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INTERVIEW

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From Skin Infections to Ebola: Practice, Policy, and Beyond

An Interview with Gregory Raczniak, MD, PhD

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Dr. Gregory Raczniak is a medical epidemiologist and former Country Director for Pakistan with the Centers for Disease Control and Prevention (CDC†). A graduate of the Kalamazoo Area Mathematics and Science Center and Kalamazoo College, he pursued his MD/PhD jointly at Yale and Eastern Virginia Medical School. He has worked for the U.S. government for over a decade, first with the U.S. Navy before transferring to the U.S. Public Health Service in 2011. He has served the United States both domestically and abroad in various roles from leading skin and soft tissue infection outbreak investigations in remote Alaskan communities to setting up treatment units in Monrovia, Liberia for the Ebola outbreak. He sat down recently to discuss and share his unique expertise on integrating research, medicine, public health, and policy.

Your investigations range from skin and soft tissue infections in Alaska to Ebola in Africa. How did you prioritize your interests, and how did you get to where you are today?

Well, disease doesn't know any boundaries. When we talk about skin infections in a rural Alaskan village, it is just as likely to reach the lower 48 states as from name-your-other-country. At the CDC, we work day and night to protect the health, safety, and security of Americans. This requires focusing on both domestic and international disease threats, and specifically on preventive medicine and public health.

For me, it has always been about being responsive to the opportunities given to you and being able to explore them. I decided that I wanted to go into public service and so I joined the U.S. Navy. I started my medical training at Eastern Virginia Medical School and, after my first year, I decided to pause and enroll in Yale's Molecular Biophysics and Biochemistry Ph.D. program in Dieter Soll's lab. After graduation, I did my internship in OB/GYN and was detailed as a General Medical Officer in the Navy.

At the time, the Navy needed to fill a post at the U.S. Naval Medical Research Unit (NAMRU) #3 based in Cairo, Egypt. The opportunity was fortuitous, and I was stationed as the Officer-in-Charge of the Ghana Detachment doing malaria vaccine trials, among other infec-

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†Abbreviations: CDC, Centers for Disease Control and Prevention; NAMRU, U.S. Naval Medical Research Unit; EIS, Epidemic Intelligence Service.

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tious disease projects. I had never considered infectious disease or public health until then, and after 3.5 years, I wasn't sure I wanted to go back to OB. Again fortuitously, the Navy provided a chance to learn about operational medicine, and upon my return to the U.S., I was trained as a Navy Diver. As an Undersea Medical Officer, I worked in hyperbaric medicine as a Submarine Medical Officer for crews that carry out our country's ballistic missile strategic deterrence in the Atlantic and Pacific. This expanded my knowledge of occupational public health and medicine, and I became proficient in policy development and implementation through projects like eliminating the use of cigarettes on submarines.

At this point, I had moved towards public health and preventative medicine. Based on my experiences in Ghana and Submarine Group Trident, I was offered an Epidemic Intelligence Service (EIS) fellowship with the CDC in Alaska. Working at the Arctic Investigations Program, I was able to be on the front lines of disease prevention, detection, and investigation. I focused on the health needs of our arctic populations, such as skin and soft tissue infections associated with traditional steam baths and other diseases of high burden. Working abroad and at home, I realized that to protect America's health, safety, and security, populations need public health practitioners to prevent disease. After nearly a decade without board certification, I restarted my residency with the CDC's preventative medicine program.

Because of my previous service, I had seen how the government interacts internationally and domestically, and I wanted to gain a different perspective within a local or state health department. I matched with Louisiana's Department of Public Health where I worked under the state epidemiologist, Dr. Raoult Ratard, for my preventive medicine residency and completed my Masters of Public Health at Tulane partially sponsored by the Pat Tillman Foundation. It is a different flavor when working for the state, and we considered state-specific issues such as leprosy and hospital acquired infections. However, halfway through my training, that's when the Ebola outbreak hit West Africa. I deployed to Sierra Leone to help conduct contact tracing for people that were being exposed to Ebola and later was deployed to Liberia. In Liberia, I worked in the U.S. Public Health Service's Ebola treatment unit, learning techniques from Médecins Sans Frontières, setting up our own Ebola treatment unit, and working as one of two night shift attending physicians.

Career expertise came full circle when I started my next job as the CDC's Resident Advisor in conjunction with the U.S. Agency for International Development under the President's Malaria Initiative. It had all started with malaria in Ghana, and now I went back to it in Rwanda. I used that foundational knowledge within this larger programmatic assignment. During my time in Kigali, I was offered a job by the CDC's Division of Global Health Protection as the Country Director for Pakistan. In this role, I was responsible for helping Pakistan evaluate and upgrade their capabilities to meet WHO's International Health Regulations by focusing on prevention of illness, identification of diseases, response to outbreaks, and coordination of information in an emergency operation center. At the CDC, we work hard with other nations to protect the public's health in America. For example, Pakistan's Field Epidemiology Training Program is modeled after the CDC's own EIS program. This program trains local staff to respond to disease outbreaks, containing them at the source and limiting their spread to other communities or countries.

My peripatetic career is a reflection of my training and education at liberal arts institutions, like Kalamazoo College and Yale University. Despite working in vastly different settings on different health threats, there are common threads. I learned to think critically and to take advantage of the different opportunities presented to me. I've been incredibly fortunate to work with highly specialized infectious disease subject matter experts as well as the local experts working the frontlines on the ground. Both bring critical knowledge to the table when trying to improve public health. As a generalist, I am able to understand the unique perspectives of both and assemble it into a coherent plan when we are faced with a pressing public health issue.

What is the most important factor in bridging the gap between research, medicine, public health, and policy?

Interdisciplinary training and experience are critical. Research, medicine, public health, and policy are all interrelated and need to be bridged. The work we do at the CDC is grounded in science and evidence-based decision-making so that we may build the local capacities to prevent, detect, and respond to outbreaks. Science and clinical medicine develop a platform to build upon and make good public health policy. My scientific experiences – from collecting sandflies in rural Ghana to RNA chemistry at Yale – are important. Working in Alaska and seeing how unique cultural practices could enhance or mitigate risk demonstrated the value of context in public health. Training today makes it seem like these elements are isolated and distinct. In fact, they blend a lot more than you'd expect.

What role does public perception and mass media play in your work?

Public perception and mass media are critical in disease prevention and control. It is the fundamental mission of the CDC to save lives and protect people from health

threats. When thinking about messaging, it must be open and transparent. We keep the public informed with clear and consistent messaging on a variety of health challenges and not only outbreaks. In an emergency, we not only need to be out there early. We have to provide the best possible information we have at the time. It needs to be clear and easy to understand.

How do you expect the landscape, medical or otherwise, to change in the coming decades?

We live in an incredibly connected world. You can transport disease from isolated rural village in Africa – or the U.S. for that matter – to anywhere in the world within 36 hours. Public health threats can affect the health, safety, and economy of Americans. The Division of Global Health Protection [1] within the CDC's Center for Global Health [2] builds the capacity for disease detection and outbreak response, whether that is Zika, Ebola, or whatever outbreak is coming next. Four essential areas allow us to maintain the priority of keeping America safe: (1) making sure that there are strong laboratory networks and that pathogens are handled in a safe and appropriate way; (2) that there is a well-trained public heath workforce; (3) that we conduct effective disease surveillance so we can quickly detect and contain outbreaks; and (4) that information is shared in a cross-sectional manner through an emergency operations center. I can't predict how the landscape will change in the coming decades, but the reality of our global community cannot be ignored.

Importantly, global health is also about national security. From our collaboration overseas and work with marginal populations, we know that more than 70 percent of countries are underprepared to detect and respond to emergencies. These crises can significantly disrupt local, regional, and international travel, trade and health. Luckily, the CDC is there for us, working 24/7 to keep the world safe, secure, and healthy.

REFERENCES

1. Global Health Protection and Security [Internet]. Centers for Disease Control and Prevention; 2016 [cited 2017 May 2]. Available from: https://www.cdc.gov/globalhealth/health-protection/index.html.
2. Global Health [Internet]. Centers for Disease Control and Prevention; 2017 [cited 2017 May 2]. Available from: https://www.cdc.gov/globalhealth/index.html