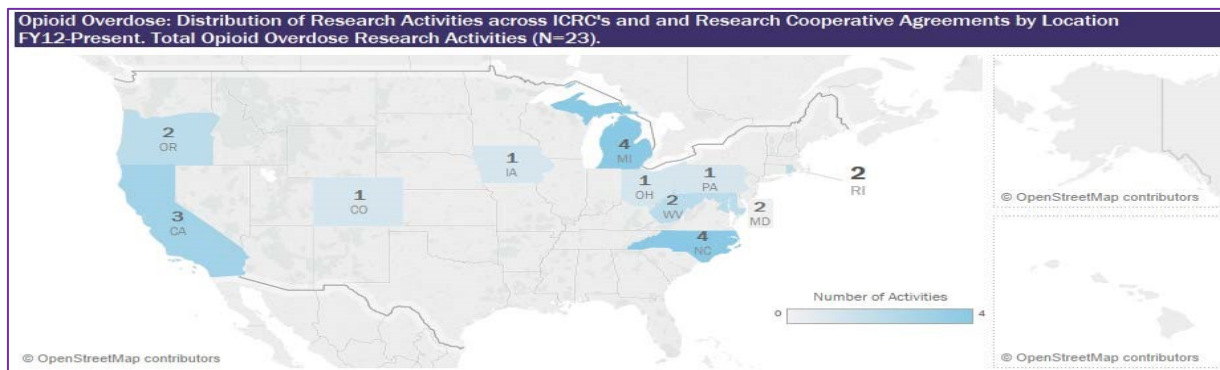
In terms of what has been accomplished to date in each of these priority areas, although the priorities were established in 2015, a retrospective look was taken back to 2012, partially because the research priorities were based on a strategy foundation that was established in 2012 with which NCIPC already was moving forward. In addition, it takes a while for research to mature and determine the outcome. This can be viewed as a mini portfolio review. In the past, NCIPC has performed long and comprehensive portfolio reviews that are 200 pages and take a year's worth of time. This was a two-month initiative that could be pulled together quickly with the information immediately available to provide a general snapshot of NCIPC's successes and how they might move forward.

Regarding funding announcements, from 2012-2019, there were six NOFOs for extramural funding released for individual research grants or cooperative agreements with an opioid focus:

- ❑ Research to Prevent Prescription Drug Overdoses (2012, 2014)
- ❑ Research on Integration of Injury Prevention in Health Systems (2014)
- ❑ Research on Rx Opioid Use, Rx Prescribing, and Heroin Risk (2016)
- ❑ Research to Evaluate Medication Management to Reduce Falls (2018)
- ❑ Research for the Primary/Secondary Prevention of Opioid Overdose (2018)
- ❑ Injury Control Research Centers (2014, 2019)

In addition, two NOFOs were released for ICRCs during this time, including supplements for which the scope including a focus on NCIPC priority topic areas, of which opioid overdose is one. The scope of individual NOFOs crossed over all four of the research priority areas including identification of risk and protective factors, evaluation of PDMPs and state policies, evaluation of insurance mechanisms, and evaluation of dissemination of clinical best practices in health systems.

A new database is being developed to help NCIPC track investments in research across all of its topic areas. For this review, Dr. Haegerich presented the following visualizations that are available to illustrate the power of this kind of tool:



In terms of the individual cooperative agreement projects that were funded under each priority, four projects were funded under the insurance mechanism priority to evaluate benefit design and formulary management policies such as lock-in programs or prior authorization for high-dose opioids across several states, which included:

- Medicaid lock-in, North Carolina (PI: Skinner)
- Worker's compensation/SSDI-eligible disabled Medicare cost sharing and closed formulary, Texas and California (PI: Mulcahy)
- Medicaid prior authorization programs in 3 states (PI: Hartung)
- Medicaid prior authorization, Pennsylvania (PI: Cochran)

Three projects were funded under the state policies and strategies evaluation priority, including the following:

- PDMP use in 7 states, impact on prescribing and health outcomes (PI: Green)
- PDMP implementation within multi-component community strategy (Project Lazarus), impact on fatal and nonfatal overdose (PI: Ringwalt)
- PDMP and pain clinic legislation, impact on prescribing behavior and use in 2 states (PI: Alexander)

Five projects were funded under the risk and protective factors identification priority, including the following:

- Qualitative investigation of transitions from Rx opioids to heroin (PI: Davidson)
- Evaluation of changes in prescribing in safety net clinics and association with heroin initiation and overdose (PI: Coffin)
- Evaluation of performance improvement in coordinated care organizations and impact on prescribing, opioid use, and Rx/illicit overdose (PI: Hartung)
- Evaluation of associations between dose reduction/discontinuation, heroin use, and overdose (PI: Bohnert)
- Evaluation of opioid reduction policies (e.g., quantity limits, MME) association with heroin use and overdose (PI: Binswanger)

Six projects were funded under the priority to identify dissemination/implementation methods, including the following:

- Evaluation of clinical guidelines within Project Lazarus, examining impact on fatal and nonfatal overdose (PI: Ringwalt)
- Evaluation of electronic health record alerts with feedback to providers on prescribing behaviors (PI: Seymour)
- Evaluation of a safe opioid prescribing protocol in a trauma center on prescribing behavior and naloxone use (PI: Baird)
- Evaluation of performance improvement efforts in coordinated care organizations on prescribing and initiation of heroin use (PI: Hartung)
- Evaluation of implementation of dose reduction/discontinuation recommendations and associations with heroin use and overdose (PI: Bohnert)
- Evaluation of impact of limits on monthly quantities or average daily dose (features of guideline) on heroin use and overdose (PI: Binswanger)

The extramural investigators funded have been quite productive. There is a list of publications in the report provided to the BSC. A lot of interesting findings have been generated and published.

For example, in an evaluation of Oregon Medicaid's prior authorization policy for high dose opioids, the probability of an opioid fill over 120 MME declined, fills of non-opioid medications to treat neuropathic pain increased, and the probability of multiple pharmacies used declined significantly.¹ In an evaluation of Florida's prescription monitoring program and pill mill law, high risk patients experienced relative reductions in MME, total opioid volume, and number of dispensed opioid prescriptions, while low-risk patients generally did not experience significant relative reductions.² In an evaluation of Project Lazarus, a state-wide initiative to prevent opioid overdose, provider education and policies to limit emergency department opioid dispensing were associated with lower overdose mortality.³ [Hartunget al. Effect of a high dosage opioid prior authorization policy on prescription opioid use, misuse, and overdose outcomes. Substance Abuse 2017; <https://doi.org/10.1080/08897077.2017.1389798>; ²Chang et al. Impact of Florida's prescription drug monitoring program and pill mill law on high-risk patients: A comparative interrupted time series analysis. Pharmacoepidemiology and Drug Safety 2018; <https://doi.org/10.1002/pds.4404>; ³Alexandridiset al. A statewide evaluation of seven strategies to reduce opioid overdose in North Carolina. Injury Prevention 2018;24:48-54].

Overall, the publication of findings illustrates that these projects have contributed uniquely to the evidence base about promising ways to address opioid-related morbidity and mortality. Dr. Haegerich noted that a few BSC members have been funded to conduct research and encouraged anyone with questions about how they have worked with CDC and the value of setting research priorities and implementing projects collaboratively to direct them to the investigators.

The ICRCs also have conducted important research to address the opioid epidemic. Essentially, the ICRCs are a national network of comprehensive academic centers that are focused on research, training, and outreach across all areas of injury prevention. Some of these centers have focused on opioid overdose specifically. This research has been directly tied to the NCIPC research priorities because these projects were funded before 2015 when the priorities were established, but in general do address the priority of opioid overdose prevention and illustrate a more holistic strategy to address the epidemic. The following is a list of funded projects from ICRCs:

- Evaluate mobile tools to educate ED patients about opioids
- Evaluate state medical board policy to identify excessive prescribing using PDM
- Analyze poison control data to assess overdose among adolescents
- Examine diagnoses and prescribing associated with OUD and overdose
- Assess availability of county and regional interventions to address misuse
- Translate opioid overdose prevention strategies
- Evaluate prescription drug coverage policy on falls and overdose in older adults
- Evaluate a brief intervention in EDs for at-risk individuals
- Evaluate a home visitation program after overdose
- Expand mindfulness-based relapse prevention in an outpatient setting for OUD

An Opioid Thematic Network also was funded across 4 of the ICRCs to address opioid misuse and overdose through Johns Hopkins University, University of Iowa, University of Michigan, and West Virginia University. The purpose of this network was to establish a national resource for evidence-based action to inform the epidemic. The network engaged stakeholders, developed a consensus document outlining evidence-based approaches to addressing the epidemic, and created a strategic dissemination plan for that. Products also were developed on state-level policy, providing evidence-based policy recommendations, a translation symposium, and

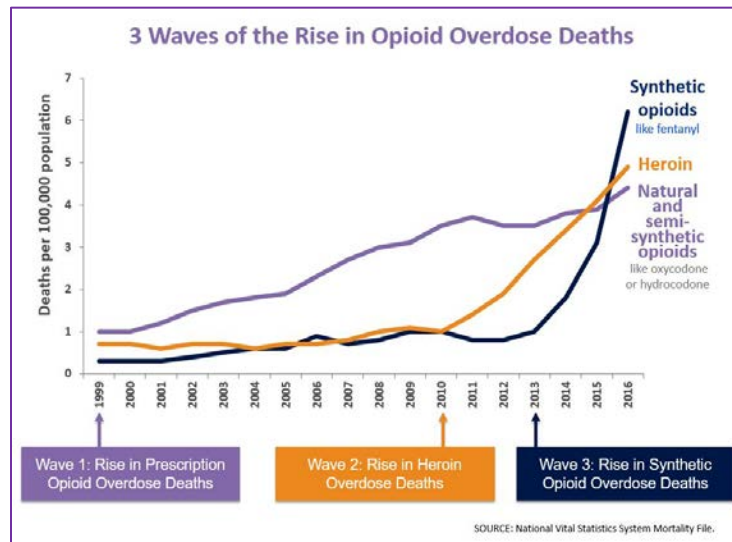
dissemination events. There is more information about the projects from the network in the full report.

To complement its extramural research, NCIPC's internal staff also conduct analyses to address the center's research priorities. This research often consists of secondary data analysis, but in other cases, NCIPC supports contracts for new data collection or engages in partnership with other organizations to conduct research that is of joint interest. The following table presents a sample of some of the intramural work that has been conducted.:

Formulary Management	PDMP/Policy	Prescription to Illicit	Clinical Care
<ul style="list-style-type: none"> Declines in opioid prescribing after Blue Cross Blue Shield policy change in Massachusetts¹ Associations among Medicaid preferred drug lists, methadone prescribing, and overdose² Impact of prior authorization policies on opioid prescribing in state Medicaid 	<ul style="list-style-type: none"> Impact of mandatory PDMP and pill mill legislation on prescribing and overdose³ Systematic review of the impact of state policy and systems- level strategies on opioid overdose⁴ Impact of proactive reporting on prescriber behavior 	<ul style="list-style-type: none"> Increase in and characteristics of drug overdose deaths involving fentanyl⁵ Demographic and substance use trends among heroin users⁶ Trends in deaths involving heroin and synthetic opioids and law enforcement drug product reports⁷ 	<ul style="list-style-type: none"> Changes in opioid prescribing in the US, before⁸ and after CDC prescribing Guideline Advancing safer and more appropriate prescribing in Kaiser Permanente⁹ Evaluation of quality improvement and coordinated care plans on opioid prescribing and patient outcomes

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- Dowell D, Zhang K, Noonan RK, Hockenberry JM. Mandatory Provider Review And Pain Clinic Laws Reduce The Amounts Of Opioids Prescribed And Overdose Death Rates. *Health Affairs* 2016;35:1876-83
- Haegerich TM, Paulozzi L, Manns B, Jones CJ. What we know and don't know about the impact of state policy and systemslevel strategies on prescription drug overdose. *Drug and Alcohol Dependence* 2014;145:34-47
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- Jones CM, Logan J, Gladden RM, Bohm MK. Vital Signs: Demographic and substance use trends among heroin users – United States, 2002-2013. *MMWR* 2015;64:719-725.
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Since 2015 when the priorities were published, the epidemic has been evolving. This had led NCIPC to examine the question regarding whether they need to evolve its research priorities in concert with the changes being observed in the field. The epidemic has been characterized as consisting of 3 waves as depicted in the following graphic:



The first wave began around 1999 during which a dramatic increase in deaths was observed involving methadone and natural and semi-synthetic opioids. These opioids are commonly prescribed for acute and chronic pain, such as hydrocodone. In the second wave around 2010, a dramatic increase was seen in deaths involving heroin. In the third wave beginning around 2013, dramatic increases have been observed involving synthetic opioids and in particular, illicitly manufactured fentanyl.

In the first wave, deaths involving prescription opioids and admissions for opioid use disorder (OUD) closely paralleled sales of prescription opioids. Interestingly during the same time, changes were not observed in the amount of pain patients reported. Prevention efforts initially were focused on addressing prescribing behavior. In the second wave, heroin came on the scene to a greater degree.

In 2015, a *Vital Signs* was published that focused on describing the second wave of the epidemic. Essentially, they saw that heroin use increased among most demographic groups and across the US. Some of the greatest increases were seen among groups with historically low rates, including women, the privately insured, and people with higher incomes. They also saw that heroin is part of a larger substance abuse problem in that people who use heroin also use other drugs, and people who are addicted to other substances are more likely to be addicted to heroin. In particular, those addicted to prescription opioids and pain medications are 40 times more likely to be addicted to heroin, so a focus on prescribing is still indicated. However, with the shift to illicit use, thought must be given to what other prevention and intervention strategies might be indicated.

In the third wave, NCIPC has been collecting law enforcement data along with public health data to better understand the increase in deaths involving synthetic opioids, in particular illicitly manufactured fentanyl. For example, it was observed that during the period of increase in synthetic opioid overdose deaths, the number of law enforcement encounters or drug seizures

testing positive for fentanyl rose dramatically. However, fentanyl prescriptions remained stable. To understand the epidemic, it is important to understand both supply and demand forces.

This has led NCIPC to focus on more comprehensive, coordinated, and informed efforts to address the epidemic. For example, in the recent *Vital Signs*, the roles of different stakeholders were highlighted (surveillance, prevention, intervention, et cetera). This includes NCIPC's traditional public health partners such as local health departments, EDs, and community members. It also extends into public safety, law enforcement, first responders, community-based organizations (CBOs), and mental health and substance abuse treatment providers.

Not only is the epidemic itself changing, but the context in which NCIPC works is changing. NCIPC has shifted its focus on priority areas with an interest in building collaborations across those priority areas. As well, the agency has engaged in efforts to synthesize work across all of its centers that have interest in opioid-related harms. Within NCIPC, there are two priority areas in which the opioid epidemic intersects. The first is Adverse Childhood Experiences (ACEs), which include experiences such as physical, emotional, and sexual abuse and exposure to household challenges such as IPV, substance abuse, mental illness, divorce, and family member incarceration. ACEs are known to be linked to risky health behavior and health outcomes, including opioid misuse. NCIPC promotes lifelong health and wellbeing to its Essentials for Childhood initiative that assures safe, stable, and nurturing relationships and environments for all children. NCIPC also developed [Preventing Child Abuse and Neglect: A Technical Package for Policy, Norm, and Programmatic Activities](#), which presents key strategies for prevention. In essence, NCIPC thinks there are opportunities to investigate how strategies that are initially focused on preventing and intervening with ACEs might also serve to mutually address prescription opioid misuse and overdose.

The second injury priority area of intersection is suicide prevention. While it is known that the causes of suicide are complex and determined by multiple factors, also known is that suicide can be prevented with the reduction of factors that increase risk and the increase in factors that promote resilience. NCIPC developed [Preventing Suicide: A Technical Package of Policy, Programs, and Practices](#) to help states and communities prioritize strategies that have the best available evidence supporting them. It is known that there are links between opioid misuse, chronic pain, opioid prescribing, and suicide. However, this must be explored further to identify what the shared risk and protective factors might be and the best way to connect intervention and prevention strategies to have a mutual benefit. NCIPC has established internal quarterly meetings of an Opioid and Suicide Interest Group to update each other on important activities and identify how to better collaborate and address issues across areas.

There have been efforts across CDC to try to enhance coordination across centers that are interested in addressing the epidemic. In May 2017, CDC's Opioid Responses Coordinating Unit (ORCU) was formed and was charged with articulating CDC's overarching vision and strategy for prevention of opioid overdose and related harms encompassing the relevant work of all centers, institutes, and offices (CIOs) in the agency. This way, all of the work can be aligned under one set of goals, strategies, and metrics. Dr. Debbie Dowel leads the ORCU effort. All of ORCU's medium- and long-term outcomes represent opioid-related harms across CDC where there is interest in prevention and intervention. The ORCU facilitated discussions with other centers and identified gaps to be addressed within the larger context of the epidemic, beyond the other NCIPC priorities, an additional priority identified in the ORCU gap analysis was the need to conduct demonstration projects to identify cost-effective methods to reach people using opioids non-medically in hidden populations and engage them in MAT; provision of naloxone and overdose prevention training; and prevention, testing, and treatment for infectious and noninfectious sequelae of opioid use.

Other centers in the agency are invested in research on the opioid epidemic from other perspectives. To help provide the BSC with some context for other priorities that complement those of NCIPC, centers were asked for a brief synopsis of their key areas of interest which follow:

Birth Defects and Developmental Disabilities

- Understand the prevalence of and reasons for opioid use during pregnancy, including the specific opioids and medication combinations used
- Evaluate the link between prenatal opioid exposure and structural birth defects, including the potential role of co-factors such as infections or other medications
- Investigate the safety and risk for medications used to treat opioid use disorder for pregnant women and their infants to inform guidelines for treatment

Reproductive Health

- Identify the barriers for Ob-Gyns and Pediatricians to implementing maternal screening for opioid use
- Identify the factors that influence post-partum relapse for women who enter opioid use disorder treatment during pregnancy
- Evaluate models of care to improve post-partum counseling and supports for women with a history of opioid use disorder

HIV/HBV/HCV/STD

- Develop comprehensive community-based approaches to prevent and treat consequences of opioid injection, including substance use disorder, overdose, HIV, hepatitis B and C, and sexually transmitted diseases among key populations including people who inject opioids and other drugs, and young people
- Identify best strategies and develop models for implementing comprehensive community-based programs to prevent injection related harms including blood borne pathogens in non-urban settings
- Identify cost-effective methods to reach people using opioids non-medically in hidden populations and engage them in prevention, testing, treatment for the infectious and noninfectious sequelae of opioid use, including early identification of youth at risk for opioid use and ensuring continuity of care and treatment for people after release from the criminal justice system

Occupational Safety and Health

- Identify antecedents to opioid use. For example, how do work and work-related injuries relate to the use of opioids? What kind of prescribing guidelines (e.g., worker's compensation prescribing guidelines) can provide a path to improved health outcomes?
- Understand opioid use at work. For example, how does the use of opioids at work impact worker safety and health? Is employer drug testing an effective strategy for reducing opioid-related work injuries? Do supportive workplace programs improve likelihood of recovery from an opioid drug dependence?
- Address the impacts of misuse and overdose in the workplace. For example, how does opioid misuse and overdose impact first responders? What is the effectiveness of personal protective equipment in protecting first responders? How effective are portable detection devices used by law enforcement to field-test for illicit opioids? What are the psychosocial and mental health impacts of potential exposure to opioids on emergency responders?

Dr. Haegerich emphasized the importance of understanding what research other centers within the agency are doing in order to understand what NCIPC's unique niche is and ensure that everyone is collaborating to address this in a holistic way without duplicating each other's work. NCIPC wants to make sure that it is addressing its established priorities, but also is being flexible and adapting so that they are identifying new priorities with greater needs for center and agency coordination and to better address the evolving nature of the epidemic.

In closing, she noted that she was going to turn the conversation over to Dr. Wilson Compton to discuss NIH's priorities in regard to the opioid crisis following which there would be open discussion. She posed the following questions for the BSC's consideration and deliberation:

- To what degree have the center's intramural and extramural research projects addressed the established opioid research priorities?
- Are the research priorities currently comprehensive enough to address the ongoing and changing epidemic?
- Is there a need to update the priorities due to the changing nature of the epidemic and the need for center, agency, and broader federal coordination?
 - What research gaps need to be addressed?
 - What is the correct balance of maintaining "old" priorities and establishing "new" priorities?

NIDA/NIH: Advancing Addiction Science to Address the Opioid Crisis

Wilson M. Compton, MD, MPE
Deputy Director
National Institute on Drug Abuse
National Institutes of Health

Dr. Compton expressed gratitude for the opportunity to present to the BSC about some of the efforts underway at NIH. While he noted that he would emphasize mostly what NIDA is doing, he would discuss some of the broader efforts as well, particularly with regard to the pain portfolio which is a very broad research program at NIH. He also discussed the recent funding through appropriations in March and the Helping to End Addiction Long-term (HEAL) initiative that was announced recently. He said that Dr. Haegerich was with them in Washington, DC the previous day where they had the opportunity to talk about the HEALing Communities program NIDA is beginning to launch that they hope will be a flagship public health program that NIH will be using to investigate how communities successfully combat the opioid overdose crisis by bringing together and implementing the full range of programs and processes that CDC, SAMHSA, NIH, and others have suggested as key components to reducing the overdose scourge in so many parts of the country.

In thinking about advancing the addiction science to address the opioid crisis, of course it is important to think about the changing patterns and the evolution of the epidemic. This is not one epidemic—it is at least three. In some ways it relates to environmental availability at all three levels, one of which relates to legal availability of prescription medications. In terms of heroin and fentanyl, it is necessary to think about availability through the illicit markets. Unlike most other health conditions, this is a situation in which there are active purveyors thinking about how to create the diseases they are trying to address. Infectious disease models are often used to

think about drug abuse and drug addiction, but Dr. Compton thinks of the epidemiology related to tobacco as being essential, such that the vector is added to the usual epidemiological triad as another key component. CDC has done leading work to collaborate with law enforcement as an example of putting that into practice. CDC has been showing everyone that it is possible to pay attention to how law enforcement operates and improve public health by establishing and enhancing those collaborations. He did not think the research community had done enough in this area and would be curious about CDC's thoughts on how to promote that going forward.

NIH's strategies fit into HHS's overall broad opioid strategies, which include the following:

- Better access to prevention, treatment, and recovery services
- Better targeting of overdose-reversing drugs
- Better timely and specific public health data on the epidemic
- Better pain management
- Better research on addiction and pain

Dr. Compton is pleased that HHS has emphasized research on addiction and pain as a key component of the department's overall strategy. While NIH does not expect to be singled out, they are very grateful for this attention to research because that has been lacking. They have observe language changes so that they no longer see law enforcement as the single unitary policy to deal with the drug addiction issue. Congress and others are now using a lot of health terms as they describe the opioid crisis. At least in the latest funding cycle, research has been recognized. In the long run, the transformative solutions to address these problems will come from research.

Something that NIH and NIDA have not emphasized as much but that has been an important component of their program going back several years is thinking about risk and protective factors, which in some ways builds upon NCIPC's program of thinking about the ACEs. There are now three large-scale school-based community trials that have shown how middle school interventions can reduce the onset of prescription drug misuse. These include Life Skills Training program and the ("Strengthening Families Program: For Parents and Youth 10-14 (SFP10-14, previously called) Iowa Strengthening Families Program"). It was found that these middle school interventions, which really does not emphasize prescription drugs, can have protective effects 8 to 10 years later. This is remarkable and builds on the understanding of developmental trajectories on brain and human development, such that if parents and families are empowered to provide nurturing environments with appropriate levels of supervision, this provides a protective shield that can markedly reduce the onset of prescription drug misuse. It is not known whether this will translate into reducing the transition into addiction and heroin use, but at least it is very strong evidence for impact on these very significant outcomes.

In terms of the second key component that HHS emphasizes in terms of direct overdose intervention, NIH has been very pleased to support the development of user-friendly formulations of naloxone. The intranasal formulation was developed partly with NIH support. The new formulations were developed following a meeting that CDC, NIDA, and the Food and Drug Administration sponsored in 2012. That meeting was convened to emphasize the need for new formulations for naloxone. A company in Virginia heard this and developed the auto injector. That meeting also was used to launch the studies that allowed the nasal spray versions. These are much easier for non-clinicians to use in real-world settings and have allowed for much greater dissemination and diffusion of naloxone than might have occurred otherwise. Recently, Surgeon General Jerome Adams emphasized that naloxone should be readily available throughout the country.

The question now regards what to do. Do we need longer acting agents to address fentanyl risks? There are some data that CDC helped developed from the National Emergency Medical Services Information System (NEMSIS) dataset to suggest that double-dosing or increased frequency of more than a single dose of naloxone has been needed recently, probably related to the more potent opioids in communities. Naloxone can be successful, but other agents may be needed. Are there other ways to support respiration and might there be devices that could be useful? These are some of the areas that NIH is beginning to investigate.

A key issue with regard to medication is that there are three medications that can be useful in reducing relapse and improving outcomes and health long-term, but these are under-used. Some of the data show that even programs that set themselves out as treating people who have an OUD, according to SAMHSA data, only about a quarter of them actually offer MAT. There are proven effective medication treatments, but only 25% that say they are taking care of patients with that condition will offer those treatments. This does not necessarily mean that patients want or will take them, but they are not even offered in most programs [Knudsen et al., *J Addict Med* 2011].

In terms of what is being done about this, Dr. Compton said he was pleased to see CDC's emphasis on ED. NIH was able to support what has been an important trial at Yale ED. Dr. Gail D'Onofrio and colleagues were the first to demonstrate that by incorporating buprenorphine as part of services to persons with OUD in the ED, they could improve outcomes. They realized they were the primary care doctors for these patients, but they were not acting as primary care doctors. They were mostly referring people to treatment. New Haven is blessed with a lot of resources, so a referral to treatment meant that someone could go pretty much next door or down the street. It was not a difficult referral, but people were not availing themselves of this referral. Therefore, they decided to try inducting people onto buprenorphine in the ED. By doing so, they showed markedly improved outcomes in terms of treatment engagement and at least short-term improvements in much lower drug use over the first month. A key question regards how to sustain that improvement, but it is at least a promising start. Also important to understand is whether it is only Dr. D'Onofrio's ED or can other EDs do this. NIDA is now conducting a multi-site trial in its Clinical Trials Network (CTN) and also has been collaborating with the ACEP and AETNA to develop some educational materials that are now available on the website that they hope will be another source of behavior change and progress for EDs.

A key area for drug addiction in general and particularly for the opioid crisis are criminal justice settings. One way NIDA has approached this is through studies of MAT, one of which was a multi-site trial by Lee and colleagues on extended-release naltrexone for those on probation and parole. One might imagine that someone on probation and parole would not be using drugs due to being under intense scrutiny, but that is not the case. Indeed, it turns out that adding a medication can improve the outcomes, at least while they are on the medication [Lee JD, et al., *Addiction* 2015;100:1005-1014 and *New Eng J Med* 2016;374:1232-1242].

A recent study compared extended-release naltrexone and buprenorphine, and there is a key message here. It was difficult to get some patients started on naltrexone because they have to be clean and sober and abstinent from all opioids for a week to 10 days before they can begin the opioid antagonist. While the primary outcomes showed a clear advantage for buprenorphine, the data suggest that once a patient is started on either medication, the two medications had about equal outcomes (Lee JD, et al. *The Lancet* 2018;391(10118):309-318). Dr. Compton looks forward to seeing the results of a natural history study CDC is conducting of methadone, naltrexone, and buprenorphine because this will add to the knowledge base.

The newest opportunity at NIH is the HEAL Initiative. The goal of this initiative is collaborative, cross-cutting research that will include a large component of basic science work as well as behavioral and applied public health science work. This takes advantage of significant funds that Congress added in March of about \$500 million, of which \$250 million was allocated for opioid addiction and overdose and \$250 million was allocated for pain research. It is designed to address national priorities for pain and addiction research. It was just launched with a commentary in the *Journal of the American Medical Association (JAMA)* published the previous week. The key priorities in terms of OUD are to improve therapeutic approaches to addiction and overdose, so there are significant additional funds for medication and other treatment development; carry out real-world implementation research to optimize interventions, and evaluate the treatments and consequences of Neonatal Opioid Withdrawal Syndrome (NOWS). In terms of pain management, the priorities are to understand the neurobiology of chronic pain; develop new non-addictive treatments for pain; and build a CTN for chronic pain research that can help shepherd many trials over future years.

Opioid use during pregnancy has been an increasing problem based on data pertaining to the number of admissions and increasing costs. NIDA recently supported a study that showed that buprenorphine as part of the treatment of infants might actually lead to shorter hospital stays and less cost without changing the overall effectiveness too much in that infants do well on either treatment, but this might be more efficient [Source: Kraft WK et al., *NEJM*2017;376:2341-2348]. NIDA is trying to build upon that by taking advantage of two research networks that NIH supports. This is work out of the National Institute of Child Health and Human Development (NICHD). The Advancing Clinical Trials in NOWs (ACT NOW) program focuses on the Neonatal Network Centers (2016-2021) as well as another program at NIH on the Institutional Development Awards (IDeA) States Pediatric Clinical Trials Network. They do not focus as much on neonatal issues necessarily and are not as advanced in terms of clinical trials work, so together they can form a powerful team and cover a broad range of sites around the country. There already was some funding last year for a 1-year pilot study from the Director's Discretionary Fund 2017. There are now 20 clinical sites participating to focus on improving treatments and developing common protocols for future studies. This is in a fairly early stage. The key goals will be to conduct clinical trials for the care of infants with NOW and determine best practices to improve short-and long-term outcomes. By starting out with clinical studies, they will be able to follow some of those infants to find out what happens to them over the ensuing years and possibly even decades.

A second major study with this new funding will be to advance NIDA's CTN. This is a multi-site network that conducts clinical trials in the context of community-based drug treatment, primary care, and EDs. It is a broad-based network that brings together academic researchers with community-based practitioners of a variety of types. NIDA is in the process of expanding the size and scope of the CTN and will be studying multiple new interventions through this network.

The second major study that NIDA will be supporting relates to justice-involved populations. This is the Justice Community Opioid Innovation Network (JCOIN). The purpose here is to increase collaborations between justice systems and community-based treatment providers to improve continuity of care. This will be a combination of efficacy and implementation trials to determine how to get interventions known to work implemented widely in justice settings. For example, some important work came out of the United Kingdom (UK) showing that when MAT was added following release throughout the UK, they could markedly reduce mortality due to overdose. Release from prison or jail is a period of exceptionally high risk for overdose. By

expanding MAT in prison and then after release, Marsden and colleagues showed that this could make a big difference [Marsden J et al., *Addiction* 2017; 112:1408-1418].

Dr. Traci Green and colleagues did the same thing in the US with a paper published just a few months ago that has generated a great deal of attention for a number of reasons, one of which is that it showed remarkable impact on overdoses by those coming out of prison at about a 60% reduction in that population across a single year. That high risk group is so important to overall population health, about a 12% decrease was observed in the rates of overdose in Rhode Island during that same 12-month period. This is at least an example of how, by focusing on certain important high-risk groups like the justice population, it is possible to have a broad-based population impact because they are so disproportionately represented in overall overdoses [Green TC and Clarke J. *JAMA Psychiatry* 2018;75(4)].

In terms of the HEALing Community Research Study, NIDA is in the process of launching a large-scale community demonstration project. They assembled a group of scientists to provide suggestions about how best to design this study, the types of outcomes to consider, and the potential pitfalls that might arise. A key challenge regards how to do this quickly while still conducting it with rigor and allowing enough time for the outcomes to develop. This is going to be a challenge because there is tremendous pressure to make a difference immediately versus 5 to 10 years from now. While this is part of the long-term initiative, this is one of the shorter-term projects. It is expected to be a 3- or 4-year community-based trial. The issue regards how to design it in order to maximize impact and perhaps set the stage for longer-term outcomes, but at least show some changes very rapidly. The primary goal will be to integrate evidence-based interventions comprehensively and in areas that are highly affected by the crisis. NIDA sees this as a pilot demonstration project. It will be a competitive process that is expected to involve a wide-range of federal, state, and local partnerships (health care, criminal justice, substance treatment, government, EDs, first responders). This is expected to be a joint effort between NIH and SAMHSA in particular, because NIH is expected to support the research component and probably a good deal of the data infrastructure that will be necessary to understand that outcomes. They hope that SAMHSA-funded interventions and programs, particularly with the increasing availability of funds through the state-targeted response grants, will be a vehicle for some states to try some innovative projects within the communities that are able to participate. Dr. Compton emphasized that it would be a good time to have comments and ideas because this is still a work in progress in the formative stages. No requests for applications have been written yet. They are thinking about them, which will be the next step.

The pain research is in the early stages as well. It focuses across the range of science: discovery, pre-clinical, and clinical trials. Some recent research focused on gender differences in Kappa opioid receptor availability. There was some nice work to show how males have higher Kappa opioid receptor availability than females, presumably from increased dynorphin. This possibly could help explain gender differences in pain catastrophizing and possibly offer new ways to develop agonists and antagonists [Vijay et al., *Am J Nucl Med Mol Imaging*.2016 6(4):205-214].

There are some interesting examples of new targets for pain control. For example, a mutation was identified in the gene that encodes for Na_v1.7, the sodium channel that regulates pain-sensing neurons. Some of the work that discovered this is remarkable. Families were found in Pakistan who have this genetic variant in which they lack the Na_v1.7 sodium channel, which is essential for experiencing pain. Though it seems like this would be a lethal mutation, it is not. They have fully normal sensation. While it is problematic, it is not lethal. They do have a lot of bites to their tongue and gums. There is a dramatic story in one of the publications that reports

that when they went to interview one of the teenagers who had this genetic variant, the teen had recently perished because their way of earning money was with street performance in which they walked on very hot surfaces and stabbed themselves with very sharp implements. Unfortunately, that behavior turned out to be lethal. Nevertheless, it is remarkable that one can have no pain sensation and still have protection of the other sensory abilities. That was a clue that maybe this channel could inform the development of mediations. So far, it has not panned out but it is still an interesting area for development.

Another main target that has generated a lot of attention recently has been in the μ -opioid receptors (MOR) pharmacology. Dr. Compton thought of this as a key and a lock such that a key is put in, turned, and actions happen. It turns out though that it is more like a key with a lot of different tumblers. There are at least two major pathways emanating from this brain receptor system for the MOR. One is mediated by the G protein system, which leads to pain control, and then there is a feedback loop through the β -arrestin system that is responsible for the development of tolerance and decreased respiration and gastrointestinal constipation—a problem with opioids. If agents could be generated that selectively are biased such that they still have the G couple protein activity, it might be possible to have a good analgesia without the side-effects [Soergel DG, et al., Pain 2014. Manglik A, et al., Nature 2016. DeWire SM, et al., JPET2013. Bohn LM, et al., Science 1999].

There is one medication under development that is currently in clinical trials that they hoped would be a very biased selective agonist, but it probably is not as biased as hoped. Therefore, it is not clear how much of an advantage this would be so far, but this is a major area of investigation. This reminded Dr. Compton of two things. First, basic science can pay off in terms of new targets. But there are many ways something can fall flat if it goes from the basic science concept to developing the medications. NIDA will continue to work on this and many other opportunities for pain medications that are non-addictive.

There are additional research priorities in terms of non-pharmacological treatment. Integrative pain management has been a major theme for much of NIDA's work, including some of the work in collaboration with CDC. Education is also of interest. NIDA is focusing primarily on addiction education as a key component of its outreach to educational programs, but they also collaborated with the NIH Pain Consortium to develop web-based training for pain assessment and treatment. This has been such a gap in medical and other health professional educational systems, that providing these materials directly by NIH turns out to be a very popular tool.

In conclusion, Dr. Compton said he hoped he had illustrated how their work at NIDA and NIH takes a variety of directions and they typically take their lead from their investigators. Thus, they want to hear everyone's best ideas and will try to support as many of them as possible. He invited everyone to follow HEAL on the [NIH website](#).

Discussion Points

Research Gaps / Research Priority Considerations / Recommendations: the BSC recommendation was to update the research priorities, with a 3 to 5 year time horizon for addressing them, with a cross-cutting focus, leveraging CDC's strengths, power, and expertise in communication.

Conclusion / Adjournment

Christina A. Porucznik, PhD, MSPH
Chair, NCIPC BSC
Associate Professor, Department of Family and Preventive Medicine
University of Utah

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

Before closing the meeting for the day, **Dr. Porucznik** recognized that it was a long, busy, and productive day. She thanked everyone for their willingness to attend, listen, and participate attentively and enthusiastically.

Dr. Greenspan expressed her gratitude to the BSC members and *Ex Officios* for a great and engaging day. She appreciated their thoughtful comments, as well as the comments provided by members of the public. In addition, she thanked everyone from the NCIPC office who helped organize the meeting, assisted with the arrangements, escorted participants, et cetera.

Dr. Porucznik reminded everyone that the second day of the meeting would begin at 8:30 AM Eastern Time, and officially closed the first day of the BSC meeting at 4:58 PM Eastern Time.

Wednesday, June 20, 2018

Call to Order / Roll Call

Christina A. Porucznik, PhD, MSPH
Chair, NCIPC BSC
Associate Professor, Department of Family and Preventive Medicine
University of Utah

Dr. Porucznik called the twenty-fourth meeting of the NCIPC BSC to order at 8:30 AM on Wednesday, June 20, 2018. She requested that Mrs. Tonia Lindley, NCIPC Committee Management Specialist, call the roll.

Mrs. Lindley conducted a roll call of NCIPC BSC members and *Ex Officio* members, confirming that a quorum was present. The roll also was called following each break and lunch to ensure that quorum was maintained. Quorum was maintained throughout the day. A list of meeting attendees is appended to the end of this document as Attachment A. The following conflicts of interest (COIs) were declared:

- Wilson Compton, MD, MPH reported that he has long-term stock holdings in General Electric, 3M Companies, and Pfizer.
- The remainder of BSC members and *Ex Officios* reported no COIs.

Web-based Injury Statistics Query and Reporting System (WISQARS™) Data Visualizations: Implementation, Lessons Learned, & Future Plans

Dr. Mick Ballesteros
Chief, Statistics, Programming, and Economics Branch
Division of Analysis, Research and Practice Integration
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Dr. Ballesteros explained that [WISQARS™](#) is CDC's web-based injury statistics querying and reporting system. NCIPC created this platform almost 20 years ago because a considerable amount of time was being spent responding to outside requests and questions about injury causes of death. For example, someone from the media might call to ask how many people drowned in 1997, how many were male/female, how many were less than 5, et cetera and NICPC would run those numbers. Thus, the decision was made to create a user-friendly online tool to allow anyone to find that type of information for themselves. NCIPC first launched WISQARS™ Fatal Injury Reports and Leading Cause of Death application in 2000. Over the next 18 years, the scope of WISQARS™ was expanded to include Nonfatal Injury Reports and Leading Causes of Nonfatal Injury in 2001, Years of Potential Life Lost (YPLL) in 2002, Violent Deaths in 2008, Fatal Injury Maps in 2010, Cost of Injury Reports in 2011, Mobile Applications (Fatal Injury) in 2014, and Data Visualization (Fatal Injury) in February 2018.

WISQARS™ is used quite a lot. The number of queries that are run are assessed every quarter by module. This table shows the data for 2017:

Module	Queries
Fatal Injury Maps	752,831
Fatal Injury Reports	197,671
Leading Causes of Death	138,036
Nonfatal Injury Reports	32,021
Violent Deaths	30,321
Cost of Injury Reports	13,062
Leading Causes of Nonfatal Injury	12,322
Years of Potential Life Lost (YPLL)	8,541

As reflected in the table, the Fatal Injury Maps module is by far the most queried module on WISQARS™, with the Fatal Injury Reports and Leading Causes of Death modules as the next most used modules. NCIPC continues to think about how to expand and improve the platform. To help with this thought process, NCIPC conducted a portfolio review on WISQARS™ in 2015. In short, the review included the following four primary evaluation questions:

- Utilization: Are WISQARS™ data being fully utilized for scientific and programmatic purposes by key stakeholders?
- Technology and Innovation: How can modern technology and innovation be used to enhance the use of WISQARS™?
- Data Sources: What are the opportunities to expand WISQARS™ data sources/data sets?
- Tools and Training: What trainings, tools and resources would facilitate actionable data translation?

The portfolio review yielded several recommendations for each evaluation question. For this presentation, Dr. Ballesteros highlighted the recommendations for the technology and innovation question, which were to:

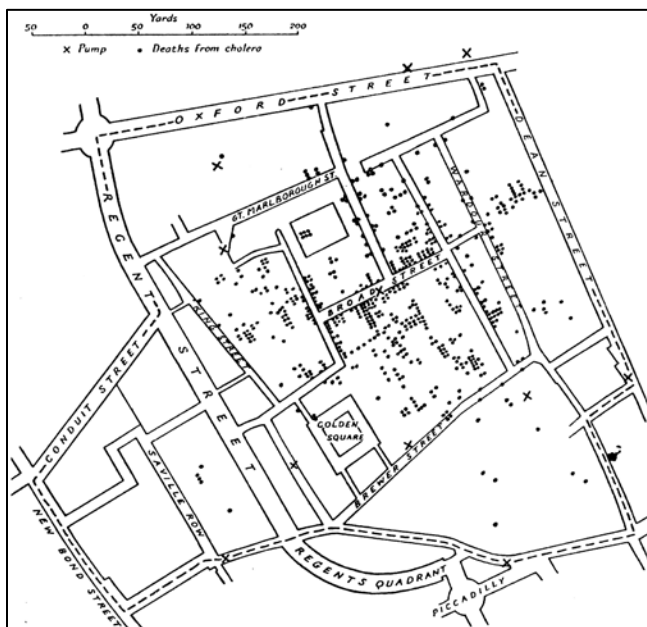
- Develop more capacity for users to export both data and graphics
- Explore the possibility of a query tool capable of accessing and aggregating across disparate datasets
- Improve visualization functionality in the system
- Shift the mobile strategy from the proliferation of mobile applications to mobile responsiveness

With regard to the recommendation to improve visualization functionality in the system, knowing that the mapping module is the most used module in WISQARS™ and to build on their experience from building the mobile applications, NCIPC started a WISQARS™ data visualization project in late 2016. The goals of the project were to: 1) develop a visualization application to demonstrate the potential of interacting with fatal injury data in a visual format; and 2) enhance the tool and move it fully onto the WISQARS™ website.

Before explaining the process and providing a demonstration, Dr. Ballesteros took a few minutes to provide more context behind NCIPC's thinking about data visualization. NCIPC's take is that data visualization is used for two main purposes: explain or explore. Explaining something is about telling a story. It is the answer to a question and visuals are used as a means to communicate that message. Most static infographics serve that purpose. Exploring is

about discovering many stories. This exploration can lead to new research questions or discovering new areas of interests, and the critical message may not be known yet.

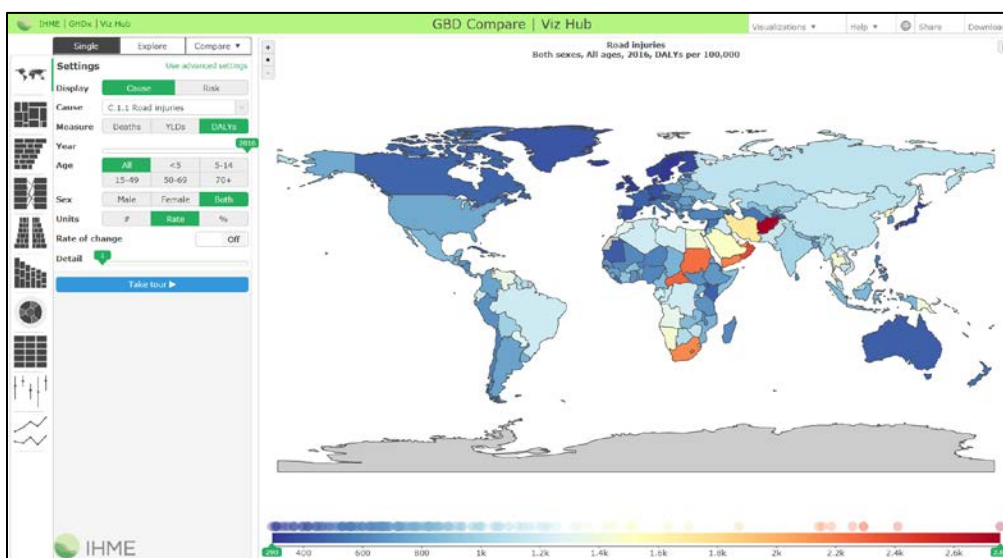
This spot map is an example of explaining. It is the result of the classic “shoe-leather” epidemiology investigation by John Snow in the mid-1800s that showed that in London, there were about 500 fatal cases of cholera within 250 yards of the Cambridge and Broad Street intersections:



Source: Gilbert, EW. Pioneer maps and health and disease in England. *Geographical Journal*, 124 (2) (1958), page 174.

Seeing this map helped to identify the contamination source, which was the Broad Street water pump. The pump was famously removed to contain the outbreak.

This is an example of a data visualization to explore:



<https://vizhub.healthdata.org/gbd-compare/>

This is how the Institute for Health Metrics and Evaluation (IHME) at the University of Washington release their Global Burden of Disease data every year. This is a free online tool. Users can explore the data by selecting different countries, different years, and other parameters to visually see estimates of causes of death and disease burden across the world.

NCIPC's aim is to focus its project on the "explore" aspect of data visualization. They began working with an external contractor who first shared demonstrations with NCIPC of previous projects they had created to help the center understand what the possibilities would be. NCIPC then had a visioning session with the contractor to help clarify the goals of the project. This included an exercise of persona identification. Personas are realistic representations of key audience segments. They considered personas the general public and non-technical external stakeholders such as policy-makers, grant writers, media, and researchers. Through these roles, they thought about what activities each of these individuals would do, what they would want in a data visualization tool, and what their challenges may be. This discussion helped NCIPC think about ideas for its application requirements and functionalities. Additionally, they brainstormed for data interests that their users may have and discussed topics such as leading causes of injury; trends; burden over time; data by sex, age, race, state; and comparison of causes in states.

From these discussions, NCIPC developed an initial list of application requirements and functionality that included the following:

- Data to include injury mortality & population data from 1999-2015
- Data presented in highly visual manner (charts, graphs, maps)
- The user interacts, queries, and changes parameters by clicking on visuals
 - Less dependence of checkboxes and drop-down menus
 - Parameters to filter on same as current WISQARS™ fatal module (injury intent, cause and mechanism, state, race, other demographics)
- Results shown as numbers and rates (crude and age-adjusted)
- Charts and data tables available for download
- Global filtering of all information seen
- Full understanding of the program in order for NCIPC to be able to enhance, update, and troubleshoot the tool on its own and not be reliant on the contractor (requested documentation and knowledge transfer process from the developer to a programming team of IT specialists)

Brainstorming then began for what NCIPC wanted the actual pages to look like. This process, known as wireframing, is literally just drawing initial ideas out on paper. The developer then pulled in a graphic designer to build on and revise the ideas based on more group discussion and feedback. The graphic designer took NCIPC's drawings and developed low resolution wireframes that the center again reviewed and commented on, and then this led to high resolution wireframes that included examples of pop-up boxes, other querying options, and what users actually would see if they clicked on certain things. After another round of feedback, the developer used the high-resolution wireframes as the initial template for the actual application.

At this point, NCIPC had to make some decisions on the type of software and programming tools they were going to use for development. A quick option would have been to use off-the-shelf software to mock up a prototype to show the center leadership what it could be. Programs across CDC began using data visualization software packages like Tableau, R Shiny, Power BI, SAS, and Visual Analytics. However, many programs have encountered challenges with getting approval for licenses, use within the CDC firewall, and externally user-facing tools that are available on the web. They did not want to be beholden to a specific software package over which they would not really have control over the functions, upgrades, and costs. Therefore, they decided to create a customized application built on open source tools. They used JavaScript executed using Node.JS and built the visuals using data-driven documents of the D3.js library for visuals. It was expected that this approach would take a lot more time up front, but would be better in the long-term to have total control over the application.

In January 2017, a “Scrum Agile” process was begun for development. That means that all of the key actions were outlined that need to be done, and then 2-week “sprints” were established to do the work. The first sprint included the first critical actions tackled. After each sprint, they would meet as a group to review the current version, provide feedback, and outline the actions for the next sprint. A total of 5 sprints or 10 weeks of intense development were planned initially. The application was built out, modified, and enhanced on the developer’s server, but their code was regularly mirrored within the CDC development servers within the firewall for testing. Oftentimes, things that work in the real-world will not work once brought inside CDC. Mirroring the developer’s code was a way to identify issues and challenges that arose almost daily.

Numerous challenges were encountered along the way. From the start, there were some data use agreement (DUA) issues with the developer. Ultimately, an artificial dataset was built that was formatted in the same way that CDC’s data are to give the developer something to build off of and test. They also connected the real data to the application within CDC. Agency approval had to be acquired for the software technology stack used for development inside the CDC firewall. Some of the tools already were approved to be used within CDC, but some of them had to be reviewed and approved. It was an extra step in the process to actually do this work. Initially, the application ran relatively slow as different parameters were queried. The developer rewrote a lot of the back-end programming to build in efficiencies and make the overall run time faster. There was a need to suppress low counts when data are shown at the state-level. This initially did not work the way it was desired and envisioned, so there was a lot of back-and-forth to make that work as needed, which is part of the DUA. As a federal agency, the application needed to be 508-compliance so that it would be accessible to individuals with disabilities. This is a significant barrier for CDC in terms of doing more interactive data visualization work, but is where the custom build paid off because a lot of the existing software is not 508-compliant. People who cannot use a mouse must be able to tab through the application, which is challenging. Most off-the-shelf applications fails this requirement. Though not really a challenge, knowledge transfer from the developer to CDC’s programming team had to be done. A series of online knowledge transfer meetings were set up during which the developer fully explained their coding. Those meetings were digitally recorded so that they can be referred to as needed in the future.

Dr. Ballesteros provided a brief demonstration, pointing out that they are still finding bugs and tweaks that are being addresses as they arise. In addition, other items are being built as well. Future plans include adding a companion “compare” tab/application that will allow users to directly compare causes of injury or states. Currently in the fatal injury reports in WISQARS™, that all has to be run separately. The companion application will permit side-by-side

comparison. This development is pretty far along. Some internal usability tests were done with it a couple of months ago, and feedback will be incorporated from now until the final build. The hope is to release that by the end of the summer. Development also has begun on a parallel non-fatal visualization application, which will leverage the existing program infrastructure for the fatal application and it will use the non-fatal data source that is currently on WISQARS™. In the longer term, the aim is to integrate the WISQARS™ county-level mapping integrating the YPLL and Leading Causes. These are currently separately WISQARS™ modules that have different processes to query an update, but they all use the same source data, so it seems that a lot of efficiencies can be gained by bringing it all together and integrating them. Thought is currently being given to what other data visualization tools can be developed for other injury datasets or dashboard type applications for key NCIPC priority areas.

In closing, Dr. Ballesteros posed the following formal questions and invited participants to raise their own questions/comments as well:

- How have you used data visualization tools or approaches for working with data? How have data visualization approaches been most useful for you?
- Are you aware of other data visualization sites or tools that you find useful and think we should review?
- Have you used legacy WISQARS™ (Fatal Injury Reports) and WISQARS™ Data Visualization? Which did you find more useful and why?
- Are there other types of data or data tools you would like to see on WISQARS™? How does WISQARS™ address or not address your needs?

Discussion

Dr. Porucznik asked whether as part of the data downloads there is documentation to indicate what ICD codes are being pulled from.

Dr. Ballesteros indicated that in the current WISQARS™ this can be done. While they have not built this in, others have asked about it so they are trying to determine the best way to do that. They know it is very useful to people.

Dr. Hedlund asked whether a data dictionary is easily available.

Dr. Ballesteros replied that it is basically the same data dictionary that is used for the current WISQARS™. There are some health documents in files that are basically the same as what has always been used, but it exists.

Dr. Schwebel indicated that he uses WISQARS™ regularly. He expressed appreciation for all of the hard work, as well as the efforts on the Global Burden of Disease Model. While it is not perfect, there is a lot to learn from that group. With increasing frequency, he uses the cost module of the legacy version and was curious as to how/whether that might be incorporated into the visualization.

Dr. Ballesteros responded that the cost module would be incorporated in the longer-term, but the short-term plans are to update the base year that those costs are built off of. Currently on WISQARS™, all of the costs are based on data from 2010. The process has begun updating that to 2015. He personally also wants to redo the user-interface for the cost module, given that it is not that user-friendly. In addition, quality-adjusted life years (QALYs) will be added to the

cost module so that it is not just direct medical costs and direct lifetime work loss costs. Hopefully that will be in the next year or so.

Dr. Eckstrom said she thought this was fabulous and uses the site regularly as well. She noticed that the age range is still 85+, an age that is getting a much larger population. She wondered if there was consideration of having an 85 to 90, 90 to 95, and maybe 95+.

Dr. Ballesteros said he thought this was something that easily could be incorporated. The ability to customize age ranges already exists, though these are not default categories. He will take that suggestion back for discussion.

Dr. Green noted that they spent a lot of time the previous day discussing the opioid crisis and many of the datasets and other efforts that have been invested in by CDC. Thinking about rising surveillance tools like SUDORS and Enhanced State Opioid Overdose Surveillance (ESOOS), she wondered whether there was a longer-term vision that will include more of a deep dive with those data in an interactive way or if there was greater encouragement to have states that have been funded by ESOOS to incorporate visualizations like this.

Dr. Ballesteros said he thought they needed to talk more with DUIP about what tools might be useful to them, or what they think is useful for the field. This has not been fleshed out fully yet. They are currently working on tools for the data in hand, which is not specific to opioids. It is basically all injury deaths. Making those data more useful is something they could talk about in the future.

Dr. Haegerich added that DUIP has considered ways to make data more accessible from both their fatal and non-fatal overdose data through the OPUS program. Obviously, WISQARS™ is a great platform. They are still just trying to figure out what level of data would be available, how they would do it, investments, et cetera.

Dr. Ballesteros noted that they have talked to other programs in the center as well about other datasets and possibilities of building modules. He emphasized that this took a year to develop, so these are significant investments of time and resources.

Dr. Austin seconded the comment about the age breakout. In transportation, they are facing the same issue. There are more requests to breakout the older age groups.

Dr. Hedegaard indicated that NCHS has done some data visualizations as well and is trying to dig deeper into particular injury topic areas, such as drug overdose deaths and suicides. She wondered whether he would consider including some links to some of NCHS visualizations so that people are aware of additional resources on injury data.

Dr. Ballesteros indicated that one of the things they are talking about for WISQARS™ in general is ways to enhance the whole platform to make it more useful to users. For example, if someone makes a query on motor vehicle traffic deaths, they also could provide links to other resources of interest at NCIPC, NCHS, or other key partners. That is part of the thought process about how WISQARS™ can be more useful in the future. They can certainly discuss ways to make that effective.

Dr. Porucznik also thought it would be great if they could link WISQARS™ to BRFSS.

Dr. Duwve loved the idea of a one-stop-shop for data related to injury. She thanked NCIPC for WISQARS™, which they use regularly in Indiana. She also thanked them for reporting drug overdose deaths and not opioid-specific overdose deaths, because their data is of such poor quality it would undercount the impact of the epidemic in their state.

Dr. Compton he heard the comment regarding making sure that there is a link to NCHS datasets. He is particularly impressed by the county modeling that NCHS does to allow for small area estimation and modeling. This is a nice complement to the real data used for state-level information. In terms of the age breakdown, a breakout of under 18 to 18 and up would be helpful as well for those who want to link to data that treat adults differently from minors.

Dr. Ballesteros explained that the age breakdown was a very long discussion in terms of the categories and how to be consistent with what has been done in the past, and what CDC does. At this point, they made the option for individuals to make their own age groups. That can be customized through the “filter data button.”

Dr. Coffin offered his praise and endorsed the idea of including ICD coding.

Dr. Schwebel wondered whether they had any data or knowledge about who is using WISQARS™. He has talked on multiple occasions with journalists who are not familiar with it and probably they should have been able to find it, but they have not. He works with international scholars who use it to conduct research on the US.

Dr. Ballesteros replied that they have been discussing this issue increasingly. In their longer-term thought process of WISQARS™, they want to build out more evaluation metrics. They are limited by what they can get off of web metrics, but they might be able to identify a more direct way of getting more information about the users. They are currently exploring ways to use web metrics to assess not only the modules that are queried, but what is actually being queried. They have another project in which they are looking at peer-reviewed papers that cite WISQARS™ as a reference. In the initial look, many of the citations are used with regard to suicide. This will help them think about the things they need to build out in the future.

Dr. Whitaker heaped praise on the visualization tool and offered congratulations for getting it up and running. Related to the last question, he wondered whether any assessment had been done about how people understand these data. For their program, they are worried about the misunderstanding of the data. The chances of misunderstanding happen increasingly the more complex the data are that are provided.

Dr. Ballesteros said they need to talk about this more and perhaps pull in some communication and evaluation experts. The people in his branch are the technical people, so they would need to partner with others. He agreed that this is something they want to get right, but are not quite there yet.

Dr. Greenspan asked the BSC members how much they use WISQARS™ as a teaching tool for students and if they teach it at the undergraduate or graduate level.

Dr. Schwebel said that while he does not teach in the classroom any longer, he mentors about a dozen students at a time in his laboratory, undergraduates to post-Docs. This is the first place he tells all of them to look for the first paragraph of their theses or manuscripts for epidemiological data on US injuries.

Dr. Duwve teaches a health policy class and some of her students do not think they should talk about epidemiology and policy. She is a stickler for understanding why policy is important and routinely directs her students to WISQARS™ for reliable, up-to-date data. Often, they do Google searches and find data sources that are 4 to 5 years old, so this has been an easy and practical site for them to visit for their information. She thinks visualization is critical.

Dr. Eckstrom indicated that she usually uses WISQARS™ when she is about to give a talk for CME, and pretty regularly with residents in clinic as well to try to help them think about population health instead of just the patient in front of them.

Dr. Porucznik teaches in infectious disease, so she has not used WISQARS™ for that. However, she was imagining with the visualization how she could make a module for middle school students about communicating data.

Dr. Ballesteros emphasized that this effort was really about the visualization part. It was NCIPC's effort to think about how CDC and NCIPC can present data more dynamically rather than just numbers and tables. He asked whether people found this to be useful. As an epidemiologist, he likes numbers, but they get a sense that people want to absorb data differently. The Global Burden of Disease piece was a key example of a new way to present data. It is a challenge to get things out, but he thinks it is worthwhile.

Dr. Frye loves the visualizations and how user-friendly this is, and thinks that linking it with other datasets would be fantastic. She asked whether there were any data on the perpetrator for homicide data.

Dr. Ballesteros said he thought some of that information is in NVDRS. There is a separate module in WISQARS™ on violent deaths that are based on NVDRS data, and he believes some of that information is there.

Mr. Miskis heaped praise as well. He can see himself using this with their aging network to convince them of the importance of incorporating behavioral health issues into the delivery of services. These are wonderful and bright people, but data will put them to sleep. These visualizations will get the message across and it will be a very helpful tool.

Dr. Green is a big fan of visualizations. However, she finds the color choices somewhat tough, especially on the tree map that has so many things and there are multiple grays, pinks, and greens that are coming out. This is a contrast with the rest of CDC branding in color choices. She prefers the idea of consistent branding so that people recognize that something came from CDC or WISQARS™.

Dr. Ballesteros indicated that they have had a lot of discussions about the colors. There are contrast requirements for people who are color blind. They can revisit this discussion.

Dr. Hedegaard said it could be easy to be somewhat misled by the results if thought is not given to how big the numbers are that went into generating the rates. When NCHS was doing its visualizations, there were issues sometimes where a rate appeared to be skyrocketing. But when looking at the scale, the rate was really going from 1.0 to 1.5. She wondered if WISQARS™ has any sort of flags or warnings that indicates a rate is based on small numbers. The NCH visualizations are shown on a static scale as well as a dynamic scale To try to keep findings in perspective.

Dr. Ballesteros said they have talked about this and have included a note that the scales are dynamic and cannot be directly compared. They were struggling with whether it made sense to show visuals that essentially are unusable. They talked about static and dynamic scales, but it was not possible for them at that point. They can further discuss this.

Dr Comstock said she was curious to know if the software that powers WISQARS™ might be made available to researchers across the country who would like to make it possible for other researchers, students, media, policy-makers, et cetera to access their datasets for queries. For example, she would gladly make her high school sports injury surveillance dataset available for free to anyone who wanted to query it if she could access such software.

Dr. Ballesteros said he would have to check with his programming team to determine whether that is possible. He has heard this comment before. Some states have reached out to them to ask for the codes so that they could build the same thing in their environment and not have to do the development. He will take it back to his programming team.

In this spirit of openness and efficiency in government, especially for those whose data collection may be funded by CDC, **Dr. Porucznik** said it would make a lot of sense if they could figure out a way to “play in the same sandbox.”

Dr. Compton asked whether any states are able to get this platform and adapt it to their own data and, if not, whether there are plans to share the platform so that states could modify it for their own purposes. This would be very helpful, given that more states are moving toward more data-driven public health policies and trying to merge multiple data systems. This is such a powerful technique, it would be nice if people were using some of the same approaches.

Dr. Ballesteros responded that they have not yet figured out how to do this, but they have heard from states that have asked about this.

Dr. Austin added to the praise as well. He has used legacy WISQARS™ a lot, so this is great. Within the Department of Transportation (DOT), products like this that are produced with government money have to be made available to the public unless the contract has some kind of restriction or it is a proprietary development.

Dr. Ballesteros said they agree and he did not think that was the challenge for them. The challenge is that they want to make it useable, but also not be responsible for having to hold the hands of others as they simply do not have time to do so.

CDC’s National Centers of Excellence in Youth Violence Prevention (YVPCs): Lessons Learned, Impact, and Future Directions

Objectives, YV Defined, History & Evolution of YVPCs

Dr. Brad Bartholow
Team Lead, Youth Violence Suicide & Elder Maltreatment Team
Division of Violence Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Dr. Bartholow indicated that this session would focus on youth violence (YV) as a significant public health problem, the history and evolution of the YVPCs, YVPC accomplishments and

impact, current YVPCs, and future directions. Youth violence is a significant public health problem. It occurs when youth between the ages of 10 to 24 as victims, offenders, or witnesses are exposed to intentional use of force to threaten or harm others. This typically involves young people hurting their peers. Examples include bullying, threats with weapons, fights, and gang-related violence.

YV is a leading public health problem. Homicide was the third leading cause of death in 2016, which comes from WISQARS™, with 5319 youth victims of homicide in that year or 15 per day. Over 493,000 youth were treated in EDs for assault-related injuries, or over 1300 per day. YV is very expensive. The cost approaches \$20 billion per year, and that is only for health care costs and lost wages. That does not include criminal justice and other costs to communities, which are substantial. YV also is a leading public health problem because exposure increases the risk of subsequent physical behavioral, mental health, and violence perpetration and victimization. YV has a negative impact on community safety; undermines opportunities for community members to thrive; undermines the health care and social services; and decreases property values, which has a tremendous economic impact on resources available in communities.

In terms of the homicide rates by race and ethnicity among youth from 2001 through 2016, in general homicide rates decreased from 2001 to around 2013 and 2014. They then began to increase again, especially among non-Hispanic blacks. In addition, there is a disparity in homicide rates between non-Hispanic blacks over time and other race and ethnic groups. For example, the homicide rate was 6 to 10 times higher for non-Hispanic black youth than it was for non-Hispanic white youth. This disparity suggests that there are community, structural, and socioeconomic factors that need to be addressed in YV prevention programming. If these are not addressed, it is unlikely that there will be a tremendous impact on violence rates, especially in poor minority communities. Despite the impressions there may be based on all of the school shootings and media coverage of them, very few youth homicides occur in schools or are school-associated. Only 1.2% of youth homicides occur in school settings. The remainder occur in other community settings.

With regard to the history and evolution of the YVPCs, after the Columbine High School shooting in 1999, Congress appropriated funding that established CDC's National Centers of Excellence in Youth Violence Prevention (YVPCs). The name has changed somewhat over time. They are now referred to as the YVPCs. They were established in 2000 with objectives to:

- Foster collaborations between academic researchers and communities
- Empower communities to address youth violence
- Develop scientific infrastructure
- Conduct etiological work on risk and protective factors
- Promote interdisciplinary research
- Build a workforce through mentoring and training

The YVPCs have progressed in a developmental stepwise fashion over 4 funding cycles. In Cycle 1 (2000-2005) the emphasis was on developing partnerships and surveillance capacity. That informed Cycle 2 (2005-2011), developing the scientific infrastructure and evidence base. That informed Cycle 3 (2010-2016), implementing comprehensive community-based strategies to achieve community-level impact. That work informed Cycle 4 (2015-2021), implementing community- and policy-level strategies to achieve community-level impact.

YVPC Accomplishments & Impacts

Dr. Melissa Mercado
Behavioral Scientist
Division of Violence Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Dr. Mercado emphasized that the YVPCs have accomplished a great deal over the past 20 years, and these accomplishments have been categorized in the following categories:

- Partnerships for YV Prevention
- Surveillance Systems that Guide Action
- Expanding the Evidence Base
- Community and Policy Strategies
- Sustaining Efforts
- Comprehensive Strategies for Community Impact

The YVPCs have effectively engaged communities in YV prevention efforts through strategic research-community partnerships that are tailored to meet the specific needs of each local context. Some of the key elements for this partnership success are long-term process, trust and relationship-building, non-traditional partners for a broader scope, and diversity. It is important to understand and plan that community partnership building is a long-term process. Gaining trust and investment from the community requires acknowledging the needs and agendas of partners. In fact, an intervention's success will depend on the willingness and capacity of schools, faith-based, and other prominent community organizations. It is also important to build trust and relationships with community members and to proactively facilitate their participation in the research. To do this, it is best if the researchers are embedded within existing programs and organizations as an extension of efforts that already exist within the communities. Additionally, it is important to consider the roles that larger socioeconomic, cultural, and community factors can play in youth development. That is why the YVPCs have broadened their partners beyond youth-serving organizations and schools. They have invited non-traditional partners in workforce development, primary and behavioral healthcare, the business sector, and the CJS.

These diverse partnerships demonstrate acceptance from many different stakeholders in the community, which is essential to enhance program reach and program exposure. Notably, the YVPCs academic-community partnerships have built and improved communities' capacity for YV surveillance data and tracking indicators. The YVPCs follow systematic processes for collecting community-specific data, including both community surveys and administrative data from sources such as police departments and hospitals. The process has helped the communities to gain an expanded understanding on the magnitude, burden, and dynamics of YV and its associated risk and protective factors. The process also has helped communities learn how to use the data to inform or guide their Community Action Plans (CAPs) to tailor prevention approaches to their community's very specific needs. Dr. Mercado shared a map with an example of data collected by the Virginia Commonwealth University YVPC (VCU YVPC). These data were used to inform their CAPs. In fact, over 15 years, VCU YVPC has collected over 19 waves of data from communities and schools allowing them to conduct ongoing surveillance on YV in Richmond, Virginia. Their system serves to this day as the foundation for citywide strategic violence prevention efforts in this city.

YVCP data also have been used to support the rigorous evaluation of prevention approaches across different levels of the social ecology. Some of these YVPC evaluated evidence-based programs are listed here:

- Youth Empowerment Solutions (YES)
- Positive Behavioral Interventions and Supports in Schools
- Universal Brief Intervention for Violence in the Urban ED
- Parenting Wisely
- Teen Court
- CeaseFire

Dr. Mercado highlighted two of these to illustrate the types of programs that YVCPs have evaluated. The first one, Youth Empowerment Solutions (YES) is a positive youth development program that is based on the theory of youth empowerment and community engagement. It addresses risk factors at different levels of the social ecology, involving youth in the process of changing communities' physical and social environments to reduce and prevent YV. Another example is CeaseFire, which is known today as KillViolence. This program stops the spread of violence by detecting and interrupting conflicts, identifying and treating those individuals at highest risk, and changing social norms. These are just two examples of the variety of programs that the YVPCs have implemented and evaluated. By doing so, the YVPCs have expanded the evidence based on what works to increase protective factors and reduce risk factors related to YV. Efforts to refine, improve, adapt to diverse practice settings, and scale up these programs continue to this day.

Needless to say, the YVPCs have made significant contributions to the YV prevention literature. During the period 2010-2015, there were 245 center publications. Of these, 53% focused on etiology, 17% on implementation science, 13% on intervention evaluation, 11% on theory, and 5% on policy. This is just a snapshot. The team is working on compiling this information for all YVPC cycles and expect that the proportions will change as more information is added to reflect the evolution of the YVPCs' work. Much of the early work of the YVPCs addressed the etiology of YV and risk and protective factors. Emerging from that work have been evaluations of promising and evidence-based programs, including implementation science efforts to improve the delivery and effectiveness of different prevention strategies. Other YVPC strategies to the literature relate to different theoretical and implementation frameworks, as well as policy impact on YV.

Dr. Mercado shared two examples of how the YVPCs have made significant contributions to understanding how policies can effectively reduce YV. The first example comes from Johns Hopkins University (JHU) YVPC. After research showed that the Positive Behavioral Interventions and Supports (PBIS) program was effective, JHU YVPC researchers helped Maryland school administrators scale up and implement PBIS statewide. They found that children in the intervention schools were 33% less likely to receive office discipline referrals compared to children in the control schools. Another example comes from VCU YVPC. Their surveillance data indicated that there were high rates of violence surrounding convenience stores with unrestricted alcohol beverage licenses that sold inexpensive, single serve alcoholic beverages that are very popular among youth. They shared this information with community partners and community partners then worked together to pass a law restricting these alcohol licenses. After the law was passed, YVPC researchers found that rates of ambulance pick-ups for violence-related injuries were reduced by 100% in the areas where the alcohol beverage licenses were restricted to preclude the sales of these inexpensive single serve beverages.

However, the policy was reversed. After the policy was reversed, the YVPC researchers found that the rate of violent injuries again increased.

The YVPC awards are limited to 5 years. However, their impact is being sustained beyond CDC funding. Many YVPC efforts have been institutionalized by local agencies and community organizations scaling up their programs across full districts, neighborhoods, and even at city- and county-wide levels. Forming collaborations and establishing 501(c)(3) non-profit organizations has been key to leveraging additional funding that these YVPCs needed. In fact, the impact of CDC's investment has gone beyond the award periods and its specific grantees. Here are a few examples. The University of Colorado Boulder YVPC helped establish the Montbello Steps to Success Community Board's 501(c)(3). This allowed them to compete for more diverse sources of funding and continue their work beyond the CDC award years. Another example is the Robeson County Teen Court and Youth Services 501(c)(3) created by the University of North Carolina Chapel Hill YVPC. They continue to implement their Teen Court efforts to this day, supported by funding from local and federal sources. Using their initial YVPC research as a foundation, they will conduct a randomized controlled trial (RCT) of school-based Youth Courts in two rural counties within North Carolina. Bright Star Community Outreach is a 501(c)(3) non-profit organization that serves the Bronzeville Community in Chicago. They have benefitted from their partnership with the University of Chicago YVPC to be able to obtain additional funding. They procured foundation and state grants to supplement the programs that were included in their CAPs, but required additional funding beyond CDC funding. Another way in which the YVPCs have been sustaining their efforts is by training the future workforce of YV prevention. They have taught and trained graduate students, funded multiple graduate assistants, and served as a field placement for students. In fact, many of these YVPC trainees continue working in YV prevention efforts way beyond their involvement with the YVPCs.

The YVPCs have demonstrated how comprehensive YV prevention strategies can result in community-level impact; that is, community-level reductions in YV rates. Dr. Mercado shared 4 specific examples from the recently concluded YVPC third cycle, which was focused on implementing and evaluating comprehensive community-based strategies to achieve community-level impact. The first is the University of Chicago Center for YV Prevention. This center implemented 4 prevention programs as part of their comprehensive strategy: CeaseFire at the community- and school-level, SAFE Children, and GREAT Schools and Families Program. They found that homicide rates decreased by 17% in the intervention community (Humbolt Park). This was relative to 17 other violent comparison neighborhoods where violence increased by 10%. This was also relative to the City of Chicago as a whole where violence increased by 9%.

The second example comes from the University of Michigan YVPC. They implemented 6 strategies: YES, Fathers & Sons, Clean and Green/Adopt-a-Lot, ED Brief Intervention, Community Outreach Program (Boys & Girls Clubs), and Community Mobilization. The evaluation of this comprehensive approach found that youth in the intervention community were 25% less likely to be a victim of assault than those living in the comparison area. Their efforts also resulted in a 38% reduction in assault-related injuries among youth treated in the EDs. However, over the 2.5-year intervention period, the University of Michigan YVPC researchers found that differences between the intervention and comparison communities began to converge. This finding suggests the need for future implementation science work to identify factors related to sustaining those YV rate reductions.

The third example comes from the University of North Carolina Chapel Hill YVPC, which has been to date the only YVPC to implement a comprehensive strategy at the county-level. They employed three prevention strategies: Positive Action (middle schools), Parenting Wisely, and Teen Court. After their interventions, the county experienced a 47% decrease in illegal behavior that took place outside of the schools, an 18% reduction in aggravated assaults committed by youth, and a 10% reduction in illegal behaviors that took place on school grounds.

The fourth example is the Clark-Hill Institute for Positive Youth Development at VCU YVPC. They implemented a comprehensive set of school-based and family-focused programs which included the Olweus Bullying Prevention Program, Staying Connected with Your Teen, and Parenting Wisely. They found that relative to areas of the community not receiving the intervention, areas receiving the intervention had a 13% lower risk of YV.

Current YVPCs & Future Directions for YVPCs

Ms. Aimée Trudeau
Behavioral Scientist
Division of Violence Prevention
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

Ms. Trudeau indicated that the currently funded YVPC include the following:

- Chicago Center for Youth Violence Prevention (CCYVP) at the University of Chicago
- Youth Violence Prevention Center- Denver (YVPC-D) at the University of Colorado Boulder
- University of Louisville Youth Violence Prevention Research Center (UofL YVPRC)
- Michigan Youth Violence Prevention Center (MI-YVPC) at the University of Michigan
- Virginia Commonwealth University Clark-Hill Institute for Positive Youth Development (VCU Clark-Hill Institute)

Three of the YVPCs (Denver, Chicago, Richmond) are using the Communities that Care (CTC) framework for their projects. CTC is designed to help community stakeholders and decision-makers understand and apply information about risk and protective factors and select programs that are proven to make a difference in promoting healthy youth development in order to most effectively address the specific issues facing their community's youth. It is comprised of 5 phases that help the community get started, get organized, develop a community profile, create a plan, and implement and evaluate the plan. CTC was first conceptualized for rural communities and for substance abuse prevention. However, CDC's YVPC are all in urban communities. Therefore, they also are testing CTC's efficacy in those settings and are documenting adaptations in language and approach. Each center is applying the framework a little differently. In Denver they are implementing in two communities with different levels of readiness to study the relationship between readiness and community-level strategies and outcomes. In Chicago they are implementing and evaluating the CTC process as their community-level strategy and selecting community-based programs for implementation using this community-level process. In Richmond, they have expanded upon the CTC traditional model and added a component of outreach workers who connect families with resources and facilitate community conversations about important challenges and concerns from the community.

MI-YVPC is currently testing a greening hypothesis in Flint, Michigan; Youngstown, Ohio; and Camden, New Jersey. They are working with each community to study how improving vacant properties can have a positive impact on YV, on property crimes, and violence-related injuries. Greening strategies like this that engage and revitalize communities have been shown to improve the health and safety of residents. The UofL YVPRC has one of the most unique and creative interventions. They are implementing and evaluating a social norming campaign. They are using social media to do so in West Louisville, Kentucky, a predominantly African American community that was center stage for the Civil Rights Movement. The campaign is being implemented over three years, each year focusing on one of three themes: Pride, Peace, and Prevention. A cohort of youth fellows have been and continue to be at the center of the conceptualization, development, and implementation of the campaign, with great support from community partners.

In terms of future directions, YVPCs and their unique contribution to YV prevention are at the forefront of an evolving evidence base and have contributed significantly to the understanding of what it takes to reduce YV. They also have provided critical leaderships for effective YV research and programming and have served as catalysts for change in their communities, cities, states, and nationally. They have demonstrated community-level impacts on YV, a level of impact that is needed in order to reduce YV rates across the country. However, more work is needed to fill gaps in the field. Thanks to CDC's previous investments in the YVPCs, there is a good foundation to do this.

Based on lessons learned, there are some ideas to help move the field forward. A great deal has been learned about implementing community-based comprehensive strategies, and now a great deal is being learned about community- and policy-level strategies to reduce rates. However, there is much more to learn about these approaches moving forward. It is known that prevention approaches that impact community-wide rates of violence must be comprehensive, consisting of a coordinated set of universal and selective strategies and different developmental stages that address multiple risk and protective factors for violence across the social ecology. Less is known about how these different components of a comprehensive approach interact with one another. How do they work together to reinforce each other and leave a level of safety and health in a community, and what combination of strategies will help reduce risks and improve protection? More is needed to understand this interplay and the mechanisms by which these complex approaches operate and affect change. There also is a growing interest in implementation science research to close the gap between the promise of scientifically proven YV interventions and their successful implementation in the real-world. A stronger understanding is needed of the most effective communication and dissemination strategies to bridge the gaps in the translation of evidence into policy and programs. With plenty of evidence that demonstrates how individual, peer, and family risk and protective factors can be affected, the YV literature is still lacking evidence about strategies that can affect community- and societal-level risk and protective factors. More research is needed to understand how to impact communities conditions that increase or buffer against risk for violence, specifically structural determinants of health (housing, education, employment), which will challenge us to expand our reach of partners who are traditionally invited to the table to be a part of the solution. Finally, research shows that different forms of violence (youth violence, child maltreatment, sexual and intimate partner violence, suicide) are strongly connected to each other in important ways. Therefore, a crosscutting approach is key to achieving measurable reductions in all violence. In an effort to break out of silos, foster collaboration, and exchange and maximize impact, NCIPC hopes to provide a stronger shared risk and protective factor framework. Additionally, YV is an ACE. It is important to make stronger connections between the two and elevate the narrative

that both children and youth need safe, stable, nurturing relationships and environments to achieve their full health and human potential.

The following questions were posed to the BSC for consideration in addition to any other questions or discussion they wished to raise:

- What types of partnerships at the community-level would best support YV prevention research addressing structural and socioeconomic determinants?
- There are few evidence-based community-level strategies to prevent YV and even fewer for urban contexts and communities of color. What are some evidence-based community-level strategies being implemented that address your primary interest area?
- How can the capacity and strategies developed for YV prevention be sustained and scaled-up over time, especially when federal resources may be waning or limited?
- YV is associated with mental health problems, maternal and child health consequences, risk behavior, chronic diseases, and early mortality. How can we better connect YV violence prevention with these other public health challenges? Are there connections between YV and your area of expertise that we might want to explore?

Discussion Points

Dr. Maholmes asked how many centers have been funded over the life cycle of this initiative.

Dr. Trudeau indicated that currently 5 centers are funded and the others mentioned were examples. Over the last 15 years, a total of 21 unique centers have been funded.

Dr. Frye asked whether any of the centers are focusing on overlapping experiences of violence among sexual orientation and gender identity among minority youth.

Dr. Duwve inquired about the intersection between environmental health and YV specifically related to brownfield sites and lead poisoning and what, if any, of the YV prevention programs have looked at old house stock or potentially environmental contaminants and if that is controlled for in the YVPC sites.

Dr. Mercado responded that sexual orientation and gender identity among minority youth are not specifically a focus at any of the YVPCs. In terms of the environment, the MI-YVPC has a site in Michigan and one of the communities is Flint. They are looking at different comprehensive strategies, not specifically looking at that environmental factor. They are looking at greening and how those initiatives can help the youth be involved in other areas and enhance the environment of the community to be able to have better conditions for youth development. That is something interesting that they could take specifically to the MI-YVPC because of one of the communities they are working on. Not with the YVPCs, but NCIPC is working on housing and mortgage studies related to YV that they could talk about in about a year after they work more on that.

Dr. Duwve noted that some studies have found high rates of lead poisoning in children who are incarcerated. It is worth perhaps looking at that intersection.

Dr. Bartholow added that in Flint, they are tearing down blighted houses so that is a major effort. They were doing that during the last cycle. Lead poisoning is certainly an issue and they are partnering with the health departments on that. At Johns Hopkins in Maryland, Freddy Gray, who was killed by the police had very high levels of lead in his system. They were working as well with the health department on strategies to reduce lead poisoning.

Dr. Schwebel stressed that it was astonishing to see the statistics of 15 deaths per day and think about those families. He appreciated and encouraged the notion of moving toward implementation prevention and dissemination. Considering the number of injuries and deaths, they really need to move toward that translation of what is known to reduce those injuries and deaths. It seems like many of the centers are focused locally. He encouraged thinking about ways to go beyond these 5 cities to nationwide dissemination, because this is a problem throughout the country.

In terms of implementation and dissemination, **Dr. Mercado** indicated that UofL YVPRC is documenting all of their experience so that other centers and communities could replicate their efforts. It is not a one-size-fits-all. The video is very specific to the youth in their community, but the strategy and the process will be documented so that perhaps others could follow that same process, determine whether it works for their community, and implement it there as well with evaluation data of course.

Dr. Trudeau added that the YVPCs, the Principal Investigators (PIs), and their research staffs are leaders in the field of YV prevention. They have been tapped into their cities, state, nationally, and internationally to provide technical assistance and share some of their challenges and lessons learned in doing this kind of work in communities. Louisville just returned from Barbados where they were working with the Ministry of Health (MoH) to try to replicate their social norm campaign in that country.

Dr. Mercado reminded everyone that this has been going on for 20 years. University of Puerto Rico, University of Hawaii, North Carolina, different universities in California, et cetera were involved at one point. It is a competitive process. It is important to get the word out to universities that this is available so they can compete. They also collaborate widely. Louisville has been collaborating and going across state lines to talk to other partners. The UofL YVPRC Co-PI is Dr. Maury Nation who is at Vanderbilt University in Tennessee. Their comparison site is Nashville, so there is collaboration across the states and the impact of the YVPCs goes beyond the communities.

Corey Verdon from DVP thought the point about lesson learned in these cities is very important. It was part of the original legislation that these centers serve as national models, and they absolutely have. One example is the work in Michigan. They are not just doing the greening strategies in Michigan. They are working in other cities currently. That is an expansion of their work. Part of their work will be developing manuals so that other cities can learn exactly how it worked in the various comparison communities and replicate it. There are many other examples such as the Yes program, which is widely implemented across the nation. The PIs from Michigan provide a tremendous amount of technical assistance pro bono to help the expansion and use of that program that works in Michigan. There are many other examples as well.

Dr. Johnson said they reached out to the MI-YVPC when there was some initial talk about Secretary Ben Carson's EnVision Centers, which were launched two weeks ago. There were 17 announced and twice or three times that will be announced over the next 12 months. The goal is

to think holistically about the types of services youth and their communities need and try to bring all of the siloed organizations within the federal and local government together. This is not about providing new resources, but instead using the resources that already are in these communities much more effectively. The Department of Housing and Urban Development (HUD) represents children who look like his child and children in his neighborhood, but not necessarily of the resources that he has. HUD is a place where they can touch 1 out of 4 children living in poverty. The wait list increases that number. Perhaps they need to step back and think about multidisciplinary approaches and also strategies that potentially could be used to touch children in different ways. He is at a housing agency, but spends most of his time with non-housing outcomes—health, education, employment. The list goes on and on. There are some opportunities to think about these issues. Housing is a platform. They need to think about places where youth live, including their own home, and using that as a platform to deliver services or intervene in different ways, they could leverage the multiple silos of resources that are currently being committed to these communities and do it differently. There are many examples of this, and many examples have not been studied well, so there is not a story to tell. He will be reaching out to the various centers, given that HUD does have evaluation dollars. He likes to stay in his lane, but if others are doing the work already, why not figure out a way to take the resources HUD has and put into places that have demonstrated that they can implement these services.

Dr. Bartholow indicated that they have been talking a lot about new partnerships that could facilitate this work. There are many government agencies that touch these populations that are working in silos. He agreed that if they could get out of those silos and worked together, they could realize much bigger impact.

Dr. Duwve pointed out that there is a group of urban-serving universities that has a subgroup of faculty who are looking at health in particular and health in communities surrounding the universities. There is a lot of brain power in that group, so it may be worth reaching out to them as well.

Dr. Mercado requested that Dr. Duwve share contact information with her for that group.

Dr. Frye observed that one of the questions posed pertained to what types of strategies could be used. Having watched the video, she wondered whether anyone had adapted the Truth campaign strategy for YV, particularly gun violence. The strategy of the Truth campaign is to focus on how tobacco companies and corporate interest target specific youth populations. She wondered if they knew of any group within NCIPC or outside that had adapted that strategy. She recognized that the number of school shootings is relatively small compared to the rest of the shootings, although it is important to note how much more likely youth are to die from gun homicide than any other developed country in the world. She read an article recently published by Children's Hospital in Philadelphia that stated that children in the US 15 to 19 years of age are 82 times more likely to die from gun homicide than in other developed countries. She wondered if anyone was working with the activist youth survivors of school shootings who are working with the youth who make up the vast majority of victims of gun violence in urban areas, and if that was on the radar for the YVPCs or CDC.

Dr. Bartholow replied that there are programs that are working with survivors of assault through hospital EDs, which have shown to be very effective because they intervene with youth at a point when there is an opportunity for learning and introspection. Even a brief intervention with those youth has quite a large effect size. He does not think anyone has worked with the Truth campaign, but they will look into it. Also with regard to survivors, the CeaseFire interventions

use violence interrupters who typically have spent time in prison for violence-related crimes and they are of the neighborhood in which they work. They intervene as conflict escalates, and they are very effective as well on de-escalating violence. They have seen some effects in Chicago and Baltimore of reduced shootings using those folks.

Dr. Frye noted that the Truth campaign specifically calls out the roll of economic interest, so she wondered if anyone was dealing with that gun manufacturers or other entities that profit from gun-related violence.

Dr. Bartholow said he did not think that had happened at this point.

Dr. Maholmes found the greening project to be very interesting, and noted that there is another group that is funded by a external group that is working in Rochester called Rochester Roots. What is appealing about that is that they use blighted areas where they help children learn how to grow their own food and address issues such as food insecurity and helping children eat healthy meals. They also are using natural products to help youth develop natural products such as tie-dyed t-shirts, soaps, et cetera and they sell their products so they also are teaching youth to be entrepreneurial. Anecdotally, they are finding reduction in not only violence, but also graffiti and other issues in that neighborhood. Perhaps it would be beneficial to connect the to the MI-YVPC.

Dr. Mercado did not know whether a connection had been made, but would be glad to do so. This example ties into the accomplishments of the YVPCs for the past 20 years. They have learned that this is a complex problem, there are many socioeconomic, cultural, neighborhood, and other factors that affect youth. That is why they are reaching out to other partners in healthcare, behavioral health, workforce development, et cetera. All of these relationships are being established, continued, or expanded upon by the YVPCs to address the problem of YV from different areas. The CTC sites help the community get organized and plan what to do, create that action guide. They do that with data from the community and they use evidence-based programs that work in their communities. Those programs can be in a wide variety of areas. Colorado is implementing some programs that have to do with greening and others that have to do with communication, workforce, small businesses, et cetera. They are taking a comprehensive approach.

Dr. Trudeau added that in the current round of funding, one of Michigan's objectives is to conduct a nationwide survey across communities that are implementing greening or other accepted interventions to look at the different components of the interventions in terms of challenges and lessons learned and they plan to compile those data and develop a blueprint or manual for other communities that are interested in doing greening work. Hopefully they will connect with Rochester through that process.

Cory Verdon said she was glad that the topic of entrepreneurship was raised as a potential strategy for YV. That has been discussed for a long time, but is an under-evaluated area. The research is mixed. Some programs are found to be effective, but some also are found to have detrimental effects. Sometimes putting more funds into young people's hands can be used in harmful ways by those young people. Some studies have found that their drug and alcohol use has increased as a result. There are some longer-term entrepreneurial models that take an internship approach that not only teach job skills, but also broad youth development and positive youth development skills. Those are showing positive effects on YV, substance use, driving, academic completion, health insurance, jobs, et cetera. This is a potential wise investment for

communities, but a place that needs more research in order to encourage communities to put their limited resources toward it.

Candice a fellow in DVP on the Youth Violence Team, recalled that someone made a comment earlier about the connection between school shootings and other forms of violence. She said she wanted to add that in March during Youth Violence Prevention Week, during which they had a panel discussion and a larger discussion that involved youth from the YVPC in addition to other YV-related CDC grant projects. As the children were discussing issues they face in the field and in their communities, they talked about the connection between school shootings and other forms of YV and ways that they might collaborate in the future. Those conversations are starting to happen and thought is being given to ways to involve youth more in the kinds of violence prevention that occurs in their communities.

In terms of the sustainability issue and strategies, **Dr. Johnson** thought it would be beneficial to think of ways to work with grantees and/or other federal agencies to determine whether the block grants these communities are receiving are eligible activities for which entitlement communities can use the resources. The same would be true for workforce investment money across the various agencies. These communities will continue to receive these resources, so thought should be given to how to think about developing an appetite locally to make investments, see demonstrated results, and then see continued investments.

Dr. Mercado responded that this is where the local partnerships come in. They need to build trust, build the relationship, get buy-in, work through projects/efforts that already are occurring.

Dr. Trudeau indicated that in previous rounds, the YVPCs have been required to work with their local and state health departments. To what extent they have established partnerships that integrate some of these strategies into community block grants and such is not clear, but those relationships with partners have been established in the past.

Dr. Greenspan said she was curious to hear from others in the room who publish NOFOs about creative ways they have tried to build sustainability into their projects. She noticed for one of the projects there was concern that sustainability had not lasted. This is something everyone struggles with all of the time.

Ms. Castillo it occurred to her when Dr. Johnson was speaking that sometimes there are other potential sources of funding through partnership links.

Dr. Maholmes agreed that sustainability is a challenge because the fiscal landscape changes at the local, state, and federal levels and other priorities come to the forefront. The teams that are funded have to get training on how to be nimble enough to seek other funds and figure out how to work with school boards or unlikely partners to get some of these elements of their projects institutionalized. That is sometimes a challenge because then they lose ownership of it and the integrity of the data being collected may be impacted. She wondered what requirements were included in NOFOs with respect to sustainability.

Dr. Bartholow responded that in this round, the YVPCs are asked to develop a sustainability plan from the beginning of the project. In the past, it was deferred too long until the end so some things were not sustained. The 501(c)(3) model has worked really well and is becoming more popular. One advantage of having a center is that it attracts other funding sources as well, so that is helpful as well. The strategies that are implemented vary in their sustainability. At the inner layer of the social ecology for example, family and parenting programs are very appealing

to people. However, it is very challenging to get families enrolled in those programs when there is not housing security, food security, et cetera. Those programs are difficult to sustain; whereas, efforts at the outer level like crime prevention through environmental design are less costly and most sustainable over time and they like have an effect size that is likely greater than some of the inner layer strategies.

Dr. Whitaker said one of his concerns is that it seems like some of the interventions being implemented in these programs are perhaps a lot looser than desired if one was going to replicate a program. He wondered about the extent to which the centers are able identify those key elements of why something might work for replication purposes. The effect sizes tend to go down one programs are implemented in the field that are tested in the laboratory and then disseminated. It is going to be very difficult to replicate interventions that are very broad with a lot of activities and are sometimes driven by charismatic people. He asked whether any thought had been given to this or if any of the sites are trying to define the broader intervention they are doing.

Dr. Bartholow indicated that a lot of work is being done on fidelity monitoring as programs move out into the field, but there is a lot of need to adapt those programs. CTC is not really developed for the urban environment, so they are finding a lot of challenges implementing that with the language used. It is very research-oriented and does not resonate with the community members at all. There is a lot of work in the CTC model for documenting process and fidelity issues.

Dr. Mercado added that all of the sites are monitoring and documenting the fidelity of their respective interventions. NCIPC has an internal workgroup to talk about these issues, collaborate with one another, eventually contribute to the field with regard to how to make those adaptations, and provide that information to others.

Dr. Austin is with the National Highway Traffic Safety Administration (NHTSA) and they deal with the issue of sustainability as well. Often, they are working with police departments and when they leave things may change. They are currently demonstrating and doing some evaluation to try to build community support. Since people feel when they get a ticket they are being picked on, NHTSA is looking at ways to convince the community that traffic safety is important.

Follow-Up Items / Portfolio Reviews / Agenda Setting

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

Dr. Greenspan reminded everyone that during a previous meeting, NCIPC indicated that they would review previous minutes for follow-up items and would provide an update during the next meeting. The one thing that stood out from the last meeting was a discussion about other BSCs within CDC and whether there could be some cross-fertilization with the NCIPC BSC and others. She reached out to the Designated Federal Officials (DFOs) in other centers that have BSCs, and there was an interest in participating in each other's meetings, sharing agendas, et cetera.

Two of the other BSCs already have *Ex Officios* on the NCIPC BSC, one of which is the NCHS. NCIPC works very close with NCHS already, as does every other center within CDC. Everyone relies on them for national statistics. They often publish on NCIPC topics and they often collaborate. Thus, the NCHS BSC would be one with which there may be some interest in cross-fertilization. The other is NIOSH, with which NCIPC works frequently on injury topics. In fact, they hold quarterly meetings within CDC with NIOSH. NIOSH covers more broadly not only injury, but also occupational disease. Other centers that have BSCs are the National Center for Environmental Health (NCEH) and the Agency for Toxic Substances and Disease Registry (ATSDR). Given their discussions earlier regarding environments, these groups may have overlapping areas of interest. The Office of Infectious Disease (OID) may be of interest due to NCIPC's work with opioids. The last BSC is the Office of Public Health Preparedness and Response (OPHPR), which is another possibility given NCIPC's work in opioid response.

At this point, Dr. Greenspan said she wanted to gauge the NCIPC BSC's interest. If there is continued interest, she thought one thing they could begin to do is share agendas to determine whether there is interest in attending. If so, they could share agendas and decide whether perhaps one person could monitor that. They could then revisit this during the next meeting. There appeared to be interest and support for this amongst the NCIPC BSC members to embark upon this.

In addition to input regarding interaction with other BSCs, Dr. Greenspan requested feedback about members' thoughts on the portfolio review from the previous day, as well as potential agenda items for the next NCIPC BSC meeting.

Discussion Points

Dr. Porucznik said that she had made this request previously, but would be rotating off of the NCIPC BSC. To her, it seemed to be reasonable at a minimum to try to get the various BSC chairs together on a teleconference, even if it is only once or twice a year. She would like NCIPC to be able to lead out on the idea of reaching across the agency and thinking about ways to potentially realize synergy and efficiency. She recognized that it is hard, but they do hard things all of the time, so why not try? The worst thing is that it might fail, and then they can at least say they tried. She thought that one of the limitations of the formal portfolio review was that by the time it got to the BSC, it seemed stale and may not have been particularly effective. She liked the portfolio review from the previous day, but pointed out that the members could respond better to future similar reviews if they receive materials sooner than the day before the meeting. Others appreciated the portfolio review and agreed that it would be beneficial to have materials further in advance of the meeting.

Dr. Maholmes thought that given the focus on opioids and what they discussed over the last couple of days with the cross-cutting nature of infectious diseases, violence, and a host of issues that it would make sense to marshal the intellectual capital available across these BSC's to get at these issues. They have a new WG forming that could benefit from learnings from other BSCs. Aside from the opioids, there is a lot of work on the intersection of violence and sexually transmitted infections. It certainly would be helpful to assess the extent to which there might be shared interests in that area as well. This would be a great opportunity that would not be that costly. Perhaps during various BSC meetings, another BSC could give a presentation that might overlap with the theme of that particular BSC.

Dr. Hedegaard agreed, noting that the NCHS BSC meeting was convened on June 19-20 as well and the agenda focused largely on opioids in the context of new datasets that are available at NCHS to examine this. They now have the National Hospital Care Survey (NHCS) that is linked to the National Death Index (NDI), which is also linked to the text information about the drugs involved in drugs deaths. After the conversation the previous day about the research that NCIPC is interested in doing around opioids, she wished they could have heard what was presented during the NCHS BSC meeting the previous day.

The following topics were proposed for possible agenda items for the next meeting, which will be convened in November or December 2018:

- Opioid WG update
- Sexual violence
- CDC Foundation
- Dissemination efforts for mTBI Guideline
- Update on grant-funded states' opioid efforts (policy, interventions, community work, evaluation) and RPE efforts
- NCIPC's efforts enhanced surveillance efforts related to overdose
- NCIPC's joint efforts with public safety
- More detailed information on guns/firearms work and the intersection with other issues (opioids, suicide, violence)
- CDC's mandates

Public Comment Session

No public comments were offered during this session.

Conclusion / Adjournment

Christina A. Porucznik, PhD, MSPH
Chair, NCIPC BSC
Associate Professor, Department of Family and Preventive Medicine
University of Utah

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

Attachment A: Meeting Attendance

BSC Members

Phillip Coffin, Ph.D.
Director of Substance Use Research
Center for Public Health Research
San Francisco Department of Public Health

R. Dawn Comstock, Ph.D.
Associate Professor
Department of Epidemiology
School of Public Health
University of Colorado at Denver

Kermit Crawford, Ph.D.
Associate Professor in Psychiatry
Department of Psychiatry Psychology
School of Medicine
Boston University

Joan Marie Duwve, M.D., M.P.H.
Associate Dean for Practice
School of Public Health
Indiana University

Elizabeth Eckstrom, M.D., M.P.H.
Associate Professor of Medicine
Division of General Internal Medicine & Geriatrics
Oregon Health & Science University

Victoria Frye, Ph.D.
Associate Medical Professor
School of Medicine
City University of New York

Gerard Gioia, Ph.D.
Chief, Division of Pediatric Neuropsychology
Children's National Medical Center

Traci Green, Ph.D.
Associate Professor of Emergency Medicine and Epidemiology
Boston University

James Hedlund, Ph.D.
Principal
Highway Safety North

Christina A. Porucznik, Ph.D., M.S.P.H.
Assistant Professor
Department of Family and Preventive Medicine
University of Utah

David C. Schwebel, Ph.D.
Associate Dean for Research in the Sciences
University of Alabama at Birmingham

Debora Daro-Tuggle
Senior Research Fellow
Chaplin Hall
University of Chicago

Federico Vaca, M.D., M.P.H.
Professor and Vice Chair of Faculty Affairs
Department of Emergency Medicine
School of Medicine
Yale University

Danial J. Whitaker, Ph.D.
Professor, Director
Health Promotion & Behavior
Georgia State University

Ex-Officio

Rory Austin, Ph.D.
Chief, Injury Prevention Research Division
Department of Transportation
National Highway and Transportation Safety Administration

Melissa Brodowski, Ph.D., M.S.W., M.P.H.
Senior Policy Analyst
Administration for Children and Families

Dawn Castillo, M.P.H.
Director
Division of Safety Research
National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention

Amy Leffler, Ph.D.
Social Science Analyst
National Institute of Justice
Department of Justice

Holly Hedegaard, M.D., M.S.P.H.
Senior Service Fellow
National Center for Health Statistics
Centers for Disease Control and Prevention

Calvin Johnson
Deputy Assistant Secretary
Department of Housing and Urban Development

Lyndon Joseph, Ph.D.
Health Scientist Administrator
National Institute on Aging
National Institutes of Health

Valerie Maholmes, Ph.D., CAS
Chief, Pediatric Trauma and Critical Illness Branch
National Institutes on Health
Eunice Kennedy Shiver National Institute of Child Health and Human Development

Wilson Compton, M.D., M.P.H.
Deputy Director
National Institute on Drug Abuse
National Institutes of Health

Thomas Schroeder, M.S.
Director
Consumer Product Safety Commission

CAPT Kelly Taylor, M.P.H.
Director, Environmental Health and Injury Prevention
Indian Health Service

CDC Attendees

Mick Ballesteros Ph.D.
Brad Bartholow, Ph.D.
Matt Breiding, Ph.D.
Gwendolyn Cattledge, Ph.D., M.S.E.H.
Jieru Chen, Ph.D.
Pierre-Oliver Cote, M.P.A.
Leslie Dorigo, M.P.H.
Deborah Dowell, M.D., M.P.H.
Corrine Ferdon, Ph.D.
Beverly Fortson, Ph.D.
Leroy Frazier, M.S.P.H.
Arlene Greenspan, Dr.P.H., M.P.H.
Jeffery Gordon, Ph.D.
Tamara Haegerich, Ph.D.
Jeffrey Herbst, B.A., Ph.D.
Susan Hillis, Ph.D.
Dan Holcomb, B.S.
Kristin Holland, Ph.D.
Debra Houry, M.D., M.P.H.
Tonia Lindley
Melissa Mercado-Crespo, M.P.H.

Malinda McCarthy, M.P.H.
 Melissa Merrick, Ph.D.
 Sue Neurath, Ph.D.
 Rita Noonan, Ph.D.
 Erin Parker, Ph.D.
 Sara Patterson, M.P.H.
 Kelly Sarmiento, M.P.H.
 Erin Sauber-Schatz, M.P.H., Ph.D.
 Tom Simon, Ph.D.
 Deb Stone, Ph.D.
 Duane Stone, C.P.A., C.G.F.M.
 Aimee Trudeau, M.P.H.
 Mildred Williams-Johnson, Ph.D., D.A.B.T.

Non_CDC Attendees

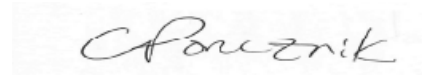
First Name	Last Name	Organization
Kasia	Baca	Health Research and Analysis, LLC
Raeford	Brown	University of Kentucky
Anne	Burns	American Pharmacists Association
Samar	DeBakery	Health Research and Analysis, LLC (HRA)
Shawn	Cooper	TCG Consulting
David	Dodick	Mayo Clinic
Elizabeth	Fineklman	National Academy of Medicine
Monica	Gonzalez-Walker	Michigan Opioid Prescribing Engagement Network (OPEN)
Marion	Greene	Indiana University Richard M. Fairbanks School of Public Health
Elizabeth	Haberman	Mayo Clinic
Reema	Hammond	Sedgwick
Madi	Hawkins	Safe Kids Worldwide
Joseph	Hill	ASHP
Anil	Kumar	New York State Department of Health
Jennifer	Long	WSIB
Christine	Mackie	ASTHO
Joan	Maxwell	PFCC
Diane	McNally	CMS
Penny	Mohr	PCORI
Margaret	Montgomery	ACEP
Lori	Murphy	Medical Association of Georgia
Lewis	Nelson	Rutgers New Jersey Medical School
Lee	Newman	Center for Health, Work & Environment, Colorado School of Public Health
Sharon	Nieb	Injury Prevention Research Center at Emory
Samantha	Pellon	California Medical Association
Jeanmarie	Perrone	University of Pennsylvania
Mark	Pew	Preferred Medical
Donna	Polite	ATL Contractors
Kendra	Pierson	TCG Consultants

First Name	Last Name	Organization
Arlene	Remicck	American College of Obstetricians and Gynecologists
Travis	Rieder	Johns Hopkins University, Berman Institute of Bioethics
David	Ring	AAOS
Mark	Rosenberg	St Joseph's health
Susan	Schulte	NCCI
Sam	Shahid	American college of Emergency Physicians
Angela	Stengel	ASRA
Cheryl	Thompson	ASHP
Linda Van	Van Dillen	CompAlliance
Jenna	Ventresca	American Pharmacists Association
Stephanie	Wallace	Cambridge Communications
Ashley	Walton	American Society of Anesthesiologists
Krystalyn	Weaver	National Alliance of State Pharmacy Associations
Scott	Weiant	PA Department of Labor & Industry
Shanon	Woodward	Food and Drug Administration
Joseph		ASHP (American Society of Health-System Pharmacists)

Certification

I hereby certify that to the best of my knowledge, the foregoing minutes of the June 19-20, 2018 NCIPC BSC meeting are accurate and complete:

September 24, 2018
Date



Christina A. Porucznik, PhD, MSPH
Chair, NCIPC BSC

Attachment B: Acronyms Used in This Document

Acronym	Expansion
AAFP	American Academy of Family Physicians
ACEP	American College of Emergency Physicians
ACEs	Adverse Childhood Experiences
ACOEM	American College of Occupational and Environmental Medicine
ACOG	American College of Obstetricians and Gynecologists
ACP	American College of Physicians
ACT NOW	Advancing Clinical Trials in NOWs
ADS	Associate Director for Science
AHRQ	Agency for Healthcare Research and Quality
APhA	American Pharmacists Association
AR	Antibiotic Resistance
ASH	Assistant Secretary for Health
ASPE	Assistant Secretary for Planning and Evaluation
ASTHO	Association of State and Territorial Health Officials
ATSDR	Agency for Toxic Substances and Disease Registry
BRFSS	Behavioral Risk Factor Surveillance System
BSC	Board of Scientific Counselors
CBOs	Community-Based Organizations
CBT	Cognitive-Behavioral Therapy
CCTN	Center for Clinical Trials Network
CDC	Centers for Disease Control and Prevention
CDS	Clinical Decision Support
CFR	Child Fatality Review
CIOs	Centers, Institutes, and Offices
CM	Child Maltreatment
CMS	Centers for Medicare and Medicaid
COD	Cause of Death
CPT	Current Procedural Terminology
CTN	Clinical Trials Network
DARPI	Division of Analysis, Research and Practice Integration
DEA	Drug Enforcement Administration
DFO	Designated Federal Official
DHQP	Division of Healthcare Quality Promotion
DUA	Data Use Agreement
DUIP	Division of Unintentional Violence Prevention
DVA	Department of Veterans Affairs
DVP	Division of Violence Prevention
ED	Emergency Department
EfC	Essentials for Childhood
EHR	Electronic Health Record
ESOOS	Enhanced State Opioid Overdose Surveillance
Epi-Aid	Epidemiologic Assistance
FACA	Federal Advisory Committee Act
FDA	Food and Drug Administration
FFS	Fee-For-Service
FOA	Funding Opportunity Announcements

Acronym	Expansion
FY	Fiscal Year
HCP	Healthcare Providers
HCPCS	Healthcare Common Procedure Coding System
HHS	(United States Department of) Health and Human Services
HIDTA	High Intensity Drug Trafficking Areas
HRSA	Health Resources and Services Administration
ICD-10-CM	International Classification of Diseases-10-Clinial Modification
ICD-10-PCS	International Classification of Diseases-10-Procedure Coding System
ICRC	Injury Control Research Center
IDeA	Institutional Development Awards
IHME	Health Metrics and Evaluation
IHS	Indian Health Service
IPRC	Injury Prevention Research Center
IPV	Intimate Partner Violence
IRB	Institutional Review Board
<i>JAMA</i>	<i>Journal of the American Medical Association</i>
<i>JPHMP</i>	<i>Journal of Public Health Management and Practice</i>
JCOIN	Justice Community Opioid Innovation Network
LTCF	Long-Term Care Facilities
MASO	Management Analysis and Services Office
MAT	Medication-Assisted Treatment
MCO	Managed Care Organizations
ME	Medical Examiner
MME	Morphine Milligram Equivalent
<i>MMWR</i>	<i>Morbidity and Mortality Weekly Report</i>
MOR	μ -Opioid Receptors
mTBI	Mild Traumatic Brain Injury
MV	Motor Vehicle
NAMCS	National Ambulatory Medical Care Survey
NCEH	National Center for Environmental Health
NCHS	National Center for Health Statistics
NCIPC	National Center for Injury Prevention and Control
NDI	National Death Index
<i>NEJM</i>	<i>New England Journal of Medicine</i>
NEMSIS	National Emergency Medical Services Information System
NFLIS	National Forensic Laboratory Information System
NHAMCS	National Hospital Ambulatory Medical Care Survey
NHCS	National Hospital Care Survey
NHTSA	National Highway Traffic Safety Administration
NICHHD	National Institute of Child Health and Human Development
NIDA	National Institute on Drug Abuse
NIH	National Institutes for Health
NIOSH	National Institute for Occupational Safety and Health
NISVS	National Intimate Partner Violence and Sexual Violence Survey
NLP	Natural Language Processing
NOFO	Notice of Funding Opportunities
NOWS	Neonatal Opioid Withdrawal Syndrome
NSC	National Safety Council

Acronym	Expansion
NSVRC	National Sexual Violence Resource Center
NVDRS	National Violent Death Reporting System
NVSS	National Vital Statistics Systems
OB/GYN	Obstetrics/Gynecology
OD	Office of the Director
OPE WG	Opioid Prescribing Estimates Working Group
ORCU	Opiate Response Coordinating Unit
OSTLTS	Office for State, Tribal, Local and Territorial Support
OD	Opioid Use Disorder
PDMPs	Prescription Drug Monitoring Programs
QALYs	Quality-Adjusted Life Years
QI	Quality Improvement
RCT	Randomized Controlled Trial
RPE	Rape Prevention and Education
SAMHSA	Substance Abuse and Mental Health Services Administration
SES	Socioeconomic
SFP10-14	Strengthening Families Program: For Parents and Youth 10-14
SME	Subject Matter Expert
SUD	Substance Use Disorder
SUDORS	State Unintentional Drug Overdose Reporting System
SV	Sexual Violence
TECs	Tribal Epidemiology Centers
UK	United Kingdom
US	United States
VA	Veterans Administration
WG	Workgroup
WISQARS™	Web-based Injury Statistics Query and Reporting System
YPLL	Years of Potential Life Lost
YRBSS	Youth Risk Behavioral Surveillance System
YV	Youth Violence
YVPCs	Youth Violence Prevention Centers / National Centers of Excellence in Youth Violence Prevention

Attachment C: Pre-Decisional Proposed Experts for the NCIPC BSC OPE WG Informing the CDC Opioid Prescribing Estimates Project (Modified 5-31-18)

RECOMMENDED MEMBERS

Specialty	Proposed Experts	Brief bio (online bio, where available, is hyperlinked to expert's name)	Recent relevant publication(s)
Dentistry	Paul Moore , DMD, PhD, MS, MPH	Professor, University of Pittsburgh School of Dental Medicine. Additional residency/fellowship training in dental anesthesiology and chronic pain management. Former Chair of Dept of Dental Anesthesiology at UPitt. Multiple leadership positions in dental pain management, including Surgeon General's Expert Panel of Prescription Drug Abuse. Has authored >250 manuscripts and given >150 invited lectures on clinical pharmacology/dental therapeutics. Recommended by American Dental Association.	Moore PA et al. Benefits and harms associated with analgesic medications used in the management of acute dental pain: an overview of systematic reviews . J Am Dent Assoc. 2018 Apr;149(4):256-265.e3
	Elliot Hersh , DMD, MS, PhD	Professor of Oral and Maxillofacial Surgery/Pharmacology, University of Pennsylvania. Clinical research expert in dental anesthesia particularly nonopioid medications. Actively teaches on clinical pharmacology and pain control to Penn dental students. Numerous awards for pharmacologic research and teaching. Recommended by American Dental Association.	Moore PA, Dionne RA, Cooper SA, Hersh EV. Why do we prescribe Vicodin? J Am Dent Assoc. 2016 Jul;147(7):530-3. doi: 10.1016/j.adaj.2016.05.005
	Raymond Dionne , DDS, MS, PhD	Research Professor, East Carolina University School of Dental Medicine. Primarily a clinical researcher now but also has >20 years of private dental practice experience. Investigator in the National Institute for Dental and Craniofacial Research (NIH) for >25 years, former Chief of Pain and Neurosensory Mechanisms Branch. Research and teaching interest for >40 years in pain. Recommended by American Dental Association.	Dionne RA, Gordon SM, Moore PA. Prescribing Opioid Analgesics for Acute Dental Pain: Time to Change Clinical Practices in Response to Evidence and Misperceptions . Compend Contin Educ Dent. 2016 Jun;37(6):372-378;quiz379. Review.
	Harold Tu , MD, DMD	Associate Professor and Director, Division of Oral and Maxillofacial Surgery, School of Dentistry, University of Minnesota. Spearheaded nation's first dental school evidence-based opioid prescribing protocols. Current appointment on the HHS Pain Management Best Practices Interagency Task Force.	Tu HK. The Surgeon's Role in Stemming the Prescription Opioid Abuse Epidemic. J Oral Maxillofac Surg. 2016 Nov;74(11):2112.

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Internal Medicine/ Family Medicine/ General Practice	G. Caleb Alexander , MD, MS	Associate Professor of Epidemiology and Medicine, and CoDirector, Center for Drug Safety and Effectiveness, Johns Hopkins Bloomberg School of Public Health. Practicing internist and pharmacoepidemiologist. Has authored >200 scientific articles and book chapters on prescription drug utilization, safety, and effectiveness. Chairs the FDA's Peripheral and Central Nervous System Advisory Committee.	Bicket MC, White E, Pronovost PJ, Wu CL, Yaster M, Alexander GC. Opioid Oversupply after Joint and Spine Surgery: A Prospective Cohort Study . <i>Anesth Analg</i> . 2018 Apr 17.
	Yngvild Olsen , MD, MPH	Medical Director, Institutes for Behavior Resources Inc/REACH Health Services in Baltimore. Previously served as Vice President of Clinical Affairs, Baltimore Substance Abuse Systems; Deputy Health Officer, Hartford County Health Department; and Medical Director, Johns Hopkins outpatient substance use treatment services. Internist trained in addiction medicine. Lectures on appropriate opioid prescribing to primary care physicians.	Olsen Y and Sharfstein JM. Chronic pain, addiction, and Zohydro . <i>N Engl J Med</i> . 2014 May 29;370(22):2061-3.
	Chinazo Cunningham , MD, MS	Internist. Professor, Departments of Medicine, Family and Social Medicine, and Psychiatry and Behavioral Sciences; Associate Chief, Division of General Internal Medicine; and Director, General Internal Medicine Fellowship Program, Albert Einstein College of Medicine. Research interest in opioid use, misuse, and addiction, as well as opioid use disorder treatment in primary care settings.	Bachhuber MA, Nash D, Southern WN, Heo M, Berger M, Schepis M, Cunningham CO. Reducing the default dispense quantity for new opioid analgesic prescriptions: study protocol for a cluster randomised controlled trial . <i>BMJ Open</i> . 2018 Apr 20;8(4):e019559.
	Mitchell Katz , MD, MPH	Internist. President and Chief Executive Officer, NYC Health + Hospitals (NYC public healthcare system). Prior Director, Los Angeles County Health Agency; prior Director and Health Officer, San Francisco Department of Public Health.	Bauer SH and Katz MH. Going Beyond Guideline-Concordant Opioid Therapy to Improve Patient Safety . <i>JAMA Intern Med</i> . 2017 Sep 1;177(9):1272.

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	Roger Chou , MD	Internist. Professor, Department of Medicine, and Professor, Medical Informatics and Clinical Epidemiology, Oregon Health & Science University. Has directed the Pacific Northwest Evidencebased Practice Center since 2012 and has thus served as the PI on multiple systematic review workgroups examining pain management. Served as director of the American Pain Society clinical guidelines program. Research interest in evaluation/management of pain, including low back pain, postoperative pain, opioid use. Co-author of the <i>CDC Guideline for Prescribing Opioids for Chronic Pain</i> .	Chou R et al. Systemic Pharmacologic Therapies for Low Back Pain: A Systematic Review for an American College of Physicians Clinical Practice Guideline . Ann Intern Med. 2017 Apr 4;166(7):480-492
Pediatrics	Lonnie K. Zeltzer , MD	Pediatrician. Professor of Pediatrics, Anesthesiology, Psychiatry, and Biobehavioral Sciences, UCLA Geffen School of Medicine. Director of the Pediatric Pain Program, UCLA Mattel Children's Hospital. Past-Medical Director, Trinity KidsCare pediatric hospice. Associate Director, Patients and Survivors Program, UCLA Jonsson Comprehensive Cancer Center. Research interest in complementary and traditional therapy for chronic and cancer pain in children. >150 publications on pediatric pain. Recommended by the American Academy of Pediatrics.	Martin S and Zeltzer LK. Prioritizing pediatric chronic pain and comprehensive pain treatment in the context of the opioid epidemic . Pain Manag. 2018 Mar;8(2):67-70
	William Zempsky , MD, MPH	Pediatrician/pediatric emergency medicine. Professor of Pediatrics and Division Head, Pain & Palliative Medicine, Connecticut Children's Medical Center of the University of Connecticut. Research interests that span both acute and chronic pain; current NIH grant focused on improving the lives of children with severe disability due to chronic pain, also special interest in pain due to sickle cell disease. Co-editor of Oxford Textbook of Pediatric Pain. Chair, Pediatric Special Interest Group of the American Pain Society. Recommended by the American Society of Hematology and American Academy of Pediatrics.	Mathew E, Kim E, Zempsky W. Pharmacologic Treatment of Pain . Semin Pediatr Neurol. 2016 Aug;23(3):209-219.

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	Neil Schechter , MD	Pediatrician. Director of the Chronic Pain Clinic at Boston Children's Hospital. Associate Professor of Anesthesiology, Harvard Medical School. Has authored >90 articles in pediatric pain management. Senior editor of <i>Pain in Infants, Children and Adolescents</i> (pediatric pain textbook). Has served on both national and international expert committees on pediatric pain. CEO of ChildKind, a nonprofit focused on reducing pain in children by certifying hospitals with an institutional commitment to pediatric pain relief. Research interests and publications span both chronic and acute/post-procedure pain in children.	Berberich FR and Schechter NL. Common pain problems in the pediatric setting. Oxford Textbook of Paediatric Pain. 2014 Cooper TE, Heathcote LC, Clinch J, Gold JI, Howard R, Lord SM, Schechter N, Wood C, Wiffen PJ. Antidepressants for chronic noncancer pain in children and adolescents . Cochrane Database Syst Rev. 2017 Aug 5;8:CD012535
	Raeford Brown , MD	Pediatric anesthesiologist. Professor of Anesthesiology and Pediatrics, and Executive Vice Chair, Department of Anesthesiology, University of Kentucky Medical Center. FDA advisor in the Division of Analgesic and Anesthetic Drug Products. Chairs the Section on Pediatric Anesthesiology and Pain Medicine, American Academy of Pediatrics. Research interests in acute and chronic pain control in children.	Brown RE Jr and Sloan PA. The Opioid Crisis in the United States: Chronic Pain Physicians Are the Answer, Not the Cause. <i>Anesth Analg</i> . 2017 Nov;125(5):1432-1434.
	Renee Manworren , PhD, MS	Associate Professor of Pediatrics, Northwestern University Feinberg School of Medicine. Research focus on acute, post-op, and procedural pain management in children; risk factors for challenges in the control of acute pain; transition from acute to chronic pain; and use of multimodal analgesia, opioid-sparing therapies, opioid prescribing and anticipatory guidance for securing, monitoring and disposing of opioids to prevent pediatric opioid misuse.	1)Manworren RCB et al. Managing Postoperative Pain . <i>Am J Nursing</i> . 2017;118(3):36-43. 2)Manworren RCB et al. Efficacy of Analgesic Treatments to Manage Children's Postoperative Pain After Laparoscopic Appendectomy: Retrospective Medical Record Review . <i>AORN J</i> . 2016 Mar;103(3):317.e1-11

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Emergency Medicine	Jeanmarie Perrone , MD	Professor of Emergency Medicine and Director of the Division of Medical Toxicology, University of Pennsylvania Perelman School of Medicine. Secondary academic appointments in Pediatrics and Pathology/Laboratory Medicine at UPenn. Research interest in the impact of opioid prescribing on patients and the community. Also collaborated with CDC, National Association of Medical Examiners, and American College of Medical Toxicology to improve death certification in drug overdose fatalities.	Delgado MK, Shofer FS, Patel MS, Halpern S, Edwards C, Meisel ZF, Perrone J. Association between Electronic Medical Record Implementation of Default Opioid Prescription Quantities and Prescribing Behavior in Two Emergency Departments. J Gen Intern Med. 2018 Apr;33(4):409411.
	Lewis Nelson , MD	Professor and Chair, Dept of Emergency Medicine, also Chief, Division of Medical Toxicology, Rutgers/New Jersey Medical School. Board certified in emergency medicine, medical toxicology, and addiction medicine. Former President of the American College of Medical Toxicology. Serves on the American Board of Emergency Medicine Board of Directors. Research interest in opioid misuse and abuse, as well as medication safety. Member of Core Expert Group for the <i>CDC Guideline for Prescribing Opioids for Chronic Pain</i> .	Mazer-Amirshahi M, Motov S, Nelson LS. Hydromorphone use for acute pain: Misconceptions, controversies, and risks. J Opioid Manag. 2018 Jan/Feb;14(1):61-71 (abstract only) Nagel FW, Kattan JA, Mantha S, Nelson LS, Kunins HV, Paone D. Promoting Health Department Opioid-Prescribing Guidelines for New York City Emergency Departments: A Qualitative Evaluation. J Public Health Manag Pract. 2017 Oct 27.
	Mark Rosenberg , DO, MBA	Chairman of Emergency Medicine; Medical Director for Population Health; Chief of Palliative Medicine, St. Joseph's Healthcare System, New Jersey. Board certified in both Emergency Medicine and Hospice/Palliative Medicine. Pioneered the Alternatives to Opioids Program (ALTO) at St. Joseph's.	Musey PI Jr1, Linnstaedt SD, Platts-Mills TF, Miner JR, Bortsov AV, Safdar B, Bijur P, Rosenau A, Tsze DS, Chang AK, Dorai S, Engel KG, Feldman JA, Fusaro AM, Lee DC, Rosenberg M, Keefe FJ, Peak DA, Nam CS, Patel RG, Fillingim RB, McLean SA. Gender differences in

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			acute and chronic pain in the emergency department: results of the 2014 Academic Emergency Medicine consensus conference pain section. Acad Emerg Med. 2014 Dec;21(12):1421-30
	M. Kit Delgado , MD	Assistant Professor of Emergency Medicine and Epidemiology, University of Pennsylvania. Leads the Behavioral Science & Analytics for Injury Reduction lab, researching behavioral economic interventions to promote opioid stewardship for acute and post-op pain. Leads research on prescribing defaults in EHRs at UPenn.	Delgado MK, Shofer FS, Patel MS, Halpern S, Edwards C, Meisel ZF, Perrone J. Association between Electronic Medical Record Implementation of Default Opioid Prescription Quantities and Prescribing Behavior in Two Emergency Departments . J Gen Intern Med. 2018 Apr;33(4):409411.
Surgery	Adil Haider , MD, MPH, FACS	Trauma/critical care surgeon, Brigham and Women's Hospital. Director of the Center for Surgery and Public Health, a joint initiative of BWH, Harvard Med School, and Harvard T.H. Chan School of Public Health. Broad research interests include longterm clinical and functional outcomes after trauma and emergency general surgery. Has authored >200 manuscripts.	Scully RE, Schoenfeld AJ, Jiang W, Lipsitz S, Chaudhary MA, Learn PA, Koehlmoos T, Haider AH, Nguyen LL. Defining Optimal Length of Opioid Pain Medication Prescription After Common Surgical Procedures . JAMA Surg. 2018 Jan 1;153(1):37-43. Chaudhary MA, Schoenfeld AJ, Harlow AF, Rankit A, Scully R, Chowdhury R, Sharma M, Nitzschke S, Koehlmoos T, Haider AH. Incidence and Predictors of Opioid Prescription at Discharge After Traumatic Injury . JAMA Surg. 2017 Oct 1;152(10):930-936.

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	Elizabeth Habermann , PhD	Robert D. and Patricia E. Kern Scientific Director for Surgical Outcomes and Associate Professor of Health Services Research at Mayo Clinic. Leads the Acute Opioid Prescribing Guidelines Subgroup of Mayo's Opioid Stewardship Program Oversight Group, which to date has developed and implemented opioid prescribing guidelines for orthopedic surgery in the Mayo Clinic system. Research focuses on the use of institutional and national secondary data to study outcomes of surgical care. Is also involved in broader opioid-related research in the Mayo Clinic system, including long-term prescribing.	Thiels CA, Anderson SS, Ubl DS, Hanson KT, Bergquist WJ, Gray RJ, Gazelka HM, Cima RR, Habermann EB. Wide Variation and Overprescription of Opioids After Elective Surgery . Ann Surg. 2017 Oct;266(4):564-573
	David Ring , MD, PhD	Orthopedic surgeon. Professor of Surgery and Associate Dean of Comprehensive Care, UT-Austin Dell Medical School. Longstanding interest in patient safety and pain management. PhD dissertation focused on psychosocial aspects of arm pain. Chair of the Patient Safety Committee of the American Academy of Orthopedic Surgery, which developed a pain relief toolkit for surgeons and patients. Clinical focus in hand/upper extremity orthopedic surgery. Current research interests in quality and patient safety, psychosocial/sociological influence on musculoskeletal illness, and opioid use after musculoskeletal trauma. Has authored >450 manuscripts.	Helmerhorst GTT, Zwiers R, Ring D, Kloen P. Pain Relief After Operative Treatment of an Extremity Fracture: A Noninferiority Randomized Controlled Trial . J Bone Joint Surg Am. 2017 Nov 15;99(22):1908-1915
	Richard J. Barth , MD	Surgical Oncologist. Section Chief, General Surgery, and Professor of Surgery, Dartmouth Geisel School of Medicine. Recent research shift focused on opioid prescribing following general surgical procedures.	Hill MV, Stucke RS, Billmeier SE, Kelly JL, Barth RJ Jr. Guideline for Discharge Opioid Prescriptions after Inpatient General Surgical Procedures . J Am Coll Surg. 2017 Nov 8. pii: S1072-7515(17)32055-0.
	Hassan Mir , MD, MBA	Orthopedic surgeon, focus on orthopedic trauma with interest in hip fractures. Director of Orthopedic Residency Program, University of South Florida. Research interests in clinical and health policy research and education, with recent shift to pain management and opioid use.	Morris BJ and Mir HR. The opioid epidemic: impact on orthopaedic surgery . J Am Acad Orthop Surg. 2015 Mar;23(5):267-71.

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	Jennifer Waljee , MD, MPH	Plastic surgeon with focus on hand surgery. Associate Professor, Section of Plastic and Reconstructive Surgery, University of Michigan School of Medicine. Research interests in patient-reported outcomes as quality measures and variations of care in reconstructive/hand surgery. Co-lead of the Michigan OPEN (Opioid Prescribing Engagement Network) opioid stewardship effort where she has spearheaded extensive research into post-op opioid prescribing for a wide variety of surgical procedures across multiple specialties (NOTE: another co-lead is already included on this list so Michigan OPEN's work will be represented).	Harbaugh CM, Lee JS, Hu HM, McCabe SE, Voepel-Lewis T, Englesbe MJ, Brummett CM, Waljee JF. Persistent Opioid Use Among Pediatric Patients After Surgery . Pediatrics. 2018 Jan;141(1).
	Michael Englesbe , MD	Transplant surgeon. Professor of Surgery, University of Michigan School of Medicine. Research interests in improving quality and efficiency of surgical care, particularly risk mitigation and opioid prescribing. Associate Director of the Michigan Surgical Quality Collaborative. Co-lead of the Michigan OPEN (Opioid Prescribing Engagement Network) opioid stewardship effort where he has spearheaded extensive research into post-op opioid prescribing for a wide variety of surgical procedures across multiple specialties (NOTE: another co-lead is already included on this list so Michigan OPEN's work will be represented).	Brummett CM, Waljee JF, Goesling J, Moser S, Lin P, Englesbe MJ, Bohnert ASB, Kheterpal S, Nallamothu BK. New Persistent Opioid Use After Minor and Major Surgical Procedures in US Adults . JAMA Surg. 2017 Jun 21;152(6):e170504

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Pain Medicine/ Anesthesiology	Chad Brummett , MD	Associate Professor of Anesthesiology, Director of Anesthesia Clinical Research, Director of the Division of Pain Research, University of Michigan. Research interest in predictors of chronic post-surgical pain and failure to derive benefit from interventions and surgeries done primarily for pain. Co-lead of the Michigan OPEN (Opioid Prescribing Engagement Network) opioid stewardship effort where he has spearheaded extensive research into post-op opioid prescribing for a wide variety of surgical procedures across multiple specialties. Prolific publisher in opioid prescribing for acute/post-operative indications.	As-Sanie S, Till SR, Mowers EL, Lim CS, Skinner BD, Fritsch L, Tsodikov A, Dalton VK, Clauw DJ, Brummett CM. Opioid Prescribing Patterns, Patient Use, and Postoperative Pain After Hysterectomy for Benign Indications . <i>Obstet Gynecol</i> . 2017 Dec;130(6):1261-1268. Harbaugh CM, Lee JS, Hu HM, McCabe SE, Voepel-Lewis T, Englesbe MJ, Brummett CM, Waljee JF. Persistent Opioid Use Among Pediatric Patients After Surgery . <i>Pediatrics</i> . 2018 Jan;141(1). pii: e20172439
	Mark Wallace , MD	Anesthesiologist and pain management specialist. Chair of the Division of Pain Medicine, Director of Center for Pain Medicine, UC-San Diego. Expert in multimodal pain management. UCSD's Center for Pain Medicine is focused on improving function in patients with lower back or other spine-related issues, joint/musculoskeletal pain, pain due to surgery, and pain due to metabolic problems like diabetes. Has authored >100 manuscripts and five textbooks on pain medicine. Board of Directors of the American Pain Society. Serves on scientific planning meetings for both national and international pain organizations.	Beal BR and Wallace MS. An Overview of Pharmacologic Management of Chronic Pain . <i>Med Clin North Am</i> . 2016 Jan;100(1):65-79

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	Edward Covington , MD	Psychiatrist and pain management specialist. Founder and Director of the Chronic Pain Rehabilitation Program, Cleveland Clinic. Leads inpatient pain consultation service for diagnosis and management of acute, chronic, and malignant pain. Lectures and publishes on psychology, physiology, and pharmacology of chronic pain.	Huffman KL, Rush TE, Fan Y, Sweis GW, Vij B, Covington EC, Scheman J, Mathews M. Sustained improvements in pain, mood, function and opioid use post interdisciplinary pain rehabilitation in patients weaned from high and low dose chronic opioid therapy . Pain. 2017 Jul;158(7):1380-1394.
	Gregory Terman , MD, PhD	Anesthesiologist. Director of the Acute Pain Service and Professor of Anesthesiology and Pain Medicine, University of Washington Medical Center. Past President of the American Pain Society.	Dworkin RH, Bruehl S, Fillingim RB, Loeser JD, Terman GW, Turk DC. Multidimensional Diagnostic Criteria for Chronic Pain: Introduction to the ACTION-American Pain Society Pain Taxonomy (AAPT). J Pain. 2016 Sep;17(9 Suppl):T1-9
Patient Representative	Joan Maxwell	Patient and family advisor for John Muir Health, Walnut Creek, CA, and patient-member of Patient & Family Centered Care Partners, Inc. Patient advocate for opioid stewardship and patient/family communication in medical settings based on personal experiences following a cancer diagnosis and multiple surgeries with complications leading to treatment with opioids, as well as a close family member with opioid use disorder.	
	Penney Cowan	Founder and CEO of the American Chronic Pain Association. Patient with chronic pain who established the ACPA to provide peer support and education in pain management skills to people with pain and their families as well as build awareness about chronic pain. Served as Consumer Representative for FDA/CDER Anesthetic and Analgesic Drug Products Advisory Committee in 2012.	

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Obstetrics and Gynecology/ Urology	Carolyn Swenson , MD	OB/GYN, specialist in female pelvic medicine and reconstructive surgery. Assistant Professor, University of Michigan School of Medicine. Scholar in the NICHD's Women's Reproductive Health Research Program and part of the Gynecology Health Services Research Group, which studies patient, surgeon, and hospital-level factors associated with complications following hysterectomy. Research interests in relationship between healthcare resources and patient outcomes, with recent focus in opioid prescribing after women's health procedures.	Schmidt P, Berger MB, Day L, Swenson CW. Home opioid use following cesarean delivery: How many opioid tablets should obstetricians prescribe? J Obstet Gynaecol Res. 2018 Apr;44(4):723729. Baruch AD, Morgan DM, Dalton VK, Swenson C. Opioid Prescribing Patterns by Obstetrics and Gynecology Residents in the United States. Subst Use Misuse. 2018 Jan 2;53(1):70-76.
	Brian T. Bateman , MD, MSc	Chief, Division of Obstetric Anesthesia, Department of Anesthesiology, Perioperative, and Pain Medicine, and Associate Professor of Anesthesia, Brigham and Women's Hospital. Researcher in the Division of Pharmacoepidemiology and Pharmacoeconomics in the Department of Medicine. Research interest in pharmacoepidemiology in pregnancy, particularly use of opioids during and after pregnancy, and medication safety in the perioperative period. Voting member of the FDA's Anesthetic and Analgesic Drug Products Advisory Committee. Board of Directors for the Society of Obstetric Anesthesia and Perinatology.	Bateman BT et al. Patterns of Opioid Prescription and Use After Cesarean Delivery. Obstet Gynecol. 2017 Jul;130(1):29-35.
	Mikio Nihira , MD, MPH	OB/GYN, specialist in urogynecology and reconstructive pelvic surgery. Clinical Professor of Obstetrics and Gynecology in the Division of Female Pelvic Medicine and Reconstructive Surgery, Vice Chairman in the Department of Women's Health, Program Director of the Obstetrics/Gynecology residency program, UCRiverside. Lectures on the Enhanced Recovery After Surgery (ERAS) care models in OB/GYN that can minimize opioid use via multimodal analgesia for women's health procedures.	Collins SA, Joshi G, Quiroz LH, Steinberg AC, Nihira MA. Pain Management Strategies for Urogynecologic Surgery: A Review. Female Pelvic Med Reconstr Surg. 2014 Nov-Dec;20(6):310-5.

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Bioethics	Travis Rieder , PhD	Assistant Director for Education Initiatives; Director of the Master of Bioethics degree program; Research Scholar at the Berman Institute of Bioethics; Faculty Affiliate at the Center for Public Health Advocacy, all at Johns Hopkins University. Research interest in ethical and policy issues surrounding the American opioid epidemic. Published an essay in Health Affairs regarding physician responsibility for safely weaning patients off prescription opioids in the context of a personal experience with prescription opioids; also coauthored a National Academy of Medicine Perspective Paper on physician responsibility in the opioid epidemic.	Rieder TN. In Opioid Withdrawal, With No Help in Sight . Health Affairs (Millwood). 2017 Jan 1;36(1):182-185
Oncology and Palliative Medicine	Victor Chang , MD	Hematologist/oncologist, with additional fellowship training in pain management at Memorial Sloan Kettering Cancer Center. Professor of Medicine, Rutgers/New Jersey Medical School. Clinical interest in medical education and care of cancer patients with emphasis on cancer pain and palliative care. Research interests in symptom control and palliative medicine in cancer patients.	Fisch MJ, Lee JW, Weiss M, Wagner LI, Chang VT, Cella D, Manola JB, Minasian LM, McCaskill-Stevens W, Mendoza TR, Cleeland CS. Prospective, observational study of pain and analgesic prescribing in medical oncology outpatients with breast, colorectal, lung, or prostate cancer . J Clin Oncol. 2012 Jun 1;30(16):1980-8. Fisch MJ and Chang VT. Striving for Safe, Effective, Affordable Care for Cancer Survivors With Chronic Pain: Another Kind of Moonshot . JAMA Oncol. 2016 Jul 1;2(7):862-4.

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	<p>Carolyn Lefkowitz, MD, MPH</p>	<p>OB/GYN, specialist in Gynecologic Oncology and Palliative Medicine. Assistant Professor, OB/GYN-Gynecologic Oncology, University of Colorado School of Medicine. Board certified in Palliative Care. Clinical interests in incorporating palliative care concurrently into cancer management, specifically the intersection of palliative care and gynecologic oncology. Research interest in opioid prescribing for gynecologic oncology patients.</p>	<p>Lefkowitz C et al. Opioid use in gynecologic oncology in the age of the opioid epidemic: Part I – Effective opioid use across clinical settings, a society of gynecology oncology evidence-based review. Gynecol Oncol. 2018 May;149(2):394-400.</p> <p>Lefkowitz C et al. Opioid Use in Gynecologic Oncology: Balancing Efficacy, Accessibility, and Safety: An SGO Clinical Practice Statement. Gynecol Oncol. 2017 Feb;141(2):232-234.</p>
	<p>Judith Paice, PhD, RN</p>	<p>Research Professor of Medicine and Director of the Cancer Pain Program in the Division of Hematology-Oncology, Northwestern University Feinberg School of Medicine. Also serves on the Hospice/Palliative Nurses Association. Past President of the American Pain Society; has also served as the Secretary of the International Association for the Study of Pain. Clinical and research focus on the relief of pain associated with cancer and HIV. Has authored >150 manuscripts.</p>	<p>Paice JA. Cancer pain management and the opioid crisis in America: how to preserve hard-earned gains in improving the quality of cancer pain management. Cancer. 2018 Mar 2.</p> <p>Paice JA. Cancer Pain Management: Strategies for Safe and Effective Opioid Prescribing. J Natl Compr Canc Netw. 2016 May;14(5 Suppl):695-7.</p> <p>Coyne P, Mulvenon C, Paice JA. American Society for Pain Management Nursing and Hospice and Palliative Nurses Association Position Statement: Pain Management at the End of Life. Pain Manag Nurs. 2018</p>

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			Feb;19(1):3-7
Hematology	Alexis Thompson , MD, MPH	Pediatric hematologist. Professor of Pediatrics, Northwestern University Feinberg School of Medicine, and Chief, Section of Hematology-Oncology Transplantation, and A. Watson and Sarah Armour Endowed Chair for Childhood Cancer and Blood Disorders, Ann and Robert H. Lurie Children's Hospital of Chicago. Current President, American Society for Hematology (ASH). Member of ASH Sickle Cell Task Force. Has served on the HHS Advisory Committee on Heritable Disorders in Newborns and Children. Clinical interest in treating sickle cell disease. Major research interests include sickle cell disease, among other topics.	Badawy SM, Thompson AA, Lai JS, Penedo FJ, Rychlik K, Liem RI. Adherence to hydroxyurea, healthrelated quality of life domains, and patients' perceptions of sickle cell disease and hydroxyurea: a crosssectional study in adolescents and young adults . Health Qual Life Outcomes. 2017 Jul 5;15(1):136
	Wally Smith , MD	Internist. Professor of Medicine, Director of the VCU Adult Sickle Cell Program, and Scientific Director of the VCU Center on Health Disparities, Department of Internal Medicine, Virginia Commonwealth University School of Medicine. Principal investigator on NHLBI/NIH grant studying barriers to health care among adults with sickle cell disease. Clinical interest in the care of adults with sickle cell disease. Prolific publisher on multiple aspects of sickle disease management including quality of care and pain management.	Evensen CT, Treadwell MJ, Keller S, Levine R, Hassell KL, Werner EM, Smith WR. Quality of care in sickle cell disease: Cross-sectional study and development of a measure for adults reporting on ambulatory and emergency department care . Medicine (Baltimore). 2016 Aug;95(35):e4528.
	Amanda Brandow , DO	Pediatric hematologist/oncologist. Associate Professor and Associate Fellowship Program Director, Division of Hematology and Oncology, Department of Pediatrics, Medical College of Wisconsin. Research interest in pain management of sickle cell disease. Multiple grants studying various aspects of sickle cell disease pain. Recommended by the American Society of Hematology.	Brandow AM et al. Sickle cell disease: a natural model of acute and chronic pain . Pain. 2017 Apr;158 Suppl 1:S79-S84.

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	Joshua Field , MD, MS	Associate Professor of Medicine, Section Chief of Benign Hematology, Medical Director of the Adult Sickle Cell Clinic, Medical College of Wisconsin. Clinical interest in sickle cell disease in adults. Research interests in multiple aspects of sickle cell disease in adults including pain management.	Mager A, Pelot K, Koch K, Miller L, Hubler C, Ndifor A, Coan C, Leonard C, Field JJ. Opioid management strategy decreases admissions in high-utilizing adults with sickle cell disease. J Opioid Manag. 2017 May/Jun;13(3):143156. (abstract only)
Physical Medicine and Rehabilitation	Jim Robinson , MD	Physiatrist. Clinical Professor of Rehabilitation Medicine, University of Washington. Clinical interest in the evaluation and conservative treatment of spine conditions and the treatment of fibromyalgia. Research interests include rehabilitative treatment of fibromyalgia and in decision-making around opioid therapy. Faculty for CDC opioid COCA webinars.	Robinson JP et al. Attitudes and Beliefs of Working and WorkDisabled People with Chronic Pain Prescribed Long-Term Opioids. Pain Med. 2015 Jul;16(7):1311-24
	Steven Stanos , DO	Physiatrist. Medical Director of Pain Services and Medical Director of Occupational Medicine Services, Swedish Health System (Seattle). Immediate Past President, American Academy of Pain Medicine.	Stanos SP et al. Rethinking chronic pain in a primary care setting. Postgrad Med. 2016 Jun;128(5):502-15
	Raj Mitra , MD	Physiatrist. Professor, Chair, and Clinical Services Chief, Department of Rehabilitation Medicine, University of Kansas Medical Center. Additional fellowship training in pain medicine. Clinical interest in back, neck, shoulder, and hip pain.	Kao JMC, Minh LC, Huang GY, Mitra R, Smuck M. Trends in ambulatory physician opioid prescription in the United States, 1997-2009. PMR. 2014 Jul;6(7):575-82. Mitra R. The utilization of opiates in pain management: use or abuse. Eur K Phys Rehabil Med. 2013 Feb;49(1):93-6.

Specialty	Proposed Experts	Brief bio (online bio, where available, is hyperlinked to expert's name)	Recent relevant publication(s)
Neurology (Focus on migraines)	Deborah Tepper , MD, MS	Internist by training but neurology faculty at Dartmouth. Migraine expert. Senior author on American Academy of Neurology migraine guidelines. Has authored a series of clinical management guidance documents as part of a "headache toolkit" for the American Headache Society.	Orr SL, Friedman BW, Christie S, Minen MT, Bamford C, Kelley NE, Tepper D. Management of Adults With Acute Migraine in the Emergency Department: The American Headache Society Evidence Assessment of Parenteral Pharmacotherapies . Headache. 2016 Jun;56(6):911-40
	David Dodick , MD	Neurologist certified in headache medicine. Professor of Neurology, Mayo Clinic in Arizona. Research interest in testing of novel compounds for acute and preventive treatment of migraine and cluster headache. Co-chair, National Institute of Neurological Disorders and Stroke (NINDS) Headache V2 Common Data Elements Working Group.	Dodick DW. Migraine . Lancet. 2018 Mar 31;391(10127):1315-1330.
	Benjamin Friedman , MD	Emergency medicine. Professor, Department of Emergency Medicine, Albert Einstein College of Medicine. Research focus on management of migraines and low back pain in the acute care setting.	Friedman BW et al. Randomized study of IV prochlorperazine plus diphenhydramine vs IV hydromorphone for migraine. Neurology. 2017 Nov 14;89(20):2075-2082.
Internal Medicine/Infectious Disease/Addiction Medicine	Phillip Coffin , MD, MIA Current NCIPC BSC member (Term 1/31/2017-8/31/2020)	Director of Substance Use Research, San Francisco Department of Public Health. Research interests include development of pharmacotherapies for substance use disorders; drug overdose, with an emphasis on opioid safety and the provision of naloxone; mathematical modeling of substance use and infectious diseases; and clinical care for HIV, viral hepatitis, and general infectious diseases.	Turner C, Chandrakumar D, Rowe C, Santos GM, Riley ED, Coffin PO. Cross-sectional cause of death comparisons for stimulant and opioid mortality in San Francisco, 2005-2015 . Drug Alcohol Depend. 2018 Apr 1;185:305-312.

RECOMMENDED BSC MEMBER REPRESENTATION

Specialty	Proposed Experts	Brief bio (online bio, where available, is hyperlinked to expert's name)	Recent relevant publication(s)
Family Medicine	Christina A. Porucznik , PhD, MSPH Current NCIPC BSC Co-Chair (Term 1/27/17-8/31/18)	Associate Professor, Department of Family and Preventive Medicine, and Associate Division Chief for Education, Division of Public Health, University of Utah. Research interest in prescription medications, especially opioids, and the impact of policy changes on drug dispensing the adverse events.	Porucznik CA et al. Specialty of prescribers associated with prescription opioid fatalities in Utah, 2002-2010 . Pain Med. 2014 Jan;15(1):73-8

FEDERAL CONSULTANTS

Specialty	Proposed Experts	Brief bio (online bio, where available, is hyperlinked to expert's name)	Recent relevant publication(s)
Internal Medicine/Family Medicine/General Practice	Erin Krebs , MD, MPH	Internist. Core Investigator, Center for Chronic Disease Outcomes Research, and Women's Health Medical Director, Minneapolis VA Health Care System; Professor of Medicine, Dept of Medicine, University of Minnesota. Research interest in benefits and harms of opioid analgesics, primary care management of long-term opioid therapy, and patient-centered approaches to pain care. Has advised on other CDC opioid-related projects. Member of Core Expert Group for the <i>CDC Guideline for Prescribing Opioids for Chronic Pain</i> .	Krebs EE et al. Effect of Opioid vs Nonopioid Medications on PainRelated Function in Patients With Chronic Back Pain or Hip or Knee Osteoarthritis Pain: The SPACE Randomized Clinical Trial . JAMA. 2018 Mar 6;319(9):872-882.
	Mallika Mundkur, MD, MPH (FDA representative)	Internist. Office of Surveillance & Epidemiology, CDER/FDA. Leads FDA's work in examining opioid prescribing for acute pain.	Mundkur M et al. Patterns of opioid initiation at first visits for pain in United States primary care settings . Pharmacoepidemiol Drug Saf. 2017 Oct 2. (Note that this is not an FDA publication)

Specialty	Proposed Experts	Brief bio (online bio, where available, is hyperlinked to expert's name)	Recent relevant publication(s)
Oncology and Palliative Medicine	Victor Chang , MD	Hematologist/oncologist, with additional fellowship training in pain management at Memorial Sloan Kettering Cancer Center. Professor of Medicine, Rutgers/New Jersey Medical School. Clinical interest in medical education and care of cancer patients with emphasis on cancer pain and palliative care. Research interests in symptom control and palliative medicine in cancer patients.	Fisch MJ, Lee JW, Weiss M, Wagner LI, Chang VT, Cella D, Manola JB, Minasian LM, McCaskill-Stevens W, Mendoza TR, Cleeland CS. Prospective, observational study of pain and analgesic prescribing in medical oncology outpatients with breast, colorectal, lung, or prostate cancer . J Clin Oncol. 2012 Jun 1;30(16):1980-8. Fisch MJ and Chang VT. Striving for Safe, Effective, Affordable Care for Cancer Survivors With Chronic Pain: Another Kind of Moonshot . JAMA Oncol. 2016 Jul 1;2(7):862-4.