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Immunizing against Addiction: The Argument for Incorporating Emerging Anti-Addiction Vaccines into Existing Compulsory Immunization Statutes

Alexis Osburn

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IMMUNIZING AGAINST ADDICTION: THE ARGUMENT FOR
INCORPORATING EMERGING ANTI-ADDICTION VACCINES
INTO EXISTING COMPULSORY IMMUNIZATION STATUTES*

ALEXIS OSBURN†

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†J.D. expected, May 2008, Cleveland State University, Cleveland-Marshall College of Law; B.A. *summa cum laude*, Bowling Green State University. The author would like to thank Barbra Tyler for supporting what proved to be a very interesting research topic. The author would also like to thank Professor Kevin O’Neill for his advice and assistance throughout the writing process.

I. INTRODUCTION

Samantha Rizzo remembers sitting on an ounce of methamphetamines with a gun pressed against her temple.¹ A man screamed at her to hand over the drugs, but she refused.² “I told him to pull the trigger. And that’s when I knew that I was mentally addicted to it, too. Because I didn’t care, just as long as they didn’t get the ounce (of meth)³ under my leg.”⁴ Samantha, a teenager from North St. Paul, Minnesota, originally started using methamphetamines when she was fifteen years old.⁵ Like most adolescent girls, Samantha had always been self-conscious about her weight.⁶ When a classmate promised Samantha using meth would help her lose weight, Samantha decided to experiment.⁷ She did lose weight, but her weight loss was accompanied by a destructive drug habit.⁸ Before long she was addicted and doing “pretty much (anything)” to get the drug from the teenage boys that would give it to her.⁹ By the time Samantha checked into a treatment center, she was two years behind academically and in danger of not graduating from high school.¹⁰

Drug addiction is a neurobiological disease¹¹ that is quickly becoming a dangerous epidemic.¹² The attributes that distinguish meth from other addictive

¹*The Early Show: Crystal Meth’s Weight Loss Dangers* (CBS television broadcast July 20, 2005), available at CBSNews.com, <http://www.cbsnews.com/stories/2005/07/20/earlyshow/contributors/melindamurphy/main710301.shtml?CMP=ILC-SearchStories>, also available at CBSNews.com, http://www.cbsnews.com/sections/i_video/main500251.shtml?id=710278n.

²*Id.*

³“Meth” is an abbreviation for methamphetamines.

⁴*The Early Show*, *supra* note 1.

⁵*Id.*

⁶*Id.*

⁷*Id.*

⁸*Id.*

⁹*Id.*

¹⁰*Id.* At the urging of Samantha’s school counselor, Samantha’s mother eventually forced her to take a drug test and checked her into an outpatient rehab facility. *Id.* After Samantha relapsed, her mother entered her into the inpatient treatment center. *Id.* A year and a half later, Samantha had graduated from high school, making up two years of school in eight months. *Id.* Her aspirations for the future at the time her story was broadcast included attending college to study either psychology or nursing. *Id.*

¹¹DIV. OF NEUROSCIENCE AND BEHAVIORAL HEALTH, INST. OF MED., DISPELLING THE MYTHS ABOUT ADDICTION 48 (1997) [hereinafter DISPELLING].

¹²David J. Jefferson et al., *America’s Most Dangerous Drug*, NEWSWEEK, Aug. 8, 2005, at 41. In July 2005, the National Association of Counties released a survey of over 500 law enforcement agencies in forty-five states comparing the burdens that meth, cocaine, heroin, and marijuana put on those agencies. *Id.* Nearly sixty percent of the agencies listed meth as their drug of primary concern. *Id.* Cocaine came in second with nineteen percent, marijuana was third with seventeen percent, and heroin came in last at only three percent. *Id.* Although anti-addiction vaccines are being developed for a wide variety of drugs, this paper will use methamphetamines and methamphetamine vaccines as examples of anti-addiction vaccination.

illicit drugs are the same attributes that make it particularly dangerous: meth is cheap,¹³ gives its users a longer high,¹⁴ and can be concocted at home using internet recipes.¹⁵ Research teams across the country have answered the addiction crisis by engaging in anti-addiction research.¹⁶ One team at the University of Nebraska has begun research on a vaccine that would eliminate both the high and the addiction that accompany methamphetamine use.¹⁷

Combine the above listed factors with teenage attitudes toward meth use,¹⁸ and states have no choice but to respond to the impending threat.¹⁹ One tool states have utilized to confront threatening epidemics in the past is compulsory immunization.²⁰ Since the mid-1800s, states have instituted statutes requiring children to receive certain vaccinations as a prerequisite to attending school.²¹ Those statutes have been upheld as a valid exercise of the state police power since the late-1800s.²² The same arguments used to support compulsory vaccination against small pox and measles can be used to support compulsory vaccination against addiction. If states can ever hope to make drug addiction as obsolete as small pox, they must preemptively attack the disease by including anti-addiction vaccinations among those required for school-aged children.

¹³Dan Frosch, *High Times: A Navajo Town Deals with the Ravages of the Latest Addictive Drug, Crystal Meth*, IN THESE TIMES, Nov. 9, 2004, at 6. For as little as twenty to forty dollars, a user can buy enough meth to stay high for several days. *Id.*

¹⁴*Id.* Meth gives users a high that can last up to eight hours. *Id.*

¹⁵Eva Chen, *Dark Crystal*, TEEN VOGUE, Dec. 2005, at 176. “The ingredients are cheap, the recipes are on the Internet, and it’s easy to make.” *Id.*

¹⁶See Melissa Lee, *NU Team Working on Meth Vaccine*, LINCOLN J. STAR, Aug. 22, 2006, at A1; see also *Anti-Addiction Drugs Poised For Approval*, ASAM NEWS (American Society of Addiction Medicine), July/Aug. 2000, available at <http://www.asam.org/news/news28.htm#10> [hereinafter *Anti-Addiction Drugs*].

¹⁷Lee, *supra* note 16.

¹⁸According to the Monitoring the Future Study, funded by the National Institute on Drug Abuse and conducted by researchers at the University of Michigan, 1.8% of eighth graders, 2.9% of tenth graders, and 2.5% of twelfth graders used methamphetamines during the last year. NATIONAL INSTITUTE ON DRUG ABUSE, MONITORING THE FUTURE SURVEY (2005), <http://www.monitoringthefuture.org/pubs/monographs/overview2005.pdf>. Only 54.6% of twelfth graders think that using meth “once or twice” puts them at great risk. *Id.* Even more disturbing are the results from a focus group in Montana showing that 43% of the young people surveyed “believed there were ‘benefits’ associated with meth use, be it weight loss, additional energy or enhanced concentration.” Andrew Buncombe, *The Crystal Craze*, THE INDEPENDENT, Apr. 21, 2006.

¹⁹Jefferson et al., *supra* note 12. Attorney General Alberto Gonzales has said that “in terms of damage to children and to our society, meth is now the most dangerous drug in America.” *Id.* One Deputy District Attorney has called meth “an epidemic and crisis unprecedented.” *Id.*

²⁰See *infra* Part III.A.

²¹See *infra* Part III.A.

²²See *infra* Part III.B-C.

This paper discusses the legal ramifications of incorporating anti-addiction vaccines into a state's existing compulsory immunization scheme. Part II explains the neurobiological and physiological factors that make addiction a medical disease and discusses the mental and physical damage caused by illicit drug use. It also introduces the reader to anti-addiction research and explains how anti-addiction vaccines work. Part III provides the reader with a brief history of state-mandated vaccination requirements, including a discussion of the leading cases that govern compulsory vaccination requirements. Part IV advocates for the amendment of state-mandated immunization statutes to include anti-addiction vaccines. It analyzes two tests scholars have suggested states use as guidelines for when to mandate a particular vaccination and explains why those tests are inadequate. It also explains what test should be used and why anti-addiction vaccines should be incorporated using school-based immunization schemes. Finally, Part V provides a brief conclusion reiterating the benefits of mandatory anti-addiction immunization.

II. ADDICTION, DRUG USE AND ANTI-ADDICTION VACCINES

All self-administered behaviors are rooted in neurobiology.²³ Addiction is a neurobiological disease that impairs an individual's ability to control his or her self-administered behavior.²⁴ Some scholars separate the neurobiological factors that cause addiction into two categories—compulsions compromising the ability to limit drug intake and withdrawal symptoms experienced once intake stops.²⁵ Other scholars differentiate between factors increasing the likelihood of addiction and factors leading to high levels of consumption.²⁶ Regardless of the particular factors being used, medical evidence suggests some people have what is commonly called "addictive personalities."²⁷ The biology of those individuals makes them more susceptible to chemical addiction.²⁸

Not only are addictive behaviors rooted in neurobiology, but continuing drug use also produces enduring changes in the way the brain functions.²⁹ Drug use fundamentally alters both the neural and cranial systems by interfering with the normal functioning of those systems in the brain.³⁰ Illicit drugs introduced into the body mimic the movements of legitimate neurotransmitters by attaching to custom-built receptors in the brain.³¹ By attaching to these receptors, addictive drugs rewire the brain's reward circuitry,³² pirating the neural processes that control an

²³DISPELLING, *supra* note 11, at 162.

²⁴*Id.*

²⁵THE NEUROBIOLOGY OF DRUG AND ALCOHOL ADDICTION 171 (Peter W. Kalivas & Herman H. Samson eds., 1992) [hereinafter NEUROBIOLOGY].

²⁶DISPELLING, *supra* note 11, at 47.

²⁷*Id.* at 49.

²⁸*Id.* at 48.

²⁹*Id.* at 45.

³⁰*Id.* at 144.

³¹*Id.* at 44.

³²*Id.* at 45.

individual's motivations and emotions.³³ This process can be likened to short circuiting the "emotional circuitry" of the brain.³⁴ Once the brain's reward system is short-circuited, continued drug use only perpetuates the addiction.³⁵

A. *The Harmful Medical Effects of Illicit Drug Use*

Scientists generally categorize addictive drugs into seven families.³⁶ Of these families, methamphetamines are within a category that poses a severe danger to society.³⁷ Methamphetamines are dangerously addictive stimulants³⁸ that severely damage the structure of the brain.³⁹ Brain damage can be detected just months after meth use begins,⁴⁰ destroying the areas of the brain that control memory and motor coordination,⁴¹ as well as emotions, and cravings.⁴² The destruction of dopamine transporters,⁴³ the inter-neurotic structures that clear dopamine from the spaces between the neurons, is arguably the most destructive effect methamphetamine use

³³*Id.* at 144.

³⁴*Id.* at 44.

³⁵*Id.* at 40.

³⁶*Id.* at 162.

³⁷*Id.* These categories are, "in *descending* order of societal importance: alcohol, nicotine, cocaine and amphetamines, heroin and other opiates, hallucinogens, cannabis, and caffeine." *Id.*

³⁸OFFICE OF NATIONAL DRUG CONTROL POLICY, DRUG FACTS: METHAMPHETAMINE (2006), available at <http://www.whitehousedrugpolicy.gov/drugfact/methamphetamine/index.html> [hereinafter DRUG FACTS].

³⁹CATHLEEN OTERO ET AL., NATIONAL CENTER ON SUBSTANCE ABUSE AND CHILD WELFARE, METHAMPHETAMINE ADDICTION, TREATMENT, AND OUTCOMES: IMPLICATIONS FOR CHILD WELFARE WORKERS 4 (2006), available at <http://www.ncsacw.samhsa.gov/Meth%20and%20Child%20Safety.pdf>. The sort of brain damage cause by meth use is sometimes likened to that caused by Alzheimer's disease, stroke, and epilepsy. DRUG FACTS, *supra* note 38.

⁴⁰*Id.*

⁴¹OTERO ET AL., *supra* note 39. Researchers hypothesize that the structural brain damage caused by meth use may be related to the length of time meth remains in the body after use. *Id.* Methamphetamines stay active in the body much longer than most other illicit drugs. *Id.* For example, within an hour of using a set amount of cocaine, fifty percent of the amount used will be extracted from the body. *Id.* By comparison, after using the same set amount of meth, it will take at least twelve hours for fifty percent of the amount used to be removed from the body. *Id.*

⁴²Clara S. L. Brenner, *A Meth Addict's Brain*, U. S. NEWS, Oct. 26, 2004, available at <http://www.usnews.com/usnews/health/briefs/addictions/hb041026a.htm>. This sort of brain damage compounds a meth user's addiction by destroying the nerve cells in the right hemisphere of the brain, causing the user to need larger amounts of the drug to satisfy a craving. *Id.*

⁴³OTERO ET AL., *supra* note 39. Dopamine is the chemical in the brain that controls vital cranial functions. *Id.* When methamphetamines are introduced into the body, dopamine floods the corner of the brain controlling feelings and body movement. *Id.*

has on the brain.⁴⁴ Other forms of brain damage include enlarged right-side ventricles and tissue swelling.⁴⁵

In addition to serious brain damage, methamphetamine users suffer from a long list of cognitive, physical, and psychological side effects.⁴⁶ Cognitively, meth users have difficulty manipulating information, making inferences, recalling information, and learning from experience.⁴⁷ Chronic methamphetamine use also takes a noticeable toll on a user's physical appearance.⁴⁸ Users often experience nosebleeds, skin lesions on the face and arms, extreme weight loss and malnutrition, and tooth loss.⁴⁹ Finally, meth use can also lead to a variety of psychotic behaviors, including intense paranoia, auditory hallucinations, and homicidal or suicidal behavior.⁵⁰ Although early studies assumed the brain damage caused by methamphetamine use was irreversible, recent studies have determined that long periods of abstinence can reverse, at least in part, some of the damage.⁵¹

B. Anti-Addiction Vaccine Research

Medical researchers, aware of the tragic effects drug abuse has on a user's body, have spent decades trying to manipulate the body's immune system so that it attacks addictive substances.⁵² The National Institute on Drug Abuse ("NIDA") has funded the majority of anti-addiction research until this point and has recently expanded its

⁴⁴*Id.*

⁴⁵Brenner, *supra* note 42.

⁴⁶OTERO ET AL., *supra* note 39, at 4-5.

⁴⁷*Id.* Although former methamphetamine users are generally able to manipulate information and ignore irrelevant information after just three months of abstinence, one study found many of the other cognitive defects became worse during those months. *Id.*

⁴⁸*Id.* at 5. These negative effects on a user's physical appearance are ironic in situations like Samantha's when the user started taking meth to improve her appearance and lose weight. *See supra* notes 5-8 and accompanying text. A website has been formed to relay the deterioration in physical appearance that accompanies methamphetamine use. *See* Faces of Meth, <http://www.drugfree.org/Portal/DrugIssue/MethResources/faces/index.html> (last visited Feb. 29, 2008).

⁴⁹OTERO ET AL., *supra* note 39, at 5. Meth users often have a myriad of dental problems resulting from a combination of poor hygiene, poor nutrition, and reduced salivation caused by the crystal meth. *Id.*

⁵⁰DRUG FACTS, *supra* note 38. Hallucinations and other psychotic symptoms of meth use can continue for months, or even years, after actual meth use ends. OTERO ET AL., *supra* note 39, at 5.

⁵¹*Id.* In one study done, the number of dopamine transporters increased considerably when users abstained from meth use for between twelve and seventeen months. *Id.* During that time, however, memory and motor skills did not improve at a comparable rate. *Id.* A different study measuring the improved brain function of abstinent meth users found no discrepancy in memory, motor skills, attention, or learning functions after four years of abstinence. *Id.*

⁵²Carey Goldberg, *Nicotine Fight Aims at Brain Receptors*, BOSTON GLOBE, June 26, 2006, at A1.

research goals in a five-year strategic plan.⁵³ Most anti-addiction research originally focused on combating nicotine addiction.⁵⁴ Once nicotine vaccines proved successful, researchers across the country started developing vaccines for other highly addictive substances.⁵⁵

One example of anti-addictive research is the methamphetamine vaccine research currently underway at the University of Nebraska.⁵⁶ A five-person research team comprised of both medical and psychological professors at the university is working to create a vaccine that would blunt both the pleasurable and addictive sensations that accompany methamphetamine use.⁵⁷ The vaccine would be injected into the body,⁵⁸ releasing antibodies from the immune system that would attach to any meth molecules introduced into the body.⁵⁹ Attachment would increase the size of the addictive compound, effectively preventing the molecules from leaving the blood stream and crossing into the brain.⁶⁰ If the methamphetamine molecules fail to enter the brain, dopamine rushes will not flood the neurotransmitters and the “high” that

⁵³*Anti-Addiction Drugs*, *supra* note 16. Since 1996, the National Institute on Drug Abuse has provided \$4.5 million for anti-addiction medical research. *Id.* The necessity for anti-addiction research efforts and the development of anti-addiction medication is reinforced by the National Institute on Drug Abuse in the text of its five-year plan: “Just as medications have been developed for other chronic diseases, such as hypertension, diabetes, and cancer, drug addiction is a disease that also merits medication for its treatment.” *Id.*

⁵⁴Lee, *supra* note 16; *see also* Goldberg, *supra* note 52. Although nicotine is a highly addictive substance that causes serious harm to nicotine users, as well as second-hand non-users, the author does not argue in this paper that emerging nicotine vaccines should be incorporated into compulsory vaccination statutes along with other anti-addiction vaccines. While it is illegal for adolescents under the age of 18 to purchase cigarettes, once that adolescent turns 18, he is able to legally purchase and use cigarettes should he so choose. The same does not apply to illicit drugs, whose illegal character remains unchanged throughout adolescence and adulthood. Further discussion on the implications of nicotine vaccines would make for an interesting discussion, but is beyond the scope of this note.

⁵⁵Lee, *supra* note 16. Researchers have used active immunization to create vaccines for methamphetamines, cocaine, and heroine. *Immunotherapy For Treatment of Drug Abuse Is Reviewed: Addiction Medicine*, VACCINE WEEKLY, December 21, 2005, at 2 [hereinafter *Immunotherapy*]. Other researchers have used passive immunization techniques in tests for methamphetamines, cocaine, and phencyclidine (PCP). *Id.* Given the strictures of this paper, the author has elected to focus specifically on methamphetamine vaccination. The reader should be aware, however, that similar anti-addiction vaccines are being developed for other addictive illicit substances. *Id.*

⁵⁶Lee, *supra* note 16.

⁵⁷*Id.*

⁵⁸*Id.*

⁵⁹Maria G. Essig, *Development of Vaccines to Prevent Drug Addiction Relapses Likely*, VACCINE WEEKLY, April 23, 2003. The vaccine essentially re-wires the body’s immune system to recognize and treat the meth molecules as “foreign invaders.” Lee, *supra* note 16.

⁶⁰Essig, *supra* note 59. The “blood-brain” barrier acts as a filter intended to protect a person’s brain from damaging substances. Goldberg, *supra* note 52. Most addictive substances are comprised of molecules so small they can easily pass through the blood-brain barrier. *Id.*

accompanies use will not occur.⁶¹ Most importantly, if the substance does not enter the brain, chemical addiction cannot occur.⁶² The methamphetamine vaccine is still being subject to preliminary testing and, at this time, has not yet been subject to human trials.⁶³ Given the serious health threat posed by the disease of addiction and the availability of vaccines to remedy this disease, vaccines like the one developed at the University of Nebraska should be utilized to their maximum potential.⁶⁴

III. THE HISTORY OF STATE-MANDATED VACCINATION REQUIREMENTS

As methods for vaccinating against drug addiction develop, questions regarding their use in compulsory immunization statutes are inevitable.⁶⁵ Compulsory vaccination statutes have been implemented throughout history as a traditional function of state police power.⁶⁶ School vaccination requirements existed in Europe as far back as 1818.⁶⁷ The movement toward imposing vaccination as a prerequisite to public school attendance did not start in the United States, however, until the mid-1860s.⁶⁸

⁶¹See OTERO ET AL., *supra* note 39. Research also shows that drug molecules restricted to the bloodstream have no affect on the central nervous system. *Immunotherapy*, *supra* note 55.

⁶²Lee, *supra* note 16. Blocking the methamphetamine molecules from entering the brain will also eliminate much of the potential brain damage caused by meth use. *See supra* Part II.A.

⁶³*Immunotherapy*, *supra* note 55.

⁶⁴Another example of anti-addiction vaccine research is the research being done at Yale University. *Anti-Addiction Drugs*, *supra* note 16. At Yale, researchers have developed a vaccine to counteract the addictive properties of cocaine and prevent the drug from producing euphoric feelings. *Id.* The vaccine utilizes a method of active immunization based on drug-protein conjugation. *Immunotherapy*, *supra* note 55. The vaccine uses disulfiram to block the perceived euphoric and rewarding effects created by the dopamine rush that accompanies cocaine use. *Anti-Addiction Drugs*, *supra* note 16. These cocaine vaccines have proven successful during preliminary trials and are currently in phase two human trials. *Immunotherapy*, *supra* note 55.

⁶⁵Ronald Kotulak, *New Breed of Vaccines Raises New Ethical Questions*, CHI. TRIB., Oct. 1, 2006, at 26.

⁶⁶James G. Hodge, Jr. & Lawrence O. Gosten, *School Vaccination Requirements: Historical, Social and Legal Perspectives*, 90 KY. L.J. 831, 841 (2001).

⁶⁷*Id.* In 1818, the King of Wittenberg issued a decree stating:

Every child must be vaccinated before it has completed its third year, under a penalty annually levied on its parents so long as the omission continues; and if the operation fail, it must be repeated *No person to be received into any school, college, or charitable institution; be bound apprentice to any trade; or hold any public office, who has not been vaccinated.*

Id.

⁶⁸*Id.* at 850.

A. *The First Compulsory Vaccination Statutes*

The first school vaccination statutes were appendages of larger public vaccination ordinances enacted by local legislatures.⁶⁹ When school-specific regulations did emerge, they were generally coupled with legislation requiring compulsory education of children until they reached a certain age.⁷⁰ The relationship between these two lines of legislation is far from coincidental.⁷¹ As one scholar noted, the sudden concentration of large numbers of children in school houses facilitated the spread of smallpox.⁷² Because small pox vaccination was a reasonably safe method of preventing the disease, “it was natural that compulsory school attendance laws should lead to a movement for compulsory vaccination.”⁷³ In 1855, Massachusetts became the first state to enact compulsory vaccination requirements as a prerequisite to attending school, followed by New York in 1862, Connecticut in 1872, and Pennsylvania in 1895.⁷⁴ Similar legislation quickly spread to the Midwest,⁷⁵ the South,⁷⁶ and, eventually, the West.⁷⁷

Compulsory vaccination statutes did not emerge without opposition.⁷⁸ Early requirements did not always come directly from state statutes, but were sometimes indirectly mandated through either state or local boards of health.⁷⁹ As a result, some initial challenges to vaccination requirements attacked them on the ground that they were administrative regulations lacking the force of law or that they conferred too much power on the local boards of health.⁸⁰ State courts generally rejected these arguments, reasoning that because the state legislature had specifically delegated the

⁶⁹*Id.* at 851. In 1827, for example, Boston became the first city requiring all school children to provide evidence that they had been vaccinated before being allowed to attend school. *Id.*

⁷⁰*Id.* at 850.

⁷¹*Id.*

⁷²*Id.*

⁷³*Id.*

⁷⁴*Id.* at 851.

⁷⁵*Id.* Midwestern states passing mandatory vaccination statutes during that time include Indiana (1881), Illinois (1882), Wisconsin (1882), and Iowa (1889). *Id.*

⁷⁶*Id.* Southern states passing mandatory vaccination statutes during that time include Arkansas (1881) and Virginia (1882). *Id.*

⁷⁷*Id.* Western states passing mandatory vaccination statutes during that time include California (1888). *Id.*

⁷⁸*Id.*

⁷⁹*See* *Blue v. Beach*, 56 N.E. 89, 91 (Ind. 1900) (asking whether a child could be excluded from school under the orders of the state and local boards of health when there was no statute imposing state-mandated vaccination as a condition to attending public schools).

⁸⁰*See id.* at 93.

task of administering public safety regulations to the local boards of health, regulations enacted by those agencies carried the force of law.⁸¹

*B. The First Case and the Four Factors: Jacobson v. Massachusetts*⁸²

Because vaccination statutes are enacted by state, as opposed to federal, legislatures, the majority of case law regarding mandatory vaccination comes from state courts.⁸³ In *Jacobson v. Massachusetts*,⁸⁴ however, the leading United States Supreme Court case in which the Court has dealt with state-mandated vaccination requirements “in more than a perfunctory manner,”⁸⁵ the Court upheld the validity of compulsory vaccination requirements as a legitimate exercise of the state police power.⁸⁶ In *Jacobson*, the plaintiff challenged the constitutionality of a Massachusetts statute giving local boards of health the power to “require and enforce the vaccination and revaccination of all the inhabitants” of the local town or city.⁸⁷ In response to an outbreak of small pox, the local board of health in Cambridge, Massachusetts adopted a regulation requiring all persons in the city to be vaccinated or revaccinated against the disease.⁸⁸

The *Jacobson* Court rejected the plaintiff’s argument that the Massachusetts statute and the resulting regulation violated his rights to individual liberty under the due process clause of the Fourteenth Amendment.⁸⁹ The Court noted that “[a]ccording to settled principles, the police power of a state must be held to embrace, at least, such reasonable regulations established directly by legislative enactment as will protect the public health and the public safety.”⁹⁰ The majority supported its argument by acknowledging that several state courts had enforced statutes mandating the vaccination of school-aged children as a prerequisite to attending public schools.⁹¹ In response to the plaintiff’s argument that the small-pox

⁸¹*See id.* at 92-93. The court in *Blue* took this position: “When these boards [of health] duly adopt rules or by-laws by virtue of legislative authority, such rules and by-laws, within the respective jurisdictions, have the force and effect of a law of the legislature.” *Id.* at 93.

⁸²197 U.S. 11 (1905).

⁸³*See e.g.*, *Allen v. Ingalls*, 33 S.W.2d 1099 (Ark. 1930); *Anderson v. State*, 65 S.E.2d 848 (Ga. Ct. App. 1951); *Davis v. State*, 451 A.2d 107 (Md. 1982); *Sadlock v. Bd. of Educ. of Borough of Carlstadt in Bergen County*, 58 A.2d 218 (N.J. 1948); *State ex rel Dunham v. Bd. of Educ. of City Sch. Dist. of Cincinnati*, 96 N.E.2d 413 (Ohio 1951).

⁸⁴*Jacobson*, 197 U.S. 11.

⁸⁵*Dalli v. Bd. of Educ.*, 267 N.E.2d 219, 221 n.1 (Mass. 1971).

⁸⁶*Jacobson*, 197 U.S. at 35.

⁸⁷*Id.* at 12.

⁸⁸*Id.* at 12-13.

⁸⁹*Id.* at 14, 35.

⁹⁰*Id.* at 25.

⁹¹*Id.* at 32. The cases the Court cites include the following: *Blue*, 56 N.E. 89; *Morris v. Columbus*, 30 S.E. 850 (Ga. 1898); *State v. Hay*, 35 S.E. 459 (N.C. 1900); *Abeel v. Clark*, 24 Pac. 383 (Cal. 1890); *Bissell v. Davison*, 32 A. 348 (Conn. 1894); *Hazen v. Strong*, 2 Vt. 427 (Vt. 1830); and *Duffield v. Williamsport Sch. Dist.*, 29 A. 742 (Pa. 1894).

vaccinations tended to invite disease rather than prevent it, the Court declined to revisit the policy decision of the legislature, stating that “[i]n a free country, where the government is by the people, through their chosen representatives . . . what the people believe is for the common welfare must be accepted as tending to promote the common welfare, whether it does in fact or not.”⁹²

In reaching its decision, the *Jacobson* Court not only recognized the broad range of the state police power, but also discussed the four factors it used to determine the constitutionality of the compulsory vaccination statute.⁹³ The first factor weighed by the Court was whether the method the state used to impose vaccination requirements satisfied a “means-ends” test.⁹⁴ The Court discussed the means-ends test in the context of its limited ability to review state welfare policy: “If there is any such power in the judiciary to review legislative action in respect of a matter affecting the general welfare, it can only be when that which the legislature has done . . . has no real or substantial relation to [the public health, morals, or safety].”⁹⁵ Having a “real or substantial relation” to a public welfare statute does not require the means chosen by the legislature to be the most effective for protecting the public.⁹⁶ The legislature need only progress upon a theory that is “at least an effective” method of protecting the public welfare.⁹⁷ Once that standard has been met, the first factor identified by the *Jacobson* Court has been satisfied.⁹⁸

The second qualifying factor mentioned by the Court, one that is also incorporated as part of the means-ends test, is that compulsory vaccinations must be based on a legitimate public health necessity.⁹⁹ State police powers can extend to any measures “reasonably required for the safety of the public.”¹⁰⁰ What is required for the public safety is determined by what is required for “the welfare, comfort and safety of the many.”¹⁰¹ This factor goes to the heart of the state’s ability to impose compulsory vaccination on its citizens, for it is the principle of self-preservation that formulates the foundation of the state police power.¹⁰² The *Jacobson* Court reaffirmed the well-established principle that state police powers may be exercised as a limitation on individual liberties when the health, safety, and morals of the public are threatened by disease or epidemic.¹⁰³

⁹²*Jacobson*, 197 U.S. at 35.

⁹³Hodge & Gosten, *supra* note 66, at 854.

⁹⁴*Id.* at 856.

⁹⁵*Jacobson*, 197 U.S. at 31.

⁹⁶*Id.* at 30.

⁹⁷*Id.* at 30-31.

⁹⁸*Id.*

⁹⁹Hodge & Gosten, *supra* note 66, at 854.

¹⁰⁰*Jacobson*, 197 U.S. at 29.

¹⁰¹*Id.*

¹⁰²*Id.* at 24-25.

¹⁰³*Id.* at 27.

The third factor discussed by the Court was one of proportionality.¹⁰⁴ The Court determined it was within its power to strike down a compulsory vaccination statute that was constitutional on its face if it imposed unfair costs on individuals subject to the statute.¹⁰⁵ A state could be authorized to enact statutes protecting the general population in areas of legitimate public concern,¹⁰⁶ but applying an otherwise valid statute in an arbitrary and oppressive manner would constitute such a blatant invasion of individual rights the Court would be forced to interfere to preserve fundamental constitutional principles.¹⁰⁷ The compulsory vaccination statute in *Jacobson* did not encourage or allow arbitrary or oppressive enforcement because it did not discriminate in its requirement that all individuals be vaccinated.¹⁰⁸ Thus, it did not impose any disproportional costs on the individual that were not felt equally by the many.¹⁰⁹

The final factor mentioned in *Jacobson* is a practical limitation already included in most, if not all, state vaccination statutes.¹¹⁰ The Court rationally concluded that, while individuals healthy enough to receive a state-mandated vaccination may be required to receive it, individuals who are not “fit” to receive the vaccination must be exempt from the statutory requirement.¹¹¹ Forcing an individual to be vaccinated, despite knowing it will likely cause serious bodily injury, would be “cruel and inhuman in the last degree.”¹¹² This factor required minimal analysis, with the Court asserting that statutory interpretation should be done in a manner that does not lead to oppression or injustice.¹¹³ After balancing these four factors, the Court determined that the Massachusetts vaccination statute was a valid exercise of the state police power and the plaintiff was obligated to comply with its provisions.¹¹⁴

C. Reinforcing Expulsion Rights: *Zucht v. King*¹¹⁵

Almost twenty years after its decision in *Jacobson*, the Supreme Court revisited the compulsory vaccination question when it verified the ability of local boards of education to expel children who did not comply with state statutes mandating vaccination as a prerequisite to attending school.¹¹⁶ In *Zucht*, public officials in San

¹⁰⁴Hodge & Gosten, *supra* note 66, at 856.

¹⁰⁵*Jacobson*, 197 U.S. at 28.

¹⁰⁶*Id.* at 38.

¹⁰⁷*Id.* at 31.

¹⁰⁸*Id.* at 30.

¹⁰⁹*Id.*

¹¹⁰Hodge & Gosten, *supra* note 66, at 856-57.

¹¹¹*Jacobson*, 197 U.S. at 38-39.

¹¹²*Id.*

¹¹³*Id.* at 39.

¹¹⁴*Id.* at 35.

¹¹⁵260 U.S. 174 (1922).

¹¹⁶*Id.* at 175.

Antonio, Texas, refused to allow the unvaccinated plaintiff to attend school anywhere in the city without presenting a certificate of vaccination.¹¹⁷ The plaintiff originally brought suit in state court,¹¹⁸ claiming the vaccination ordinance deprived her of her rights under the due process clause of the Fourteenth Amendment because the vaccination was compulsory.¹¹⁹ The Supreme Court summarily dismissed the plaintiff's due process claim¹²⁰ stating, "Long before this suit was instituted, *Jacobson v. Massachusetts* had settled that it is within the police power of a state to provide for compulsory vaccination."¹²¹

By recognizing that *Jacobson* definitively established compulsory vaccination as a legitimate state police power, the Court also reaffirmed that some diseases posed a threat to the public health and safety and vaccination against such diseases was a reasonably related method of combating the threat.¹²² Once it was established that compulsory vaccination statutes satisfied the means-ends test, the Court responded to the plaintiff's claim that the vaccination statute conferred arbitrary power upon the municipal authority.¹²³ Although the statute in *Zucht* was more specific than that in *Jacobson*,¹²⁴ the Court held the statute did nothing more than confer the general discretion required to protect the public health from vaccine-preventable diseases.¹²⁵

¹¹⁷*Id.* at 174.

¹¹⁸*Id.* This case followed an unusual pattern on its path to the Supreme Court. The original complaint filed with the state trial court was dismissed by the trial court under a general demurrer. *Id.* The civil court of appeals upheld the demurrer and the plaintiff's motion for rehearing was denied. *Id.* at 175-76. A writ of error to the Supreme Court of Texas was also denied. *Id.* at 176. The United States Supreme Court originally dismissed a petition for a writ of certiorari for failing to comply with Supreme Court Rule 37. *Id.* The Court eventually accepted the case on a writ of error, which allows review of a state statute when the highest court in that state has upheld the validity of the law. *Id.* The fact that so many courts summarily dismissed this case indicates that the law in the area of compulsory vaccination was well-settled and established by the state courts, particularly after *Jacobson*, prior to the Court's decision in this case.

¹¹⁹*Id.* at 175-76. In the *Zucht* case, the plaintiff did not go through the indirect channels of claiming a parenting right to decide not to have the child vaccinated in accordance with the discussion *infra* Part IV.B. The distinction would not have affected the outcome of the *Zucht* case, but the distinction is relevant to the outcome of cases dealing with exemption from compulsory vaccination statutes.

¹²⁰*Id.* The plaintiff also brought suit on two other grounds. *Id.* The Plaintiff argued both that no epidemic or outbreak made it necessary for her to be vaccinated and that the ordinance gave the board of health the ability to enforce a broad rule without guidance or safeguards to protect against arbitrary enforcement. *Id.* at 175. The Court dismissed both of those arguments, as well. *Id.* at 176-77.

¹²¹*Id.* at 176.

¹²²*Id.*

¹²³*Id.*

¹²⁴*Id.* The *Jacobson* statute required compulsory vaccination for everyone in the city, adults and children alike. *Jacobson*, 197 U.S. at 24. The *Zucht* statute was enacted for the more specific purpose of expelling school children who failed to provide verification that they had been vaccinated before entering school. *Zucht*, 260 U.S. at 176.

¹²⁵*Id.* at 177.

The fact that the statute only applied to a particular class of individuals did not make the statute inherently arbitrary because, as the Court had recognized in the past, reasonable classifications may be created by the state when exercising the state police power.¹²⁶

D. Enforcement, Exemptions and Contemporary Litigation

Since *Jacobson* and *Zucht*, state and federal courts have continued to uphold compulsory vaccination requirements as a valid exercise of the state police power.¹²⁷ Unfortunately, the decisions in these cases did not translate to stricter enforcement of the compulsory vaccination statutes.¹²⁸ Mass vaccination, despite being highly successful at eliminating public health epidemics, continued to be met with resistance.¹²⁹ Strong antivaccination¹³⁰ opposition discouraged most state executive officers from consistently enforcing their compulsory vaccination statutes.¹³¹ In fact, some states had still failed to enact school-based vaccination statutes by the mid-1970s.¹³²

State-mandated immunization reached its modern era in the 1960s and 1970s due to national programs aimed at eliminating measles transmission in schools.¹³³ In 1977, the federal government launched the Childhood Immunization Initiative, a nation-wide initiative with the two-part goal of eliminating measles from the United States and generally raising immunization rates.¹³⁴ As part of the initiative, the government placed a strong emphasis on enforcing existing school-related vaccination requirements and creating compulsory immunization requirements in states where they did not already exist.¹³⁵ By the start of the 1980-81 academic year, all fifty states had compulsory vaccination laws for students entering school.¹³⁶

Since the Childhood Immunization Initiative, compulsory vaccination requirements have been more widely enforced, though immunization rates vary from state to state.¹³⁷ Statistics from the Center for Disease Control (“CDC”) indicate that

¹²⁶*Id.* at 176-77.

¹²⁷*See supra* note 81 and accompanying text.

¹²⁸Hodge & Gosten, *supra* note 66, at 851-52.

¹²⁹*Id.* at 851.

¹³⁰*Id.* Antivaccinationists are individuals that strongly oppose compulsory vaccination requirements as a prerequisite to attending school. *Id.*

¹³¹Linda E. LeFever, *Religious Exemptions From School Immunization: A Sincere Belief or a Legal Loophole?*, 110 PENN. ST. L. REV. 1047, 1051-52 (2006).

¹³²Alan R. Hinman et al., *Tools to Prevent Infectious Disease: Childhood Immunization: Laws that Work*, 30 J. L. MED & ETHICS 122, 123 (2002).

¹³³Kathryn M. Edwards, *State Mandates and Childhood Immunizations*, 284 JAMA 3171, 3172 (2000).

¹³⁴LeFever, *supra* note 131, at 1051.

¹³⁵Hinman et al., *supra* note 132.

¹³⁶*Id.*

¹³⁷LeFever, *supra* note 131, at 1053.

just seventy-nine percent of school-aged children in the United States receive the necessary vaccinations at the appropriate time.¹³⁸ Overall, however, in more than half of the states, ninety-five percent of entering students¹³⁹ have been immunized against the basic vaccine-preventable diseases¹⁴⁰ since the start of the 1981-82 academic year.¹⁴¹ These high immunization rates have dramatically changed the focus of compulsory immunization programs.¹⁴² The reason for requiring vaccination is no longer to achieve high levels of vaccination, but to maintain, and possibly improve, existing levels of vaccination.¹⁴³ This theory is often referred to as maintaining “herd immunity.”¹⁴⁴

High levels of herd immunity allow some individuals to be exempt from immunization requirements without seriously jeopardizing the health of the individual or the safety of the general public.¹⁴⁵ All exemptions can be classified into three categories: medical exemptions,¹⁴⁶ religious exemptions,¹⁴⁷ and philosophical exemptions.¹⁴⁸ Medical exemptions have been required for all vaccination statutes

¹³⁸*Id.*

¹³⁹Center for Disease Control, *Vaccination Coverage Among Children Entering School – United States, 2005-06 School Year*, 296 JAMA 2544, 2547 (2006) [hereinafter *Vaccination Coverage*].

¹⁴⁰Hinman et al., *supra* note 132, at 123-24. These fundamental diseases include DTP, poliomyelitis, measles, mumps, and rubella. *Id.* at 124.

¹⁴¹*Id.* at 123-24.

¹⁴²Sean Coletti, Note, *Taking Account of Partial Exemptors in Vaccination Law, Policy, and Practice*, 36 CONN. L. REV. 1341, 1348-49 (2004).

¹⁴³*Id.* By 2010, the government hopes to “achieve and sustain greater than 95% vaccination coverage . . . for the following vaccines: hepatitis B vaccine; diphtheria and tetanus toxoids and pertussis vaccine, diphtheria and tetanus toxoids and acellular pertussis vaccine, or diphtheria and tetanus toxoids vaccine; poliovirus vaccine; measles, mumps, and rubella vaccines; and varicella vaccine.” *Vaccination Coverage, supra* note 139, at 2546.

¹⁴⁴Coletti, *supra* note 142, at 1349. “Herd immunity” is a term used to refer to high vaccination levels that protect the entire population, including those individuals who are not vaccinated. *Id.*

¹⁴⁵*Id.*

¹⁴⁶*Id.* The medical exemption applies when a child’s health, or even life, could be threatened if the vaccination is administered. *Id.*

¹⁴⁷*Id.* Forty-eight of the fifty states have religious exemptions included in their compulsory vaccination statutes. *Id.* The two states that do not recognize this exemption are Mississippi and West Virginia. *Id.* Religious exemptions to mandatory vaccinations have been written about extensively in law review articles and scholarly writings. The scope of these exemptions raises interesting constitutional questions, but those questions are beyond the scope of this note. For a detailed discussion on this topic, see Ross D. Silverman & Thomas May, *Private Choice Versus Public Health: Religion, Morality, and Childhood Vaccination Law*, 1 MARGINS 505 (2001).

¹⁴⁸Coletti, *supra* note 142, at 1343. Philosophical exemptions are exemptions based on the moral, personal, or philosophical objections of a parent or child. *Id.* Nineteen states currently have provisions in their compulsory vaccination laws allowing philosophical exemptions. *Id.*

since *Jacobson v. Massachusetts*.¹⁴⁹ The original compulsory vaccination statutes, however, did not include religious or philosophical exemption provisions.¹⁵⁰ Such provisions did not become popular additions to immunization statutes until the 1970s.¹⁵¹ Some states take an “all or nothing” approach, forcing parents to reject all vaccinations before they will receive an exemption.¹⁵² Other states allow parents to object to individual vaccines.¹⁵³ Regardless of how the exemption is worded, religious exemptions to compulsory vaccination statutes have been a source of significant controversy since the 1970s.¹⁵⁴ The recent surge in philosophical exemptions is quickly becoming a controversial issue, as well.¹⁵⁵ In spite of their controversial nature, however, these exemptions could serve as an important “safety net” for incorporating anti-addiction vaccines into existing school-based compulsory vaccination schemes.

IV. AMENDING EXISTING MANDATORY VACCINATION STATUTES TO INCLUDE SCHOOL-BASED ANTI-ADDICTION VACCINATION REQUIREMENTS

Because compulsory vaccination is a product of the state police power, statutory language dictating what immunizations are required for school-aged children varies widely from state to state. Some states list specific diseases children must be immunized against before being allowed to attend school,¹⁵⁶ including how many doses of each vaccine are required.¹⁵⁷ Other states have enacted more broadly worded statutes that generally allow mandatory immunization against communicable diseases.¹⁵⁸ Such statutes generally authorize either state health officials or state

These states are Arizona, Arkansas, California, Colorado, Idaho, Louisiana, Maine, Michigan, Minnesota, New Mexico, North Dakota, Ohio, Oklahoma, Rhode Island, Texas, Utah, Vermont, Washington, and Wisconsin. *Id.* at 1343 n.15.

¹⁴⁹*See supra* notes 109-113 and accompanying text.

¹⁵⁰Coletti, *supra* note 142, at 1347.

¹⁵¹*Id.*

¹⁵²*Id.* at 1371.

¹⁵³*Id.* at 1350-51. The vaccine most often objected to on religious grounds is the hepatitis B vaccine. *Id.* at 1351-52. For a further discussion of why this is, see *infra* Part IV.A.

¹⁵⁴*See Silverman & May, supra* note 147.

¹⁵⁵For a detailed discussion advocating on behalf of philosophical exemptions, see Coletti, *supra* note 142.

¹⁵⁶*See* N.Y. PUB. HEALTH LAW § 2164 (McKinney 2006) (“Every person in parental relation to a child in this state shall have administered to such child an adequate dose or doses of an immunizing agent against poliomyelitis, mumps, measles, diphtheria, rubella, varicella, Haemophilus influenzae type (Hib), pertussis, tetanus, pneumococcal disease, and hepatitis B.”).

¹⁵⁷Edwards, *supra* note 133, at 3173.

¹⁵⁸*See* ALA. CODE § 16-30-4 (2006) (“The boards of education . . . shall require each pupil . . . to present a certification of immunization or testing for the prevention of those communicable diseases designated by the State Health Officer”); OHIO REV. CODE ANN. § 3313.67 (LexisNexis 2006) (“[T]he board of education of each city . . . may make and enforce such rules to secure the immunization of, and to prevent the spread of communicable

boards of health to make more specific determinations regarding vaccination requirements.¹⁵⁹ Yet another group of states tailors its mandatory vaccination requirements to the recommended schedules published by national immunization, pediatric, or medical academies.¹⁶⁰

Regardless of the statutory language used in a particular state, legislators and health officials typically rely on the vaccination schedule recommended by the Advisory Committee on Immunization Practices (“ACIP”) when deciding which vaccines to mandate.¹⁶¹ Based on the ACIP’s recommendations, all states require incoming school children to receive some combination of vaccination against nine diseases: hepatitis B; diphtheria, tetanus, pertussis (DTP); haemophilus influenzae type B (Hi); polio; measles, mumps, rubella (MMR); varicella; pneumococcal; hepatitis A; and influenza.¹⁶² The most recent recommended vaccination schedule, published for 2007, has one notable, and controversial, addition.¹⁶³ In June 2006, the ACIP unanimously voted to include the human papillomavirus (“HPV”) vaccine on the 2007 vaccination schedule for adolescent girls.¹⁶⁴ The vaccine prevents HPV, a prevalent STD that causes cervical cancer, precancerous genital lesions, and genital warts.¹⁶⁵ The ACIP recommended the vaccine after multiple cost-benefit analyses proved the vaccine was “a cost-effective” method of combating HPV.¹⁶⁶

diseases among the pupils attending . . . schools of the district . . .”); MASS. GEN. LAWS ch. 76, § 15 (2006) (“No child shall . . . be admitted to school except upon presentation of a physician’s certificate that the child has been successfully immunized against . . . such other communicable diseases as may be specified . . . by the department of health.”).

¹⁵⁹Edwards, *supra* note 133.

¹⁶⁰CONN. GEN. STAT. § 19a-7f (2006) (“The standard of care for immunization for the children of this state shall be the recommended schedule for active immunization for normal infants and children published by the committee on infectious diseases of the American Academy of Pediatrics or the schedule published by the National Immunization Practices Advisory Committee, as determined by the Commissioner of Public Health.”); CAL. HEALTH & SAFETY CODE § 120325 (West 2006) (“In enacting Chapter 1 . . . it is the intent of the Legislature to provide . . . [a] means for the eventual achievement of total immunization of appropriate age groups against . . . any other disease that is consistent with the most current recommendations of the United States Public Health Services’ Centers for Disease Control Immunization Practices Advisory Committee and the American Academy of Pediatrics Committee of Infectious Diseases, and deemed appropriate by the department.”).

¹⁶¹Edwards, *supra* note 133.

¹⁶²Coletti, *supra* note 142, at 1365. Currently, all fifty states require vaccinations for diphtheria, tetanus, polio, measles, and rubella. *Id.* Forty-seven states include mumps in their compulsory vaccination schemes, forty-four include pertussis, and forty-one include hepatitis B. Hinman, *supra* note 132. Furthermore, forty-nine states require incoming students to receive a second vaccination against measles, twenty-one require vaccination against varicella, and just six require vaccination against hepatitis A. *Id.*

¹⁶³Center for Disease Control and Prevention, *Recommended Immunization Schedules for Persons Aged 0-18 Years – United States, 2007*, MMWR WEEKLY, January 5, 2007.

¹⁶⁴Bridget M. Kuehn, *CDC Panel Backs Routine HPV Infection*, 296 JAMA 640, 641 (2006).

¹⁶⁵*Id.*

¹⁶⁶*Id.* When given in a three-dose series, the total cost of the vaccine is \$360. *Id.* at 640.

The HPV vaccine is a recent addition to the ACIP's advisory vaccination schedule, but at least six states are already attempting to amend their compulsory vaccination laws to include HPV vaccination for middle school girls.¹⁶⁷ Many doctors are in full support of administering the vaccine, but parents in some states have strenuously opposed compulsory HPV immunization.¹⁶⁸ The reasons for their objections vary from the most basic anti-vaccination arguments¹⁶⁹ to asserting that mandating vaccination against STDs will promote adolescent promiscuity.¹⁷⁰ Some scholars have also responded skeptically to the idea of state mandated HPV vaccination.¹⁷¹ The arguments raised against compulsory HPV vaccination are similar to those that might be raised against compulsory anti-addiction vaccination—that it is unethical to make vaccination decisions based on speculation about future behavior choices.¹⁷² Thus, while HPV is in many ways different from drug addiction, the arguments being raised against the HPV vaccine are a useful point of comparison to anti-addiction vaccination.

A. The “Nature of the Disease” Test

Medical ethics scholars have proposed a variety of tests for determining whether a particular vaccine should be statutorily mandated.¹⁷³ One such test focuses on the nature of the disease the vaccine is intended prevent.¹⁷⁴ Under this “nature of the disease” test, states are encouraged to assess each proposed vaccine individually, with the assistance of local experts and medical advisory groups, to determine whether the disease it is intended to prevent meets each of the following three criteria: 1) it is highly contagious, 2) it results in significant morbidity and mortality, and 3) it poses a major health risk to both the individual and the community.¹⁷⁵ Satisfaction of all three factors, however, would not automatically guarantee the vaccine should be mandated by statute.¹⁷⁶

¹⁶⁷Kevin B. O'Reilly, *States Propose Laws Requiring HPV Vaccine*, AMNEWS, Jan 29, 2007, available at <http://www.ama-assn.org/amednews/2007/01/29/prsb0129.html>. “In December 2006, Michigan fell just three votes shy of becoming first to mandate the HPV vaccine for girls entering sixth grade.” *Id.* “The bill has been reintroduced there, and lawmakers in Texas, California, Kentucky and Washington, D.C., are considering similar legislation. A bill is expected to be introduced in Illinois soon.” *Id.*

¹⁶⁸*Id.*

¹⁶⁹*See infra* notes 205-208 and accompanying text.

¹⁷⁰Kuehn, *supra* note 164.

¹⁷¹*See* Edwards, *supra* note 133; *see also* Fredrick M. Hodges et al., *Prophylactic Interventions on Children: Balancing Human Rights With Public Health*, 28 J. MED. ETHICS 10, 11 (2002).

¹⁷²Hodges et al., *supra* note 171.

¹⁷³Coletti, *supra* note 142, at 1368; *see also* Edwards, *supra* note 133; Hodges et al., *supra* note 171.

¹⁷⁴Edwards, *supra* note 133.

¹⁷⁵*Id.*

¹⁷⁶*Id.* Maintaining parental confidence in the vaccination system is the underlying rationale cited for using this three factor test. *Id.* The theory is that the majority of parents

While the nature of the disease test appears reasonable at first glance, a more detailed analysis reveals this test is too narrow to encompass all nine of the vaccines currently required by most states, including varicella, tetanus, and hepatitis B. The varicella vaccine is used to combat chickenpox which, although highly contagious, does not satisfy either the second or third factor of the test.¹⁷⁷ Chickenpox does not result in significant morbidity and does not pose a major health risk to the individual or the community.¹⁷⁸ Likewise, the tetanus vaccine, although accepted by many parents and included on the recommended vaccination schedule, also fails to satisfy two of the three factors of this test.¹⁷⁹ Tetanus infections are not at all contagious and do not pose a major health risk to the general population.¹⁸⁰

Like varicella and tetanus, hepatitis B also fails to satisfy two of the three factors of the nature of the disease test.¹⁸¹ Prior to the addition of the HPV vaccine, the hepatitis B vaccine was the most controversial on the ACIP recommended schedule.¹⁸² Hepatitis B, a liver disorder, is the leading cause of cirrhosis and chronic liver disease.¹⁸³ Intravenous drug use and sexual contact with an infected person are the primary methods of transmitting the virus.¹⁸⁴ The CDC recommended the vaccine be added to the immunization schedule in the mid-1990s after determining that many adults with a high-risk of contracting hepatitis B were not being vaccinated.¹⁸⁵ The attributes and symptoms of hepatitis B make the vaccine analogous to the anti-addiction vaccines being developed by university research teams.

Hepatitis B fails the nature of the disease test because it is not highly contagious, nor does it have a high mortality rate.¹⁸⁶ Small concentrations of hepatitis B can be found in saliva, but the virus is generally not passed by casual contact.¹⁸⁷

recognize the health benefits associated with vaccination and accept compulsory vaccination because of those perceived benefits. *Id.* In order for states to maintain that confidence, states must “use [their] mandates wisely.” *Id.* States should “carefully consider each licensed vaccine and use the criteria of severity, contagion, and effectiveness prior to mandating [a] vaccine for all children.” *Id.*

¹⁷⁷*Id.*

¹⁷⁸Hodges et al., *supra* note 171.

¹⁷⁹Coletti, *supra* note 142, at 1368-69.

¹⁸⁰*Id.*

¹⁸¹*Id.* at 1351-52.

¹⁸²*Id.* The addition of the HPV vaccine this year undoubtedly challenges hepatitis B’s position as the most controversial recommended vaccine.

¹⁸³*Id.* at 1351.

¹⁸⁴Hodges et al., *supra* note 171.

¹⁸⁵Coletti, *supra* note 142, at 1352.

¹⁸⁶*Id.*

¹⁸⁷*Id.* HPV, a disease comparable with hepatitis B because it is passed primarily through unprotected sexual activity, also fails the first prong of the “nature of the disease test” because it is not highly contagious. Kuehn, *supra* note 164.

Furthermore, the mortality rate for hepatitis B is just 0.1%.¹⁸⁸ Thus, while some statutorily-mandated vaccines “protect against highly contagious diseases that cause significant morbidity and mortality,” not all widely-administered vaccines do so.¹⁸⁹ But in spite of their failure to satisfy all three factors of the nature of the disease test, the varicella, tetanus, and hepatitis B vaccines are rightfully included in the list of state-mandated vaccines for most school-aged children.

B. The “Human Rights” Test

A second test proposed to determine whether compulsory vaccination for a particular disease is appropriate focuses more generally on whether the vaccination is permissible in light of basic human rights concerns.¹⁹⁰ This “human rights” test encourages states to require the following six factors be satisfied before a vaccine is incorporated into a state’s compulsory vaccination statute: 1) the danger to public health must be substantial, 2) the condition must have serious consequences if transmitted, 3) the effectiveness of the vaccine in safeguarding the majority of the public against the particular malady must be well established, 4) the vaccine must be the most appropriate, least invasive, and most conservative means of achieving the desired public health objective, 5) the individual must be provided with an appreciable benefit not dependent on speculation about hypothetical future behaviors, and 6) the burden to the individual’s human rights must be balanced against, and found to be substantially outweighed by, the benefit to society in helping prevent a highly contagious disease or other potentially calamitous condition from affecting the public health.¹⁹¹ As with the nature of the disease test, the satisfaction of all six factors is a “necessary but not a sufficient basis” for mandating vaccination.¹⁹²

The first two factors of the human rights test essentially encompass all three factors in the nature of the disease test.¹⁹³ It therefore follows that, similar to the nature of the disease test, the human rights test does not condone all nine vaccines currently mandated by most states.¹⁹⁴ The author of the human rights test further defines the “substantial public danger” required by the first factor as a situation in which a disease is highly contagious, is “spread through the air or through casual, impersonal, non-sexual contact,” and has a high morbidity and mortality rate.¹⁹⁵ The latter part of this definition eclipses the second factor, which focuses more squarely on the serious consequences that result from transmission (i.e. the morbidity or mortality associated with the disease).¹⁹⁶ Thus, for the reasons discussed in

¹⁸⁸Coletti, *supra* note 142, at 1352.

¹⁸⁹Edwards, *supra* note 133.

¹⁹⁰Hodges et al., *supra* note 171.

¹⁹¹*Id.*

¹⁹²*Id.*

¹⁹³*Id.* See also Edwards, *supra* note 133.

¹⁹⁴See *supra* notes 172-188 and accompanying text.

¹⁹⁵Hodges et al., *supra* note 171, at 12.

¹⁹⁶*Id.*

conjunction with the nature of the disease test, the varicella, tetanus, and hepatitis B vaccines already mandated in almost all fifty states do not satisfy the human rights test.¹⁹⁷

The four remaining factors of the human rights test are also invalid because they are based on standards not established by the Supreme Court in *Jacobson v. Massachusetts*.¹⁹⁸ The *Jacobson* Court did not demand the effectiveness of the vaccine in protecting the majority of the public must be well-established¹⁹⁹ and specifically rejected the fourth factor principle that intervention must be the “most appropriate, least invasive, and most conservative means of achieving the desired public health objective.”²⁰⁰ On the contrary, the Court stated that vaccination requirements imposed by a state legislature need only bear a “real or substantial relation” to a public health threat.²⁰¹ To satisfy the means-ends test in *Jacobson*, vaccines do not have to be the most effective, least invasive, or most appropriate method of combating the public health risk.²⁰² The standard set out by the *Jacobson* Court is a lower standard that only requires the legislature to believe vaccination has a substantial relation to eliminating a public health risk.²⁰³ Thus, the third and fourth factors of the human rights test are invalid because they impose stricter standards than are required by the Supreme Court.

The fifth and sixth factors of the human rights test are essentially an inquiry into whether vaccination should be avoided to preserve individual liberties.²⁰⁴ Supporters of the test claim a presumption in favor of individual freedoms when the disease being vaccinated against can be largely avoided by certain behavioral choices.²⁰⁵ This argument is analogous to those raised by parents who claim vaccination requirements usurp their due process rights to make parental decisions on behalf of their children.²⁰⁶ The Supreme Court addressed these individual liberty concerns in

¹⁹⁷See *supra* notes 172-188 and accompanying text. Hodges admits that the varicella vaccine, which combats chickenpox, does not satisfy this test. Hodges et al., *supra* note 171, at 12.

¹⁹⁸197 U.S. 11. This is true even though three of the four remaining factors are generally conceded as being satisfied by nearly all currently mandated vaccines. Hodges et al., *supra* note 171, at 12. Proponents in favor of this six factor balancing test admit that the third and fourth factors are satisfied when it comes to vaccination in general. *Id.* Under the sixth factor, vaccination is approved because, although vaccination poses a burden on individual liberties, “as vaccination does not alter the structure, appearance, or function of any body part, its human rights burden is minimal.” *Id.* The most obvious exception is the hepatitis B vaccine, discussed *supra* notes 180-188 and accompanying text.

¹⁹⁹*Jacobson*, 197 U.S. at 30.

²⁰⁰Hodges, et al., *supra* note 171, at 12.

²⁰¹*Jacobson*, 197 U.S. at 30.

²⁰²*Id.*

²⁰³*Id.*

²⁰⁴Hodges et al., *supra* note 171, at 11.

²⁰⁵*Id.* at 12.

²⁰⁶*Jacobson*, 197 U.S. 11.

Jacobson when it said, “[T]he liberty secured by the Constitution of the United States . . . does not import an absolute right in each person to be, at all times and in all circumstances, wholly freed from restraint.”²⁰⁷ The Constitution does protect many freedoms, but “all rights are subject to such reasonable conditions as may be deemed by the governing authority of the country essential to the safety, health, peace, good order and morals of the community.”²⁰⁸

C. The “*Jacobson*” Test

Of the various tests proposed to guide states in making compulsory vaccination decisions, the test that should be used is the one identified in *Jacobson v. Massachusetts*.²⁰⁹ The human rights test does take more legally significant factors into account than the nature of the disease test, but many of the factors it uses are inconsistent with those identified by the Supreme Court in *Jacobson*.²¹⁰ For a state-mandated vaccination to be upheld, all that needs to be shown is that the four factors set forth in *Jacobson* are met: a public health threat, a remedy bearing a substantial relation to preventing the threat, an application that is not arbitrary and oppressive, and medical exemptions for “unfit” citizens.²¹¹ Anti-addiction vaccines satisfy all four of these elements.

Widespread drug addiction constitutes a serious public health threat.²¹² The threat led President Nixon to declare a “War on Drugs” in 1971.²¹³ Since the War on Drugs began, the government has given more than one billion dollars to federally funded anti-addiction research facilities.²¹⁴ Drug addiction threatens the health and safety of the general population²¹⁵ as much as it deteriorates the body of the individual.²¹⁶ The public threat posed by illicit drug addiction may involve criminalized conduct, but addiction is a legitimate medical disease.²¹⁷ It is not, as some may argue, a purely behavioral choice.²¹⁸

²⁰⁷*Id.* at 26.

²⁰⁸*Id.*

²⁰⁹*See supra* notes 91-112 and accompanying text.

²¹⁰*Id.*

²¹¹*Id.* Because all states already have medical exemptions written into their compulsory immunization statutes, the analysis will forgo discussion of that issue to focus more squarely on the controversial issues.

²¹²*See supra* note 12.

²¹³DISPELLING, *supra* note 11, at 185.

²¹⁴*Id.* at 185-89.

²¹⁵*See e.g.*, Jefferson, *supra* note 12; Frosch, *supra* note 13; Buncombe, *supra* note 18; OTERO ET AL., *supra* note 39.

²¹⁶*See supra* Part II.A.

²¹⁷*See supra* notes 23-28 and accompanying text.

²¹⁸Hodges et al., *supra* note 171. For a discussion of the neurobiological factors that cause addiction, see *supra* Part II.A.

In the end, the pertinent question is not whether drug addiction is caused by an allegedly behavioral choice, but whether drug addiction poses a substantial public health risk. Once that has been proven, the legislature need only progress upon a theory that is “at least an effective” method of protecting the public welfare.²¹⁹ Vaccination has historically proven to be a very effective method of combating disease, and if anti-addiction vaccines continue with the same level of success, anti-addiction vaccines will undoubtedly be an effective method of protecting the public welfare.²²⁰ Because drug addiction is a legitimate medical disease with side-effects that constitute a serious public health threat, anti-addiction vaccination satisfies both prongs of *Jacobson*’s means-ends test.

Mandating anti-addiction vaccination is not an arbitrary or oppressive method of combating drug addiction because it imposes the same requirements on all students. Universal vaccination is the least arbitrary vaccination method and increases vaccination rates.²²¹ It is the selective²²² and individual²²³ vaccination categories suggested by vaccination critics that would cause states to exercise their police powers in an arbitrary manner. An example of what constitutes an arbitrarily enforced vaccination statute can be found in one critic’s theory that hepatitis B immunization would be more effective, and less intrusive, if it focused on individuals at high-risk of contracting the disease.²²⁴ This list would include certain classes of health care workers, prostitutes, intravenous drug users, and immigrants coming to the United States from countries struggling with a hepatitis B epidemic.²²⁵ Another example comes from a different critic who has suggested that states use genetic testing to assess which children are at the highest genetic risk of succumbing to chemical addiction and focus immunization on those children.²²⁶ Both of these suggestions would require states to arbitrarily distinguish between students who might be at risk for addiction and students who are less likely to succumb to the disease.

²¹⁹*Jacobson*, 197 U.S. at 30-31.

²²⁰See Hodge & Gosten, *supra* note 66, at 844. Public vaccination is “widely viewed as among the most cost-effective and widely used public health interventions.” *Id.*

²²¹DISPELLING, *supra* note 11, at 57.

²²²*Id.* Selective treatment focuses on “individuals who are members of a subgroup or population that is known to be at higher risk for a given disorder, such as aiming interventions at teenagers to prevent drug abuse or drinking.” *Id.*

²²³*Id.* Individual intervention focuses on “individuals who exhibit a known risk factor, condition, or abnormality that identifies them as being at high risk for developing a disorder.” *Id.*

²²⁴Hodges et al., *supra* note 171. Critics of the hepatitis B vaccine argue vaccinating a child against a disease that can be avoided based on one’s lifestyle choices is unethical. *Id.* at 12. Many objections to administering the hepatitis B vaccine also stem from religious objections. Coletti, *supra* note 142, at 1352. Among such objectors, the shared sentiment is that “young children, raised in good, religious homes, are not going to get hepatitis B.” *Id.* at 1353.

²²⁵Hodges et al., *supra* note 171.

²²⁶*Id.*

Not only would risk-based anti-addiction vaccination create an inherently arbitrary and oppressive statute, but risk-based vaccination requirements would also decrease anti-addiction vaccination rates. Risk-based vaccinations are generally much less successful than universally mandated vaccinations.²²⁷ Although several pediatric associations suggest asthmatic children receive flu vaccines to avoid the serious health complications they could experience if they contract the flu, only one third of children with asthma receive an influenza vaccine.²²⁸ Likewise, rubella vaccination was originally only recommended for girls,²²⁹ but the vaccine did not become an effective method of fighting the disease until it was universally required for boys and girls alike.²³⁰ Based on this knowledge that risk-based vaccination does not adequately protect either the general population or the individuals susceptible to the disease, some experts suggest that the HPV vaccine, currently recommended only for girls, should be administered to boys, too.²³¹ Because risk-based compulsory vaccination requirements require inherently arbitrary enforcement, anti-addiction vaccines should be universally required for all incoming students.

D. Implementing Compulsory Anti-Addiction Vaccination Requirements

Assuming anti-addiction vaccines should be incorporated into state compulsory vaccination statutes, the vaccines should be introduced along with other attempts to raise adolescent immunization levels. Adolescent immunization has been losing momentum in recent years.²³² Some analysts suggest the compulsory immunization programs implemented by various state legislatures are a victim of their own success.²³³ As herd immunity continues to grow, parents forget the consequences that accompany exemption and outbreaks have reemerged.²³⁴ Decreased immunization levels led to a major outbreak of measles in 1996, more documented

²²⁷NATIONAL FOUNDATION FOR INFECTIOUS DISEASES, ADOLESCENT VACCINATION 6 (William Schaffner et al., eds., 2005), http://www.nfid.org/pdf/publications/adolescent_vacc.pdf [hereinafter FOUNDATION].

²²⁸*Id.*

²²⁹Girls are more likely to suffer from the disease. *Id.*

²³⁰*Id.*

²³¹Victoria Stagg Elliot, *Doctors Explore Expanding Age Groups For HPV Vaccine*, AM. MEDICAL NEWS, Dec. 25, 2006, <http://www.ama-assn.org/amednews/2006/12/25/hlsb1225.htm>. The purpose of administering the vaccine to boys would be that fewer boys would pass HPV on to the girls. *Id.*

²³²FOUNDATION, *supra* note 227.

²³³Ross D. Silverman, *No More Kidding Around: Restructuring Non-Medical Childhood Immunization Exemptions to Ensure Public Health Protection*, 12 ANN. HEALTH L. 277, 278-79 (2003). “[A]s risks of contracting many deadly and crippling diseases continue to decline to near negligible levels, and rates of childhood immunization continue to reach record levels, the public today places greater attention on the relative weaknesses and dangers of immunizations, and the systems through which they are administered.” *Id.*

²³⁴FOUNDATION, *supra* note 227, at 7. “Once a vaccine has been used for an extended period, the community begins to lose sight of the social costs of the disease it prevents and instead focuses on the vaccine’s side effects. This results in decreased vaccine compliance and increased risk of disease outbreaks.” *Id.*

cases of rubella since the mid-1990s, and more fatalities from meningococcal disease.²³⁵

To combat decreased immunization levels, the CDC has identified several factors that contribute to the difficulty of overcoming antipathy toward adolescent immunization.²³⁶ Adolescents are at an age where they want to exert their independence from parental decision making.²³⁷ Their feelings of invincibility may also lead them to believe they will not contract a vaccine-preventable disease, regardless of whether they are vaccinated.²³⁸ Furthermore, adolescents may be unwilling to return to their pediatricians because they may feel they have outgrown their “baby doctor.”²³⁹ And finally, diminished communication between parents and their children regarding family health issues eliminates opportunities for the issue to come up at all.²⁴⁰

Many of these reasons are also reasons why anti-addiction vaccination is important for adolescents. Immunization against vaccine-preventable addiction is just as important as vaccination against traditionally communicable diseases because risky behavior is common during adolescence.²⁴¹ Vaccinating adolescents against addictive substances in the same way they are vaccinated against communicable diseases is appropriate because addiction is a disease, not a behavioral vice.²⁴² Thus, immunizing adolescents against both the health risks and the misperceived “benefits” that accompany unhealthy addictive behavior²⁴³ will reduce the occurrences of vaccine-preventable addictive diseases among adolescents.²⁴⁴

To counteract the decline in adolescent immunization, various immunization, pediatric, and medical associations have recommended both age-based and school-based vaccination requirements.²⁴⁵ The same methods suggested for overcoming barriers to adolescent vaccination rates can, and should, be used to incorporate anti-addiction vaccines into state-mandated immunization statutes.²⁴⁶ Using those

²³⁵*Id.*

²³⁶*Id.*

²³⁷*Id.*

²³⁸*Id.*

²³⁹*Id.*

²⁴⁰*Id.*

²⁴¹*Id.* at 6.

²⁴²Kotulak, *supra* note 65.

²⁴³*See supra* note 18 and accompanying text.

²⁴⁴Centers for Disease Control and Prevention, *Immunization of Adolescents: Recommendations of the Advisory Committee on Immunization Practices, the American Academy of Pediatrics, the American Academy of Family Physicians, and the American Medical Association*, MORBIDITY AND MORTALITY WKLY. REP., Nov. 22, 1996, at 10 [hereinafter *Immunization of Adolescents*].

²⁴⁵FOUNDATION, *supra* note 227, at 14-15. The National Foundation for Infectious Diseases specifically rejected recommendations based on the presence of risk factors. *Id.* at 14.

²⁴⁶*Immunization of Adolescents, supra* note 244, at 12.

recommendations, compulsory vaccination statutes should be amended to include emerging anti-addiction vaccines for eleven- and twelve-year-old children entering the seventh and eighth grades.

Age-based immunization schemes are effective primarily because they institutionalize the immunization process for adolescents, parents and physicians.²⁴⁷ The National Foundation for Infectious Diseases suggests the optimal age for age-based vaccination requirements is either eleven or twelve years old.²⁴⁸ Because young adolescents tend to stop regular visits to their primary care provider around these ages, it is important to implement the immunization requirements before regular visits terminate.²⁴⁹ Adolescents are also more likely to abide by the wishes of their parents at this age than they are just one or two years later.²⁵⁰ The primary reason for vaccination at eleven or twelve years of age, however, is that vaccination at the earliest age possible provides the student being vaccinated with the greatest level of protection against addiction.²⁵¹ In the case of the new HPV vaccine, for example, the ACIP recommended vaccination for girls between eleven and twelve years old because vaccinating at that age provides the highest level of protection.²⁵² It is important to vaccinate young girls against HPV before they become sexually active²⁵³ because “[m]ost women acquire the infection shortly after becoming sexually active.”²⁵⁴ The immunotherapeutic response to vaccination is also greatest with adolescents.²⁵⁵ Given an adolescent’s tendency to engage in risky behavior, early vaccination is imperative.²⁵⁶

Age-based recommendations coincide well with school-based immunization requirements for students entering the seventh or eighth grade.²⁵⁷ Statutes requiring proof of immunization as a prerequisite to school entry are a valuable “safety net”

²⁴⁷FOUNDATION, *supra* note 227, at 14.

²⁴⁸*Id.*

²⁴⁹*Id.* Recommendations for increasing immunization among adolescents “focus on establishing a routine visit to health-care providers . . . for adolescents ages 11-12 years.” *Immunization of Adolescents*, *supra* note 244, at 1-2. Routine visits provide opportunities for physicians to administer or renew necessary vaccinations, as well as recommend other preventative services. *Id.* at 2.

²⁵⁰FOUNDATION, *supra* note 227, at 16.

²⁵¹*Id.*

²⁵²Kuehn, *supra* note 164.

²⁵³O’Reilly, *supra* note 167.

²⁵⁴Kuehn, *supra* note 164.

²⁵⁵*Id.*

²⁵⁶*See supra* note 237 and accompanying text.

²⁵⁷*Immunization of Adolescents*, *supra* note 244. “Additional state laws and regulations requiring documentation of up-to-date immunization of adolescents or a reliable history of disease-related immunity at entry into sixth or seventh grade would ensure implementation of these recommendations and would lead to further reduction in transmission of vaccine-preventable diseases.” *Id.* The ACIP also recommends adolescents be vaccinated before entering either the sixth or seventh grade. FOUNDATION, *supra* note 227, at 16.

because they ensure all children are vaccinated.²⁵⁸ Children are more up-to-date with their vaccination requirements when they enter kindergarten than they are at younger ages, suggesting school-based compulsory immunization laws are an effective method of maintaining high vaccination levels.²⁵⁹ Unfortunately, school-based immunization requirements, which have been the crux of vaccination requirements for kindergarten-aged children, have not been enforced as effectively at the middle school level.²⁶⁰ State statutes, if they outline vaccination requirements for adolescents at all, are inconsistent and, as a result, ineffective.²⁶¹ Strict seventh and eighth grade vaccination requirements would translate to high immunization rates. Statistics show that state compulsory vaccination laws increase immunization rates by anywhere between five to thirty-five percent, depending on the vaccine, the site, and the age of the subjects.²⁶² Practically speaking, ninety-eight percent of students stay in school until they are eleven or twelve, so the likelihood that most adolescents will be properly vaccinated is highest when vaccinations are required for entry into the corresponding grade.²⁶³

E. Combining Vaccination with Education and Exemption

Researchers predict anti-addiction vaccinations will be available through personal healthcare providers once the vaccines are financially affordable²⁶⁴ and the stigma that accompanies addiction is mitigated.²⁶⁵ Despite years of medical research proving drug addiction is a disease, a large portion of the general public continues to see addicted people as “immoral, weak-willed, or as having a character defect requiring punishment or incarceration.”²⁶⁶ Addicted individuals, even if sufficiently motivated, still suffer from the multiple factors that lead to addiction.²⁶⁷ In the words

²⁵⁸*Vaccination Coverage*, *supra* note 138. See also Silverman, *supra* note 233, at 257. “[S]tate vaccination law and regulations for kindergarten . . . have led to a marked decline of overall morbidity and mortality from vaccine-preventable diseases.” *Immunization of Adolescents*, *supra* note 244.

²⁵⁹*Vaccination Coverage*, *supra* note 139.

²⁶⁰FOUNDATION, *supra* note 227, at 15-16.

²⁶¹*Id.* at 16. Such categories include 11-12 years, 11-16 years, 11-18 years, and “college aged.” *Id.*

²⁶²Edwards, *supra* note 133.

²⁶³FOUNDATION, *supra* note 227, at 15-16. According to the National Foundation for Infectious Diseases, “dropout rates begin to climb at age 13.” *Id.*

²⁶⁴DISPELLING, *supra* note 11, at 139. The ACIP recommended the HPV vaccine “be covered by the Vaccines for Children Program, a CDC program that makes vaccines available to children covered by Medicaid, those who are uninsured or underinsured, and Native American children at no cost through select health care centers.” Kuehn, *supra* note 164.

²⁶⁵*Review Examines Future Advances In Addiction Treatment: Addiction Medicine*, VACCINE WEEKLY, Feb. 15, 2006, at 7 [hereinafter *Review*].

²⁶⁶DISPELLING, *supra* note 11, at 139.

²⁶⁷*Id.* at 140.

of one neuroscientist: “To have [anti-addiction vaccines] as an option other than telling people to ‘just say no’ has potentially huge public health consequences.”²⁶⁸

Anti-addiction vaccinations should lead the charge against adolescent addiction, but these vaccines should not be the sole method for combating drug abuse.²⁶⁹ Vaccination alone only prevents physical addiction.²⁷⁰ Parents, guardians, and schools should continue providing adolescents with extensive education on the dangers that accompany drug use.²⁷¹ All psychology, sociology, and health education classes should integrate information about drug addiction into their curriculum.²⁷² The same authoritative figures should work with adolescents to emphasize the importance of educational, interpersonal, and vocational skills.²⁷³ Developing such skills not only discourages risky or dangerous behavior, but also encourages adolescents to develop positive reasons for abstaining from drug abuse.²⁷⁴

States with restrictive vaccination statutes put themselves at a distinct disadvantage by limiting their ability to take full advantage of emerging vaccination technologies.²⁷⁵ Those who object to anti-addiction vaccination can petition their state legislatures to include partial philosophical exemption provisions in the compulsory vaccination statute. Parents could take advantage of the individualized exemption if they did not want their children to be vaccinated against addiction. States pushing to adopt the HPV vaccine have those provisions, allowing parents to stop their children from receiving the vaccine if the parents have religious, moral or philosophical objections to its administration.²⁷⁶ With the inclusion of these safety-valves, administering anti-addiction vaccines as part of a school-based statutory immunization scheme could potentially eradicate drug addiction in much the same way that small pox vaccines eradicated small pox several decades ago.²⁷⁷

²⁶⁸Kotulak, *supra* note 65.

²⁶⁹*Id.*

²⁷⁰Lee, *supra* note 16. In the case of the HPV vaccines, experts agree the vaccine “will not replace other prevention strategies, such as cervical cancer screening, for women or protective sexual behaviors.” Kuehn, *supra* note 164.

²⁷¹See Project 7th Grade, <http://www.project7thgrade.org> (last visited Feb. 29, 2008).

²⁷²DISPELLING, *supra* note 11, at 97. Students should learn the “genetic and biological bases for addiction and how they interact with psychosocial and behavioral factors in the development of addiction, efforts to overcome it, and relapse.” *Id.*

²⁷³Review, *supra* note 265.

²⁷⁴*Id.*

²⁷⁵FOUNDATION, *supra* note 227, at 11. In addition to the methamphetamine vaccine discussed above, other potentially important future vaccines include vaccines that combat the herpes simplex virus and Chlamydia. *Id.*

²⁷⁶O’Reilly, *supra* note 167.

²⁷⁷NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES, NATIONAL INSTITUTES OF HEALTH, FACT SHEET: EVOLUTION OF VACCINES (2003).

V. CONCLUSION

Addiction is a neurobiological disease that impairs an individual's ability to control his or her self-administered behavior.²⁷⁸ Research teams like that at the University of Nebraska have started research on anti-addiction vaccines that would stop drug molecules from entering the brain, effectively eliminating both the high and the addiction that accompany illicit drug use.²⁷⁹ These vaccines should be incorporated into the school-based immunization requirements mandated by various state statutory schemes.²⁸⁰

State statutes mandating vaccination as a prerequisite to attending public schools have been upheld as a valid exercise of the state police power in the United States by both state and federal courts since the early 1900s.²⁸¹ Although generally dealt with in state courts,²⁸² the United State Supreme Court upheld the validity of compulsory vaccination requirements as a legitimate exercise of the state police power in *Jacobson v. Massachusetts*.²⁸³ In reaching its decision, the Court highlighted four factors that must be met before the state could impose compulsory vaccination: 1) the vaccine must bear a reasonable relationship to a legitimate public health objective, 2) it must counter a serious public health risk, 3) the statute cannot be oppressive or arbitrarily enforced, and 4) the statute cannot be imposed on "unfit" individuals if administration of the vaccine is unsafe.²⁸⁴

Scholars have proposed several tests for determining whether a state should incorporate a proposed vaccine into its existing compulsory vaccination statute. One test focuses on the nature of the disease being fought, but that test is invalid because several currently mandated vaccines do not meet its criteria.²⁸⁵ A second test focuses on balancing individual liberty interests against the government's public safety concerns, but that test also fails because it contradicts the principles espoused in *Jacobson*.²⁸⁶ The more appropriate test for determining whether states should adopt

²⁷⁸DISPELLING, *supra* note 11.

²⁷⁹Lee, *supra* note 16.

²⁸⁰FOUNDATION, *supra* note 227, at 14-16.

²⁸¹See *Jacobson*, 197 U.S. at 35 ("[W]e hold that the statute in question is a health law, enacted in a reasonable and proper exercise of the police power." (citation omitted)); see also *Blue*, 56 N.E. 89 (upholding the order of the local board of health mandating vaccination of all school-aged children as a prerequisite to attending public school).

²⁸²See e.g., *Allen v. Ingalls*, 33 S.W.2d 1099 (Ark. 1930); *Anderson v. State*, 65 S.E.2d 848 (Ga. Ct. App. 1951); *Davis v. State*, 451 A.2d 107 (Md. 1982); *Sadlock v. Bd. of Educ. of Borough of Carlstadt in Bergen County*, 58 A.2d 218 (N.J. 1948); *State ex rel Dunham v. Bd. of Educ. of City Sch. Dist. of Cincinnati*, 96 N.E.2d 413 (Ohio 1951).

²⁸³197 U.S. at 35.

²⁸⁴*Id.*; see also *Hodge & Gosten*, *supra* note 66, at 856-57.

²⁸⁵Edwards, *supra* note 133.

²⁸⁶Hodges et al., *supra* note 171.

anti-addiction vaccination is the four factor *Jacobson* test itself.²⁸⁷ Anti-addiction vaccines satisfy all four factors of that test.²⁸⁸

The same strategies suggested by the National Foundation for Infectious Diseases for increasing adolescent immunization rates should be utilized to incorporate anti-addiction vaccines into the various state-mandated immunization statutes.²⁸⁹ Anti-addiction vaccines should be universally imposed because risk-based vaccination schemes are generally ineffective.²⁹⁰ School-based immunization requirements mandating anti-addiction vaccination for all students entering the seventh and eighth grade promise to be an effective method of eradicating addiction among adolescents, and eventually the general public. States must take full advantage of emerging vaccination technologies if they hope to defeat the addiction epidemic.

²⁸⁷*Jacobson*, 197 U.S. 11.

²⁸⁸*See supra* Part IV.C.

²⁸⁹FOUNDATION, *supra* note 227, at 14-16.

²⁹⁰*Id.* at 13-15.