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GLOBAL INTIMACIES: INNOVATING THE HPV VACCINE FOR WOMEN'S HEALTH

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According to the Pan American Health Organization's Silvana Luciani, "New technologies for cervical cancer prevention are revolutionizing public health." Yet the vaccine for human papillomavirus (HPV) is contested, in part because it evokes politics of contagion that foreground intimate transmissibility (Casper and Carpenter 2008). As a preventive technology, the vaccine promises to reduce rates of cervical cancer by controlling the spread of the causal agent, infectious HPV. It is already reshaping sexual politics and health care relations in the United States and is poised to similarly alter public health practices globally. This essay examines the HPV vaccine's impact on transnational women's health, specifically its role in the emergence and consolidation of nongovernmental organizations (NGOs) focused on women's sexuality and reproduction, its impact on cervical cancer screening, and expectations it arouses regarding pandemic HIV.

A tangible object that makes and remakes people, things, and places (Helmreich 2003), the HPV vaccine joins a long list of technologies that have reconfigured health care practices and intervened in women's health. The birth control pill, for example, fundamentally altered bodies, sexual relations, gender politics, and cultural meanings of reproduction (Watkins 1998). A twenty-first-century technology, the HPV vaccine is being introduced into a clinical, cultural, and geopolitical landscape profoundly shaped by modernist yet shifting notions of sex, gender, embodiment, contagion, health, progress, and empire. Specifically, the vaccine builds on and challenges unequal relations among women across geopolitical zones and between nation-states. The technology mediates this fractured—and fractious—landscape in important ways and facilitates new biopolitical practices and forms of social organization.

In tracking transnational migrations of the vaccine, we draw upon Foucault's notion of biopolitics and on feminist science and technology studies.

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Despite their potential usefulness to each other in exploring women's health technologies, these theoretical areas are seldom in conversation. In Foucault's (1978) formulation, biopower—disciplinary power over individuals—led to the production of new regimes, including replacement of sovereign rule with rational systems of regulations. This transition included the emergence of juridical competition among experts, the development of rights discourse, and various efforts to "normalize" the human body and its practices. Biopolitics refers to social practices and institutions designed to regulate a population's quality of life. The target is not the individual per se, but rather the aggregate; individuals become means to governmental ends.

While Foucault usefully analyzed power as fluid and relational and recognized the interplay between individuals and states or macro knowledge systems, he undertheorized the middle space of social action: organizations and institutions. For example, he talked about health, including the clinic, *writ large*, but not about specific clinics or health practices and how these contribute to forms of governmentality—the organized practices through which subjects/citizens are created and governed. As members of populations internalize the knowledge/discourses produced by institutions such as hospitals and schools, they come to govern themselves in ways well suited to fulfilling biopolitical (population-level) aims. Further, while Foucault recognized that knowledge systems and practices could be *social* technologies in the sense that they enabled other things to happen, actual technologies—pills, prosthetics, techniques, devices—are strangely absent from his work. Consequently, Foucault offers limited utility for grasping intricacies of specific technologies that work in and through institutional biopolitics to reshape populations and their bodies (Casper and Moore 2009).

Feminist science and technology studies (STS), which emphasizes bodies and technologies, can fill this gap. Methodologically and epistemologically, feminist STS situates women, gender, or both at the center of analysis and tracks the ways that science, medicine, and technologies are shaped socially and intervene in/on embodied lives. Haraway (1989), Oudshoorn (2003), and others have examined the consequential relationships among bodies (especially women's bodies), technologies, and operations of science and medicine historically and today. Feminist STS analyses are often (but not always) attentive to processes of racialization both nationally and transnationally (e.g., TallBear 2007). On the whole, this scholarship attends to a range of organizational and institutional practices, though not always through an explicitly biopolitical lens, finding that women, both individually *and in*

aggregate, are targets of innovative, potentially beneficial, but often damaging practices and techniques.

Technologies, from this perspective, are not just equipment and techniques, but "hybrid assemblages of knowledges, instruments, persons, systems of judgment, buildings and spaces"—directed to more or less conscious goals— "underpinned at the programmatic level by certain presuppositions and assumptions about human beings" (Rose 1996, 26). Technologies such as the HPV vaccine—encompassing not just the vaccine but also the people and institutions that create, administer, and use it—in effect act like a web holding governmental practices together. At the same time, as Woolgar argued (1992), technologies configure users in important ways; technologies and users are mutually shaped in practice. Technologies and their politics are thus inscribed—literally written on the body (Hayles 1999).

In the realm of women's health, women themselves may be conceptualized as technologies to be used and manipulated for (or against) their own reproductive potential. The numerous uncertainties presumed to be embodied in women's flesh and blood—sexual power, reproductive futures, citizens made and unmade, diseases—provide fertile ground for disciplinary intervention by medical providers, public health agents, and nation-states (Ginsburg and Rapp 1995). A feminist STS framework that takes biopolitics into account views women's bodies and the technologies used on/in them as woven tightly into governmental practices, such that technologies and women are (re)configured. Such (re)configurations may be prompted by women's own desires for healthier bodies, babies, and lives, but often are not, especially for women who are disadvantaged by race, class, age, citizenship status, geography, or a combination of these.

We use these insights to examine women's health practices that have emerged in response to the HPV vaccine at the transnational level. Specifically, we trace the collaboration of NGOs involved with the Alliance for Cervical Cancer Prevention and their impact on health care provision in resource-poor settings. We also examine cervical cancer (CC) screening practices and the application of knowledge about HPV to preventing HIV/AIDS. Noting the multiple ways women's health is construed and contested transnationally (Booth 1998), particularly with respect to emergent forms of governmentality in twenty-first-century public health practices, we suggest that the category of "women's health" itself is shaped by inequities in access to technologies, with women in resource-poor settings defined differently from (and more pejoratively than) women in the global North. Dissemina-

tion and use of the HPV vaccine as a biopolitical technique thus embodies—and sustains—"stratified reproduction" (Colen 1995).

CERVICAL CANCER, HPV, AND VACCINATION

The cervix, or lower uterus, is covered by an inner basal columnar epithelium and a thin outer epithelial layer composed of flat, irregularly shaped squamous cells. From fetal life through menopause, the cervical epithelium undergoes many changes, rendering the cervix susceptible to malignancies (Singer and Jordan 2006).

Cervical cancer constitutes 12 percent of all cancers in women worldwide (WHO 2002). Initial stages of CC—cervical intraepithelial neoplasia or squamous intraepithelial lesion (Koushik and Franco 2006)—account for about 80 percent of all invasive cases. These are typically asymptomatic, detected only through screening technologies (Casper and Clarke 1998). Because untreated precursors can develop into carcinoma, screening is vital to reducing CC incidence.

Worldwide, nearly five hundred thousand new cases of CC are diagnosed each year; of the 225,000 annual deaths from CC, 80–85 percent occur in developing countries, reflecting limited access to health care and preventive technologies (WHO 2006). In the United States, where preventive screening is widespread, CC is relatively rare—about ten thousand new cases and thirty-seven thousand deaths annually—albeit stratified by race/ethnicity and socioeconomic status (Singh et al. 2004).

Virtually all CC cases (99 percent) and their precursors are linked to genital infection with HPV (Grimes 2006). While most of the thirty to forty known sexually transmitted HPV strains are relatively harmless, some increase women's risk of developing CC (Lowy and Schiller 2006). Recognition that CC is a sexually transmitted infection (STI) represents an etiological shift; prior to the 1990s, CC was considered and treated as a conventional cancer (Koushik and Franco 2006).

In 2006, the U.S. Food and Drug Administration (FDA) approved Gardasil, the HPV vaccine manufactured by pharmaceutical giant Merck. A second vaccine, Cervarix, produced by GlaxoSmithKline, is scheduled for market in 2009. Both vaccines target HPV-16 and HPV-18, which together cause about 70 percent of CCs. Gardasil additionally targets HPV-6 and HPV-11, which produce a substantial proportion of low-grade dysplasia and 90 percent of genital warts (Wheeler 2007). Cervarix may also protect against HPV-45 and HPV-31, the third- and fourth-most-common

cancer-causing strains (Harper 2006). Merck and GlaxoSmithKline stand to profit considerably, with analysts predicting annual sales of $3.2 billion in the United States alone (Allen 2007).

Both vaccines are administered by three injected doses over six months. A course of Gardasil costs about $375, and Cervarix will be comparably priced. Side effects are generally minor (localized itching and swelling, dizziness, fever, and nausea), although more than seven thousand "adverse events" have been reported (CNN.com, 2008), and safety remains a concern of many who oppose requiring widespread vaccination, including some physicians (Lowndes and Gill 2005).[1] Clinical trials indicate that the vaccines are 99–100 percent effective in preventing precancerous lesions and CC (caused by HPV-16 and HPV-18) in women who have completed vaccination (Ault and Group 2007).

The vaccine is aimed at young women because trials found stronger immunological response in girls aged ten to fifteen than in women aged sixteen to twenty-three and because it is more efficacious among women who have not yet had sex (Dailard 2006). Ongoing trials indicate that Gardasil may prevent genital warts and HPV-related cancers in men (Associated Press 2008).

NGOS, DONORS, AND BIG PHARMA

A multitude of NGOs target women's health, as do pharmaceutical companies. Focusing on those with sustained interests in HPV and CC, we ask: How does understanding CC as sexually transmissible make possible new collaborations? What inspires groups with different histories and interests to work together around this common aim? What kinds of biopolitical efforts does the vaccine animate, and with what consequences? We turn our attention to the Alliance for Cervical Cancer Prevention (ACCP), because of its global reach and because it represents the kinds of transnational relationships we seek to understand regarding governmentality and women's health. ACCP is bringing together different NGOs, many from the global North; creating partnerships with pharmaceutical companies; and enrolling major donors to CC efforts, all in the name of "better" disease prevention strategies and "healthier" subjects/citizens. But is the ACCP's work old-fashioned imperial biopolitics through a brand-new technique, or is it offering improved health care for (some) women?

Established in 1999, ACCP is composed of five international public health partners: EngenderHealth, the International Agency for Research on

Cancer (IARC), Jhpiego, the Pan American Health Organization (PAHO), and the Program for Appropriate Technology in Health (PATH). Organizationally, PATH serves as ACCP's coordinating agency. Although ACCP receives funding from various sources, the Bill and Melinda Gates Foundation provided "generous support" at the collaboration's inception and millions of dollars to its members since. ACCP's mission and purpose, aimed "overseas," is to assess CC screening and treatment, improve service delivery systems, ensure that community perspectives are built into programs, and increase awareness of CC and prevention strategies. ACCP funds research and demonstration projects in many nations. The following overview of each ACCP member's history and focus highlights biopolitical strategies embedded in the alliance's work.

New York–based EngenderHealth aims to improve health and well-being in the poorest communities in forty countries "by sharing our expertise in sexual and reproductive health and transforming the quality of health care. We promote gender equity, advocate for sound practices and policies, and inspire people to assert their rights to better, healthier lives" (EngenderHealth 2008). Intriguingly, given its contemporary role in HPV screening and stated commitment to gender equity, EngenderHealth's roots lie in the early twentieth-century eugenics movement (Valone 2007): it was previously known as the Association for Voluntary Sterilization, a major player in the population control movement (Stern 2005). Having adopted the language of transnational women's health and rights, EngenderHealth's work is now framed in more progressive terms: health, equity, partnership. Whether its actual practices mirror this discursive move is unclear.

IARC's mission is to provide reliable and accurate data about the efficacy of screening for cervical, oral, and breast cancers. It conducts clinical trials and cost-effectiveness studies, produces training materials, and maintains a bilingual (English and French) website. IARC's "ultimate objective is to guide the development of public health policies in implementing screening in a range of health care settings, particularly in low-resourced countries" (IARC 2008). By positioning early CC detection through screening as the best way to achieve cancer reduction, IARC frames its work in terms of successful public health outcomes at the *global* level.

A project of Johns Hopkins University since 1973, Jhpiego "put[s] evidence-based health innovations into everyday practice to overcome barriers to high-quality health care services for the world's most vulnerable populations" (Jhpiego 2008). Originally focused on reproductive and

maternal/child health, Jhpiego has expanded its expertise to encompass HIV/AIDS, malaria, and CC. In order to provide "front-line health workers" with low-cost, hands-on tools to deliver better health care, Jhpiego brokers the export of new biomedical technologies, bringing innovations from developed to developing nations.

Century-old PAHO is an international public health agency and regional office for WHO. Its mission is "to strengthen national and local health systems and improve the health of the peoples of the Americas," guided by stated values of equity, excellence, solidarity, respect, and integrity (PAHO 2008b). Based in Washington, D.C., PAHO has offices in twenty-seven countries and nine scientific centers. It collaborates with ministries of health, universities, social security agencies, community groups, and international agencies. Its role in the alliance is to target CC prevention efforts to the Americas.

A self-described "catalyst for global health" focused on technologies and behaviors, PATH states: "We meet the complex health needs of an expanding world with [a] multipronged approach that moves solutions from innovation to impact" (PATH 2008b). PATH's focal areas include emerging and epidemic diseases, health technologies, maternal and child health, vaccines/immunizations, and reproduction. It categorizes CC and the HPV vaccine under reproduction rather than immunization, thus framing women's sexual health in reproductive terms. Vis-à-vis ACCP, PATH describes its work as a "low-resource approach to a high-stakes health problem" and positions its vaccine efforts as "preparing the way for a new tool in the fight against cervical cancer."

Established in 1994 by Microsoft billionaires Bill and Melinda Gates, the Gates Foundation, in Seattle, is among the largest donors in the world, with assets totaling $37.3 billion. A key actor in global health initiatives (http://www.gatesfoundation.org), it explicitly supports "breakthrough science" and innovations, focusing on children's health, HIV/AIDS, malaria, nutrition, reproductive technologies, tuberculosis, infectious diseases (where it categorizes HPV), and vaccine-preventable diseases. The foundation has supported ACCP and its members' HPV-related research, dissemination, and clinical practices in amounts totaling millions annually since 1999.

It is not coincidental that these organizations have coalesced, in partnership with Big Pharma, to "innovate" the HPV vaccine transnationally. With the century-long war on cancer unsuccessful in its search for a cure, efforts turned toward prevention. Vaccines promise an alternate path to reducing

cancer morbidity and mortality. Framed as a cancer, as it was historically, CC, along with its sufferers, was troublesome to organizations, such as the American Cancer Society, interested in successful cutting-edge practices. Although basic screening remains relevant to these organizations, issues of access and cost continue to pose barriers to widespread, effective CC screening (see below). Vaccines, on the other hand, promise more bang for the biopolitical buck. ACCP members and the Gates Foundation target global health, including transnational circuits of preventive and clinical care, innovation and scientific advances, service for the world's poor as an aggregate category, and low-cost solutions in resource-poor settings. Merck and GlaxoSmithKline benefit financially from these shared goals.

Yet even as ACCP pursues widespread dissemination of the HPV vaccine, extant structural inequities complicate implementation. While the vaccine promises breakthroughs in CC prevention, it cannot directly improve access to screening, nor may it improve the status of the world's most vulnerable women, who may be perceived as recalcitrant (Casper and Carpenter 2008). Moreover, we remain somewhat skeptical of transnational efforts to improve women's lives that originate in the West, especially efforts in which local women are not involved. "Postcolonial" practices of technology distribution and use for women's health may improve statistics—a goal of governmentality—but they may also replicate such misguided historical interventions as eugenic population-control programs or experimentation on poor women of color (Briggs 2003). Technologies and organizational forms may be innovated, we suggest, while underlying social structures remain intact.

UNCERTAIN FUTURES OF CERVICAL CANCER SCREENING

The HPV vaccine emerged in a context of evolving CC screening practices and faith in innovative technologies to prevent disease. Its development and reception not only was affected by these practices but also may change them in critical ways. While the vaccine holds much promise, "it will be at least a decade before we see a drop in the rates of cervical cancers associated with HPV 16 and 18" (Elit 2007); hence, CC screening via existing and newer techniques will likely remain necessary. PATH frames CC prevention in explicitly feminist terms: "Every woman has the right to screening at least once in her lifetime, and girls have the right to HPV vaccination" (PATH 2008a). But whether every woman and girl actually will be screened or vaccinated, and for what broader cultural purposes, is unknown.

Cytology screening, the first "modern" technology for detecting CC and its precursors, entails collecting and fixing exfoliated cervical cells on a slide (or other medium), which is read under a microscope in a laboratory and classified using one of several systems (Clarke and Casper 1996). Called the "Pap smear" after the inventor Dr. George Papanicolaou, cytology became the "right tool" for CC screening in the 1940s (Casper and Clarke 1998). High-quality cytology is very specific (i.e., able to detect only the disease in question) but only moderately sensitive (i.e., unable to detect all abnormalities); its success depends on adequate infrastructure (e.g., trained providers and technicians, adequate collection procedures, quality laboratories, follow-up mechanisms) (WHO 2002).

The expansion of cytology screening in developed countries in the 1960s led to significant reductions in CC incidence and mortality (WHO 2002). Yet CC remains common in developing countries because screening is rarely available and largely inadequate where it exists (Sankaranarayanan, Budukh, and Rajkumar 2001). "Scarce resources, limited infrastructure and competing health priorities" represent key barriers to successful CC prevention programs in developing countries; existing resources often must be "allocated to high-cost treatment for late-stage disease" (Bishop et al. 1995, 60).

Fewer than 5 percent of women in low-income countries are screened for CC in any year (PATH 2004), compared with 45–50 percent in developed countries (WHO 1986). Cytology programs in many middle-income countries suffer from low-quality collection and reading, infrequent supply of materials, lack of technicians, and failure to reach poor and rural women and women at peak-risk ages (thirty to forty years old) since screening is often provided via maternal/child health services or private physicians (WHO 2002). The multiple clinic visits required for screening and treatment prove prohibitive for many women, especially those not already seeking care for pregnancy and childbirth.

Frustration that so many women in developing countries were dying from a preventable disease inspired efforts to expand screening programs and pioneer new screening technologies (Bishop et al. 1995)—and ultimately to develop the HPV vaccine (inherent limitations of cytology screening provided additional incentives [ReproLine 1997]). Particularly active in these efforts, which began in the 1980s and intensified in the 1990s, were the NGOs that became ACCP (Gaffikin et al. 2008). Given their overarching concern with preventing CC in developing countries, ACCP members (and the Gates Foundation) continue to support CC screening initiatives, even as

they embrace the HPV vaccine and cultivate partnerships with Merck and GlaxoSmithKline.

Visual cervical inspection with acetic acid washing (VIA), proposed as an adjunct and possible alternative to cytology in the late 1980s, uses a bright light source without magnification to detect lesions on cervixes soaked with 3–5 percent vinegar solution (ReproLine 1997). Similar in sensitivity but lower in specificity than cytology, VIA is inexpensive, requires minimal training, and produces immediate results (WHO 2002). Jhpiego strongly advocates a "single visit approach," combining CC screening and treatment/referral, in low-resource settings. However, VIA's low specificity can result in treating women unnecessarily for nonprecancerous lesions.

Establishing HPV as the cause of CC facilitated new screening methods that detect HPV-DNA in exfoliated cervical cells (WHO 2002). HPV-DNA screening is highly specific, has similar (or better) sensitivity as cytology, and can be interpreted more objectively—that is, results are more quantifiable and thus easily classifiable. But it is expensive, requires molecular diagnostic laboratories (lacking in the global South), currently depends on reagents from a single manufacturer, has lower specificity in women under thirty and HIV-positive women, and provides delayed results.

A WHO (2002, 61) expert consultation—in which ACCP partners were central—concluded that "cytology screening remains the standard for . . . middle-income countries" though "VIA holds substantial promise," especially for lower-income countries, if its specificity-related difficulties can be overcome. HPV-DNA testing "could eventually become the gold standard" if made more affordable, at least in countries with the requisite laboratory facilities. In short, WHO recommends different screening policies and technologies for countries with different resource levels—a position whose ethics are hotly debated. Thus, while a governmental rationality of prevention to achieve healthier citizens may be widespread, the shape such governmentality takes transnationally may vary depending on available resources and populations targeted. Biopolitical strategies may use similar technologies differently across different aggregates of at-risk women.

Many stakeholders note that "whichever screening test is to be used, the challenges in organizing a screening program are the same" (Sankaranarayanan, Budukh, and Rajkumar 2001, 959), including political will; funding; adequate health infrastructure; provider training; means to identify, screen, and follow up target populations and manage abnormalities; and program monitoring (WHO 2002). Nonetheless, many recommend VIA, on the

grounds that "screening tests . . . that require additional recalls and revisits for diagnostic evaluation and treatment may pose added logistic difficulties and . . . another barrier for participation in low-resource settings" (Sankaranarayanan, Budukh, and Rajkumar 2001, 959).

ACCP-sponsored VIA screening campaigns are under way in countries including India, China, Kenya, and Peru (Katz and Wright 2006)—but not without critics. Suba et al. (2006, 484) find VIA screen-and-treat programs unethical because they result in frequent overtreatment (violating the "first, do no harm" principle), and they dispute claims that cytology screening is unfeasible in developing countries, both because cytology's costs have been overestimated and because all screening techniques are "vulnerable to the same quality control problems" and "sociopolitical, technological, and financial obstacles." They further contend that the Gates Foundation's commitment to emergent technologies directs attention away from the "sociopolitical and power structure changes" necessary for any screening program to succeed (483).

While celebrating the HPV vaccine's debut, medical and other key actors worry that it offers "false security to vaccinated women, who may incorrectly believe that they no longer need to undergo Pap smears" (Katz and Wright 2006, 1110). Recommendations have proliferated for "integrat[ing] . . . vaccination in young women and screening in older women"—in high-, middle-, and low-resource settings—with strategies optimally "determined regionally on the basis of local competencies, costs, needs, and . . . acceptability" (Schiffman and Castle 2005, 2104). Such approaches are consistent with global South/postcolonial feminists' emphasis on the local within the global (e.g., Mohanty 1991) but could be seen as ethically problematic, particularly if local women do not hold decision-making roles.

ACCP affiliates uniformly agree that the HPV vaccine must not disrupt existing screening practices or efforts to expand them, given that "there would still be many women who are already infected [with HPV]. . . . And not all cancer-causing HPV types are covered by the vaccines" (PATH 2008c). WHO (2006, 11) stresses that screening programs "need to be maintained and women encouraged to continue to come for screening." PAHO's Jon Andrus declared: "Cervical cancer can be prevented if we focus simultaneously on improving access to screening, treatment, and on introducing HPV vaccines when they become affordable" (PAHO 2008a). The International Agency for Research on Cancer maintains a screening group "to provide data on . . . different screening interventions" for CC. But critics fear

that plans to implement the vaccine and alternative screening programs—possibly years from fruition—will forestall the use or expansion of cytology screening (where feasible) in the meantime (Suba et al. 2006).

Merck and GlaxoSmithKline echo ACCP recommendations, in ways that enhance the companies' marketing efforts. They stress that "health-care provider[s] should inform the patient, parent or guardian that vaccination does not substitute for routine cervical cancer screening" (Merck 2007), while emphasizing the "strain on the healthcare system" caused by abnormal cytology results and follow-up exams (GlaxoSmithKline 2007). GlaxoSmith-Kline's website features a PATH press release announcing their "partnership" (along with Merck) and declaring: "While simpler screening approaches are emerging, vaccines are the best hope for lowering the death toll of [CC] in the long run" (GlaxoSmithKline 2006). Both companies highlight efforts to approve their vaccines "around the world" and intention to "donate free vaccine . . . to support demonstration studies . . . in the most impoverished nations" (Merck 2007).

Scientists and NGOs hope that, in developing countries, "widespread adoption of HPV vaccines will also reinforce efforts . . . to improve [CC] screening programs" insofar as "the need for fewer screening tests would provide a window of opportunity for governments to shift their attention to improving screening quality and to focus more on follow-up and treatment" (PAHO 2008). WHO (2006) is even more optimistic, "hop[ing] that the interest generated by the HPV vaccine will act as a stimulus to the establishment of [CC] screening and treatment services in settings where progress has so far been limited" (8–9). It is important to note, however, that the HPV vaccine's actual impact on screening efforts, and on women's health, will not be known for years. Efforts to make the vaccine available in developing countries may reflect corporate interests in emerging markets as much as (or more than) concern for women's health.

CC screening technologies are most obviously gendered insofar as only women benefit directly from screening for this sex-specific disease. They also activate cultural beliefs about gender and sexuality. In Recife, Brazil, for example, CC prevention campaigns increased the number of women getting Pap smears, but reinforced the belief that women's sexuality is dangerous and must be controlled (Gregg 2003). In much of Africa and Asia, "gynecologic examinations remain deeply stigmatized," not least because they are seen as threatening women's sexual purity (Katz and Wright 2006, 1110). New screening technologies, which require cervical examination, and the HPV

vaccine, which does *not* eliminate the need for screening, are unlikely to disrupt these cultural associations.

Gender relations also determine screening access. Especially in developing countries, women face disproportionate barriers to obtaining medical services (WHO 2002). Such barriers apply to all screening technologies, though VIA's low cost may improve its accessibility while also meeting nation-states' governmental needs. Policy makers in societies where women are generally devalued may be reluctant to invest in CC prevention, or willing to invest only in those technologies that are inexpensive or promise immediate results. By bringing more women (including underserved groups) into contact with providers, CC screening and HPV vaccination may improve women's health, potentially increasing women's power and status in families (and societies). Yet if screening and vaccination take place in specifically *reproductive* health settings, they may reinforce understandings of women primarily as future/current/former mothers (Booth 1998). Conversely, efforts to frame HPV vaccination around cancer rather than around sexual transmission might reconfigure gender by disrupting associations between women and sexuality.

In short, biopolitical strategies and techniques are resource dependent; they are shaped by and in turn sustain social inequities, particularly in the global South. In the absence of widespread social change to improve women's lives, technological efforts that promise a "quick fix" may be of limited value. Technologies designed to improve women's health often reflect the narrow definitions of "*women's health*," based on assumptions about female sexuality and reproduction, that prevail in many settings. For women to truly benefit from public health efforts and new technologies, notions of women's health need to be reconfigured to recognize women as whole people with complex health needs and embodied desires. Yet, as we show next, the HPV vaccine is routinely framed in ways that position women as means to an end.

WHAT CAN THE HPV VACCINE DO FOR (AND AGAINST) HIV?

The HPV vaccine emerged in settings primed not only by politics of CC screening, but also by global initiatives around HIV/AIDS, initiatives that are profoundly gendered and shaped by inequities among nations. This has affected the HPV vaccine's development and reception—and vice versa. Here we illuminate ways that efforts to reduce CC through HPV vaccination are being co-opted by and for HIV prevention efforts, often with little stated regard for women's needs. Although women may ultimately benefit from this

crossover, there are consequences to framing HPV advances not as a means to save women's lives but rather as a way of facilitating HIV innovation. The goal is a form of "technology transfer"—a hallmark of emergent forms of transnational governmentality—rather than a women's health agenda *for women*.

Epidemiologically, HIV and HPV/CC are connected in ways that may complicate prevention and treatment. HIV-positive women "are at *increased* risk for cervical cancer" (ReproLine 1997) because HIV, in damaging the body's immune system, increases vulnerability to HPV infections and inhibits the body's ability to attack cancer cells such that "cervical precancer might develop into an invasive cancer faster than it normally would" (American Cancer Society 2008). HIV rates are rising in many countries where CC is a leading cause of cancer deaths (ReproLine 1997). Ironically, however, the high prevalence of HIV—along with tuberculosis, malaria, and maternal mortality—among women in developing countries means that, comparatively, CC is "barely recognized [in these countries] as a significant public-health problem" (Denny 2008).

Trials to determine the HPV vaccine's efficacy and safety in HIV-positive women are under way (WHO 2006), and experts have called for studies to determine the best approaches to HPV/CC in HIV-prevalent countries and to assess HPV/CC "treatment failure rates among HIV-positive women" (ReproLine 1997). According to WHO (2006, 7), links with HIV are one reason "to place HPV vaccines higher on the rights-based agenda." Linking HPV to HIV also facilitates additional circuits along which biopolitics of public health may unfold, thereby deepening governmental rationalities focused on prevention and healthy subjects/citizens.

Many actors involved in global HPV/CC prevention efforts are also active in combating HIV/AIDS. The Gates Foundation provides substantial funding for both efforts and ACCP affiliates regularly address links between HPV/CC and HIV. Jhpiego's website explains: "From our origins as technical experts in reproductive, maternal and child health, Jhpiego has grown to embrace new challenges, including HIV/AIDS, malaria and [CC] prevention—reflecting the increasing interconnectedness of global health" (Jhpiego 2008). The 2006 International AIDS Conference, organized by the United Nations Population Fund and WHO, included a session on "the potential role of HPV vaccines in improving HIV prevention among young girls and women." WHO (2006, 7) contends that, because "[CC] prevention and care among immuno-compromised women are also of interest to the

HIV community . . . there is a key role for the HIV activist community in the introduction of HPV vaccines."

GlaxoSmithKline and Merck both have researched vaccines for HIV, as well as produced antiretroviral therapies. Both tout enduring efforts "to discover, develop and make available new drugs and vaccines for treatment or prevention of diseases of the developing world" (GlaxoSmithKline 2008). Yet Merck discontinued trials of its HIV vaccine in 2007 "after an independent safety monitoring board decided the vaccine was ineffective" (Silverman 2007); as of June 2008, GlaxoSmithKline was still working on an HIV vaccine. Yet, with the exception of GlaxoSmithKline's press kit on CC, which lists "HIV and other STIs" as "factors [that] appear to contribute to the persistence of a cancer-causing virus infection" (GlaxoSmithKline 2007), neither company explicitly treats its HIV and HPV initiatives as connected. Searching both companies' websites for "HIV and HPV" yields only reports (aimed at investors) that discuss the diseases independently, as potential market streams.

HPV vaccination initiatives in developing countries often are framed as opportunities to address various HIV-related issues, revealing the complexity of biopolitical public health practices. In addition to hoping that HIV/AIDS programs will partner with national immunization programs to deliver HPV vaccine (see above), WHO (2006, 8) proposes using HPV vaccine provision to enhance STI/HIV prevention efforts "by educating adolescents to delay sexual debut and to use condoms." WHO (2006, 15) also recommends that HPV vaccination monitoring programs "capture HIV status and pregnancies," ostensibly to provide data on the HPV vaccines' effects in HIV-positive and pregnant women, and, conversely, that STI and HIV services offer information on and referrals for HPV vaccination and CC screening. That is, the similar logics of prevention and images of women underlying both the HPV vaccine and HIV/AIDS efforts allow existing public health programs to build on these shared links in their practices, thus streamlining strategies and potentially reducing expenditures.

Many experts posit the HPV vaccine as a test case for an eventual HIV vaccine (likely intensifying investment in the former) (WHO 2006). As the Joint United Nations Program on HIV/AIDS (UNAIDS) executive director Peter Piot (2007) notes, HPV and HIV activate the same politics: "opposition to sex education at schools . . . , opposition to condom promotion . . . , homophobia, sexism, not recognizing . . . stigma and discrimination associated with [the disease]" (7). However, HIV programs may also teach HPV

vaccination campaigns how to confront concerns that prevention efforts will cause promiscuity and necessitate teaching children about sex, insofar as "some countries have already dealt with these issues because of AIDS" (PATH's Vivien Tsu, qud. in Twombly 2006).

Gender connects HPV/CC and HIV/AIDS. A critical epidemiological trend is "the feminization of the HIV epidemic and the still underestimated and undervalued burden of STIs on women" (Piot 2007, 4). Worldwide, women represent 50 percent of people living with HIV, "and the proportion is going up in every continent. . . . Women also bear the brunt of the impact of the most common viral STI, [HPV] and its consequences—notably cervical cancer" (4). Those who acknowledge these patterns tend to emphasize women's role as *mothers*, however. As PATH's Jacqueline Sherris explains, CC "shatters families by taking women at the peak of their productive lives, when they are in their 40s and 50s. Often, and especially in communities with large numbers of AIDS orphans, these grandmothers and aunts play a crucial role in raising children and maintaining social cohesion" (ACCP 2008). Alternatively, the spread of HPV and HIV is blamed on women's "promiscuity" (Booth 1998).

CONCLUSIONS

We have shown that gender relations, especially women's comparative disadvantage vis-à-vis men and inequities among women across nations and regions, have profoundly shaped the HPV vaccine's emergence as a globalized biomedical technology. The vaccine has fostered new organizational forms and relations, including a U.S.-funded transnational alliance of NGOs targeting women's health, shifts in CC screening, and aspirations to address HIV alongside HPV. However, given the history of Western philanthropic imperialism in general and of key organizations in particular, "progressive" contemporary practices may in fact overlay less progressive agendas. Notions of women's health, deployed strategically by ACCP and others, may conceal more traditional (even eugenic) meanings of gender and sexuality. For example, framing "Third World women" as always and already reproductive and thus as viable (and homogeneous) biopolitical targets indicates that public health practices designed to reduce CC incidence may do much more.

In an era when transnational NGOs seek to create equality among men and women (with minimal attention to differences *among* women), it is crucial to reveal the subtle ways that notions of gender may obscure the specific realities and needs of women. Biopolitical public health practices such as CC

screening and vaccination define women and girls in aggregate and uniform terms: they are *categorically* the target population for HPV/CC prevention practices. Some commentators wrestle with the contradictions embodied in transnational health practices, including the ethically problematic "need" for different screening technologies in different regions. Others reproduce these inequities through universalizing discourses and practices. Caught in the middle are girls and women at risk for CC and other diseases who may desperately desire improved health care technologies.

A different example of "transferring" a technology for women's health across national borders can be found in Kathy Davis's (2007) analysis of the global travels of the women's health guide *Our Bodies, Ourselves*. *OBOS* is an explicitly feminist technology, comprising not just an informative book (and, later, website) but also a set of strategies for creating, collecting, and disseminating knowledge about women's bodies (by, for, and to women). Davis shows how *OBOS*, in more than twenty-seven translations and adaptations around the globe (most created by local women's collectives), provides even the poorest women with resources to question and challenge (masculinist) understandings of women's bodies, health, and sexuality—that is, key biopolitical discourses—thereby potentially disrupting the government of bodies/populations.

As the HPV vaccine is implemented transnationally, we must attend to the shifts and contradictions it animates in the name of improving women's health. While the vaccine appears to be the solution to preventing CC, it is not a solution for resolving poverty and sexism; its use may showcase and deepen global inequities. Examination of governmental practices organized around CC prevention reveals that new NGOs may replicate old-fashioned imperial politics in the name of technical innovation. If, as some of these NGOs suggest, girls and women have the right to obtain access to new technologies, then surely they also have the right to live free of poverty, violence, disease, and hunger. A truly progressive women's health agenda would weave women's own needs and desires into every stage of a technology's life course from design to use, while at the same time ensuring that governmental practices reorder and resist rather than reproduce gender hierarchies.

NOTE

1. About 2.5 million girls were vaccinated in Gardasil's first year of availability in the United States (*Medical News Today* 2008).

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