

Transcript Health and Behavior

Lecture companion to the text, Chapter 7, "Health and Behavior."

1. Welcome to the lecture on Health and Behavior. The lecture is a companion to Jonas & Kovner's Health Care Delivery in the United States, chapter 7.
2. The objectives of this presentation are:
 - Explain personal health behavior's impact on individual and population health status
 - Define approaches for addressing behavioral risk factors
 - Relate the importance of trust in public health
3. Health behaviors significantly contribute to individual and population health. As you probably have learned in your Health, Behavior, and Society class (HSC 4211), these are the most important behavioral risk factors in the U.S.: tobacco use, alcohol abuse, sedentary lifestyle, unhealthy diet, and overweight & obesity. As you've learned, a [core public health function](#) is policy development. Within this function is the key public health service to "inform, educate, and empower people about health issues." This key service is what this Health and Behavior lecture is about.
4. Because these behaviors lead to poorer health outcomes, public health aims to change these behaviors. To make a difference at the population level, our interventions as public health professionals must address all people, not just those that are motivated to change. But, how do we approach this? In this section of this lecture, I will discuss these three approaches to health promotion. First, the social ecological model to health promotion, then social marketing, and, lastly, chronic condition self-care. There are many more perspectives to health promotion, some of which your textbook addresses, but I want know these key approaches. In the next section, I will present information on provider-oriented interventions intended to change individual and population health behavior.
5. The social ecological model of health promotion has been an important theory in public health for over 30 years. As this image depicts, the social ecological model is a way of approaching health behaviors interventions that recognizes the interrelationships between individuals and multiple levels of their environment. Do you see how the center of this concentric circle is the individual? Well, radiated out from the individual is all the things that surround them. First there interpersonal relationships with health care providers, family, peers, and social networks. All of these interpersonal relationships impact health behavior. But beyond these immediate relationships, organizational factors, community factors, and health policies also influence health behavior. When designing health promotion interventions of any kind, we must acknowledge complexity of health behavior and the interconnectedness of all these levels in determining how people behave.

Think about a public health campaign to get people to eat 5 fruits and vegetables a day. At the individual-level, public health officials need to convince people to believe that fruits and veggies are good for them and that they taste good. Interpersonal? Get providers to recommend 5 a day. At the organizational level, employers could be convinced to replace unhealthy snack vending machines

with fresh fruit. Communities could be mobilized to organize farmer markets within walking distance from neighborhoods. Finally, at the policy level, legislation could be passed to subsidize the costs of fresh fruit and veggies so that low-income families can afford them. These are just some examples of the social ecological approach to health promotion.

6. Social marketing is the use of marketing to design and implement programs to promote socially beneficial behavior change. It is a program-planning process that applies commercial marketing concepts and techniques to promote voluntary behavior change. So, the ideas that marketers use to convince people to buy everything from cars to shoes are applied to public health promotion.

The USF College of Public Health's Department of Community and Family Health is the academic home for the Florida Prevention Research Center. The Social Marketing Group hosts the World's largest social marketing conference which is held in the area each year. They teach professionals that social marketing is not just about advertising. It encompasses much more. In fact, social marketing embraces the social ecology model to health promotion and implements behavior change efforts at many levels of influence. Remember, social marketers aren't advertisers, but marketers take a holistic look at solving problems. Also, definitely should not be confused with social media, such as Google and Facebook. Maybe it should be called social marketing for behavior change.

If you are interested in learning more about this after you graduate, USF offers an online graduate certificate in social marketing. You would take courses such as Intro to Social Marketing for Public Health, Formative Research Methods in Social Marketing, Social Marketing Program Management, and Advanced Social Marketing. These courses may be applied master in public health with a Concentration in Social Marketing, which is an Online Program.

7. Let me give you some more detail about social marketing and its approach to social problems using the commercial marketing techniques. See the "Hookah Hides The Truth" poster on this slide? Did you know that USF's College of Public Health Florida Prevention Research Center developed the Hookah Social Marketing campaign to deter hookah smoking among college students? The FPRC worked with USF students to develop a plan that incorporated the 4 P's of marketing. The four P's are used in commercial marketing, but here, the FPRC used it to reduce hookah use. According to the [FPRC](#), starting top left and moving clockwise, there's:
 - "Product: How to maximize opportunities to engage in the desired behavior (not smoking hookah).
 - Price: How to minimize the perceived costs associated with the desired behavior.
 - Promotion: How to promote the desired behavior in a manner that is relevant and appealing."
 - Place: How to develop program partnerships within USF to disseminate information and reinforce the desired behavior.
8. Chronic condition self-care. As I presented in the lecture on population health, Stanford's "[Better Choices, Better Health](#)" chronic condition self-management program teaches five core skills of self-management are problem solving, decision making, resource utilization, forming a patient/healthcare provider partnership and taking action. The content reinforces health behaviors

such as exercise programs, symptom management through guided relaxation and distraction, and nutritional change, fatigue and sleep management, the use of community resources, managing the emotions of fear, and depression, and training in communication with health professionals and others. The programs have shown to be associated with better outcomes and reduce health service utilization than those without support from these programs.

9. In the next few slides, we will focus on Trust in Public Health. The re-emergence of vaccine-preventable diseases has become [increasingly common](#) worldwide. This is alarming, because vaccines are considered a huge success. Researchers [estimate](#) that immunization has prevented 75–106 million cases of disease in the U.S. alone. The vast majority of children are immunized, but the [public's confidence in vaccines is waning](#). It's more than that though, it's the [institutions](#) (which provide information about vaccines) that are mistrusted!
10. Mark Sagoff, wrote "Trust Versus Paternalism" in response to the American Journal of Bioethics article on "Nudging and Informed Consent." This is a quote that I love. "Where there is trust, paternalism is unnecessary; where there is no trust, it is unconscionable." In other words, if the public trusts us, then we don't need to act like their parent. If they don't trust us, then bossing them around is terrible. While, this quote was made in the context of the physician-patient relationship, but the same thing applies to public health. "Where there is trust, paternalism is unnecessary; where there is no trust, it is unconscionable."
11. Have we broken the public's trust? Maybe so. Certainly, the Tuskegee Syphilis Experiment, gave the public reason to be suspicious of government health authorities. Beginning in 1932, the Public Health Service syphilis study involved 400 African American in Alabama. The study actually lasted 40 years - long past the time when penicillin became available to treat syphilis in 1947. Sadly, researchers did not offer penicillin to the subjects, and there is evidence that they prevented men from getting treated by the local public health agencies or the U.S. military draft board. The picture on the left is a doctor giving a placebo to a participant in the experiment.

So, there is a legacy of mistrust that continues today. The person in the middle is Jenny McCarthy, a television personality and former Playboy Playmate. She is also a leader of Generation Rescue, an organization that asserts that vaccines cause autism. To support her cause, she went on a CNN talk show and told the host that she had spoken to thousands of moms that had same experience as she had. McCarthy told the television audience, "I came home [after his vaccination], he had a fever, he stopped speaking, and then he became autistic." McCarthy urged, "It's time to start listening to parents who watched their children descend into autism after vaccination."

The last picture represents the concerned parent, wondering whom to trust. According to a [study](#), 43% of vaccination-related websites were anti-vaccination, including all of the first ten on Google. The author's wrote that "nearly all [anti-vaccine] sites adopted an 'us versus them' approach, casting doctors and scientists as either 'willing conspirators cashing in on the vaccine fraud' or 'pawns of a shadowy vaccine combine.'"

Paul Offit, a leading vaccine scientist [wrote](#), "Every story has a hero, victim, and villain." he explains. "McCarthy is the hero, her child is the victim—and that leaves one role for you."

12. There are two main issues with those that claim vaccine cause autism. The first concerns the MMR (mumps-measles-rubella) vaccine that children get first at age 12-15 months and a second at age 4-6 years. Before the measles vaccine became available in 1963, approximately 3 to 4 million cases and an average of 450 deaths were reported in the United States. Thanks to the success of vaccinations measles is no longer endemic in the U.S., though it is widespread in other countries.

In 1998, a scientist physician named Andrew Wakefield published [an article in the Lancet](#) claiming an association of autism with the MMR vaccine. The article was later discredited as fraud and was retracted by the journal. Also, he was later banned from practicing medicine in the UK due to his professional misconduct.

Many studies have failed to show a relationship of MMR vaccines to autism, but I don't want to recount those studies here. The [science](#) is solid, but that's not my point. In fact, my point is that some parents don't trust the science. The Wakefield study, coupled with increasing incidence of autism contributed parents' fears and paranoia. Many parents echoed what Jenny McCarthy said about autism and vaccines. In fact, her organization's [website](#) states. "A parent takes their child to the pediatrician. The child receives multiple vaccines. The parents report that the child changes after the appointment, and the child is later diagnosed with autism." This is really scary for parents, but what's wrong with the logic here?

13. Correlation is NOT causation. As we discussed in the Population Health lecture, there is a difference between coincidence and causation. Or, as I said in the other lecture correlation does not mean causation. If you look at these figures. The chart on the right graphs quantities of chocolate consumed per capita against the number of Nobel laureates per 10 million people. If correlation meant causation, this would mean that if a country ate a lot of chocolate, then it would produce a lot of Nobel Prize winners. Or, perhaps it means that Nobel Prize parties serve a lot of chocolate. Neither of these are true, though, because clearly this is just a correlation between chocolate and Nobel laureates.

Similarly, because MMR vaccine is given after a child's first birthday, or about the same time parents would notice their children's autism, parents naturally see vaccines as the cause of autism. Michael Shermer, author of [Why People Believe Weird Things](#), wrote this, "Humans evolved the ability to seek and find connections between things and events in the environment. Those who made the best connections left behind the most offspring. We are their descendants. The problem is that causal thinking is not infallible. We make connections whether they are there or not." There's a public health consequence to all this.

14. The second issue related to vaccines and autism is that of Thimerosal, an ethyl mercury-containing organic compound used as a preservative. This issue was investigated as the result of the hypothesis that autism is a novel form of mercury poisoning ([Bernard et al., 2001](#)). The [U.S. Institute of Medicine convened a committee](#) (the Immunization Safety Review Committee) that decided to remove thimerosal from vaccines as "a prudent measure in support of the public health goal to reduce mercury exposure of infants and children as much as possible." This was done, even though the science was not definitive, in part, to maintain public confidence in their safety. The agencies agreed, and vaccine manufacturers responded quickly; by March 2001, no children's vaccines in the U.S. contained thimerosal.

Now let's look at this figure of Denmark [results](#) with thimerosal and autism. A [study team](#) reasoned that if thimerosal were a major cause of autism, incidence of new cases should drop once it was removed after 1992. As you can see, instead of declining, the incidence continued to rise after eliminated thimerosal from childhood vaccines. So, the epidemiologist concluded that thimerosal was not a major cause of autism.

15. Russian-linked Twitter accounts used vaccinations as a wedge issue, promoting discord in American society. The Russian Internet Research Agency used similar tactics to disrupt the 2016 United States presidential election.

The U.S. government's [2015 Bot Challenge](#) identified bot networks designed to spread vaccine misinformation. These bad actors were able to spread harmful health content, including unverified and erroneous information about vaccines. As many as 50% of tweets about vaccination containing anti-vaccine beliefs, much of this promulgated by "bots" and "trolls." These trolls wanted the U.S population to think that there is not a scientific consensus about vaccines.

16. Consider #VaccinateUS. This is a Twitter hashtag created by Russian troll accounts linked to the Internet Research Agency that was designed to promote discord using vaccination as a political wedge issue. According to in the [American Journal of Public Health article](#) "Analysis of the Russian troll hashtag showed that its messages were more political and divisive."

According to their analysis, the Russian trolls and more sophisticated bot accounts posted equal amounts of pro- and anti-vaccination tweets to divide Americans on the issue. However, certain accounts called "content polluters" (bot accounts that distribute disruptive materials) "shared anti-vaccination messages 75% more than average Twitter users."

The researchers found that the Russian group often used #VaccinateUS in tweets that spread disputed claims like "#vaccines can cause serious and sometimes fatal side effects" and "Did you know #vaccines caused autism?"

So, how do we fight this misinformation? According to the authors, "Directly confronting vaccine skeptics enables bots to legitimize the vaccine debate. More research is needed to determine how best to combat bot-driven content."

17. "It's hard to communicate in a way that's unambiguously clear," [acknowledges](#) Dr. Melinda Wharton, a deputy director of CDC's National Center for Immunization and Respiratory Diseases.

An [IOM panel](#) reviewed over 200 epidemiological and biological studies for any link between vaccines and autism. They concluded that there was no evidence of a causal relationship between either MMR or thimerosal and autism, no evidence of vaccine-induced autism in "some small subset" of children, and no demonstration of potential biological mechanisms. In another report, they [stated](#), "The committee notes that its conclusion does not exclude the possibility that MMR vaccine could in rare cases contribute to autistic spectrum disorders resulting in a very small number of affected children."

Wait. What!? What about the conclusions in your report, *committee*? Why don't you prove that vaccines don't cause autism? The IOM report should have convinced people. Instead, it agitated the anti-vaccine activists. A group called Parents Requesting Open Vaccine Education—or PROVE—[denounced](#) the IOM panel as “riddled with conflicts of interest” and urged parents to spread the word about the committee’s conspiracy.

What the committees report failed to point out that no study could ever prove MMR didn't cause autism in a small number of children because the scientific method would never allow it. According to Paul Offit in his book, [Autism's False Prophets: Bad Science, Risky Medicine, and the Search for a Cure](#), “scientists often hedge about saying whether their findings prove or disprove anything.” He writes that, “scientists can't prove MMR doesn't cause autism in absolute terms because the scientific method allows them to say it only at a certain level of statistical confidence.” For parents who are more concerned about autism, which is prevalent, than [measles, which is uncommon in the U.S.](#), the scientific method is hardly reassuring – even though measles kills, and autism doesn't.

18. Maybe for some people, we shouldn't try to advocate public health interventions by communicating the science. [Lewandowsky, et al. \(2013\)](#) found that “Conspiracist ideation,” such as agreeing with the statement not “The Apollo moon landings never happened and were staged in a Hollywood studio” or “the belief that AIDS was created by the government” is moderately correlated with vaccination fears. The researchers wrote that “because ‘conspiracist ideation’ leads believers to resist evidence contrary to their conspiracy theory, presenting them with scientific evidence tends to amplify that rejection” [Lewandowsky, et al. \(2013\)](#).
19. According to [psychologists in “The Psychology of Conspiracy Theories,”](#) there are three main reasons why people believe in conspiracy theories.
 - a. The desire for understanding and certainty - Conspiracy theories reinforce a belief that nothing in the world happens through coincidence. As opposed to random and unknowable, people are comforted by answers to questions even if they are not necessarily the true answers.
 - b. The desire for control and security - Feelings of anxiety and uncertainty also help fuel conspiracy theories. Such emotions function as a psychological warning signal, leading people to try and make sense of societal events that frighten them. People need to feel in control of their lives. Conspiracy theories can give their believers a sense of control and security. Ironically, conspiracy theories just make these feeling worse and lead to more theorizing.
 - c. The desire to maintain a positive self-image - People who feel socially marginalized believe in conspiracy theories to give them a sense that they are the holders of privileged knowledge. They create a community of like-minded people which makes them have a better self-image.

So, imagine a person who is uncertain, anxious, and socially marginalized. Think about how you might communicate to this person.

20. [Lewandowsky, et al. \(2013\)](#) concede that rejection of science has implications for science communicators, including public health professionals and climate scientists. So, how do we communicate to science skeptics?

Factual rebuttals strategies alone are unlikely to counter the emotional appeals of websites, such as Jenny McCarthy's ([Davies, et al. 2002](#)). Sound logic typifies most scientific theories, but conspiracy theories rely on isolated pieces of evidence that are inconsistent with an official account ([Lewandowsky, et al. \(2013\)](#)). So, citing additional studies may just reinforce their beliefs that science is corrupt.

- [Lewandowsky, et al. \(2013\)](#) recommend more indirect means, such as confirmation of their competence and character, despite their faulty logic.
- As a communication strategy, according to [public health researchers](#), a key step is to identify those who are vulnerable to misleading information, but those can be convinced with more interactive and customized messages ([Betsch, et al., 2012](#)).
- Acknowledge that science is not infallible. In fact, the [CDC continues](#) to look at differences in environmental exposures, including vaccines, but are looking at things like older siblings that had colds and mothers who drank a lot of diet soda during pregnancy.
- Also, sharing anecdotal evidence about the consequences is another approach. Since results of prevention through vaccination are intangible ([Betsch, et al., 2012](#)), and measles other infectious diseases are now rare, perhaps we need to do a better job of communicating the consequences of non-vaccination.

So let me try using these pieces of advice now as an example. "You are an obviously a caring parent that thinks about issues such as vaccinations carefully. Many parents feel the same way. Autism is increasing and we don't know why yet, which is scary. However, these infectious diseases are a real threat to your child. There was an outbreak in San Diego recently. Have you seen the stories from the parents? Here's the website address..." As you can see, efforts should be made to rebut many conspiracy theories, but done in a non-confrontational manner.

21. Here are some take-aways from this lecture:

- Part of the role of public health is to inform, educate, and empower people about health issues
- Public health innovations continue to improve health behaviors
- Factual rebuttals strategies alone are unlikely to counter the emotional position of science deniers