>> Welcome to CDC Public Health Grand Rounds Year In Review. Every Grand Round is an opportunity to learn what CDC and others are doing in the world of public health. Let's hear from Dr. John Iskander, Scientific Director for Grand Rounds.

>> Thank you for joining us today. The goal of CDC Public Health Grand Rounds is to share some of the important work that CDC is doing around the world to save lives and protect people. Each Grand Round session is the result of a rigorous process, which takes 90 to 120 days to prepare. This attention to detail ensures that our audiences' receive up-to-date, scientifically-accurate, usable information, whether they're clinicians, researchers, students of public health medicine and nursing, or the public that we serve. In addition to the session, we also offer beyond the data interviews, providing an opportunity to expand on some of the key points made during the session. We've selected a few moments from each of our 2017 Grand Rounds and beyond the data interviews to share with you here. After you view this retrospective, you may want to visit our Grand Rounds On Demand website where you will find recordings of all our sessions. Remember that continuing education units are available for sessions up to two years after they originally air. Stay tuned for the launch of our new website in March 2018. This new offering will make it easier for you to find everything you need about the topics we feature in Grand Rounds. We hope you enjoy this Grand Rounds year in review, join us for our new offerings the third Tuesday of every month.

>> January, 2017. Opioid use disorder in women. We started the year with one of the most critical public health topics of our times, opioid use. With a focus on the impact of opioids on women, Dr. John Iskander shared a very personal story about a friend and classmate.

>> I'm Dr. John Iskander, it's my pleasure to welcome you to CDC Public Health Grand Rounds for January 2017, on the unique challenges of opioid use disorder in women. This is a picture of one of my closest friends. Someone I hoped could be here herself. I'm telling her story on behalf of her family and friends. She was a peace corp volunteer, a dedicated public health worker, a champion for persons living with HIV/AIDS, and a certified addiction peer counselor. She had a medical condition for which she was prescribed opioids. Now I know, based on medical and personal information, that opioids contributed to my friend's recent death. As a physician, I understand that this was not a moral failing, but a recurrence of a chronic disease, addiction. As a friend and a classmate who wrote her obituary, I am heartbroken. The opioid epidemic affects all of us. Today we will learn about what each of us can do to help prevent other needless losses.

>> Nearly 21 million Americans, more than the number of people who have all cancers combined, suffer from substance use disorders. Alcohol and drug addiction took an enormous toll on individuals, families, and communities. Most Americans know someone who's been touched by an alcohol or drug use disorder. Yet 90 percent of people with a substance use disorder are not getting treatment. Since 1999, there have been over 71,800 prescription opioid-related deaths among women. Our mothers, wives, sisters, daughters are dying from these overdoses at rates never seen before, and this needs to stop. Three principles in the guideline are key to improving patient care. First, outside of end-of-life care, non-opioid therapy should be preferred for chronic pain. Second, when opioids are used, the lowest possible effective dose should be prescribed. Third, providers should exercise caution when prescribing opioids and monitor all patients closely using prescription drug monitoring programs, PDMPs, and other means.

>> Healthcare professionals frequently miss the signs of addiction in women and girls who are more likely to receive long-term prescriptions for sedatives and analgesics for depression, anxiety, or other disorders. All of these factors underscore the importance of screening, brief intervention, and referral to treatment for girls and women.

>> Dr. Turplin [phonetic] spoke about physician responsibility and challenges.

>> Opioid use disorders in women, in general terms, what is the scope of the problem that we are facing?

>> Well, we're in the midst of an opioid epidemic that has multiple-related parts to it. There's an epidemic of over-prescribing, an epidemic of misuse, there's an epidemic of addiction to opioids, and there's an epidemic of overdose and overdose death. I think we want to acknowledge how we got into this opioid epidemic, which is, in part, from over-prescribing of opioids, but we have to pay attention to what -- where that all came from, and it was individuals coming

to their physician with expressions of disease, pain, suffering, I don't feel right. Help me. And I think it's really important, as we implement appropriate opioid-prescribing guidelines that we don't lose track of the fact of why people come to see us in the first place and what to do about it. And I don't think patients came to the doctor in the early part of this century saying, I want opioids, I want to misuse them, I want, you know, to be exposed to the possibility of developing an addiction. They came saying, I want to be listened to. I want you to hear my hurt and take it seriously. And that's at the core of the doctor/patient relationship in clinical practice. And I think we can't lose sight of that.

>> February 2017. Overcoming barriers to medication adherence. Clinicians have long struggled with patients either not taking their medicines correctly or often not even taking them at all. We learned some of the reasons why this problem exists, and some ways we can help.

>> Medication adherence has been linked with clinical outcomes. So, for many conditions, good adherence is also associated with reduced mortality, and poor medication adherence is associated with higher rates of hospital admissions, readmissions, and significant healthcare costs. Interventions tend to not focus on patient's reasons for non-adherence. So some non-adherence is intentional, with patients making a decision to stop or to alter their medication regimen in some way. And some non-adherence is unintentional due to forgetting to take the medications or external barriers that interfere with the patient's ability to follow their medication regimen, and those types of medication non-adherence require different types of interventions to address them.

>> A prior study found that by eliminating copays for cardiovascular drugs, they were able to improve medication adherence, as denoted by the light blue bars. But as you can see, overall rates of -- of adherence were still low in the year after. And the reasons for this are multifactorial, and one of this is that, you know, usually a patient has multiple reasons for being nonadherent, and this was a survey where they asked patients why they had trouble taking their medications. And, as you can see, there's multiple reasons, that include forgetting to take their meds, running out, having side effects, trying to save money, or thinking that their medications weren't working for them. And so based on the literature and kind of the reason, the multiple reasons that patients are nonadherent, and the fact that they change over time, we conducted a multifaceted intervention to try to improve adherence.

>> We also want to make sure that we're picking medications that are -- are convenient for the patients, that they're lower cost, and so what we did is we put together a multi-specialty team to come up with some guidelines, based on different patient scenarios, what medications they should be started on first or escalated to second in a stepwise manner to make sure that they're getting appropriate medications, low cost medications, convenient medications for them. And in order to make sure to promote the physicians staying on these guidelines and not being distracted, we actually discourage physicians from seeing pharmaceutical reps or other pharmaceutical marketing materials. I actually haven't seen a drug yet -- a drug rep in decades. And I've been at this organization for -- for 30 years. We also -- when I'm prescribing, the electronic health record, I can actually see the formulary of the patient to make sure that I'm picking medications that are more cost-effective for -- for that particular patient. And in Massachusetts, we have four generic substitution, which means that as long as I don't write that they have to give the brand name, the pharmacist is required to substitute a generic if there's an equivalent.

>> You may wonder why HIV in the sessional [phonetic] chronic disease. When HIV was first discovered in the 1980's, the disease was considered untreatable. Since then we've made great progress with the antiretroviral treatments. So much so that we now consider HIV care like treating a chronic disease, and with that, medication adherence has -- has grown in importance. For persons infected with HIV, medication adherence is crucial, because the antiretroviral treatment lowers the amount of HIV circulating in the blood. Less circulating virus leads to better immune function, thus, healthier people. It also reduces the risk of transmitting the HIV to others by more than 90 percent. Since 2012, antiretroviral treatment has been recommended for all HIV-infected persons in the United States. To maximize health and prevent HIV transmission, viral suppression is the goal. Medication adherence that reduces HIV viral load, the amount of HIV in the blood, to below detectable levels is how this is achieved. HIV viral load is typically measured at least twice per year in persons taking the antiretroviral treatment. The importance of engaging persons with HIV into care cannot be understated. From this analysis of 2009 data, CDC estimates that 3 out of every 5 new HIV infections, or about 60 percent, could be attributed to people who had been diagnosed with HIV, but are not in care. Only about 2.5 percent of transmissions are estimated to come from persons when care is optimized and viral suppression is reached. Antiretroviral treatment is a fundamental part of the National HIV/AIDS Strategy, in addition to reducing new HIV

infections, goals have been established for increasing access to HIV care and reducing HIV-related health disparities and health inequities.

>> I look back on myself as a resident and a staff person, and -- and I'm embarrassed at how I expected patients to take their medicines two or three times a day, and how I thought they just didn't care about their condition, and I just couldn't believe that they couldn't do it. But when I need to take medicine only twice a day, I never remember to take it, no matter how important it is, unless I had an annoying alarm on my phone that tells me to do it.

>> Hear firsthand how Dr. Larry Garber [phonetic] views both patient and physician responsibilities.

>> It's actually -- I've been a physician for 30 years, and it actually came as a surprise to me. I, you know, for many years, I just assumed that patients were taking their medications and would just wonder why some people's blood pressure wouldn't improve or their cholesterol wouldn't improve with the medicines until I started to, you know, learn and understand that for patients on chronic medications, half of them are not taking the medications as prescribed, you know, they're not adhering to their -- their regimens. And so it's a -- it's a huge problem, and there are many reasons, but -- but the implications are -- are phenomenal, that, you know, it impacts the health of our patients, that they're more likely to progress to -- to problems and disability related to their diseases, or even to death, and besides being, obviously, bad for our patients, it's -- it's also bad for society. It costs hundreds of billions of dollars every year that are wasted on hospitalizations or support for the disabled patients who have suffered diseases because they haven't been adhering to their medications. Well, it's -- it's both the patient's role, as well as the -- the physician and provider team's role to work together. You know, I may have made it sound like it's, you know, it's the doctor decreeing, you're going to take these pills, you know, here you go, good luck with that. But it actually needs to be a discussion, it needs to be a two-way negotiation to understand, you know, what are the best treatments for a particular problem, and if it is medications, what are the most appropriate medications? You know, we really need to understand what are the -- the actual personal situations that the patient is in? Do they have financial issues? Do they work the night shifts, so that the timing is -- is not in the morning, it's when they wake up, which is different.

>> March 2017. Emerging tick-borne diseases. Did you know there are 18 tick-borne disease currently in the United States? And ticks are being found in more areas than ever before. Our expert panel discussed why this is happening, and what to do to prevent and treat these diseases.

>> Among the nearly 50,000 cases of locally-acquired, nationally-notifiable vector-borne diseases of humans reported annually to the CDC from states and the District of Columbia, approximately 95 percent are transmitted by ticks. The more than 84 tick species described in the United States, roughly a dozen are frequent human biters that are capable of transmitting human [phonetic] pathogens. Human-biting ticks are present across the contiguous United States. There are no human vaccines currently on the market in the United States to prevent tick-borne diseases. Although we have several options for prevention, we lack a single effective, widely accepted method for preventing tick-borne diseases. Current prevention strategies fall into three broad areas, personal protection, environmental modification, or tick suppression. Personal protection strategies focus on avoiding tick habitat and use of repellents, specifically 20 to 30 percent DEET on exposed skin and wearing permethrin-treated clothing. Daily tick checks and removal aim to remove the ticks before pathogen transmission occurs. To accomplish this, CDC recommends bathing or showering as soon as possible after coming indoors, checking yourself, your children, your pets, and your outdoor gear for ticks and removing them promptly, and tumble drying dry clothing on high heat to kill any ticks that remain on the clothing.

>> Finally, and perhaps most importantly, doxycycline is the drug of choice for all tick-borne rickettsioses and in all patients and all ages. Therapy needs to be initiated immediately based on a presumptive diagnosis.

>> The systems that we're talking about are complex, as they are for all arthropod-borne disease, but the understanding of ticks lags far behind that of mosquitos. This is partly because of the prolonged life cycle of ticks. They live longer than the grants many of us hope to obtain to use to study them.

>> You're talking specifically about prevention of tick-borne diseases. So, there are a couple of strategies. One includes trying to avoid tick habitat, which is often easier said than done, and a lot of times, the ticks are in residential areas where you simply can't avoid them. When that's not possible, we recommend using a repellant, specifically containing

20 to 30 percent DEET that you can apply to exposed skin or clothing or using permethrin-treated clothing. Those are probably the simplest prevention steps you can take, but then it's also recommended that after coming indoors, that you bathe and do a tick check, and any tick that you identify, you remove promptly to prevent the likelihood of the tick having the ability to transmit any of the pathogens that it's carrying. You can also tumble dry your clothing at high heat to try to kill any ticks that are still on your clothes, but, most importantly, make sure that you do the tick checks, check yourself, your children, your outdoor gear, your pets, so that you're not bringing those -- the ticks into your home for later exposure.

>> Not all the ticks that bite people are infected with a pathogen, but enough of them are so that getting that tick off you as quickly as possible reduces the risk of -- of transmission, and different pathogens take different periods of time to transmit once the tick is attached, but the quicker you can get that tick off, the better you are. And the other thing is you need to be looking at your kids very, very carefully. And ticks will go to places that are -- that are hard to find, so you have to do a very thorough tick check when you've been in tick-infested areas. But that does minimize risk. Really the key to all these tick-borne diseases is awareness and education of the clinicians who are -- who are seeing patients, as well as the public who are getting infected and -- and presenting to their clinicians.

>> Dr. Phoebe Thorpe [phonetic] asked panelist, Dr. Bobbi Pritt [phonetic], what people need to do in case they find a tick on their body.

>> I think first, it's important to know that human-biting ticks are found in many parts of the United States, and they can transmit, through their bite, a number of bacteria, viruses, and parasites, so one of the most important messages I have for people is to know what ticks are in your area and what diseases, and then know what the major symptoms of those diseases are so they can keep a watch out for them. The other thing that I think is important for the general public is that if they're feeling ill and they go to their doctors, they should mention if they've had a recent tick bite, because that's important and the physician can use that information to help determine what's causing their illness. So, don't panic, that's probably the first thing, but you want to remove it as quickly as possible. So the best way to do that is using fine-tipped tweezers, and if these are the tweezers, if you have a tick on you, you basically want to get as close to the skin as possible, grasp firmly, and then just pull it out in a smooth, continuous motion. You don't want to twist, you don't want to squeeze the tick, because that may cause it to regurgitate some of its stomach contents into your skin, and that may transmit diseases. You also want to avoid folklore remedies, like putting petroleum jelly on the tick or burning the tick with a match or a lighter, because that could just actually damage your skin, damage the tick, and maybe even increase the likelihood of getting infection. It never hurts to put the tick in a Ziploc bag and you can just hold onto it in case you need it.

>> April 2017, amyotrophic lateral sclerosis, ALS. April was the first time we featured people who were actually living with the diseases we study at CDC, and one of our panelists spoke candidly about having ALS.

>> Hi, everybody. So I'm Ed [inaudible], and I was diagnosed at Emory Clinic in 2009 with ALS. I'll tell you today, in the few minutes we have, briefly about my patient experience, the clinical trial participation, the wonderful times I've had with ALS families and persons with ALS, we call them pALS, and last, a little bit about purpose that I've come to understand. So, to begin with, I love my life. I -- I live it with no regrets. I've never considered myself a victim of the disease, because I believe in my heart that all of us have a wheelchair. In my case, it's quite literal. 400 pounds of plastic, rubber, and hydraulics, and I can kill people if I'm not careful with that thing [laughter]. But with everything that goes on in my long life, every family I know has had crisis. Whether it's caring for children or the dashed hopes of dreams and careers or family emergencies, life and death issues, we have to reckon with the human condition, and we can bend the curve a little bit, but we can't change it. We can be kinder to people, we can listen better, we can seek out those from whom we have much to learn, and generally living our life that way is quite a savve, quite a bromide. The last one, in my case, is important. Having to do with seeking out people who have -- that my wife and I have enjoyed so much. First of all, every disease or injury is costly. But no injury or disease, I think, requires as much personal expense as does ALS. The basic requirements to live with it involves, as many of you know, home renovation, vans with ramps, expensive power chairs, lifts in your home, every sort of ramp on the outside. It's in the 100 to 150,00 range before it went -- just about when you get started. So the personal cost has to be understood because the fear of family financial ruin is -- is a very big deal. My wife and I have learned in -- in 8 years of informal conversations in this way, that attitudes are developed, they're not born, and there's five things that we, they're cliches, but they continually come back

and mean something. And that's to be purposeful, to be selfless, to be self-determined, empowered, and courageous. Sure, cliches, but that's what you lose when you get a diagnosis like this, and we've got to fight to get it back. Thank you for the long listen, it's a tough subject, but maybe we can fling open a door or two in the next couple of years of research. I know a lot of smart people are working on it, and we'll change this disease from a fatal disease to maybe a chronic condition. That's not sexy, but I don't use the word, cure, I'm happy just to stall this thing and get all of us to another chapter in our life. Thank you very much!

>> Over 75 years have gone by, and ALS continues to frustrate researchers and patients with the lack of information about etiology, as well as viable treatments. Currently, there are more unknowns than knowns about ALS, no one knows what causes ALS. ALS continues to disproportionately affect whites, males, and those between the ages of 60 and 69. We are not sure why ALS affects whites, especially males, more so than any other group. This continues to be a vexing issue for researchers. There's another group that impacts ALS at a higher rate, it is our military veterans, specifically men. Those who have served are at greater risk of ALS than those who have not served. For example, vets who have served in the First Gulf War were twice as likely to develop ALS as those not deployed to the Gulf. We are not sure why veterans are at risk, but it may be environmentally-linked. More research is needed to investigate etiology. Sports in ALS have also been in the news recently. Specifically football. It is unknown why football players are at a greater risk of ALS than the general population, but it is believed it may be due to repeated concussions.

>> Typically, weakness will begin in one bodily region. Roughly 80 percent of the time in a limb. So it'll begin very insidiously, very subtly, with, perhaps a foot drop, or just a little bit of weakness with hand function. The remaining 20, 25 percent of the individuals will have difficulty beginning in the so-called bulbar region, which means difficulty with articulation of speech or chewing or swallowing function. So the formation of concepts and language is preserved, but the pronunciation and articulation is impaired. Most ALS patients have no family history, no primary, first degree relative with ALS, so they're -- they're listed as sporadic. This is going to give a snapshot of what weakness means from the neurology standpoint. Unfortunately, that sort of lay term is thrown out kind of [chuckling] trivially, you know, everybody's having a bad day, so you feel weak, but this is what real weakness is. This is a patient I videoed about three months prior to this man's death. And so he's -- it represents a very advanced individual.

>> Dr. Iskander interviewed Becky, another person living with ALS in Beyond the Data. Her open and heartfelt words were powerful, as she talked about the need to be present in the moment when you know you are dying.

>> One of the things I sometimes say when people ask me to talk about this is, believe it or not, there are gifts with disease. Now, of course, you don't want to have the disease, but several gifts. One is that nonsense just goes away. You never feel more in the moment than when you are living with a terminal disease, the nonsense over PTA meetings and gossip in the neighborhood and around the pool, all that just goes away, because it's simply not important. And what God has taught me is you stay in the moment, appreciate what you have right now, and love it, and appreciate everything you do have instead of everything you're losing. And that's not always easy to do, don't get me wrong. This thing, it's a horrible disease, and [pause] but there are gifts associated with it. One of the gifts that I tell people is, I have a 14-year-old son, he was 8-years-old when I was diagnosed, and we waited a while to tell him because my progression was so slow, it wasn't impacting his life. But we've told him, obviously, a few years ago, and a gift, as much as you don't want your child to go through this, you watch your child grow, you watch his heart expand, you watch his ability to deal with stress and -- and sadness grow. He -- he [pause] -- I know I won't be here someday, when he gets married, or to meet my grandchildren, but what I have right now is a great gift with him and my husband is just an amazingly real, deep, and loving relationship in the here and in the now. And the nonsense just goes away. That, and another gift is, I've met some amazing people who are living with this disease.

>> June 2017, it's loud out there, hearing health across the lifespan. Most people think hearing loss is a normal part of aging, but it doesn't have to be. In June, we learned that we really can prevent hearing loss from noise exposure.

>> Almost all hearing loss from noise exposure is preventable. However, the NHANE [phonetic] survey found that 70 percent of person's exposed to loud noise in the past 12 months had never or seldom worn hearing protection. Noise reduction and avoidance can prevent hearing loss or slow its progression. Steps individuals can take for personal protection are relatively easy. Move away from the sounds -- source of loud sounds, such as loud speakers or cannons at college stadiums, use quieter products and tools, take break from exposures, avoid high volumes on personal listening

devices, reduce listening time to loud levels of music, and use hearing protection. Hearing protectors need to fit well to reduce noise exposure effectively.

>> It is important to understand that the risk of hearing loss is a combined effect of the sound level and the duration of listening. Continuous sound levels are quantified using, A, wading, which shapes the noise measurement to match the sensitivity of the human ear. Just like sun exposure in skin cancer, the longer you are in the noise hazard without protection, the greater the risk of noise-induced hearing loss. The absolute safe sound exposure limits for children and adolescents are unknown. Of note is our study from 2007 that reported that only 22 percent of the 22 different hearing screening protocols used in United States schools will be able to detect early noise-induced hearing loss in youth. Consequently, school hearing screenings should not be relied upon for the detection of noise-induced hearing loss in youth. It's also worth noting that middle school and high school students are less likely to have a school-based hearing screening at all. At-risk youth should be referred to an audiologist for hearing testing. Hazardous noise exposure not only leads to noise-induced hearing loss, but also tinnitus, or tinnitus, which is ringing or buzzing in the ears. The messaging incorporates three strategies for hearing loss prevention, turn it down, walk away, protect your ears.

>> High noise levels can cause hearing damage before it is perceived as being too loud. Ototoxic chemicals can interact with a noise exposure, and, perhaps, produce more hearing loss than the noise or the oto toxicants in isolation, and genetics affect the individual's susceptibility to both noise-induced hearing loss and age-related hearing loss. Whether it's listening to that personal stereo, attending a rock concert, or working in a factory, noise exposures above 85 decibel sound pressure level can cause hearing loss. Recreational activities, such as target shooting or setting off fireworks, can expose your ears to levels between 120 and 175 decibels. At these levels, hearing loss can occur immediately. At work, at home, power tools, lawn care equipment, exposures to sounds of high levels can fatigue the sensory hair cells of the cochlea and lead to hearing loss over repeated exposures. Now the good news is that these noise exposures are preventable, reducing or eliminating the high-level noise exposures by using quieter power tools or wearing properly-fit hearing protection are excellent strategies to prevent hearing loss.

>> Earbuds, music listening is here to stay, it's a passion, it's what people like, and the message isn't not to listen to your music, it's -- it's to listen responsibly and to -- to want to listen for a lifetime, so that's one of those behavior changes we have to get to, and one of the best ways that dangerous decibels has some evidence for is that you teach the adolescents who are risk takers, they're invincible, they don't recognize things that are going to happen years down the road, and you teach them to teach the younger kids. They don't want to be hypocrites. So the best outcomes we found in high school students and adolescents is to get them engaged in teaching younger kids.

>> In our interview with Dr. Murphy, we learned about a hearing loss prevention program that starts with children.

>> Well, one of the programs that we discussed in the -- in the Grand Rounds, is the dangerous decibels program. And the unique thing about dangerous decibels is it is an evidence-based public health promotion and hearing loss prevention program. And the idea is to get children involved, get them to understand what it is about the auditory system and how it can be affected by noise, and to make them aware of the fact that, at least at this point in time, if you lose your hearing, it's gone. You know, it's not like a burn on your skin where, alright, you burn yourself and it heals up. No, if you -- if you destroy the hair cells in the cochlea, they're gone. Now, hopefully, in the future, we'll see, perhaps, maybe some genetic treatments in animals and in humans, where they may be able to restore hearing through a genetic treatment. And I know that they've had success in mice in doing this, but, at this point, we haven't got it for humans.

>> August 2017, new frontiers in workplace health. August brought us new information about changes in the workplace that bring challenges to our overall well-being, both at home and at work.

>> My father had one job in his life. I, likely to have six in mine, but my kids are going to have six at the same time. Wow! That some may benefit from those changes, but a lot of folks will not, because we know that this has a price to pay. Certainly the intermittency of employment, the decrease in security or the promise of a long-term job can certainly lead to stress, to uncertainty, and interrupted earnings over time. Some, as we mention, will benefit from the freedom or mobility of this new pattern of employment, but we see worrisome safety, health, and societal consequences in these new work arrangements. Police officers, firefighters, and security guards are more than 50 percent more likely to be obese than the typical American worker. Now some people say, well, this is because of the sedentary nature of the job

or their dietary habits, but our research shows that it's more at play than that. Shift work, long hours of work, high stress levels, constant scrutiny, having to make split-second decisions, these all drive cofactors that lead to the risk of obesity. Low-wage healthcare workers and transportation workers also fare poorly. So, I have a question for you, should the profession that someone chooses automatically condemn them to a shorter life span with a greater risk for disability and an early death? We think there's a better way. Work is changing, and our workplace health interventions must change to meet this challenge. It's time for seeing work as an opportunity for both a better living and a fuller, healthier life.

>> Even though 4 out of 5 employers say that they offer wellness programs, if you survey employees who are workers, fewer than half say that their employers offer these programs to them. So there's a big gap there, a disconnect between what employers think they're offering and what employees are actually experiencing.

>> I am pleased to announce that today CDC is launching its newest workplace health offering, the CDC Workplace Health Resource Center, also referred to as the WHRC. This easy-to-navigate website helps employers find actionable workplace health information, guidance, and tools to develop or expand their workplace health promotion programs. The WHRC is your first online stop to advance workplace health promotion through employer education. The WHRC includes reliable, credible, fact-based resources from organizations already in the workplace health marketplace. The public information is vetted by the CDC and a steering committee of national experts in the workplace health community, including employers, state public health departments, business health associations, and academic institutions. The WHRC helps employers tailor workplace health promotion programs to suit their organizational needs. Currently, the WHRC database has over 200 resources, and that list will continue to grow over time. The free website will include, or does include, case studies with real-life examples from organizations of different sizes. Since we know employers really respond to seeing examples of what their peers and competitors are doing and have done. Emerging health issues, the WHRC has identified a number of gaps in available public domain information on a number of topics, such as sleep and fatigue. Over the coming year, we will be developing a set of new novel products to address some of these issues. The website will include new evidence-based summaries and issue briefs on a range of topics.

>> In Beyond the Data, we talked more about CDC's workplace resource center, where you'll find tools for employers and employees.

>> Things that employers can do actually don't cost a lot of money. It -- it gets very expensive when somebody is ill. So if somebody needs retreatment, if they need medicine, if they need an operation, if they need a procedure, all those things, that's where the expense comes -- comes up, and the idea is, of course, to prevent them from getting to that stage in the first place. So, if somebody is prediabetic or if somebody has metabolic syndrome, they're not quite very expensive yet, but they will be, unless you -- they -- they move in a healthy direction. So getting people to eat healthy, why not, in the cafeterias and vending machines, lower the prices of healthy foods, increase the prices of unhealthy foods. If you want people to be physically active, open up the staircases next to the elevators, encourage people to use staircases, even mark hallways, put little mile markers there so that people know that they're getting certain -- certain steps everyday in their lives, making the workplace kind of more -- the design of the workplace more amenable to physical activity interaction. So there are many programs and policies that people can do to -- to improve the health and wellbeing of the workplace and improve their safety, which don't actually cost a whole lot of money.

>> September 2017, healthy aging, promoting wellbeing in older adults. Dr. Anne Schuchat, Deputy Director of CDC, opened our September session by sharing a poem.

>> What I wanted to do today was something a little different for the Public Health Grand Rounds and introduce a moment of poetry. So here is an excerpt from the UKs, apparently the UK's most popular poem about aging by Jenny Joseph. It's called, Warning. And for those of you used to seeing me in my commission core uniform, this may seem particularly apropos. When I am an old woman, I shall wear purple, with a red hat, which doesn't go and doesn't suit. And I shall spend my pension on brandy and summer gloves and satin sandals and, say, we have no money for butter. I shall sit down on the pavement when I'm tired and gobble up samples in shops and press alarm bells and run my stick along the public railings, and make up for the sobriety of my youth. I shall go out in my slippers in the rain and pick flowers in other people's gardens, and learn to spit [laughter]. So, with that, let us proceed with today's Public Health Grand Rounds.

>> Aging leads to new abilities and knowledge that older people can share with their communities. We want to make the most of that by not only increasing life span, but health span as well. Increasing the years Americans live without disabling conditions. People over 50 in the United States generate 7.6 trillion dollars annually in economic activity. And to give you a sense of proportion, when you add up all the economic activity they drive, older Americans make up the third-largest economy in the world. We have to acknowledge that aging carries with it an increase in the prevalence of chronic disease, such as hypertension, diabetes, and arthritis, but only 7 percent of older adults are receiving their recommended preventive services. And only 16 percent of Medicare recipients had an annual wellness visit in 2014.

>> Alzheimer's is being recognized as a disease with a long continuum where dementia is only one stage. So it starts with physical changes in the brain, even before symptoms, that's known as the preclinical stage, followed by mild cognitive impairment caused by Alzheimer's disease, and then finally the dementia stage of the disease. Specifically, smoking, diabetes, and midlife hypertension. The association also concluded that midlife obesity was a risk factor. Basically, the saying is, what's good for your heart is good for your brain. Now to make matters even worse, healthy people 20/20 baseline data show that even among those who have been diagnosed with dementia, nearly two-thirds of them or their caregivers are unaware of the diagnosis. Unaware. In other words, people are not talking to healthcare professionals about their memory problems, people are not being diagnosed, and those who are diagnosed are not being told. And this is happening, even though there are demonstrable benefits to an early and disclosed diagnosis. For example, it allows individuals to access available treatments, build a care team, and improve medication management. On the social side, individuals who have been diagnosed early can access support services, create advanced care directives while they are still able to do so, and address driving and safety issues.

>> So what is it that, when we say family caregiving is a public health issue, what is it that we really mean? I think the first thing here is that we estimate that there's 44 million family caregivers in the U.S. This is roughly the same size as the population of Argentina. So it's a huge number of people who are providing care, unpaid, to a friend, family, or a neighbor. And if you were to replace each one of those family caregivers with a direct care worker, it would cost the U.S. economy 470 billion dollars a year. Now, what are they doing? We know they're spending about 24 hours a week providing activities of daily living, which is high-touch tasks, such as helping someone bathe, get dressed, and eat. Instrumental activities of daily living, which would be coordinating type skills, such as managing finances or running errands or cooking, and medical or nursing tasks, which would be things like changing wounds, using a catheter, giving injections. And at the same time that people are giving 24 hours a week caring for someone, most people are also working. So 34 percent have a full-time job, a quarter are working part-time, and then 28 percent are in what we would call the sandwich [phonetic] generation. So they are not only caring for an older adult, but they're also raising children in their household. So you start to get a sense of how difficult it is to balance both caring for someone, your own employment and financial needs, and your own personal needs.

>> In Beyond the Data, [inaudible] on the challenges of Alzheimer's disease.

>> I would say they should do a couple of things. First of all, they should learn about the ten warning signs, and on the Alzheimer's Association website, alz.org, there's a section on the 10 warning signs. Because some memory loss is normal with aging. What's not normal is Alzheimer's disease, and to be able to distinguish between, oh, you know, I forgot my keys, I do that, and -- and I did that when I was in my 20's every once in awhile, where did I put my keys, but -- so to distinguish between what is normal memory loss, occasionally forgetting things, and something that's symptomatic of a bigger problem is important to understand. So you should become aware of what those warning signs are. And then the second thing is is talk to your healthcare provider, talk to your physician. If you're having memory problems, and particularly if those memory problems are getting worse, and if you -- you or your loved one are noticing a change over time in your memory problems, raise it with your healthcare provider.

>> October 2017, global prevention of neural tube defects. In October, we explored the worldwide impact of adding folic acid to foods. Did you know that that addition of folic acid in our diets will prevent some birth defects?

>> Neural tube defects, or NTDs, are a series of birth defects shown here that result from the failure of the neural tube to close during very early embryonic development. If the neural tube defects can be prevented, the resulting benefits would be tremendous. As malnutrition was associated with an increased neural tube defect risk, micronutrients were considered candidates for prevention measures. One of these is folate. There are three main challenges to neural tube

defects prevention. Timing, vehicle, and delivery. Timing is critical. As noted earlier, the intervention must begin prior to pregnancy, and reach the highest-risk women. The second issue is vehicle. It is difficult to really reach the equivalent of 400 micrograms of synthetic folic acid with natural food folate. And it also requires behavior change. It is critical to note that although natural folate consumption is encouraged, folic acid is the only form of folate that has been shown in clinical trials to prevent NTDs.

>> So in 2016, we worked with stakeholders, working with a small, medium-scale enterprises and with district officials and local government, to design and pass a [inaudible] to bring all maize flour producers in the district under the main fortification law. So the law would make fortification of maize flour with iron, EDTA, zinc oxide, folate, and vitamin E and vitamin B12 mandatory for any maize flour produced or sold within the district boundary. The law passed in September 2017, and we're currently working on enforcement guidelines. Prior to this intervention in [inaudible], maize millers were dropping out of the fortification program because there was no market for fortified food. With just one year of intensive advocacy, education, increasing the number of participating millers, and adapting a supportive legal environment, including the passing of the fortification bylaw, access to fortified maize flour increased from 3 percent to 72 percent among poor households [inaudible]. We saw a shift in purchasing behaviors among all respondents, and found fortified maize in 72 percent of poor houses in our sample. These findings challenge the idea that working with packaging millers will not reach the poor. This pilot project shows that fortification can be successful among SMEs with a small investment and with the proper framework leading to improved market demand, improved access to product, higher-quality production, safer food products, healthier population, and fewer cases of neural tube defects. We're now going to be planning -- we're now looking at the potential for scale up.

>> Dr. Thorpe interviewed Scott Montgomery who shared his personal and professional goals, and why this work is so important.

>> 30 years in the private sector, my goal was to make money. Now, I wake up every morning and my goal is to eliminate the burden of micronutrient deficiencies by adding vitamins and minerals, and particularly folic acid to cereal grains to prevent spina bifida, as an example.

>> November 2017, maternal mortality in the United States. We finished the season with a focus on maternal mortality. Unfortunately, racial disparities continue to impact our society.

>> Hello! I'm Dr. Brenda Fitzgerald, Director of the Centers for Disease Control and Prevention. I welcome you to this Public Health Grand Rounds on measuring and preventing maternal mortality. As an OB/GYN, I know that the health of both babies and their mothers is extremely important. But around the country, maternal mortality rates are at an unacceptable level. America must focus more on the health of mothers. Beginning with a better understanding of how maternal emergencies turn fatal. We need more than just vital statistics to really understand this problem. In this Grand Rounds, we'll talk about the power of hospital maternal mortality review committees. They can provide critical data that can help us save mothers lives. These committees verify the accuracy of reported data and provide detailed information on causative and preventative factors in fatal maternal emergencies. I hope you will join us to learn how we can increase the number of maternal mortality review committees and other multisector partnerships. It's an important opportunity to turn this disturbing trend around. We need to ensure that all mothers have the best chance for a safe and healthy pregnancy. No matter in what state the delivery occurs. Thank you.

>> There's no question that the traumatic experience of being a parent with a child in the NICU has enormous implications, and this is actually well-documented in the literature. But it doesn't -- and I should say, it doesn't take much to realize that a young mother, at the healthiest time in her life, having to have a close brush with death, spending time in the ICU, possibly weeks, possibly months, changes her forever. But what people don't often realize is that the dads, there are consequences on the dads, as well. Oftentimes, they are pitted against mom with different priorities. Whose life is more important? Mother or baby?

>> In Beyond the Data, Dr. John Iskander and Dr. Michael [inaudible] discuss the shocking numbers of women dying during childbirth in the United States, and what we need to do about it.

>> We heard today about the issue of maternal mortality in the United States, and many people many think of this as an

issue from a bygone era, but how large is this problem in the United States?

>> Yeah, I think a lot of people don't know about this, that every year, in the United States, more than 700 women die from complications during pregnancy and childbirth. I think that's 700 too many. And more than 50,000 women suffer a life-threatening complications, or what we call, severe maternal morbidity. We are the richest nation on the earth, and yet we now rank last -- last amongst developed nations on maternal mortality. I think this is a national disgrace, I think we can do better as a nation.

>> Thank you for watching this Grand Rounds Year In Review. All our sessions are available at cdc.gov/cdcgrandrounds. Grand Rounds will return in January 2018.