

## Thomas Parran Award Lecture

# *A Funny Thing Happened on the Way to FHI*

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MY DEEPEST THANKS TO ASTDA, Jonathan, the Selection Committee, and the entire field of sexually transmitted diseases (STDs) for this wonderful honor. You welcomed me into your fold as a virtual unknown in the early 1980s, and then provided a phenomenal and continuous learning opportunity thereafter. Many of you in this room have been both mentors and colleagues on a variety of projects over the last 2 decades, so many in fact that I would use up most of my time if I attempted to name you all. However, rest assured I am totally grateful and offer you my sincerest thanks.

I have entitled this talk “A Funny Thing Happened on the Way to FHI” because it also deals with the unique circumstances that got me to this podium today, but more on that later. Two thousand three has been quite a year for the Cates family. On a personal front, both of our daughters decided to get married within 5 months of each other, thus the financial award that goes with this recognition is much welcomed. On a professional front, the year has provided an opportunity to deliver overview lectures to several key audiences: to senior scientists of the American Epidemiologic Society, next to burgeoning scientists at the Centers for Disease Control and Prevention’s (CDC) EIS conference, and now the full range of STD scientists attending this ISSTDR meeting. At each talk, I have tried to weave in the history of our unique field, demonstrating how, in the field of sexual health, “the more things change, the more they remain the same.” Today, I will continue this theme.

### **Parran’s Heritage**

The person for whom this lecture is named, Thomas Parran, is a person of major importance to our field (Fig. 1). His gracing the cover of *Time* magazine in 1936 was an appropriate recognition for the already-monumental contributions Parran had made.<sup>1</sup> As a public health practitioner at both the state and federal level, he eventually rose to the heights of Surgeon General. Parran creatively used this health “bully pulpit” to advance the cause of

venereal disease (VD) control by instilling the then-novel concept of secondary prevention.

The American culture after World War I preached “social hygiene” as a means of VD control.<sup>2</sup> This judgmental term implied the cleansing of society of unclean, immoral sexual enticements. Parran instead embraced science and medicine as his vehicle for attacking venereal infections. First in New York State and then for the entire country, he embodied FDR’s New Deal approach to providing public health services. Parran strongly advocated for the government’s proactively inserting itself into diagnosing and treating the heretofore-clandestine sexual infections.

Parran’s approach was clearly laid out in his landmark work, *Shadow on the Land*.<sup>3</sup> Just like with HIV today, syphilis during Parran’s time was an incurable, fatal, global infection. His Platform for Action emphasized broad approaches to syphilis case-finding through routine screening, educating the public about its symptoms, improving the quality of VD services, and actively tracing sex partners of those found to be infected. As the *Time* cover showed, he brought the field of VD to center stage.

However, this success came with a price. Parran deliberately avoided the more sensitive topic of primary prevention, being reluctant to deal with the issue of safer sex.<sup>2</sup> He never promoted condoms as a means of VD prophylaxis, even though they were widely championed by Margaret Sanger and her feminist colleagues as a way of preventing pregnancy. In fact, perhaps because of his Catholic heritage, Parran avoided the topic of contraception altogether.<sup>2</sup> Thus, somewhat ironically, Parran’s approach to VD control created a separation of the fields of infection prevention and pregnancy prevention, a division that still exists today and to which I devote the remainder of this talk.

### **Personal Odyssey**

It is customary in these Parran lectures to present a brief personal career history. In my case, winding up in front of you today was largely serendipity, a testimony to the ways in which life’s unplanned vicissitudes can have a happy ending. Thus, the title of this talk. In 1974, I joined the CDC in hopes of furthering a career in preventive medicine and learning its basic science of epidemiology. The CDC scientific farm system, then and now, is the Epidemic Intelligence Service, a 2-year fellowship in applied epidemiology. The EIS officers receive their initial CDC assignments through a system analogous to residency matching. During the match weekend, I listed a variety of positions, any of which I

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Received for publication August 11, 2003, and accepted August 15, 2003.

thought would allow optimal development of my epidemiologic skills. Like nearly all my EIS classmates, the odds were that I would probably wind up in one of the infectious disease or state health department positions. However, when the match was announced, I had been assigned to the Abortion Surveillance Branch in the Family Planning Evaluation Division. Although somewhat surprised, because I could not distinguish a curette from a toaster, nonetheless, this act of fate provided an amazing career opportunity.

As an aside, my timing in arriving in Atlanta was also fortuitous. Tennis leagues were being formed and CDC was looking for players. Seven teammates (who were relatively young at the time) joined together to eventually win the city championship; of the 7, 4 have now been selected for the Parran Award: Larry Corey, Walt Stamm, Bill Darrow, and now me! Only Bill was in the sexually transmitted disease field at the time.

Back to my abortion days. In 1974, the *Roe v. Wade* Supreme Court decision had just been announced, and the public health impact of legalizing abortion was palpable.<sup>4</sup> Women could terminate their unintended pregnancies in modern health facilities rather than back alleys, which allowed much safer choices. Moreover, this national “natural experiment” in public policy provided a remarkable opportunity for me as a developing epidemiologist to collect data about the numerators and denominators of a key issue of our time. Together with my then CDC and now FHI colleagues, David Grimes and Ken Schulz, I was fortunate to be in a position to learn more about a single surgical procedure, legally induced abortion, than we know about any other operation. Moreover, because of the visibility of the issue, our being able to translate epidemiologic findings rapidly into policy actions was rewarding. During the 1970s, we directly influenced Supreme Court decisions, Congressional legislation, Presidential Executive Orders, and even Health and Human Services funding, heady stuff for a small group of 3 at the CDC.

For those dealing with STDs, a particularly topical, and career-influencing, article we wrote involved comparing the safety of “treatments” for 2 sexually transmitted *conditions*: abortion for unintended pregnancy with penicillin for syphilis.<sup>5</sup> Using the World Health Organization’s (WHO) statistics on the risk of anaphylaxis from penicillin, we found that, contrary to popular mythology which still saw abortion in its coat hanger days, terminating pregnancies under safe, legal conditions was no more dangerous than a shot of penicillin to cure a sexually transmitted infection. We initially attempted to publish this comparison in the *Journal of the American VD Association* (currently *Sexually Transmitted Diseases*). We got one of the fastest rejection letters ever received, with a note that this type of comparison would be better intended for a family planning audience, not one concerned with venereal diseases.

This controversial comparison, plus others we made during the 1970s, clearly established the safety of legal abortion. However, the data did not sit well with those opposed to allowing American women this choice. With the change of political administrations in 1980, from Jimmy Carter to Ronald Reagan, so came my second surprise career opportunity. In 1982, Bill Foege, who was then the Director of the CDC and was formerly my PM residency advisor, called me into his office, and we discussed the stark realities. Surgeon General Koop had just been approved by Congress, and I was the Administration’s next target. The CDC itself was in a sensitive position, with cutbacks to the Federal budget overall and the Public Health Service in particular. The agency could not afford to fight a controversial battle to save me, no matter how justified its position. Bill offered several career-changing directions, the National Clearinghouse for Smoking and Health was



Fig. 1. Thomas Parran—the Person.

moving to the CDC, and the Division of VD Control’s Task Force for Kaposi Sarcoma/Opportunistic Infections was seeking more help in its fledgling months. I chose the latter and the rest is history as they say.

Within months, Paul Weisner announced he was going to the National Center for Environmental Health, and the search for a new director of the Division of VD Control was underway. The Search Committee interviewed outsiders and insiders. As a newcomer, I was not initially on any list. Near the end of the process, to provide a totally fresh perspective, Paul asked me to interview. Much to my surprise, to say nothing about that of the rest of the VD field, Mike Lane called thereafter and asked me to be the new director. One slight problem remained however; because of my heritage with abortion and the field of unplanned pregnancies, I had to get clearance at the department level. This process took over a week, and some still untold negotiations, but in the end, the Administration said okay. Because of these 2 acts of fate, the EIS match and the Reagan election, I stand before you today. Talk about being lucky.

### The Emerging Cultures

The remainder of this talk touches on my intellectual struggle in transitioning from a mindset concerned with *unintended pregnancy* as the priority to a focus on sexually transmitted *infections* as my discipline. As I wrestled with understanding the nuances of the different cultures, I realized they were characterized by several similarities.<sup>6</sup> Both conditions are transmitted sexually. Both have a disproportionate effect on women. Both occur at higher levels in young, low-income population, and finally, consistent and correct use of condoms reduces the risks of both conditions.

These similarities can be shown by the high incidence of STD and unintended pregnancies in a young Atlanta female popula-

tion.<sup>7</sup> Over an interval of just 6 months, nearly 1 in 5 young women had acquired chlamydia. However, the second most frequent sexually transmitted condition acquired during this study was unintended pregnancy, at a rate of 1 in 8 young women, higher than gonorrhea, herpes, and trichomonas combined. Unfortunately, this fact was not included in any of the tables in the article but had to be ferreted out of the discussion section of the text. Again, a lost opportunity to highlight the overlap of the 2 cultures.

However, the differences between the fields of STD and unintended pregnancy are even more dominating than their similarities.<sup>6</sup> For example, the percent of the population capable of transmitting these conditions, their respective transmission coefficients, as well as the focus for prevention basic science, clinical services, and activities are all different. Moreover, their approach to the clients creates distinctly different attitudes; in family planning clinics, clients are provided with nondirective counseling, allowing them to select among the range of contraceptives available; in an STD clinic, the counseling is much more directive: oriented toward taking medicines as prescribed, not having sex until completing therapy, and making sure that sex partners get appropriately treated. I have elaborated much more on these differences in past articles<sup>6,8</sup> so I will not delve further here.

### The Impact of HIV

Just as I was reconciling some of these fundamental issues between the fields of family planning and STD, the situation became even more complicated. The discovery of the virus HIV and the awareness of its global importance have dominated public health over the past 2 decades. This led to the emergence of 3 cultures, not 2, and had an impact on both the field of STD prevention and also that of pregnancy prevention.

The *Newsweek* cover in August 1985 woke Americans up with the realization that one of its idols, Rock Hudson, was dying of AIDS.<sup>9</sup> Moreover, this same *Newsweek* issue, at the time the total number of AIDS cases was just over 12,000, contained a quote from me which I wish had not come so true: “Anyone who has the least ability to look into the future can already see the potential for this disease being much worse than anything mankind has seen before.” My CDC colleagues thought I had crossed the line with my rather excessive hyperbole. Tragically, history has shown my fears to be realized.

In response, the Division was renamed STD/HIV Prevention, and we were dealing with 3 cultures rather than 2. This has created additional communication hurdles. Fortunately, during the next 15 years, the strategies of the 2 infectious disease fields have grown closer together. At first, in the 1980s, the addition of HIV had little impact on the biomedically driven model of STD control. HIV was focusing on prevention messages directed toward the highest risk communities. However, by the 1990s, voluntary counseling and testing for HIV had become more widely available, and antiretroviral treatment allowed dramatic prognostic improvement.<sup>10</sup> HIV care began to resemble its STD brethren. At the same time, the field of STD control was taking a more community-oriented approach. Thus, by the time of the new millennium, their strategies, although not their bureaucracies or funding streams, were quite similar. In fact, the CDC’s current approach of targeting HIV prevention activities to those who are infected represents the same approach undertaken by the STD community during the majority of the 20th century.

Unfortunately, during the same interval, HIV ramped up its international pace. The generalized HIV destruction in Africa was recognized, a concentrated HIV fortress in Asia was built, and an emerging HIV foothold in eastern Europe was established. It

became time for me to venture outside the confines of Atlanta’s Interstate 285 and move to FHI in North Carolina. This opportunity both allowed a merging of my 2 career fields at the CDC and also provided a wonderful chance to expand my professional domain into the global reproductive health and HIV agendas.

### Contraception and HIV

At FHI I helped describe how of HIV’s effects on the contraceptive field created additional issues for those delivering reproductive health services (Fig. 2). Like they had with the other STDs, family planning clinicians were concerned about the effect of different contraceptive methods on *acquisition* of HIV by their client population of predominantly uninfected individuals. However, for the person infected with HIV, use of contraception involves at least 4 different interactive levels:

1. Its effect on HIV transmission and genital shedding;
2. Its impact on the progression of HIV disease;
3. The possibility of increased contraceptive side effects compared with uninfected people; and
4. The effects of antiretroviral treatment on systemic hormonal contraception.

As with STD, the fields of unintended pregnancy and HIV saw the world through different lenses. A fascinating example of this occurred in 1996 at a meeting hosted by the National Institute of Child Health and Human Development examining the emerging data on the association of hormonal contraception and the acquisition of HIV. Over 150 persons attended and categorized themselves as being primarily from the field of contraception, the field of HIV, or from both. Although these experts had been listening to the same data, those identifying with the contraceptive field were generally less convinced of the association, those with an HIV identity tended toward being more convinced, and those having a foot in both camps remained the same. Apparently, both beauty and data are in the eye of the beholder, but the disparate effect on scientific interpretation creates difficulties in agreeing on prevention policies.

The concept of achieving dual protection against both unintended pregnancy and STD/HIV became a fashionable, albeit somewhat quixotic, effort over the past decade.<sup>11</sup> The outcomes of pregnancy and infection have different acquisition risks with a single exposure. Moreover, interpretations of contraceptive effectiveness are even more complicated depending on whether the method was being used “ideally” (namely, correctly and consistently) or “typically” (namely, sporadically). These conflicting situations between the 2 conditions conspired to produce “trade-offs” in choosing a method of contraception.

Suffice to say that the determinants of what is the best contra-

- **HIV uninfected - acquisition**
- **HIV infected**
  - **HIV transmission – genital shedding**
  - **Progression of HIV disease**
  - **Contraceptive side effects in HIV (+)**
  - **ART effects on systemic hormonals**

Fig. 2. HIV/Contraception—dimensions of the problem.

ceptive to achieve dual protection depends on factors operating at both the community and the individual level.<sup>11</sup> At the community level, if HIV/STD prevalence is high, emphasis on those contraceptives that reduce infection risks takes on greater weight. However, if the risks of unintended pregnancy are high (namely, unsafe abortion and dangerous childbirth practices), then those contraceptives with the better record of preventing pregnancy would be emphasized. The same factors, although individualized, operate for the client. They would self-assess their risks of HIV/sexually transmitted infection, as well as the personal consequences of an unintended pregnancy, to make an informed choice of contraceptive method or methods.

### Contraception as HIV Prevention

Another twist to the concept of dual protection operates at a more strategic level, namely, the use of effective contraception by HIV-infected women to prevent HIV sequelae down the road. Unfortunately, this remains one of the best-kept secrets in the field of HIV prevention. Most reviews of perinatal prevention strategies begin with the infected pregnant woman and emphasize antiretroviral prophylaxis to prevent transmission from the woman to her infant. However, earlier stages of prevention can be both more profound and more cost-effective. The WHO has proposed a 4-phased perinatal prevention strategy that includes the use of contraception as its second phase.<sup>12</sup> The 4-phase approach involves 1) preventing HIV in women overall, 2) preventing unintended pregnancies in HIV-infected women, 3) preventing transmission from an HIV-infected pregnant woman to her infant, and 4) providing support, and ideally treatment, for the mother and her family.

We can demonstrate the differential impact by comparing phases 2 and 3, namely, providing effective contraception and delivering low-cost nevirapine to a population of 1000 HIV-infected women. Using assumptions based on the best available data, we computed the number of infants infected with HIV either during delivery or the breastfeeding interval and the number of uninfected infants becoming orphans (Fig. 3). We compared 4 categories of care: 1) the "usual" standard of care (namely, no care in most resource-poor settings), 2) providing nevirapine like in phase 3 only, 3) providing contraception like in phase 2 only, or 4) providing both phase 2 and phase 3 sequentially.

Focusing on the delivery interval, without any intervention, 150 infants would be infected with HIV. If nevirapine were available and chosen by pregnant, HIV-infected women, this number could be reduced to 82, which is the expected 47% decline. If effective contraceptive services were available to all HIV-infected women who did not want to become pregnant, this number would be reduced to 49, and finally, if both these strategies were used, we could further decrease the number of infected infants to 25.

During the breastfeeding interval, a paradoxical effect occurs with nevirapine compared with no intervention. Because the number of infants uninfected at birth rises with nevirapine, so does the denominator of those exposed to the breastfeeding interval. Thus, the number of infants infected during breastfeeding increases with use of nevirapine. This does not occur with contraceptive services, because the pregnancies themselves are prevented.

Finally, the most dramatic effect of these 2 phases is on the number of future infants orphaned because their mothers die of HIV infection. Without any intervention, 300 orphans will eventually be left behind by the death of their mother. Using nevirapine to prevent transmission again has the paradoxical effect of creating more orphans because a greater number of infants will be uninfected and live longer, whereas their mothers will die in the

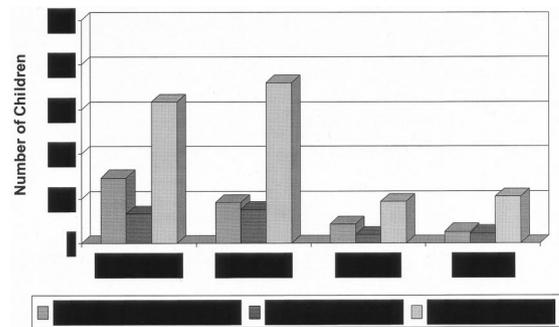


Fig. 3. Comparative outcomes of providing nevirapine (NVP) and effective\* contraceptive services (CS) to 1000 HIV-infected women during 1 year of service delivery.

absence of antiretroviral treatment. However, with contraceptive services, the number of unintended orphans declines dramatically, to less than 100, because the unintended pregnancies themselves are prevented. Likewise, when both phases are used, the overall impact is best.

These data are compelling. Providing effective and safe contraceptive choices to HIV-infected women who do not want to currently become pregnant optimizes the effect we could have on reducing the number of infected infants and future orphans. The main question facing us with phase 2 is which method of contraception is best in these settings. . . . Stay tuned for further research.

### Sexual Health, Not Disease

In closing, I wonder what Thomas Parran would do if he were alive today. How would he approach this gulf that exists among the 3 cultures of unintended pregnancy, STD, and HIV? Knowing his pioneering mentality, as well as the evolution of society's attitude to the topics of primary prevention and contraceptive choice, I feel Parran would certainly take this challenge head on. Moreover, I hope he would endorse a direction I have been championing in recent years, namely, joining the overlapping fields in a common sexual health initiative. We have tended to approach our field of STD in negative terms to achieve an "absence of disease." Instead, it would be great if we could move forward with more positive messages talking about healthy sex.

WHO has recently refined its pioneering definition of sexual health,<sup>13</sup> calling it the "integration of the physical, emotional, intellectual, and social aspects of sexual well-being in ways that are enriching an enhanced personality, communication and love." The emphasis is on sexual *health*, not sexual *disease*. Also, although they present sex education curricula differently, 2 organizations, SIECUS and The Medical Institute for Human Sexuality, have categorized healthy sex using 5 general criteria: consensual, nonexploitative, honest, mutually pleasurable, and protected.<sup>14,15</sup> These 5 categories taken together promote a strategy of healthy sex rather than absence of disease.

One thing is for sure: as Zena Stein eloquently stated,<sup>16</sup> if we allow our 3 cultures to remain divided, we will continue to chase the negative consequences of unintended pregnancies and sexually transmitted infection for the rest of our lives. We have to do a better job of talking among ourselves, of looking for the synergies among our disciplines, and of taking a more sexually holistic approach to our clients.

Thank you again for this honor.

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