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Beth Seltzer, MD, MPH, is a clinical and public health physician, board certified in public health and general preventive medicine. She is currently working on an Indian reservation in western Washington, where her role has included everything from treating the common cold to leading new public health initiatives. Prior to her medical career, Dr. Seltzer was a documentary film producer, earning multiple awards for her work. More recently, she served as a writer and consultant for the Discovery Health and Discovery Channel television networks, developing content for educational television shows and interactive media directed at both physicians and general audiences. She has also written for the Careers in Public Health newsletter from the American Public Health Association.
This book is dedicated to my parents, Lynn and Robert Seltzer, who have been right there with me through my own 101 careers.
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When I was in medical school, I was constantly frustrated by the number of people suffering from preventable diseases. Why was all the effort going into treating obesity-related diabetes instead of preventing it? We knew that a lot of our pediatric asthma patients would turn up in the emergency room again at some point after we discharged them from the hospital. Why weren't we figuring out why this kept happening, instead of accepting that these kids would be on a merry-go-round of asthma attacks and treatment? Teenagers with serious sexually transmitted diseases (STDs), adults with untreated mental illness—the number of people who could have been helped by population-level efforts was astonishing to me.

I spent about 3½ years railing against all this, until one of my teachers finally introduced me to the world of public health. Here were the people who shared my frustration. Here was a whole world of doctors, nurses, social workers, research scientists, administrators, and activists working off the asthma merry-go-round, trying to shift the way America eats and convince us to ramp up our exercise levels to halt the epidemic of diabetes, and working with teenagers to encourage safer sexual practices and slow the spread of STDs.

I have since completed my medical residency and become board-certified in preventive medicine, a specialty with a focus on public health. My fellow “prev med” physicians are an extraordinary group of people, and I think most of us are delighted to have found our way here. As I was interviewing people for this book—health inspectors, civil engineers, pharmacists, and a range of other experts—every single one of them shared his or her excitement about being part of public health.

I had a wonderful time writing the first edition of 101 Careers in Public Health. I met public health professionals from all across the country and in a wide array of jobs. I got to have fascinating conversations as I learned about the good work they were doing.

For this new edition, I had the privilege to include some new interviewees. The original “career profile” interviews have otherwise been left
largely intact. Even though not all of the interviewees are still in the same roles, I’ve reviewed every one of the profiles and they’re just as useful now as when they were first written.

Where I could, I’ve included “Profile Updates” with interviewees’ new roles, titles, and workplaces. I think it’s a great way to see how different public health careers can evolve. I’ve also added an expanded chapter on global health, some insight into public health careers in the military, thoughts on making the decision between a medical or a public health degree, and advice from two expert career counselors. I hope you will find the new information useful!

I am delighted that you have picked up this book, and I hope it will inspire you to pursue a career in public health. It is a great field to be in.

—Beth Seltzer, MD, MPH
A heartfelt thank you to the extraordinarily generous people who contributed their time, wisdom, and experience to this book. Much of what you will learn here comes from them. Any errors are entirely mine.

Thank you to all the people who shared their stories for the public health profiles. Many of you agreed to participate with just a brief introduction to the project, because you wanted to help students and career changers learn about your job. Your kindness made working on this book an absolute joy.

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PART I

Introduction to Public Health
Public health professionals sometimes joke that nobody understands what they do—until something goes wrong. We tend to take it for granted that the water from our kitchen faucets is safe to drink. We rarely worry about tuberculosis, measles, or diphtheria. We assume that medicine we buy from the local pharmacy will make us better, not make us ill. But when dozens of people are sickened at a restaurant or if there is an outbreak of a deadly illness, then everyone asks why the health department has not been doing its job!

Public health is the discipline that aims to keep our population safe from illness. Unlike a doctor who treats individual patients (usually once they are already sick), the public health expert considers health from the perspective of entire communities, neighborhoods, cities, and states. Public health addresses disease prevention and health promotion on a local, national, and global scale.

HISTORY OF PUBLIC HEALTH

Public health measures have been around for centuries (Rosen, 1958). Excavation of a 4,000-year-old city in India revealed covered sewers to carry waste away from people’s homes. In Rome about 2,000 years ago, a system of aqueducts brought fresh water to the city. Legend has it that 2,500 years
ago, a Greek emperor ended a malaria epidemic by changing the course of two rivers, making a marshy region less hospitable to mosquitoes.

The idea of quarantining people who were contagious became prominent in the Middle Ages. To combat leprosy, church leaders decided to separate people with leprosy from the rest of society, making life very difficult for those patients, but probably saving many healthy citizens from contracting the disease (Porter, 1999). Similar measures were used when the Black Plague hit.

Of course, people have not always understood disease the way we do today. Some misunderstandings actually led to effective public health efforts—the idea that disease was caused by “bad air” eventually led to improvements in sanitation. But confusion about how diseases spread also led to less successful approaches. In Europe in the 1800s, government officials tried to stop the spread of cholera by quarantining people who were ill, destroying their belongings, and burying the dead immediately and away from highly populated areas. But none of these activities actually stopped cholera epidemics.

The roots of modern epidemiology, one of the most important sciences in public health today, are widely thought to lie in work that was done around that time. Epidemiology is the study of how diseases occur within populations and how they can be controlled. Although no one knew exactly what caused cholera, John Snow, a doctor practicing in London, realized that the key to stopping outbreaks lay in figuring out how cholera was being transmitted. Instead of focusing on the disease in individual patients, he looked for patterns in where and when cases of cholera occurred. His investigation led to the discovery that outbreaks were linked to contaminated water and could be halted by providing a clean water supply. Snow was not the only one who attempted to use epidemiologic methods, but his story is among the most well known. It took years for his ideas to be accepted, but approaches similar to his are now widely considered to be at the heart of modern public health.

**THE ROLE OF PUBLIC HEALTH TODAY**

Today, public health is far more than providing clean water, maintaining sanitation, and controlling the spread of contagious diseases. The field has expanded to include prevention of chronic diseases and cancer, the control of conditions that are linked to disease, like obesity, and attention to mental health. There are public health experts studying disparities in levels of disease among different racial and ethnic groups and trying
to bring everyone up to the same degree of health. Public health topics also include infant mortality, access to dental care, the prevention of drug and alcohol abuse, and even seat belt and helmet laws. Public health techniques are used to promote workplace safety and reduce on-the-job injuries. Public health can even include clinics and other services to individuals, when those services are offered in the context of trying to raise the health of a community or group.

In fact, the field of public health has become so broad that even the people who practice it sometimes have trouble defining exactly what public health means today. In general, what public health efforts have in common is a focus on promoting health at the population level, instead of focusing on the individual interactions between doctor and patient. The Institute of Medicine offered a definition in their 1988 report *The Future of Public Health* (Institute of Medicine Committee for the Study of the Future of Public Health, 1988). The report specified the mission of public health as “fulfilling society’s interest in assuring conditions in which people can be healthy.” It also identified three core functions:

- **Assessment.** Public health agencies should collect and analyze information about the health of the communities they serve.
- **Policy Development.** Agencies should promote the use of sound science and act as leaders in the development of comprehensive public health policies.
- **Assurance.** Agencies should assure the provision of services necessary to meet public health goals.

Federal agencies and public health organizations got together a few years later and expanded the definition with the following list of 10 essential public health services (Centers for Disease Control and Prevention, 2014):

1. **Monitor** health status to identify community health problems.
2. **Diagnose and investigate** health problems and health hazards in the community.
3. **Inform, educate, and empower** people about health issues.
4. **Mobilize** community partnerships to identify and solve health problems.
5. **Develop** policies and plans that support individual and community health efforts.
6. **Enforce** laws and regulations that protect health and ensure safety.
7. **Link** people to needed personal health services and assure the provision of health care when otherwise unavailable.
8. **Assure** a competent public health and personal health care workforce.

9. **Evaluate** effectiveness, accessibility, and quality of personal and population-based health services.

10. **Research** for new insights and innovative solutions to health problems.

**Monitoring, Diagnosis, and Investigation**

Monitoring is at the root of many public health efforts. If we do not know what patterns of disease are occurring, we cannot create rational programs to address those diseases. In the United States, certain contagious diseases are considered “reportable,” which means that doctors or laboratories must alert health officials whenever a case is discovered. If there is an unusually high number of cases, public health experts swing into action to find out why. Public health agencies also monitor diabetes, heart disease, cancer, birth defects, certain types of injuries, and other serious medical problems. A sudden increase in disease, especially if it is in a single location, can signal an immediate problem to be addressed. Even a gradual, widespread change can expose the need for improved health measures on a local or national scale.

**Disease Prevention and Health Promotion**

Once a problem (such as infectious disease, chronic disease, or injury) has been identified, public health experts use a wide range of methods to try to prevent it from happening. Water treatment plants, free clinics to treat and prevent the spread of sexually transmitted infections, and ad campaigns promoting exercise are all examples of disease prevention efforts. So are programs to reduce pollution and to encourage stores to stock more healthful foods. From low-cost vaccinations for children to national recommendations for exercise, the active prevention of disease and promotion of health are enormous parts of modern public health activities.

**Research**

The best public health efforts are based on sound research. At schools of public health, government agencies, nonprofit organizations, and even some for-profit businesses, scientists work on finding the best approaches to maintaining and improving health on a population level. Researchers
are looking at how our environment affects our health. They are examining why certain populations seem to have consistently better health outcomes than others. They are working on ways to evaluate existing public health programs to see what works and where our tax dollars should be spent. And they are studying public health from many other angles, from the impact of personal choices to the effects of national policy.

Policy

Many public health programs and services are provided by local, state, and federal government agencies. These efforts are created and controlled by laws and regulations. Even nonprofit organizations operate according to overarching policies. A good policy provides for sound, science-based monitoring and prevention and may also support necessary research. But even policies that come from the best intentions can have unintended consequences. There are public health experts who study the outcomes of past policies, examine the impact of current ones, and advise legislators and other policy makers on how to make good choices for the future.

Health Services Research

Health services research is sometimes considered a separate category from public health, but many public health experts consider it a part of the continuum. Health services research looks at how health care is delivered, including the effects of billing and financial structures; the organization of hospitals, insurance companies, and medical practices; the use of health technologies; and the behavior of individuals. Researchers in this area look at patient outcomes, access to care, how people utilize doctors and hospitals, and how health care differs for different populations. The information they collect can be used by doctors, patients, hospitals, insurance companies, policy makers, and others, and the overall goal—at least from the public health perspective—is to improve health care for all.

Direct Service

There are many public health efforts that incorporate direct patient care. There are local and national hotlines to help people quit smoking, provide assistance in cases of accidental poisoning, and direct victims of domestic violence to services. Emergency medical services use a public
health perspective, aiming not only to match their services to community needs but also standing ready to serve in case of disaster or attack. Many members of the U.S. Public Health Service Commissioned Corps are assigned to the Indian Health Service, which provides comprehensive health services to American Indians and Alaska Natives.

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