Needles and Notebooks: The Limits of Requiring Immunization for School Attendance

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Abstract

The constitutional requirements for compulsory vaccination are analyzed in the context of the release of a vaccine against human papillomavirus, a virus associated with development of various kinds of cancer, requiring many years after infection for cancer to
develop. Examination of the requirements of Jacobson v. Massachusetts suggests that proposed vaccination programs be subjected to a balancing test that considers the severity of the disease, the risks of the vaccine, the amount of overall clinical experience with the vaccine, and alternate methods of prevention. It is argued that there are further constraints if vaccination is to be a requirement for school attendance. Under these circumstances, the disease must either be one which is acquired in the normal course of school activities, or one which interferes with the education of a child that acquired the disease. This analysis will be fact-specific, and the outcome of the analysis can change if the general understanding of the underlying scientific facts changes appreciably.

*Having children made us look differently at all these things that we take for granted, like taking your child to get a vaccine against measles or polio.*

*Melinda Gates*²

**Introduction**

Vaccination³ against certain communicable diseases is required for admission to public schools in all states in the United States.⁴ Such compulsory vaccination has substantially reduced the occurrence of a number of serious infectious diseases that affect children. These diseases include diphtheria, polio, measles and smallpox.

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³ Strictly speaking, “vaccination” is “inocul[ation of] (a person with cowpox virus in order to produce immunity to smallpox.” (Webster’s Ninth New Collegiate Dictionary (Merriam-Webster, 1991) (1301)). A second definition is injection of a vaccine, which is a “preparation…that is administered to produce or artificially increase immunity to a particular disease” (Id.) This word will be used instead of the medically preferable “immunization” because the latter is frequently used as a legal word of art, and “vaccination” is clearer to a legal audience.

⁴ See, Hodge, *supra* note 4 at 833, and Table 2. (2001).
The constitutional issue was addressed in 1905 when *Jacobson v. Massachusetts* gave states and their political subdivisions great latitude in requiring vaccination. In *Zucht v. King*, the Supreme Court affirmed the constitutionality of a state scheme that required vaccination for school attendance. Both cases involved smallpox vaccination during epidemics. Smallpox is an acute, frequently fatal disease easily transmitted in a school environment.

Subsequent scientific and technological developments have raised issues that these decisions did not anticipate. This has been dramatically illuminated by introduction of a vaccine against human papillomavirus (“HPV”) in 2006. This development has stimulated interest in the appropriate scope of governmentally mandated vaccination programs (“compulsory vaccination”). Some authors have reexamined the boundaries set

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7 See id. at 175. At that time, “vaccination” meant immunization for smallpox.
by Jacobson and Zucht regarding the power of the state to compel vaccination of children.9 These explicit boundaries rarely have been acknowledged in judicial opinions.

These Jacobson constraints appear to make it constitutionally impermissible in certain situations to enforce compulsory vaccination by exclusion of children from school. Furthermore, Jacobson may deny states any power to compel certain vaccinations.

In 2006, Merck, Inc. marketed Gardasil®, a vaccine that induces immunity against two strains of HPV associated with 70% of carcinoma of the uterine cervix.10 The FDA has approved Gardasil® use only for females 9 to 26 years old.11 Proposals for making vaccination compulsory are controversial because of differences between cervical cancer and diseases for which vaccination has traditionally been required. Some of these differences, as shall be shown, include the lack of nexus of infection with school activities, the lack of impact of the disease on the ability to educate infected children, the existence of other ways to prevent cancer caused by HPV, and the newness of the vaccine. Another issue that has been raised is the constitutional problem entailed in a vaccination requirement that applies only to one sex. However, HPV causes cancer in males as well.12 In time, Gardasil may be approved for use in males, which will make this issue moot.

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9 This issue has been examined in detail, s in Cook, Dowling, Estragh, Javitt, Ross, and wood, all supra, note 8.
11 In the interests of clarity this article will use the words “girl,” “boy,” and child” to denote individuals under the age of consent. “Woman,” “man,” and “adult” refer to those over the age of consent. “Male” and “female,” used as nouns, refer collectively to those of all ages possessing the respective biological features.
This article will argue that compulsory vaccination programs targeting HPV do not pass constitutional muster, whether as a requirement for school attendance or otherwise. I will not address policy issues regarding the desirability of compulsory vaccination for HPV, such as cost, cost-benefit, and the putative potential for vaccination to encourage early sexual activity.

Part I of the article will provide the scientific substrate to the legal discussion. This includes (A) the general scientific basis for vaccination, and (B) the relevant medical facts relating to HPV and Gardasil. Part II will discuss the legal basis both for compulsory vaccination and for opt-out by parents. Part III will examine the effect of the constraints mandated by Jacobson’s extent on mandating HPV vaccination for admission to school. I will argue that linkage of vaccination to school attendance should be restricted to circumstances in which the disease can be acquired through school activities, or in which the disease in question is likely to disrupt a child’s education. Finally, Part IV will argue that Jacobson precludes mandatory HPV vaccination under any circumstance. I then will try to construct a doctrinal framework for assessing the constitutional permissibility of compulsory vaccination.

I. The science that underlies the legal issues

A. The scientific rationale for vaccination

Every state requires vaccination as a condition of attending school. School attendance is compulsory in all states. Vaccination is, perforce, compulsory as well.

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13 Throughout this article, “parent” refers to a parent, guardian, or other person or entity with the power to give or withhold consent for a child’s vaccination.

14 See Hodge, supra, note 4 at 833.

15 See, for example, NY CLS Educ § 2 (11) (2008).
Infectious\textsuperscript{16} diseases against which vaccination commonly is required include poliomyelitis, mumps, measles (rubeola), diphtheria, rubella, varicella (chicken pox), \textit{Haemophilus influenzae} type b (Hib), pertussis, tetanus, pneumococcal disease, and hepatitis B.\textsuperscript{17}

These diseases develop in childhood, and all can be acquired through normal school activities. All except polio, tetanus, and Hepatitis B are contracted by inhalation of droplets created by talking, coughing or sneezing, and exchanged whenever two or more people are in close proximity. Polio is spread by ingestion of small amounts of feces obtained through skin to skin contact or by sharing food. Tetanus is acquired from puncture by objects contaminated with the causative bacterium. Children can acquire all of these diseases in the course of normal school activities.\textsuperscript{18} (See Table 1) All these diseases develop after an incubation period lasting a few days to two weeks. Following exposure, development of most of these diseases is inevitable.\textsuperscript{19}

Vaccination against smallpox was introduced in the 18\textsuperscript{th} century.\textsuperscript{20} Vaccines against other communicable diseases of childhood have subsequently been introduced, culminating with a varicella vaccine released in the United States in 1995.\textsuperscript{21}

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\textsuperscript{16} An infectious disease is one caused by an organism such as a bacterium, virus, or fungus. A communicable disease is one transmitted directly from one person to another, or from an animal to a person. Thus, a disease such as tetanus acquired from bacteria resident in soil is infectious, but not communicable.

\textsuperscript{17} See, for example, NY CLS Pub Health § 2164 (2) (a) (2008).

\textsuperscript{18} Contrast hepatitis B, which is transmitted through sexual intercourse and through sharing needles in the course of using recreational drugs.

\textsuperscript{19} Injections of immune gamma globulin can prevent some cases Hepatitis A and tetanus, but this treatment is not entirely effective. See, for example, Mccomb J. A., The Prophylactic Dose of Homologous Tetanus Antitoxin. 270 New Eng. J. Med. 175 (1964).

\textsuperscript{20} See Hodge, supra at 836 – 840 for a summary of Jenner’s work in developing the technique of vaccination. Jenner inoculated humans with material taken from cows with cowpox. This is a disease caused by a virus related to the smallpox virus. It induces immunity that confers cross-immunity to smallpox, but usually causes but mild symptoms in humans.

\textsuperscript{21} Committee of Infectious Disease, American Academy of Pediatrics, Recommendation for the use of live Attenuated Varicella Vaccine, 95 Pediatrics 791 (1996).
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Vaccination has markedly reduced death and major morbidity from each of these diseases. The United States has seen a 92% to 100% reduction in cases of various communicable childhood diseases.\textsuperscript{22} In the five years following the introduction of varicella vaccine in 1995, the percent of cases of varicella fell by 71% to 84% in three areas studied, as a result of achieving immunization rates of 73% to 82% of children.\textsuperscript{23}

The scientific rationale behind making immunization against a specific disease compulsory is based on the phenomenon of herd immunity. This phenomenon allows eradication of a disease from a population if most, but not all, members are vaccinated.\textsuperscript{24} This is because immunization interrupts transmission of disease from person to person by removing potential hosts from the chain of transmission. Therefore, vaccination of one individual benefits all susceptible persons in the community.

Each communicable disease has an $R_0$, defined as the number of persons to whom an infected person will transmit a disease in a totally susceptible population.\textsuperscript{25} The infection will die out if $R_0 < 1$.\textsuperscript{26} $R_0$ is determined by the properties both of the disease\textsuperscript{27} and of the specific population.\textsuperscript{28} Factors unique to a population, such as age distribution, social patterns, and genetic susceptibility influence $R_0$.\textsuperscript{29} For example, herd immunity for

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\textsuperscript{22} Sandra W. Roush and Trudy V. Murphy, \textit{Historical Comparisons of Morbidity and Mortality for Vaccine-Preventable Diseases In the United States}, 298 JAMA 2155, 2156 (2007). The disease and rates are diphtheria, 100%; measles, 100%; mumps, 96%; pertussis, 92%; Poliomyelitis, 100%; rubella, 99%; congenital rubella syndrome (in fetuses exposed to maternal rubella infection), 99%; smallpox, 100%, and tetanus, 93% (\textit{figures rounded to nearest percent}).
\textsuperscript{24} Paul E. M. Fine, \textit{Herd immunity: History, theory, practice}. Epidemiol Rev 15:265-302 (1993). For example, “wild polio virus ceased to circulate in most of the United States… [w]hen only some 65 percent of children were receiving a complete course of live polio vaccine.” Id. at 291
\textsuperscript{25} Roy M Anderson, Modern vaccines: Immunisation and Herd Immunity, 335 Lancet 641.
\textsuperscript{26} Id.
\textsuperscript{27} Id.; for example, the estimated $R_0$ of measles is about 10 times that of smallpox.
\textsuperscript{28} Id.; for example, population density
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measles has been estimated at 55% to 95% in different populations.\textsuperscript{30} Herd immunity cannot be measured directly, but is only estimated through mathematical modeling.\textsuperscript{31}

Vaccination decreases the $R_0$, so the greater the number of individuals vaccinated, the lower $R_0$ will be.\textsuperscript{32} Even if everyone has not been vaccinated, when the prevalence of immunity exceeds a certain level, $R_0$ becomes $< 1$ and the disease will die out in a closed community.\textsuperscript{33} Of course, real human communities are not closed. People frequently leave and enter. If an infected person enters the community, then members of that community who are exposed to the infected person are likely to contract the disease regardless of the vaccination rate or the rate of immunity, though if there is herd immunity the disease will eventually disappear in that community until it is reintroduced by another in-migrant.

Most diseases for which vaccination generally is required as a condition of entering school share four characteristics germane to this analysis. First, they are transmitted through normal school activities.\textsuperscript{34} Second, exposure to the school environment enhances the opportunity for infection.\textsuperscript{35} Third, the interval from exposure to acquisition of the disease is brief, and the debilitating results of the disease disrupt the child’s education. Fourth, the infection cannot be detected between exposure and manifestation of the disease, and there are no effective modalities for preventing development of the disease. Cancer of the uterine cervix lacks these characteristics.

\textbf{B. Cervical cancer and cervical cancer vaccines}

\begin{itemize}
\item \textsuperscript{30} See Fine, supra note 24 at 284 – 287.
\item \textsuperscript{31} Id. Such modeling requires simplifying assumptions that may be inaccurate.
\item \textsuperscript{32} See, generally, id.
\item \textsuperscript{33} T. Jacob John & Reuben Samuel, Herd Immunity and Herd Effect: New Insights and Definitions, 16 Eur. J. Epidemiology 601, 601 - 602
\item \textsuperscript{34} Except hepatitis B.
\item \textsuperscript{35} Except tetanus and hepatitis B.
\end{itemize}
Approximately 11,150 new cases of carcinoma of the uterine cervix (“cervical cancer”) were diagnosed in 2007 in the United States, and 3,670 women died. Infection with one of 13 different strains of human papillomavirus (“HPV”) is associated with almost all cases of cervical cancer and advanced precancerous lesions. The most prevalent of these virus types are HPV 16 and HPV 18, which are associated with 70% of cases of cervical cancer. Women do not develop cervical cancer without first being infected with HPV. Cervical HPV is almost always transmitted through sexual contact.

In the United States, about ¾ of new cases of HPV infection in women occur by age 25. Prevalence in these young women is up to 46%. “Approximately 20 million Americans are currently infected with HPV, and another 6.2 million people become infected annually.”

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37 Id.
42 See, Bosch supra note 39 at 252. (“Epidemiological studies investigating risk factors for HPV infection clearly and consistently have shown that the key determinants among women are the number of sexual partners, the age at which sexual intercourse was initiated, and the likelihood that each of her sexual partners was an HPV carrier.”). See, also, Salvatore Vaccarella, Silvia Franceschi, Rolando Herrero, Nubia Muñoz, et al., Sexual Behavior, Condom Use, and Human Papillomavirus: Pooled Analysis of the IARC Human Papillomavirus Prevalence Surveys, 15 Cancer Epidemiology Biomarkers & Prevention 326 - 333, 316 (2006).
newly infected each year. At least 50% of sexually active men and women acquire genital HPV infection at some point in their lives.\textsuperscript{45}

Infection with HPV precedes development of cervical cancer by many years. Infection usually occurs in young women. The vast majority of precancerous lesions occur between the ages of 20 and 40.\textsuperscript{46} Cervical cancer usually is diagnosed after age 40.\textsuperscript{47} However, up to 90% of cervical HPV lesions will clear spontaneously rather than progress,\textsuperscript{48} while persistence of HPV infection is correlated with development of precancerous cervical lesions.\textsuperscript{49}

Annual cervical cytology (the “Pap test”) usually detects HPV infection at a precancerous stage.\textsuperscript{50} One estimate suggests that 1,500,000 American women receive such a diagnosis each year,\textsuperscript{51} more than 100 times as many as have invasive cervical cancer. Since many years generally elapse between initial infection and development of cancer,\textsuperscript{52} regular cervical cytology according to a recommended schedule\textsuperscript{53} almost always

\textsuperscript{45} Centers for Disease Control and Prevention, Genital HPV Infection – CDC Fact Sheet, http://www.cdc.gov/std/HPV/STDFact-HPV.htm, last accessed July 20, 2009 (Henceforth, “Fact Sheet.”
\textsuperscript{49} See, Nicolas F. Schlecht, Sophie Kulaga, Juliette Robitaille, Silvaneide Ferreira, Monica Santos, Romulo A. Miyamura, Eliane Duarte-Franco, Thomas E. Rohan, Alex Ferenczy, Luisa L. Villa, Eduardo L. Franco, Persistent Human Papillomavirus Infection as a Predictor of Cervical Intraepithelial Neoplasia, 286 JAMA 3106 (2001).
detects HPV lesions before they become cancerous. Thus, cervical cancer is largely prevented by regular Pap test with appropriate follow-up and treatment of women with abnormal results.  

Evaluation of an abnormal Pap smear begins with a safe but moderately painful, biopsy procedure. Early precancerous lesions mostly regress without treatment, and rarely progress to cancer. If they persist or are relatively severe, an operation called conization may be necessary for cure. Conization consists of surgical removal of a portion of the cervix using a scalpel, laser, or electrical current. Most patients can shortly return to full activity. Conization generally is safe, but sometimes impairs the ability to become pregnant or carry a fetus to term. It does, however, cure the vast majority of precancerous lesions.

Gardasil® conveys almost complete immunity against HPV 16 and HPV 18 in women who have not yet contracted those viruses. Gardasil® is administered by

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55 See, The TOMBOLA Group. After-effects reported by women following colposcopy, cervical biopsies and LLETZ: results from the TOMBOLA trial. BJOG. 2009 Jul 7. [Epub ahead of print]
56 Id.
57 See, Wright supra note 51.
injection, and causes pain and swelling in the injection site, often with fever, chills, malaise, headache and dizziness lasting up to a few days. In contrast to a number of other vaccines no confirmed reports exist of severe complications from Gardasil. The Centers for Disease Control and Prevention has determined that claims of a link between Gardasil® and Guillain-Barre syndrome lack scientific foundation.

The duration of immunity is at least 42 months. The vaccine markedly reduces development of precancerous cervical conditions. Because of the long period between infection and development of invasive cancer, it is not yet possible to determine whether Gardasil actually prevents cancer development, although this is generally presumed. Gardasil has been approved in the United States for administration to females 9 to 26 years old. The manufacturer does not claim efficacy against carcinogenic virus types other than HPV 16 and HPV 18.

Gardasil® also protects against infection with HPV 6 and HPV 11, the two HPV types that cause genital warts, which equally affects males as well as females.

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64 See, id. at 1992 – 1993. Reported adverse sequelae of vaccination, such as motor vehicle accident and appendicitis, were deemed unrelated to the vaccination.
65 See, id. at 2023 – 2034. Rare complications include severe allergic reactions, encephalitis, meningitis, neuropathy, pneumonia, diabetes, and deafness.
67 See Mao, supra note 62.
71 See, Press release, supra note 59.
warts due not cause death or major morbidly in otherwise healthy people, but can cause distress and embarrassment.\textsuperscript{73} Regardless, the vaccine is not approved in the United States for administration to males.\textsuperscript{74}

There are at least five arguments against immunizing women with Gardasil®. First, the vaccine has been marketed only since 2006,\textsuperscript{75} so its long-term toxicity profile cannot be known for many years. Second, future vaccines may cover more than two carcinogenic HPV types. This would necessitate widespread revaccination. Third, the two strains of HPV against which Gardasil is effective accounts for only 70% of cervical cancer. It is possible that the strains accounting for the remaining 30% of cases will become more prevalent, analogous to the proliferation of antibiotic resistant bacteria due to antibiotics killing susceptible strains. Fourth, even if such type shift does not occur, mathematical modeling suggests that most precancerous lesions will not be prevented by Gardasil.\textsuperscript{76} Thus, women will continue to require periodic Pap tests, and will frequently require biopsy and conization procedures.

Finally, the population that receives immunization may not be the same population that develops invasive cancer. Women who would receive Gardasil may be the same women who now undergo frequent gynecologic examination, and whose HPV infections are diagnosed and successfully treated before they develop cancer. By contrast, American patients diagnosed with cervical cancer may be either women who do not avail

\textsuperscript{73} Id.
\textsuperscript{75} See, Press release, supra note 69.
themselves of available gynecological care, or recent immigrants from places where
cervical cytology is unavailable or is not routine. In my own clinical practice, the large
majority of patients with cervical cancer fall into these categories. I am aware of no
recent data addressing this subject on a population basis.

A compulsory vaccination program arguably is inappropriate without empiric data
(or, at least, convincing non-empiric modeling) demonstrating that the vaccine is likely to
reduce the incidence of invasive cancer in the overall population.

II. Legal basis for compulsory vaccination.

There are three tiers of regulation involved in compulsory vaccination. The first consists
of approval for marketing by the Food and Drug Administration (“FDA”) under the
provisions of the Federal Food, Drug and Cosmetics Act. This process, which is
permitted under the Commerce Clause, permits use of a vaccine if prescribed by a
physician. The second tier is evaluation by the Advisory Committee for Immunization
Practices (“ACIP”). This is a body of medical experts established under the aegis of the
Centers for Disease Control and Prevention under federal statutory authorization. It
provides “recommendations that address the general use of vaccines.” These
recommendations are influential in determining clinical practice. ACIP also recommends
which vaccines should be administered to children under federally subsidized programs.
Finally, states, but not the federal government, may mandate use of vaccines under
constitutional authority that shall be explained below.

A. The constitutional basis for compulsory vaccination

80 Id.
81 Id.
The availability of Gardasil®, combined with the seriousness of cancer, has led some to advocate that vaccination with Gardasil® be required for girls. Virginia and the District of Columbia have enacted legislation to this effect.

The Jacobson court established that the Constitution allows states to require compulsory vaccination, and Zucht held that unvaccinated children could be excluded from school. A long line of cases, some preceding Jacobson, emphasize that the state’s power to vaccinate children trumps parental objection. Jacobson upheld a law that required vaccination of adults during a smallpox epidemic. The state is authorized to do this by its state police power, which 14th Amendment substantive due process does not overcome.

However, this power has significant limits. Jacobson states that state authority to vaccinate has constitutional constraints, which Hodge and Gosten characterize as follows:

(1) public health necessity... police powers must be based on the "necessity of the case" and could not be exercised in "an arbitrary, unreasonable manner" or "go so far beyond what was reasonably required for the safety of the public;"

(2) reasonable means... a reasonable relationship between the public health intervention and the achievement of a legitimate public health objective... [t]he methods adopted

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84 See Jacobson, supra note 5 and Zucht, supra note 6.
85 See Viemeister v. White, 179 N.Y. 235, 240; 72 N.E. 97 (N.Y., 1904) ([S]tatutes requiring children to be vaccinated in order to attend the public schools have generally been sustained by the courts. (citations omitted))
86 Id. at 27 – 28.
87 Id. at 26 (There are manifold restraints to which every person is necessarily subject for the common good,” and “[r]eal liberty for all could not exist under the operation of a principle which recognizes the right of each individual person to use his own, whether in respect of his person or his property, regardless of the injury that may be done to others.”
88 Id. at 29.
89 Hodge, supra note 4 at 856-857.
90 Jacobson, supra, note 6 at 28
91 See id. at 26.
must have a "real or substantial relation" to protection of the public health, and cannot be "a plain, palpable invasion of rights;"\(^{92}\)

(3) **proportionality**—"The police power of a State [] may be exerted in such circumstances or by regulations so arbitrary and oppressive in particular cases as to justify the interference of the courts to prevent wrong and oppression."\(^{93}\) Thus, a public health regulation may be unconstitutional if the intervention is gratuitously onerous or unfair; and

(4) **harm avoidance**—[T]he measure itself should not pose a health risk to its subject… [R]equiring a person to be immunized despite knowing harm would be "cruel and inhuman in the last degree."\(^{94}\)

*Jacobson* does not explicitly state the specific constitutional basis for these limitations, but they probably arise from the 14\(^{th}\) Amendment.\(^{95}\) The Court’s proscription of "arbitrary and oppressive"\(^{96}\) state action may be invoking procedural Due Process in banning “arbitrary” action, and substantive Due Process in proscribing “oppressive” action.

*Zucht v. King* held that state police power permitted a state to make vaccination a condition of attending public or private school, and that this did not violate the due process and equal protection clauses of the 14\(^{th}\) Amendment.\(^{97}\)

*Jacobson* and *Zucht* addressed requirements for vaccination when an epidemic already was in progress. There do not appear to be cases on record that distinguish between the power of the state to vaccinate during an epidemic in order to abort an epidemic and its power to require routine vaccination absent an epidemic, either

\(^{92}\) *Id.* at 31; *internal quotes and citations omitted.*

\(^{93}\) *Id.* at 38 – 39.

\(^{94}\) *Id.* at 39-40.

\(^{95}\) *Jacobson* was decided less than two months before *Lochner v. New York* (*Lochner v. New York*, 198 U.S. 45 (1905)), which explicitly established the doctrine of substantive due process based on the 14\(^{th}\) amendment. The *Lochner* court balances state police power against constitutional guarantees of liberty, but here rules against the state exercise of power. ("The right to purchase or to sell labor is part of the liberty protected by [the Fourteenth] amendment, unless there are circumstances which exclude the right. There are, however, certain powers, existing in the sovereignty of each State in the Union, somewhat vaguely termed police powers, the exact description and limitation of which have not been attempted by the courts." *Lochner* at 53.)

\(^{96}\) *Id.* at 38

\(^{97}\) *Zucht*, supra note 6 at 175.
supporting or denying the relevance of this distinction. Challenges to vaccinations based on the absence of an epidemic would be likely to fail, as Zucht grants states broad discretion to require vaccination.\(^98\) Routine, population-wide vaccination is allowed under state police power as necessary to achieve herd immunity.

The state has other means of enforcing a compulsory vaccination requirement for children. One is the threat of prosecution under criminal child neglect statutes when parents fail to vaccinate children.\(^99\) Another is to prosecute parents for violating compulsory school attendance laws if their children are excluded from school for want of vaccination.\(^100\) Indeed, some cases arose out of such prosecution of parents.\(^101\) Finally, the state can appoint a guardian for the child to authorize and secure the child’s vaccination.\(^102\) Such state practices are authorized by the state police power as defined by Jacobson and Zucht.\(^103\)

**B. The First Amendment religion clauses and vaccination requirements**

A litigant seeking exemptions from a compulsory vaccination requirement on the basis of the Free Exercise or Establishment clause likely will lose. These issues have been extensively adjudicated, and the results of this adjudication have been reviewed in

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\(^{98}\) Id. at 177.

\(^{99}\) See, for example, State v. Drew, 89 N.H. 54; 192 A. 629 (N.H., 1937).

\(^{100}\) This is not true if the parents offer their children home schooling in compliance with state law. A lay summary of the laws of each state regarding home schooling (with links to relevant statutes) can be found at [http://homeschooling.about.com/od/legal/Staying_Legal_Homeschool_Laws_and_Requirements.htm](http://homeschooling.about.com/od/legal/Staying_Legal_Homeschool_Laws_and_Requirements.htm) (last accessed on February 4, 2009). However, the availability of a home schooling alternative provides another reason why procedures other than linkage to school attendance should be used to enforce vaccination laws. A home schooled child who is not vaccinated does not have immunity to diseases in question, and this defeats the purpose of these laws.

\(^{101}\) See, for example, Marsh v. Earle, 24 F. Supp. 385 (M.D. Pa., 1938); Davis v. Maryland, 294 Md. 370; 451 A.2d 107 (Md., 1982) (Reversed on other grounds); People v. Ekerold, 211 N.Y. 386; 105 N.E. 670 (N.Y., 1914).

\(^{102}\) See, for example, Cude v. State, 237 Ark. 927, 377 S.W.2d 816, (Ark., 1964). (Reversed on other grounds).

\(^{103}\) See, for example, Marsh, supra note 101 at 387; Davis, supra note 101 at 111, 378; Drew supra note 99 at 57, 631; Ekerold supra note 101 at 391 -292, 671 – 672;
Two recent cases heard in the same federal district court exemplify the present state of the law.

*Boone v. Boozman*\textsuperscript{105} ruled on a challenge based on the Establishment clause. The *Boone* court prescribed an algorithm for evaluating such cases. The threshold question is whether a statute discriminates among religious denominations. If so, strict scrutiny is applied, as required by *Larson v. Valente*.\textsuperscript{106} This would occur, for example, if exemptions were restricted to religious groups whose official doctrines oppose vaccination. If there is no discrimination among religious groups, then the *Lemon* test is applied to the law.\textsuperscript{107} However, permissive accommodation of religious belief is deemed not to have a religious purpose within the meaning of the first *Lemon* prong (that the law must have a secular purpose).\textsuperscript{108} The same judge heard a case seeking an exemption grounded in the Free Exercise clause. The plaintiff in *Brock v. Boozman*\textsuperscript{109} claimed that the presence in the law of a secular medical danger exemption precluded the power of the state to deny religious exemptions.\textsuperscript{110} The claim was that *Employment Division v. Smith* and *Church of the Lukumi Babalu Aye, Inc. v. City of Hialeah* require a compelling state interest for restriction on religious exemptions to a law when the law permits individualized secular exemptions.\textsuperscript{111} The *Brock* court asked whether the individualized secular interest (i.e., the exemption for medical contraindication) undermined the state

\textsuperscript{104} Linda E. LeFever, Religious Exemptions from School Immunization: A Sincere Belief or a Legal Loophole? 110 Penn St. L. Rev. 1047 (2006).
\textsuperscript{106} Larson v. Valente, 456 U.S. 228 (1982).
\textsuperscript{107} See *Lemon v. Kurtzman*, 403 U.S. 602, 612 - 613 (1971); 91 S. Ct. 2105, 2111 (1971). (The three prongs of the test require that (1) the law in question have a secular purpose, (2) that it neither advance nor inhibit religion, and (3) that it avoid excessive government entanglement with religion).
\textsuperscript{108} See id., citing *Children's Healthcare Is a Legal Duty, Inc. v. Min De Parle*, 212 F.3d 1084 at 1093 (8th Cir. 2000).
\textsuperscript{110} See, id. at 12, 15-18.
purpose that the law was meant to further. If so, the denial of religious exemption would be suspect. However, the court found the opposite—that the medical exemption was meant to further the general secular purpose for which police power was being applied. This general purpose was to further public health and safety. The court concluded that granting the medical exemption but denying the religious exemption was valid. The court noted that, denial of a religious exemption specifically furthered this secular purpose. Furthermore, it was specifically not the purpose of the medical exemption to favor secular reasons for opposing vaccination over religious reasons. Thus, the *Smith* and *Lukumi* modifications of the secular purpose test do not invalidate statutory schemes providing for compulsory vaccination of schoolchildren with medical, but not religious exemptions.

*Boone* and *Brock*, which are district court opinions, reflect the last word on the constitutional status of religious exemption from compulsory vaccination at this time. States may, but need not, provide for exemption from compulsory vaccination of schoolchildren based on the sincere religious beliefs of the parent. They may not discriminate among religious beliefs on the basis of whether opposition to religion is a formal religious doctrine. They may, however, permit religion-based exemption while denying exemption based on conscientious secular belief.

**C. Exemptions to vaccination and the Fourteenth Amendment**

1. Is there a right not to be vaccinated?

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112 See id. at 19 – 22.
113 States may ask whether the reasons parents give to refuse vaccination for their child are sincere, or whether they are, in fact religious. See Scherr v. Northport-East Northport Union Free School District, 672 F. Supp. 8, 94 - 97 (E.D.N.Y., 1987). States may, however, enact statutes that preclude such investigation by local authorities. See Department of Health v. Curry, 722 So. 2d 874, 877 (Fla. Dist. Ct. App., 1998). The author is unaware of a successful constitutional challenge to a requirement that parents seeking a religious exemption for a child be required to demonstrate the sincerity of their convictions.
Parents who do not want their children vaccinated have tried to use the Fourteenth Amendment to justify exemption from vaccination. This has been a futile pursuit. As discussed above, *Jacobson* closed this door, provided the state can demonstrate a public health benefit of sufficient magnitude to make vaccination reasonable, and that it provides a medical exemption when vaccination is unsafe.

In *Syska v. Montgomery Cty. Bd. of Educ.*, for example, a plaintiff wanted her child admitted to school without vaccination because she believed vaccination might be unsafe, and considered it experimental.\(^{115}\) A Maryland court rejected Fourteenth Amendment claims based on equal protection and privacy, as being trumped by the state police power as per *Jacobson*.\(^{116}\)

*Hanzel* also rejected Fourteenth Amendment claims.\(^{117}\) The plaintiffs sought protections for their “chiropractic ethics” in seeking an exemption for their children’s vaccination.\(^{118}\) They claimed a constitutional right to an exemption on the basis of the right to privacy, procedural due process, and equal protection. The court cited a series of cases, including *Jacobson*,\(^{119}\) *Buck v. Bell*,\(^{120}\) *Schmerber v. California*,\(^{121}\) and *Selective Service Cases*,\(^{122}\) to support the proposition that “bodily autonomy *per se*” is not fundamental. It observed that:

> the core types of decisions encompassed by the right of privacy are those involving "freedom of personal choice in matters of marriage and family life." *Akron v. Akron Center for Reproductive Health*, 462 U.S. 416, 427, 76 L. Ed. 2d 687, 103 S. Ct. 2481

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\(^{116}\) *See id.* at 632 – 633, 304 – 305.

\(^{117}\) *See Hanzel, supra* note 114.

\(^{118}\) *See id.* at 1260.

\(^{119}\) *See Jacobson, supra* note 5

\(^{120}\) *See Buck v. Bell*, 274 U.S. 200 (1927) (permitting statutory requirement for sterilization of mentally ill and mentally retarded persons following court order).


\(^{122}\) *See Selective Service Draft Cases*, 245 U.S. 366 (1918) (permitting military conscription).
The fact that the Constitution protects several specific aspects of personal choice, however, does not mean that it protects all aspects of individual privacy.

The Hanzel court observed, in fact, that Roe v. Wade, which established a 14th amendment privacy right, specifically cited Jacobson as precluding an “unlimited right” to “do with one’s body as one pleases.” The Hanzel court, however, dodged an argument based on procedural due process.

Injection of potentially toxic foreign material such as a vaccine should be subject to procedural Due Process rights established in Board of Regents v. Roth. Without consent or legal authorization, injection of vaccine into a person’s body would constitute an assault. When mandated by the state, there is potential infringement on potential liberty interests, and possibly on property and life interests, since vaccination can produce complications that result in medical costs, loss of income, and even death. As discussed above, Jacobson allows the state to override such interests when this is necessary to protect major public health interests. I am not aware that courts have addressed the question of whether individuals have the challenge vaccination requirements through an administrative process. At least as important is the second issue of what rights individuals have to challenge the specific application of vaccination requirements to them.

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123 See Hanzel, supra note 114 at 1262.
125 See Jacobson, supra note 5.
126 Id.
127 Id.
128 See Hanzel, supra note 114 at 1263 - 1264.
129 See Board of Regents v. Roth, 408 U.S. 564, 571 - 572 (1972).
130 See, for example, N.Y. Penal Code § 120.00 (“A person is guilty of assault in the third degree when…[w]ith intent to cause physical injury to another person, he causes such injury to another person…assault in the third degree is a class A misdemeanor”); § 120.05 (“A person is guilty of assault in the second degree when…(5) for a purpose other than a lawful medical or therapeutic treatment he intentionally causes…physical impairment or injury to another person by administering to him, without his consent, a drug, substance, or preparation capable of causing the same…Assault in the second degree is a class D felony”); § 10.00 (9) (“Physical injury” means impairment of physical condition or substantial pain”) (emphases added).
Individuals must be able to avail themselves of some procedure to challenge application of vaccination rules to them, to avoid abuse.\textsuperscript{131} For example, a functionary may exclude from school a child who is not vaccinated because the vaccine is, or may be unsafe. This is an exception in all state law\textsuperscript{132} and is demanded by Jacobson’s constraint requiring harm avoidance. It is important that the parents be able to appeal this mistaken action.

This principle is well recognized with regard to application of quarantine laws. All states have quarantine laws,\textsuperscript{133} which are based on state police power\textsuperscript{134} and do not, \textit{per se}, violate 14\textsuperscript{th} Amendment substantive due process.\textsuperscript{135} States have subjected quarantine to procedural requirements that include a formal judicial hearing, as has the Federal government.\textsuperscript{136} The interest involved in quarantine, which involves prolonged physical restriction and its social and economic consequences,\textsuperscript{137} is much greater than the loss that vaccination generally entails, though. Therefore, it is not clear that a procedure as elaborate as a formal hearing should be required to impose or to adjudicate a decision to vaccinate.

\textsuperscript{131} See, generally, Board of Regents of State Colleges v. Roth, 408 U.S. 564 (1972).
\textsuperscript{132} Walter A. Orenstein & Alan R. Hinman, \textit{The Immunization System in the United States - the Role of School Immunization Laws}, 17 Vaccine S19. These vary in language and strength; see, for example, Mich. Comp. Laws § 333.9215 (1) (2007) (“A child is exempt from the requirements [for vaccination when] a physician certifies that a specific immunization is or may be detrimental to the child's health.”); Miss. Code Ann. § 41-23-37 (2007) (“A certificate of exemption from vaccination for medical reasons may be offered on behalf of a child by a duly licensed physician and may be accepted by the local health officer when, in his opinion, such exemption will not cause undue risk to the community.”); N.Y. C.L.S. § 2164 (8) (2007) (“If any physician licensed to practice medicine in this state certifies that such immunization may be detrimental to a child's health, the requirements of this section shall be inapplicable.”)
\textsuperscript{133} See, for example, Col. Stat. § 25-1-506. (“Each county and district health department has [the power to] exercise such physical control over physical property and over the persons of the people within the jurisdiction of the department may find necessary for the protection of the public health”). The laws of all states are summarized at http://healthyamericans.org/reports/bioterror04/Quarantine.pdf (last accessed January 14, 2008).
\textsuperscript{134} See Gibbons v. Ogden, 22 U.S. 1, 203, 205-06 (9 Wheat) (1824); Compagnie Francaise v. Louisiana State Bd. of Health, 186 U.S. 380, 393 (1902).
\textsuperscript{135} See Michelle A. Daubert Comment: Pandemic Fears and Contemporary Quarantine: Protecting Liberty through a Continuum of Due Process Rights, 54 Buffalo L. Rev. 1299, 1308 - 1316 (2007).
\textsuperscript{136} See, generally, id.
\textsuperscript{137} See Daniel Markovits, Quarantines and Distributive Justice, 33 J.L. Med. & Ethics 323, (2005).
The *Hanzel* court rejected a claim\(^{138}\) that the compulsory vaccination law provided constitutionally insufficient guidelines for officials providing exemptions, denying that a fundamental right was at stake.\(^{139}\) This is consistent with *McCormick v. Stalder*, which permitted a prison to compel anti-tuberculosis medication for a prisoner, without a hearing.\(^{140}\) *McCormick* first found that the prison had the power to compel such treatment.\(^{141}\) It then applied a *Mathews v. Eldridge* analysis to determine that a hearing was not required for administration of the therapy.\(^{142}\)

Whatever a student may think about her school, however, it is not a prison, and may not deserve the sort of deference that courts often grant prisons in decisions with regard to their inmates. Thus, a separate *Mathews* analysis of procedural Due Process rights may determine that more formal process may be necessary for the state to mandate vaccination.

Finally, the *Hanzel* court took up the Equal Protection issue.\(^{143}\) The court ruled that rational basis scrutiny applied.\(^{144}\) Since “philosophical beliefs do not receive the same deference in our legal system as do religious beliefs, even when the aspirations flowing from each such set of beliefs coincide,”\(^{145}\) officials were entitled to a broad range of discretion, and the statute satisfied a rational basis test.\(^{146}\) Allowing the state to grant greater deference to religious beliefs than to secular beliefs was based on *Wisconsin v.*

\(^{138}\) See *Hanzel*, *supra* note 114 at 1263.

\(^{139}\) See *id.* at 1264.

\(^{140}\) See *McCormick v. Stalder*, 105 F.3d 1059 (5th Cir., 1997).

\(^{141}\) See *id.* at 1061, citing *Jacobson* *supra* note 5 at 31; *Washington v. Harper*, 494 U.S. 210, 227 (1990).

\(^{142}\) See *id.* at 1062, citing *Mathews v. Eldridge*, 424 U.S. 319, (1976). The *Mathews* test balances the impact of the potential deprivation on the recipient (*see Mathews* at 341 - 343), the likelihood of administrative error without the proposed administrative safeguard (*see Mathews* at 343 -344) and the cost and administrative burden to the proposed administrative safeguard to the agency (*see Mathews* at 347 - 349).

\(^{143}\) See *Hanzel*, *supra* note 114 at 1265 – 1266.

\(^{144}\) See *id.* at 1265.

\(^{145}\) *Id.*

\(^{146}\) See *id.*
It ignores the court’s clear message that the challenge to the state compulsory education law is based on the law’s “substantially interfering with the religious development of the Amish child and his integration into the way of life of the Amish faith community.”\textsuperscript{148} Vaccination is not as comprehensive an assault on a family’s way of life as is a period of several years of school attendance. There is no reason why providing exemptions for conscientious beliefs not dependent on the existence of a deity should be more inimical to public health measures such as vaccination than exemptions based on perceived divine command in the absence of an extreme restriction on the ability to practice one’s religion. But there are other Equal Protection considerations that challenge the validity of any non-medical exemptions.

2. Is there a right to compel others to forego exemptions to vaccinations laws?

These considerations involve the rights of children whose parents accept vaccination. The Mississippi Supreme Court found in \textit{Brown v. Stone} that laws providing religious exemptions violated the 14\textsuperscript{th} Amendment Equal Protection rights of non-exempt children in two ways.\textsuperscript{149} First, they discriminate against those who must receive vaccination because their parents do not hold beliefs entitling them to exemptions for their children.\textsuperscript{150} Second, they “expose [such children] to the hazard of associating in school with children exempted under the religious exemption who had not been immunized as required by the statute.”\textsuperscript{151} I am unaware of another ruling on whether

\textsuperscript{148} \textit{Id.} at 218.
\textsuperscript{149} \textit{See} Brown v. Stone, 378 So. 2d 218, 233 (Miss., 1979).
\textsuperscript{150} \textit{Id.} Presumably, the discrimination consists of (1) exposing them to the risks and discomforts of vaccination, and (2) limiting their choices.
\textsuperscript{151} \textit{Id.} The Brown opinion does not make it clear how exposure to children whose parents obtain exemptions from vaccination violates the rights of children whose parents do not obtain such exemption for
religious exemption violates the rights of non-objectors. Indeed, I am unaware of this claim being raised by a litigant in any other case.¹⁵²

III. When vaccination should not be linked to school attendance

A. Basic principles

All states have compulsory education laws.¹⁵³ Two state powers justify compulsory school attendance. One is the state police power.¹⁵⁴

Police power generally means the power to govern and belongs to every sovereignty. It can be lawfully exercised only in the public interest. Constitutions do not describe it. They circumscribe it so that it cannot be used in contravention of private rights guaranteed by the constitution.¹⁵⁵

_Yoder_ acknowledged that compulsory education is necessary to “prepare citizens to participate effectively and intelligently in our open political system.”¹⁵⁶

The other basis for compulsory education is the state’s role as _parens patriae_, which is “a concept which describes the obligation of the state to act as "parent of the country" in caring for those who cannot care for themselves.”¹⁵⁷ This doctrine gives the state a large measure of control over minors in the interest of their welfare.¹⁵⁸ The _Zucht_ court held that “the state as _parens patriae_ may restrict the parent's control by requiring whatever reason. Indeed, the court may not have regarded this as a violation, as it grounded the constitutional violation in equal protection. The quoted phrase about exposure to the illness may just be an aside. I believe that such exposure constitutes a Due Process violation, and will explain why in the Section IV of this article.

¹⁵² Nor does the state appear to have raised a 14th Amendment argument in _Brown_; the court appears to have introduced the issue _sua sponte_!
¹⁵⁵ Snyder v. Town of Newtown, 147 Conn. 374, 389; 161 A.2d 770, 778 (1960) (internal citations omitted).
¹⁵⁶ Yoder, _supra_ note 147 at 221.
¹⁵⁸ See, for example, Mercein v. People, 25 Wend. 63, 103 (N.Y., 1842) (“The moment a child is born, it owes allegiance to the government of the country of its birth, and is entitled to the protection of that government. And such government is obligated by its duty of protection, to consult the welfare, comfort and interest of such child in regulating its custody during the period of its minority.

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school attendance.”\textsuperscript{159} Yoder recognized this basis for compulsory education as “prepar[ing] individuals to be self-reliant and self-sufficient participants in society.”\textsuperscript{160}

Exclusion of children from school for reasons not directly related to educational purposes undermines the legal bases for compulsory education. When the state proposes to exclude a child from school because she has not been vaccinated, it then is not educating that child. It follows that the child’s education is less important to the state than is the reason for the exclusion. Thus the proportionality constraint of Jacobson requires that exclusion of children from school for a vaccine be justified by a health or safety consideration more important than the child’s continuous participation in school activities. Unless the rationale for vaccination is objectively important, the school is not fulfilling the onus it accepted under the \textit{parens patriae} doctrine, and may be abusing its police power. If a child is excluded from school because of general health considerations, rather than to significantly enhance the safety of the schools or to protect the child from an infection that may disrupt her education, the state is merely punishing the child for her parents’ refusal to obey the vaccination law.\textsuperscript{161} Under these circumstances, the only palpable result of excluding the child from school is that her education is discontinued or disrupted. Indeed, the excluded child still has not been vaccinated!

Furthermore, many states guarantee a right to education in their constitutions; these provisions differ in their wording and in the scope of the right.\textsuperscript{162} Such provisions

\textsuperscript{159} Prince v. Massachusetts, 321 U.S. 158, 166 (1944).
\textsuperscript{160} Yoder, \textit{supra} note 147 at 221.
\textsuperscript{161} Indeed, in the case of HPV, the long interval from infection to development of cancer virtually guarantees that infection will have no effect on a child’s education, because the consequences of infection occur after the infected women have left school.
\textsuperscript{162} \textit{See, for example}, Ind. \textit{Const.} art 8 § 1 (“it should be the duty of the General Assembly to encourage, by all suitable means, moral, intellectual scientific, and agricultural improvement; and provide, by law, for a general and uniform system of Common Schools, wherein tuition shall without charge, and equally open to all.”); La. \textit{Const.} art. VIII preamble (“that every individual may be afforded an equal opportunity to
invite state courts to rule on state constitutional grounds against legislation excluding children from school for purposes tangentially related to educational goals or a safe school environment. Vaccination against HPV does not serve either of these two goals.

Cervical cancer differs in certain legally germane ways from smallpox, the disease that was the basis for the *Jacobson* and *Zucht* decisions: (1) it is not transmitted in the course of normal school activities; (2) school attendance does not enhance transmission; (3) cancer occurs after the infected person leaves school, so education is not disrupted by HPV acquisition; and (4) cervical cancer can be prevented by an alternative method to vaccination—periodic cervical cytology with appropriate evaluation of abnormal findings.\footnote{A fifth difference is that serious consequences of HPV infection are common in females, but rare enough in males that vaccination might not be warranted. This is not germane to the issues this article discusses.}

B. Compulsory vaccination against HPV

1. Transmission in the course of school activities.

The *Zucht* opinion permitting states to require vaccination during smallpox epidemics as a condition of attending school was brief, vague, and did little more than reaffirm the applicability of *Jacobson* to the school situation.\footnote{See Zucht, *supra* note 6, 176 -177.} There is no reason to believe that this opinion extends powers granted to the states by *Jacobson*. The *Jacobson* constraints mandate a high level of scrutiny for compulsory vaccination schemes. The

\footnotetext[163]{A fifth difference is that serious consequences of HPV infection are common in females, but rare enough in males that vaccination might not be warranted. This is not germane to the issues this article discusses.}

\footnotetext[164]{See Zucht, *supra* note 6, 176 -177.}
four Jacobson constraints, described above on page 16, include public health necessity, reasonable means, proportionality, and harm avoidance.

School attendance creates unique threats to the health of the children gathered in the school. Hundreds, or even thousands, of children may be collected in one building for several hours a day housed in classrooms containing 20 or more children.\footnote{See, for example, http://schools.nyc.gov/AboutUs/DOEData/ClassSizeReport/classsize.htm (follow link to “Aggregate School Level Data); this gives statistics for average class size for all New York City public schools, which is over 20 students per class in most schools.} Were it not for school, the children likely would be working or playing alone or in small groups, much as adults do. The collection of many children in such close quarters facilitates passage of respiratory droplets and fecal particles. This enhances transmission of infectious diseases spread in these ways.

If transmission of an infectious disease is enhanced in a school environment, then requiring schoolchildren to undergo a relatively safe vaccination satisfies the constraints imposed by Jacobson. A public health necessity then exists when the disease is serious and vaccination to obtain herd immunity is substantially safer than failure to vaccinate. The reasonable means test is satisfied by the nexus between school attendance and disease transmission. The proportionality test is satisfied by the relative safety of the vaccine. Finally, the principle of harm avoidance is met by allowing exemption for medical conditions which make vaccination detrimental to a child’s health.\footnote{See, for example, N.Y. Pub. Health L. § 2164 (8).}

But states require vaccination for Hepatitis B, which is acquired outside of the school environment, through sexual relations and through injection using needles shared without adequate sterilization. These activities are not part of the school program, and presumably do not take place in school.
The *Jacobson* test of proportionality should not be an absolute bar to linking vaccination to diseases not contracted through school activities. Consider the hypothetical situation of a rat-borne disease that is easily transmitted, rapidly fatal, incurable, but preventable with a vaccine. Jacobson does not require strict scrutiny that mandates the narrowest possible remedy (which might be to control rat infestation in school buildings). Instead, *Jacobson* invites states and courts to balance public heath needs against the liberty to decline care. The government interest in preventing or aborting an epidemic of such a disease would seem to be sufficiently exigent and imperative to satisfy the *Jacobson* test if the government required vaccination against this hypothetical disease. In this case, there would be a compelling interest to rapidly immunize everyone possible. The necessity, reasonable means, and proportionality tests would all be satisfied. On the other hand, imposition of vaccination for less severe diseases, or for diseases easily prevented without vaccination, should require more definitive demonstration of vaccine safety. HPV and the common cold fall into this category.\(^{167}\)

In conclusion, *Jacobson* seems to require that decisions to require vaccination for school attendance be subject to a balancing test, taking into account linkage of the disease to school activities, as well as the severity of the disease, the risks of the vaccine, the amount of overall clinical experience with the vaccine, and alternate methods of prevention. The absence of linkage of a disease to school activities should weigh heavily against a vaccination requirement.

2. **Enhancement of transmission by school attendance**

\(^{167}\) Perhaps varicella (chicken pox) is such a disease; it rarely causes death or permanent harm in otherwise healthy children, though it may have grave consequences in adults. There are no published opinions of challenges to compulsory varicella vaccination.
Tetanus can be transmitted in school, but the school environment does not enhance transmission. It is acquired by introduction of spores of the *Clostridium tetani* bacterium through a laceration caused by a contaminated object. Such lacerations arise through falls and with accidents with sharp objects. Such injuries are a normal part of the school environment.\textsuperscript{168} There is no reason to believe that the likelihood of such injuries is increased by school attendance; as active children frequently experience lacerations outside of school. Nevertheless, tetanus can be caused by school activities, and the arguments in the prior section apply to tetanus as well as to diseases whose transmission is enhanced by school attendance. The proportionality rule of *Jacobson* is probably satisfied, as tetanus vaccine has been marketed for over 60 years, and is extremely safe.\textsuperscript{169}

3. **Disease onset occurs after infected person leaves school**

Cervical cancer usually occurs in women over 40 years old, and rarely occurs in school-age children. Even if children contract HPV in school, its manifestations are unlikely to interfere with their education, and treatment almost always prevents cancer.

One beneficial effect of a vaccination program for childhood diseases is to prevent disruption in education caused by prolonged absence or by disease-induced disability. It is unusual, however, for courts to cite educational objectives as a reason for public health programs being yoked to the educational system. The court in *Parents United v. Sch. Dist. Of Philadelphia Bd. of Education* found, however, that a Pennsylvania condom distribution program “fulfills [the District’s] educational mandate

\textsuperscript{168} It is common for students to incur injuries in school that break the skin. Such activities include falls and sports.
by attempting to promote health services designed to prevent disease.” This opinion is of limited precedential value, as it is based on Pennsylvania law. This decision is eccentric in focusing on the educational value of preventing sexually transmitted diseases (“STD”).

Condom use and compulsory vaccination differ in two important respects. First, condoms are safer than vaccination. There is no intrinsic harm associated with condom use, except for rare instances of latex allergy. In contrast, various medical complications can occur as a result of vaccine use. Second, the success of condom use relies on repeated compliance by the male. Compulsory vaccination, however, involves insertion on only a few occasions of a physical substance into the body of the person vaccinated. This is done without consent by the child or his proxy. It is ironic that the Constitution protects unconsented administration of the more dangerous and more invasive modality while seeming to require parental consent for school distribution of the less invasive and safer product.

4. Alternate means of prevention are available

It takes an average of 20 years or more for cervical cancer to develop after an initial HPV infection. A woman who follows recommendations for periodic screening with cervical cytology will rarely, if ever, develop invasive cervical cancer, as precancerous conditions will be detected and treated if necessary. On the other hand, a person of any age infected with any of the other viruses for which vaccination is compulsory will experience disease manifestations within two weeks. Since it is possible

170 Parents United for Better Schools, Inc. v. Sch. Dist. of Philadelphia Bd. of Education, 148 F.3d 260, 273 (1998). The justification was the District’s educational mandate, and not its role in loco parentis (see Parents United, n. 7).
171 See Parents United, supra note 170
to avoid cervical cancer without vaccination—indeed, most American women infected with HPV do so—there is limited harm in deferring vaccination.

This weighs against making vaccination for HPV mandatory, as it pushes the balance under the necessity and reasonable means prongs of *Jacobson* away from such a requirement.

**IV. Vaccination programs that should not be compulsory**

**A. The disease does not rise to *Jacobson* standards**

Some infectious diseases may warrant public health measures, but may not exhibit the degree of necessity that creates a justification for compulsory treatment against the wishes of a patient (or the proxy of a patient not competent to consent). A series of cases on school condom distribution programs addresses this concept, and provides a useful analogy to HPV vaccination.

*Parents United* and other condom distribution cases also address the question of the role of parental consent. *Parents United* upheld such a program when there was both parental notification and parental opt-out.172 The same decision also emphasizes that student participation also was voluntary.173 The *Parents United* court considered the voluntary aspect of the program critical.174 It distinguished the facts with which it was presented from a condom distribution program without parental opt-out that was overturned in *Alfonso v. Fernandez*.175 Of note, and in contrast to the *Parents United* decision, is that *Alfonso* considered condom distribution not to be an educational activity,

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172 See *Parents United*, *supra* note 170 at 275. (“We recognize the strong parental interest in deciding what is proper for the preservation of their children’s health. But we do not believe the Board’s policy intrudes on this right. Participation in the program is voluntary. The program specifically reserves to parents the option of refusing their child’s participation.”)

173 Id. (“Students are not required to seek out or obtain condoms or counseling and may furthermore refuse condoms after counseling. We find the policy coerces neither parents nor students”)

174 See id. at 277.

but strictly a health activity. 176 In contrast, Curtis v. Sch. Comm. Of Falmouth upheld a
school condom distribution program with parental notification but without parental
consent. 177 The court held that the program did not violate the parents’ 14th amendment
rights. 178 Its rationale was that because student participation was voluntary, the program
was not coercive. Parents were still “free to instruct their children not to participate,” 179
though such instruction was not binding on the children. Thus, the key element was that
participation by the minor was voluntary, which is a curious way to approach parental
rights.

Many of the diseases averted through condom use are manifest within a short
period of time, not otherwise preventable and (in the case of HIV and hepatitis B) often
fatal. Indeed, condoms also protect against HPV infection. 180 Even so, two of three courts
ruling on condom distribution held that parental opt-out was necessary. Furthermore, the
court that disagreed with this used the fantastic reasoning that voluntary consent of the
child satisfied parental due process rights. If parental consent is required for condom
distribution it should be, a fortiori, required for vaccination for HIV, since vaccination is
more invasive, has greater intrinsic discomfort and carries more potential risk than does
condom use.

The delayed onset of HPV disease manifestations also implies that it is not
reckless for parents to allow their children to decide whether to take the vaccine when
they reach an age when they have the capacity to consent to medical treatment. At that

176 See id. at 50-56; 262 – 265.
178 See id. at 759 – 760, 587.
179 See id. at 578, 586.
180 See, Centers for Disease Control and Prevention, Vaccines and Preventable Diseases: HPV Vaccine -
Questions & Answers for the Public about the Safety and Effectiveness of the Human Papillomavirus
point a person can decide for herself whether to accept a recently released vaccine with unknown long-term effects and with partial effectiveness, knowing that she still will require annual cytology.

Medical ethicists have argued that parents should not be empowered to authorize testing of their children for genetic diseases such as Huntington’s disease that are not manifest until adulthood.\textsuperscript{181} All professional organizations that have directly addressed the issue recommend postponing genetic testing until children can consent for themselves, unless testing may provide direct benefit to the child.\textsuperscript{182} The reason is that the child in question may not wish to know if she carries a gene that causes an untreatable disease first manifest in mid-life.

The HPV paradigm differs from such genetic testing, however, in that vaccination does benefit the child. Much, but not all of the benefit of vaccination persists if vaccination is deferred until maturity. However, it still seems reasonable to allow parents to decide whether to protect their children against HPV or whether to allow them to make the decision themselves at the time of maturity.

As with other medical decisions, the parents should be allowed to make an affirmative decision to institute treatment, rather than to be confronted with a situation in which the default choice is treatment, and active parental opt-out is necessary to avoid treatment. If a disease has sufficient nexus to school or education, and a serious enough impact to require vaccination, then there is no constitutional requirement for parental opt-out. On the other hand, if there is no necessity for vaccination, the state should not force


\textsuperscript{182} \textit{Id.}

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parents to take affirmative steps to prevent their children from being vaccinated. Cases involving other forms of treatment give great deference to parent’s wishes except when a child is in acute danger from dying from a disease.\textsuperscript{183} State authorities should do so as well.

\textbf{B. The vaccine does not meet \textit{Jacobson} standards}

Is there a constitutional requirement that the state or municipality\textsuperscript{184} must demonstrate a certain level of confidence that the efficacy and risks of a vaccine are well established before it legislates mandatory vaccination?\textsuperscript{185} \textit{Jacobson}\textsuperscript{186} and \textit{Viemeister v. White}\textsuperscript{187} (which \textit{Jacobson} cites), emphasize the universal medical belief in the efficacy and safety of smallpox vaccination.\textsuperscript{188} By such emphasis, these courts suggest that a high level of confidence that the vaccine’s effects are understood is a prerequisite to compulsory vaccination. However, the vaccine need not be the best means of preventing transmission;\textsuperscript{189} it seems that the only relevant facts are the actual degree of efficacy and safety.


\textsuperscript{184} \textit{Zucht} makes it clear that local ordinance is an appropriate way to exercise police power state action (see \textit{Zucht}, supra note 6 at 176.

\textsuperscript{185} Jacobson, supra note 5 at 30 (“[The legislature] was not compelled to commit a matter involving the public health and safety to the final decision of a court or jury. [T]o determine which one of two modes was likely to be the most effective for the protection of the public against disease…was for the legislative department to determine in the light of all the information it had or could obtain.”).

\textsuperscript{186} See \textit{id.} at 31, footnote 1.

\textsuperscript{187} See \textit{Viemeister} supra note 85 at 241 – 242; 72 N.E. 97 (N.Y., 1904).

\textsuperscript{188} In fact, Viemeister said this view was so prevalent that it merited judicial notice. See \textit{id.} at 240 – 241.

\textsuperscript{189} Jacobson, supra note 5 at 35 (“no court, much less a jury, is justified in disregarding the action of the legislature simply because in its or their opinion that particular method was -- perhaps or possibly -- not the best either for children or adults.”)
Jacobson and Viemeister also emphasize the importance of the length and breadth of experience with smallpox vaccination. It may be that mere approval of a vaccine for marketing is insufficient to establish safety sufficiently to satisfy the 14th Amendment. Marketing approval is governed by the Federal Food, Drug, and Cosmetics Act and is based on review of contemporary clinical trials rather than on prolonged, widespread clinical experience.

Drugs, however, may have disastrous long-delayed effects, as in the following two examples. Alkylating agents and etoposide can cause leukemia many years after they are given to treat cancer. Similarly, diethylstilbestrol can cause vaginal and cervical cancer in mature women whose only exposure to the drug was in fetal life. The Jacobson proportionality test may require that the state not compel vaccination without allowing sufficient time for such long term risks to become manifest. Voluntary use of drugs, of course, is not governed by such stringent scrutiny.

Although the duration and volume of experience with a vaccine should be an important factor in evaluating whether it meets the Jacobson proportionality requirement, it should not be absolute. It may be reasonable to require administration of a new vaccine

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190 See Jacobson, supra note 5 at 31, footnote 1; Viemeister, supra note 85 at 240.
192 21 U.S.C. 355
195 See, Herbst, A.L., Ulfelder, H, and Poskanzer, D.C., Adenocarcinoma of the Vagina: Association of Maternal Stilbestrol Therapy with Tumor Appearance in Young Women. 284 New Eng. J. Med. 878 (1972). Ironically, the drug proved to be ineffective in preventing miscarriage, the reason for which it was given to millions of pregnant women. (See W.J. Dieckmann, M.E. Davis, S.M. Rynkiewicz et al., Does the Administration of Diethylstilbestrol during Pregnancy Have Therapeutic Value? 66 Am. J. Obstetrics & Gynecology 1062 (1953).)
against a devastating, highly communicable illness such as poliomyelitis, but not against a milder illness such as varicella or the common cold.

C. What if children regularly engage in sexual activity on school premises?

Participation in sexual relations is not a normal school activity. It occurs between teachers and students below the university level, but is probably unusual. Students may also engage in sexual activity with each other on school premises. Although the frequency of this is unknown, it may be enhanced by the concentration of adolescents in schools. Methodological problems in estimating the proportion of girls who, in school, voluntarily or involuntarily participate in sexual acts that can transmit carcinogenic forms of HPV are monumental. Such data would be obtained either by observation or by survey; the former is not feasible and the latter is unreliable.

If such sexual exposure is unusual, then a program requiring HPV vaccination for school attendance fails the necessity and proportionality tests. If sexual exposure is more common, then the necessity and proportionality tests are satisfied. Linkage of vaccination to school attendance then must also satisfy the reasonable means test. Measures to improve school security would be a more narrowly tailored than vaccination. However, the Jacobson level of scrutiny is not strict scrutiny, but rather that “… [t]he methods adopted must have a real or substantial relation to protection of the public health, and cannot be "plain, palpable invasion of rights;"” The concept of proportionality suggests that risk/benefit considerations strongly favor vaccination vis-à-vis failure to vaccinate,

197 Jacobson, supra note 5 at 31; internal quotes and citations omitted.
and invites a balance of health effects among various policies. This balances comparison of compulsory vaccination with other available means with regard to efficacy, intrusiveness, the potential for externalities, and expense.

An illustration of such a comparison can be found by looking at a hypothetical serious disease transmitted through contaminated water supply. It is preventable either by sufficiently widespread vaccination to achieve herd immunity or by chlorination of the water supply. If chlorination could be accomplished reasonably cheaply, did not change the taste of the water, had little impact on the health of water drinkers, and had no significant associated externalities (e.g., destruction of plumbing, death of wildlife near reservoirs), then a choice of universal vaccination as a means to prevent cholera would be unreasonable. If chlorination was much more expensive that vaccination, made the water taste bad, or caused health problems to those who drank the water, or was associated with burdensome externalities, then mandatory vaccination might be reasonable. But if the disease were rare, then no public health measure might be appropriate.

In the case of HPV transmission through in-school sexual activity, the reasonable means test demands that we ask whether measures such as security, health education, or expulsion of violators will effectively reduce such activity to a level low enough to make vaccination unnecessary. This raises complicated factual questions. If alternative measures would entail a level or expense and administrative difficulty that would compromise the ability of schools to fulfill their educational mission, or a level of invasiveness that interferes with education or that compromises individual rights more than does compulsory vaccination, then linking compulsory HPV vaccination to school attendance is reasonable.
But before resorting to this, the state should determine whether either of the measures discussed in the next two sections would answer the need.

**D. Compulsory vaccination programs not linked to school attendance**

Recall that compulsory vaccination need not be linked to school attendance. Rather, parents can be prosecuted for failure to comply with mandatory vaccination laws. Alternatively, children can be removed from the custody of their parents, at least to the extent necessary to vaccinate them.

Although there are no constitutional objections to such schemes, there may be policy objections. First, these methods of enforcement burden parents more than does exclusion of children from school. On the other hand, if the state were forced to prosecute parents or to remove children from their custody to enforce vaccination laws they would be reluctant to do so unless there was a true public health necessity. This is because of the likely unpopularity of such coercive measures.

Second, it is more expensive and burdensome to the state to institute actions against parents who violate vaccination provisions than simply to keep their children out of schools. However, it is arguable that this, too, is a positive feature; that the state should compel medical treatment only when the need is so important that it is willing and able to expend the resources needed to prosecute violators.

**V. An approach to determining the constitutionality of compulsory vaccination programs**

In determining whether and how a vaccine should be required, I propose the following algorithm, based on discussion of issues affecting compulsory vaccination. It has been proposed that situations requiring vaccination be divided into "medical
"necessity" and "practical necessity." I do not believe this is necessary; *Jacobson* already provides a satisfactory framework to reasonably determine the constitutionality of compulsory vaccination programs, provided courts pay attention to the *Jacobson* constraints. I propose that state health agencies and courts apply the following two-prong analysis with regard to putative compulsory vaccination programs.

The first prong is a balancing test to determine if it is appropriate to require the vaccine. Administrative agencies and courts should consider (1) the seriousness of the disease, (2) the safety and efficacy of the vaccine, (3) the volume and duration of clinical experience with the vaccine as a determinant of the reliability of contemporary understanding of safety and efficacy, and (4) the expense, obtrusiveness, and likelihood of success of other measures.

If compulsory vaccination is reasonable, then the second prong asks whether vaccination should be required for school attendance. If the disease is transmitted in school, then *Jacobson* permits requiring vaccination for school admission. If the disease can disrupt education, then the anticipated degree of disruption and the cost of other methods of enforcing vaccination requirements should be weighed with the factors enumerated in the first prong.

In any case, proponents of vaccination should be required to show a major benefit for vaccination in order to overcome the strong presumption in favor of parental rights enunciated in *Meyer v. Nebraska* and *Pierce v. Society of Sisters*. Furthermore, it is not appropriate to split the baby in two by having a vaccination requirement with parental opt-out. If it is important to achieve herd immunity, the state should take appropriate measures.

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measures to achieve it. If the disease neither is contracted in school nor has an impact on education, then vaccination should not be mandatory for school attendance.

HPV presents a situation where compulsory vaccination goes beyond the limits set in *Jacobson*. The disease is not transmitted in school, and its onset, at least in manifestations that cause disability or require prolonged treatment, is after the usual completion of education. There are other means to prevent HPV-related cancer than vaccination. The vaccine is relatively new, and long-term effects are necessarily unknown. Thus, it is not clear that there is a public necessity, and it is not clear that medical personnel who give the vaccine can predict that there will be no harm. Finally, the proportionality and reasonable means tests are not fulfilled.

**Conclusion**

In 1905, the Supreme Court ruled that states could compel vaccination against smallpox, an epidemic disease that often was fatal. It placed some constraints around the states’ use of this power—constraints that rarely if ever have been cited in judicial decisions. The Court contemplated that a vaccine would be required only when (1) the biologic effects of the vaccine in humans would be well established, (2) the vaccine clearly was efficacious; and (3) that there be no reason to believe that the vaccine would not be given to individuals likely to be harmed by it. It also demanded (1) a public health necessity, which is not well defined, but represents something more than a desirable health outcome; (2) that the vaccination be a reasonable means to address the necessity; and (3) that there be proportionality between the objective and the vaccination, and that the vaccination program not be arbitrary and capricious.
Since then, many vaccines have emerged, many for diseases much less deadly than smallpox. States have required that children receive a number of these vaccines as a condition of school attendance. The most recent is a vaccine for HPV, which rarely causes serious disease in school children.

I have attempted to show that the *Jacobson* decision provides a framework for analysis of whether a compulsory vaccination program is constitutional under the due process clause of the 14th amendment, and whether making vaccination a requirement for school attendance passes such constitutional muster.
Table 1: Characteristics of diseases preventable by childhood vaccination

<table>
<thead>
<tr>
<th>Disease</th>
<th>Transmission</th>
<th>Communicability/ Acquisition in School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical neoplasia (human papillomavirus)</td>
<td>Sexual intercourse</td>
<td>Y/NOC</td>
</tr>
<tr>
<td>Diphtheria(^{200})</td>
<td>Respiratory</td>
<td>Y/ENH</td>
</tr>
<tr>
<td><em>Haemophilus influenzae</em> type b(^{201})</td>
<td>Respiratory</td>
<td>Y/ENH</td>
</tr>
<tr>
<td>Hepatitis B(^{202})</td>
<td>Body fluid exchange; blood, semen, etc</td>
<td>Y/NOC</td>
</tr>
<tr>
<td>Mumps(^{203})</td>
<td>Respiratory</td>
<td>Y/ENH</td>
</tr>
<tr>
<td>Pertussis (whooping cough)(^{204})</td>
<td>Respiratory</td>
<td>Y/ENH</td>
</tr>
<tr>
<td>Pneumococcus(^{205})</td>
<td>Respiratory</td>
<td>Y/ENH</td>
</tr>
<tr>
<td>Poliomyelitis(^{206})</td>
<td>Fecal-oral</td>
<td>Y/ENH</td>
</tr>
<tr>
<td>Rubella(^{207})</td>
<td>Respiratory</td>
<td>Y/ENH</td>
</tr>
<tr>
<td>Rubeola (measles)(^{208})</td>
<td>Respiratory</td>
<td>Y/ENH</td>
</tr>
<tr>
<td>Tetanus(^{209})</td>
<td>Puncture with contaminated object</td>
<td>N/NE</td>
</tr>
<tr>
<td>Varicella (chicken pox)(^{210})</td>
<td>Respiratory</td>
<td>Y/ENH</td>
</tr>
</tbody>
</table>

Abbreviations:
- ENH: Transmission enhanced in school environment
- N: Not communicable
- NE: Infection can occur with ordinary school activity, but is not enhanced by school environment
- NOC: Not transmitted in ordinary course of school activities
- Y: Communicable


\(^{201}\) See *id.*, Timothy F. Murphy, *Haemophilus Infections*, Chapter 139 923-926.


\(^{203}\) See *id.*, Anne Gershon, Mumps, Chapter 187 1220.

\(^{204}\) See *id.*, Scott A. Halperin, *Pertussis and Other Bordetella Infections*, Chapter 142, 933.


\(^{207}\) See *id.*, Anne Gershon, *Rubella (German Measles)*, Chapter 186 1217, 1218

\(^{208}\) See *id.*, Anne Gershon, *Measles (Rubeola)*, Chapter 185 1214.

\(^{209}\) See *id.*, Elias Abrutyn, *Tetanus*, Chapter 133 898

\(^{210}\) See *id.*, Richard J. Whitley, *Varicella-Zoster Virus Infections*, Chapter 173 1102