

Speed Zone Epidemiology: A Preliminary Report On Benzathine Penicillin G For Gonorrhea in Women

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SINCE the discovery by Neisser of the role of the gonococcus in gonorrheal infections, efforts have been made to prevent the spread of this organism from one person to another. With the advent of penicillin in 1944, it was hoped that gonorrhea would be rapidly controlled, but this hope has not been realized. Since there has never been any difficulty in effecting cures in men no matter what type of penicillin has been used, one is led to believe that the reason for continued high rates is that infection in women is either undetected, inadequately treated, or both.

The Venereal Disease Control Clinic in the Memphis and Shelby County Health Department on March 16, 1953, set up a "speed zone" epidemiology program. In speed zone epidemiology all male patients are interviewed for the names of contacts and an effort is made to bring these contacts to examination and treatment within 72 hours.

The results of this program have been disappointing. Between March 16, 1953, and March 16, 1956, 9,835 men were admitted to the clinic. They named as contacts 15,410 women, of whom 12,921 were within the jurisdiction of the health department. Of these 12,921 women, 83.5 percent have been brought to examination and

treated either as infected patients or as possibly incubating contacts. In the first year of the "speed zone" epidemiology program, 3,229 men with gonorrhea reported to the clinic; in the second year, 3,397; in the third year, 3,209. The contact index remained at the 1.5 level over the 3 years. We have felt that our failure to reduce the incidence of gonorrhea has been due to our inability to control the disease in women.

Should a woman have sexual intercourse with a man within 24 hours following her treatment, it is conceivable that he may contract gonorrhea and, though he name her as the contact, she may be found to be free of the disease. Such an infection has nothing to do with the adequacy of therapy; at the time of contact the penicillin had not yet killed the gonococci. Apparently the sex activity of certain patients is such that the therapeutic agent does not have the opportunity to act long enough to prevent the woman from contracting the infection herself or from giving the residual infection to her partner.

The present study was undertaken to determine whether therapy has been adequate and whether other therapy might be more effective. Therapy had consisted of 600,000 units of procaine penicillin with aluminum monostearate (PAM) to each female patient plus the advice to take vinegar douches and to refrain from sexual intercourse and indulgence in alcohol for at least a week. Abstinence from alcohol was intended to increase resistance to infection and to sexual impulses. We decided to determine whether the addition of 1.2 million units of benzathine penicillin G (Bicillin) with a consequent longer lasting blood level of penicillin would improve the female patient's chance of bacteriological cure and reduce the incidence of repeat visits by female contacts. (Benzathine penicillin G was supplied by Wyeth Laboratories under the trade name Bicillin.)

During this study, 150 women, named as contacts, were admitted to the Memphis and Shelby County Health Department Clinic and cervical and urethral smears were taken. All of these women were given 600,000 units of PAM and 1.2 million units of benzathine penicillin G and

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advised to douche and refrain from sexual intercourse for at least a week. They were asked to return in 1 week and again in 4 weeks when re-examination and repeat smears were taken. Any patients whose smears were positive were re-treated with the same schedule as before.

Results

On pretreatment examination, 122 of the original 150 women in the study were found to have a smear positive for gram negative intracellular diplococci from either cervix or urethra, or both. Of these 122 women, 85 (70 percent) were treated. They returned to the clinic as directed for two followup examinations. Smears taken at these examinations were negative for the diplococcus. Thirty-four women failed to return, while three who completed the followup were found to be positive for the diplococcus. Of the original 150 women in the study, 28 had negative smears on initial examination and smears continued to be negative throughout the 30 days during which they were under observation. Of the original 150 women, 10 were renamed as contacts to men suffering with gonorrhea during the study period, and examination of these women showed 4 to be positive and 6 negative for gonorrhea.

In a study undertaken February through June 1955, it was ascertained that 15 percent of all female contacts were renamed by men with a diagnosis of gonorrhea during a period of 60 days following initial identification of the women as contacts. A similar study conducted February through March 1956, after the introduction of benzathine penicillin G for the treatment of gonorrhea in women, showed that 6.7 percent of contacts named (10 in 150) were renamed. This is a significant reduction, and we feel it is due entirely to the change in therapy.

There has also been a reduction in the number of men entering the clinic and diagnosed as having gonorrhea during the period January 1-May 25, 1956. The accompanying table shows this reduction to be the first of any magnitude since accurate records were kept, beginning March 16, 1953. It is true that this reduction has occurred only for a very short period but we have reason to believe, because

of the downward incidence of gonorrhea week by week until the day of the writing of this paper, that it will continue.

Gonorrheal infections in males treated in Memphis and Shelby County Health Department, January 1954-May 1956

Month	1954	1955	1956
January.....	230	295	¹ 215
February.....	227	224	210
March.....	265	303	266
April.....	223	202	² 193
May.....	274	246	209
Subtotal (5 months)....	1, 219	1, 270	1, 083
June.....	348	370	-----
July.....	275	280	-----
August.....	319	339	-----
September.....	329	377	-----
October.....	240	217	-----
November.....	218	187	-----
December.....	261	251	-----
Total (12 months)....	3, 209	3, 291	-----

¹ Beginning January 1, 1956, female contacts were treated with 600,000 units PAM and 1.2 million units Bicillin.

² Beginning April 1, 1956, males were treated with 600,000 units PAM and 1.2 million units Bicillin.

The addition of long-acting penicillin in the treatment of gonorrhea seems to have started a reduction in incidence of the disease in the venereal disease clinic of the Memphis and Shelby County Health Department. It is believed, however, that without the "speed zone" epidemiology technique a change in therapy alone would be ineffective. It is equally obvious that this technique alone over a 3-year period has in itself been equally ineffective. A combination of the two is necessary for success in the reduction of the incidence of gonorrheal infection in the community.

Conclusions

Speed zone epidemiology in itself is not adequate to control gonorrhea.

The addition of a long-acting antibiotic reduces the number of women reinfected and renamed as contacts within 60 days.

The addition of a long-acting antibiotic as a therapeutic agent reduces the incidence of gonorrhea in men.