Gonorrhoea identification
Telling signs of a social disease

New methods for gonorrhoea identification are being developed which may prove to be more reliable, rapid and effective than the techniques currently in use.

Through a collaborative effort between NRC's Dr. Malcolm Perry and Dr. B.B. Diena of Health and Welfare Canada, new methods for gonorrhoea identification are being developed which may prove to be more reliable, rapid and effective than the techniques currently in use.

The standard method for confirmation of gonorrhoea (the commercially available fluorescent antibody test) is considered inadequate by most clinicians because it is simply not reliable (up to 25 per cent error is not uncommon). The problem appears to be two-fold. Firstly, the nature of the technique does not provide clear-cut identification of the disease organism (*Neisseria gonorrhoeae* or gonococcus) and, secondly, its lack of specificity sometimes indicates a positive reaction for other bacteria similar to gonococcus but which do not cause the disease (this could result in some infected people thinking they do not have the disease and others needlessly worrying that they do). The problem in diagnosis is further complicated; males and females can carry and transmit the disease organism without suffering any of the symptoms. The need for fast, reliable gonorrhoea tests is even more paramount considering the incidence of the disease. Today, about 0.2 per cent of the Canadian population is afflicted by gonorrhoea, and in certain groups that figure reaches three per cent.

Each of the new identification tests developed by the Ottawa team have one common factor: the use of specific antibodies for identifying gonococci. The antibodies are produced by injecting into laboratory animals a special purified part of the gonococcus cell wall (made up of sugars and fats). Because the injected fat-sugar structure is unique to gonococcus, the resulting antibodies are specific and, when used in the test, attach to and thus identify only the gonococcus and not the other closely related bacteria often found in the body (hence the reliability of the test.)

The most promising of the procedures (the clumping or agglutination test) is also the simplest. A sample taken from a patient is grown on special nutrients to increase the gonococcal populations (there can be many different kinds of bacteria in the sample). Suspect colonies then are suspended in liquid and mixed with the specific antibodies. If gonorrhoea-causing bacteria are present, the antibodies bind them together creating clumps which fall out of suspension and are visible to the naked eye. The reaction is immediate and unlike other tests does not require sophisticated equipment or techniques. Along with the benefits of accuracy and simplicity, the test also has the distinct advantage of speed; a correct answer is possible within 24 hours of obtaining a sample from a patient.

Extensive laboratory testing of the agglutination procedure was conducted at Health and Welfare Canada, National Research Council and the Ontario public health laboratory in Ottawa. After these investigations had demonstrated its effectiveness, MDS Health Group Ltd., of Toronto, was contracted under NRC's Program for Industry/Laboratory Projects (PILP) to prove the test's feasibility in clinical field trials. MDS, which also holds the license for the test's manufacturing and marketing rights, has already conducted one successful trial and is proposing others, prior to production, to insure that it will work on the variety of gonorrhoea strains found across Canada.

A second test developed by the Ottawa team requires the same antibodies as the first, except that fluorescent molecules have been attached to them. When these labelled antibodies are mixed with gonococci, they can be detected through a microscope by a tell-tale fluorescent ring of antibodies attached specifically to their surface.

Rigorous laboratory testing of the fluorescent procedure has proved it just as effective in detecting gonococci as the first; currently, MDS is conducting clinical feasibility trials to determine this method's marketing potential.

Two other tests, which are variations on the same theme, are now being refined. When completed, this variety of definitive tests for gonorrhoea will allow clinical laboratories to select the procedure most suitable for their identification program. □

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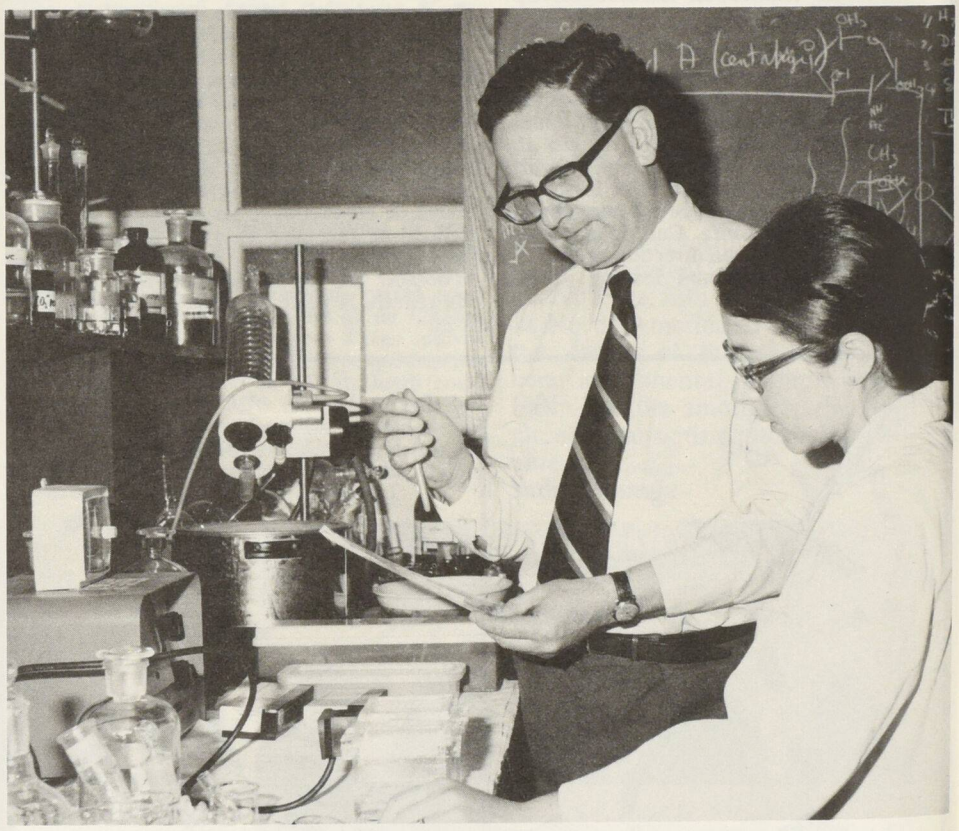

Bruce Kane NRC/CNRC

Dr. M.B. Perry and Mrs. Virginia Daoust study the results of an experiment.

Le Dr M.B. Perry et Mme Virginia Daoust étudient les résultats d'une expérience.