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Abstinence-Only Education: Politics, Science, and Ethics

INTRODUCTION

UNTIL AUGUST 2004, I WORKED AT THE US CENTERS FOR DISEASE CONTROL and Prevention (CDC) as a researcher on adolescent health issues, an Institutional Review Board chairman, and a supervisor of other public health scientists.* This opportunity to do important public health research in a supportive, collaborative environment was a tremendous personal experience. CDC prided itself on excellence in epidemiologic and social science research and on science as the primary basis for its public health policy. I joined the CDC in 1991 because doing research with the centers meant that a scientist could influence critical public health issues—he or she could make a difference.

Sadly, toward the end of my 13-year stay at CDC, it was becoming increasingly difficult to conduct research on certain sensitive social issues. Although I was never overtly censored, scientific review became more labored and colleagues began to talk, somewhat ironically, about "self censorship," that is, avoiding research that might not be received favorably in Washington. A paper I had written on teen pregnancy declines, which examined the contributions of fewer teens having sex and more teens using contraception, made reviewers nervous because it could be used to support a conclusion that would have been contrary to the administration's emphasis on abstinence-only education for

teenagers. Although scientific review in my own division and center seemed fair, I began to hear stories from other centers about papers and projects that had been stopped by scientific reviewers. Then, one day in 2003, under the Department of Health and Human Services (DHHS) Secretary Tommy Thompson's "one voice" initiative, the entire communications group at CDC, the group that helped us to clarify and hone our scientific messages for the public, was transferred from CDC headquarters in Atlanta to DHHS headquarters in D.C. It seemed that controlling the message in terms of its policy impact suddenly had become more important than getting the scientific content right. I became increasingly beleaguered and began to feel that creativity, an essential element of research, was not longer valued, particularly if it challenged orthodoxy. Also, after September 11th, the surgeon general had begun to discuss the idea of retraining CDC and National Institutes of Health (NIH) scientists, regardless of their specialty, as disaster preparedness experts. Feeling that my skill set was no longer as valued inside the government sector, and having an outside opportunity present itself, I joined the exodus of senior researchers from the agency. Suddenly, my shoulders felt lighter, and the air seemed clearer.

In January 2006, colleagues and I published two papers in the *Journal of Adolescent Health.* One (Santelli, 2006) was a scientific review and analysis of federal funding for "abstinence-only" education (AOE), or abstinence until marriage programs; the other was a position paper from the Society for Adolescent Medicine (SAM) on the same subject (SAM, 2006). The review paper, at considerable length, pointed out numerous scientific problems with US government support for AOE. Building upon writing from the 1990s on reproductive rights as human rights, we also pointed to what we saw as the inherently coercive aspects of a government policy that suppresses information or provides only half-truths. In February, I spoke on the issue of AOE at the New School's Politics and Science conference. And in May, I experienced an example of the current administration's interference with science.

I had submitted an abstract, which was then accepted through the peer review process, to the National STD Prevention Conference,

co-sponsored by the CDC Division of STD Prevention and three professional groups. Others, including a state STD director, a graduate student, and an advocate for comprehensive sexuality education, also submitted abstracts that were each accepted through the same process. Two weeks before the meeting date in May, we began to receive e-mail messages from the CDC meeting sponsors indicating that a congressman was concerned about CDC sponsoring a meeting in which a one-sided attack on US government policy would be presented. We were informed that Rep. Mark Souder (R., Ind.) had contacted DHHS officials and questioned the panel's balance. Two panel members were subsequently uninvited (that is, removed) from the panel. In a May 9, 2006, letter, Rep. Henry Waxman (D., Calif.) asked DHHS Secretary Michael Leavitt about the change in panel membership. Waxman wrote, "In effect, it appears that presentations at a public health conference were censored because they criticized abstinence-only education. This attempt at thought control should have no place in our government" (http://www.henrywaxman.house.gov/issues/health/issues_health_HIV_current.htm). The response from Representative Souder's office, as published in the *Philadelphia Inquirer*, May 11, 2006, by Dawn Fallik, was unrepentant:

> "They're upset because we rained on their little party," said Marc Wheat, chief counsel for the drug policy subcommittee that oversees the CDC, of which Souder is chair. "They don't like to have their orthodoxy questioned." Those who organized the panel had an anti-abstinence agenda and it was the CDC's responsibility to reach out to those with other views, Wheat said.

The conference session was held, but with a panel composed of two abstinence proponents, the original state STD director, and myself. The title of my talk was changed, and my abstract was deleted from the conference website, but I was allowed to give my talk as planned, without any changes to its content. Reports in online journals (for example, www.slate.com) and national newspapers (such as the *Philadelphia Inquirer*) in

the days preceding the conference ensured that session attendees were well aware of the change in panel membership. The session was packed and the debate was vigorous. The controversy insured that participants received two lessons that day: one on the issue of abstinence-only education, and the other on political intrusion into the scientific process.

This paper uses the controversy surrounding abstinence-only education to depict the current struggle between US politics and science. Herein, I attempt to illustrate how science has been misused in support of the federal government's abstinence-only education policies. I also attempt to illustrate the way in which this fight over science has become a communications battle and how the Internet has become the vehicle through which ideology is able to masquerade as science.

FRAMING SCIENTIFIC DEBATE

Thomas Kuhn, in his seminal book on the development of scientific theory, described how changing theoretical paradigms was an essential part of scientific transformations (Kuhn, 1996). Scientific revolutions involve some new data, but of greater importance are critical changes in the way we organize new and old data to understand the physical world. So, while many had seen apples fall from trees, Newton provided new insights into the operations of nature that led to a new scientific paradigm for physics. Such paradigms guide research and provide benchmarks against which to evaluate new data. They are an important aspect of the scientific consensus that guides peer review and scientific publication.

In the world of communication science, George Lakoff has described how the way we use language to frame political debates greatly influences the way we set policies and priorities (Lakoff, 2004). The framing of the debate sets an underlying paradigm for how one initially marshals the data. Thus, in a debate about "partial birth abortion," "welfare reform," or "sexual predators," much of the debate is already defined before one even gets to the data. Returning to the issue of AOE, proponents have repeatedly used the term "junk science" to criticize scientists who publish information that does not coincide with their beliefs. For example, the critique by Robert Rector of the Heritage

Foundation of a study by Peter Bearman of Columbia University uses this term (http://new.heritage.org/research/welfare/wm762.cfm). Try Googling "abstinence" and "junk science" to see how frequently the latter term has been used.

The works of both Kuhn and Lakoff are pertinent to the debate over abstinence-only education. In part, this is a debate between moral beliefs and scientific efficacy. But this is also a scientific debate over the nature of adolescence and emerging sexuality. Underlying ideological assumptions, which are often at odds with current scientific and medical consensus, are an important feature of the "science" supporting current abstinence-only policies. In fact, frequently the arguments used to support abstinence-only programs are an artful mix of science and pseudoscience.

HISTORY OF FEDERAL SUPPORT FOR ABSTINENCE EDUCATION AND THE SOCIETY FOR ADOLESCENT MEDICINE POSITION PAPER

While the federal government began supporting abstinence promotion programs in 1981 through the Adolescent Family Life Act (AFLA), there have been since 1996 major expansions in federal support for abstinence programming and a shift to funding programs that teach abstinence exclusively and restrict information about condoms and other methods of contraception (Dailard, 2002). These expansions include Section 510 of the Social Security Act in 1996, which was part of welfare reform, and Community-Based Abstinence Education (CBAE) projects in 2000. The CBAE program bypasses state governments' approval processes and makes grants directly to community-based organizations, including faith-based organizations. Both Section 510 and CBAE programs prohibit disseminating information on contraceptive services, sexual orientation, gender identity, and other aspects of human sexuality (Dailard, 2002). Section 510 provides an eight-point definition of abstinence-only education (see table 1), and specifies that programs must have as their "exclusive purpose" the promotion of abstinence outside of marriage and may not in any way advocate contraceptive use or

discuss contraceptive methods except to emphasize their failure rates (Dailard, 2002).

The congressional intent of the CBAE program in 2000 was to create "pure" abstinence-only programs, in response to concerns that states were using funds for "soft" activities such as media campaigns instead of direct classroom instruction and were targeting younger adolescents (Dailard, 2002). Programs funded under CBAE must teach all eight components of the federal definition; they must target 12 to 18 year olds, and, except in limited circumstances, they cannot provide young people they serve with information about contraception or safer-sex practices—not even with their own non-federal funds (Dailard, 2002). Federal funding for abstinence-only programs has increased from $60 million in fiscal year (FY) 1998 to $168 million in FY2005. Virtually all the growth in funding since FY2001 has been in the CBAE program. The administration has promised to increase total funding for abstinence-only education from $204 million in FY2007 to $270 million in FY2009 (Dailard, 2006).

In late January 2006, just after the SAM position paper was released, the federal Administration for Children and Families issued new rules for the CBAE program that more clearly define abstinence but also more clearly prohibit dissemination of any positive information about contraception or condoms (http://www.acf.hhs.gov/grants/pdf/HHS-2006-ACF-ACYF-AE-0099.pdf). For example, grantees "must not promote contraception and/or condom use," must not "promote or encourage the use of any type of contraceptives outside of marriage or refer to abstinence as a form of contraception," and must teach that "contraception may fail to prevent teen pregnancy and that sexually active teens using contraception may become pregnant" (Dailard, 2006). While more specific, such language reveals an overt bias against contraception.

In the position paper from the Society for Adolescent Medicine, to which I was a major contributor, abstinence from sexual intercourse is endorsed as a "healthy choice for adolescents" and an important behavioral strategy for preventing human immunodeficiency virus (HIV), other

Table 1

Under Section 510, abstinence education is defined as an educational or motivational program that:

(A) has as its exclusive purpose, teaching the social, psychological, and health gains to be realized by abstaining from sexual activity;

(B) teaches abstinence from sexual activity outside marriage as the expected standard for all schoolage children;

(C) teaches that abstinence from sexual activity is the only certain way to avoid out-of-wedlock pregnancy, sexually transmitted diseases, and other associated health problems;

(D) teaches that a mutually faithful monogamous relationship in the context of marriage is the expected standard of human sexual activity;

(E) teaches that sexual activity outside of the context of marriage is likely to have harmful psychological and physical effects;

(F) teaches that bearing children out-of-wedlock is likely to have harmful consequences for the child, the child's parents, and society;

(G) teaches young people how to reject sexual advances and how alcohol and drug use increases vulnerability to sexual advances; and

(H) teaches the importance of attaining self-sufficiency before engaging in sexual activity.

sexually transmitted infections (STIs), and pregnancy among adolescents (SAM, 2006). However, SAM roundly castigated the federal programs that promote only abstinence and denigrate already proven risk reduction strategies to demonstrate the superiority of abstinence-only approaches. We built our case on demographic data, careful analysis of current program requirements, evaluation and observational data about abstinence-only curricula, and human rights principles. For example, we noted that many adolescents, including most younger adolescents, have not initiated sexual intercourse and many sexually experienced adolescents and young adults are abstinent for varying periods of time. We noted broad public and parental support for abstinence as a part of sexuality education. We also noted that according to demographic data, few

Americans remain abstinent until marriage and most Americans initiate sexual intercourse and other sexual behaviors during adolescence. In addition, marriage is occurring increasingly later in life: the median age for first marriage is 25 for women and 27 for men. Examining a central assertion by abstinence proponents that abstinence is 100 percent effective, we reviewed longitudinal data that indicates that abstinence as practiced by American teenagers often fails to protect against pregnancy and STIs. SAM noted that a recent emphasis on abstinence-only programs and policies appears to be undermining more comprehensive sexuality education and other government-sponsored programs. Finally, SAM concluded that abstinence-only education programs, as defined by federal funding requirements, are ethically problematic, because these programs withhold information and promote inaccurate information and questionable opinions.

The SAM position paper noted that abstinence, in specific curricula and in government policies, is frequently defined in moral terms, using language such as "chaste" or "virgin," and is frequently framed as an attitude or a commitment. For example, one study of abstinence-only program directors, instructors, and youth found that all groups defined abstinence in moral terms, such as "making a commitment" and "being responsible," as well as in specific behavioral terms, such as not engaging in coitus (Goodson, 2003). Federal regulations for domestic AOE funding adopt a moral definition of abstinence in the language above, requiring funded programs to teach that "a mutually faithful monogamous relationship in the context of marriage is the expected standard of human sexual activity." In understanding the framing of the debate about abstinence education, it should be noted that while health professionals generally view abstinence as a behavioral or health issue, many AOE advocates view abstinence as an issue of character or morality, based on their own personal religious or moral beliefs.

SCIENCE, IDEOLOGY, AND ABSTINENCE EDUCATION

It is useful to examine specific examples of clashes between ideology and science over abstinence education. These begin with particular

misuses and misrepresentations of scientific data within the curricula of abstinence programs. Next, I examine the program evaluation data on abstinence-only programs and how proponents have misrepresented this data and/or used the Internet to "publish" data and conclusions at odds with peer-reviewed summaries. Attacks on research and researchers who have examined the virginity pledge movement and AOE are presented, including a poorly considered re-analysis from the Heritage Foundation of the data on virginity pledges, and attacks on my own credibility. Finally, we review the damage caused by this injection of ideology into public health, and the ethical issues raised by providing adolescents with partial information or misinformation regarding protection of their sexual health.

Abstinence-only curricula make extensive use of "science," or what appears to be science, in describing the dangers of sex. These curricula commonly use data from the CDC, NIH, and other research groups regarding the STD risk among teenagers, the incidence of STDs, the frequency of unintended pregnancy, and the consequences of such events. As such, they often provide risk information similar to other sexuality education curricula, but they present different prevention messages. However, some curricula may also exaggerate risk and/or diminish other prevention approaches such as condom use.

Abstinence-only education may also exaggerate or misrepresent the mental health consequences of sex during adolescence or sex before marriage. For example, federal AOE funding language requires teaching that sexual activity outside the context of marriage is likely to have harmful psychological effects. The SAM review found no scientific data suggesting that consensual sex between adolescents is harmful. We noted that most Americans initiate intercourse during adolescence and virtually all do so before marriage. Also, research shows that early sexual activity and pregnancy are associated with adverse childhood experiences, including unwanted sexual intercourse, sexual abuse, unsupportive social environments, and individual mental health problems such as conduct disorder and substance abuse (SAM, 2006). Thus, certain mental health problems are associated with early sexual activity, but these peer-

reviewed studies suggest that sexual activity is a consequence of pre-existing mental health problems. We found no reports showing that initiation of adolescent sexual intercourse itself has an adverse impact on mental health. We also noted the paucity of data on whether purposively remaining abstinent until marriage promotes either personal resiliency, or sexual dysfunction in adulthood.

As unwanted or coercive sexual experiences are associated with mental health consequences, one must control for such experiences when examining the psychological consequences of sexual initiation. AOE advocates have recently pointed to a 2005 longitudinal analysis (Hallfors, 2005) using National Longitudinal Study of Adolescent Health (also known as "Add Health") data that found substance use, sexual experimentation, and having multiple sexual partners among females was predictive of depression one year later. However, that study did not control for sexual coercion. Moreover, the authors themselves noted that they had found few previous studies where sexual behavior and depression were temporally linked. Another recent study found that forced sex was related to poorer psychological health (Else-Quest, 2005); however, premarital sex absent these coercive experiences was not related to psychological problems. Advocates of AOE appear more interested in justifying their beliefs about abstinence than dealing with the complicated realities of adverse childhood experiences, conduct disorder, and substance abuse.

In a related area, opponents of abortion (which include many of the groups promoting AOE) have created a pseudo-scientific psychological diagnosis: "postabortion syndrome." This "diagnosis" is not recognized by either the American Psychological Association, or the American Psychiatric Association. In fact, studies of psychological reactions following abortion have consistently shown that the risk of psychological harm is low, and postabortion reports of distress and dysfunction are lower than preabortion rates (Adler, 1992). Long-term rates of psychological distress among women after having an abortion are generally the same or lower compared to that of the general popula-

tion (Adler, 2003). Longitudinal studies with adolescents show similar findings of improved psychological functioning postabortion, and low rates of distress with one- to two-year follow up.

A content review of commonly used, abstinence-only curricula conducted by the minority staff of the Committee on Government Reform of the House of Representatives (led by Representative Henry Waxman) found that 11 of the 13 curricula contained false, misleading, or distorted information about reproductive health, including inaccurate information about condom and other contraceptive effectiveness, the risks of abortion, and other scientific errors. These curricula promoted gender stereotypes as scientific fact and blurred religious and scientific viewpoints (http://www.democrats.reform.house.gov/Documents/20041201102153-50247.pdf). The committee staff found multiple examples of such errors.

Likewise, Representative Waxman in a July 2005 letter to DHHS Secretary Michael Leavitt criticized an abstinence-inspired DHHS website (www.4parents.gov) as inaccurate and ineffective, promoting misleading and inaccurate information on STIs and condoms, and providing a narrow focus on abstinence (http://www.democrats.reform.house.gov/story.asp?ID=888). The website used content from the National Physicians Center for Family Resources, a supporter of AOE, instead of the expertise of scientists from NIH or CDC, or physicians from mainstream leading professional organizations such as the American Academy of Pediatrics or Society for Adolescent Medicine.

Although opponents of AOE have consistently attacked these programs for a lack of efficacy in reducing adolescent risk behaviors, based on the SAM review it is probably fair to say that there is a paucity of well-designed studies on which this assertion can be made. Three recent systematic reviews examined the evidence supporting abstinence-only programs and comprehensive sexuality education programs designed to promote abstinence from sexual intercourse (Kirby, 2001; Kirby, 2006; Manlove, 2004). These reviews were published as monographs; each

underwent peer review, and each examined primarily curricular evaluations published in peer-reviewed journals. These reviews employed similar scientific criteria in selecting studies for evaluation and were based on criteria that are commonly used to evaluate comprehensive sexuality education programs, including use of experimental or quasi-experimental research design, and measurement of behaviors and not just behavioral intentions. Each review concluded that comprehensive sexuality education effectively promoted abstinence as well as other protective behaviors. In contrast, these reviews found no scientific evidence that abstinence-only programs demonstrate efficacy in delaying initiation of sexual intercourse. Manlove and Kirby identified the lack of rigorously evaluated programs as a major problem in evaluating the effectiveness of abstinence-only education. The most recent review by Kirby (2006) finds a few additional well-designed evaluations of abstinence-only educational programs, but no deviation from the conclusion that these evaluations have not demonstrated an impact on delay in initiation.

Doug Kirby's 2001 review of AOE program evaluations was challenged by Robert Rector of the Heritage Foundation in a paper published on the Foundation's website (http://www.heritage.org/Research/Family/BG1533.cfm). Rector identified evaluations of AOE programs that he believed demonstrated behavior change as a result of program participation. Rector reports, "There are currently 10 scientific evaluations that demonstrate the effectiveness of abstinence programs in altering sexual behavior. Each of the programs evaluated is a real abstinence (or what is conventionally termed an 'abstinence only') program; that is, the program does not provide contraceptives or encourage their use." Kirby, responding on the website of the National Campaign to Prevent Teen Pregnancy, noted that few of these evaluations identified by Rector met the minimum scientific criteria used by Kirby in his review, and all contained flaws in methodology or interpretation of the data that could lead to significantly biased results (Kirby, 2002).

Proponents of AOE assert that a variety of AOE programs have been shown to be effective, including those studied by Lerner, Cabezon,

Devaney, Maynard, and Borawski, but there are problems with these assertions. The evaluation by Lerner (2005) of the Best Friends program suffers from serious problems in research design, including the comparison of data from self-selected program participants to community-wide data from the Youth Risk Behavior Survey. The Lerner analysis was specifically rejected by Kirby in his reviews of abstinence programs because of these methodological limitations. The evaluation of the Teen Star program in Chile by Cabezon (2005) is adequately designed but the program is not an abstinence-only program; it specifically provided students with information on contraception and fertility awareness. The study by Devaney and Maynard under contract to the DHHS Office of the Assistant Secretary for Planning and Evaluation is very well designed and is referenced in the SAM review. The first two reports (Devaney, 2002; Maynard, 2005) from their evaluation document some increase in abstinence intentions and small (but positive) effects on teen norms and perceived risk; other intermediate variables did not change. It is important to note that the second report (Maynard, 2005), which presented the one-year impact of the program, failed to provide any behavioral data, although the baseline report suggested such data would be included in the second report. Finally, the Borawski (2005) evaluation is well designed but failed to demonstrate an impact on delay in initiation of sexual intercourse. It did demonstrate behavioral impact, increasing secondary abstinence and reducing multiple partners. The Borawski evaluation also found a worrisome reduction in intentions to use condoms along with an increase in abstinence intentions.

A critical study in the debate about AOE involves the work of Peter Bearman, former chairman of Sociology at Columbia University. Using longitudinal data from Add Health, Bearman and colleagues examined the virginity pledge movement, estimating that over 2.5 million American adolescents have taken public "virginity pledges." Bearman initially found that pledgers were more likely to delay initiation of intercourse by 18 months on average for adolescents 12 to 18

years (Bearman, 2001). This initial study was warmly received by AOE advocates. However, a second study involving a longer follow-up period (six-year follow-up) found that the prevalence of STIs (chlamydia, gonorrhea, trichomoniasis, and HPV) was similar among those taking the abstinence pledge and nonpledgers (Bruckner, 2005). Moreover, many teens who intended to be abstinent failed to do so, and when abstainers did initiate intercourse, many failed to protect themselves by using contraception. While pledgers had fewer sexual partners compared to nonpledgers, they were less likely to report seeing a doctor for an STI concern and were less likely to receive STI testing. Although pledgers tended to marry earlier than nonpledgers, if married, most pledgers initiated vaginal intercourse before marriage (88 percent). Virtually all married nonpledgers also initiated sex before marriage (99 percent).

AOE advocates were angered by the second report. Robert Rector of the Heritage Foundation has re-analyzed the Add Health data and severely criticized the Bruckner study at a DHHS conference and in a paper published on the Heritage Foundation website (http://www.heritage.org/Research/Welfare/whitepaper06142005-1.cfm). The Rector analysis has been severely criticized for manipulating statistical norms for significance in an online critique by a Princeton statistician (http://slate.msn.com/id/2122093/). A serious flaw in Rector's analysis stems from his selection of a less valid dependent variable. He used self-reported STIs, instead of laboratory-reported infections as used in the Bruckner analysis. This is problematic given that many STIs are asymptomatic and that Bruckner demonstrated that pledgers were less likely to have received STI testing.

Abstinence proponents have also vociferously attacked both the SAM position paper and the review paper on abstinence-only education. Immediately after the two papers were released in January 2006, the Abstinence Clearinghouse in a press release suggested that the "Society for Adolescent Medicine needs a health education of its own" (http://abstinence.net/library/index.php?entryid=2463). The Medical Institute on Sexual Health (MISH) in May 2006 also issued a 24-page

Internet critique (Hendricks, 2006) of the papers, admonishing the lead author (myself), the peer reviewers for the journal, and the journal editor. This critique found

> a significant number of serious omissions, misrepresentations, deviations from accepted practices, and opinions presented as facts. Logic, if employed, was often faulty. However, the authors should not be given full credit for these shortcomings, as even a handful of such errors in an article submitted for publication to most peer-reviewed journals would have caught the attention of at least one reviewer or editor. . . . The scholarship in this review article is generally lacking in rigor. The authors employ nonstandard research methods. Key points are substantiated by non-peer-reviewed sources.

This critique is itself full of striking misrepresentations and twisted logic. For example, the authors criticized the use of web references but then "published" their critique on a website. The MISH authors asserted that we "paint educational policies having moral components as patently unscientific." We had pointed out the moral basis for many AOE curricula and the scientific mistakes in commonly used AOE curricula. We never asserted that morality is incompatible with science. The MISH critique claims that we were erroneous in saying that the American Academy of Pediatrics (AAP) and the American Public Health Association (APHA) vigorously supported "comprehensive sexuality education." In an amazing feat of logic, they document this "error" by quoting the AAP policy as supporting "accurate and comprehensive education about sexuality." They then quote the APHA statement as encouraging government leaders to ensure that "sexuality education programs include comprehensive, medically-accurate information." These two verbal quibbles appear to be examples of distinctions without differences.

DAMAGE TO PUBLIC HEALTH PROGRAMS

Our review suggested that the politics around AOE programs is causing systematic harm to a variety of domestic public health programs and international HIV-prevention programs. Abstinence-only education appears to be replacing more comprehensive forms of sexuality education in many communities. For example, in 2004 the Texas Board of Education decided to remove most information about contraception from new health education textbooks. Recent reports in the popular media describe teachers and students being censured for responding to questions or discussing sexuality topics that are not approved by the school administrators (Joint statement from the National Coalition against Censorship, 2002), as well as restricted access to HIV/AIDS experts from the classroom, and censorship of what experts and teachers can say in the classroom.

The abrupt cancellation by DHHS of Programs that Work from the Division of Adolescent and School Health at the Centers for Disease Control and Prevention is another example of political interference with public health. One day in 2002, the program and website disappeared. Programs that Work used a rigorous peer-reviewed process to identify programs that were effective in changing adolescent sexual risk behaviors; the cancellation is believed to have been the result of CDC's failure to identify any abstinence-only programs as effective (http://www.thememoryhole.org/health/healthsites-scrub.htm).

Surveys on health educational practice in the United States provide further evidence of an erosion of comprehensive sexuality education, coincident with the rising emphasis on abstinence education. Data from the School Health Policies and Programs Study in 2000 found that 92 percent of middle and junior high schools and 96 percent of high schools taught abstinence as the best way to avoid pregnancy, HIV, and other STDs (CDC, 2002). Only 21 percent of junior high and 55 percent of high school teachers taught the correct use of condoms. Between 1988 and 1999, sharp declines occurred in the percentage of



teachers who supported teaching about birth control, abortion, and sexual orientation and in the percentages who actually taught these subjects. For example in 1999, 23 percent of secondary school sexuality education teachers taught abstinence as the only way to prevent pregnancy and STDs, compared with only 2 percent who had done so in 1988 (Darroch, 2000). In 1999, one-quarter of sex education teachers said they were prohibited from teaching about contraception.

An emphasis on abstinence has influenced important public health programs. For example, federal and state governments provide support for family planning programs, which are available to adolescents through Title X of the Public Health Service Act. Starting in the FY2004 service delivery grant announcements, the Office of Population Affairs announced that program priorities for Title X grantees would include a focus on extramarital abstinence education and counseling, increasing parental involvement in the decisions of minors to seek family planning services, reporting of statutory rape, and working with faith-based organizations. Thus, Title X grantees are now expected to focus on these new priorities, while continuing to provide condoms and other contraceptive services, STI- and HIV-prevention education, cancer screening, and other reproductive health services. Many who work in the Title X program are concerned that these changes may weaken efforts to provide effective reproductive health services for adolescents and unmarried individuals who are sexually active (Dailard, 2003).

Likewise, language stressing abstinence has also appeared in CDC's Interim HIV Content Guidelines for AIDS-Related Materials. These guidelines require that "All programs of education and information receiving funds under this title shall include information about the harmful effects of promiscuous sexual activity and intravenous substance abuse, and the benefits of abstaining from such activities" (Office of the Federal Register, 2004).

Abstinence-only policies by the US government have also influenced global HIV-prevention efforts. Human rights groups have reported

that government policy has become a source for misinformation and censorship in other countries (Human Rights Watch, 2004). US emphasis on abstinence may also have reduced condom availability and access to accurate information on HIV/AIDS in some countries (Human Rights Watch, 2004). The President's Emergency Plan for AIDS Relief (PEPFAR), focusing on 15 countries in sub-Saharan Africa, the Caribbean, and Asia that have been severely affected by AIDS, requires grantees to devote at least 33 percent of prevention spending to abstinence-until-marriage programs. Since the publication of the SAM position paper, the Government Accountability Office (GAO), which is the investigative arm of Congress, has issued a critique of US foreign policy support for abstinence-only education. PEPFAR in-country prevention teams reported that spending requirements "present challenges to their ability to respond to local prevention needs" and "can limit their efforts to design prevention programs that are integrated and responsive to local prevention needs" (http://www.gao.gov/new.items/d06395.pdf). The GAO report underscores our contention that abstinence-only policies undermine public health and health education efforts. At the urging of Representative Waxman, the GAO is currently conducting a review of the federal government's domestic abstinence-only education programs.

SCIENCE, ETHICS, AND HUMAN RIGHTS

Scientific ethics has often focused on the protection of human subjects in research, the responsible conduct of research by scientists, and distributional justice in access to the benefits of medical advances. The SAM position paper and our review paper both raised ethical concerns about AOE based on the principle of informed consent, suggesting that abstinence-only curricula withhold information from teenagers and thus are inconsistent with commonly accepted notions of medical ethics. Access to complete and accurate HIV/AIDS and sexual health information has been recognized as a basic human right and essential to realizing the human right to the highest attainable standard of health (Freedman, 1995). As such, governments have an obligation to provide accurate

information to their citizens and avoid the provision of misinformation; such obligations extend to government-funded health education and health care services (Freedman, 1995).

International treaties provide that all people have the right to "seek, receive and impart information and ideas of all kinds," including information about their health. The UN Committee on the Rights of the Child, the UN body responsible for monitoring implementation of the Convention on the Rights of the Child, and which provides authoritative guidance on its provisions, has emphasized that children's right to access adequate HIV/AIDS and sexual health information is essential to securing their rights to health and information. The United Nations Guidelines on HIV/AIDS and Human Rights provide guidance in interpreting international legal norms as they relate to HIV and AIDS. These guidelines similarly call on states to "ensure the access of children and adolescents to adequate health information and education, including information related to HIV/AIDS prevention and care, inside and outside school, which is tailored appropriately to age level and capacity and enables them to deal positively and responsibly with their sexuality." Access to accurate health information is a basic human right that has also been described in international statements on reproductive rights such as the Programme of Action of the International Conference on Population and Development, Cairo, 1994.

Similarly, we asserted in our papers that patients and students have rights to accurate and complete information from health teachers and health care professionals, and that health professionals have ethical obligations to provide accurate health information. Health care providers may not withhold information from a patient in order to influence their health care choices, nor should health teachers. Such ethical obligations are based on the principle of respect for persons and are operationalized through the process of providing informed consent. Informed consent requires provision of all pertinent information to the patient. Similar ethical obligations should apply to health educators.

CONCLUSIONS AND RECOMMENDATIONS

Given the clash between ideology and science, how will scientists and medical providers be able to influence the policy debate over abstinence education? It is unlikely that simply providing more data or better evaluations will resolve these debates rooted in cultural and religious beliefs. Part of the resolution may be for scientists to become better communicators to the public about scientific principles and findings. However, in a clash between belief and science, improved communication is likely to fail. Nathanson (2006) has described the contingent power of experts in deciding public health issues, particularly the example of the United States, where no single group seems to have scientific supremacy, and considerable mistrust of scientific authority is evident. If scientists (and citizens) are interested in improving sexuality education, we need to rely on science but may find it more advantageous to reframe our arguments around themes that perhaps have greater cultural salience. "Medical accuracy" and "medical ethics" are two potential themes. While appeals to human rights may be an important adjunct strategy (with greater global resonance), medical ethics is likely to provide a broader appeal to US voters and parents.

Recognizing and appealing directly to the concerns of parents may also be effective in public policy debates. Parents overwhelmingly support education about abstinence *and* about condoms and risk reduction. Home-spun language such as "parents want their kids to be protected" and "kids need all the facts to protect themselves" may appeal to parents. Finally, while becoming more effective communicators, scientists must remain true to the data and the methods of scientific inquiry. Let us not fall into the rhetorical trap that has snared the proponents of abstinence-only education.

NOTES

* This commentary draws upon a review paper, "Abstinence and Abstinence-Only Education: A Review of U.S. Policies and Programs," by Santelli et al. (2006) and a similar position paper from the Society for Adolescent Medicine, both published in the *Journal of Adolescent*

Health in January 2006. I would like to thank my coauthors for their insights and encouragement in understanding and analyzing the science and politics around abstinence. This paper builds upon our previous efforts. I took this opportunity to update the data and my own understanding of the issues. Also, I would like to thank Lila J. Lande for her writing assistance.

REFERENCES

Adler, N. E., E. J. Ozer, and J. Tschann. "Abortion among Adolescents." *American Psychologist* 58:3 (March 2003): 211-217.

Bearman, P. S., and H. Bruckner. "Promising the Future: Virginity Pledges and First Intercourse." *American Journal of Sociology* 106 (2001): 859-912.

Borawski, E., E. S. Trapl, L. D. Lovegreen, N. Colabianchi, and T. Block. "Effectiveness of Abstinence-only Interventions in Middle School Teens." *American Journal of Health Behaviors* 29:5 (Sept.-Oct. 2005): 423-434.

Bruckner, H., and P. S. Bearman. "After the Promise: The STD Consequences of Adolescent Virginity Pledges." *Journal of Adolescent Health* 36:4 (April 2005): 271-278.

Cabezon, C., P. Vigil, I. Rojas, M. E. Leiva, R. Riquelme, W. Aranda, and C. Garcia. "Adolescent Pregnancy Prevention: An Abstinence-Centered Randomized Controlled Intervention in a Chilean Public High School." *Journal of Adolescent Health* 36:1 (January 2005): 64-69.

Dailard, C. "Abstinence Promotion and Teen Family Planning: The Misguided Drive for Equal Funding." *The Guttmacher Report on Public Policy* 5:1 (February 2002): 1-3.

———. "Title X Program Announcement Articulates New Priorities for Nation's Family Planning Program." *The Guttmacher Report on Public Policy* 6:5 (December 2003): 13.

———. "The Other Shoe Drops: Federal Abstinence Education Program Becomes More Restrictive." *Guttmacher Policy Review* 9:1 (Winter 2006): 19-20.

Darroch, J. E., D. J. Landry, and S. Singh. "Changing Emphases in Sexuality Education in U.S. Public Secondary Schools, 1988-1999." *Family Planning Perspectives* 32:5 (Sept.-Oct. 2000): 204-211.

Devaney, B., A. Johnson, R. Maynard, and C. Trenholm. "The Evaluation of Abstinence Education Programs Funded under Title V Section 510: Interim Report to Congress on a Multi-site Evaluation." Princeton: Mathematica Policy Research, Inc., 2002.

Else-Quest, N. M., J. S. Hyde, and J. D. DeLamater. "Context Counts: Long-term Sequelae of Premarital Intercourse or Abstinence." *Journal of Sex Research* 42:2 (May 2005): 102-112.

Freedman, Lynn P. "Censorship and Manipulation of Reproductive Health Information." *The Right to Know: Human Rights and Access to Reproductive Health Information.* Ed. Sandra Coliver. Philadelphia: University of Pennsylvania Press, 1995.

Goodson, P., S. Suther, B. E. Pruitt, and K. Wilson. "Defining Abstinence: Views of Directors, Instructors, and Participants in Abstinence-Only-Until-Marriage Programs in Texas." *Journal of School Health* 73:3 (March 2003): 91-96.

Hallfors, D. D., M. W. Waller, D. Bauer, C. A. Ford, and C. T. Halpern. "Which Comes First in Adolescence: Sex and Drugs or Depression?" *American Journal of Preventive Medicine* 29:3 (October 2005): 163-170.

Hendricks, K., P. Thickstun, A. Khurshid, S. Malhotra, and H. Thiele. "The Attack on Abstinence Education: Fact or Fallacy?" Technical paper. MISH/SR/TP - 20060505. Austin, Tex.: Medical Institute for Sexual Health; May 5, 2006 <http://www.medinstitute.org/includes/downloads/sr_tp20060505.pdf>.

Human Rights Watch. "The Philippines. Unprotected: Sex, Condoms, and the Human Right to Health." New York: Human Rights Watch, May 2004.

Kirby, D. "Emerging Answers: Research Findings on Programs to Reduce Teen Pregnancy." Washington, D.C.: National Campaign to Prevent Teen Pregnancy, 2001 <http://www.teenpregnancy.org/resources/research/reports.asp>.

———. "Do Abstinence-Only Programs Delay the Initiation of Sex among

Young People and Reduce Unintended Pregnancy?" Washington, D.C.: National Campaign to Prevent Teen Pregnancy; 2002 <http://www.teenpregnancy.org/resources/data/pdf/abstinence_eval.pdf>.

Kirby. D., B. A. Laris, and L. Rolleri. "The Impact of Sex and HIV Education Programs in Schools and Communities on Sexual Behaviors among Young Adults." Research Triangle Park, N.C.: Family Health International, 2006 <http://www.fhi.org/NR/rdonlyres/e2saa3gkcwbr422uoeyiitlrre6pd62cyh63x7rmw7xaibtztb2zvox-px4sb7oxmq7hugymp722f5n/KirbyFinallongreportv251.pdf>.

Kuhn, Thomas S. *The Structure of Scientific Revolutions.* Chicago: The University of Chicago Press, 1996.

Lakoff, George. *Don't Think of an Elephant: Know Values and Frame the Debate-The Essential Guide for Progressives.* White River Junction, Vt.: Chelsea Green Publishing Company, 2004.

Lerner, R. "Can Abstinence Work? An Analysis of the Best Friends Program." *Adolescent and Family Health* 3:4 (April 2005): 85-192.

Manlove, J., A. Romano-Papillo, and E. Ikramullah. "Not Yet: Programs to Delay First Sex among Teens." Washington, D.C.: National Campaign to Prevent Teen Pregnancy, 2004.

Maynard, R. A., C. Trenholm, B. Devaney, A. Johnson, M. A. Clark, J. Homrighausen, and E. Kalay. "First Year Impacts of Four Title V, Section 510 Abstinence Education Programs." Princeton: Mathematica Policy Research, Inc., 2005.

Nathanson, C.A. "The Contingent Power of Experts in the Marketplace of Knowledge." In press, 2006.

The National Coalition Against Censorship. "Abstinence Only Education? A Joint Statement." New York: The National Coalition Against Censorship, 2002.

[Office of the] Federal Register. *2004 Federal Register.* Washington, D.C.: National Archives and Records Administration; June 16, 2004; 69 (115).

Santelli, J. S., M. A. Ott, M. Lyon, J. Rogers, D. Summers, and R. Schleifer. "Abstinence and Abstinence-Only Education: A Review of US Policies and Programs." *Journal of Adolescent Health* 38 (2006): 72-81.

Society for Adolescent Medicine. "Abstinence-only Education Policies and Programs: A Position Paper." Prepared by J. S. Santelli, M. A. Ott, M. Lyon, J. Rogers, and D. Summers. *Journal of Adolescent Health* 38 (2006): 83-87.