

Virtual Mentor

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New Media, Old Messages: Themes in the History of Vaccine Hesitancy and Refusal

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The current climate surrounding childhood vaccination in the United States is one of confusion and vitriol. Despite the well-documented achievements of vaccines and extensive efforts by the public health community to ensure their safety, vocal critics of vaccination proffer a growing list of theories that link vaccines to an array of medical conditions, most prominently autism. Others question the necessity of newer vaccines, seeing their arrivals not as triumphs of medical research but as overreaches by a profit-obsessed pharmaceutical industry and an accommodating, financially conflicted medical establishment.

In response to these charges, physicians, scientists, and government public health officials are routinely on the defensive, refuting allegations of unconfirmed risks, justifying the value of recommended vaccines, and striving to preserve public trust in vaccination overall. While national data suggest that a strong foundation of support for vaccination remains, regional clusters of unvaccinated children and increases in nonmedical exemptions from state school-entry vaccination requirements are causes for alarm among advocates of vaccines. Even more worrisome is research suggesting that the safety of vaccines is a growing concern among many parents [1].

The contours of the current debate regarding vaccination may be notable for their novelty—new vaccines, new recommendations, new research evidence, and new trends in diagnoses, to name a few examples. Just as striking, however, are the echoes in contemporary vaccine debates of the history of such movements. At the heart of these conflicts are the complex, long-contested relationships among citizens, science, and the state and their implications for public health policy and practice. The historical antecedents of contemporary vaccine hesitancy and refusal reveal that the present state of affairs is not an unprecedented crisis but an opportunity for renewed education, dialogue, and consensus-building regarding the value of vaccines.

Patterns in the History of Vaccine Opposition

Two primary themes can be seen throughout vaccine opposition movements of the past and present. The first is the perception among critics that vaccines, individually and collectively, cause more harm than the diseases that they are intended to prevent. Even before the introduction of Edward Jenner's smallpox vaccine, Cotton Mather and other advocates of variolation in eighteenth-century New England were forced to defend that immunization practice against such charges. As smallpox vaccination programs eventually contributed to a massive decline in the incidence of the disease

by the early twentieth century, questions about the necessity of continuing to vaccinate grew in frequency and intensity.

This pattern has continued throughout the life cycles of more recent vaccines. Most have been met initially with great enthusiasm, in part because the serious, sometimes fatal consequences of the diseases they prevent had been familiar to the public. As a result of successful vaccination programs, vaccine-preventable diseases and their effects gradually become far less visible. In time, patients, parents, and even many health care professionals have little firsthand familiarity with the diseases that vaccines prevent. The benefits of vaccines are then difficult to discern, while the risks—those known to exist and others that are alleged—become comparatively more visible. Proponents lament that “vaccines are victims of their own success,” and opposition to vaccination has been particularly active during these ebbs in the prevalence of vaccine-preventable diseases.

A second theme in this history is the close association between the promotion of vaccines and mandatory vaccination policies intended to ensure compliance. The earliest laws requiring vaccination were introduced in several European cities and Boston within 25 years of the arrival of the smallpox vaccine. By 1827, Boston was the first U.S. city to link compulsory smallpox vaccination with school attendance, a practice that spread throughout the country by the end of the nineteenth century. Enforcement varied widely, particularly between outbreaks, and it declined altogether as smallpox grew exceedingly rare in the United States by the mid-twentieth century. The introduction of several new vaccines beginning in the 1950s, coupled with severe outbreaks of measles among schoolchildren, led to a renewed emphasis on school vaccination requirements in the 1960s and 1970s. These state requirements increasingly included most, if not all, vaccines routinely recommended for school-age children, establishing the model that persists today [2].

Compulsory vaccination has been strongly contested since its earliest appearances. In England, enforcement of a nineteenth-century smallpox requirement disproportionately targeted the working-class and poor with fines and jail terms for noncompliance, provoking an organized opposition movement [3]. Its efforts led to reforms allowing conscientious objections, the forerunner of contemporary exemptions from state vaccination requirements. In the United States, the Anti-Vaccination Society of America was established in 1879, and similar groups in cities brought together like-minded members of diverse religious, ethnic, and socioeconomic groups [4, 5]. They were often joined by medical practitioners whose views were outside the mainstream of their professions.

While the 1905 decision of the Supreme Court in *Jacobson v. Massachusetts* upheld the authority of governments to mandate vaccination (and a 1922 case—*Zucht v. King*—expressly permitted vaccination linked to school attendance), compulsory vaccination remained a source of considerable tension between health authorities and the public. A 1906 news item from York, Pennsylvania, headlined “Vaccination Stirs Revolt,” reported, “Threats to burn schoolhouses, whip teachers, and punish school

directors have been the outcome of the enforcing of the compulsory vaccination law” [6]. In one affected school, only 94 of 370 students were in compliance with the requirement. Elsewhere during this period, scuffles with the police over compulsory vaccination were common, providing important context when we speak of contemporary “resistance” to vaccination [7].

By the early 1970s, most state vaccination requirements included newer vaccines such as measles and polio. A 1969 review of mandatory vaccination identified three principal objections voiced by opponents of these policies: government intrusion on religious beliefs, general distrust of medical science, and infringement of personal liberty [8]. These themes capture quite well the major objections of critics to that point, and they remain remarkably apt synopses of critiques of U.S. vaccine policy in 2012.

Contemporary Opposition to Vaccination Policy

Despite the introduction of many new vaccines and concurrent advances in vaccine science and practice, the core arguments of critics of vaccination continue to parallel those expressed for nearly 200 years. They question the science of vaccines—namely, that the risks are greater or the benefits less than the mainstream public health community believes—or assert that the state is inappropriately interfering with individual or parental autonomy by requiring vaccination for school-age children. What has changed are the ways in which parents, scientists, physicians, and others skeptical or critical of vaccines communicate and collaborate.

In contrast to the early history of vaccination, when local, grassroots opposition movements were most prevalent, today’s critics of vaccines are part of national and international networks that have capitalized on the explosive growth of information technologies in the past quarter-century. Many observers of this history point to a 1982 television documentary, *DPT: Vaccine Roulette*, as a turning point in the modern history of vaccine safety controversies [9]. The program featured emotional profiles of children believed by their parents to have been harmed by the diphtheria-pertussis-tetanus combination vaccine. In the years that followed, parents with similar stories involving a variety of vaccines and their alleged risks would become a mainstay of popular media coverage of vaccine debates.

Throughout the more recent controversy regarding vaccines and autism, some of these parents or grandparents have been celebrities or public officials, providing a still larger platform for such accounts, absent confirmation that the conditions described were caused or exacerbated by vaccines. Until very recently, the opinions and personal experiences of such critics often received media attention equal to that given to the consensus views of national medical and scientific organizations regarding vaccine safety.

The Internet has been similarly transformative in bringing together individuals and groups critical of vaccines and contemporary vaccine policy. Instead of the pamphlets common to early vaccine opposition movements, web sites, blogs, e-mail

lists, and related media now allow parents to instantly compare their experiences, share theories regarding the causative role of vaccines, and coordinate activism on vaccine safety policies and legislation.

The Internet has also democratized access to scientific and medical knowledge among patients and parents. Despite frustration from some health care professionals, these changes help to promote an environment in which patients are engaged, informed, and active contributors to their own medical decision making. A related change with more mixed outcomes for medical knowledge and patient care is the massive growth in venues available for the publication of scientific research, many of which exist principally or exclusively online. The quality of these publications varies widely; publishing standards may be inconsistent, and peer review limited or nonexistent.

Patients or parents researching vaccines or other health topics may have difficulty distinguishing reputable sources of information from less trustworthy venues. In the case of vaccines, public discourse and public health may be jeopardized by the publication of research so flawed in design or analysis that valid conclusions cannot be reached. Much of the published research cited by proponents of the vaccine-autism link and similar theories has appeared in publications of dubious reputation and is rejected as scientifically unsound by mainstream researchers. However, the most prominent published science on vaccines and autism, the now-retracted 1998 paper by Andrew Wakefield and colleagues, appeared in *The Lancet*, among the world's premier medical journals. The gatekeeping function of scientific publication is not without flaws, but it remains one important safeguard in promoting the dissemination of valid, scientifically responsible research results.

Preserving and Promoting Vaccination in a Democracy

The pace of advances in scientific and medical knowledge today is only surpassed by the speed at which such information can be transmitted. Amid this changing climate, the core arguments of critics of vaccination have remained remarkably stable. Public health officials and other advocates of vaccination have largely focused their efforts on refuting specific claims against the safety and necessity of vaccines and the importance of school-entry requirements. The long-term success of this approach is questionable; recent experience suggests that new hypotheses appear more quickly than they can be conclusively refuted. For example, as evidence mounted against a link between the measles-mumps-rubella vaccine and autism, replacement theories began emerging, alleging that specific vaccine components, the timing and spacing of vaccination, or the overall vaccine schedule may actually be to blame. Maintaining a largely defensive, responsive posture to vaccine safety allegations may ultimately be ineffective.

A superior strategy for advocates of vaccines may be to use the current media and information environment to refocus attention toward the positive case for vaccines. A lesson from the long history of vaccine hesitancy and refusal is that the most strident critics of vaccine safety are unlikely to be swayed by any amount of

evidence, particularly evidence produced by government scientists and academic researchers, groups whom they generally distrust. Meanwhile, growing numbers of parents who are not active participants in vaccine safety movements are expressing new concerns about the risks of vaccines. Directing efforts toward preserving the widespread foundation of support for vaccines that persists despite these controversies may be the most fruitful route to maintaining the success of vaccination programs [10].

Such work requires not merely a communications or marketing strategy by the public health community but a continued commitment to ensuring the safety of vaccines, assessing their benefits for individuals and communities, and implementing mandatory vaccination programs responsibly. Concerns in these areas have motivated opposition movements since the dawn of vaccination. While history suggests that broad consensus on the design and scope of vaccination programs is unlikely to be reached, all participants in these debates can work for respectful dialogue informed by the best available evidence [11]. In this way, citizens, scientists, and public officials can advance both the best ideals of a democracy and the health of its citizens.

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