AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

S. HRG. 115–787

THE OPIOID CRISIS: IMPACT ON CHILDREN AND FAMILIES

HEARING

OF THE

COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS

UNITED STATES SENATE

ONE HUNDRED FIFTEENTH CONGRESS

SECOND SESSION

ON

EXAMINING THE OPIOID CRISIS, FOCUSING ON THE IMPACT ON CHILDREN AND FAMILIES

FEBRUARY 8, 2018

Printed for the use of the Committee on Health, Education, Labor, and Pensions

Available via the World Wide Web: *http://www.govinfo.gov*

U.S. GOVERNMENT PUBLISHING OFFICE

28–659 PDF WASHINGTON : 2020

COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS

LAMAR ALEXANDER, Tennessee, *Chairman*

MICHAEL B. ENZI, Wyoming
RICHARD BURR, North Carolina
JOHNNY ISAKSON, Georgia
RAND PAUL, Kentucky
SUSAN M. COLLINS, Maine
BILL CASSIDY, M.D., Louisiana
TODD YOUNG, Indiana
ORRIN G. HATCH, Utah
PAT ROBERTS, Kansas
LISA MURKOWSKI, Alaska
TIM SCOTT, South Carolina

PATTY MURRAY, Washington
BERNARD SANDERS (I), Vermont
ROBERT P. CASEY, JR., Pennsylvania
MICHAEL F. BENNET, Colorado
TAMMY BALDWIN, Wisconsin
CHRISTOPHER S. MURPHY, Connecticut
ELIZABETH WARREN, Massachusetts
TIM KAINE, Virginia
MAGGIE HASSAN, New Hampshire
TINA SMITH, Minnesota
DOUG JONES, Alabama

DAVID P. CLEARY, *Republican Staff Director*
LINDSEY WARD SEIDMAN, *Republican Deputy Staff Director*
EVAN SCHATZ, *Democratic Staff Director*
JOHN RIGHTER, *Democratic Deputy Staff Director*

C O N T E N T S

STATEMENTS

THURSDAY, FEBRUARY 8, 2018

Page

COMMITTEE MEMBERS

Alexander, Hon. Lamar, Chairman, Committee on Health, Education, Labor, and Pensions, Opening statement 1
Murray, Hon. Patty, Ranking Member, a U.S. Senator from the State of Washington, Opening statement 3

WITNESSES

Savage, Becky, R.N., M.S.N., Co-Founder, 525 Foundation, Granger, IN 7
Prepared statement 9
Summary statement 10
Patrick, Stephen W., M.D., M.P.H., M.S., F.A.A.P., Assistant Professor of Pediatrics and Health Policy, Division of Neonatology, Vanderbilt University Medical Center, Nashville, TN 10
Prepared statement 12
Summary statement 45
Bell, William C., Ph.D., President and CEO, Casey Family Programs, Seattle, WA 45
Prepared statement 47
Summary statement 53

ADDITIONAL MATERIAL

Alexander, Hon. Lamar:
Prepared statement of Hon. Mitch McConnell to be submitted for the Record 73
Murray, Hon. Patty:
The American College of Obstetricians and Gynecologists, Statement for the Record 74
Port Gamble S'Kallam Tribe, Statement for the Record 78
Port Gamble S'Kallam Tribe, "THOR=Tribal Healing Opioid Response" 81
Port Gamble S'Kallam Tribe, "T.H.O.R. Responds to PGST Opioid Crisis", newspaper article 83

THE OPIOID CRISIS: IMPACT ON CHILDREN AND FAMILIES

Thursday, February 8, 2018

U.S. SENATE,
COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS
Washington, DC.

The Committee met, pursuant to notice, at 10:10 a.m., in room SD–430, Dirksen Senate Office Building, Hon. Lamar Alexander, Chairman of the Committee, presiding.

Present: Senators Alexander [presiding], Murkowski, Scott, Collins, Young, Murray, Hassan, Casey, Kaine, Bennet, Baldwin, Murphy, Warren, Jones, and Smith.

OPENING STATEMENT OF SENATOR ALEXANDER

The CHAIRMAN. The Senate Committee on Health, Education, Labor, and Pensions will please come to order. This is the fourth in a series of hearings in this Congress on the opioid crisis. Today, we are looking at its effect on children and infants.

We have a vote, I believe, at 11:30 today, which should, I believe, give us time to have a good full discussion with our witnesses.

Before we turn to today's focus, I wanted to say that later today, Senator Murray and I and Senators Young and Hassan will introduce legislation to help address the opioid crisis. Dr. Collins, head of the National Institutes of Health, has predicted that the development of a new, non-addictive painkiller could be achieved within 5 years with consistent funding and more flexible authority to conduct the necessary research.

Our bill would give NIH more flexibility to conduct research to address the opioid crisis. This Committee plans to hold a markup on this bill, as well as other legislation to address the opioid crisis, as soon as March.

Senator Murray and I will each have an opening statement, and then we will introduce the witnesses. After their testimony, we'll each have a round of 5-minute questions from the Senators.

The opioid crisis is particularly heartbreaking for families and children. No one understands that more than Jessie, an East Tennessee woman who lost a baby during the nearly two decades she struggled with an addiction to opioids and other substances. When Jessie entered recovery in September 2012 she had no driver's license and no formal education, but she did have a calling to help those still battling addiction.

Today, she is working to complete a degree in Human Services before beginning on a Master's, but most important, Jessie is a powerful resource for pregnant women in East Tennessee who are addicted to opioids. She is a peer advocate at 180 Health Partners, a Nashville startup that helps coordinate comprehensive care for expecting mothers who are struggling with opioid use. In her role as a peer advocate, Jessie provides support and encouragement to women going through the same battles Jessie fought during her recovery.

Babies born to mothers using opioids are at risk for Neonatal Abstinence Syndrome, or NAS, and may go through withdrawal symptoms and face other health issues. 180 Health Partners works with Medicaid managed care organizations to help expectant mothers begin treatment and stay in treatment after their baby is born. It has only been around for about a year, but they have seen dramatic results.

Babies born to mothers working with 180 Health Partners stay in the intensive care unit for half the time of other babies born with NAS. The average cost to treat a baby born with NAS is $66,000. The cost is a lot less for babies born to mothers in the program.

180 Health Partners has also been successful working with the state to help mothers in the program keep their babies. Jessie says, quote, "We want these moms to just understand that they are pregnant and you should just stop it. Our disease does not turn off because we get pregnant. Today, it is about continuing to change my life, and through helping other addicts. That's the only way that I can breathe. This is my entire existence. I have had numerous mothers tell me, 'My only support is 180 Health Partners.'"

The work that is being done by that organization is just one example of how states, communities, and local organizations are dealing with what the Tennessee Department of Health has described as a sharp increase in the number of babies born in opioid withdrawal. According to the Centers for Disease Control and Prevention, the number of infants born in withdrawal from opioids has tripled from 1999 to 2013. According to one of our witnesses, Dr. Patrick from Vanderbilt, Tennessee has a rate of babies born in drug withdrawal that is about three times the national average.

Another example of communities responding to this crisis is Niswonger Children's Hospital in Johnson City, Tennessee, which treats about 350 infants a year who are born with NAS. The hospital has developed programs to help families care for their babies born with Neonatal Abstinence Syndrome and to bring services that offer addiction treatment to a mother addicted to opioids while they are still in the hospital after having their baby.

The opioid crisis affects more than just infants. Many grandparents and relatives have taken on the role of caregiver. In Tennessee, between 2010 and 2014, there was a 51 percent increase in the number of parents who lost parental rights because of an opioid addiction.

This is a problem seen nationwide. After steadily declining since 2000, there has been a 10 percent increase in the number of children in foster care in the last 3 years. In some places, the numbers have even tripled in the same time period. That's a lot of numbers,

but they represent real children and real families whose lives are being affected.

It is important for this Committee to hear how states are helping to ensure that newborns and children impacted by drug abuse are being cared for, and if they need changes to Federal law to improve that care. I believe the focus should be on keeping families stronger.

States and local communities, those on the frontlines, are taking steps to help children and families affected by opioid abuse. Tennessee Governor Bill Haslam announced last month a new comprehensive proposal to respond to the opioid crisis. Included in the plan is a targeted outreach program to educate young women addicted to opioids on the risk of Neonatal Abstinence Syndrome. And TennCare, our Medicaid program, actually saw such a sharp increase in babies born with NAS that Tennessee became the first state to create a statewide data base to track how many infants were born with NAS each year.

Congress has taken a number of steps. In 2015, the Protecting Our Infants Act, sponsored by Senators McConnell and Casey, helped ensure that Federal programs are more effective in helping expectant mothers struggling with opioid abuse. In 2016, the Comprehensive Addiction and Recovery Act—we call it CARA—which included input from many Members of this Committee, helped states. Included in CARA were updates to the Child Abuse Prevention and Treatment Act, which require states to have plans of safe care for babies and children impacted by drug abuse of both legal and illegal drugs.

Congress passed the Child Abuse Prevention and Treatment Act in 1974 to combat child abuse and neglect and to provide funding for states to improve their child protection and child welfare services. Due to updates, the law now requires states to address the needs of both the infant as well as the affected family member and requires states to collect new information. Congress also passed the 21st Century Cures Act, which this Committee worked on hard, in 2016, which included $1 billion in grants for states to fight the opioid crisis.

What we hope to learn today is: Are these laws helping? Are they helping states and communities address the problems faced by children and families in the opioid crisis? Are there any Federal barriers that states and communities face? We want to ensure states are able to coordinate all services a parent addicted to opioids and the children who are impacted may need, including mental health treatment and substance abuse disorder treatment and family supports.

Senator Murray.

OPENING STATEMENT OF SENATOR MURRAY

Senator MURRAY. Thank you very much, Mr. Chairman. I am really grateful that this Committee is having the opportunity to focus on the impact the opioid epidemic is having on individuals, families, communities, and what we can do to help them. I'm also really grateful to all of our witnesses today for bravely sharing their stories and lending your expertise. It's vitally important.

As we have seen again and again, this epidemic doesn't just impact one person. It has a ripple effect that impacts entire families and entire communities. If we are going to beat this public health crisis, we need to make sure we are providing resources to everyone who is touched by it. We need to make sure we are healing all the damage it does.

We need to be listening to the full stories, all of them, the stories told by hospital staff, like those I recently visited in Longview, Washington, who told me that half, half, of the babies they delivered were born to mothers battling opioid addiction; the stories told by the sharp increase nationally in babies born with Neonatal Abstinence Syndrome, who are born seizing, shivering, and struggling with other symptoms of withdrawal. We need to be listening to the stories of the 90,000 children removed from homes deemed unsafe due to a parent's challenges with drug use and the stories of the children struggling with the impacts of trauma in schools which lack the resources they need to meet their unique needs.

But the story isn't just told by children. It's told by parents, parents who have watched as the children they would do anything for struggle with a disease they feel helpless to do anything against; parents who don't know where to turn for help, even if they can afford it, who feel disheartened by a child's relapse, who feel silenced by the stigma; and the story is told by grandparents and relatives who must step up as guardians and caregivers.

When we fight this disease, we need to fight it on all of these fronts and for all of these people. We have to do more than stem the tide of the opioid epidemic. We must also acknowledge and address the damage it does.

My constituent Alise's story shows why this is so important.

When she became pregnant with her daughter, she was struggling with addiction. She was in and out of jail during her pregnancy, and by the time her daughter was born, 2 months early and with a small amount of meth in her system, Alise was facing a 7-year prison sentence. Her daughter was immediately placed in foster care.

But that's not the end of Alise's story. She received treatment in prison. She fought against her addiction, and she fought for her family, her daughter, and their future, and she won that fight. She beat her addiction and regained custody of her daughter. She decided to help others going through the same thing.

Today, she works with Parents for Parents, a program that pairs parent mentors with families battling to stay safely together. It takes a holistic and evidence-based approach to the challenge of healing families. Results have shown that the program makes it more likely that families stay together and less likely that mothers and fathers lose their parental rights. There are many approaches like Parents for Parents that serve these broader needs and deserve our full support.

Congress has to continue its bipartisan work to combat this crisis by addressing both the root causes and the ripple effects of the opioid epidemic. That means we have to address childhood trauma. We have to train teachers to understand how it can affect children and how to avoid knee-jerk discipline that does more harm than good. We have to make sure young people understand the grave

risks of misusing opioids and that they are equipped to avoid making decisions that could take their lives in just one night.

We have to support parents who need information amid the uncertainty of how to help a struggling family member, support amid the fear of stigma in discussing the disease, and reassurance amid the common trials of relapse. We need to address the needs of pregnant women, postpartum women, and their infants with substance use treatment that allows them to safely stay together.

We must reorient our child welfare system toward prevention services for families. Programs like Head Start offer a two-generation approach so that children and families get the support they need to heal, grow, and succeed together. Research has shown that children brought to the attention of child protective services who are enrolled in Head Start programs are 94 percent less likely to be in foster care a year later.

We need to confront the challenges of everyone this crisis affects, and we need to do it in partnership with everyone who can help effect change. That means working closely with stakeholders ranging from Federal, state, and local governments, to health care providers, to educators, to public safety officials, and, most importantly, families.

Unfortunately, while President Trump has declared the opioid crisis a public health emergency, his promise to address it rings hollow today in light of the actions. At a time of public health emergency, President Trump's administration has been sabotaging our healthcare, making it harder for people to get Medicaid, which helps provide substance use disorder treatment, proposing dramatic cuts to drug control offices and programs that are designed to promote evidence-based treatments, and leaving key leadership positions empty.

The President may not be taking meaningful action, but I've been really heartened to see Congress continuing to work in a bipartisan way to solve this issue, like when we passed the 21st Century Cures Act to fund state efforts in prevention, treatment, and recovery; and when we passed the Comprehensive Addiction and Recovery Act which supports specific outreach for veterans and pregnant and postpartum women, expands access to medication-assisted treatments, and more. I am very encouraged that the recent bipartisan funding deal includes additional resources as well.

Of course, even as we act, we have to continue to listen to those stories like Alise's, which is why I'm incredibly grateful to hear from all of our witnesses today and why I am already planning to meet with more parents like Alise and more children like her daughter when I get back to Washington State later this month.

Finally, before we begin, I do want to submit a statement for the record from the American College of Obstetricians and Gynecologists on this topic as well.

Thank you.

[The following information can be found on page 74 in Additional Material:]

The CHAIRMAN. Thank you very much, Senator Murray, and thanks for your cooperation in planning the hearing, and your—it will be submitted.

We'd like to ask our witnesses to summarize their testimony in about 5 minutes. That will leave Senators time to have a conversation with you afterwards.

We'll ask Senator Young to introduce our first witness.

Senator YOUNG. Thank you, Chairman.

This morning, I am honored to introduce Becky Savage. She is a nurse and a mother from Indiana. She has turned unimaginable heartbreak into lifesaving action. She is joined today by her husband, Mike, and her son, Matthew. I welcome them as well.

Becky's passionate efforts to combat the opioid crisis began after a tragic event, losing her two oldest sons, Nick and Jack. She lost them on the same night to alcohol and prescription drug overdoses. Both boys graduated high school with honors, and both were captains of their high school hockey team.

Nick had already completed a year of college and was home for the summer. Jack was preparing for his first semester of college when their family changed forever.

As a father of four, my heart breaks for the Savage family. I had the opportunity to visit with Becky yesterday, and I just want to reiterate how much respect I have for you, Becky, and how much gratitude I have for your bravery and your willingness to share your story here today as you have in the past.

In a display of incredible strength and in the face of unimaginable pain, Becky has turned grief into hope. She formed the 525 Foundation to help raise awareness of the dangers of drug and alcohol abuse. Her organization strives to educate young people about the dangers of under-aged drinking and the misuse and abuse of prescription drugs. The 525 Foundation also collaborates with other local groups, law enforcement, and state agencies to make an impact on the opioid crisis.

Becky has been a tireless advocate and a source of comfort for parents who share in her grief. Her advocacy today, paired with legislative action, can help curb the opioid epidemic that's devastated too many Indiana families and communities, and I look forward to hearing Becky's testimony today.

Thank you.

The CHAIRMAN. Thank you, Senator Young.

Ms. Savage, welcome to you and to your husband, Mike, and to Matthew. We appreciate your willingness to be here.

Dr. Stephen Patrick is Assistant Professor of Pediatrics and Health Policy at Vanderbilt University Medical Center. His research focuses on improving outcomes for opioid-exposed infants and women with substance abuse disorders and on state and Federal drug control policies. Dr. Patrick has served as an expert consultant for the Substance Abuse and Mental Health Services Administration. His research has been published in the New England Journal of Medicine and other leading scientific journals. He has received several prestigious awards for his work.

Dr. Patrick, we welcome you to the hearing today.

Senator Murray will introduce our third witness.

Senator MURRAY. Thank you.

I'm really honored to welcome and thank Dr. William Bell for joining us today from my home State of Washington. He is the President and Chief Executive Officer of the Casey Family Pro-

grams. It's a national organization headquartered in Seattle with a mission to provide and improve and ultimately prevent the need for foster care.

He previously served the organization as its Executive Vice President for Child and Family Services, and before joining Casey Family Programs, he was Commissioner of New York City's Administration for Children's Services. All together, Dr. Bell has 35 years of experience working to keep children safe and to keep families together.

Dr. Bell, thank you for your testimony, and thank you for making that long flight out here from Washington State.

The CHAIRMAN. Senator Murray knows about that long flight.

Senator MURRAY. I do.

The CHAIRMAN. Now, we'll begin with our witnesses.

Ms. Savage, why don't you go first.

STATEMENT OF BECKY SAVAGE, R.N., M.S.N., CO-FOUNDER, 525 FOUNDATION, GRANGER, IN

Ms. SAVAGE. Thank you, Senators, for inviting me to speak with you today and for allowing me to share our family's story of loss in the hopes of helping others.

I am a wife, a nurse, and a mother of four boys. Our family is just like a lot of other families, including yours. We like to spend time together, laugh together, and dream about the future. On June 14th of 2015, our lives changed forever. That is the day that our two older sons were pronounced dead of an accidental alcohol/opioid related overdose.

Our sons, Nick and Jack, were like many other 18 and 19 year olds. They were athletes, had a great circle of friends, and had dreams and aspirations in life. Nick had just finished his freshman year at Indiana University, and Jack had just graduated high school and was heading into his first year at Ball State University. They were best friends.

Nick and Jack had attended graduation parties the night before. They came home at curfew and checked in with me. I went to bed as they headed to the kitchen to make a snack. The next morning, I went into Jack's room and found him unresponsive. I did what I was trained to do and initiated CPR after I called 911. I was yelling. I yelled for Nick to come help me, but he never came. You see, Nick was sleeping in the basement with friends, and when I called for help, his friends heard me and tried to awaken him, but he had passed as well.

How could two boys who have always seemed to make good decisions in life make such a choice that would ultimately cost them their life? My husband and I don't understand. How could this happen? How did somebody's prescription end up in the pocket of a teenager at a graduation party? Why wouldn't they just say no? We may never know the answers to all these questions, but what we do know is that bringing awareness to this issue could save a life.

Our kids were talked to about drugs and underage drinking and knew that it was wrong. So why would they take a prescription that did not belong to them? Prescription drug misuse and abuse was not even on our radar two and a half years ago and, therefore, never discussed with our children.

In the spring of 2016, we were approached by a local coalition that was doing a Community Town Hall meeting that was being funded by SAMHSA. The topic was underage drinking. Since underage drinking contributed the poor choices our boys made that night, we decided to participate. This marked the first time that we spoke publicly about losing Nick and Jack, and it began a partnership with other community advocates and lawmakers who are also looking for answers to this epidemic.

Since that time, Nick and Jack's story has been told to over 20,000 students across the United States to help spread awareness of alcohol and prescription drug misuse and abuse. Every time I tell Nick and Jack's story, it takes my breath away. It still doesn't seem real. It would be so easy to be consumed by grief and never heard from again, or we could talk about what happened to us to increase awareness in the hope of helping others. This is what we have chosen to do. Nick and Jack may no longer be able to live their dreams, but by telling their story we can help others live to reach their dreams and their potential in life.

We have created the 525 Foundation in memory of Nick and Jack; 5 was Jack's hockey number and 25 was Nick's. This foundation has allowed us to reach thousands of high school students, parents, and educators. Their story makes an impact, and kids listen. You can hear a pin drop in many of the auditoriums that I speak in. If we can reach one person every time we tell their story, then we have made a difference.

Our goal for our foundation is to make a significant difference in our communities. We have partnered with our police, fire departments, and other local coalitions to hold pill drops to get opioids and other prescription drugs off our streets. At our last community pill drop, we collected over 500 pounds of unused or expired prescription medications. When you think that just one pill could take a life, that's a lot of lives saved. There is a need for safe disposal of medications.

We have joined drug and alcohol abuse task forces in Indiana in collaboration with doctors, community leaders, and police personnel. We've partnered with our local health departments to help expand educational programs. We are working with Indiana University's Grand Challenge to establish long-term plans to combat opioid misuse and abuse in our state. Our goal for our future is to expand educational curriculum to include prevention at all age levels.

There is a need for increased awareness and education related to opioids. Every week, when I talk to a new group of teenagers about our family and the dangers of prescription drug misuse and abuse, it is evident that there is a knowledge gap. There are still people in this country that are unaware of the dangers like we were two and a half years ago.

Time is of the essence when you look at the statistics. According to the Centers for Disease Control, 115 people die every day of an opioid overdose. That means that today, 115 families are going to suffer a loss like we did. Who will it be today? This story will repeat itself 115 times a day, and families will continue to be destroyed until we move forward as a nation on all levels, community, state, and Federal, to address this crisis.

The reason I am in front of you is to impress upon you and everyone listening that this epidemic is real and it can happen to anyone. Thank you for your time and, once again, for the opportunity to speak with you.

[The prepared statement of Ms. Savage follows:]

PREPARED STATEMENT OF BECKY SAVAGE

Thank you Senators, for inviting me to speak with you today and for allowing me to share our family's story of loss in the hopes of helping others. I am a wife, a nurse and a mother of four boys. Our family is just like a lot of other families including yours, we like to spend time together, laugh together and dream about the future. On June 14, 2015 our family changed forever, that is the day that our two older sons were pronounced dead of an accidental alcohol/opioid overdose. Our sons Nick and Jack were like many other 18 and 19 year olds. They were athletes, had a great circle of friends, and had dreams and aspirations in life. Nick had just finished is freshman year at Indiana University and Jack had just graduated high school and was heading into his first year at Ball State University. They were best friends.

Nick and Jack had attended graduation parties the night before, came home (at curfew) and checked in with me. I went to bed as they headed to the kitchen to make a snack. The next morning, I went to Jack's room and found him unresponsive. I did what I was trained to do and initiated CPR after I called 911. I yelled for Nick to come help me but he never came. You see, Nick was sleeping in the basement with friends and when I called for help his friends heard me and tried to awaken him but he had passed away as well.

How could two boys who have always seemed to make good decisions in life make a choice that would ultimately cost them their life? My husband and I don't understand. How could this happen? How did someone's prescription end up in the pocket of a teenager at a graduation party? Why wouldn't they just say no? We may never know the answers to all these questions, but what we do know is that bringing awareness to this issue could save a life. Our kids were talked to about drugs and underage drinking and knew that it was wrong. So why would they take a prescription that did not belong to them? Prescription drug misuse and abuse was not even on our radar 2 and a half years ago, and therefore never discussed with our children.

In the Spring of 2016 we were approached by a local coalition that was doing a Community Town Hall meeting that was being funded by SAMHSA. The topic was underage drinking. Since underage drinking contributed the poor decisions of Nick and Jack that fatal night, we agreed to participate. This marked the first time we spoke in public about losing Nick and Jack, but it began a partnership with other community advocates and lawmakers who are also looking for answers to this epidemic. Since that time, Nick and Jack's story has been told to over 20,000 students across the United States to help spread awareness of alcohol and prescription drug misuse and abuse.

Every time I tell Nick and Jack's story it takes my breath away. It still does not seem real. It would be so easy to be consumed by grief and never heard from again. OR , we could talk about what happened to us and increase awareness in hopes of helping others. This is what we have chosen to do. Nick and Jack may no longer be able to live their dreams, but by telling their story we can help others live to reach their dreams and potential in life. We created the 525 Foundation in memory of Nick and Jack (5 was Jack's hockey number and 25 was Nicks). This foundation has allowed us to reach thousands of high school students, parents and educators. Their story makes an impact, kids listen. You can hear an a pin drop in many of the auditoriums that I speak in. If we can reach one-person every time we tell their story, then we have made a difference. The goal of our foundation is to make a significant difference in our communities. We have partnered with our police, fire departments and other local coalitions to hold pill drops to get opioids and other prescription drugs off our streets. At our last community pill drop, we collected over 500 pounds of unused or expired prescription medications. When you think that just one pill could take a life, that's a lot of lives saved. There is a need for safe disposal of medications.

We have joined drug and alcohol abuse task forces in Indiana in collaboration with doctors, community leaders and police personnel; we partnered with our local health department to expand educational programs; we are working with Indiana University's Grand Challenge to establish long term plans to combat opioid misuse

and abuse in our state. One goal for our future is to expand educational curriculum to include prevention at all age levels.

There is a need for increased awareness and education related to opioids. Every week, when I talk to a new group of teenagers about our family and the dangers of prescription drug misuse and abuse, it is evident that there is a knowledge gap. There are still people in this country that are unaware of the dangers like we were 2 and a half years ago.

Time is of the essence when you look at the statistics. According to the Center for Disease Control, 115 people die every day of an opioid overdose. That means today, 115 families are going to suffer a loss like we did. Who will it be today? This story will repeat itself 115 times a day, and families will continue to be destroyed until we move forward as a nation on all levels, community, state and Federal to address this crisis.

The reason I am in front of you is to impress upon you and everyone listening that this epidemic is real and it can happen to anyone.

Thank you for your time and once again the opportunity to speak with you.

[SUMMARY STATEMENT OF BECKY SAVAGE]

On June 14, 2015 our family changed forever, that is the day that our two older sons were pronounced dead of an accidental alcohol/opioid overdose. In memory of Nick and Jack we created the 525 Foundation (5 was Jack's hockey number and 25 was Nicks). This foundation has allowed us to reach thousands of high school students, parents and educators. Their story makes an impact, kids listen. If we can reach one-person every time we tell their story, then we have made a difference.

The goal of our foundation is to make a significant difference in our communities. We have partnered with our police, fire departments and other local coalitions to hold pill drops to get opioids and other prescription drugs off our streets. Our last community pill pick-up collected over 500 pounds of unused or expired prescription medications! When you think that just one pill could take a life, that's a lot of lives saved. There is a need for safe disposal of medications.

We have joined drug and alcohol abuse task forces in Indiana in collaboration with doctors, community leaders and police personnel; we partnered with our local health department to expand educational programs; we are working with Indiana University's Grand Challenge to establish long term plans to combat opioid misuse and abuse in our state. One goal for our future is to expand educational curriculum to include prevention to all age levels.

There is a need for increased awareness and education related to opioids. Every week when I talk to a new group of teenagers about our family and the dangers of prescription drug misuse and abuse it is evident that there is a knowledge gap. There are still people in this country that are unaware of the dangers like we were 2 and a half years ago.

Time is of the essence when you look at the statistics. 115 people died everyday of an opioid overdose, who will it be today? I can promise you it will be a loved one of someone, and families will be destroyed today and every day unless we move forward as a nation on all levels, Federal, state and community to address this crisis.

The CHAIRMAN. Thank you, Ms. Savage. Your story takes our breath away, and we're grateful for your courage.

Ms. SAVAGE. Thank you.

The CHAIRMAN. Dr. Patrick.

STATEMENT OF STEPHEN W. PATRICK, M.D., M.P.H., M.S., F.A.A.P., ASSISTANT PROFESSOR OF PEDIATRICS AND HEALTH POLICY, DIVISION OF NEONATOLOGY, VANDERBILT UNIVERSITY MEDICAL CENTER, NASHVILLE, TN

Dr. PATRICK. Chairman Alexander, Ranking Member Murray, and honorable Members of the Committee, thank you for the opportunity to speak here today about the impact the opioid epidemic is having on our Nation's families.

My name is Stephen Patrick. I'm a neonatologist at Vanderbilt Children's Hospital, and I direct a National Institutes of Health-funded research program focused on the effect that the opioid epidemic is having on pregnant women and infants. My written testimony contains a range of recommendations, but I'd like to highlight a few here today.

Recently, I was caring for a sick infant who had been transferred to our neonatal intensive care unit. The infant had trouble feeding, was jittery, and had rapid weight loss, more than 10 percent in just a few days. Something was clearly wrong.

The infant was exhibiting classic signs of Neonatal Abstinence Syndrome, a postnatal drug withdrawal syndrome that most commonly occurs after in utero opioids. But like many conditions, Neonatal Abstinence Syndrome can be difficult to diagnose in the newborn.

Over the next few days, the infant was increasingly irritable, had difficulty feeding, increased muscle tone and muscle jerking. We suspected opioid withdrawal, but his mother denied using any substances. After a week in the hospital, the umbilical cord drug screen came back positive for an opioid.

As I walked into the infant's room to talk to his mother, I could sense her guilt and anxiety. She cried as I talked to her about the drug test, and she wondered aloud if she would lose custody of her infant. She had been afraid of my response and the response from child welfare all along. Like too many women I see, she became dependent on an opioid after an accident. She wasn't able to get the treatment for opioid use disorder during pregnancy, and she was too scared or ashamed to ask for help. This combination is potentially disastrous.

The rapid rise of opioid use and its complications caught hospitals, communities, and Federal programs off guard. As opioid use became more common throughout the United States, rates of Neonatal Abstinence Syndrome grew exponentially. Our team's research found that from 2000 to 2014, the number of infants diagnosed with the syndrome grew nearly seven-fold. Put another way, nearly one infant is born every 15 minutes with the syndrome nationwide. This escalating public health problem needs urgent attention.

The 21st Century Cures Act, CARA, and the Protecting Our Infants Act moved forward important child health priorities addressing the opioid epidemic. These important pieces of legislation would benefit from additional action, funding, and implementation efforts. The Protecting Our Infants Act, for example, resulted in a comprehensive strategy document from SAMHSA. But as the document notes, full implementation is contingent upon funding.

Congress should consider additional actions to improve outcomes for pregnant women and infants impacted by the opioid epidemic focused on prevention, expansion of opioid use disorder treatment, improving care for opioid-exposed infants, and improving outcomes after discharge by bolstering both the child welfare and early intervention systems.

For pregnant women with opioid use disorder, accessing treatment is difficult, and, in fact, most women in the United States with opioid use disorder aren't receiving highly effective therapies

like buprenorphine and methadone, both of which reduce risk of death for the infant and for the mother and increase the likelihood that the infant will go to term. There remains urgent need for an expansion of treatment for opioid use disorder, particularly for pregnant women.

Throughout the United States, opioid-exposed infants experience variable treatment resulting in variable outcomes. State and national perinatal quality improvement groups and hospital teams like ours at Vanderbilt are working to decrease this variability, but this work could be accelerated. Because Medicaid is financially responsible for 80 percent of infants diagnosed with Neonatal Abstinence Syndrome, it should play a key role in standardizing care and breaking down discontinuities in care from pregnancy through the postnatal period.

Last, the already-taxed child welfare system is being stretched even more thinly by the opioid epidemic. In 2015, the number of children entering foster care grew to nearly 270,000. One-fifth of them are infants. Imagine if this scared mother I described earlier was proactively engaged in child welfare before birth, linked to treatment and closely monitored after her infant was born. How might her story be different?

Our child welfare system is in urgent need of attention from Congress. The passing of CARA added important requirements for states to develop infant plans of safe care that also address the needs of the family. This was a great step forward. Unfortunately, those requirements came without clear guidance and, more importantly, sufficient resources for implementation. There is an urgent need for additional guidance and resources from the Federal Government to ensure infant safety and to keep families intact when that's appropriate.

The opioid epidemic is taking a terrible toll on pregnant women and infants. Congress must act to address the urgent need for additional resources and coordination. For women and infants, like the one I cared for at Vanderbilt, the current system is disjointed, and it doesn't consider the needs of both the pregnant woman and the infant.

Every day, people are dying. Pregnant women are not getting the treatment they need, and infants are spending their first few weeks in withdrawal. In just the time we're sitting here, eight infants will be born with Neonatal Abstinence Syndrome, and 10 people will die from an opioid related overdose. These are our brothers and sisters and our children. They need our help now perhaps more than ever.

Mr. Chairman, thank you for the opportunity to speak today, and I look forward to your questions.

[The prepared statement of Dr. Patrick follows:]

PREPARED STATEMENT OF STEPHEN PATRICK

Chairman Alexander, Ranking Member Murray and Honorable Members of the Committee, thank you for the opportunity to speak here today about the impact of the opioid epidemic on our Nation's families. My name is Dr. Stephen Patrick, and I am a board-certified pediatrician and neonatologist at the Monroe Carell Jr. Children's Hospital at Vanderbilt. At Vanderbilt I direct a National Institutes of Health-funded research program focused on the effect that the opioid epidemic has had on pregnant women and infants. I have published extensively on this topic, including in JAMA, Pediatrics, The New England Journal of Medicine and Health Affairs. I

also serve on the American Academy of Pediatrics Committee on Substance Use and Prevention and have previously served as an advisor to the White House Office of National Drug Control Policy.

Recently, I was caring for a sick infant at Vanderbilt who had been transferred to our neonatal intensive care unit from the newborn nursery. The infant had trouble feeding, was jittery and had rapid weight loss—more than 10 percent of his body weight in a few days. Something was wrong.

The infant was exhibiting classic signs of neonatal abstinence syndrome, a postnatal drug withdrawal syndrome that most commonly occurs after in utero exposure to opioids, but like many conditions, neonatal abstinence syndrome can be difficult to diagnose in the newborn. Over the next few days, the infant was increasingly irritable, continued to have difficulty feeding, increased muscle tone and muscle jerking. We suspected opioid withdrawal, but his mother denied using any drugs. Despite this, we started treating the infant as we would any infant with the syndrome.

After a week in the hospital, the umbilical cord drug screen came back positive for an opioid. As I walked into the infant's room to talk to his mother I could sense her guilt and anxiety. She cried as I talked to her about the drug test, and wondered aloud if she would lose custody of her infant. She had been afraid of my response and the response from child welfare. Like too many women I see, she became dependent on an opioid after an accident, was not able to get treatment for her opioid use disorder while pregnant and was too scared and ashamed to ask for help. This combination was dangerous to her and her infant.

Had I known this mother was using an opioid, I could have started treating the baby earlier by controlling the environment, making adjustments to the baby's care to make the withdrawal less severe while teaching his mother how to recognize and mange his symptoms. Perhaps more optimally, his mother could have already had access to comprehensive treatment during her pregnancy.

As a practicing neonatologist, I have seen first-hand the destructive impact of opioids on families. Neonatologists like me are trained to care for very premature infants and infants with severe birth defects. However, a few years ago we began to see an influx of a different type of infant—those having withdrawal from opioids, known as neonatal abstinence syndrome. These infants can be inconsolable, have muscle tremors, have trouble feeding, difficulty sleeping and breathing problems. Infants experiencing severe neonatal abstinence syndrome require treatment with an opioid like morphine or methadone, and stay in the hospital an average of more than 3 weeks. [1]

Once rare, this diagnosis has become increasingly common. Our team's research has found that from 2000 to 2014, the number of infants diagnosed with neonatal abstinence syndrome grew nearly 7-fold.[31-3] Put another way, nearly one infant is born every 15 minutes with signs of drug withdrawal in the US.[3]

This rise in the incidence of neonatal abstinence syndrome happened in parallel with increases in opioid use nationally. In 2015, Americans were prescribed three times as many opioids as they were in 1999.[4] That year, more than 37 percent of American adults were prescribed at least one opioid pain reliever.[5] Research, including our own, has found similarly high rates of opioid prescribing in women of reproductive age[6] and pregnant women.[7] More recently, we have experienced a surge in use and complications due to heroin and fentanyl use. In 2016, more than 42,000 Americans died from an opioid overdose death[8] and some of them were pregnant or had recently been pregnant.

Implementation of Existing Legislation

I applaud the Committee and the Congress for the passage of the 21st 'Century Cures Act, the Comprehensive Addiction and Recovery Act and the Protecting Our Infants Act. Together, these pieces of legislation have moved forward important child health priorities for addressing the opioid epidemic. Even with the passage of these landmark pieces of legislation, there is an urgent need for additional legislative action and executive branch implementation of these laws. For example, there remains confusion at the state and provider level around some provisions of the Comprehensive Addiction and Recovery Act and, while SAMHSA has released its final report for the Protecting Our Infants Act, it is unclear how the recommendations contained in the report are being implemented.

---

[1] Results embargoed, but permission to cite given by editor. Paper will appear online in the journal *Pediatrics in March.*

Protecting Our Infants Act

The Protecting Our Infants Act was passed just after a Government Accountability Office (GAO) report highlighted large gaps in research and service delivery for mothers and infants impacted by opioid use.[9] The Act required that the Department of Health and Human Services (HHS) conduct a review of its planning and coordination of activities related to prenatal opioid use and neonatal abstinence syndrome. It also mandated that HHS study and develop recommendations for preventing prenatal opioid exposure, treating opioid use disorder among pregnant women, and preventing, identifying and treating neonatal abstinence syndrome and its consequences. Last, the Act required HHS develop a strategy to address gaps in research, Federal programs and coordination. Last year, SAMHSA released its final strategy focused on three domains: prevention, treatment and services. While these recommendations are important, it remains unclear how they will be implemented, funded and coordinated.

Comprehensive Addiction and Recovery Act & the Child Abuse Prevention and Treatment Act

The already-taxed child welfare system is being stretched even more thinly by the opioid epidemic. In 2015, the number of children entering foster care increased to nearly 270,000, up from 251,352 in 2012. In 2015, infants represented nearly one-fifth of all removals of children from their families to foster care, totaling 47,219. Parental substance use was a factor in the foster care placement in nearly one-third of all cases.[10]

Congress has a role in helping to improve collaboration among health care providers, the child welfare system and substance use disorder agencies in responding to the rise of substance use disorders among pregnant and parenting women and affected infants and those who experience neonatal abstinence syndrome. Your actions in 2016 to amend the Child Abuse Prevention and Treatment Act (CAPTA) in passing the Comprehensive Addiction and Recovery Act added important clarifications to the requirements for states to develop infant "plans of safe care" that also address the needs of the family or caregiver in instances when an infant is identified as affected by substance abuse, experiences withdrawal symptoms or fetal alcohol spectrum disorder. The goal of these plans is to engage child health and welfare professionals in collaborating to ensure the safety of these vulnerable infants upon discharge from the hospital.

Unfortunately, those requirements came without clear guidance or, importantly, sufficient resources for implementation. States need additional guidance, funds, and resources from the Federal Government to ensure infant safety and to keep families intact when appropriate. States and communities need assistance to develop their key definitions and need funding for services to address these families' needs. I have experienced first-hand how these changes in statute are being interpreted with great variability among doctors, hospitals and child protective services. I would encourage the Committee to continue to exercise robust oversight of the Federal agencies working with states on implementing and monitoring CAPTA, and to provide funding additional legislative clarity where needed.

In addition to the severe gap in funding the CAPTA-required plans of safe care, funds to ensure family centered treatment are currently lacking. Congress should act to ensure that funds allocated across Medicaid, CAPTA, Title IV of child welfare services, and the Substance Abuse Prevention and Treatment Block Grant are flexible, but also targeted to prevent children from being removed from their family whenever possible. Removing children is itself a form of trauma and one that can often be avoided if we provide families with the treatment and services they need to stay safely together.

Treatment programs for pregnant and parenting women funded under the block grant need expansion because the program has not changed in nearly 20 years.[11] It is time for Congress to revisit the funding mechanisms for these two-generation programs and encourage expansion of services for this population through Medicaid, the Block Grant, CAPTA and grants to pregnant and parenting women programs.

Recommendations

Addressing the complexity of perinatal opioid use and neonatal abstinence syndrome requires a thoughtful public health approach targeting the pre-pregnancy, pregnancy and post-pregnancy periods for women and infants. Our goal should be to promote healthy mothers and infants by supporting prevention and recovery:

My recommendations fall into three broad categories: improving care for mothers, improving infant outcomes, and research.

Improving Care for Mothers

Primary prevention of opioid use disorder begins with preventing unnecessary opioid use well before pregnancy. Non-medical use of opioids among adolescents commonly begins with opioids not prescribed to them, but rather to a family member or friend. Congress should take steps to decrease the opioid supply, including through responsible prescribing and drug takeback programs.

Too many health care providers are still unaware of the implication of their prescribing patterns for their patients. It is clear that additional provider education in this area is greatly needed. Congress should also bolster prescription drug monitoring programs[12] by providing states with additional resources to modernize them and integrate them better into physician work flow and electronic medical records.

Improving access to contraception, including long-acting reversible contraception, is vitally important because research suggests that women with opioid use disorder are nearly twice as likely to have an unplanned pregnancy.[13] Congress should protect and expand women's access to all forms of contraception approved by the U.S. Food and Drug Administration, including coverage of contraceptives without cost-sharing.

Congress should also act to expand access to opioid treatment programs, especially for pregnant women and postpartum. Untreated opioid use disorder among pregnant women leads to poor outcomes for the mother and infant;[14] however, treatment with opioid agonist therapies like buprenorphine and methadone are highly effective,[15] especially for pregnant women.[14] These therapies improve treatment retention,[16] reduce relapse risk,[316-19] reduce HIV-risk,[16],[20] reduce criminal behavior,[18] reduce risk of overdose death[21] and improve birth weight.[22] Despite evidence that treatment is effective in mitigating adverse outcomes from opioid use disorder, evidence suggests that the majority of women in need of treatment do not receive it.[23] Congress should work toward ensuring that treatment is available when it is needed, including opioid agonist therapies when appropriate, and it should be comprehensive, trauma-informed, gender-specific and inclusive of obstetric and pediatric care. Gender-specific treatment must include the ability of the mother to bring her children with her so that she is not faced with the unfair choice of getting treatment or caring for her children.

Congress should resist any efforts to pursue punitive measures against pregnant women using opioids as some state legislatures have done. Major medical associations, including both the American College of Obstetricians and Gynecologists[24] and the American Academy of Pediatrics,[25] endorse non-punitive approaches to opioid use in pregnancy. SAMHSA estimates that more than 400,000 infants every year are exposed to alcohol or illicit substances.[26] Punitive approaches are unethical, impractical and incentivize women to avoid care or not report their substance use to their provider. If a woman is fearful of criminal punishment, she may avoid prenatal care, go to another state to deliver, or even deliver at home, potentially resulting in adverse outcomes for mother and baby.[2] Infants are routinely discharged at 24 to 48 hours of life, but signs of drug withdrawal may not develop until 72 hours of life or later.[27] If women are unwilling to disclose substance use, their infants are at risk of experiencing withdrawal at home with potentially dire health consequences including death.

Improving Infant Outcomes

Throughout the US, opioid-exposed infants experience variable treatment[28] resulting in variable outcomes.[29] State and national perinatal quality improvement groups and hospital teams like ours at Vanderbilt are working to decrease this variability, but Congress should act to accelerate this vital work. Medicaid in particular could play a key role in standardizing care and breaking down discontinuities in care from pregnancy through the post-natal period. Medicaid is financially responsible for 80 percent of infants diagnosed with neonatal abstinence syndrome.[2] Our team's research, due to be published next month, found that in 2014 neonatal abstinence syndrome accounted for 6.7 percent of all birth related expenditures for Medicaid nationally.[3iii] In that study there was some evidence that infants in Medicaid are being treated differently than those with private insurance, with higher rates

[2] *http://www.wbir.com/article/news/local/mother-of-drug-dependent-baby-tells-her-story/51–63840991*

of transfer to another hospital and longer hospital stays for infants covered by Medicaid.[3] Medicaid programs are well-positioned to achieve the "triple aim" for families impacted by opioid use, by improving population health, improving the experience for pregnant women and infants and reducing cost.[30] Congress should urge the Centers for Medicare and Medicaid Services to play a more active role in working with state Medicaid programs to address care for substance-exposed infants, including those with neonatal abstinence syndrome.

Our nation has a long way to go to improve care for infants with neonatal abstinence syndrome, from better identification and treatment (including non-pharmacologic treatment) to improvements in the structure of care and minimizing separation of the maternal/infant dyad. Systems need to be agile, responding to new complications of the opioid-epidemic like hepatitis C. In a study conducted in partnership with the Tennessee Department of Health, my colleagues and I found that hepatitis C rates among pregnant women nearly doubled in the US from 2009 to 2014.[31] Some states were more affected than others, with the highest rates in West Virginia, where one in fifty infants was exposed to the virus in 2014. Exposed infants are completely asymptomatic and it is not possible to tell if they will acquire the virus until they are several months old. Screening for hepatitis C during pregnancy is not universal, and emerging data suggest that most exposed infants are not followed up to see if they become hepatitis C virus-positive.[32] Congress should support and fund Centers for Disease Control and Prevention efforts to better identify pregnant women with hepatitis C virus. Congress should also urge the Centers for Medicaid and Medicare Services to develop programs to ensure exposed infants are appropriately followed.

We also must do a better job of supporting families in the transition to home through initiatives like home visiting. The Maternal, Infant, and Early Childhood Home Visiting program provides funding to states to implement and expand effective home visiting programs that improve the early health, school readiness and economic stability of children and families. High-quality home visiting services to infants and young children can improve family relationships, advance school readiness, reduce child maltreatment, improve maternal-infant health outcomes, and increase family economic self-sufficiency.[33] However, funding for the program expired September 2017, and Congress has yet to renew this funding. Congress should renew funding for the program as quickly as possible at the current level of $400 million annually for five more years, so that this program can continue its successes at the local level for the most vulnerable children and families.

Next, the Individuals with Disabilities Education Act (IDEA) Part C supports early intervention services, like speech therapy, physical therapy and occupational therapy to infants with developmental delays. In 2004, reauthorization of this program extended to substance-exposed infants and infants having drug withdrawal after birth; however, adoption has been uneven. While as a provider I refer substance-exposed infants to early intervention services, it is not clear how many others are. Congress should ensure better linkages between child welfare, substance use disorder treatment for pregnant women and early intervention services.

Research

In 2015, the GAO highlighted research gaps and reasons for the difficulty of conducting research on prenatal substance use and neonatal abstinence syndrome.[9] As the GAO report noted, the Federal Government spent only $21.6 million over a 7-year period on research related to perinatal opioid use and neonatal abstinence syndrome—a small investment considering neonatal abstinence syndrome birth hospitalizations cost Medicaid $462 million in 2014.[3] The 21st Century Cures Act provided urgently needed funding to states to support treatment and prevention, but an urgent need remains for additional National Institutes of Health funding specifically targeting the opioid epidemic. Congress should direct additional funding to the National Institute on Drug Abuse to expand research focused on improving outcomes pregnant women and infants impacted by the opioid epidemic.

Summary

The opioid epidemic is taking a terrible toll on pregnant women and infants. Congress must act to address the urgent need for additional resources and coordination. For women and infants, like the ones in my introduction, the current system is disjointed and does not consider the needs of the mother and infant together. Without treatment, pregnant women are at risk of overdose death. Discharging infants home to a safe environment could be achieved by a more proactive and better funded child welfare system.

Every day, people are dying, pregnant women are not getting the treatment they need and infants are spending their first days or weeks of life in drug withdrawal. In just the time we are meeting here, 8 infants will be born with neonatal abstinence syndrome and 10 people will die from an overdose. These are our brothers and sisters and our children—they need us, now perhaps more than ever.

Mr. Chairman, thank you for the opportunity to speak today. I look forward to your questions.

References:

1. Patrick SW, Davis MM, Lehmann CU, Cooper WO. Increasing incidence and geographicdistribution of neonatal abstinence syndrome: United States 2009 to 2012. J Perinatol.2015;35(8):650-655.

2. Patrick SW, Schumacher RE, Benneyworth BD, Krans EE, McAllister JM, Davis MM. Neonatalabstinence syndrome and associated health care expenditures: United States, 2000-2009.JAMA. 2012;307(18):1934-1940.

3. Winkelman TNA, Villapiano NL, Kozhimannil KB, Davis MM, Patrick SW. Incidence and Costsof Neonatal Abstinence Syndrome among Infants with Medicaid: 2004-2014. Pediatircs, InPress. 2018.

4. Guy GP, Jr., Zhang K, Bohm MK, et al. Vital Signs: Changes in Opioid Prescribing in theUnited States, 2006-2015. MMWR Morb Mortal Wkly Rep. 2017;66(26):697-704.

5. Han B, Compton WM, Blanco C, Crane E, Lee J, Jones CM. Prescription Opioid Use, Misuse,and Use Disorders in U.S. Adults: 2015 National Survey on Drug Use and Health. Ann InternMed. 2017;167(5):293-301.

6. Ailes EC, Dawson AL, Lind JN, et al. Opioid prescription claims among women of reproductiveage - United States, 2008-2012. MMWR Morb Mortal Wkly Rep. 2015;64(2):37-41.

7. Patrick SW, Dudley J, Martin PR, et al. Prescription opioid epidemic and infant outcomes.Pediatrics. 2015;135(5):842-850.

8. Hedegaard H, Warner M, Minino AM. Drug Overdose Deaths in the United States, 1999-2016.NCHS Data Brief. 2017(294):1-8.

9. Prenatal Drug Use and Newborn Health: Federal Efforts Need Better Coordination andPlanning. Washington, D.C.: United States Government Accountability Office;2015.

10. U.S. Department of Health and Human Services, Administration on Children, Youth, andFamilies, Children's Bureau. The AFCARS Report FY 2015. 2016;*https://www.acf.hhs.gov/sites/default/files/cb/afcarsreport23.pdf.* Accessed February 3, 2018.

11. Substance Abuse Prevention and Treatment Block Grant (SABG).*https://www.samhsa.gov/sites/default/files/sabg—set-aside—for—women—r021014a—rev.pdf.*Accessed February 5, 2018.

12. Patrick SW, Fry CE, Jones TF, Buntin MB. Implementation Of Prescription Drug MonitoringPrograms Associated With Reductions In Opioid-Related Death Rates. Health affairs (ProjectHope). 2016;35(7):1324-1332.

13. Heil SH, Jones HE, Arria A, et al. Unintended pregnancy in opioid-abusing women. Journal ofsubstance abuse treatment. 2011;40(2):199-202.

14. ACOG Committee Opinion No. 524: Opioid abuse, dependence, and addiction in pregnancy.Obstet Gynecol. 2012;119(5):1070-1076.

15. Fullerton CA, Kim M, Thomas CP, et al. Medication-assisted treatment with methadone:assessing the evidence. Psychiatr Serv. 2014;65(2):146-157.

16. Sees KL, Delucchi KL, Masson C, et al. Methadone maintenance vs 180-day psychosociallyenriched detoxification for treatment of opioid dependence: a randomized controlled trial.Jama. 2000;283(10):1303-1310.

17. McCarthy JJ, Leamon MH, Parr MS, Anania B. High-dose methadone maintenance inpregnancy: maternal and neonatal outcomes. Am J Obstet Gynecol. 2005;193(3 Pt 1):606-610.

18. Schwartz RP, Kelly SM, O'Grady KE, Gandhi D, Jaffe JH. Interim methadone treatmentcompared to standard methadone treatment: 4-month findings. Journal of substance abusetreatment. 2011;41(1):21-29.

19. Schwartz RP, Kelly SM, O'Grady KE, Gandhi D, Jaffe JH. Randomized trial of standardmethadone treatment compared to initiating methadone without counseling: 12-month findings.Addiction. 2012;107(5):943-952.

20. Wilson ME, Schwartz RP, O'Grady KE, Jaffe JH. Impact of interim methadone maintenance onHIV risk behaviors. Journal of urban health : bulletin of the New York Academy of Medicine.2010;87(4):586-591.

21. Schwartz RP, Gryczynski J, O'Grady KE, et al. Opioid agonist treatments and heroin overdosedeaths in Baltimore, Maryland, 1995-2009. Am J Public Health. 2013;103(5):917-922.
22. Kandall SR, Albin S, Lowinson J, Berle B, Eidelman AI, Gartner LM. Differential effects ofmaternal heroin and methadone use on birthweight. Pediatrics. 1976;58(5):681-685.
23. Substance Abuse and Mental Health Services Administration OoAS. Results from the 2014National Survey on Drug Use and Health: Summary of National Findings. Rockville, MD:Substance Abuse and Mental Health Services Administration;2015.
24. Committee Opinion No. 711: Opioid Use and Opioid Use Disorder in Pregnancy. ObstetGynecol. 2017;130(2):e81-e94.
25. Patrick SW, Schiff DM. A Public Health Response to Opioid Use in Pregnancy. Pediatrics.2017;139(3).
26. Young N, S G, C O, et al. Substance-Exposed Infants: State Responses to the Problem.Rockville, MD: Substance Abuse and Mental Health Services Administration;2009.
27. Hudak ML TRCoD, Committee on Fetus and Newborn, American Academy of Pediatrics.Neonatal drug withdrawal. Pediatrics. 2012;129(e540-560).
28. Patrick SW, Schumacher RE, Horbar JD, et al. Improving Care for Neonatal AbstinenceSyndrome. Pediatrics. 2016;137(5).
29. Patrick SW, Kaplan HC, Passarella M, Davis MM, Lorch SA. Variation in treatment of neonatalabstinence syndrome in US Children's Hospitals, 2004-2011. J Perinatol. 2014.
30. Patrick SW. The Triple Aim for Neonatal Abstinence Syndrome. J Pediatr. 2015;167(6):1189-1191.
31. Patrick SW, Bauer AM, Warren MD, Jones TF, Wester C. Hepatitis C Virus Infection AmongWomen Giving Birth - Tennessee and United States, 2009-2014. MMWR Morb Mortal WklyRep. 2017;66(18):470-473.
32. Kuncio DE, Newbern EC, Johnson CC, Viner KM. Failure to Test and Identify PerinatallyInfected Children Born to Hepatitis C-Positive Women. Clin Infect Dis. 2016.
33. Duffee JH, Mendelsohn AL, Kuo AA, Legano LA, Earls MF. Early Childhood Home Visiting.Pediatrics. 2017;140(3).

POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

A Public Health Response to Opioid Use in Pregnancy

Stephen W. Patrick, MD, MPH, MS, FAAP[a,b,c,d,e] Davida M. Schiff, MD, FAAP,[f] COMMITTEE ON SUBSTANCE USE AND PREVENTION

abstract

The use of opioids during pregnancy has grown rapidly in the past decade. As opioid use during pregnancy increased, so did complications from their use, including neonatal abstinence syndrome. Several state governments responded to this increase by prosecuting and incarcerating pregnant women with substance use disorders; however, this approach has no proven benefits for maternal or infant health and may lead to avoidance of prenatal care and a decreased willingness to engage in substance use disorder treatment programs. A public health response, rather than a punitive approach to the opioid epidemic and substance use during pregnancy, is critical, including the following: a focus on preventing unintended pregnancies and improving access to contraception; universal screening for alcohol and other drug use in women of childbearing age; knowledge and informed consent of maternal drug testing and reporting practices; improved access to comprehensive obstetric care, including opioid-replacement therapy; gender-specific substance use treatment programs; and improved funding for social services and child welfare systems. The American College of Obstetricians and Gynecologists supports the value of this clinical document as an educational tool (December 2016).

FREE

[a]Departments of Pediatrics and [b]Health Policy, [c]Mildred Stahlman Division of Neonatology, [d]Vanderbilt Center for Health Services Research, and [e]Vanderbilt Center for Addiction Research, Vanderbilt University, Nashville, Tennessee; and [f]Department of Pediatrics, Boston Medical Center and Boston University School of Medicine, Boston, Massachusetts

Dr Schiff conceptualized and drafted the initial manuscript and critically reviewed the revised manuscript; Dr Patrick conceptualized the manuscript and critically reviewed and revised the manuscript; and both authors approved the final manuscript as submitted.

This document is copyrighted and is property of the American Academy of Pediatrics and its Board of Directors. All authors have filed conflict of interest statements with the American Academy of Pediatrics. Any conflicts have been resolved through a process approved by the Board of Directors. The American Academy of Pediatrics has neither solicited nor accepted any commercial involvement in the development of the content of this publication.

Policy statements from the American Academy of Pediatrics benefit from expertise and resources of liaisons and internal (AAP) and external reviewers. However, policy statements from the American Academy of Pediatrics may not reflect the views of the liaisons or the organizations or government agencies that they represent.

The guidance in this statement does not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

All policy statements from the American Academy of Pediatrics automatically expire 5 years after publication unless reaffirmed, revised, or retired at or before that time.

DOI: 10.1542/peds.2016-4070

Address correspondence to Stephen W. Patrick, MD, MPH, MS, FAAP. E-mail: stephen.patrick@vanderbilt.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2017 by the American Academy of Pediatrics

To cite: Patrick SW, Schiff DM, AAP COMMITTEE ON SUBSTANCE USE AND PREVENTION. A Public Health Response to Opioid Use in Pregnancy. *Pediatrics*. 2017;139(3):e20164070

FROM THE AMERICAN ACADEMY OF PEDIATRICS

INTRODUCTION

Substance use during pregnancy occurs commonly in the United States. In 2009, the Substance Abuse and Mental Health Administration estimated that 400 000 infants each year are exposed to alcohol or illicit drugs in utero.[1] Although concern regarding substance use in pregnancy is not new, it has recently increased among health care providers, the public, and policy makers as the opioid epidemic's impact reached an increasing portion of the US population, including pregnant women and their infants.[2,3] Several recent studies highlighted an increase in prescription opioid use among women of childbearing age[4] and among pregnant women.[5,6] As opioid use among pregnant women increased, the rate of infants in the United States experiencing opioid withdrawal after

birth, known as neonatal abstinence syndrome (NAS), grew nearly fivefold over the past decade.[2,7] By 2012 in the United States, on average, 1 infant was born every 25 minutes experiencing signs of withdrawal, accounting for an estimated $1.5 billion in hospital charges.[2] The issues surrounding substance use in pregnancy are complex and merit a thoughtful public health response focused on prevention, expansion of treatment to women with substance use disorder, and improved funding for child welfare systems to improve the health of the substance-exposed mother-infant dyad.

Primary Prevention

A public health approach to substance use in pregnancy should begin with primary prevention: preventing substance and opioid misuse before pregnancy. In 2011, the White House Office of National Drug Control Policy released a plan to respond to the prescription opioid epidemic that has 4 main pillars: (1) improve public and provider education about the abuse potential of opioids, (2) reduce the abuse of prescription opioids by bolstering prescription drug monitoring programs, (3) ensure that unused opioids are properly disposed, and (4) provide law enforcement with the tools needed to stop illegal prescribing or dispensing of opioids.[8] Public health and policy approaches to the prescription opioid epidemic will help eliminate the burden of opioid use disorder before pregnancy begins.

Preconception and interconception (between pregnancies) care plays an important role in improving outcomes for pregnant women. Counseling during these crucial periods may play a role in identifying and mitigating risk to mothers and their infants.[9] Although 31% to 47% of US pregnancies are unintended, research suggests that, for women with opioid use disorder, the proportion of unintended pregnancies was higher than 85%.[10] Education and expansion of access to effective contraception, particularly long-acting reversible contraception (LARC) methods,[11] are important components of primary prevention. Access to LARC methods is supported by both the American Academy of Family Physicians (AAFP) and the American College of Obstetricians and Gynecologists (ACOG)[12,13] during both the pre- and interconception periods. However, there remain barriers to highly effective contraception in many states. For example, the ACOG supports placement of LARC devices during the immediate postpartum period to improve the use of LARC among postpartum women[13]; however, bundled payments for delivery create a relative financial disincentive to place LARC devices at the time of delivery. State Medicaid programs play a critical role in ensuring access to highly effective contraception at the time when it is desired, including the time of delivery. However, recent research suggests that states are variable in aligning financial incentives to ensure access to LARC methods if elected at the time of delivery.[14]

Improved Identification and Access to Treatment

The early identification of women who use illicit substances during pregnancy is vital to improving outcomes for both mothers and infants. Routine universal screening through brief questionnaires for drug, alcohol, and tobacco use before and throughout pregnancy is recommended by the ACOG and AAFP.[9,15,16] The ACOG recommends that screening consist of a mutual dialogue between clinician and patient and be performed in partnership with the woman with the use of validated screening tools,[17,18] with her consent, and screening should be applied equally to all women, regardless of their age, race, ethnicity, or socioeconomic status.[19]

The benefits of drug testing in addition to screening during pregnancy remain uncertain. Targeted urine drug-testing programs have been shown to disproportionately affect low-income women of racial or ethnic minorities,[20–23] prompting some to develop universal urine toxicology testing protocols at the time of delivery.[24] Although urine toxicology tests can provide objective evidence of drug use at 1 point in time, they do not enable providers to determine the frequency of use or to characterize the frequency or degree of use.[25,26] Studies comparing the difference between verbal screening and urine drug testing are mixed; 1 study found superior identification with verbal screening and another identified individuals with positive urine drug test results who were not previously known to have used opioids.[17,24] Consistent with ACOG policy, informed consent should occur at the time of drug testing and a woman should be informed how a positive test result will be used for both medical treatment and reporting to child welfare agencies.[19]

Drug screening and testing in pregnancy should be used to identify women with substance use disorder and enable access to comprehensive treatment. Access to comprehensive prenatal care and treatment of women with substance use disorders is associated with fewer preterm deliveries, small-for-gestational-age infants, and infants with low birth weight.[27–30] The literature suggests that pregnancy can motivate women with substance use disorders to seek treatment.[31] However, there remains a dearth of comprehensive treatment programs geared toward pregnant and parenting women. Only 19 states have treatment programs specifically designed for pregnant women.[32] Furthermore, only 15% of current treatment centers across

the country offer specific services for pregnant women with substance use disorders, and the majority of these are located in urban areas.[33] Women with substance use disorder report high rates of past trauma, including physical and sexual abuse, and need access to gender-specific, family-friendly addiction treatment programs, psychosocial services, and mental health treatment.[34–36] Trauma-informed services should be framed by an understanding of the effects of interpersonal violence and victimization of women with substance use disorders, with a focus on creating a strengths-based environment to foster resiliency and to minimize the possibility of retraumatization.[37] In addition, pregnant and parenting women are likely to remain in treatment if on-site child care and child services are provided and staff work to develop collaborative and nonjudgmental therapeutic alliances through the use of trauma-informed care approaches.[38,39] Positive outcomes of treatment in pregnant and parenting women who complete treatment programs include employment, less engagement in criminal activity, and lower risk of relapse.[40,41]

For women with opioid use disorder, the abrupt discontinuation of opioids in pregnancy can result in preterm labor, fetal distress, or fetal demise. Furthermore, medically supervised withdrawal from opioids in opioid-dependent women is currently not recommended during pregnancy, because the literature suggests that withdrawal is associated with high relapse rates.[16] Opioid agonist therapy, also known as medication-assisted treatment, with methadone or buprenorphine has emerged as the standard for pregnant women with opioid use disorder.[42] Opioid agonist therapy has been shown to be safe and effective in pregnancy[16,43,44] and is associated with improved maternal and infant outcomes.[45,46]

Knowledge of substance use during pregnancy is vital to the pediatrician's ability to effectively provide care for substance-exposed infants. For example, exposure to opioids in utero may lead to an infant developing NAS. The presentation of NAS may be delayed for several days depending on several factors (eg, timing of maternal drug use, drug type, infant metabolism),[47] and clinical signs of NAS can be vague (eg, irritability, poor feeding). Each of these factors creates the possibility that a diagnosis of NAS may be missed without the knowledge of opioid exposure, potentially leading to poor outcomes for infants.[47] Teamwork between all health care providers, including but not limited to obstetric, pediatric, family, and addiction medicine, is vital to optimal care of substance-exposed infants. When inadequate information about drug exposure exists, testing an infant's urine, meconium, or umbilical cord tissue can be important in ensuring the optimal care of the infant.

Criminal Justice Approaches to Substance Use in Pregnancy

In recent years, a number of state legislatures have passed new laws or applied existing child endangerment laws to prosecute pregnant women for illicit drug use during pregnancy.[32,48] The American Academy of Pediatrics (AAP) first published recommendations on substance-exposed infants in 1990 and reaffirmed its position in 1995 that "punitive measures taken toward pregnant women, such as criminal prosecution and incarceration, have no proven benefits for infant health" and argued that "the public must be assured of nonpunitive access to comprehensive care that meets the needs of the substance-abusing pregnant woman and her infant."[49,50]

More than 20 national organizations have since published statements against the prosecution and punishment of pregnant women who use illicit substances: these include the American Medical Association, the AAFP, the ACOG, the American Public Health Association, the American Nurses Association, the American Psychiatric Association, the National Perinatal Association, the American Society of Addiction Medicine, the March of Dimes, and the Association of Women's Health, Obstetric and Neonatal Nurses.[51–60] Despite the strong consensus from the medical and public health communities affirming that a punitive approach during pregnancy is ineffective and potentially harmful, there has been a recent increase in the number of states passing and considering criminal prosecution laws that selectively target pregnant women with substance use disorders.[61–63]

The existing literature supports the position that punitive approaches to substance use in pregnancy are ineffective and may have detrimental effects on both maternal and child health. Qualitative research performed in pregnant women with substance use disorders shows that women may avoid prenatal care for fear of being reported to the police and child protective services.[23,64–66] In addition, surveys of pregnant women found that punitive laws targeted at pregnant women who use drugs are a significant deterrent to obtaining regular prenatal care and agreeing to drug testing,[67] and women who deliver without receiving any prenatal care are more likely have a history of substance use.[68] For these reasons, the AAP supports an approach toward substance use in pregnancy that focuses on a public health approach of primary prevention, improving access to treatment, and promoting the provider-patient relationship rather than punitive measures through the criminal justice system.

Role of Child Welfare Systems

The Child Abuse Protection and Treatment Act mandates that states have in place "policies and procedures to address the needs of infants born with and identified as being affected by illegal substance abuse or withdrawal symptoms from prenatal drug exposure."[69] Reporting requirements for in utero illicit substance exposure to child welfare systems have been interpreted differently by each state. More than 25% of states currently have statutes that consider illicit substance use during pregnancy to be reportable as child abuse or neglect.[32] Health care providers caring for pregnant women with substance use disorders and their infants should be knowledgeable about their state requirements and be able to educate women during pregnancy. Notably, although the incidence of NAS has increased in recent years,[2,7] federal funding for child welfare systems has not changed,[70] even as some state child welfare systems are reporting an increased workload attributable to NAS.[71] In recent years, Congress has addressed the issue of substance-exposed infants in child welfare systems; however, there has not been a substantial increase in funding to state child welfare systems to bolster the response to the growing number of opioid-exposed infants. There is an urgent need for improved funding to child welfare systems to ensure the safety of infants and to promote the well-being of families.

RECOMMENDATIONS

Opioid use in pregnancy is increasingly common, with an associated increase in opioid-exposed infants. This critical public health issue demands a public health approach grounded in science. For these reasons, the AAP recommends the following:

1. The treatment of pregnant women with substance use disorder requires a coordinated, evidence-based, public health approach. The AAP reaffirms its position that punitive measures taken toward pregnant women are not in the best interest of the health of the mother-infant dyad.
2. Primary prevention strategies should be bolstered to educate the public about the addictive potential of prescription opioids and enhance access to reproductive health services, including effective forms of contraception such as LARC.
3. The ACOG policy that universal substance use screening of all pregnant women via validated screening tools such as questionnaires should occur at routine health care visits and at several points throughout prenatal care and be applied equally to all women, regardless of age, race, ethnicity, or socioeconomic status, should be supported. If urine drug testing is performed, a reasonable effort to obtain a woman's informed consent should be made before collecting the sample, and the woman should be aware of the results and who will have access to the results.
4. Access should be improved to comprehensive prenatal care for pregnant women with substance use disorders, including medication-assisted treatment and gender-specific substance use treatment programs that provide nonjudgmental, trauma-informed services.
5. Health care providers caring for women who use substances during pregnancy should be knowledgeable about their state's reporting mandates around illicit drug use and educate pregnant women prenatally about these requirements. In addition, states should clarify which substances constitute mandated reporting and explicitly define the health care provider's role in reporting.
6. To adequately ensure the safety of substance-exposed infants and to provide optimal care to families, social support services and child welfare systems are in need of additional funding.

The American College of Obstetricians and Gynecologists supports the value of this clinical document as an educational tool (December 2016).

AUTHORS

Stephen W. Patrick, MD, MPH, MS, FAAP
Davida M. Schiff, MD, FAAP

COMMITTEE ON SUBSTANCE USE AND PREVENTION, 2016–2017

Sheryl A. Ryan, MD, FAAP, Chairperson
Joanna Quigley, MD, FAAP
Pamela K. Gonzalez, MD, MS, FAAP
Stephen W. Patrick, MD, MPH, MS, FAAP
Leslie R. Walker, MD, FAAP

FORMER COMMITTEE MEMBERS

Sharon J.L. Levy, MD, MPH, FAAP
Lorena Siqueira, MD, MSPH

LIAISONS

Vivian B. Faden, PhD – *National Institute on Alcohol Abuse and Alcoholism*
Gregory Tau, MD, PhD – *American Academy of Child and Adolescent Psychiatry*

STAFF

Renee Jarrett, MPH

ABBREVIATIONS

AAFP: American Academy of Family Physicians
ACOG: American College of Obstetricians and Gynecologists
LARC: long-acting reversible contraception
NAS: neonatal abstinence syndrome

FINANCIAL DISCLOSURE: The authors have indicated they do not have a financial relationship relevant to this article to disclose.

FUNDING: No external funding.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

REFERENCES

1. Young N, Gardner S, Otero C, et al. Substance-exposed infants: state responses to the problem. HHS Publication SMA09-4369. Available at: https://ncsacw.samhsa.gov/files/Substance-Exposed-Infants.pdf. Accessed August 23, 2016
2. Patrick SW, Davis MM, Lehmann CU, Cooper WO. Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012 [published erratum appears in *J Perinatol*. 2015;35(8):667]. *J Perinatol*. 2015;35(8):650–655
3. Patrick SW, Dudley J, Martin PR, et al. Prescription opioid epidemic and infant outcomes. *Pediatrics*. 2015;135(5):842–850
4. Ailes EC, Dawson AL, Lind JN, et al; Centers for Disease Control and Prevention. Opioid prescription claims among women of reproductive age—United States, 2008-2012. *MMWR Morb Mortal Wkly Rep*. 2015;64(2):37–41
5. Epstein RA, Bobo WV, Martin PR, et al. Increasing pregnancy-related use of prescribed opioid analgesics. *Ann Epidemiol*. 2013;23(8):498–503
6. Desai RJ, Hernandez-Diaz S, Bateman BT, Huybrechts KF. Increase in prescription opioid use during pregnancy among Medicaid-enrolled women. *Obstet Gynecol*. 2014;123(5):997–1002
7. Patrick SW, Schumacher RE, Benneyworth BD, Krans EE, McAllister JM, Davis MM. Neonatal abstinence syndrome and associated health care expenditures: United States, 2000-2009. *JAMA*. 2012;307(18):1934–1940
8. Office of National Drug Control Policy. Epidemic: responding to America's prescription drug abuse crisis. Washington, DC: Office of National Drug Control Policy; 2011. Available at: https://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/rx_abuse_plan.pdf. Accessed August 23, 2016
9. American Academy of Family Physicians. Position paper: preconception care. Leawood, KS: American Academy of Family Physicians; 2015. Available at: www.aafp.org/about/policies/all/preconception-care.html. Accessed August 23, 2016
10. Heil SH, Jones HE, Arria A, et al. Unintended pregnancy in opioid-abusing women. *J Subst Abuse Treat*. 2011;40(2):199–202
11. Winner B, Peipert JF, Zhao Q, et al. Effectiveness of long-acting reversible contraception. *N Engl J Med*. 2012;366(21):1998–2007
12. American Academy of Family Physicians. Policy: long-acting reversible contraceptives. Leawood, KS: American Academy of Family Physicians; 2015. Available at: www.aafp.org/about/policies/all/longacting-reversiblecontraceptives.html. Accessed August 23, 2016
13. American College of Obstetricians and Gynecologists Committee on Practice Bulletins—Gynecology. Practice bulletin: long-acting reversible contraception: implants and intrauterine devices. Washington, DC: American College of Obstetricians and Gynecologists; 2011. Available at: www.acog.org/Resources-And-Publications/Practice-Bulletins/Committee-on-Practice-Bulletins-Gynecology/Long-Acting-Reversible-Contraception-Implants-and-Intrauterine-Devices. Accessed August 23, 2016
14. Moniz MH, Chang T, Davis MM, Forman J, Landgraf J, Dalton VK. Medicaid administrator experiences with the implementation of immediate postpartum long-acting reversible contraception. *Womens Health Issues*. 2016;26(3):313–320
15. Wright TE, Terplan M, Ondersma SJ, et al. The role of screening, brief intervention, and referral to treatment in the perinatal period. *Am J Obstet Gynecol*. 2016;215(5):539–547
16. ACOG Committee on Health Care for Underserved Women; American Society of Addiction Medicine. ACOG Committee Opinion No. 524: opioid abuse, dependence, and addiction in pregnancy. *Obstet Gynecol*. 2012;119(5):1070–1076
17. Chasnoff IJ, Wells AM, McGourty RF, Bailey LK. Validation of the 4P's Plus screen for substance use in pregnancy validation of the 4P's Plus. *J Perinatol*. 2007;27(12):744–748
18. Goodman DJ, Wolff KB. Screening for substance abuse in women's health: a public health imperative. *J Midwifery Womens Health*. 2013;58(3):278–287
19. American College of Obstetricians and Gynecologists. Committee Opinion No. 633: alcohol abuse and other substance use disorders: ethical issues in obstetric and gynecologic practice. *Obstet Gynecol*. 2015;125(6):1529–1537
20. Chasnoff IJ, Landress HJ, Barrett ME. The prevalence of illicit-drug or alcohol use during pregnancy and discrepancies in mandatory reporting in Pinellas County, Florida. *N Engl J Med*. 1990;322(17):1202–1206
21. Kerker BD, Horwitz SM, Leventhal JM. Patients' characteristics and providers' attitudes: predictors of screening pregnant women for illicit substance use. *Child Abuse Negl*. 2004;28(2):209–223
22. Kunins HV, Bellin E, Chazotte C, Du E, Arnsten JH. The effect of race on provider decisions to test for illicit drug use in the peripartum setting. *J Womens Health (Larchmt)*. 2007;16(2):245–255
23. Roberts SC, Nuru-Jeter A. Women's perspectives on screening for alcohol and drug use in prenatal care. *Womens Health Issues*. 2010;20(3):193–200
24. Wexelblatt SL, Ward LP, Torok K, Tisdale F, Meinzen-Derr JK, Greenberg JM. Universal maternal drug testing

in a high-prevalence region of prescription opiate abuse. *J Pediatr.* 2015;166(3):582–586

25. US Preventive Services Task Force. Final recommendation statement: drug use, illicit: screening. Rockville, MD: US Preventive Services Task Force; 2008. Available at: www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/drug-use-illicit-screening. Accessed August 23, 2016

26. Levy S, Siqueira LM, Ammerman SD, et al; Committee on Substance Abuse. Testing for drugs of abuse in children and adolescents. *Pediatrics.* 2014;133(6). Available at: www.pediatrics.org/cgi/content/full/133/6/e1798

27. Goler NC, Armstrong MA, Taillac CJ, Osejo VM. Substance abuse treatment linked with prenatal visits improves perinatal outcomes: a new standard. *J Perinatol.* 2008;28(9):597–603

28. El-Mohandes A, Herman AA, Nabil El-Khorazaty M, Katta PS, White D, Grylack L. Prenatal care reduces the impact of illicit drug use on perinatal outcomes. *J Perinatol.* 2003;23(5):354–360

29. Armstrong MA, Gonzales Osejo V, Lieberman L, Carpenter DM, Pantoja PM, Escobar GJ. Perinatal substance abuse intervention in obstetric clinics decreases adverse neonatal outcomes. *J Perinatol.* 2003;23(1):3–9

30. Lieberman L, Taillac C, Goler N. Vision, research, innovation and influence: Early Start's 15-year journey from pilot project to regional program. *Perm J.* 2005;9(1):62–64

31. Davis KJ, Yonkers KA. Making lemonade out of lemons: a case report and literature review of external pressure as an intervention with pregnant and parenting substance-using women. *J Clin Psychiatry.* 2012;73(1):51–56

32. Guttmacher Institute. Substance abuse during pregnancy. *State Policies in Brief.* December 1, 2015. Available at: www.guttmacher.org/statecenter/spibs/spib_SADP.pdf. Accessed August 23, 2016

33. Terplan M, Longinaker N, Appel L. Women-centered drug treatment services and need in the United States, 2002-2009. *Am J Public Health.* 2015;105(11):e50–e54

34. Greenfield SF, Rosa C, Putnins SI, et al. Gender research in the National Institute on Drug Abuse National Treatment Clinical Trials Network: a summary of findings. *Am J Drug Alcohol Abuse.* 2011;37(5):301–312

35. Liebschutz J, Savetsky JB, Saitz R, Horton NJ, Lloyd-Travaglini C, Samet JH. The relationship between sexual and physical abuse and substance abuse consequences. *J Subst Abuse Treat.* 2002;22(3):121–128

36. McHugo GJ, Caspi Y, Kammerer N, et al. The assessment of trauma history in women with co-occurring substance abuse and mental disorders and a history of interpersonal violence. *J Behav Health Serv Res.* 2005;32(2):113–127

37. Substance Abuse and Mental Health Services Administration. Substance abuse treatment: addressing the specific needs of women. A Treatment Improvement Protocol (TIP 51). Publication SMA 13-4426. Rockville, MD: US Department of Health and Human Services; 2009. Available at: https://store.samhsa.gov/shin/content/SMA13-4426/SMA13-4426.pdf. Accessed August 23, 2016

38. Greenfield SF, Brooks AJ, Gordon SM, et al. Substance abuse treatment entry, retention, and outcome in women: a review of the literature. *Drug Alcohol Depend.* 2007;86(1):1–21

39. Brady TM. *Women in Substance Abuse Treatment: Results From the Alcohol and Drug Services Study (ADSS).* Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies; 2005

40. Gregoire KA, Schultz DJ. Substance-abusing child welfare parents: treatment and child placement outcomes. *Child Welfare.* 2001;80(4):433–452

41. Nishimoto RH, Roberts AC. Coercion and drug treatment for postpartum women. *Am J Drug Alcohol Abuse.* 2001;27(1):161–181

42. Mattick RP, Breen C, Kimber J, Davoli M. Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. *Cochrane Database Syst Rev.* 2009;3:CD002209

43. Jones HE, Heil SH, Baewert A, et al. Buprenorphine treatment of opioid-dependent pregnant women: a comprehensive review. *Addiction.* 2012;107(suppl 1):5–27

44. Minozzi S, Amato L, Bellisario C, Ferri M, Davoli M. Maintenance agonist treatments for opiate-dependent pregnant women. *Cochrane Database Syst Rev.* 2013;12:CD006318

45. Ordean A, Kahan M, Graves L, Abrahams R, Kim T. Obstetrical and neonatal outcomes of methadone-maintained pregnant women: a Canadian multisite cohort study. *J Obstet Gynaecol Can.* 2015;37(3):252–257

46. Burns L, Mattick RP, Lim K, Wallace C. Methadone in pregnancy: treatment retention and neonatal outcomes. *Addiction.* 2007;102(2):264–270

47. Hudak ML, Tan RC; Committee on Drugs; Committee on Fetus and Newborn. Clinical report: neonatal drug withdrawal. *Pediatrics.* 2012;129(2). Available at: www.pediatrics.org/cgi/content/full/129/2/e540

48. Paltrow LM, Flavin J. Arrests of and forced interventions on pregnant women in the United States, 1973-2005: implications for women's legal status and public health. *J Health Polit Policy Law.* 2013;38(2):299–343

49. Committee on Substance Abuse. Drug-exposed infants [policy statement]. *Pediatrics.* 1990;86(4):639–642

50. Committee on Substance Abuse. Drug-exposed infants. *Pediatrics.* 1995;96(2 pt 1):364–367

51. American College of Obstetricians and Gynecologists Committee on Health Care for Underserved Women. ACOG Committee Opinion No. 473: substance abuse reporting and pregnancy: the role of the obstetrician-gynecologist. *Obstet Gynecol.* 2011;117(1):200–201

52. American Academy of Family Physicians. Policy: substance Abuse and Addition. Pregnant women, substance use and abuse by. Available at: www.aafp.org/about/policies/all/substance-abuse.html#pregnant. Accessed August 23, 2016

53. Cole HM. Legal interventions during pregnancy: court-ordered medical treatments and legal penalties for potentially harmful behavior by pregnant women. *JAMA.* 1990;264(20):2663–2670

54. American Public Health Association. Illicit drug use by pregnant women. Washington, DC: American Public Health Association; 1990. Available at: https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/03/10/56/illicit-drug-use-by-pregnant-women. Accessed August 23, 2016

55. American Nurses Association, Center for Ethics and Human Rights. Position statement: non-punitive alcohol and drug treatment for pregnant and breast feeding women and their exposed children. Washington, DC: American Nurses Association; 2011. Available at: www.nursingworld.org/MainMenuCategories/EthicsStandards/Ethics-Position-Statements/Non-punitive-Alcohol-and-Drug-Treatment-for-Pregnant-and-Breast-feeding-Women-and-the-Exposed-Childr.pdf. Accessed August 23, 2016

56. American Psychiatric Association, Board of Trustees. Position statement on care of pregnant and newly delivered women addicts. Washington, DC: American Psychiatric Association; 2007. Available at: www.psychiatry.org/File%20Library/About-APA/Organization-Documents-Policies/Policies/Position-2007-Pregnant-Addiction.pdf. Accessed August 23, 2016

57. American Society of Addiction Medicine, Board of Directors. Chemically dependent women and pregnancy. Chevy Chase, MD: American Society of Addiction Medicine; 1989. Available at: www.asam.org/advocacy/find-a-policy-statement/view-policy-statement/public-policy-statements/2011/12/18/chemically-dependent-women-and-pregnancy. Accessed August 23, 2016

58. Criminalization of pregnant women with substance use disorders. *J Obstet Gynecol Neonatal Nurs.* 2015;44(1):155–157

59. March of Dimes. Policies and programs to address drug-exposed newborns. White Plains, NY: March of Dimes; 2014. Available at: www.marchofdimes.org/materials/NAS-Policy-Fact-Sheet-December-2014.pdf. Accessed August 23, 2016

60. National Perinatal Association. Position paper: substance abuse among pregnant women. Lonedell, MO: National Perinatal Association; June 2012. Available at: www.nationalperinatal.org/resources/Documents/Substance%20Abuse%20Among%20Pregnant%20Women%20Position%20Paper%2010-1-15.pdf. Accessed August 23, 2016

61. Lester BM, Andreozzi L, Appiah L. Substance use during pregnancy: time for policy to catch up with research. *Harm Reduct J.* 2004;1(1):5

62. Tennessee Senate Bill 1391 by Tate, House Bill 1295 by Weaver (2013). An Act to amend Tennessee code annotated title 39, relative to criminal law. Available at: www.capitol.tn.gov/Bills/108/Bill/SB1391.pdf. Accessed August 23, 2016

63. North Carolina Senate Bill 297 (2015). Prenatal narcotic drug use/criminal offense. Available at: www.ncleg.net/Sessions/2015/Bills/Senate/PDF/S297v1.pdf. Accessed August 23, 2016

64. Roberts SC, Pies C. Complex calculations: how drug use during pregnancy becomes a barrier to prenatal care. *Matern Child Health J.* 2011;15(3):333–341

65. Jessup M, Humphreys J, Brindis C, Lee K. Extrinsic barriers to substance abuse treatment among pregnant drug dependent women. *J Drug Issues.* 2003;33(2):285–304

66. Schempf AH, Strobino DM. Drug use and limited prenatal care: an examination of responsible barriers. *Am J Obstet Gynecol.* 2009;200(4):412.e1–412.e10

67. Poland ML, Dombrowski MP, Ager JW, Sokol RJ. Punishing pregnant drug users: enhancing the flight from care. *Drug Alcohol Depend.* 1993;31(3):199–203

68. Maupin R Jr, Lyman R, Fatsis J, et al. Characteristics of women who deliver with no prenatal care. *J Matern Fetal Neonatal Med.* 2004;16(1):45–50

69. The Child Abuse Prevention and Treatment Act. 2010, as amended by Pub L No. 111-320, the CAPTA Reauthorization Act of 2010. Available at: https://www.acf.hhs.gov/sites/default/files/cb/capta2010.pdf. Accessed August 23, 2016

70. Stoltzfus E. Child welfare: an overview of federal programs and their current funding. Washington, DC: Congressional Research Service; 2015, Available at: https://www.fas.org/sgp/crs/misc/R43458.pdf. Accessed August 23, 2016

71. França UL, Mustafa S, McManus ML. The growing burden of neonatal opiate exposure on children and family services in Massachusetts. *Child Maltreat.* 2016;21(1):80–84

A Public Health Response to Opioid Use in Pregnancy

Stephen W. Patrick, Davida M. Schiff and COMMITTEE ON SUBSTANCE USE AND PREVENTION

Pediatrics; originally published online February 20, 2017;
DOI: 10.1542/peds.2016-4070

Updated Information & Services	including high resolution figures, can be found at: /content/early/2017/02/16/peds.2016-4070.full.html
References	This article cites 50 articles, 6 of which can be accessed free at: /content/early/2017/02/16/peds.2016-4070.full.html#ref-list-1
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): **Substance Abuse** /cgi/collection/substance_abuse_sub
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: /site/misc/Permissions.xhtml
Reprints	Information about ordering reprints can be found online: /site/misc/reprints.xhtml

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2017 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

A Public Health Response to Opioid Use in Pregnancy
Stephen W. Patrick, Davida M. Schiff and COMMITTEE ON SUBSTANCE USE AND PREVENTION
Pediatrics; originally published online February 20, 2017;
DOI: 10.1542/peds.2016-4070

The online version of this article, along with updated information and services, is located on the World Wide Web at:
/content/early/2017/02/16/peds.2016-4070.full.html

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2017 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Journal of Perinatology (2015), 1–6
© 2015 Nature America, Inc. All rights reserved 0743-8346/15
www.nature.com/jp

ORIGINAL ARTICLE

Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012

SW Patrick[1,2,3,4], MM Davis[5,6,7], CU Lehman[1,2,8] and WO Cooper[1,3,4]

OBJECTIVE: Neonatal abstinence syndrome (NAS), a postnatal opioid withdrawal syndrome, increased threefold from 2000 to 2009. Since 2009, opioid pain reliever prescriptions and complications increased markedly throughout the United States. Understanding recent changes in NAS and its geographic variability would inform state and local governments in targeting public health responses.

STUDY DESIGN: We utilized diagnostic and demographic data for hospital discharges from 2009 to 2012 from the Kids' Inpatient Database and the Nationwide Inpatient Sample. NAS-associated diagnoses were identified utilizing *International Classification of Diseases, Ninth Revision, Clinical Modification* codes. All analyses were conducted with nationally weighted data. Expenditure data were adjusted to 2012 US dollars. Between-year differences were determined utilizing least squares regression.

RESULTS: From 2009 to 2012, NAS incidence increased nationally from 3.4 (95% confidence interval (CI): 3.2 to 3.6) to 5.8 (95% CI 5.5 to 6.1) per 1000 hospital births, reaching a total of 21 732 infants with the diagnosis. Aggregate hospital charges for NAS increased from $732 million to $1.5 billion ($P < 0.001$), with 81% attributed to state Medicaid programs in 2012. NAS incidence varied by geographic census division, with the highest incidence rate (per 1000 hospital births) of 16.2 (95% CI 12.4 to 18.9) in the East South Central Division (Kentucky, Tennessee, Mississippi and Alabama) and the lowest in West South Central Division Oklahoma, Texas, Arkansas and Louisiana 2.6 (95% CI 2.3 to 2.9).

CONCLUSION: NAS incidence and hospital charges grew substantially during our study period. This costly public health problem merits a public health approach to alleviate harm to women and children. States, particularly, in areas of the country most affected by the syndrome must continue to pursue primary prevention strategies to limit the effects of opioid pain reliever misuse.

Journal of Perinatology advance online publication, 30 April 2015; doi:10.1038/jp.2015.36

INTRODUCTION

Neonatal abstinence syndrome (NAS) is a withdrawal syndrome that occurs in opioid-exposed infants shortly after birth.[1–3] Infants with NAS have longer, more complicated postnatal hospitalizations characterized by a myriad of clinical signs ranging from feeding difficulty to seizures.[1,4,5] Recently, NAS emerged as a significant public health problem, increasing in number and healthcare expenditures.[5] By 2009, one infant was born per hour with the syndrome, accounting for an estimated $720 million in hospital charges.[5] The increase in NAS occurred temporally with an increase in opioid pain reliever (OPR) use[6] among several populations, including pregnant women.[7,8]

Data from the Centers for Disease Control and Prevention suggest that since 2009, when the most recent national estimates of NAS were reported, OPR use continued to increase. In 2012, the total number of OPR prescriptions rose to 259 million, enough for every American adult to have one bottle.[9,10] Recent data also highlight substantial variation in OPR use across different United States geographic regions.[9] To date, however, there are no national studies describing geographic variation in NAS. Understanding recent changes in NAS, including its variability in geographic regions, would inform state and local governments in targeting public health responses.

We sought to determine whether the incidence of NAS increased since 2009 in parallel with the marked increase in OPR use nationally and whether the incidence varied across the United States. Further, we aimed to determine whether healthcare utilization patterns of infants with NAS changed over time.

METHODS

Study design and setting

For this retrospective serial cross-sectional analysis, we used data from the Kids' Inpatient Database (KID) for 2009 and 2012 and from the Nationwide Inpatient Sample (NIS) for 2010 and 2011. Both data sets are compiled by the Agency for Healthcare Research and Quality as part of the Healthcare Utilization Project. The KID is the largest publicly available all-payer database for hospitalized children in the United States. The KID contains 2 to 3 million pediatric inpatient records per year from 2500 to 4100 hospitals and is created through systematic random sampling to select 10% of uncomplicated term births and 80% of other pediatric discharges. This sampling strategy gives the KID statistical power to evaluate rare conditions and provide more precise point estimates for all pediatric conditions.[11] The NIS is the largest publicly available all-payer inpatient database in the United States, containing more than 8 million hospital stays sampled from a 20% stratified sample of 1000 community hospitals.[12] Both the KID and NIS have been used broadly in national

[1]Department of Pediatrics, Vanderbilt University, Nashville, TN, USA; [2]Mildred Stahlman Division of Neonatology, Vanderbilt University, Nashville, TN, USA; [3]Vanderbilt Center for Health Services Research, Nashville, TN, USA; [4]Department of Health Policy, Vanderbilt University, Nashville, TN, USA; [5]Child Health Evaluation and Research (CHEAR) Unit, Department of Pediatrics and Communicable Diseases, University of Michigan Health System, Ann Arbor, MI, USA; [6]Gerald R. Ford School of Public Policy, University of Michigan, Ann Arbor, MI, USA; [7]Institute for Healthcare Policy and Innovation, University of Michigan, Ann Arbor, MI, USA and [8]Department of Biomedical Informatics, Vanderbilt University, Nashville, TN, USA. Correspondence: Dr SW Patrick, Monroe Carell Jr Children's Hospital At Vanderbilt, Mildred Stahlman Division of Neonatology, 11111 Doctor's Office Tower, 2200 Children's Way, Nashville, TN 37232-9544, USA.
E-mail: stephen.patrick@vanderbilt.edu
Received 18 December 2014; revised 24 February 2015; accepted 12 March 2015

studies of pediatric[5,13,14] and adult[5,15,16] conditions. As the study used de-identified data, it was considered exempt from human subjects review by the Vanderbilt University School of Medicine.

Identification of sample

Infants with NAS were identified if the *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*) code 779.5 (drug withdrawal syndrome in a newborn) appeared in any 1 of 25 diagnostic fields.[17] Infants with presumed iatrogenic NAS from medical treatment were excluded using strategies described previously.[9] KID and NIS provide data for hospital births using *ICD-9-CM* codes (V3000 to V3901 with the last two digits of '00' or '01') if the patient is not transferred from another acute care hospital or healthcare facility. Uncomplicated births are identified using the diagnosis-related group code for 'Normal Newborn' (391, version 24).[11,12]

Descriptive variables

Infants with NAS are more likely to have neonatal respiratory complications, feeding difficulty, seizures and low birthweight.[1] Clinical characteristics of infants were obtained using the following *ICD-9-CM* codes in any one of the diagnostic fields during the birth hospitalization: transient tachypnea of the newborn (770.6), meconium aspiration syndrome (770.11, 770.12), respiratory distress syndrome (769.x), other neonatal respiratory diagnoses (770.x excluding above codes and 770.7), feeding difficulty (779.3x), concern for sepsis (771.81), jaundice (774.x) and seizure (779.0, 780.3). Additional descriptive variables, including primary payer (private, Medicaid, uninsured and other) and sex were provided in the KID and NIS.

Outcome variables

National incidence rates of NAS were estimated by dividing the total number of infants with NAS by the total number of hospital births and expressed as incidence per 1000 births. Beginning in 2012, the KID and NIS samples increased, providing sufficient reliability to create estimates by the United States Census Bureau geographic division. Length of stay (LOS) data were obtained from the KID and NIS; as infants not receiving pharmacotherapy for NAS are unlikely to have LOS >6 days,[1] we evaluated LOS for all infants with NAS and then for infants with NAS who had a LOS >6 days (presumed pharmacologically treated). Throughout the article we will refer to infants presumed to be pharmacologically treated as 'pharmacologically treated'. Hospital charges were obtained from the KID and NIS and adjusted to 2012 US$.[18] Missing charges (<3%) were imputed using a regression approach using the command 'impute' with diagnosis-related groups, LOS, age and NAS as predictors. Mean charges before and after imputation were compared and were not significantly different; data with imputed values are presented.

Data analysis

Statistical analyses were conducted using Stata version 13.1 (StataCorp, College Station, TX, USA). For all analyses, survey weights provided by Healthcare Utilization Project were applied to facilitate nationally representative estimates. For 2012, differences in clinical characteristics and primary payer for infants with NAS versus all other hospital births were assessed. Trends for LOS and hospital charges were evaluated using variance-weighted least squared regression.[2] NAS incidence rates were

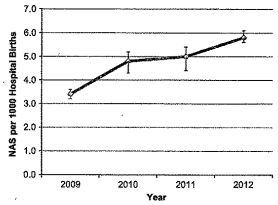
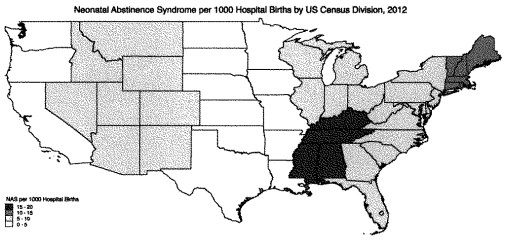


Figure 1. Incidence of neonatal abstinence syndrome per 1000 hospital births in the United States, 2009 to 2012. Data obtained from the Kids' Inpatient Database for 2009 and 2012 and from the Nationwide Inpatient Sample in 2010 and 2011. 2009: 3.4 (95% confidence interval (CI) 3.2 to 3.6); 2010: 4.8 (95% CI 4.3 to 5.2); 2011: 5.0 (95% CI 4.4 to 5.4); 2012: 5.8 (95% CI 5.5 to 6.1).

Table 1. Characteristics of infants with neonatal abstinence syndrome vs all other hospital births, 2012

	Infants with neonatal abstinence syndrome (N = 21 732)		*All other hospital births (N = 3 716 916)*		*P-value*
	N	%	N	%	
Female	9902	45.6	1 817 513	48.9	< 0.001
Clinical characteristics					
Low birthweight	5308	24.4	267 885	7.2	< 0.001
Respiratory diagnoses					
Transient tachypnea	2552	11.7	113 483	3.1	< 0.001
Meconium Aspiration syndrome	613	2.8	13 235	0.4	< 0.001
Respiratory distress syndrome	977	4.5	74 001	2.0	< 0.001
Jaundice	7134	32.8	708 872	19.1	< 0.001
Feeding difficulty	3765	17.3	111 288	3.0	< 0.001
Seizures	309	1.4	4208	0.1	< 0.001
Sepsis	3218	14.8	81 845	2.2	< 0.001
Insurance					< 0.001
Private	2688	12.4	1 717 308	46.2	
Medicaid	17 717	81.5	1 726 432	46.4	
Uninsured	853	3.9	144 137	3.9	
Other	405	1.9	118 918	3.2	

Point estimate (standard error) *N* for NAS = 21 732 (857); unweighted sample *n* = 16 254. Point estimate (standard error) *N* for all other hospital births = 3 716 916 (55 864); unweighted sample *n* = 1 094 748.



US Census Division	NAS Rate per 1000 Births (95% CI)
New England	13.7 (12.5-14.5)
Middle Atlantic	6.8 (5.9-7.6)
East North Central	6.9 (6.0-7.8)
West North Central	3.4 (3.0-3.8)
South Atlantic	6.9 (6.3-7.4)
East South Central	16.2 (12.4-18.9)
West South Central	2.6 (2.3-2.9)
Mountain	5.1 (4.6-5.5)
Pacific	3.0 (2.7-3.3)

Figure 2. Incidence of neonatal abstinence syndrome per 1000 hospital births by US Census Bureau geographic division, 2012. Division 1 (New England): Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. Division 2 (mid-Atlantic): New York, Pennsylvania and New Jersey. Division 3 (East North Central): Wisconsin, Michigan, Illinois, Indiana and Ohio. Division 4 (West North Central): Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota and Iowa. Division 5 (South Atlantic): Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida. Division 6 (East South Central): Kentucky, Tennessee, Mississippi and Alabama. Division 7 (West South Central): Oklahoma, Texas, Arkansas and Louisiana. Division 8 (Mountain): Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona and New Mexico. Division 9 (Pacific): Alaska, Washington, Oregon, California and Hawaii.

calculated by division (nine overall: New England, Mid-Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain and Pacific) for 2012. Maps were generated to evaluate geographic variation of NAS using the spmap command[19] in Stata, with map data obtained from the National Oceanic and Atmospheric Administration.[20] Throughout our analysis, all tests were two sided, with data reported with standard errors or 95% confidence intervals (CIs).

RESULTS

In 2012, there were an estimated 21 732 (95% CI: 20 052 to 23 413) infants diagnosed with NAS and 3 716 916 (95% CI: 3 607 375 to 3 826 456) other hospital births. Infants with NAS were more likely to have complications than other hospital births, including low birthweight (24.4% vs 7.2%), transient tachypnea of the newborn (11.7% vs 3.1%), meconium aspiration syndrome (2.8% vs 0.4%), respiratory distress syndrome (4.5% vs 2.0%), jaundice (32.8% vs 19.1%), feeding difficulty (17.3% vs 3.0%), seizures (1.4% vs 0.1%) and possible sepsis (14.8% vs 2.2%; $P < 0.001$). Infants with NAS were also more likely than other hospital births to be insured by Medicaid (81.5% vs 46.4%; $P < 0.001$; Table 1).

From 2009 to 2012, incidence (95% CI) of NAS increased from 3.4 (3.2 to 3.6) to 5.8 (5.5 to 6.1) per 1000 hospital births overall (Figure 1). By 2012, approximately one infant was born every 25 minutes in the United States with the syndrome. There was significant geographic variation in NAS diagnoses. In the most recent studyyear, the East South Central division (Kentucky, Tennessee, Mississippi and Alabama) had the highest incidence of NAS at 16.2 (12.4 to 18.9) per 1000 hospital births compared with the West South Central division (Oklahoma, Texas, Arkansas and Louisiana) that had the lowest national incidence rate of 2.6 (2.3 to 2.9) per 1000 hospital births (Figure 2).

From 2009 to 2012, there was no significant change in overall mean LOS for all NAS infants, pharmacologically treated NAS infants and for uncomplicated term infants with mean LOS in 2012 of 16.9 (16.0 to 17.7), 23.0 (22.2 to 23.8) and 2.1 (2.1 to 2.1) days, respectively. Inflation-adjusted mean hospital charges increased for all groups and in 2012 reached $66 700 (61 800 to

Table 2. Mean length of stay and inflation-adjusted hospital charges for all infants with neonatal abstinence syndrome, infants with neonatal abstinence syndrome with a length of hospital stay >6 days and uncomplicated term infants, 2009–2012

Year	*2009* N *(95% CI)*	*2010* N *(95% CI)*	*2011* N *(95% CI)*	*2012* N *(95% CI)*
Neonatal abstinence syndrome				
Mean length of stay (days)	16.5 (15.9–17.2)	17.2 (15.8–18.5)	16.6 (15.1–18.1)	16.9 (16.0–17.7)
Mean hospital charges (2012 US$)	53 800 (49 400–58 300)	59 000 (49 600–68 400)	62 300 (52 900–71 700)	66 700 (61 800–71 600)
Pharmacologically treated neonatal abstinence syndrome				
Mean length of stay (days)	22.7 (21.9–23.4)	22.9 (21.6–24.1)	22.8 (21.5–24.2)	23.0 (22.2–23.8)
Mean hospital charges (2012 US$)	75 700 (69 500–82 000)	80 500 (68 000–93 100)	87 700 (76 300–99 100)	93 400 (86 900–100 000)
Uncomplicated term infant				
Mean length of stay (days)	2.1 (2.1–2.1)	2.1 (2.1–2.1)	2.1 (2.1–2.1)	2.1 (2.1–2.1)
Mean hospital charges (2012 US$)	2800 (2700–2900)	3500 (3300–3800)	3700 (3400–3900)	3500 (3400–3600)

Abbreviation: CI, confidence interval. All US$ inflation adjusted to 2012 and rounded to nearest hundred.

Table 3. Aggregate hospital charges by primary payer for neonatal abstinence syndrome, 2009–2012

Year	*2009*		*2010*		*2011*		*2012*		
	Total charges ($)	*SE ($)*	*Total charges ($)*	*SE ($)*	*Total charges ($)*	*SE ($)*	*Total charges($)*	*SE ($)*	p-for-trend
Private	133 553 300	11 176 700	167 466 500	24 810 000	208 363 300	30 929 400	202 233 600	12 054 400	< 0.001
Medicaid	563 809 300	33 650 300	865 649 700	79 181 000	903 654 700	94 344 100	1 170 206 600	68 789 500	< 0.001
Uninsured	20 079 300	1 603 200	35 995 700	4 906 100	30 842 700	4 735 100	40 370 800	3 004 500	< 0.001
Other	14 248 300	2 628 000	29 379 400	6 807 800	30 117 700	8 011 000	33 395 300	4 890 800	< 0.001
Total	731 841 300	40 290 000	1 098 996 200	98 050 800	1 174 848 900	117 316 500	1 449 389 600	76 698 100	< 0.001

All US$ inflation adjusted to 2012 and rounded to nearest hundred.

71 600) for infants with NAS, $93 400 (86 900 to 100 000) for pharmacologically treated NAS infants and $3500 (3400 to 3600) for uncomplicated term infants (Table 2).

During the study period, the aggregate hospital charges for NAS nearly doubled from an estimated total of $731 841 300 in 2009 to $1 449 389 600 in 2012. Through all study years the majority of hospital charges were attributed to state Medicaid programs, growing from $563 809 300 to $1 170 206 600 (Table 3, $P < 0.001$).

DISCUSSION

The incidence of NAS in the United States nearly doubled during our study period and has grown nearly fivefold since 2000.[5] NAS results in longer, more costly and complicated hospital stays compared with other hospital births. The rapid rise in NAS parallels the increase in OPR use in the United States, suggesting that preventing opioid overuse and misuse, especially before pregnancy, may prevent NAS. NAS is a rapidly increasing public health problem that merits a focused public health approach to mitigate its now far-reaching impact.

We found significant geographic variation in NAS that parallels variations in OPR prescription.[9] We found high rates of NAS in New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut; 13.7, 95% CI: 12.5 to 14.5) and the East South Central (Kentucky, Tennessee, Mississippi and Alabama; 16.2, 95% CI: 12.4 to 18.9) divisions. The New England division contains two of the top five prescribing states of long-acting OPR (Maine and New Hampshire) and the East South Central division contains three of the top five prescribing states of short-acting OPR (Alabama, Tennessee and Kentucky),[9] further supporting the association between increased OPR prescription and NAS.

As expected, we found that infants with NAS were more likely to have low birthweight, significant respiratory complications including meconium aspiration and respiratory distress syndrome, feeding difficulties, possible sepsis and seizures—all of which may have contributed to longer LOS compared with other hospital births. More difficult to measure are the associated costs to families affected by the syndrome. Hospitalization for NAS most commonly involves an admission to a neonatal intensive care unit that disrupts maternal and infant bonding. Preventing NAS will prevent the clinical complications of the syndrome and potentially improve the outcomes that are more difficult to measure, including maternal attachment.[21]

Infants with NAS had an overall mean LOS of 16 days and those requiring pharmacologic treatment had a mean LOS of 23 days. We hypothesize that overall mean LOS is positively skewed by some infants who are non-pharmacologically treated or show minimal signs of withdrawal. Interestingly, LOS did not change significantly for either group during the study period. Care for NAS is variable,[4,22] and research suggests that LOS may have decreased with protocol adherence,[23] use of clonidine as an adjunct,[24] breastfeeding when appropriate (for example, when the mother is enrolled in treatment),[25–27] rooming in[28,29] and a site of care outside of the neonatal intensive care unit environment.[30]

Notably, some cases of NAS in our cohort likely occurred in the setting of medication-assisted treatment (MAT) with methadone or buprenorphine. For pregnant women with opioid dependency, current evidence suggests that enrollment in MAT improves pregnancy outcomes including preterm birth.[31,32] However, the literature supporting MAT in pregnancy was developed in the context of heroin use; data supporting optimal management of pregnant women with OPR dependency are limited.[31] With increasing use of OPR in pregnancy,[7] there is an urgent need for research to guide appropriate management of OPR dependency in pregnancy.

Nationally, over 80% of infants with NAS are enrolled in state Medicaid programs, accounting for the majority of the estimated

$1.5 billion in total hospital charges for the syndrome. Given the length of NAS-related hospital care, some states incur substantial expenditures in their Medicaid programs for NAS. For example, the Tennessee Medicaid program estimates that infants with NAS accounted for 1.7% of live births but 13.0% of expenditures on births in 2012.[33] In addition to administering and partially funding Medicaid, states also regulate prescribers and pharmacists. Therefore, states are well positioned to employ public health interventions aimed at preventing OPR misuse. Prescription drug monitoring programs are an intervention employed in every state except Missouri.[34] Prescription drug monitoring programs vary in scope and structure and are a tool to prevent behaviors that increase risk of OPR-related complications (for example, targeting doctor shopping to mitigate risk of overdose death[35]).

Limitations

Our study contains limitations that merit discussion. First, our reliance on administrative data may lead to misclassification bias. There are few studies comparing administrative to clinical data; however, one study noted that administrative data systematically underreported actual NAS.[36] Next, it is possible that the increase in NAS we observed is secondary to observer bias, as the syndrome has received significant attention recently. However, the temporal increases in NAS we observed mirror national increases in OPR use and adverse effects (for example, overdose deaths) attributed to their use. Further, our finding of significant geographic variability in the diagnosis of NAS correlated with geographic variations in use and adverse effects in the United States.[9] In addition, it is important to note that hospital charges do not equal hospital costs and do not include professional fees. In our analysis, we assumed that infants with NAS who had a LOS < 7 days were not pharmacologically treated; however, this may not always be true.

CONCLUSION

NAS has grown nearly fivefold since 2000, accounting for an estimated $1.5 billion in annual hospital expenditures across the United States. This costly public health problem merits a public health approach to alleviate harm to women and children. Federal and state policymakers should be mindful of the impact the OPR epidemic continues to have on pregnant women and their infants, and consider these vulnerable populations in efforts aimed at primary prevention. Finally, efforts aimed at primary prevention and treatment improvements should be targeted at the most affected areas of the country.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENTS

The authors acknowledge Kelly Patrick for her contributions to this manuscript. This study was supported by CTSA award KL2TR000446 from the National Center for Advancing Translational Sciences and by the National Institute on Drug Abuse through the award 1K23DA038720-01 (Dr Patrick).

DISCLAIMER

The sponsor had no role in the design and conduct of the study; in the collection, analysis, and interpretation of the data; or in the preparation, review, or approval of the manuscript or the decision to submit.

REFERENCES

1 Hudak ML, Tan RC. Neonatal drug withdrawal. *Pediatrics* 2012; **129**(2): e540–e560.
2 Kellogg A, Rose CH, Harms RH, Watson WJ. Current trends in narcotic use in pregnancy and neonatal outcomes. *Am J Obstet Gynecol* 2011; **204**(3): 259 e1–4.
3 Finnegan LP, Kron RE, Connaughton JF, Emich JP. Assessment and treatment of abstinence in the infant of the drug-dependent mother. *Int J Clin Pharmacol Biopharm* 1975; **12**(1-2): 19–32.
4 Patrick SW, Kaplan HC, Passarella M, Davis MM, Lorch SA. Variation in treatment of neonatal abstinence syndrome in US children's hospitals, 2004-2011. *J Perinatol* 2014; **34**(11): 867–872.
5 Patrick SW, Schumacher RE, Benneyworth BD, Krans EE, McAllister JM, Davis MM. Neonatal abstinence syndrome and associated health care expenditures: United States, 2000-2009. *JAMA* 2012; **307**(18): 1934–1940.
6 Centers for Disease Control and Prevention (CDC). Vital signs: overdoses of prescription opioid pain relievers — United States, 1999–2008. *MMWR Morb Mortal Wkly Rep* 2011; **60**(43): 1487–1492.
7 Epstein RA, Bobo WV, Martin PR, Morrow JA, Wang W, Chandrasekhar R *et al.* Increasing pregnancy-related use of prescribed opioid analgesics. *Ann Epidemiol* 2013; **23**(8): 498–503.
8 Desai RJ, Hernandez-Diaz S, Bateman BT, Huybrechts KF. Increase in prescription opioid use during pregnancy among medicaid-enrolled women. *Obstet Gynecol* 2014; **123**(5): 997–1002.
9 Paulozzi LJ, Mack KA, Hockenberry JM. Vital signs: variation among States in prescribing of opioid pain relievers and benzodiazepines – United States, 2012. *MMWR Morb Mortal Wkly Rep* 2014; **63**(26): 563–568.
10 Centers for Disease Control and Prevention. Prescription Drug Overdose in the United States: Fact Sheet Atlanta, GA: Centers for Disease Control and Prevention; 2014. Available at http://www.cdc.gov/homeandrecreationalsafety/overdose/facts.html.
11 HCUP Kids' Inpatient Database. Healthcare Cost and Utilization Project (HCUP) Rockville, MD: Agency for Healthcare Research and Quality; 2000, 2003, 2006, 2009, 2012. Available at http://www.hcup-us.ahrq.gov/kidoverview.jsp.
12 HCUP Nationwide Inpatient Sample. Healthcare Cost and Utilization Project (HCUP) Rockville, MD: Agency for Healthcare Research and Quality; 2009–2011. Available at http://www.hcup-us.ahrq.gov/nisoverview.jsp.
13 Patrick SW, Davis MM, Sedman AB, Meddings JA, Hieber S, Lee GM *et al.* Accuracy of hospital administrative data in reporting central line-associated bloodstream infections in newborns. *Pediatrics* 2013; **131**(Suppl 1): S75–S80.
14 Auger KA, Patrick SW, Davis MM. Infant hospitalizations for pertussis before and after Tdap recommendations for adolescents. *Pediatrics* 2013; **132**(5): e1149–e1155.
15 Afana M, Brinjikji W, Cloft H, Salka S. Hospitalization costs for acute myocardial infarction patients treated with percutaneous coronary intervention in the United States are substantially higher than medicare payments. *Clin Cardiol* 2014; **38**(1): 13–19.
16 Kozhimannil KB, Arcaya MC, Subramanian SV. Maternal clinical diagnoses and hospital variation in the risk of cesarean delivery: analyses of a National US hospital discharge database. *PLoS Med* 2014; **11**(10): e1001745.
17 International Classification of Diseases. *Clinical Modification, American Medical Association*, 9th Revision, Chicago, IL, USA, 2012: p 360.
18 US Bureau of Labor Statistics. Consumer Price Index 2014 [cited 15 July 2014]. Available at http://www.bls.gov/cpi/.
19 Pisati M. Simple thematic mapping. *Stata J* 2004; **4**: 361–378.
20 National Oceanic and Atmospheric Administration. US States and Territories Silver Spring, MD2014. Available at http://www.nws.noaa.gov/geodata/catalog/national/html/us_state.htm.
21 Eapen V, Dadds M, Barnett B, Kohlhoff J, Khan F, Radom N *et al.* Separation anxiety, attachment and inter-personal representations: disentangling the role of oxytocin in the perinatal period. *PLoS One* 2014; **9**(9): e107745.
22 Sarkar S, Donn SM. Management of neonatal abstinence syndrome in neonatal intensive care units: a national survey. *J Perinatol* 2006; **26**(1): 15–17.
23 Hall ES, Wexelblatt SL, Crowley M, Grow JL, Jasin LR, Klebanoff MA *et al.* A multicenter cohort study of treatments and hospital outcomes in neonatal abstinence syndrome. *Pediatrics* 2014; **134**(2): e527–e534.
24 Agthe AG, Kim GR, Mathias KB, Hendrix CW, Chavez-Valdez R, Jansson L *et al.* Clonidine as an adjunct therapy to opioids for neonatal abstinence syndrome: a randomized, controlled trial. *Pediatrics* 2009; **123**(3): e849–e856.
25 Jansson LM. ABM clinical protocol #21: guidelines for breastfeeding and the drug-dependent woman. *Breastfeed Med* 2009; **4**(4): 225–228.
26 Wachman EM, Hayes MJ, Brown MS, Paul J, Harvey-Wilkes K, Terrin N *et al.* Association of OPRM1 and COMT single-nucleotide polymorphisms with hospital length of stay and treatment of neonatal abstinence syndrome. *JAMA* 2013; **309**(17): 1821–1827.
27 Jansson LM, Velez M, Harrow C. Methadone maintenance and lactation: a review of the literature and current management guidelines. *J Hum Lact* 2004; **20**(1): 62–71.
28 Abrahams RR, Kelly SA, Payne S, Thiessen PN, Mackintosh J, Janssen PA. Rooming-in compared with standard care for newborns of mothers using methadone or heroin. *Can Fam Physician* 2007; **53**(10): 1722–1730.
29 Hunseler C, Bruckle M, Roth B, Kribs A. Neonatal opiate withdrawal and rooming-in: a retrospective analysis of a single center experience. *Klin Padiatr* 2013; **225**(5): 247–251.

30 Saiki T, Lee S, Hannam S, Greenough A. Neonatal abstinence syndrome–postnatal ward versus neonatal unit management. *Eur J Pediatr* 2010; **169**(1): 95–98.

31 ACOG Committee on Health Care for Underserved Women, American Society of Addiction Medicine. ACOG Committee Opinion No. 524: Opioid abuse, dependence, and addiction in pregnancy. *Obstetrics and Gynecology (New York 1953)* 2012; **119**(3): 1070–1076.

32 Fullerton CA, Kim M, Thomas CP, Lyman DR, Montejano LB, Dougherty RH *et al.* Medication-assisted treatment with methadone: assessing the evidence. *Psychiatr Serv* 2014; **65**(2): 146–157.

33 TennCare. Neonatal Abstinence Syndrome among Tenncare enrollees Provisional 2012 data Nashville, TN2013 [cited 27 October 2014]. Available at http://www.tn.gov/tenncare/forms/TennCareNASData2012.pdf.

34 PDMP Assist. PDMP program status 2014 [cited 18 June 2014]. Available at http://www.pdmpassist.org/pdf/PDMPProgramStatus2014.pdf.

35 Peirce GL, Smith MJ, Abate MA, Halverson J. Doctor and pharmacy shopping for controlled substances. *Med Care* 2012; **50**(6): 494–500.

36 Burns L, Mattick RP. Using population data to examine the prevalence and correlates of neonatal abstinence syndrome. *Drug Alcohol Rev* 2007; **26**(5): 487–492.

Prescription Opioid Epidemic and Infant Outcomes

Stephen W. Patrick, MD, MPH, MS[a,b,c,d], Judith Dudley, BS[e], Peter R. Martin, MD, MSc[f], Frank E. Harrell, PhD[g], Michael D. Warren, MD, MPH[h], Katherine E. Hartmann, MD, PhD[i], E. Wesley Ely, MD, MPH[j,k], Carlos G. Grijalva, MD, MPH[e,k], William O. Cooper, MD, MPH[a,d]

abstract

BACKGROUND AND OBJECTIVES: Although opioid pain relievers are commonly prescribed in pregnancy, their association with neonatal outcomes is poorly described. Our objectives were to identify neonatal complications associated with antenatal opioid pain reliever exposure and to establish predictors of neonatal abstinence syndrome (NAS).

METHODS: We used prescription and administrative data linked to vital statistics for mothers and infants enrolled in the Tennessee Medicaid program between 2009 and 2011. A random sample of NAS cases was validated by medical record review. The association of antenatal exposures with NAS was evaluated by using multivariable logistic regression, controlling for maternal and infant characteristics.

RESULTS: Of 112 029 pregnant women, 31 354 (28%) filled ≥1 opioid prescription. Women prescribed opioid pain relievers were more likely than those not prescribed opioids ($P < .001$) to have depression (5.3% vs 2.7%), anxiety disorder (4.3% vs 1.6%) and to smoke tobacco (41.8% vs 25.8%). Infants with NAS and opioid-exposed infants were more likely than unexposed infants to be born at a low birth weight (21.2% vs 11.8% vs 9.9%; $P < .001$). In a multivariable model, higher cumulative opioid exposure for short-acting preparations ($P < .001$), opioid type ($P < .001$), number of daily cigarettes smoked ($P < .001$), and selective serotonin reuptake inhibitor use (odds ratio: 2.08 [95% confidence interval: 1.67–2.60]) were associated with greater risk of developing NAS.

CONCLUSIONS: Prescription opioid use in pregnancy is common and strongly associated with neonatal complications. Antenatal cumulative prescription opioid exposure, opioid type, tobacco use, and selective serotonin reuptake inhibitor use increase the risk of NAS.

WHAT'S KNOWN ON THIS SUBJECT: Although opioid pain relievers are commonly prescribed in pregnancy, their association with neonatal outcomes is not well described. Further, factors associated with development of neonatal abstinence syndrome, a neonatal opioid withdrawal syndrome is inadequately understood.

WHAT THIS STUDY ADDS: Prescription opioid use in pregnancy is common and strongly associated with neonatal complications. Antenatal cumulative prescription opioid exposure, opioid type, tobacco use, and selective serotonin reuptake inhibitor use increase the risk of neonatal abstinence syndrome.

Departments of [a]Pediatrics, [b]Health Policy, [c]Psychiatry, [d]Pharmacology, [e]Biostatistics, [f]Obstetrics and Gynecology, and [g]Medicine, Vanderbilt University, Nashville, Tennessee; [h]Mildred Stahlman Division of Neonatology, Vanderbilt University, Nashville, Tennessee; [i]Vanderbilt Center for Health Services Research, Nashville, Tennessee; [j]Tennessee Department of Health, Nashville, Tennessee; and [k]Veteran's Affairs, Tennessee Valley Geriatric Research Education Clinical Center, Nashville, Tennessee

Dr Patrick conceptualized the study, conducted the analysis, and drafted the initial manuscript; Dr Cooper was involved in the analytic plan, conducted the analysis, interpreted the results, and revised the manuscript; Ms Dudley and Dr Harrell conducted the analysis, were involved in interpretation of the results, and revised the manuscript; Drs Martin, Warren, Hartmann, Ely, and Grijalva were involved in the analytic plan and interpretation of the results and revised the manuscript; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

The contents of this article are solely the responsibility of the authors and do not necessarily represent the official views of the Tennessee Department of Health or the National Institutes of Health.

www.pediatrics.org/cgi/doi/10.1542/peds.2014-3299

DOI: 10.1542/peds.2014-3299

Accepted for publication Feb 10, 2015

Downloaded from

Recently, sales of opioid pain relievers (OPRs) in the United States have surged.[1] Complications of this increase have affected a wide range of the US population, including pregnant women and their infants.[2,3] Neonatal abstinence syndrome (NAS) is a postnatal withdrawal syndrome, initially described among heroin-exposed infants,[4] that presents with a wide array of clinical signs ranging from feeding difficulties to seizures.[5] From 2000 to 2009, the number of infants in the United States diagnosed with NAS grew nearly threefold, temporally associated with a fourfold increase in OPR prescriptions.[1,6] By 2009, one US infant was born per hour with NAS, accounting for $720 million in national health care expenditures.[6] Despite this temporal association, no large population-based studies have explored the association between OPR use in pregnancy and NAS.

Factors that determine which exposed infants will develop NAS are poorly understood. Rates of NAS among infants exposed to heroin or maintenance medications are reportedly as high as 80%.[5,7] For infants exposed to maintenance medications, risk of NAS seems unrelated to opioid dose[8,9]; however, the association of cumulative opioid exposure for nonmaintenance OPRs and NAS has not been studied. Some reports suggest that the use of tobacco and coprescription of selective serotonin reuptake inhibitors (SSRIs) may also increase the likelihood of developing NAS.[10–12]

Using a large retrospective cohort of pregnant women, our objectives were to identify neonatal complications associated with antenatal OPR exposures and to determine if antenatal cumulative prescription opioid exposure, opioid type, number of cigarettes smoked daily, and SSRI use were associated with a higher likelihood of developing NAS.

METHODS

Study Design and Setting

This retrospective, longitudinal cohort study was conducted by using data from TennCare, Tennessee's Medicaid program; outpatient prescription claims were linked to vital records and hospital and outpatient administrative data. These resources have been used extensively to assess the safety of medications during pregnancy.[13–16] Medicaid serves as an ideal program to study NAS because an estimated 80% of infants with NAS nationwide are enrolled in state Medicaid programs.[6]

The present study was approved with a waiver of informed consent by the Vanderbilt University institutional review board, the State of Tennessee Department of Health, and the Bureau of TennCare.

Cohort Assembly

Maternal and infant dyads were included in the study if: (1) the mother was 15 to 44 years old at the time of delivery; (2) the mother had been enrolled in TennCare at least 30 days before delivery; and (3) the infants were enrolled in TennCare within 30 days after delivery. Last menstrual period and date of delivery were obtained from vital records.[17] Pregnancies were included if the birth occurred between January 1, 2009, and December 31, 2011. Of a total 134 450 births, 112 029 met our inclusion criteria (83.3%).

Exposures

The study's primary exposure of interest was any prescription opioid fill during pregnancy identified from TennCare pharmacy claims data. TennCare pharmacy files contain information on all outpatient prescriptions that are reimbursed by TennCare. Opioid drug types were categorized as short-acting (eg, oxycodone hydrochloride), long-acting (eg, oxymorphone hydrochloride extended release), or maintenance (eg, buprenorphine hydrochloride) medications. Opioid doses were converted to morphine milligram equivalents by using established conversion guidelines to facilitate meaningful comparisons.[18] Duration of opioid use was defined as the period between the prescription start date and the end of the days of supply (allowing up to a 5-day carryover period from previous prescriptions). SSRI prescriptions filled within 30 days before delivery were captured. Information on tobacco use during pregnancy was obtained from birth certificates and from claims by using *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM),[19] diagnostic codes (tobacco: 305.1, V15.82, 989.84, and 649.0x). Data regarding the number of cigarettes smoked per day were obtained from birth certificates, and medication costs were obtained from TennCare pharmacy expenditures. Antenatal exposure to benzodiazepines[20] has been associated with more severe NAS among opioid-exposed infants and was considered in our evaluation; however, the use of these drugs was rare in the study population (167 of 112 029) due to TennCare policies and was not included.

Descriptive Variables, Demographic Characteristics, and Outcomes

Maternal Characteristics

Demographic information was obtained, including maternal age, education (number of years), birth number (parity), and race from birth certificates. Given that the literature describes opioid-using populations to be at increased risk of hepatitis B,[21] hepatitis C,[21,22] HIV,[23] depression,[24–26] and anxiety,[27] data regarding these conditions were obtained from birth certificate data and from outpatient and hospital administrative records by using diagnostic codes (hepatitis B: 070.2x and 070.3x; hepatitis C: 070.41, 070.44, 070.51, 070.54, and 070.7x; HIV: 042, 079.53, and V08;

depression: 296.2x, 296.3x, and 311; and anxiety disorder: 300.x). Acute pain, chronic pain, headache or migraine, and musculoskeletal diseases were identified by using ICD-9-CM codes (acute pain: 338.1x; chronic pain: 338.2x; headache or migraine: 339.x, 346.x, and 784.0; diseases of the musculoskeletal system and connective tissue: 710.x–739.x) as potential OPR indications. Lastly, we identified women with opioid dependency (opioid-type dependence: 304.0x; combinations of opioid type drug with any other drug dependence: 304.7x).

Outcome

Infants with NAS were identified if the ICD-9-CM code 779.5 (drug withdrawal syndrome in newborn) appeared in any diagnostic field during the birth hospitalization. To establish the accuracy of administrative coding for NAS, a chart review was performed of 228 randomly selected cases and noncases. Using a standard definition of NAS as a reference, ICD-9-CM–based identification yielded an 88.1% (95% confidence interval [CI]: 83.3–91.7) sensitivity and a 97.0% (95% CI: 93.8–98.5) specificity (Supplemental Information Appendix A). Infants were further classified as having: (1) no opioid exposure; (2) opioid exposure without NAS; or (3) NAS.

Infant Characteristics

After establishing our cohort, our goal was to describe the clinical characteristics of each infant based a priori on the literature. NAS is characterized by respiratory symptoms, feeding difficulties, and seizures. Opioid-exposed infants and infants with NAS are also more likely to be born preterm or with a low birth weight.[5] Gender, gestational age, and birth weight data were obtained from birth certificates. Clinical signs of NAS, including transient tachypnea of the newborn (770.6), meconium aspiration syndrome (770.11 and 770.12), respiratory distress syndrome (769.x), other neonatal respiratory diagnoses (770.x, excluding the aforementioned codes and 770.7), feeding difficulty (779.3x), and seizure (779.0 and 780.3), were obtained from hospital claims. Infants with NAS might be at greater risk for concerns of sepsis (771.81) considering their clinical presentation (eg, irritability, respiratory distress), and they may also be at an increased risk of jaundice (774.x) due to feeding difficulties. We evaluated for necrotizing enterocolitis (777.5x), given that some authors have reported an association between this condition and NAS.[28] Lastly, we examined the risk of hemolytic disease (773.x) among infants with NAS because of the possibility of previous maternal intravenous drug use.

Data Analysis

The Wilcoxon rank-sum test and χ^2 tests were used where appropriate for bivariate analyses. Candidate predictors of NAS were established a priori from the literature. The level of missing data in our predictors was evaluated; <1% of missing data was found for all variables except number of cigarettes smoked per day, which had 5.6% missing. Birth weights <400 g were deemed unreliable and considered missing. To account for missing data, we used the aregImpute function for multiple imputation by using predictive mean matching[29,30] with 5 imputations. Because of the small numbers of long-acting opioids (n = 177), this group was combined with maintenance opioids for the statistical analyses. Using our entire cohort of 112 029 pregnant women, a logistic regression model was fit with NAS as the outcome and cumulative opioid exposure, opioid type (short-acting, long-acting, or maintenance), number of cigarettes smoked per day, SSRI within 30 days of delivery, infant gender, birth weight, multiple gestations, year of birth, birth number (parity), maternal age, maternal education, and maternal race (white, African American, and other) as predictors. The nonlinear relationship of continuous variables was accounted for by using restricted cubic splines for all variables except morphine milligram equivalents, which were cube root transformed and fit by using a quadratic function to account for skewness.[29] Results for nonlinear predictors are presented graphically (with P values for tests of association) because odds ratios would compare arbitrary data points and may not fully capture their nonlinear relationship with the primary outcome (ie, NAS). Interactions were tested between opioid type × cumulative opioid exposure, number of cigarettes smoked per day × cumulative opioid exposure, opioid type × number of cigarettes smoked per day, and SSRI × cumulative opioid exposure.

Because OPR use early in pregnancy would likely not result in NAS, 2 supplemental analyses restricted to opioid prescriptions were performed that continued through the final 30 and 14 days of pregnancy to determine if restriction to these subsets changed our results. Cost estimates were created by using TennCare pharmacy expenditures and previously published estimates of NAS hospitalization charges.[6] All dollars were adjusted to 2011 US dollars by using the Consumer Price Index.[31] Statistical analyses were completed by using R version 3.1.0. (R Foundation for Statistical Computing, Vienna, Austria)[32] and Stata version 13.0 (StataCorp, College Station, TX).

RESULTS

Among the 112 029 pregnant women in our sample, 31 354 (28.0%) were prescribed at least 1 OPR during pregnancy. Compared with women with no opioid exposure, women taking OPRs were more likely (P < .001) to be white (72.4% vs 65.8%); have depression (5.3% vs 2.7%), anxiety disorder (4.3% vs 1.6%),

headache or migraine (8.3% vs 2.0%), and musculoskeletal disease (23.7% vs 5.8%); use tobacco (41.8% vs 25.8%); and be prescribed an SSRI within 30 days before birth (4.3% vs 1.9%) (Table 1).

Among women prescribed opioids, the majority received short-acting medications (n = 30 192 [96.2%]); fewer received maintenance treatment of opioid use disorder (n = 853 [2.7%]) or long-acting preparations (n = 177 [0.6%]) (Supplemental Table 4). Median (interquartile range) cumulative morphine milligram equivalents were higher among those using maintenance medications (18 480 [8160–37 232]) compared with those using long-acting preparations (4029 [1508–10 800]) or short-acting preparations (150 [75–373]; $P <$ .001). Median (interquartile range) amounts paid for OPRs per individual were $1317 (586–2598) for maintenance treatment, $208 (53–756) for long-acting preparations, and $8 (5–16) for short-acting preparations. Within the last 30 days of pregnancy, 8835 women were prescribed OPRs, 93.6% of whom received a short-acting preparation (Supplemental Table 5). Lastly, 12 896 women received a >7 days' supply of opioids during pregnancy (Supplemental Table 6).

In our cohort, a total of 1086 infants were diagnosed with NAS, 701 (65%) of whom had mothers with at least 1 OPR prescription during pregnancy. Between 2009 and 2011, the quarterly rate of NAS among infants in TennCare rose from 6.0 to 10.7 per 1000 births ($P <$ .001) (Fig 1). NAS occurred more frequently among infants exposed to maintenance opioids (29.3%) and long-acting opioids (14.7%) than in those exposed to short-acting preparations (1.4%) (Supplemental Table 4). Infants with NAS were more likely than other opioid-exposed and nonopioid-exposed infants to be born with a low birth weight (21.2% vs 11.8% vs 9.9%; $P <$ .001) and preterm (16.7% vs 11.6% vs 11.0%; $P <$ .001). Consistent with the characteristics of the syndrome, when comparisons were made between nonopioid and opioid-exposed infants, those with NAS were more likely ($P <$ .001) to have respiratory diagnoses (28.7% vs 10.1% vs 8.8%), feeding difficulties (13.1% vs 2.6% vs 2.3%), and seizures (3.7% vs 0.4% vs 0.3%). Rates of necrotizing enterocolitis were similar among all groups (Table 2). Every $1 spent on short-acting and long-acting opioids (excluding maintenance) was associated with $52 and $12, respectively, in hospital charges for infants with NAS.

After adjusting for maternal age, education, race, infant gender, birth weight, multiple births, birth number (parity), year of birth, the interaction of opioid type × cumulative opioid exposure, opioid type × number of cigarettes smoked per day, and number of cigarettes smoked per day × cumulative opioid exposure, the following factors were independently associated with an increased odds of NAS: cumulative opioid exposure for short-acting OPRs ($P <$ .001), opioid type ($P <$ .001), number of cigarettes smoked per day ($P <$ .001), and SSRI use within 30 days of delivery (odds ratio: 2.08 [95% CI: 1.67–2.60]) (Fig 2). For pregnant women exposed to maintenance/long-acting opioids, the risk of NAS was consistently higher than in other exposure groups, but the risk did not vary with cumulative opioid exposure (P = .16). In supplemental analyses, restricting assessments to women who filled OPR prescriptions through 30 and 14 days before delivery, our results were similar to the findings from our primary analysis (Supplemental Tables 7 and 8, respectively).

TABLE 1 Maternal Characteristics According to Opioid Exposure in Tennessee Medicaid, 2009–2011

Characteristic	No Opioid (n = 80 675)		Any Opioid (n = 31 354)		P
	Median	IQR	Median	IQR	
Age, y	23	20–27	24	21–27	<.001
Education, y	12	12-13	12	11–13	<.001
Birth number	1	1–2	1	1–2	<.001
	N	%	N	%	
Race					<.001
Black	25 986	32.2	8362	26.7	
White	53 074	65.8	22 699	72.4	
Other	1298	1.6	188	0.6	
Maternal comorbidities					
Pain					
Musculoskeletal disease	4430	5.8	7439	23.7	<.001
Headache or migraine	1636	2.0	2593	8.3	<.001
Chronic pain	40	0.0	187	0.6	<.001
Acute pain	72	0.1	132	0.4	<.001
Infectious					
Hepatitis C	328	0.4	358	1.1	<.001
Hepatitis B	91	0.1	39	0.1	.61
HIV	144	0.2	43	0.1	0.13
Psychiatric					
Depression	2185	2.7	1672	5.3	<.001
Anxiety disorder	1279	1.6	1361	4.3	<.001
Opioid dependency	154	0.2	262	0.8	<.001
Additional substances used					
Tobacco	20 785	25.8	13 097	41.8	<.001
SSRI (last 30 d of pregnancy)	1529	1.9	1335	4.3	<.001

Percentages may not add to 100% because of rounding.
IQR, interquartile range.

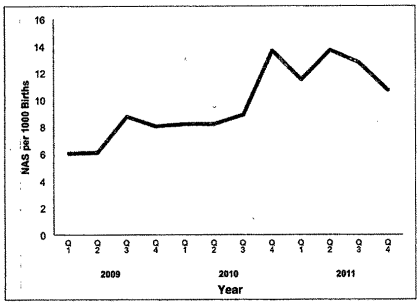


FIGURE 1
Rate of NAS in Tennessee Medicaid according to quarter, 2009 through 2011. $P < .001$.

Based on our regression model, the predicted probability of NAS among mothers who received OPRs during pregnancy varied greatly depending on drug type, cumulative opioid exposure, and number of cigarettes smoked per day. As an example, a woman who took oxycodone hydrochloride 10 mg every 6 hours for 5 weeks with no tobacco or SSRI use had a probability of delivering an infant with NAS of 0.011 (95% CI: 0.008–0.016). In contrast, a woman prescribed buprenorphine hydrochloride 24 mg daily for 25 weeks, who smoked 20 cigarettes (ie, 1 pack) per day and took an SSRI, had a 0.366 (95% CI: 0.270–0.474) probability of her infant having NAS (Table 3).

TABLE 2 Infant Characteristics for Infants With and Without NAS in Tennessee Medicaid, 2009–2011

Characteristic	No Opioid (No NAS) (n = 80 292)		Opioid (No NAS) (n = 30 651)		NAS (n = 1086)		P
	N	%	N	%	N	%	
Female	39 064	48.7	14 986	48.9	502	46.2	.2
Preterm (<37 wk)	8868	11.0	3549	11.6	181	16.7	<.001
Low birth weight (<2500 g)	7940	9.9	3615	11.8	230	21.2	<.001
Clinical conditions							
Respiratory diagnoses	7052	8.8	3083	10.1	312	28.7	<.001
Transient tachypnea of the newborn	2192	2.7	964	3.1	146	13.4	<.001
Respiratory distress syndrome	2170	2.7	1045	3.4	76	7.0	<.001
Meconium aspiration syndrome	321	0.4	106	0.3	36	3.3	<.001
Other respiratory diagnoses	4517	5.6	1965	6.4	177	16.3	<.001
Jaundice	13 963	17.4	5503	18.0	393	36.2	<.001
Feeding difficulty	1809	2.3	788	2.6	142	13.1	<.001
Sepsis	1515	1.9	692	2.3	78	7.2	<.001
Seizure	240	0.3	117	0.4	40	3.7	<.001
Hemolytic disease	1051	1.3	342	1.1	28	2.6	<.001
Necrotizing enterocolitis	136	0.2	56	0.2	**	0.1	.7

Comparisons made among mutually exclusive groups of no opioid exposure and no NAS, opioid exposure and no NAS, and NAS. Percentages may not add to 100% because of rounding.
**Value suppressed given n <10 in cell.

DISCUSSION

In this large retrospective cohort study of >100 000 pregnancies, cumulative OPR exposure for short-acting OPRs, opioid type, tobacco, and SSRI use during pregnancy was associated with an increased risk of NAS. In the study cohort, nearly 1 in 3 women used at least 1 OPR during pregnancy; 96% were nonmaintenance prescription opioids. Although NAS has previously been associated with illicit opioid use, we found that 65% of infants with NAS were exposed to legally obtained OPRs in pregnancy. These associations provide compelling evidence that OPRs and other concurrent antenatal exposures have a measurable deleterious impact on infants who are more likely than others to be born with NAS and related complications.

Maintenance medications were categorized separately, given that women using maintenance medications have different risks and different reasons for using opioids. For women with heroin dependency especially, maintenance medications have been shown to improve both maternal and neonatal outcomes, including improved fetal growth and decreased preterm birth.[33,34]

Neonatal Complications

Rates of NAS nearly doubled in TennCare during our 3-year study period, reaching 10.7 per 1000 births, exceeding previously reported rates of 3.4 per 1000 births.[6] Compared with nonopioid-exposed infants, those with NAS were more likely to have neonatal complications. Opioid-exposed infants and those with NAS were more likely than nonopioid-exposed infants to be born preterm and have low birth weight. Preterm birth imparts risk to the infant for clinical comorbidities, including respiratory distress syndrome, feeding difficulties, and jaundice (as we have shown).

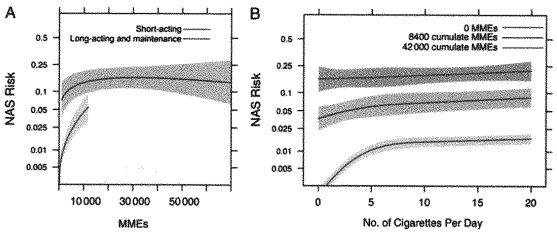


FIGURE 2

Probability of NAS. A, Opioid type and cumulative morphine milligram equivalents (MMEs). B, Number of cigarettes smoked per day and cumulative MMEs after adjusting for maternal characteristics, infant characteristics, and birth characteristics. Graph A: Cumulative MMEs and risk of NAS for short-acting opioid preparations ($P < .001$) and long-acting/maintenance opioid preparations ($P = .16$). Graph B: An increasing number of cigarettes raised the risk of NAS among women with 0 cumulative MME (ie, receiving no legal opioids; $P < .001$) receiving a cumulative total of 8400 MMEs, which equals oxycodone 10 mg q6h × 20 weeks ($P < .001$), and 42 000 MMEs, which equals buprenorphine 24 mg daily × 25 weeks ($P < .001$). The absolute risk and 95% CIs of NAS have been adjusted for cumulative opioid dose in MMEs, maternal age, maternal education, birth number, infant birth weight, year of birth, maternal race, infant gender, multiple gestations, and interaction effects of drug type × cumulative opioid dose ($P = .002$), number of cigarettes smoked per day × cumulative opioid dose ($P < .001$), and drug type × number of cigarettes smoked per day. Total sample = 112 029 mother–infant dyads, 30 651 mothers with OPR use, and 1086 infants with NAS.

In this study cohort, opioid dose for short-acting opioids, tobacco use, and SSRI use were strongly associated with NAS. Similar to previous smaller studies, we found that dose of maintenance opioids did not modify the risk of NAS.[8,9] Furthermore, our findings provide important information that builds on previous studies of OPR use in pregnancy[3,35,36] and several publications describing tobacco and SSRI use in the context of opioid maintenance.[10–12] Both tobacco and SSRIs have been described in the literature as having individual withdrawal syndromes and unique toxidromes.[5] Nevertheless, these exposures could also be associated with a constellation of other risk factors that may be difficult to measure directly (eg, substance abuse) and account for in our analyses. Polysubstance exposure is common among infants with NAS, raising the possibility that observable clinical signs (eg, hypertonia) may not be solely attributable to opioids. In many instances, clinical signs compatible with NAS may be due to multiple withdrawal syndromes and toxidromes occurring simultaneously.

State Policies

The association of increasing use of OPR, overdose deaths, and NAS garnered the attention of many state and federal policymakers.[37] States license and regulate prescribers and pharmacists, and they are financially responsible for the care received by ~80% of infants with NAS through Medicaid programs.[6,38] Nearly all states have implemented prescription drug monitoring programs[39] that aim to reduce diversion and misuse of OPR by identifying high users and high-risk behavior (eg, "doctor and pharmacy shopping"). Tennessee's program began in 2006 as an optional resource for providers and pharmacists. In 2013, the state instituted a requirement that the program must be queried before prescribing most controlled substances.[40] Our study found that ~30% of pregnant women in TennCare were prescribed at least 1 opioid before these policy changes. It will be important moving forward to evaluate the impact of new state policies on reducing opioid use in pregnancy and the incidence of NAS. Furthermore, innovative strategies to enhance prescription drug monitoring databases by including risk predictions of adverse outcomes such as NAS and overdose deaths[41] should be piloted and evaluated.

Variable Risk

The American Academy of Pediatrics recommends that all opioid-exposed infants be observed in the hospital for 4 to 7 days after birth.[5] However, our data suggest there was a wide variability in an infant's risk of drug withdrawal based on opioid type, dose, SSRI use, and number of cigarettes smoked per day by the mother (Fig 2, Table 3). Future studies should evaluate new care models for opioid-exposed infants at different risk levels of developing NAS. For instance, some low-risk infants may be safely discharged from the hospital sooner, whereas high-risk infants may require longer hospital observation.

Limitations

Our study does have several important limitations to consider, similar to other studies that rely on accurate coding of

TABLE 3 Probability of NAS According to Varying Exposures of Short-Acting Opioids and Maintenance Opioids, Tobacco, and SSRI Use

Variable	Short-Acting (eg, Oxycodone Hydrochloride) 10 mg q6h	Maintenance (eg, Buprenorphine Hydrochloride Tablet) 24 mg q24h
	Probability (95% CI)	Probability (95% CI)
5-wk duration	0.011 (0.008–0.016)	0.132 (0.085–0.199)
No cigarette use, SSRI use	0.023 (0.016–0.034)	0.241 (0.157–0.351)
5 cigarettes/d, no SSRI	0.026 (0.020–0.033)	0.165 (0.123–0.219)
5 cigarettes/d, SSRI	0.053 (0.039–0.071)	0.293 (0.217–0.383)
20 cigarettes/d, no SSRI	0.037 (0.029–0.047)	0.179 (0.137–0.231)
20 cigarettes/d and SSRI use	0.074 (0.056–0.098)	0.314 (0.239–0.399)
25-wk duration	0.048 (0.028–0.081)	0.163 (0.103–0.247)
No cigarette use, SSRI use	0.095 (0.055–0.158)	0.289 (0.188–0.416)
5 cigarettes/d, no SSRI	0.073 (0.045–0.115)	0.172 (0.123–0.236)
5 cigarettes/d, SSRI	0.141 (0.088–0.220)	0.303 (0.218–0.404)
20 cigarettes/d, no SSRI	0.104 (0.068–0.156)	0.216 (0.156–0.291)
20 cigarettes/d and SSRI use	0.196 (0.129–0.285)	0.366 (0.270–0.474)

Results shown after adjustment for maternal age, education, race, infant gender, birth weight, year of birth, interaction drug type and cumulative opioid exposure (0.0002), interaction of number of cigarettes smoked per day and cumulative opioid exposure ($P < .001$), and interaction of drug type and number of cigarettes smoked per day.
Probability can be interpreted as 1 = 100% certainty that an event will occur, and 0 = 0% certainty that an event will occur. As an example, a probability of an outcome equal to 0.37 can be interpreted as among a sample of 100 patients, 37 will have the predicted outcome.
As an example, a woman taking oxycodone hydrochloride 10 mg every 6 hours for 5 weeks with no tobacco or SSRI use had a probability of delivering an infant with NAS of 0.011 (95% CI: 0.008–0.016). In contrast, a woman prescribed buprenorphine hydrochloride 24 mg daily for 25 weeks smoking 20 cigarettes (ie, 1 pack) per day and taking SSRIs had a 0.366 (95% CI: 0.270–0.474) probability of delivering an infant with NAS.

hospital administrative and vital statistics data. Both errors of omission and commission are possible, leading to misclassification bias; however, our medical record review suggested that potential misclassification of outcomes was likely to be small. Next, we did not directly observe women in our cohort taking the prescribed OPR. It is possible that OPR medications were not taken as prescribed, resulting in a bias toward the null hypothesis. Next, we were unable to capture other exposures (eg, illicit drugs) that may have influenced our primary outcome (NAS). Opioids obtained by other legal sources not paid for by TennCare (ie, cash payments) were not captured in our sample, which could bias our results toward the null hypothesis. Conversion to morphine milligram equivalents, although the accepted standard, may not create perfect comparisons of various OPRs. Finally, it is possible that opioid prescribing is a surrogate for other unmeasured risk factors for NAS; residual confounding cannot be completely ruled out.

CONCLUSIONS

The use of commonly prescribed, nonmaintenance OPRs in pregnancy increased the infant's risk of developing NAS. Nearly 27% of our cohort of pregnant women was prescribed at least 1 short-acting OPR. Furthermore, NAS risk varied widely based on antenatal cumulative opioid exposure, opioid type, number of cigarettes smoked per day, and SSRI use. Public health efforts should focus on limiting inappropriate OPR and tobacco use in pregnancy. Prescribing opioids in pregnancy should be done with caution because it can lead to significant complications for the neonate.

ACKNOWLEDGMENTS

The authors acknowledge Michael Polson, MS, PharmD, Ann Stark, MD, and Jeff Reese, MD, for their assistance in preparation of the manuscript. We are indebted to the Tennessee Bureau of TennCare of the Department of Finance and Administration, which provided the data. We are also indebted to the Tennessee Department of Health, Office of Health Statistics, for providing vital records data.

Address correspondence to Stephen W. Patrick, MD, MPH, MS, Monroe Carell Jr Children's Hospital at Vanderbilt, Mildred Stahlman Division of Neonatology, 11111 Doctor's Office Tower, 2200 Children's Way, Nashville, TN 37232-9544. E-mail: stephen.patrick@vanderbilt.edu .

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2015 by the American Academy of Pediatrics

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: Financially supported by the Tennessee Department of Health (Drs Patrick, Cooper, and Harrell) and the National Institutes of Health through the Clinical and Translational Science Award KL2TR000446 from the National Center for Advancing Translational Sciences (Dr Patrick), the National Center for Research Resources/National Institutes of Health (UL1 RR024975-01) Clinical and Translational Science Award (Dr Harrell), and R01AG043471-01A1 from the National Institute on Aging (Dr Grijalva). Funded by the National Institutes of Health (NIH).

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

REFERENCES

1. Centers for Disease Control and Prevention (CDC). Vital signs: overdoses of prescription opioid pain relievers—United States, 1999-2008. *MMWR Morb Mortal Wkly Rep.* 2011; 60(43):1487–1492
2. Bateman BT, Hernandez-Diaz S, Rathmell JP, et al. Patterns of opioid utilization in pregnancy in a large cohort of commercial insurance beneficiaries in the United States. *Anesthesiology.* 2014; 120(5):1216–1224
3. Epstein RA, Bobo WV, Martin PR, et al. Increasing pregnancy-related use of prescribed opioid analgesics. *Ann Epidemiol.* 2013;23(8):498–503
4. Finnegan LP, Kron RE, Connaughton JF, Emich JP. Assessment and treatment of abstinence in the infant of the drug-dependent mother. *Int J Clin Pharmacol Biopharm.* 1975;12(1–2):19–32
5. Hudak ML, Tan RC; Committee on Drugs; Committee on Fetus and Newborn; American Academy of Pediatrics. Neonatal drug withdrawal. *Pediatrics.* 2012;129(2). Available at: www.pediatrics.org/cgi/content/full/129/2/e540
6. Patrick SW, Schumacher RE, Benneyworth BD, Krans EE, McAllister JM, Davis MM. Neonatal abstinence syndrome and associated health care expenditures: United States, 2000-2009. *JAMA.* 2012;307(18):1934–1940
7. Doberczak TM, Kandall SR, Wilets I. Neonatal opiate abstinence syndrome in term and preterm infants. *J Pediatr.* 1991;118(6):933–937
8. Cleary BJ, Donnelly J, Strawbridge J, et al. Methadone dose and neonatal abstinence syndrome-systematic review and meta-analysis. *Addiction.* 2010; 105(12):2071–2084
9. Jones HE, Dengler E, Garrison A, et al. Neonatal outcomes and their relationship to maternal buprenorphine dose during pregnancy. *Drug Alcohol Depend.* 2014;134:414–417
10. Choo RE, Huestis MA, Schroeder JR, Shin AS, Jones HE. Neonatal abstinence syndrome in methadone-exposed infants is altered by level of prenatal tobacco exposure. *Drug Alcohol Depend.* 2004; 75(3):253–260
11. O'Connor AB, O'Brien L, Alto WA. Are there gender related differences in neonatal abstinence syndrome following exposure to buprenorphine during pregnancy? *J Perinat Med.* 2013;41(5):621–623
12. Kaltenbach K, Holbrook AM, Coyle MG, et al. Predicting treatment for neonatal abstinence syndrome in infants born to women maintained on opioid agonist medication. *Addiction.* 2012;107(suppl 1): 45–52
13. Cooper WO, Habel LA, Sox CM, et al. ADHD drugs and serious cardiovascular events in children and young adults. *N Engl J Med.* 2011;365(20):1896–1904
14. Griffin MR, Ray WA, Livengood JR, Schaffner W. Risk of sudden infant death syndrome after immunization with the diphtheria-tetanus-pertussis vaccine. *N Engl J Med.* 1988;319(10): 618–623
15. Cooper WO, Ray WA, Griffin MR. Prenatal prescription of macrolide antibiotics and infantile hypertrophic pyloric stenosis. *Obstet Gynecol.* 2002;100(1):101–108
16. Ray WA, Murray KT, Kawai V, et al. Propoxyphene and the risk of out-of-hospital death. *Pharmacoepidemiol Drug Saf.* 2013;22(4):403–412
17. Cooper WO, Hernandez-Diaz S, Arbogast PG, et al. Major congenital malformations after first-trimester exposure to ACE inhibitors. *N Engl J Med.* 2006;354(23):2443–2451
18. Prescription Drug Monitoring Program Training and Technical Assistance Center. Conversion reference table. Available at: www.pdmpassist.org/pdf/Conversion Reference Table.xlsx. Accessed May 9, 2014
19. *International Classification of Diseases, Ninth Revision, Clinical Modification.* Chicago, IL: American Medical Association; 2012
20. Cleary BJ, Eogan M, O'Connell MP, et al. Methadone and perinatal outcomes: a prospective cohort study. *Addiction.* 2012;107(8):1482–1492
21. Larney S, Randall D, Gibson A, Degenhardt L. The contributions of viral hepatitis and alcohol to liver-related deaths in opioid-dependent people. *Drug Alcohol Depend.* 2013;131(3): 252–257
22. Silberbogen AK, Janke EA, Hebenstreit C. A closer look at pain and hepatitis C: preliminary data from a veteran population. *J Rehabil Res Dev.* 2007; 44(2):231–244
23. Koeppe J, Armon C, Lyda K, Nielsen C, Johnson S. Ongoing pain despite aggressive opioid pain management among persons with HIV. *Clin J Pain.* 2010;26(3):190–198
24. Dreifuss JA, Griffin ML, Frost K, et al. Patient characteristics associated with buprenorphine/naloxone treatment outcome for prescription opioid dependence: results from a multisite study. *Drug Alcohol Depend.* 2013; 131(1–2):112–118
25. Proctor SL, Estroff TW, Empting LD, Shearer-Williams S, Hoffmann NG. Prevalence of substance use and psychiatric disorders in a highly select chronic pain population. *J Addict Med.* 2013;7(1):17–24
26. Merrill JO, Von Korff M, Banta-Green CJ, et al. Prescribed opioid difficulties, depression and opioid dose among chronic opioid therapy patients. *Gen Hosp Psychiatry.* 2012;34(6):581–587
27. Sareen J, Cox BJ, Clara I, Asmundson GJ. The relationship between anxiety disorders and physical disorders in the U.S. National Comorbidity Survey. *Depress Anxiety.* 2005;21(4):193–202
28. Christensen RD, Lambert DK, Baer VL, Gordon PV. Necrotizing enterocolitis in term infants. *Clin Perinatol.* 2013;40(1): 69–78
29. Harrell FE. *Regression Modeling Strategies: With Applications to Linear Models, Logistic Regression, and Survival Analysis.* New York, NY: Springer; 2001
30. Harrell FE. Hmisc: a package of miscellaneous R functions. Available at: http://biostat.mc.vanderbilt.edu/Hmisc. Accessed August 3, 2014
31. US Bureau of Labor Statistics. Consumer price index. Available at: www.bls.gov/cpi/. Accessed July 15, 2014
32. *R: A Language and Environment for Statistical Computing* [computer program]. Vienna, Austria: R Foundation for Statistical Computing; 2013
33. Fullerton CA, Kim M, Thomas CP, et al. Medication-assisted treatment with methadone: assessing the evidence. *Psychiatr Serv.* 2014;65(2):146–157

34. ACOG Committee on Health Care for Underserved Women; American Society of Addiction Medicine. ACOG Committee Opinion No. 524: opioid abuse, dependence, and addiction in pregnancy. *Obstet Gynecol.* 2012;119(5):1070–1076

35. Kellogg A, Rose CH, Harms RH, Watson WJ. Current trends in narcotic use in pregnancy and neonatal outcomes. *Am J Obstet Gynecol.* 2011;204(3):259.e1–259.e4

36. Desai RJ, Hernandez-Diaz S, Bateman BT, Huybrechts KF. Increase in prescription opioid use during pregnancy among Medicaid-enrolled women. *Obstet Gynecol.* 2014;123(5):997–1002

37. Office of National Drug Control Policy, Executive Office of the President of the United States, The White House. Epidemic: Responding to America's Prescription Drug Abuse Crisis. Washington, DC: The White House; 2011

38. Patrick SW, Kaplan HC, Passarella M, Davis MM, Lorch SA. Variation in treatment of neonatal abstinence syndrome in US Children's Hospitals, 2004-2011. *J Perinatol.* 2014;34(11): 867–872

39. PDMP Training & Technical Assistance Center. Status of prescription drug monitoring programs (PDMPs). Available at: www.pdmpassist.org/pdf/PDMPProgramStatus2014.pdf. Accessed June 18, 2014

40. Tennessee Department of Health. Controlled Substance Monitoring Database (CSMD) and Prescription Safety Act. Available at: http://health.state.tn.us/boards/Controlledsubstance/faq.shtml

41. Swira Baumblatt JA, Wiedeman C, Dunn JR, Schaffner W, Paulozzi LJ, Jones TF. High-risk use by patients prescribed opioids for pain and its role in overdose deaths. *JAMA Intern Med.* 2014;174(5): 796–801

THE HIGH COST OF WORKING: *My daughter has begun the search for a summer job or internship. Last year, she was quite fortunate as she found a paid internship in a city only 5 hours from where we live. The company, a provider of wellness packages, seemed a great fit given my daughter's interest in athletics and communication. That she was actually paid to rotate through the different departments and assist in a variety of functions made the experience all the more remarkable. One of my sons, looking for a position overseas, has not been so fortunate.*

As he has found out, and as reported in The New York Times *(Education Life: February 5, 2015), few paid overseas internships exist. Students either volunteer or pay someone else for the opportunity to do an internship. The demand for overseas positions is high. During the 2012-13 year, approximately 40,000 Americans participated in for-credit internships or interned, worked, or volunteered abroad for no credit. Given the demand for positions, companies have sprung up to arrange for internships in a wide array of industries across the globe. While the experiences can be quite gratifying and many students report that the experience helped them find a job back home in the US, the costs of obtaining the internship can be high. Students may have to pay between $8,000 and $15,000 for a six to eight week experience. The cost of the flight and food are additional. While I am supportive of overseas learning experiences, I am having a bit of trouble digesting the concept of paying so much money for the opportunity. I am hoping that my children find summer internships close to home.*

Noted by WVR, MD

Prescription Opioid Epidemic and Infant Outcomes

Stephen W. Patrick, Judith Dudley, Peter R. Martin, Frank E. Harrell, Michael D. Warren, Katherine E. Hartmann, E. Wesley Ely, Carlos G. Grijalva and William O. Cooper

Pediatrics; originally published online April 13, 2015;
DOI: 10.1542/peds.2014-3299

Updated Information & Services	including high resolution figures, can be found at: http://pediatrics.aappublications.org/content/early/2015/04/08/peds.2014-3299
Supplementary Material	Supplementary material can be found at: http://pediatrics.aappublications.org/content/suppl/2015/04/08/peds.2014-3299.DCSupplemental.html
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): **Agency ABC's** http://pediatrics.aappublications.org/cgi/collection/agency_abcs
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://pediatrics.aappublications.org/site/misc/Permissions.xhtml
Reprints	Information about ordering reprints can be found online: http://pediatrics.aappublications.org/site/misc/reprints.xhtml

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2015 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Prescription Opioid Epidemic and Infant Outcomes

Stephen W. Patrick, Judith Dudley, Peter R. Martin, Frank E. Harrell, Michael D. Warren, Katherine E. Hartmann, E. Wesley Ely, Carlos G. Grijalva and William O. Cooper

Pediatrics; originally published online April 13, 2015;
DOI: 10.1542/peds.2014-3299

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://pediatrics.aappublications.org/content/early/2015/04/08/peds.2014-3299

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2015 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™

[SUMMARY STATEMENT OF STEPHEN PATRICK]

The number of infants diagnosed with neonatal abstinence syndrome, a post-natal drug withdrawal syndrome that most commonly occurs after in utero exposure to opioids, grew nearly 7fold from 2000 to 2014. By 2014, one infant was born every 15 minutes in the US with the syndrome. The rise of neonatal abstinence syndrome occurred with concurrent increases in opioid use and opioid use disorder among pregnant women. The 21st Century Cures Act, the Comprehensive Addiction and Recovery Act and the Protecting Our Infants Act moved forward important child health priorities addressing the opioid epidemic. These important pieces of legislation may benefit from additional action, funding and implementation efforts. In addition, Congress could consider several actions to improve outcomes for pregnant women and infants impacted by the opioid epidemic, focused on prevention, expansion of opioid use disorder treatment, improving care for opioid-exposed infants and improving outcomes after discharge by bolstering the child welfare system and early intervention systems.

The CHAIRMAN. Thank you, Dr. Patrick.

Dr. Bell, welcome.

STATEMENT OF WILLIAM C. BELL, PH.D., PRESIDENT AND CEO, CASEY FAMILY PROGRAMS, SEATTLE, WA

Dr. BELL. Good morning, Chairman Alexander, Ranking Member Murray, and honorable Members of the Committee. My name is Dr. William C. Bell, and I'm the President and CEO of Casey Family Programs, the Nation's largest operating foundation focused on safely reducing the need for foster care and building communities of hope for children and families across America.

Casey Family Programs works in all 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands, and with more than 16 tribal nations to influence long-lasting improvements to the safety and success of children, families, and the communities where they live. I thank you for the opportunity to be here today to discuss the disruption and trauma the opioid crisis is causing for our children, families, and communities.

Data and our work with states and communities show that parental substance abuse is a key reason that the number of children being separated from their families and placed into foster care has been increasing significantly since 2012. As you've heard, approximately 270,000 children entered the foster care system in fiscal year 2015.

Governors, mayors, child welfare leaders, nonprofit leaders, and tribal leaders across the country have been working tirelessly to overcome the challenges they face on a daily basis as they struggle to support and strengthen the families impacted by this opioid crisis. Increasingly, challenges involving recruiting foster parents, providing treatment services, treating babies born with prenatal exposure, and healing the mental trauma experienced by families have left child welfare systems strained and challenged to target resources in the best way to help families in devastated communities.

There should be nothing more important to our Nation than ensuring the safety of our children and ensuring that they have the opportunity to grow up surrounded by a community of hope. I applaud this Committee for its leadership in the passage of the Comprehensive Addiction and Recovery Act of 2016. Among its provisions, CARA strengthened the requirement that states have infant

plans of safe care in place that address both the needs of the infant and the needs of their parents. This legislation and the Protecting Our Infants Act of 2015 make it clear that our national child welfare—child/family response systems cannot continue operating as though it is possible to fully address the well-being of children without addressing the well-being of their families and their communities.

Current research has found that when parents can access treatment programs on demand and can enter treatment while keeping custody of their children, they are much more likely to successfully complete that program and, more importantly, continuing to improve their capacity to care for their children.

One such example of an intervention is Kentucky's Sobriety Treatment and Recovery Teams program, or START, an evidence-based program that provides services to safely maintain child placement in the home and provide parents with rapid access to intensive addiction and mental health assessment and treatment. Kentucky's START families have had twice the sobriety rates and half as many children in foster care as compared to their peers who did not participate in the Kentucky START program.

Nationally, grandparents and other relatives are caring for more than one-third of all children who have been placed into foster care due to the parental substance abuse. Research on kinship foster care tells us that children who cannot remain with their birth parents are more likely to have stable and safe childhoods when raised by relatives.

Frequently, relative caregivers have told us that the supports they need most include respite care, treatment, financial support, and mental health services for individuals and family members to deal with the enormous strain that this epidemic is placing on them. But, most critically, we hear from parents, foster parents, youth, kinship caregivers, child welfare leaders, and tribes that prevention services that promote long-term sobriety, services that improve parenting capacity, and the availability of sustained services for families once children return home from foster care are among the most important improvements that we can make.

But despite everything that we know that works to both keep children safe and support their families, the vast majority of our Federal child welfare funds support a different approach. For every $7 that we spend on foster care, we spend only $1 on prevention. We must change how we spend Federal child welfare funds to make sure that we are funding the efforts that are most likely to get the results that our children and their families need.

We know it is important that we intervene as early as possible. States need the ability to target their existing Federal resources into an array of prevention and early intervention services to keep children safe, to strengthen families, and to reduce the need for foster care whenever it is safe to do so.

We also know that one of the most traumatic experiences that a child can have is to be forcefully removed from their family.

In 2018, this Committee will consider the reauthorization of the Child Abuse Prevention and Treatment Act. Casey Family Programs stands ready to be a resource to you and to assist this Committee in any way that we can to reduce the impact of child abuse

and neglect, to increase the availability and quality of prevention programs, and to increase levels of well-being in vulnerable communities across America.

In spite of all the devastation that we have witnessed and all that you've heard from us today, I still believe that there is hope, and I believe in the inherent power that hope brings to those in need of help. And I also believe in the power that hope brings to those of us who have chosen to be the bearers of that help.

We are a nation of overcomers. Throughout our history when, as a Nation, we decided that a specific challenge confronting us as Americans had to be resolved, we have always come together and found a way to be victorious. We have found a way to overcome every challenge once we truly decided that it must be done. This epidemic is no different. This must be done. Mothers and fathers and sisters and brothers and entire communities and tribes have cried enough tears. This must be done.

This isn't a problem that people like Ms. Hegle or the Savage family and others in similar situations should be left to solve on their own. All of us together must face this challenge with them as a nation united, with Federal, state, county, city, and local communities making sure that every child has a permanent and loving home where they can thrive and grow up to live to the fullest whatever dreams they have for themselves.

Thank you very much for this opportunity to speak with you today, and I'm happy to answer any questions that you may have.

[The prepared statement of Dr. Bell follows:]

PREPARED STATEMENT OF WILLIAM C. BELL

Good morning Chairman Alexander, Ranking Member Murray and Members of the Committee. My name is William Bell and I am the President and Chief Executive Officer of Casey Family Programs. Casey Family Programs is the Nation's largest operating foundation focused on safely reducing the need for foster care and building communities of hope for children and families across America.

Casey Family Programs was founded in 1966 and has been analyzing, developing and informing best practices in child welfare for more than 50 years. We work with child welfare agencies in all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and with 16 American Indian tribal nations, and with the Federal Government on child welfare policies and practices. We partner with child welfare systems, policymakers, families, community organizations, American Indian tribes and courts to support practices and policies that increase the safety and success of children and strengthen the resilience of families.

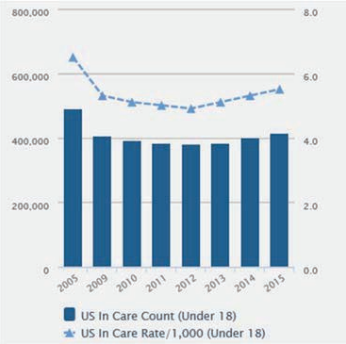
I thank you for the opportunity to be here today to discuss the critical impact the opioid crisis is having on our Nation, and in particular the disruption it is causing for children, families and communities. This is not the first time that substance abuse has devastated families, leading to their involvement in the child welfare system—take for example the crack epidemic of the 1980's. Data and our work with states and communities continues to show that parental substance abuse overall is a key factor associated with children coming into foster care—separated not only from their families—but often from their neighborhoods, schools, friends and everything familiar.

While parental substance abuse is not a new challenge for child welfare agencies, the current opioid epidemic is proving to have an immeasurable impact on foster care caseloads and child welfare budgets across the country.

The National Center on Substance Abuse and Child Welfare (NCSCAW) explains it this way, *"In the past three decades, the United States has experienced at least three major shifts in substances of abuse that have had dramatic effects on children and families. However, the increase of opioid misuse has been described by long-time child welfare professionals as having the worst effects on child welfare systems that*

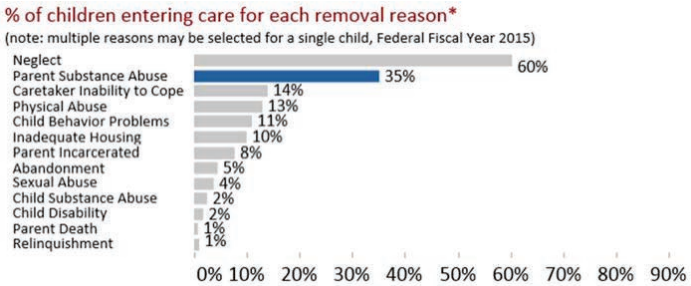
they have seen. Studies indicate that there is substantial overlap between parents involved in the child welfare and substance use treatment systems . . .".[1]

This is what the data tells us: Following years of decline in the national foster care population, there has been a steady increase in the number of children in foster care. In fiscal year 2016, there were 437,465 children in foster care in the United States.[2] Many jurisdictions have attributed this increase to be directly correlated with opioid use disorders and overdoses among parents.



Source: Adoption and Foster Care Analysis and Reporting System (AFCARS)

Number of Children in Foster Care in the United States



Source: Adoption and Foster Care Analysis and Reporting System (AFCARS)

At least 35 percent of the entries into foster care were identified as due to parental substance use—a percentage that has steadily risen in recent years and a percentage that represents an undercount, due to the varying approaches states take to documenting removal reasons.[3] This impact may be even higher for American Indians and Alaska Natives who are at least twice as likely as the general population to become addicted to drugs and alcohol, and three times as likely to die of a drug overdose.[4]

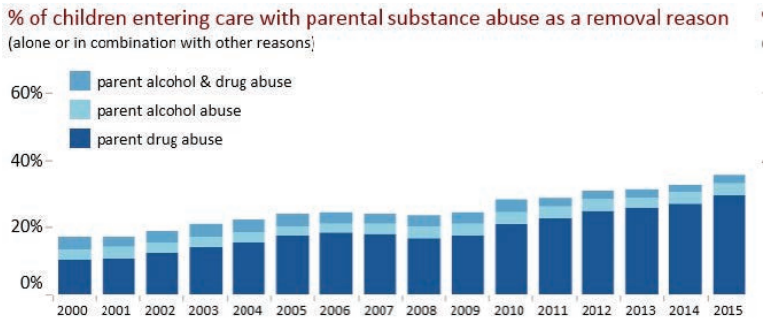
---

[1] See *https://ncsacw.samhsa.gov/resources/child-welfare-and-treatment-statistics.aspx*

[2] AFCARS fiscal year 2016

[3] Ibid. Children enter care for many reasons. These categories represent the standard removal reasons states provide as part of their required AFCARS submission. How states utilize these standard fields, and whether or not they use all fields, is impacted by two key things: 1) how the removal reasons in their case management system are mapped to these categories; and 2) how caseworkers are instructed to determine removal reasons for a child. State policy and practice vary.

[4] American Journal Drug and Alcohol Abuse (2012) Epidemiology and Etiology of Substance Use among American Indians and Alaska Natives: Risk, Protection, and Implications for Prevention. Retrieved from: *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4436971/*



Source: Adoption and Foster Care Analysis and Reporting System (AFCARS)

We have heard directly from states that the opioid crisis continues to directly impact the well-being of children and families and has increased pressure on their child protection systems. Just last month, the National Governors Association (NGA)—a bipartisan organization of the Nation's Governors—released recommendations to Congress and the Administration calling for action to bolster the Federal response to the opioid crisis. The NGA's recommendations included the following:

- Increased Federal support to states, with flexibility to meet communities' needs;
- Improved coordination across Federal agencies;
- Federal training and education requirements for opioid prescribers;
- Statutory flexibility for state Medicaid programs to provide the full continuum of evidence—based treatment;
- More flexibility for providers to prescribe medications to treat opioid use disorder;
- Additional training and technical assistance to facilitate data and information sharing across public health and public safety; and
- Enhanced Federal support for justice-involved populations, including the option for state Medicaid programs to cover substance use and mental health services prior to conviction and up to 30 days prior to release from prison or jail.[5]

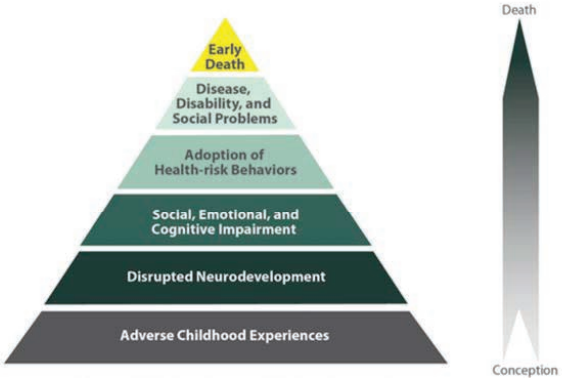
We recently partnered with the State of Tennessee to host a Safety Culture Summit that explored Tennessee's progress in reframing their system—at all program and policy levels—to recognize safety as a key priority in how they work and engage with families and their children, including around the impact of opioids and substance abuse. More than 20 states attended this summit, illustrating strong interest from states in exploring how they might work to reform their systems in a similar manner.

I want to applaud this Committee for its leadership to address the opioid and other substance abuse crisis through passage of the Comprehensive Addiction and Recovery Act of 2016 (CARA). CARA included language to strengthen the requirement that states—as a condition of receiving funds through the Child Abuse Prevention and Treatment Act (CAPTA)—have infant plans of safe care in place that address both the needs of the infant as well as the caregiver. But there is so much more we can, and should, be doing.

Children can experience specific trauma as a result of parental opioid addiction—including emotional or physical abandonment—which is often magnified by the additional trauma that comes from removal from the home. Studies indicate that such Adverse Childhood Experiences—or ACEs—can have negative, lasting effects on health and well-being and are strongly related to the development of risk factors for disease, such as increased illness and morbidity, as well as negatively impacting future well-being through higher unemployment and reduced productivity. One of the key ACEs is parental substance abuse, which not only endangers children at the

[5] National Governor's Association, press release from January 18, 2018, retrieved from *https://www.nga.org/cms/Governors-recommendations-opioid-crisis.*

time it occurs, but has negative downstream effects on child development, and on the ability of those children to parent their own children in the future.[6]



Mechanism by Which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan[7]

Casey Family Programs partners with states, localities and tribes throughout this country, and we hear directly from youth and families, child welfare leaders, judges, and other professionals in the field. Through their own work and experiences, they have identified certain strategies as effective in supporting families at risk or involved with child welfare due to a substance use disorder. I'd like to share some of those with you today.

Parents have highlighted that timely access to comprehensive substance use treatment options—including family residential and family centered treatment, peer mentors, medication assisted therapy (MAT), residential treatment for pregnant mothers and recovery supports—have been effective in their recovery and reunification with their children.[8] Research has shown that when parents are able to get into treatment programs with their children in a timely manner, two-thirds of them complete the program[9] compared with only one-fifth of parents who complete the program when their children are not allowed to stay in the treatment facility with them.[10]

For example, Kentucky's Sobriety Treatment and Recovery Teams (START) is an evidence-based program for families with substance use disorders and child abuse and neglect that provides services to safely maintain child placement in the home when possible and provides parents rapid access to intensive addiction and mental health assessment and treatment. Kentucky START has demonstrated that the families they serve have twice the sobriety rates and half as many children in foster care compared to their peers who did not participate in Kentucky START.[11]

To address rising placement rates and challenges recruiting and retaining foster parents shortages—in some states resulting in children sleeping in offices and hotels—child welfare systems are increasingly placing children with grandparents and other relatives. Nationally, over a third of all children placed in foster care because of parental alcohol or drug use, are placed with relatives.[12] Many relatives and

---

[6] *https://www.cdc.gov/violenceprevention/acestudy/about.html*

[7] Ibid.

[8] What Parents Say About Substance Abuse Recovery. National Alliance for Children's Trust and Prevention Funds, 2017.*http://www.bpnn.ctfalliance.org/BPNN percent20Brief—What percent20Works percent20in percent20Substance percent20Abuse percent20Rec overy.pdf*

[9] *https://www.ncbi.nlm.nih.gov/pubmed/11291901*

[10] *https://www.ncbi.nlm.nih.gov/pubmed/11291900*

[11] Huebner, R. A., Willauer, T., & Posze, L. (2012). The impact of Sobriety Treatment and Recovery Teams (START) on family outcomes. Families in Society Journal of Contemporary Social Services, 93(3)196–203. See also Testimony of Tina Willauer. May 18, 2016. U.S. House of Representatives Committee on Ways and Means Hearing "The Heroin Epidemic and Parental Substance Abuse: Using Evidence and Data to Protect Kids from Harm" *http://waysandmeans.house.gov/wp—content/uploads/2016/05/20160518HR-Testimony-Willauer.pdf*

[12] Raising the Children of the Opioid Epidemic: Solutions and Supports for Grandfamilies. Generations United, 2016 *http://gu.org/OURWORK/Grandfamilies/TheStateofGrandfamiliesinAmerica/TheStateofGrandfamiliesinAm erica2016.aspx*

child welfare professionals have cited a direct correlation between the spike in relatives caring for children and the national opioid epidemic.[13]

Extensive research confirms that children who cannot remain with their birth parents are more likely to have stable and safe childhoods when raised by relatives compared to children raised by non-relatives.[14]

- Kinship placements tend to be more stable than non-relative foster care placements, and there are fewer placement disruptions.[15]
- Children placed with relatives are more likely to be placed with siblings and maintain relationships with birth parents and relatives.[16]
- Children in kinship care are more likely to remain in their community of origin and maintain connections to cultural identity, as well as remain in the same school and benefit from their school support system.[17]
- Children in kinship care tend to be as safe, or safer, than children in foster care.[18]
- Children in kinship care are less likely to re-enter care than children in foster care.[19]

Relatives who step in to care for children are often older and on fixed incomes, perhaps lacking adequate supports to care for their relative children. Caregivers report that they need a range of supports, including mental health services for the child and the family, kinship navigators, respite care, and financial assistance.[20]

Parents, youth, and kinship caregivers report tremendous value in services to safely prevent the need for foster care by strengthening a family's ability to keep their children safe and help them thrive and by stabilizing a family before maltreatment occurs.[21] Examples include peer support, evidence-based parenting education programs, supportive housing and individual and family mental health services. Federal foster care funding through Title IV-E does not currently allow children or their caregivers to access such prevention services.

Youth and parents also report that reunification after a stay in foster care can be a very vulnerable time when the family may need additional in-home services to ensure the children remain safely at home and avoid repeat maltreatment. The majority of children in foster care have a case plan goal of reunification with their parent or primary caregiver. In fiscal year 2016, 125,975 (51 percent)[22] children left foster care and were reunified with their parent or primary caregiver. However,

---

[13] Testimony of Bette Hoxie. March 21, 2017. U.S. Senate Special Committee on Aging Hearing "Grandparents to the Rescue: Raising Grandchildren in the Opioid Crisis and Beyond" *https://www.aging.senate.gov/imo/media/doc/SCA—Hoxie—3—21—17.pdf;* Testimony of Sharon McDaniel. March 21, 2017. U.S. Senate Special Committee on Aging Hearing "Grandparents to the Rescue: Raising Grandchildren in the Opioid Crisis and Beyond" *https://www.aging.senate.gov/imo/media/doc/SCA—McDaniel—3—21—17.pdf*

[14] Children Thrive in Grandfamilies. Generations United, 2016. *http://grandfamilies.org/Portals/0/16—Children-Thrive-in-Grandfamilies.pdf*

[15] Rubin, Downes, O'Reilly, Mekonnen, Luan, and Localio (June 2008). Impact of kinship care on behavioral well-being. Pediatrics Adolescent Medicine. Volume 162, No. 6; Webb, Dowd, Harden, Landsverk, and Testa. (2010). Child Welfare and Well Being. New York: Oxford University Press; Wonokur, Holtan, and Valentine. (2009). Kinship care for the safety, permanency, and well-being of children removed from the home for maltreatment. Campbell Systemic Review. 2009:1.

[16] Child Welfare Information Gateway. (2013). Sibling issues in foster care and adoption. Washington, DC: U.S. Department of Health and Human Services, Children's Bureau; Obrien and Fechter-Legget. (2009). The effects of kinship care on adult mental health outcomes of alumni of foster care. Children and Youth Services Review. V. 31, pages 206–213.

[17] Pew Charitable Trust. (2007). Time for reform: Support relatives in providing foster care and permanent families for children. Retrieved from *http://www.pewtrusts.org/?/media/legacy/uploadedfiles/www.ewtrustsorg/reports/foster—care—reform/sup portingrelativespdf.pdf*

[18] Haskins, R., Wulcyzn, F., and Webb, M.B. (2007). Child Protection: Using research to improve policy and practice. Washington DC: Brookings Institution Press.

[19] Casey Family Programs. (2011). Does kinship care work well for children? A summary of the research. Seattle: Casey.

[20] Raising the Children of the Opioid Epidemic: Solutions and Support for Grandfamilies. Generations United. 2016.*http://gu.org/OURWORK/Grandfamilies/TheStateofGrandfamiliesinAmerica/TheStateofGrandfamiliesinAm erica2016.aspx*

[21] Testimony of Sandra Killett. August 4, 2015. U.S. Senate Committee on Finance Hearing "A Way Back Home: Preserving Families and Reducing the Need for Foster Care". *https://www.finance.senate.gov/imo/media/doc/04aug2015-KillettTestimony.pdf;* What Parents Say About Prevention and Early Intervention. National Alliance for Children's Trust and Prevention Funds, 2017.*http://www.bpnn.ctfalliance.org/BPNN percent20Brief—Prevention percent20Strategies percent20That percent20Work.pdf*

[22] AFCARS fiscal year 2016

Federal foster care funding through Title IV-E does not currently allow children or their caregivers to access aftercare services.

Despite all of what we know works to both keep children safe and support their development within their families, the vast majority of our Federal funds for child welfare support a different decision. For every $7 the Federal Government spends on foster care, only $1 is spent on prevention. We must reform how we spend Federal child welfare funds to allow states and localities to be nimble and targeted in how they support those families that come to our attention.

Research and the stories of youth and their families tell us that children need permanent and loving homes, preferably with their families, to thrive and grow up to be happy and productive adults. Our goal is for children to be free from abuse and neglect, surrounded by strong families and supportive communities. We believe that this can be achieved by allowing states to invest Federal child welfare resources in an array of prevention, early intervention, after care services, treatment, and other efforts that would reduce the unnecessary and costly need for foster care when it is safe to do so.

To truly help these families, we know it's important that we intervene as early as possible. As the other witnesses have testified, we must support and ensure our programs and policies encourage parents and families to be more forthcoming with their challenges in a manner that is not punitive.

This Committee will consider the reauthorization of the Child Abuse Prevention and Treatment Act. Nationally, more than 4 million calls are made to hotlines of reports of abuse and neglect, a very small number of which ever reach a response that warrants removal.[23] States and communities are challenged every day with how to respond to each of these calls, often early warning signs that a family is at risk of child maltreatment, in a way that connects these families for life-long success. Casey Family Programs looks forward to being a resource for assistance to the Committee for child abuse and prevention programs.

Jurisdiction leaders from the public and private sectors in Johnson County, Kentucky,[24] Hagerstown, Maryland[25] and Gainesville, Florida[26] have demonstrated that when public and private agencies working with children and families come together the safety, permanency and well-being outcomes for children and families can be improved. Families have shared that they often interact with multiple systems of care, including the courts, housing, child welfare, and healthcare. Coordination among systems positively impacts families' ability to successfully and efficiently get the help they need and keep their children safe.[27] For families at risk of child welfare involvement and for families reunifying, access to affordable housing along with services—supportive housing—has demonstrated improved child safety and family stability, as well as sobriety for the families that entered with a substance abuse problem.[28]

I'd like to end my testimony with just one example of why we believe there is hope, and why we believe it is important that we not forget how each and every family we interact with has the same opportunity for a bright future. Just last month, I had the privilege to recognize Alise Hegle as one recipient of the 2018 Casey Excellence for Children Awards.[29] Ms. Hegle's daughter was removed at birth due to her struggles with substance use and a pending prison sentence. However, Ms. Hegle participated in a treatment program and was reunified with her daughter. Ms. Hegle has become a compassionate ally and forceful advocate for birth parents. As a peer mentor in Washington State, Ms. Hegle uses her own life lessons to engender hope in families involved in the dependency system. Part of Ms. Hegle's message is the critical importance of working in and with communities, connecting parents together to ensure their needs are met, and shifting resources toward prevention and reunification efforts.

---

[23] U.S. Department of Health & Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2018). Child maltreatment 2016. Available from *https://www.acf.hhs.gov/cb/research-data-technology/statistics-research/child-maltreatment*

[24] *https://cdn.casey.org/media/hope2017.pdf*

[25] *https://cdn.casey.org/media/Hagerstown—brief.pdf*

[26] *https://www.casey.org/media/Gainesville—brief.pdf*

[27] Testimony of Toni Miner. November 8, 2017. U.S. House of Representatives Committee on Education and the Workforce Joint Subcommittee on Early Childhood, Elementary, and Secondary Education, and Higher Education and the Workforce Hearing "Close to Home: How Opioids are Impacting Communities."*https://edworkforce.house.gov/uploadedfiles/toni—miner—written—testimony——final.pdf*

[28] *http://www.csh.org/wp-content/uploads/2011/12/Report—KFTFindingsreport.pdf*

[29] See *https://www.casey.org/2018-casey-excellence-for-children-awards/*

I have highlighted some of the strategies that are critical to combatting this crisis and ensuring safety, stability and success for children and families across the country. However, it will take a coordinated network of services with the support and advocacy from all levels of government, to begin to repair and halt the destructive impact that the opioid crisis is having on children and families.

Thank you again for this opportunity, and I'd be happy to answer any questions you may have.

[SUMMARY STATEMENT OF WILLIAM BELL]

Casey Family Programs was founded in 1966 and has been analyzing, developing and informing best practices in child welfare for more than 50 years. Headquartered in Seattle, we work with all 50 states, tribal nations and communities throughout the country to ensure safe children, strong families, and supportive communities.

The opioid crisis is having a critical impact on children, families and communities. Jurisdictions have attributed the recent increase in the number of children entering foster care as directly correlated with opioid use and overdoses among parents. At least 34 percent of the entries into foster care were due to parental substance use.

Every child welfare leader will tell you of the challenges they are facing each and every day as they struggle to support and strengthen families impacted by substance abuse. Throughout the country, we are seeing more and more children separated from their parents and more and more child welfare systems strained and challenged to target resources to help these families. There is nothing more important than ensuring the safety of a child, but the path we have chosen of disrupting families and imposing unnecessary trauma on these children must change.

The passage of the Comprehensive Addiction and Recovery Act (CARA) of 2016 bolstered efforts to help states support families and protect children but there is much more we can and should be doing. States are working to ensure infant plans of safe care are in place for families and children at risk.

Parents need timely access to comprehensive substance use treatment options—including family residential and family centered treatment, peer mentors, medication assisted therapy, residential treatment for pregnant mothers and recovery supports. We have evidence-based programs that work. One example is Kentucky START in which participants had twice the sobriety rates and half as many children in foster care when compared to those not in the program.

More children are being cared for by relatives due to the opioid epidemic. Kin providers need a range of supports to care for these children. Research confirms that children who cannot remain with their birth parents are more likely to have stable and safe childhoods when raised by relatives compared to children raised by nonrelatives.

States need the flexibility to invest their existing Federal resources into an array of prevention and family support services to keep children safe, provide treatment and recovery supports for families. However, Federal child welfare funding predominantly only supports foster care placement. The Federal Government spends $7 for foster care for every $1 spent for prevention.

Coordination and shared services between multiple systems of care—including the courts, housing, child welfare, and healthcare—helps families be successful.

We look forward to being a resource for the Committee for child abuse and prevention programs.

The CHAIRMAN. Thank you, Ms. Savage and Dr. Patrick and Dr. Bell.

We'll now have 5-minute rounds of questions. I'm going to try to keep the exchange back and forth within 5 minutes because we have a vote at 11:30, and we have—I had that noisy——

Senator MURRAY. Siri didn't like that.

The CHAIRMAN. Siri didn't like that.

[Laughter.]

The CHAIRMAN. Life used to be simpler.

Senator Collins.

Senator COLLINS. Thank you, Mr. Chairman.

Ms. Savage, I want to thank you for sharing your story publicly and for being here today. You are clearly a family of tremendous strength, and by coming forward, you are truly saving lives. I just want to tell you that I am just overwhelmed by your ability to take such a tragedy and turn it into something that is going to help other families avoid what you went through.

Just yesterday, I met with a group of Mainers, a large group of Mainers, from all over the state who had received funding from the Drug-Free Communities program, and I was impressed by a group of students from Fort Kent, Maine, way in the north near the Canadian border, who have developed their own program to try to help their peers avoid alcohol abuse, tobacco, and opioids, a crisis that we're in the midst of in Maine.

What do you think of those kinds of peer counseling or peer groups to help teach high school students and younger children that there are alternatives to drugs and alcohol?

Ms. SAVAGE. I think any time a conversation is started, it's a positive, and those peer mentor groups are incredible. I think a lot of times just talking about it can start a conversation where maybe a child goes home and talks to their parents about the issue, and any time that can happen, of course, that's a success. So I think that's a wonderful thing.

Senator COLLINS. Thank you. I couldn't help, when you were testifying, thinking that I'm going to send your testimony to all of the members of that group, because I think they would be inspired by it. They're doing great work as are you. Thank you.

Dr. Bell, the Aging Committee, which I chair, held a hearing in March on grandparents raising grandchildren due to the opioid crisis, and in Maine, we have seen the number of such families soar by 24 percent over a 5-year period due to the opioid crisis. As you pointed out, compared to children who are placed in non-relative care, these children in the care of their grandparents have better outcomes. They have more stability in their lives, they have greater preservation of their identity, and they have better behavioral and mental health outcomes.

But what we also learned is how difficult it is for these grandparents, who thought that they were going to be entering into an easier time of life and all of a sudden, they're raising children, in some cases, infants. The grandparents talked to me about their need for support, and that's why Senator Casey and I have introduced the Supporting Grandparents Raising Grandchildren Act.

The bill would create a task force to help develop and distribute information designed to help kinship parents, because what we heard is it was really hard for them to learn to navigate the school system all over again—it may have been many, many years—that the parents that they were dealing with—or it could have been their children—that they didn't have the kind of supports.

Do you have some ideas on what we could do in addition to respite care, which you mentioned, to better support grandparents who find themselves in this unexpected role?

Dr. BELL. Absolutely. Thank you, Senator, and also for the effort that you and Senator Casey are approaching. You know, unfortunately, opioids is not the first time we've been in this position. I was in New York City during the crack epidemic, and we dealt

with exactly what you're describing, and at that point in time, we called it skip-generational parenting. Because of the loss of frontline parents, grandparents and other relatives stepped in to care for children. What we found was that they needed support groups. They needed financial support. They needed a navigator type program that would help them understand where to go.

One of the things that we created through the Department for the Aging in New York City during that epidemic was something that was called a Grandparent Resource Center, which was run through Aging, connected senior centers, and other community resources so that grandparents would not be alone or aunts or uncles would not be left alone to care for this child, but the community would be surrounding them. I think that's something that we could do in this situation as well.

Senator COLLINS. Thank you so much.

The CHAIRMAN. Thank you, Senator Collins, and thanks to you and Senator Casey for your work on Supporting Grandparents Raising Grandchildren. We plan to consider that bill in our markup later this month.

Senator Murray.

Senator MURRAY. Thank you.

Ms. Savage, thank you so much to you and your family for being here. I can't imagine the loss and the tragedy and how hard it has been for you and your family to get through this. I think every parent in the room just went, "Oh, my God. That could be me," and your courage in coming and telling this is incredible and also inspiring that you use the strength you obviously have to get past what happened to your family to make sure it happens to no one else, and we're all really grateful for that.

Let me ask you—we've had a lot of witnesses here with really great ideas from renovating state prevention—or prescription drug monitoring programs to treating this as a disease and not as criminalizing it. But let me ask you what every parent would like to ask you, which is: What is your best advice to parents in their own communities? What should they be doing within their own families and their own communities to make sure this doesn't happen?

Ms. SAVAGE. Sure. Thank you for the question. I think what parents can do is just start the conversation. Start talking. If they hear of an issue, just bring it up with your children and start talking about it. I also talk with parents, and I encourage them to go clean out their medicine cabinets, because I know when I talk to crowds, I ask for a show of hands of how many people have expired medications in your medicine cabinet that you're not using, and probably about 75 percent to 80 percent of the crowd raise their hands.

I encourage them to go home and clean out their medicine cabinets and be responsible with the medications that they do have. Make sure that they know where they're at and keep them under lock and key. Treat it as a lethal weapon.

Senator MURRAY. I think most people think you keep them out of the hands of 2 years olds, and they don't think past that.

Ms. SAVAGE. Right, right, a good lesson to push forward.

Senator MURRAY. Well, thank you again to you and to all your family, and we so appreciate it.

Ms. SAVAGE. Thank you.

Senator MURRAY. Dr. Bell, thank you again for being here. You know, the goal of the Casey Family Programs is to keep families safely together, as you said, and the opioid epidemic is clearly a challenge to that. We know that in the past 5 years, we've seen almost a 10 percent increase in the number of children in foster care, as you talked about, much of it which can be attributed to substance abuse, and that trend is really concerning, really concerning.

Children in foster care disproportionately face significant trauma, as you well know, and adverse childhood experiences that put them at higher risk all through life for disease and addiction and early death. What are some of the resources that communities need to prevent the need for foster care and keep children and their families safely together?

Dr. BELL. Thank you, Senator Murray. You know, one of the things that we've seen, that we've spent a lot of time focused on, are the foster care rolls that have been increasing during the last 3 years. But in New York City, the foster care roll has continued to go down over the course of this time period. I believe that one of the reasons that is there is because of the immense amount of prevention services that are available in the city.

One of the biggest challenges for families who are raising kids and kids who are at risk of coming into foster care is social isolation. If communities are going to strengthen their ability to keep kids out of foster care, we've got to make sure that families have access to prevention services, that there are community-driven support services available to them, and that they're not left alone.

Unfortunately, too many of our families have moved away from extended family and they're living in communities where they're set apart. We've got to create school-based programs, we've got to create support-based programs, we've got to create community-driven programs so that somebody can see every child every day, so that support is there, because when you think about the protective factors, one of the five core protective factors is preventing social isolation and having community supports available for families, and I think that's what all communities need to strive to do.

Senator MURRAY. Thank you, and thank you for your expertise.

Dr. Patrick, I just have a minute left, but I wanted you to talk just a little bit about NAS and what you're seeing and how important it is that we focus on a comprehensive approach to preventing NAS both through helping women plan for when they want to become pregnant through programs like Medicaid, which is so important, and through improving access to evidence-based treatment for all women.

Dr. PATRICK. Senator Murray, thank you for the question. Yes, I think a comprehensive approach to substance use overall—we know that SAMHSA estimates around 400,000 substance-exposed infants born every year—so a comprehensive approach to all substances to have healthy moms and babies, and I think that begins with some of the things we've been talking about here, like prescription drug monitoring programs, controlling prescribing, improving access to treatment, and then throughout the entire continuum, pre-pregnancy, pregnancy, and beyond, to really focus on improving outcomes for families.

Senator MURRAY. I would just point out that recent studies showed nine out of every 10 pregnancies for women who misuse opioids are unintended, and we can't leave that out of our discussion. So thank you very much. Thanks for being here.

Dr. PATRICK. Thank you.

The CHAIRMAN. Thank you, Senator Murray.

Senator Bennet.

Senator BENNET. Thank you, Mr. Chairman, and thank you and the Ranking Member for holding this important hearing.

Ms. Savage, like the others, I want to thank you for your strength. In the 9-years that I've been in the Senate, I've never heard as moving a testimony as the testimony you've given this morning, and as a father of three teenage girls, daughters who I can't get to read anything that I work on when I'm here, I have no doubt that they will read the testimony that you gave today, and for that, I am eternally grateful to you.

I wonder whether you could tell the Committee a little bit about what efforts at education you find work particularly well with adolescents, what things seem not to work terribly well. Sometimes people try to communicate with young people, and it either makes matters worse or just bounces off them. That may be only my problem with teenagers, but I suspect others have it as well.

Ms. SAVAGE. Sure. Thank you for the question. I'm no expert on teenagers, either. I have a few of them in my home as well. However, what I'm noting when I go to the schools to talk is that the kids really listen to real stories, real things that happened. You know, statistics and things are nice, and they'll kind of listen to that for a little bit, but they like to hear real stories and how this can affect them.

I show pictures of my boys before I start talking so that they can connect with the pictures, hockey pictures—there could be hockey players or athletes out in the crowd, and so I try to make that connection with them, and then I tell our story, and they really seem to connect with that. So I think just telling personal stories, and I usually open it up to questions and answers.

Senator BENNET. What kind of questions do you typically get from them?

Ms. SAVAGE. The questions I get are about prescription drugs. Some of the kids don't understand why prescription drugs are dangerous if they're prescribed by a physician, and so we talk about that any prescription that's not prescribed to you by your doctor could be lethal to you. So they're trying to make that connection between street medications or street drugs and prescription drugs, and we're trying to show them that they both can be lethal to you. Just because one is prescribed by a physician doesn't mean it's any less dangerous.

Senator BENNET. Is it your impression when you're with these young people that they're hearing about this for the first time?

Ms. SAVAGE. In some crowds, yes. In some of the schools I go to, we'll talk about it, and it's like the first time they—they don't understand that you can die from one time trying something. They don't understand that there's different strengths of medications, which I tell them, "And you shouldn't. You're not a pharmacist or a medical professional. But there are different strengths, and you

don't know what you're taking when somebody gives you something out of a vial or out of a Ziploc bag, and why would you trust them with your life? These are life choices that we're trying to help you make."

Senator BENNET. Thank you for being here again.

Ms. SAVAGE. You're welcome. Thank you.

Senator BENNET. Dr. Bell, thank you for your work. You described the benefits of programs where parents have access to treatment and also don't lose their children.

Dr. BELL. Right.

Senator BENNET. I wonder whether you could describe for the Committee, from the point of view of families, a more typical experience in America today if you're somebody who is struggling with opioid addiction.

Dr. BELL. I would hesitate to go typical, because I know that our systems are in various levels of trying to figure out how to make this happen. But when you think about when a parent who has been reported for abusing a substance—so the START program that I talked about. The referral to the START program begins when a mother is—or an expecting mother is tested positive either in the second trimester or the third trimester for a substance, and there is an immediate referral to child welfare. You know, in many states, it has become prima facie child abuse and neglect to have a positively exposed child in utero.

We are working to help folks to understand that in that parent's mind, they are wrestling with a disease. I like to do the comparison between what happened when crack was the issue and what we're trying to do right now in the opioid crisis. I believe that what we're trying to do right now is a much more humane approach to dealing with families who are struggling with a disease.

Under the crack epidemic, that woman would have been referred to child welfare, we would have done an investigation, and in all likelihood, we would have removed her child and placed the child in foster care. She would have been in the court system, maybe represented by a quality attorney, maybe not. Her child would have been languishing in foster care. She would have had a long list of things that she had to complete in order to get her child back, including housing, including parenting skills, including overcoming substance abuse treatment.

But at the same time, we also know that stress exacerbates the use of substances, and we would be contributing to that stress by holding her child over here and restricting her access to that child. One of the things that grew out of that particular piece was that courts started to use drug treatment courts, which began to work in a conversation with parents to say, "We know that you want your child back. We want you to have your child back, but we also know that you need to overcome this disease that you have. We will work with you to increase your capacity to see your child as long as you're working to achieve the sobriety that we know is necessary and that you want to have."

I think that where we are right now is a mix of people who some states still say, "It's still prima facie child abuse and we need to keep you away from this child." There are other states that are saying, "No, this is a person who is wrestling with a very dev-

astating disease, and we need to change our systems and protocols so that we can help lift them up." I mentioned earlier when I was responding to Senator Murray——

The CHAIRMAN. We need—we're well over time, sir. We need to go on to——

Dr. BELL. Okay.

The CHAIRMAN. Thank you, Senator Bennet.

Senator Casey.

Senator CASEY. Thanks very much. I wanted to raise a question that may have already been asked, but I think it's important to reiterate, and I'm particularly grateful for the witnesses and your testimony.

One of the real horrors of the—or I should say one of the worse manifestations of what we've been dealing with in the opioid crisis is that you have individuals who have lived full lives and then reach the point where, because a son or daughter might have a problem and they have children, the grandparents have to raise the grandchildren or at least play a role in raising them.

I know that Senator Collins has worked on this with me and worked on legislation. But this is both a human challenge, but it's also a—the reality is that these families end up helping all of us in the dollars they save. We're told that, by one calculation, grandparents and other relatives who raise children outside of the foster care system save something on the order of $4 billion each year. So not only are they sacrificing a lot of their golden years, but they're, in fact, helping all of us by taking on that substantial burden. 2.6 million grandparents are raising grandchildren, and that's a huge number.

As I mentioned, Senator Collins and I have the legislation called Supporting Grandparents Raising Grandchildren Act, which creates a Federal task force to serve as a one-stop resource for resources and information for grandparents who are, in fact, having to raise their grandchildren.

I wanted to start with Mr. Bell and ask whether you think having this information will help support these grandparents and relatives who are raising these children as a result of the opioid epidemic.

Dr. BELL. Thank you, Senator Casey.

Senator CASEY. Dr. Bell. I'm sorry.

Dr. BELL. Thank you. Senator Collins did raise this before she left, and as I indicated, we are very supportive of what you are trying to do here. It's something that we learned from the crack epidemic, that these grandparents need support centers. They need navigation programs. They need financial resources, because the notion of the $4 billion savings is because many of these grandparents have not necessarily been informed that they can become kinship providers.

I wouldn't advocate that we take all of these grandparents and bring them into the foster care system, because many of them can do better outside. But we do need to figure out a way to provide financial support, provide respite, provide opportunities for them to continue to live their lives so that they are not burdened down overly with these children, because one thing that we saw during the crack epidemic was that their health started to deteriorate

when they didn't have the support that they needed. So I think that you're definitely on the right pathway, and we would fully support working with you on that.

Senator CASEY. Well, Doctor, I appreciate it, because you bring particular experience and expertise to these issues, so we're grateful for that help, and it will give us momentum for passing the bill. So I appreciate that.

Dr. Patrick, I wanted to raise with you a question that I know that the Chairman, Chairman Alexander, referred to. He and I worked together on the implementation of the Plan of Safe Care legislation, and I know that this may also be reiterating what was spoken of earlier. But we have this GAO report that just came out yesterday. I had requested that the GAO examine the so-called Infant Plan for Safe Care Improvement Act, and what the GAO found was a lack of guidance from HHS on how states should be implementing the law. So we're going to continue to work on full implementation and sufficient support for states in being able to carry out their responsibility on plans of safe care.

I guess I'd ask you, as a neonatologist who's on the frontlines, when it comes to identifying these substance-affected infants—many of them, I guess, burdened by the so-called NAS syndrome, the Neonatal Abstinence Syndrome—have you identified any best practices for ensuring a coordinated multidiscipline area approach to this?

Dr. PATRICK. Well, Senator Casey, I think, just as the GAO report suggested, there's a lot of confusion at the state level as to what defines an infant safe plan of care and what that should look like and resources to be able to carry those out. There are models. There's a couple of models—one that I'm familiar with. It's called CHARM in Vermont, where they proactively engage families that are in substance use treatment well before birth, meet with those families throughout, develop plans throughout the pregnancy, and work toward a safe discharge.

What I experience is far more reactive, where a referral is made to DCS around the time of birth, and there's no action taken until around the time of discharge, and it tends to be reactive. In part, I think that's because our overburdened child welfare system is simply reacting to the problem instead of having the resources and training to address it head-on.

I'll point out one other point, which is that in many states, they treat substance exposure just as they would severe physical or sexual abuse, and I think that's the paradigm that many child welfare systems engage in. So reframing that specifically on how to work with families early on to keep families together where it's appropriate is really needed, and I think your work on this and the Infant Safe Plan of Care, implementing that, and getting more resources is really vital to improving outcomes for families.

Senator CASEY. Thank you, Doctor.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Casey.

We have our vote at 11:30, so I'm going to ask the witnesses and the Senators to try to keep the exchange within 5 minutes and then supplement the answers in written form after the hearing.

Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman, and I would hope that I could do follow-up questions with members of the panel, because this is very important.

I go around the state. The meetings that I have—the meetings that I have with folks here—I don't care if you're the Alaska Association of School Boards or whether you're here as a mayor talking about an infrastructure project, we always end up talking about addiction and what is happening in our small communities. And when we think about the addict, we cannot think about the addict without thinking about the families and the children that are now part of this world of addiction. It is just something that breaks your heart.

I was at a meeting down on the Kenai Peninsula just this past Friday and was told—and this is still anecdotal—but that when OCS, the Office of Children's Services, takes a case, takes children in—not even taking them into the system, but just reviewing them—they do a hair follicle test to test for drugs, and nine out of 10 of the kids in the system right now are testing positive for drugs because of drugs that are in the household that they have been exposed to.

When you think about the addict, you don't necessarily think about the impact, again, to our children, the impact on pre-maternal care, women who are pregnant who are choosing not to get care because they're afraid they're going to be told by their doctor that they are bad people, that when they—if they are mothers who have young children, they're not telling their doctors about their use because they're afraid they're going to lose their children. It is just beyond belief, the impact to the children.

We had Mr. Sam Quinones, who's the author of Dreamland, before the Committee some weeks ago. He suggested we need a Moon Shot approach in order to really get this social movement for recovery, and I suggested that Moon Shot was a different thing, because it gave something for us as Americans to aspire to, some big lofty goal. When it comes to addiction, it's much harder for the communities at large to embrace this as something that we need to do because there is still such a stigma attached to it.

When I asked him what we as lawmakers could do, he said, "You need to give a forum to the families to speak out so that we view differently those that are addicts."

Ms. Savage, I want to ask you as the mother of two young men who are no longer with you and your family because of addiction—when we think about the addict of days gone by, it is a different mental image in people's minds. Recognizing that the addict today is a different person, how can we do more to facilitate a conversation about the fact that people who are dealing with this—they're not losers. They're not bottom of the barrel. They are not these people at the bottom of society. These are boys, these are our brothers, our sisters, our parents, people that we love. How do we change this so that there is this ability as a society to embrace what we have to do to solve addiction?

Ms. SAVAGE. Sure. Thank you for the question, Senator. Our boys, I just want to clarify, were not addicts. They had experimented with a medication that was brought to a graduation party, so it was a one-time use that did kill them.

However, we are faced with the stigmatism, because every time somebody says, "Oh, you lost your two older boys. How did they pass away?", you have that split second of, "Oh, my gosh. Here we go." And when you tell them they died of an overdose, you do get the stigmatism, and we talk about it. We tell exactly what happened. But there is that stigmatism out there.

There are some school systems that I know parents have contacted me about going to talk to, and the school systems maybe aren't ready to have someone come in and talk about opioid misuse or abuse or prescription pills because of the stigmatism. They're afraid that they're going to be classified as having an issue at their school.

I'm not sure how to combat that, other than just talking about it and being more open with talking to people. We talk about it all the time, obviously. I would like to say it's getting easier. But I think just talking about it, hopefully, will help fight some of that stigmatism.

Senator MURKOWSKI. Well, I thank you for the courage as a parent for coming forward and helping others as they deal with the losses and the challenges in their personal lives.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Murkowski.

Senator Baldwin.

Senator BALDWIN. Thank you, Mr. Chairman.

I knew when I saw the announcement about this hearing that it was going to feel awfully personal. I want to thank you all for being here and for your advocacy.

Ms. Savage, thank you. You are saving lives. You talked about the power of storytelling when you meet with students. So I want to share just a little of mine. I think most of the people on this Committee know that I was raised by my grandparents, because I talk about them all the time, oftentimes in the context of Committee hearings that we're having.

I worked with Senator Collins on a different caregiver measure that was signed into law just 2 weeks ago, dealing more with supporting families who are caring for elderly people who are becoming frail or adults with disabilities.

But I don't think I've often shared why I was raised by my maternal grandparents. My mother was 19 when I was born and going through a divorce and moved back home, but throughout her life struggled with mental illness and physical illness and chronic pain, for which, in the days well before we labeled an opioid epidemic, she was prescribed a multitude of benzodiazepines, narcotics, and other medications.

I always knew and had a lot of contact with my mother when I was growing up. She lived very close by. But my grandparents were heroes and gave me a stable upbringing, and they thought they were empty nesters. They were both in their mid 50's. Both of their daughters had left the home, and I don't think they imagined that they were going to get an infant. I moved in when I was 2 months old—I actually had the same grade school principal that my mother had when she was in grade school—and I know they struggled.

One of the issues they struggled with was health insurance coverage for me. They weren't in the foster system. This was an informal arrangement. But I saw what my mother struggled with, misusing, addiction, and I saw my grandparents, again, just my rocks, my—folks who just were with me the whole time. I had the honor of returning to care for my grandmother when she was in her 90's and needed caregiving.

The issue of supporting our families in these roles from all perspectives, whether getting the person with substance abuse issues the help they need or supporting the families and foster parents who step forward and give a kid a chance—I cared so deeply about this.

I wanted to—having taken so much of my questioning time, I suspect I will give you some questions for the record. But I wanted to ask a little bit about the infants, Dr. Patrick and Dr. Bell, who have significant health impacts of their own because of neonatal abstinence syndrome. I have long championed a measure that has yet to become law that would expand access to therapeutic foster care, employing Medicaid funds for children who will need lifelong care, but to empower family members and foster parents to provide more than just custodial care and love, but also more intensive services.

I wonder if you could talk about the importance of the role of therapeutic foster care and our ability to get Medicaid funds to support those families.

Dr. Patrick, why don't we start with you?

The CHAIRMAN. Dr. Patrick, if you could—you have 13 seconds left, so if you could summarize that and then perhaps in writing answer Senator Baldwin's questions.

Tammy, thank you for your story, too. That was—thank you for doing that. But please go ahead.

Dr. PATRICK. I think one of the things we often miss is that substance exposure often leads to pre-term birth. I sent home a baby in the last week that had been in the hospital for 8 months, was born at 23 weeks, and the amount of support that family needs is extensive. For many of our babies, they, unfortunately, don't have families to go to. So what you're talking about is vitally important as we support families, particularly, foster families that come in and care for infants that have complex needs. So thank you for that.

The CHAIRMAN. Thank you very much, Senator Baldwin.

Senator Scott.

Senator SCOTT. Thank you, Mr. Chairman.

To Senator Baldwin, thank you. I came in halfway through your story. Thank you for sharing your personal story with all of us. I think it's informative and instructive as well, and we're all appreciative of family members who step up to the plate when challenges arise with our primary caregivers.

Ms. Savage, the power of your personal testimony is unmatched, and I can't imagine the excruciating pain and misery that your family has endured. But the ability to articulate your story in these conditions will have impacts throughout this Nation that we'll never hear about, but lives will be saved because you have the

power and the strength to testify, and thank you to your family, your husband and your son, for being here as well.

Dr. Patrick, I know you've answered this question a couple of times already, and I had to go to a Banking hearing and other hearings. But in South Carolina, according to many reports, from 2007 to 2015, the number of babies born with NAS has gone from 4 per 1,000 to 7 per 1,000. It's my understanding that it's very difficult to treat these babies.

Can you once again illuminate, perhaps briefly, how we could do a better job, first? And, second, my question is—when I was here and listening to your testimony, you talked about the difficulty within the first couple of weeks. Can you speak to the challenges for the next several years for some of these kids as they grow up?

Dr. PATRICK. Thank you for the question. When I describe a baby that has drug withdrawal, I often describe them as a colicky baby times five. These are infants that are increasingly fussy. They have difficulty breathing, difficulty feeding, sometimes difficulty breathing, and, less commonly, they can also have seizures. So you can imagine what that's like for a family to go through and for the infant to go through.

Our approach has changed substantially at Vanderbilt based on best practices around the country. So no longer do infants that have drug withdrawal come to the neonatal intensive care unit. They stay with their mom, if possible, in the newborn nursery, and then they go to a different part of the hospital outside the ICU. We find that keeping moms and babies together—it decreases the severity of the drug withdrawal, and it keeps the bonding of the dyad from early on. It's so important.

Your questions around long-term outcomes are really important. One of the things that we need is additional research to understand that. There really aren't large prospective studies to follow infants as they go to kindergarten. We have some older studies that suggest that there may be some issues with attention, maybe with language. But there really aren't robust studies. It's an area that certainly needs to be funded.

But as we think through this, as we sort of react to what we're doing now, one of the vital things that we do is support infants for those first years of life, and that includes partnering with child welfare, but also early intervention services. So every infant that is substance-exposed should be referred for early intervention services, and that includes speech therapy, occupational therapy, so that we can maximize their outcome, and I think that period of time going home is just so critical. Right now, the way it feels for me when I discharge an infant home is that it's uncoordinated and it puts a lot of stress on a family that already has a lot of stress.

Senator SCOTT. Thank you very much.

Dr. Bell, I thank you for being here as well. One of the comments that we've been thinking about as I've been listening is the thought that shame and the consequences of one's actions leads many folks to hide the challenges and the addiction. I know that there's a strong push toward allowing parents who are going through treatment not to lose their children, which sounds like a good idea, but also a double-edged sword. Can you walk me through that as well?

Dr. BELL. The approach really is one that says, "We want to honor your relationship with your child. We also want to acknowledge that having that child connected to you is a great motivator to overcoming the challenge that you're dealing with."

But in doing that, we also acknowledge the need to make sure that there's constant monitoring of the children, that there is constant support for the children, that there's respite for the child, time periods for the child to be away from the parent, so that child welfare is not doing what we've done—typically done in the past, which is having this complete distance, but that we are not leaving the child just with the parent so that something might possibly happen, and we're continuously working with that mother and fathers and other family members to improve their capacity to care for the children.

Senator SCOTT. Thank you. Using my last 14 seconds here as wisely as I can, which means I'm going to go over my 14 seconds, Senator Baldwin's story as it relates to the involvement of her grandparents—how often do you see the grandparents——

The CHAIRMAN. Senator Scott, I'm going to have to—I've told the—we have a vote right now and four Senators waiting.

Senator SCOTT. Oh, is that right? Okay. Well, I'll wrap it up in just about seven more minutes.

[Laughter.]

Senator SCOTT. I'll submit that in writing to you.

Thank you, Mr. Chairman.

The CHAIRMAN. I'm sorry to cut you off, but——

Senator SCOTT. I fully understand.

The CHAIRMAN ——I've been trying to be a little bit—Senator Murphy?

Senator MURPHY. Thank you very much, Mr. Chairman.

I wanted to add my thanks to Senator Baldwin for sharing that story with us, and I actually may have a question pertaining to how we make sure that families are truly involved in the care for their loved ones, if I have time with my strict 5-minute limit.

But I wanted to come back to Dr. Patrick to expand on this conversation about neonatal abstinence syndrome. A few years ago, Yale Children's Hospital conducted a quality improvement study to look at how to best care for these kids, and what they attempted to do was build a really comprehensive non-pharmacological approach to caring for these infants. That meant low stimulation rooms, swaddling, soothing, feeding on demand, trying to enhance the bond between mother and child. The results were really extraordinary. Average length of stay in the NICU went from 28 days to just over 8 days. Morphine treatment in the NICU decreased from 98 percent to 44 percent.

My question is how important is it to prioritize non-pharmacological treatment for NAS, and are our hospitals ready for this? I mean, you have to have more nurses. You have to have dedicated physical space in order to do this right. How important is this treatment, and are we ready to do more of it?

Dr. PATRICK. Well, my colleagues at Yale have done a wonderful—built a wonderful program. It's vital. Non-pharmacologic care is vital. We find as we do that in our hospitals, we're using less morphine. So what would you rather have? Would you rather have

your mother or morphine? Putting moms and babies together and creating that environment is so important.

As far as whether hospitals are ready for it, I think we do have challenges in many communities, particularly rural communities. We know in states like ours, in Tennessee, and my birth state, West Virginia, there's a really high number of opioid-exposed infants, and sometimes the neonatal intensive care unit is the only pediatric place in that hospital.

I think when we think about how this is implemented and how do we begin to deescalate the care that we provide for infants and create a model where families can stay together, I think it may look slightly different in different hospitals, hospitals that may not have the resources that Vanderbilt has to support lactation. We have a child life specialist who's building a cuddler program, so when moms can't be there, we're able to support that. I think it's going to look different a little bit everywhere, but it is vital.

Senator MURPHY. I'll direct this to Dr. Bell, but, Ms. Savage, if you have thoughts as well—I want to talk about what happens when a child hits the age of majority. One of the things we talked about in the Mental Health Reform Act of 2016 that this Committee and this Congress passed is looking at HIPPA laws and how they may create barriers at age 18 for the parents to stay involved in the care of a loved one, a child who may have complicated comorbidities, addiction and mental illness.

We want to respect the privacy rights of adults, but we also want to make sure that if a doctor feels it's in the best interest of that child, when they go from 17 to 18, that the parents can still, at the very least, know about when the appointments are so that they can help that 18-year-old stay on schedule. I just wanted to pose that question to you, about how you think about making sure that families stay integrated in care when you have that transition to the age of majority.

Dr. BELL. You know, I think that it is important for young people, particularly entering adulthood, to have as strong a support system around them as possible. One of the things that we have wrestled with in the child welfare service area around privacy has always been being able to help the individual understand why this is helpful to them. It's a very complicated legal matter in trying to override someone's right to privacy.

But I do believe the relationship is the most important factor in getting people to accept that this is helpful to me, as opposed to invasive to me. We have to respect privacy, but I do believe that there are possibilities through relationship for being able to get that done.

Senator MURPHY. Well, I know we've got other people who want to speak, so I'll yield back the rest of my time. Thanks, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Murphy. That's good of you. We have several Senators, some of whom have been here for the whole hearing.

Senator Young.

I believe the vote may have been moved to 11:45, so that may help us.

Senator YOUNG. Well, thank you, Chairman.

Ms. Savage, you and I talked in my office about how you've been able to reach so many high school students, not only in the State of Indiana but really increasingly across the country through work with the 525 Foundation, which you established. You indicated how so many of these kids have no idea whatsoever or very little idea about the risk associated with prescription pills and the risk they pose to their health and the health of loved ones. I think a lot of adults lack that awareness as well.

How in your mind do we bring more awareness to this issue to high school students? And do you think we might need a broader public awareness campaign to address it?

Ms. SAVAGE. Thank you for your question. Absolutely. Not just with high school students, but also middle school age students and also elementary age students and also adults, I think a big campaign with a public service announcement, a national campaign, would be awesome, because it would touch so many different people, different age groups, absolutely.

Senator YOUNG. Thanks, and we had a little dialog about that last night——

Ms. SAVAGE. Yes, we did.

Senator YOUNG ——recalling the "This Is Your Brain On Drugs" ad from years ago——

Ms. SAVAGE. Yes, that we still remember.

Senator YOUNG ——and there might be an analog to that.

Dr. Bell, I'm going to turn to you, sir, and I would like to discuss the issue of predictive analytics. By way of background, Marilyn Moores is a juvenile court judge in the Indianapolis area, and she recently said that our traditional systems of early warning related to child welfare cases are overwhelmed. With caseworkers stretched too thin, we end up with a bunch of kids who are falling through the cracks, not just in Indiana, but we see this around the country.

But imagine if we could use existing data to help those caseworkers in targeting much needed services to those children who are most at risk. Child welfare expert and former Michigan Supreme Court Justice Maura Corrigan said, "If we're able to mine data in child welfare and intervene with good casework by the mining of that data, perhaps we would reduce the 1,500 to 3,000 deaths from child abuse and neglect in this country each year."

I'm going to ask you, Dr. Bell, how might we use data to estimate risks for children, and should we be using data from past cases in order to inform decisions about current ones?

Dr. BELL. Thank you, Senator Young. You know, I would just say about predictive analytics that we must first understand that it is a tool and not a solution unto itself. But predictive analytics is a very valuable tool that has been used for years in the healthcare field, in law enforcement, in meteorology, and it is essentially taking the things that we know, analyzing them, to help us better predict the things that we don't know.

If we can utilize this tool that has shown so much value for others—aviation, I mean, airplane crashes—predictive analytics has been paramount to reducing those. So I think that we have to explore every possible opportunity to do better for our children, and

we believe predictive analytics is one of those things that we can explore.

Senator YOUNG. Well, thank you, and I agree with you. I think sometimes we come up with fancy names for things that have been around a while. I guess this is forecasting, and we ought to apply it to this field to improve the lives of our children. So thank you.

With my remaining time, I'm going to ask you about reporting, sometimes a boring issue, but if you don't have clarity about an issue and there's not proper reporting, you don't really have a clear picture of what's going on and oftentimes a solution is poorly targeted. So nearly 11,000 children entered the foster care system in Indiana in fiscal year 2016, with at least 58 percent of these children entering care because of parental substance abuse.

However, both experts and child welfare agencies believe this percentage to be underestimated. Nancy K. Young of Children and Family Futures said in a 2016 Senate Finance Committee hearing, "Not a single state believes these data accurately reflect their experience and tell us that these numbers greatly understate the vast majority of cases in which a child is placed in protective custody related to parental substance use disorders."

I guess—I've got about 15 seconds left, and I, too, want to be respectful of my colleagues. Yes or no, do we know the full extent substance use disorders are associated with the number of children being placed in the foster care system?

Dr. BELL. No, we don't, but we can.

Senator YOUNG. Thank you.

Dr. BELL. We can correspond on that.

Senator YOUNG. I look forward to that.

The CHAIRMAN. Thank you, Senator Young.

Senator Warren.

Senator WARREN. Thank you, Mr. Chairman.

The Massachusetts Department of Health recently released some astonishing data about the impact of the opioid crisis in our state. They wanted to better understand the relationship between pregnancy and overdose. So they linked up a lot of data bases around the state to track the records of mothers who gave birth and then also died in a 4-year period between 2011 and 2015. They found something that was really heartbreaking. For four out of every 10 women in this group, the cause of death was opioid overdose.

During the same time period, our foster care system grew by 19 percent across the state. About 10,000 grandparents are now primary caregivers for their grandchildren, grandchildren who have often landed in their grandparents' arms because of this crisis. Now, this crisis isn't just about the lives that are lost. It is also about the struggle of those who have to cope when lives are lost.

Dr. Bell, you're an expert in the foster care system. When a parent dies from an opioid overdose, what kind of financial impact does it have on a child?

Dr. BELL. I would start by just referring to ACEs, and one of the leading ACEs as documented through Child Trends is separation from a parent—death, loss of a parent. When a parent dies, that is a traumatic experience for a child that lasts throughout a lifetime, and the result of that is loss of finances, loss of this role model who was there for them, loss of this protector, this chief ad-

vocate, and our systems have to be designed to focus on how do we replace those lost elements of that child's development.

Senator WARREN They lose the emotional support. They lose the financial support. Let's fast-forward to when the child is 18 years old. In about half of our states, foster care ends at age 18. So if a child stayed in foster care, they'll be aging out just about the time they finish high school. If a child ended up, say, with their grandparents after the death of a parent from an opioid overdose, those grandparents may be in their 70's by that point, maybe older, living on a fixed income.

Dr. Bell, at age 18, do youth who have lost a parent face financial burdens in continuing their education?

Dr. BELL. They absolutely do, and far too many of them do not complete their post-high school education, and far too many don't even complete their high school education.

Senator WARREN. One of the ways that we try to take care of kids who have lost a parent is through the Social Security system. When a working parent dies, the child is eligible for Social Security survivor benefits, which are designed to help out in these kinds of tragic circumstances.

Until a couple of decades ago, Social Security survivor benefits were available for a child until they were 22, if they were full time students. In 1981, Congress changed the rules and cut the benefits off at 18, even for students.

The Bipartisan Policy Center, a group of both Democrats and Republicans, has recommended restoring eligibility up to age 22.

Now, Dr. Bell, the average size of these benefits is about $820 a month. Is that enough money to make a difference for these young people?

Dr. BELL. Given the cost of living, it clearly is not. But I would say to you that there are a number of possibilities that we need to work on putting together to actually deal with this issue, because I don't believe that there's any single avenue that will solve this challenge that we're talking about.

Senator WARREN. But will it help us push in the right direction?

Dr. BELL. If we combine it with many other things that are possible, absolutely. And this is definitely a conversation I would love to be able to continue with you, because I think that it's pointing in a direction that we must go in.

Senator WARREN. Good, and I think that's important. You know, as Ms. Savage testified, the opioid epidemic is not fair to anyone, and too many kids are also left to deal with the emotional and economic costs of losing a parent. We could make a common sense change to Social Security survivor benefits. It won't solve every problem, but it certainly moves us in the right direction, and I think the least we could do is restore benefits up to age 22 for full time students so that these young people who are eligible for benefits could have a little bit better lifetime chances going forward. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Warren.

The vote has started, but we should have time for Senator Smith and then Senator Hassan to ask their questions.

Senator Smith.

Senator SMITH. Thank you very much, Chair Alexander and Ranking Member Murray.

I'd like to start out by talking about what is actually an urgent need for immediate action on a program that provides health coverage to Minnesotans, about 100,000 Minnesotans, including coverage for the treatment and recovery for exactly what we're talking about today. So in Minnesota, we have something called a basic health plan. It's called MinnesotaCare at home, which serves as a lifeline for working families. It offers low-cost comprehensive health coverage for people who make too much to qualify for Medicaid, but simply can't afford health coverage on the private market.

Yet, unfortunately, recent actions by the administration have jeopardized the long-term stability of this program and is putting MinnesotaCare coverage at risk for families. So, actually, in total, my state stands to lose $800 million in Federal funding for MinnesotaCare, which is a big blow.

I want to thank Chair Alexander and Ranking Member Murray and all the Members of this Committee for working with me to reverse these cuts.

I'm really hoping and counting on a bipartisan effort to stabilize this market and to help us in Minnesota who count on this, because it relates directly to what we're talking about today, the need to not only recognize a desperate public health crisis, but also have the resources to provide treatment and recovery to people who need it. So I want to thank you for the opportunity to just mention that, and we'll just turn to a question.

Ms. Savage, I'm so grateful for you being here today. I'm a mother of two sons. I have also sat around tables in coffee shops in Minnesota and talked to moms, I want to say with similar stories, but every single one of these situations is a unique tragedy, and I want to recognize that.

Ms. SAVAGE. Thank you.

Senator SMITH. I've talked to a lot of parents and teachers and school officials in Minnesota about this epidemic, and I hear a lot about the need to strengthen mental health systems in our schools and especially the mental health workforce. It's kind of like an early warning system in schools. In Minnesota, we have done some unique things to try to strengthen this link between schools and community health providers, and it's a big problem. I'm actually working with Senator Murkowski on a way of making this work better.

But I'd be really interested to hear from your perspective—you've spent a lot of time in schools—how you think a stronger mental health system in our public schools would help with this.

Ms. SAVAGE. Well, I think any time you can strengthen anything in the school system, it's a good thing, and mental health being no different with that. I know that a lot of students who maybe do have some substance abuse issues, it's because of a mental health issue as well. So I think if you can strengthen that, you might be able to help on the other aspect of this addiction process as well.

Senator SMITH. Right. Thank you very much.

I want to ask a follow-up question—this is to Dr. Patrick—around this question of family based treatment and how that might

work. Last week, I had a chance to meet with some representatives from Minnesota Head Start providers, and they were telling me about what pressure it has put on the Head Start system—this opioid public health emergency that we have. They said we literally do not have enough arms to hold the infants that need to be held because of what's happening.

I'm wondering if you could talk a little bit about how we might use existing systems like Head Start to help support families, parents and children who are dealing with neonatal abstinence syndrome.

Dr. PATRICK. Thank you for the question. I think it actually begins before—it begins with a comprehensive approach that includes prevention and bolstering prevention early on, well before pregnancy. But as far as our existing resources to engage the family, I think many of the things that have been said, including by Dr. Bell a bit ago, in terms of having a more proactive child welfare system that can engage families holistically and utilize and coordinate some of those resources from child welfare, early intervention, throughout the continuum of care—I think that's really vital.

Senator SMITH. Thank you very much.

The CHAIRMAN. Thank you, Senator Smith, and thank you for your remarks about the Minnesota Healthcare plan. Senator Murray and I are working on a way to lower insurance rates that would specifically solve that problem, and I hope we can finish that work promptly.

Senator SMITH. I appreciate that very much.

The CHAIRMAN. Senator Hassan.

Senator HASSAN. Thank you very much, Mr. Chair and Ranking Member Murray.

To our panelists, thank you for your work and for your patience and attention this morning.

Before we start, I do want to address the bipartisan funding agreement that the Senate reached yesterday to significantly increase Federal funding to combat the opioid crisis, which is an important next step in strengthening our response to this epidemic. These new dollars need to be prioritized for states like my own, New Hampshire, which has been terribly and disproportionately hit by this crisis, and I'm going to continue to work with my colleagues to ensure that happens.

We also know that we will ultimately need far more funding beyond this measure over the years to come to truly address this crisis. So there are a number of us here this morning who will continue to fight to do that.

I want to thank the leadership of this Committee, because I think they have assembled an extraordinary panel. You all represent really the full scope of this terrible epidemic, the individual loss, and the lives changed forever as a result of the long-term effects for our next generation that both Dr. Patrick and Dr. Bell are talking about as well.

Ms. Savage, as I heard your testimony, I was reminded of the experience of two granite staters, Jim and Jeanne Moser, who lost their 26-year-old son, Adam, in a somewhat similar experience to what you described with your sons. One of the steps they've taken

is called the Zero Left campaign, and I take it from your nodding that you know a little bit about it. Would you like to address it?

Ms. SAVAGE. Yes. It's a wonderful campaign that I actually just became familiar with. Jim has reached out to our organization about perhaps partnering with it to kind of help spread what they're trying to do. What it is—it's Zero Left, and it's a campaign to try to get people to clean out their closets and their medicine cabinets to leave zero left behind. They also have safety disposal for prescription medications that they can put them in a pouch and mix it with water, and it disposes of the prescription medication. So it's a wonderful campaign.

Senator HASSAN. Yes, and they're working with five hospitals in our state, so that when a doctor prescribes an opioid, they're given that pouch along with a warning about the impact that—even though legally prescribed—drugs can have. So I'm glad you guys have connected. It's a real example of the work that so many families are doing to try to prevent this from happening to anyone else. So thank you.

Dr. Bell, last week, I was honored to have a woman named McKenzie Harrington-Bacote join me as my guest for the state of the Union. McKenzie works as the program administrator for the Office of School Wellness in the Laconia School District in New Hampshire. That office focuses on preventing substance misuse and addressing students' all around behavioral health and wellness. Laconia has been very hard hit by the epidemic, and the schools are really working with Federal funds to stem the tide. They have seen a great improvement in student well-being by providing kids with counseling, meals, and other supports so that they are better able to learn, engage in the classroom, and cope with challenges at home.

Dr. Bell, you have worked with school age children your entire career. Can you speak to what more schools should be doing to help facilitate student well-being, especially in schools where children may be exposed to substance misuse in their homes or communities, and how can we here in Congress support those efforts?

Dr. BELL. Thank you, Senator, for the question. You know, I think schools have always been and should continue to be a core frontline institution in whatever ailments we are challenging in our communities, and I think particularly with the opioid crisis, the school can become a very safe haven for young people.

But as we know, there's a lot going on in our schools, and that means that we've got to change our approach that we're taking. I think that we need to focus less on the policing that we're doing in our schools and more on the protecting, and that we need to have conversations with the community, and that our schools should not close down at 3 o'clock. The schools have to become that school-based community center where our children and our families can go to get protection, to be safe, and to learn how to protect their lives and to improve the conditions that they're living in, and I think there's much more that we can do in that area.

Senator HASSAN. Well, I thank you, and to both you and Dr. Patrick, one of the things you've both been talking about is the importance of integrated care and services and prevention that can come with that kind of integrated service. In my experience as a Gov-

ernor, it takes resources to actually coordinate and integrate things. You can't just kind of say it's a good thing. So there are a number of us here, myself included, who will be fighting to get you guys on the front lines those kinds of resources. We are so grateful for your work.

Thank you, Mr. Chair.

The CHAIRMAN. Thank you, Senator Hassan.

Senator Jones, have you voted yet?

Senator JONES. Not yet. But I just have one quick question for Ms. Savage and we can move on, if that's Okay. This won't take but a second.

The CHAIRMAN. Sure.

Senator JONES. Ms. Savage, I appreciate your testimony, and as a lawyer before I came here, I had clients that had issues, similar issues, and I saw the devastating—but one of the things that I would like to talk about as opposed to the money and the legislation—you mentioned the community pill drop. I think Senators can also use their positions as community engagement.

Just briefly, I'd like to know just a little bit more about what you did, how you put that together, so that perhaps in Alabama we can go back and try to organize that. We don't have much time, so I apologize.

Ms. SAVAGE. I'll be quick. What we did is we worked with a lot of other community coalitions, and we organized a pill drop, where we picked a Saturday, and we got DEA approval, and we manned five different locations across our community from 10 o'clock to 2 o'clock p.m. And in those 4 hours is where we had picked up those 500 pounds of pills.

Senator JONES. Did you advertise that?

Ms. SAVAGE. We advertised it, and we had—through Facebook, and the local media picked it up and advertised that, and it was just a constant flow of traffic coming through. We went through the fire department, the stations. They would pull in. They would hand out their pills in little Ziploc baggies that we asked that they bring them in, and they put them in a box, and then they would drive through.

Senator JONES. Well, that was just briefly it, Mr. Chairman. I wanted to hear a little bit about that. I appreciate your indulgence on that. And I look forward to hearing back from you.

Ms. SAVAGE. Thank you.

The CHAIRMAN. Thank you, Senator Jones, and you're welcome to supplement that answer, any of you.

Thanks to all of you. We need to go vote, and I'm going to wind up the hearing. But this, as you can tell, has been a very helpful hearing, and we respect and appreciate the effort that each of you has made to come.

I would ask unanimous consent that the statement by Senator McConnell be submitted into the record.

[The prepared statement of Senator McConnell follows:]

PREPARED STATEMENT OF SENATOR MCCONNELL

Mr. Chairman, Ranking Member Murray, Fellow Senators:

In Kentucky and across our Nation, the scourge of opioid abuse continues to devastate communities and tear families apart. One of the most heartbreaking aspects of this crisis is the increasing number of infants born dependent on opioids. These

infants are the most innocent among us, and it is heartbreaking to learn that so many start off their life suffering from drug dependency.

Last May, I shared an article on the Senate floor entitled "A Generation of Heroin Orphans." It told the story of a Kentucky family with a single-mother who was suffering from heroin addiction and the five young children were sent to live with their grandparents. The youngest of the children—twins—were born addicted to heroin. Because of the incredible love and care from their grandparents, these five children are now going to school and living happy lives. However, this is not always the case for the nearly 70,000 kids in Kentucky who live with their relatives because their parents are struggling and with addiction and are unable to care for them.

Heartbreaking stories as a result of opioid abuse are too common across the United States. Through strong bipartisan efforts, we have passed significant laws to help fight back—including the Protecting Our Infants Act (POIA), the 21st Century Cures Act, the Comprehensive Addiction and Recovery Act, and most recently the Senate-passed Jessie's Law. As the Members of this Committee know, the opioid epidemic cannot be solved by a single program or piece of legislation. But by building upon our successful efforts we can continue to make a real difference in the lives of those who need it most.

Today, I would like to focus on one law that is of particular importance to me and relates to the topic of today's hearing. In 2015, I was proud to sponsor and lead to enactment the bipartisan POIA. The POIA aims to prevent prenatal exposure to opioids, to treat infants born with opioid withdrawal, and to improve the states' public health response to this problem. Specifically, it instructed the Secretary of Health and Human Services to develop a comprehensive strategy to address gaps in research and programs. Further, it directed the Secretary to develop recommendations for preventing prenatal opioid abuse and treating infants born dependent on opioids. After working with my colleagues to challenge Federal agencies to meet timelines established by the POIA, I was proud to see these recommendations published last year.

I am extremely proud that POIA became the first Federal law to address prenatal opioid exposure, and I thank my colleagues for joining me in the effort to see it signed into law.

To address a complex issue like the opioid epidemic, it is critical that the Federal Government continues to collaborate with states, communities, and localities to find comprehensive solutions through prevention, treatment, and law enforcement efforts. Earlier this week, during her trip to Cincinnati, First Lady Melania Trump visited the Children's Hospital Medical Center to spend time with patients suffering from the consequences of opioid abuse. Her visit, in addition to providing comfort and support to the children, brings national attention to the struggles of some of our youngest and most vulnerable citizens.

I would like to thank Chairman Alexander and Ranking Member Murray for holding this important hearing today to focus on how this epidemic has specifically affected children and families, and I commend them for their continued work in this space. By continuing to fight the opioid epidemic, we can help those suffering from its effects. I will continue working with my colleagues in this effort to help make the scourge of opioid abuse a thing of the past.

The CHAIRMAN. The record will remain open for 10 days. Members may submit additional information for the record within that time if they'd like. Our Committee will meet again on Tuesday, February 13, at 10 a.m. for a hearing entitled Improving Animal Health: Reauthorization of FDA Animal Drug User Fees.

Thank you for being here today. The Committee will stand adjourned.

ADDITIONAL MATERIAL

THE AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS

Chairman Alexander, Ranking Member Murray, and distinguished Members of the Senate Committee on Health, Education, Labor and Pensions, thank you for the opportunity to submit written testimony in response to your February 8, 2018 hearing titled "The Opioid Crisis: Impact on Children and Families." The Amer-

ican College of Obstetricians and Gynecologists (ACOG), representing more than 58,000 physicians and partners dedicated to advancing women's health, appreciates the thoughtful way that the Committee is approaching this sensitive topic. I hope you will view ACOG as a resource and trusted partner as you continue to examine this important issue.

As ACOG's Executive Vice President and Chief Executive Officer, I am keenly aware of the increase in opioid dependence and its impact on our patients and their families. My testimony will focus on the need for greater access to evidence-based treatment for pregnant and parenting women and the importance of family preservation.

The instance of opioid use disorder has risen dramatically over the past few years, including among pregnant and parenting women. The unplanned pregnancy rate among women with an opioid use disorder is 86 percent, a number that far surpasses the national average of 45 percent.[1] This speaks to the need for increased access to contraception among women with opioid use disorder, as well as the fact that many of these women did not intend to be pregnant.

During pregnancy, most women who use substances, including opioids, are motivated to change unhealthy behaviors and quit or cut back. Those who cannot stop using have a substance use disorder. In other words, continued substance use in pregnancy is a characteristic of addiction, a chronic, relapsing brain disease.

Evidence-based treatment for pregnant and breastfeeding women with substance use disorders includes the use of medication-assisted treatment (MAT) such as methadone and buprenorphine. MAT is the recommended therapy for treating pregnant women with opioid use disorder, and is preferable to medically supervised withdrawal, which is associated with higher relapse rates and poorer outcomes, including accidental overdose and obstetric complications. Use of MAT also improves adherence to prenatal care and addiction treatment programs. MAT, together with prenatal care, has been demonstrated to reduce the risk of obstetric complications. Neonatal abstinence syndrome (NAS) is an expected and treatable condition that can follow prenatal exposure to opioids, including MAT.[2]

Tragically, overdose and suicide are now the leading causes of maternal mortality in a growing number of states.[3],[4] Threats of incarceration, immediate loss of child custody, and other potential punishments drive pregnant and parenting women away from vital prenatal care and substance use disorder treatment. Non-punitive public health approaches to treatment result in better outcomes for both moms and babies. Immediately postpartum, women who bond

---

[1] Heil S, Jones H, Arria A, et al. "Unintended pregnancy in opioid-abusing women." J Subst Abuse Treat. 2011 Mar, 40(2): 199–202.

[2] Opioid use and opioid use disorder in pregnancy. Committee Opinion No. 711. American College of Obstetricians and Gynecologists. Obstet Gynecol 2017;130:e81—94.

[3] Metz TD, Rovner P, Hoffman MC, Allshouse AA, Beckwith KM, Binswanger IA. Maternal deaths from suicide and overdose in Colorado, 2004—2012. Obstet Gynecol 2016;128:1233—40.

[4] Maryland Department of Health and Mental Hygiene Prevention and Health Promotion Administration. Maryland Maternal Mortality Review: 2016 Annual Report. Retrieved from *http://healthymaryland.org/wp-content/uploads/2011/05/MMR—Report—2016—clean-copy—FINAL.pdf*

with their babies, including via skin-to-skin care and breastfeeding, are more likely to stay in treatment and connected to the health care system. Further, breastfeeding is associated with decreased severity of NAS symptoms and reduced length of hospital stay for the newborn.[5] Substance use disorder treatment that supports the family as a unit has proven effective for maintaining maternal sobriety and child well-being.

However, in 2015 the Government Accountability Office (GAO) found that "the program gap most frequently cited was the lack of available treatment programs for pregnant women. . ."[6] In 2017, the GAO again cited barriers faced by pregnant women with opioid use disorder, including "the stigma faced by women who use opioids during pregnancy" and "limited coordination of care for mothers and infants with NAS," making it "difficult for families to get the resources or support they need."[7]

As the Committee considers approaches to improve outcomes and mitigate the impact of the opioid crisis on children and families, we urge you to consider the following:

- The need for the US Senate to pass S. 1112, the Maternal Health Accountability Act, introduced by Senators Heitkamp (D-ND) and Capito (R-WW) to assist states with the creation or expansion of maternal mortality review committees (MMRCs). Urgent action is needed to bring down the rising maternal mortality rate in the United States. States with MMRCs bring together local health care professionals to review individual maternal deaths and recommend specific ways to prevent future deaths. MMRCs are critical tools to understanding why women die related to pregnancy, including those linked to opioid overdose, and identifying opportunities for prevention.
- The need for increased access to residential and nonresidential treatment options for pregnant and parenting women with opioid use disorder. Section 501 of the Comprehensive Addiction and Recovery Act (CARA; Public Law 114–198) authorized funds to increase access to outpatient treatment options that are responsive to pregnant and parenting women's complex responsibilities, often as the primary or sole caregivers for their families. Ensure this program receives adequate funding to improve access for all women seeking treatment.
- The Protecting Our Infants Act: Final Strategy, created pursuant to Public Law 114–91, made several recommendations to address gaps in research; gaps, overlaps, or duplication in relevant Federal programs; and

[5] Klaman SL, Isaacs K, Leopold A, Perpich J, Hayashi S, Vendor J, Campopiano M, Jones HE. Treating Women Who Are Pregnant and Parenting for Opioid Use Disorder and the Concurrent Care of Their Infants and Children: Literature Review to Support National Guidance. J Addic Med 2017;11(3):178–190.

[6] U.S. Government Accountability Office. (2015, February). Prenatal Drug Use and Newborn Health: Federal Efforts Need Better Planning and Coordination. (Publication No. GAO–15–203). Retrieved from *http://www.gao.gov/products/GAO–15–203.*

[7] U.S. Government Accountability Office. (2017, October). Newborn Health: Federal Action Needed to Address Neonatal Abstinence Syndrome. (Publication No. GAO–18–32). Retrieved from *https://www.gao.gov/assets/690/687580.pdf.*

coordination of Federal efforts to address neonatal abstinence syndrome (NAS) with recommendations regarding maternal and child prevention, treatment, and services. The October 2017 GAO report made one recommendation: to implement the Strategy.[8] However, the Strategy includes a disclaimer that "full implementation will be contingent upon funding."[9] Congress should direct Federal funds to ensure full implementation of the Protecting Our Infants Act: Final Strategy.

- Critical gaps in public and private insurance coverage lead to gaps in care or discontinuation of treatment. Women receiving pregnancy coverage through Medicaid or the Children's Health Insurance Program (CHIP) may lose their access to MAT weeks after giving birth, during a particularly vulnerable time when relapse risk increases if treatment is not continued. Further, continued and improved coverage is needed for nonpharmacological pain relief, and should include transportation and childcare options for women seeking treatment. Explore coverage policies that ensure continued access to treatment for women postpartum.
- Facilitate better collaboration between health care providers and the child welfare system in responding to the rise of opioid use disorder among pregnant and parenting women and NAS. This epidemic is increasingly leading to children being placed in kinship care or foster care homes. State child welfare agencies do not currently have the resources necessary to address the impact of this epidemic on families. Our shared priority is that infants born to families struggling with opioid use disorder have safe homes, and that the family unit is preserved when possible.
  - Section 503 of CARA added requirements for states to develop plans of safe care for infants born with NAS. Unfortunately, those requirements came without resources for implementation or clear guidance, and may unintentionally lump together women who use illicit substances with those in active treatment or with a current valid prescription. States need additional guidance, funds, and resources from the Federal Government to ensure infant safety and to keep families intact when appropriate.
  - Advance S. 1268, the Child Protection and Family Support Act introduced by Senators Daines (R-MT) and Peters (D-MI) to expand access to treatment services for vulnerable families while helping them stay together and heal. Unfortunately, our current system too often relies on punitive approaches that deter women from seeking treatment and places chil-

[8] Ibid.

[9] Protecting Our Infants Act: Final Strategy. Submitted by the Behavioral Health Coordinating Council Subcommittee on Prescription Drug Abuse. Retrieved from *https://www.samhsa.gov/sites/default/files/topics/specific—populations/final-strategy-protect-our-infants.pdf*

dren in foster care when they could safely remain at home with the appropriate treatment and support services.

- Reauthorize the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program that serves at-risk families via evidence-based programs with goals to improve maternal and child health, prevent child abuse and neglect, and encourage positive parenting. Home visiting programs are an important tool as we work toward ensuring safe homes and family preservation.

- Improve access to primary care and the full range of contraceptives with no cost sharing for women with opioid use disorder, to drive down the high rate of unplanned pregnancies in this group as well as the rate of babies born with NAS. Advance S. 1985, the Protect Access to Birth Control Act introduced by Ranking Member Murray to ensure continued access to coverage for women with private insurance.
- Promote research into pharmacological and nonpharmacological treatments for both pregnant and breastfeeding women with opioid use disorder; non-opioid pharmacotherapies for pain management for women, including pregnant women; and both pharmacological and nonpharmacological treatments for newborns with NAS.

Thank you again for the opportunity to submit written testimony, and for your thoughtful approach to this issue. We look forward to working closely with you and the Committee as you consider additional strategies to address the impact of the opioid crisis on children and families. I hope that you will consider ACOG a trusted partner and will let us know if we can provide any additional assistance.

TESTIMONY OF THE PORT GAMBLE S'KLALLAM TRIBE

"The Opioid Crisis: Impact on Children and Families"

The Port Gamble S'Klallam Tribe (PGST) provides these comments for the record for the Committee's hearing held on February 8, 2018, entitled, "The Opioid Crisis: Impact on Children and Families." We look forward to further opportunities for discussion on this important topic and invite the Committee to contact us with any follow-UP questions.

PGST is a federally recognized, self-governing tribe owning 100 percent of its reservation lands. We are located on the northern tip of the Kitsap Peninsula in Kitsap County Washington. The PGST Reservation is home to about two-thirds of the Tribe's 1,200 enrolled members, and the Tribe also provides services to approximately 800 other American Indians, Alaska Natives and non-Indians living on the reservation in Kitsap County.

PGST is actively involved in providing culturally appropriate care, as the only Indian health care provider of both primary and behavioral health services in Kitsap County. The Tribe joined the

Tribal Self-Governance Project in 1990 and has administered health services to its members for over 20 years. The Tribe provides primary care, dental, mental health and substance abuse services. Over 98 percent of clients served by behavioral health are served by primary care also.

In Washington State, Indians die of drug overdoses at a rate of 29 in 100,000, compared to a rate of 12 for whites. The opioid epidemic is devastating to families and children in our Tribal community. This is a real and heartbreaking crisis for the Tribe. We have had numerous overdoses and deaths in our community as a result of the opioid crisis, and not only from the vast supply available on the black market. The deaths include members who were prescribed opioids as pain medication and accidentally overdosed. In just the past few months we had an overdose by a young mother and the death of a toddler, just 2 years old, who got into his parents' opioid medication. We have grieving parents, grandparents, and great-grandparents who have lost children due to this scourge. It would be hard to find a family on our reservation that has not been impacted by this epidemic.

Since January 1, 2018, the Tribe has filed four new dependency cases, all but one was related to opioid abuse. These new cases are in addition to the open dependency cases on which the Tribe had already filed. Significantly, this is more cases than what we filed the entire year of 2017.

Our Children & Family Services Department's mission is to enhance the quality of life of our members and their families through a culturally sensitive approach, which encourages living a healthy lifestyle and promotes self-sufficiency. Our Department has two divisions: the Behavioral Health Division and the Community Services Division. Our Department offers a wide range of services and partners with Behavioral Health to address the opioid epidemic in our community. We use a wrap-around service approach and tailor a service plan for each family to meet its specific needs. These service plans include, among other things, treatment, parenting, and counseling. Our Department also offers prevention services to avoid court involvement and the removal of the children from their family home. If removal of a child from the home is necessary, placement is often an issue. We have a large number of relatives as placements as well as 20 Tribal licensed homes, but with the increased number of dependencies, we often struggle to find homes for the children. Opioid abuse impacts the whole family. Our Tribal member grandparents are often raising their grandchildren. In addition to this role, they are also often struggling with their child who is involved with the addiction.

The opioid crisis is overwhelming to our law enforcement and social services as they are not presently resourced sufficiently to meet the needs arising from opioid epidemic. We are working as hard and as efficiently as we can with the resources we have, but additional resources in terms of funding, personnel and authorities would go a long way in our efforts to combat the myriad problems the opioid crises causes. Opioid use disorder is a complex issue, and there is no quick and easy fix for resolving the problem. Rather,

we need a multifaceted, comprehensive approach with tactics that work.

Importantly, PGST is taking important steps to address the opioid epidemic. Our Tribe launched a Tribal Healing Opioid Response (THOR) to coordinate a cross-governmental approach to combat the crisis. We joined a tri-county group to strengthen collaboration with partners in the community to implement our plan that is focused on effective treatment, harm reduction, prevention, and reducing the role of criminalization. The goal is to address increasing rates of opioid dependence, overdose, and other negative consequences stemming from opioid use. More information about THOR is attached in a one-page briefing paper and in an article published in our tribal newspaper.

PGST is particularly interested in initiating a pilot program for residential post-treatment facilities. PGST would like to provide treatment and support past the prevailing 28-day model, utilizing evidenced-based practices with a robust evaluation component. PGST has partnerships with Oxford House and Habitat for Humanity, and is well positioned to start such a pilot program.

Culturally appropriate care is of critical importance to Indian Country, where traditional healing practices, cultural beliefs regarding approaches to treatment, and differences in interpersonal communication may contribute to significant variances in effectively meeting the healthcare needs of American Indian/Alaska Native populations.

Prevention is the cornerstone for any opioid response, as The Surgeon General's Report on Alcohol, Drugs and Health (November 2016) noted. The PGST prevention team has numerous programs that focus on youth and using evidenced-based approaches to keep youth active in the community. PGST also provides education to the community and to the providers treating pain, with a focus on treating pain with non-opioid medications. Currently, however, prevention funding is grant based and administratively burdensome. A more streamlined approach with direct funding would benefit the prevention efforts. We strongly encourage Congress to provide direct funding to Tribes and ensure that any additional funds for opioids does not decrease services in other areas.

We appreciate Congress's inclusion of authorization for $6 billion over 2 years for opioid efforts in the recently passed Bipartisan Budget Act of 2018. We ask that you work to make sure Congress appropriates this full amount. We also urge Congress to ensure that these moneys make their way directly to tribal governments for them to spend in their own communities. Such funds should not be passed through the state. We also ask you to support S. 2270, the Mitigating the Methamphetamine Epidemic and Promoting Tribal Health Act, which would increase funding in the 21st Century Cures Act, and specifically make tribes and tribal organizations eligible applicants for direct funding under the Act. Additionally, we ask you to work toward providing sufficient funding to the Indian Health Service (IHS) for opioid treatment and prevention.

We also want to point out certain other barriers to our efforts to combat the opioid crisis. Current regulations require providers of medication-assisted treatment (MAT) to apply for waivers even

though no such limitation exists on providers prescribing opioids. This creates barriers to accessing MAT. Medicaid dollars used to fund transportation to opioid services could be reduced significantly if buprenorphine was easier to access at primary care facilities. Those saved funds could be used for prevention or treatment. In addition, nurse care management as an adjunct to MAT has been shown to be successful and is an evidenced based practice in treating opioid addiction. We need to expand tribes' access to this treatment.

Two longstanding areas of concern across the IHS are the limited funding for construction of new Indian health care facilities and the need to modernize the IHS's health information system. Both of these issues impact the ability of tribes to confront the opioid epidemic. PGST is actively working to align substance use disorder treatment with primary care to address a person's overall health, rather than treating it as a substance misuse or a physical health condition alone or in isolation. Co-locating these services provides behavioral health integration. Yet, current estimates for a new facility for us for all health services is over $8 million dollars. Barriers to integration within the health information system are being addressed at significant cost to the PGST as we left the Indian Health Service RPMS system years ago.

Thank you for the opportunity to provide comments for this important hearing. It will be through your dedication and that of your colleagues to ensure that sufficient resources and authorities are available to tribal governments, as well as to the Federal, state and local governments, to stop this scourge on our Nation and communities which takes such a heavy toll on our children and families.

We look forward to working with the Committee to make sure the necessary tactics are implemented to combat the opioid crisis. Our THOR program is an example of one such tactic, and we invite you to visit our Tribe to learn more about it and other actions we are taking to do our part in the opioid fight. If you have any questions or would like to discuss this testimony, please contact our Tribal Chairman, Jeromy Sullivan.

THE PORT GAMBLE S'KLALLAM TRIBE THOR PROJECT

THOR = Tribal Healing Opioid Response

THOR Logo was designed by Port Gamble S'Klallam Tribal member, Jeffrey Veregge.

THOR Was developed to address opioid, specifically, heroin use on the reservation.

THOR Team includes tribal departmental staff from the police, health, youth, behavioral health and H.R. and also Court staff and community members.

Participants meet monthly to work to address the three goals of THOR

Goals:

- Prevent opioid misuse and abuse
- Expand access to opioid use disorder treatment
- Prevent deaths from overdose

To date the Health Department has started a needle exchange program thereby reducing infection risks and number of used needles being found in playgrounds and public areas on reservation.

The Health Department also trains interested staff in the administration of Naloxone Hydrochloride Injection (NARCAN) to individuals who may be in an overdose.

Behavioral Health not only provides chemical dependency and mental health counseling but also has a suboxone program and has tribal members utilizing methadone clinics as well.

The Police Dept. has a secured medicine take back box that has seen increase use since it was first installed 5 months ago. The Police and Natural Resource Enforcement officers are trained to administer NARCAN.

Tribal Council approved a Good Samaritan Law.

Town hall meetings are held at least quarterly to educate the community on various topics but most recently, due to the rise in opioid use on reservation, the focus has been on opioid use. A NARCAN training was held for interested tribal members and over 120 tribal members were issued and trained on using NARCAN.

For more information:

Karol Dixon, Health Services Director, 360–297–9641 *karold@pgst.nsn.us*

Jolene George, Behavioral Health Director, 360–297–9674 *jolenes@pgst.nsn.us*

Kara Wright, Admin. Dir. Tribal Services, 360–297–6223 *karah@pgst.nsn.us*

Sam White, Chief of Police, 360–297–9685 *swhite@pgst.nsn.us*

Trisha Ives, Prevention Coordinator, 360–297–6276 *tives@pgst.nsn.us*

THOR Sweatshirt Valued at $15.

In This Issue
Page 3 America's Opioid Crisis
Page 6 Heronswood Gets Haunted
Page 9 Obituary: Brian Burton Fulton

PRSRT STD
U.S. POSTAGE
PAID
Silverdale, WA
Permit # 111

PORT GAMBLE S'KLALLAM
syəcəm
THE OFFICIAL NEWSPAPER OF THE PORT GAMBLE S KLALLAM TRIBE | WWW.PGST.NSN.US | 360-297-2646 | NOVEMBER 2017

T.H.O.R. Responds to PGST Opioid Crisis

THOR Logo by Jeffrey Veregge

Late in 2016, the community came together for a town hall on opioids. Then, in January 2017, PGST Council members and staff took part in an opioid response meeting with representatives from three counties. From this humble origin story comes T.H.O.R.

The Tribal Healing Opioid Response, or T.H.O.R., is a plan set forth by the Wellness and Health Services Departments to respond to the opioid crisis on reservation. At its center are three very broad, but distinct goals: prevent opioid misuse and abuse; expand access to opiate use disorder treatment, and prevent deaths from overdose.

Each of these goals include strategy items to help achieve positive outcomes. For example, while opioids can be useful for short-term pain management, the program wants to make sure doctors and other health care providers are using best practices when prescribing, including recognizing the signs of misuse.

T.H.O.R. is unique compared to state and county plans because of the opportunity PGST has for departments to work in coordination. The program was designed for collaboration with a lead department for each strategy who will work with partnering departments. In this way, no one department is responsible for combatting the crisis; each has a role and an opportunity to bring new ideas to the table.

"Everyone has a role to play. No one department or leader can solve this problem. That's the main idea behind T.H.O.R.," said Dr. Luke McDaniel, Medical Director, Port Gamble S'Klallam Tribal Health Center.

The Goals and Strategies of THOR

1.) Prevent Opioid Misuse and Abuse
- Promote best practices for prescribing
- Raise awareness of risks including overdose; reduce stigma
- Prevent opioid misuse in communities, particularly with youth
- Promote safe storage and disposal of prescription medicine
- Decrease the supply of illegal opioids

2.) Expand Access to Opioid Use Disorder (OUD) Treatment
- Expand capacity of health providers to recognize signs of opioid misuse
- Increase access to and utilization of best practices OUD treatment in communities
- Increase access to and utilization of best practices OUD treatment in the criminal justice system
- Increase capacity of syringe exchange programs to provide overdose prevention training, including naloxone and to engage clients in supportive services
- Reduce withdrawal symptoms in newborns

3.) Prevent Deaths from Overdose
- Educate community to know how to recognize and respond appropriately to an overdose
- Increase availability of overdose reversal medication Naloxone

~THOR, *continued on page 2*

~THOR, *continued from page 1*

Dr. McDaniel went on to add: "The Surgeon General's Report on Alcohol, Drugs, and Health showed that the highest return on investment is with prevention-evidence-based programs. To me, the remarkable thing about these programs is that they focus on very basic stuff: parenting skills, problem-solving, dealing with emotions, building parent-child bonds, school success, and other fundamental issues that often seem unrelated to drugs. These are non-technical things that are everyone's responsibility."

Other elements of the T.H.O.R. program include an ongoing needle exchange program, training of staff and community members in the administration of Naloxone Hydrochloride Nasal Spray (NARCAN) in case of overdose, and treatment utilizing suboxone, a drug that can deliver relief from heroin cravings. In addition, since the PGST police department set up a secured medicine take-back box five months ago, drop-offs have continued to increase, ensuring fewer bottles of prescription pills in medicine cabinets.

In October, T.H.O.R. was launched at a town hall meeting, where a logo for the effort was revealed. Designed by Jeffrey Veregge, it depicts the mighty hero, Thor, with his hammer, drawn in Veregge's traditional native style. It is hoped that the distinctive logo will bring awareness to the program and help tribal members remember that they, like Thor, have the power to save a life, even their own.

Fentanyl: A Lethal Danger

Synthetic "super" opioid appears in King County; Fentanyl-laced pills suspected as cause of at least one death

The opioid crisis just keeps getting worse, in part because new types of drugs keep finding their way onto the streets. Fentanyl, heroin's synthetic cousin, is among the worst offenders. Fentanyl is 100 times more potent than morphine, and many times that of heroin. Illegally made Fentanyl can be made into pills, powder, and heroin.

Most of the time drug users are unaware that substances bought on the street are being laced, or sometimes totally replaced, by Fentanyl. When they inject their usual amount of heroin, they can inadvertently take a deadly dose of Fentanyl. This has been happening all over the nation and, sadly, in October it was reported in King County.

Washington State Patrol responded to a possible lethal overdose and, on the scene, found pills, which appeared to be Oxycodone, but when tested, came up positive for Fentanyl. While the cause of death is still pending, health officials from the King County Medical Examiner's office suspect these drugs played a significant role.

Bottom Line: Users need to be aware that Fentanyl is a hidden danger circulating the community.

The only way to protect yourself completely is to not use drugs.

If you must use, please practice these simple precautions:

- Do not use alone.
- Start with a small amount.
- Watch and wait before the next person uses.
- Have Naloxone at the ready to prevent an overdose. The PGST Health Clinic and Wellness Center will provide Naloxone to anyone who asks, no questions asked.
- Know that counterfeit "kill pills" may be circulating that look like prescription drugs but contain fentanyl. You cannot determine whether a pill is real or what is in it by how it looks.

If you see an overdose:

- Call 911 immediately. It's a health emergency and PGST's Good Samaritan Law protects the person who had the overdose and the people who seek help.
- Administer Naloxone, if possible. If you live with a drug user, have this at the ready.
- Start CPR until medical help arrives.

The best way to protect your life is to be treated for addiction. If you are ready for treatment, please do not hesitate to call the Wellness Center at 360-297-6326, or the 24-hour Recovery Line at 866-789-1511.

Port Gamble S'Klallam Tribe

31912 Little Boston Road NE
Kingston, WA 98346
Telephone: 360-297-2646
Fax: 360-297-7097
Website: www.pgst.nsn.us
Email: info@pgst.nsn.us

Tribal Council

- Jeromy Sullivan, Chairman
- Chris Tom, Vice Chairman
- Renee Veregge, Councilman
- Lena Tunkara, Councilman
- Talia DeCoteau, Councilman
- Donovan Ashworth, Councilman

Entity Directors

- Kelly Sullivan, Executive Director
- Betty Decoteau, CFO
- Audrey Gugni, Administrative Director of Tribal Government
- Kara Wright, Administrative Director of Tribal Services
- Chris Placentia, Executive Director, Noo-Kayet
- Leo Cullao, General Manager, The Point Casino
- Nicole Armstrong, Director, Tribal Gaming Agency
- Joan Garrow, PGS Foundation Executive Director
- Margaret Tom, Port Gamble S'Klallam Housing Authority Executive Director

PGST Vision Statement

Our vision is to achieve the full potential of the Port Gamble S'Klallam Tribal sovereign nation to be self-sufficient, proud, strong, healthy, educated and respected.

PGST Mission Statement

The mission of the Port Gamble S'Klallam Tribe is to exercise sovereignty and ensure self-determination and self-sufficiency through visionary leadership. We will ensure the health, welfare and economic success of a vibrant community through education, economic development, preservation and protection of the rich culture, traditions, language, homelands and natural resources of our Tribe.

nəxʷ qiyt nəxʷ sʼǩáyəm

America's Opioid Crisis:

How bad is it and how did we get here?

President Donald J. Trump has declared the opioid crisis a "public health emergency."
Photo credit: The White House

Hardly a day goes by without news about America's opioid problem. It has become this country's worst and most deadly drug crisis.

According to data from the Centers for Disease Control (CDC) and compiled by *The New York Times*, drug overdose deaths in 2016 topped 59,000—a 19% increase over 2015. The 2016 overdose death toll is greater than the number of people who died during that year in car crashes (38,000) or from gun violence (36,000). It is even greater than the number of deaths at the peak of the HIV/AIDS crisis (43,000) or U.S. casualties in the Vietnam War (58,200).

Drug overdoses are now the leading cause of death among Americans under the age of 50.

Opioids Explained

Opioids are a class of drugs that can be used to treat pain. They include brand and common names such OxyContin®, Vicodin®, codeine, and morphine—all of which are only legal when obtained with a valid prescription. Also included under the classification are heroin and Fentanyl, a synthetic opioid that is often illegally produced and mixed with other drugs, increasing the risk of overdose. Opioids are so named because they are synthetic derivatives of opium.

Opioids work by mimicking neurotransmitters that activate brain receptors to block pain. This abnormal stimulation also floods the brain with the naturally-occurring "pleasure center" compound, dopamine, which can produce euphoria in the user.

Prescribed opioids can be safe for pain relief if they are taken for a short period of time, but, because of the feelings of pleasure they induce, they are also highly addictive, even when taken under the supervision of a doctor.

According to the American Society of Addictive Medicine, over 2.5 million Americans aged 12 and older are addicted to opioids.

The History of the Crisis

Before the 1990s, doctors were hesitant to prescribe opioids for anything other than severe pain, such as in patients with end-stage cancer, over worries about misuse and addiction.

In the early part of the decade, concerns began to increase over the number of Americans suffering from chronic pain. Doctors were, rightfully, encouraged to find solutions to this serious medical issue, which, according to the Institute of Medicine, impacts 100 million Americans, or about a quarter of the U.S. population. Chronic pain affects more people than heart disease, diabetes, and cancer combined.

Pharmaceutical companies seized the opportunity, marketing opioids to skeptical doctors. One such drug, OxyContin, was released by Purdue Pharma in 1995, and was promoted as something of a medical miracle: a time-release narcotic that could safely treat moderate to severe pain without fear of addiction.

According to a recent *New Yorker* article, "The Family That Built an Empire of Pain", which explores the role OxyContin has played in the current drug epidemic, "Purdue launched OxyContin with a marketing campaign that attempted to counter (fears of addiction) and change the prescribing habits of doctors."

~**Opioid Crisis,** *continued on page 7*

Key

- Tribal Business
- Clinic & Health
- Natural Resources
- Community News

Want to learn more about a something you've read about in Syecem or submit an article?

Contact Sharon Purser, at the
Port Gamble S'Klallam
Tribal Center,
31912 Little Boston Road,
Kingston, Washington
(360) 297-6276 or
sharonp@pgst.nsn.us

~**Opioid Crisis,** *continued from page 3*

"The company funded research and paid doctors to make the case that concerns about opioid addiction were overblown, and that OxyContin could safely treat an ever-wider range of maladies. Sales representatives marketed OxyContin as a product 'to start and stay with.' Millions of patients found the drug to be a vital salve for excruciating pain. But many others grew so hooked on it that, between doses, they experienced debilitating withdrawal."

It is estimated that Purdue has made over $35 billion in revenue from the sale of OxyContin.

While drug trials soon found that Purdue's claim of 12-hour pain relief from OxyContin was, at best, exaggerated, prescriptions of the drug and other opiates increased. It's not hard to understand why when you consider that that cost of chronic pain—in treatment, lost wages, and other lifestyle impacts—is more than $600 billion a year. Opioids were an easy solution to a very difficult and expensive problem.

Over the last decade, heroin use has increased five-fold. According to the CDC, this staggering jump is being led by middle aged women and men aged 25-44. The CDC study states that this rise can be attributed to many factors, but especially prescription opioid addiction and a need to find cheaper alternatives when a legal prescription is not possible.

A 2014 Journal of the American Medical Association Psychiatry report found that 75% of heroin users in treatment began their addiction with painkiller abuse.

The U.S. Government Response

Throughout the 2016 Presidential campaign, both the Democratic and Republican candidates stressed that the federal government needed to aggressively respond to the opioid crisis. This was as more and more media reports began to tell the stories of everyday Americans trying to conquer—or, at the least, live with—their addictions.

On October 26, 2017, President Donald J. Trump directed the Department of Health and Human Services to declare the opioid crisis a "public health emergency," which is different than a "national emergency". This distinction impacts funding sources and the power of the federal government to act upon initiatives.

While the administration has not put forth a plan to deal with the issue, during a statement announcing the directive, President Trump said one idea is for the government to produce an advertising campaign to help steer kids away from using drugs in the first place.

"This was an idea that I had, where if we can teach young people not to take drugs, it's really, really easy not to take them," said President Trump.

This approach harkens back to former First Lady Nancy Regan and the "Just Say NO" campaign of the 1980s. Unfortunately, studies of that program and ones like it show they are marginally effective, at best.

There's also the question of how any program proposed by the administration will be funded. Public health emergencies must come out of the Public Health Emergency Fund, which, currently, carries a balance of of just over $56,000. The federal government estimates that the cost to treat opioid addiction could be as high as $75 billion a year.

President Trump has admitted this shortfall, and has said he is trying to negotiate funding with Congress as a part of his budget plan.

Despite the fact that it's unclear what impact, if any, the President's directive will have on the opioid crisis, Dr. Luke McDaniel, Medical Director of the Port Gamble S'Klallam Tribal Health Center, is optimistic.

"We remain hopeful that the President's declaration will, one day, lead to substantive action," said Dr. McDaniel.

Treating the Crisis in Indian Country

The National Institutes for Health estimate that Native Americans are at least twice as likely to become addicted to drugs or alcohol. In Washington state, indigenous people die of drug overdoses at a rate 2.5 times that of the white population. Lack of access to medical care as well as mental health and addiction services compound the problem

But there is good news: Tribes like PGST, who are trying to turn this trend around.

The PGST government has developed its own response plan to the opioid crisis. Called T.H.O.R. ("Tribal Healing Opioid Response), the program has three broad goals: prevent opioid misuse and abuse; expand access to opiate use disorder treatment, and prevent deaths from overdose. *(Read more about THOR starting on page 1.)*

OxyContin and other opioids are derivatives of heroin. Some people will start their addiction with a prescription and then turn to heroin as a cheaper alternative.

Dr. McDaniel believes that the nature of tribal communities make holistic programs like T.H.O.R. more likely to succeed. "For reasons of family, culture, and history, I think native communities are exceptionally tight," he said. "No one is thrown away. Addicts remain family and problems are not ignored. Hope for redemption always endures. The community always comes together to keep on working."

In addition, the health department has started a needle exchange program to reduce the risk of infection from shared needles.

Health department, police, and Natural Resource Enforcement staff have been trained in the administration of Naloxone Hydrochloride Nasal Spray (NARCAN), which can reverse an overdose if given immediately. Recently, 120 Tribal members were trained in how to administer the drug.

The Behavioral Health department offers access to suboxone, a drug used to treat opiate addiction in adults. This is in addition to chemical dependency and mental health counseling.

A document prepared by the PGST Health Services Department to explain the response to the opioid crisis talks about the Tribe's thoughtful, holistic approach to the problem: "A strength of our approach is the collaboration between departments. No one department 'owns' the opioid response, each has a role."

[Whereupon, at 11:57 a.m., the hearing was adjourned.]

○