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I debunk junk science and flawed public policy..

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OPINION 7/22/2014 @ 6:00AM | 825 views

CDC Errs On Policy As Well As Handling Dangerous Pathogens

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The agency's reactive approach to [Legionnaires' disease](#) causes thousands of preventable infections every year.

Recent revelations about several instances of scientists' mishandling of dangerous pathogens—including potentially lethal anthrax bacteria and H5N1 bird flu—at the federal Centers for Disease Control and Prevention (CDC) were bad enough. But testifying before a subcommittee of the House Energy and Commerce Committee last week, CDC Director Thomas Frieden confirmed that these were not isolated incidents. He admitted that in spite of a spate of other similar incidents, “We missed the broader pattern.”

Fortunately, no illnesses or fatalities resulted from these mishaps, but the same cannot be said for other, more deliberate actions of the CDC. Deaths have resulted from a conscious, long-standing policy on how to address a common, potentially life-threatening infection, Legionnaires' disease, a type of environmentally acquired pneumonia. There have been a number of recent fatalities: Six U.S. veterans at the VA Hospital in Pittsburgh, six patients at an assisted living home in Ohio, three hotel guests at a hotel in downtown Chicago and two patients at a major university hospital in Birmingham, Alabama.

Legionella, the cause of Legionnaires' disease, was originally identified after an outbreak at an American Legion Convention in a Philadelphia hotel in 1976 that killed 34 and sickened 221. The bacterium lurks at low levels in natural fresh water sources (such as rivers, lakes and streams) in virtually every part the world, most often with little impact on humans. It becomes hazardous when it survives municipal water treatments and subsequently contaminates and grows in man-made building water systems such as hot tubs, decorative fountains, shower heads and cooling towers. Left undetected in these locations, it can multiply to high concentrations. People become sickened after inhaling contaminated aerosol droplets generated from these sources.

Unlike most other pneumonias caused by microorganisms, this disease is not transmitted person-to-person; it is purely of environmental origin.

The only way to determine whether a water source is a high-risk Legionella-contaminated system is to take samples of the water to see whether the bacteria grow in a simple and inexpensive culture test in a laboratory.

Although they receive little attention, outbreaks are not uncommon. By far, however, most cases of Legionnaires' disease are individual sporadic cases that are not known to be associated with larger outbreak clusters, although this may be due to the fact that most sporadic cases are never thoroughly investigated. (Legionnaires' disease symptoms are similar to other pneumonias and can only be diagnosed by specific laboratory tests.) Estimates of the number of cases annually in the United States range from 8,000 to more than 25,000.

An obvious question is what federal health officials are doing to protect Americans from this disease. The answer is both complicated and puzzling. The approach of the CDC's National Center for Immunization and Respiratory Diseases (NCIRD), which has the responsibility for Legionnaires' disease prevention, is flawed. Perhaps that is not surprising, given that prevention appears not to be NCIRD's strong suit; its officials also recommended eliminating the fourth booster dose for the childhood pneumococcal vaccine although that would reduce the efficacy of vaccination and result in the death of children (the subject of a [previous](#) Forbes article).

The CDC's recommendations for preventing Legionnaires' disease have been predominantly focused on what might be termed a disease surveillance strategy—a reactive process that relies on screening for disease after cases are detected, at which time a response is quickly undertaken to prevent further infections. Although this strategy works well for person-to-person transmissible diseases where the source of the disease is another infected individual, it is not well suited to situations in which the source of disease is in the environment.

Former Assistant U.S. Surgeon General Dr. J. Donald Millar, who used the disease surveillance approach successfully as the head of CDC's renowned Smallpox Eradication Program, has long been critical of CDC's approach to Legionnaire's disease. In 1997 he [warned](#) that disease surveillance was being misapplied to the prevention of Legionnaires' disease because it is not transmitted from person to person but is contracted solely by exposure to bacteria-contaminated aqueous sources. For such diseases of environmental origin, proactive environmental surveillance, rather than reactive disease surveillance, is the appropriate prevention strategy.

Others have echoed Millar's views, but for decades CDC's position has remained unchanged.

Another indicator that CDC was on the wrong track was the outcome of a 1991 lawsuit in which the U.S. Government was sued following an outbreak of Legionnaires' disease at a Social Security Administration (SSA) building in Richmond, California. The U.S. unsuccessfully relied on defense testimony from CDC experts for its defense and was subsequently forced to pay an out of court settlement. Clark W. Patten, the lead plaintiff attorney in the case, [recounted](#) that his winning strategy was based on the premise that the U.S. Government (specifically the CDC) should have known how to prevent the outbreak at the federal building.

A closer look at CDC policy over the years reveals the ways that a reactive approach is illogical and ineffective. A recurring theme is that CDC discourages environmental testing until an outbreak occurs. At that point, however, CDC demands testing to demonstrate that all evidence of Legionella is gone for up to a year after the outbreak. Inexplicably, CDC's current recommendation is still that "an epidemiological association with a probable source should be established *before intervention methods, such as disinfection, are undertaken*" [emphasis added].

This contradiction—environmental surveillance not needed before an outbreak, but required afterwards—in effect uses people as "canaries in the coal mine" to detect high-risk water sources.

CDC claims that a reason for not performing environmental surveillance is that Legionella test results are uninterpretable in the absence of disease because the concentration of Legionella in a water sample required to cause disease is not fully understood. But Dr. David Krause, the former State Toxicologist for the State of Florida, dismisses this claim: "one does not need to know the concentration of Legionella required to cause disease to prevent it, one just needs to know if amplification is being controlled in the system and a simple periodic Legionella laboratory culture test can provide an answer." Dr. Krause added that "useful guidance to help building operators interpret Legionella concentrations in water samples has been published for over 20 years by a laboratory in the private sector and have [sic] long been cited in the [Occupational Safety and Health Organization \(OSHA\) Technical Manual](#)."

Dr. W. Dana Flanders, Professor of Epidemiology and Biostatistics at Emory University, wrote, "I am concerned CDC seems to be discouraging environmental Legionella testing based on flawed assumptions...when I looked more closely at references they use to support their position, I found that some of them instead actually supported the opposite position concerning benefits of environmental testing." The problem, Dr. Flanders explained, is, "When

CDC discourages proactive, routine environmental testing, the result is that hazardous sources in building settings with high counts may persist and go unrecognized until after an association with disease.”

CDC’s posture is puzzling. The number of cases since Legionnaire’s disease was discovered is staggering—on the order of 900,000, and the number of reported cases continues to increase each year. The yearly [costs](#) for hospitalizing Legionnaires’ disease patients exceed \$400 million, and yet CDC still recommends through their website and scientific publications that concerned parties wait for an outbreak before monitoring and disinfecting building water sources.

Perhaps in CDC’s adherence to this approach we are seeing a syndrome that is common, especially among bureaucrats: the unwillingness of people to admit that they’ve been wrong.

In 1992 Congress changed the official name of the CDC to the “Centers for Disease Control and Prevention,” but at least for the Legionella Program within the NCIRD, that addendum doesn’t seem to have made an impression.

In the aftermath of the recent mishaps with dangerous pathogens at CDC, Director Frieden [said](#) at a press conference, “Events like this should never happen, and that’s why I will do everything in my power to make sure that nothing like this happens again.” While he’s reviewing his agency’s miscues, Dr. Frieden should pay some attention to his agency’s misguided approach to Legionnaires’ disease.