DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
and Prevention

February 4, 2005

Dear Colleague,

You are probably aware of a recently-published letter to the editor of the journal *Nature* in which Grassly and colleagues hypothesize that changes in the immunity of the population are largely responsible for periodic syphilis outbreaks, rather than changes in sexual behavior. You may also be aware of a number of web and print articles in the popular media reporting on the Grassly letter and analysis, many of which concluded that unsafe sex was not responsible for syphilis outbreaks.

We at CDC are concerned about such broad conclusions circulating in the public media and have written a letter to media editors (attached) to clarify some key points about the importance of behavior in the transmission of STDs, including syphilis. In the context of discussion about the Grassly paper, we believe the most important public health messages are:

1. The epidemiology of all STDs results from a dynamic interplay between the host, infectious agent and the effectiveness of STD prevention and control interventions. At present there is insufficient evidence to suggest that immunity is largely responsible for the observed changes in syphilis epidemiology. Rather it is the interaction between these factors, which influences the trajectory of STD epidemics.

2. Although this study provides some insight into the possible role of immunity, probability sample population surveys consistently show that high-risk sexual behavior is the key determinant of an individual's STD acquisition risk. Behavioral modification e.g. by avoiding sexual activity or reducing the number of sex partners, is the best strategy to reduce an individual's risk of acquiring syphilis.

3. Changes in syphilis epidemiology in the US have accompanied substantial population-wide changes in risk behavior, especially in groups such as men who have sex with men (MSM). The marked declines in syphilis incidence in the mid to late-1980s accompanied population wide reductions in risk behavior following the emergence of the HIV epidemic. In contrast, the recent increases in syphilis and other STDs among some MSM have accompanied substantial increases in sexual risk behaviors in this group.

4. Trends in national surveillance data for a highly endemic infection such as gonorrhea are likely to hide fluctuations in sub-populations such as MSM. Although national rates of reported gonorrhea have not shown the same patterns of oscillations seen in syphilis, there is growing evidence from local areas that the gonorrhea rates among MSMfollowed trends quite similar to those for syphilis, with decreases in the mid-late 1980s and increases in the later 1990s.

5. Syphilis epidemics are also strongly influenced by the effectiveness of STD diagnosis, treatment and prevention interventions. The widespread availability of penicillin resulted in marked declines in disease incidence. Other interventions (e.g. the syphilis elimination effort) have had a direct impact on raising public and professional awareness, and improving screening, diagnosis, treatment and reporting of this condition.

We hope this information is useful to you in responding to questions from local media, health care providers and the public. If you would like to discuss the *Nature* letter or any of the points we raise here or in the letter to the editor, please feel free to contact our Syphilis Elimination Coordinator, Dr. Kevin Fenton. He can be reached at 404-639-8187 or KFenton@cdc.gov.

Sincerely,

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Cyclical Syphilis Letter to the Editor

February 2, 2005

To the Editor:

Nothing would make the goal of eliminating syphilis simpler than being able to predict who will acquire the disease, when and where ("Researchers say rise and fall of syphilis rates due to natural cycle, not changes in sexual behavior," January 26, 2005). British researchers recently hypothesized that changes in the immunity of the population, rather than changes in sexual behavior, are largely responsible for periodic syphilis outbreaks. However, the real world of sexually transmitted disease (STD) transmission is not so straightforward, and it is important for people to realize that sexual risk behavior is the critical factor in determining risk of syphilis and other STDs, regardless of the role played by immunity.

The cyclical nature of infectious diseases has long been recognized. However, there is a complex interplay of biology, behavior and control efforts that result in rises and falls in syphilis rates. The relative contribution of each, how they interact with each other, or how these interactions vary over time remains unclear. If natural cycles were the primary factor driving current syphilis trends, we would expect to see increases among heterosexual men and women as well as gay men. But this has not occurred.

In contrast, scientific studies have consistently demonstrated that sexual risk behavior is the key determinant of an individual's risk of acquiring an STD. Recent increases in syphilis rates, particularly among men who have sex with men (MSM), are associated with increases in sexual risk behaviors, and correspond closely with increases in other STDs. For example, clinic-based studies have shown rising gonorrhea rates among MSM over the past five years in the U.S.

In our effort to confront America's STD epidemics, it is imperative to examine every pattern in disease transmission that might offer clues about how to make syphilis a disease of the past. Although the role of immunity in determining syphilis epidemics is important to clarify, it is critical that we do not forget the primary role of behavior in STD transmission. As with all other STDs, prevention is our best defense.

Sincerely,

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