



The Age-Old Struggle against the Antivaccinationists

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Since the introduction of the first vaccine, there has been opposition to vaccination. In the 19th century, despite clear evidence of benefit, routine inoculation with cowpox to protect people against

smallpox was hindered by a burgeoning antivaccination movement. The result was ongoing smallpox outbreaks and needless deaths. In 1910, Sir William Osler publicly expressed his frustration with the irrationality of the antivaccinationists by offering to take 10 vaccinated and 10 unvaccinated people with him into the next severe smallpox epidemic, to care for the latter when they inevitably succumbed to the disease, and ultimately to arrange for the funerals of those among them who would die (see the Medical Notes section of the Dec. 22, 1910, issue



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of the *Journal*). A century later, smallpox has been eradicated through vaccination, but we are still contending with antivaccinationists.

Since the 18th century, fear and mistrust have arisen every time a new vaccine has been introduced. Antivaccine thinking receded in importance between the 1940s and the early 1980s because of three trends: a boom in vaccine science, discovery, and manufacture; public awareness of widespread outbreaks of infectious diseases (measles, mumps, rubella, pertussis, polio, and others) and the desire to protect children from these highly prevalent ills; and a baby boom, accompanied by increasing levels of education and wealth. These events led to public acceptance of vaccines and their use, which resulted in significant decreases in disease outbreaks, illnesses, and deaths. This golden age was relatively short-lived, however. With fewer highly visible out-

breaks of infectious disease threatening the public, more vaccines being developed and added to the vaccine schedule, and the media permitting widespread dissemination of poor science and anecdotal claims of harm from vaccines, antivaccine thinking began flourishing once again in the 1970s.¹

Little has changed since that time, although now the antivaccinationists' media of choice are typically television and the Internet, including its social media outlets, which are used to sway public opinion and distract attention from scientific evidence. A 1982 television program on diphtheria–pertussis–tetanus (DPT) vaccination entitled “DPT: Vaccine Roulette” led to a national debate on the use of the vaccine, focused on a litany of unproven claims against it. Many countries dropped their programs of universal DPT vaccination in the face of public protests after a period in which pertussis had been well controlled through vaccination² —

how to counter antivaccinationists' false and injurious claims. The scientific method must inform evidence-based decision making and a numerate society if good public policy decisions are to be made and the public health held safe. Syncretism between the scientific method and unorthodox medicine can be dangerous.

Fourth, we must enhance public education and public persuasion. Patients and parents are seeking to balance risks and benefits. This process must start with increasing scientific literacy at all levels of education. In addition, public-private partnerships of scientists and physicians could be developed to make accurate vaccine information accessible to the public in multiple languages, on a range of reading levels, and through various media. We must counter misinformation where it is transmitted and consider using legal remedies when appropriate.

The diseases that we now seek to prevent with vaccination pose far less risk to antivaccinationists than smallpox did through the early 1900s. Unfortunately, this means that they can continue to disseminate false science without much personal risk, while putting children, the elderly, and the frail in harm's way. We can propose no Oslerian challenge to demonstrate our point but have instead a story of science and contrasting worldviews: on the one hand, a long history of stunning triumphs, such as the eradication of smallpox and control of many epidemic diseases that had previously maimed and killed millions of people; on the other hand, the reality that none of the antivaccinationists' claims of widespread injury from vaccines have withstood the tests of time and science. We believe that antivaccinationists have done significant harm to the public health. Ultimately, society must recognize

that science is not a democracy in which the side with the most votes or the loudest voices gets to decide what is right.

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ACOs and the Enforcement of Fraud, Abuse, and Antitrust Laws

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Hospitals and physicians are eagerly awaiting regulations for accountable care organizations (ACOs), which many observers view as the best hope provided by the Patient Protection and Affordable Care Act (ACA) for needed delivery system reform. Starting in 2012, health care providers in ACOs that furnish efficient, high-quality care to Medicare patients will share in Medicare's savings. Providers are concerned, however, that in creating ACOs they risk violating fraud, abuse, and antitrust laws.¹ To address these fears, the Department of Health and Human

Services (DHHS), the Federal Trade Commission, and the Department of Justice, under the direction of the White House, are collaborating to provide waivers, safety zones, and guidance to providers.

An ACO, as defined by the ACA, is an organization of health care providers that agrees to be accountable for the quality, cost, and overall care of Medicare patients for whom they provide the bulk of primary care services.² ACOs must have defined processes for promoting evidence-based medicine, reporting data with which to evaluate the qual-

ity and cost of care, and coordinating care. ACOs that meet specified quality standards will receive a share of the savings if Medicare's cost for the care of their assigned patients is below a certain benchmark. ACOs, along with bundled payments and other payment innovations, are intended to transform the health care delivery system both by replacing fee-for-service payments, which tend to increase utilization, and by boosting collaboration among providers so as to reduce costs and improve quality.

However, providers organizing ACOs may fear violating fraud-