Infertility

by Patrick J. Rowe

Infertility is a problem that affects men and women of reproductive ages in all areas of the world. Although estimates of how common infertility is are not very accurate and vary from region to region, some 8 to 15 per cent of couples experience problems in achieving a pregnancy during their reproductive lives. This represents some 50 to 80 million people, and it is well recognised that infertility can cause considerable personal suffering and disruption to family life.

The rate of population growth worldwide has undergone a rapid decline through international and national governmental pressure, the increased provision of contraceptive services, and a re-evaluation of the traditional need for large family sizes. Against this background, infertility has not received as much emphasis as fertility regulation and it has been questioned whether scarce medical resources should be devoted to the prevention, diagnosis or treatment of infertility.

However, the changes in population growth over the past 50 years in the developed countries, and over the past 20 years in some developing countries, make infertility a more urgent problem. In other developing countries, that have not been through the population change from high death rates in childbirth and infancy to smaller family sizes and increased health and social opportunities for the smaller family unit, the problem of infertility is closely linked to the introduction and the extent of use of contraceptive services. If couples are asked to voluntarily restrict their own fertility, they must also have access to services for the diagnosis and treatment of infertility when the couple wish to have their first or another child.

A couple’s inability to have a living child may stem from:

**Primary infertility:** the woman has never conceived despite cohabitation, regular sexual intercourse and exposure to pregnancy for 2 years.

**Secondary infertility:** the woman has conceived previously but is subsequently unable to conceive.

**Pregnancy wastage:** the woman is able to conceive but unable to produce a live birth.

**Subfertility:** Clinicians define this as the difficulty experienced by some couples, both of whom may have reduced fertility, jointly to conceive. Demographers define it as the inability of a group to maintain a birth rate equal or superior to the general mortality rate.

To understand the more frequent causes of infertility, it is necessary to outline the process of reproduction in the male and female.

Classically, each type of infertility can be attributed to congenital causes or acquired causes. The former stem from abnormalities in the development of the genital tract in either the male or female. Examples of this are absent ovaries and hence no ovulation, absent vagina and hence no intercourse. Obviously these causes result in primary infertility. There are congenital causes of male infertility, but these are more usually detected before sexual maturity and are therefore infrequently counted as cases of infertility. For example, normally the testes reside inside the abdomen and migrate downwards to fill the scrotum in early childhood. In some cases this fails to happen and the testis fails to mature and produce sperm.

Among acquired causes in women, there may be a deficient production of two key hormones — follicle stimulating hormone (FSH) and luteinising hormone (LH) — by the pituitary gland, in which case the patient will not ovulate at all or only very infrequently. Or there may be an excessive production of the hormone which stimulates the breast to produce milk — prolactin. As with FSH and LH this is produced by the pituitary. Hormone injections or special drugs can often restore the normal menstrual cycle and fertility in such cases.

Infection is one of the most common causes of infertility in women. It may result in adhesions around the ovary and tube, preventing the passage of the ovum into the tube. The tube itself may be affected by the infection and become blocked. Abortion and delivery are particular occasions for the uterus or tubes to be damaged by infection, especially where the abortion has been criminally induced or either abortion or delivery takes place in unsanitary conditions.

A large research study conducted by WHO in 25 countries has shown that the results of previous infection in the genital tract play a very important role in causing infertility. One third of the women in developed countries complaining of infertility showed evidence of previous pelvic infection, including blocked tubes. Similar numbers were found in Asian and Latin American countries, but in the African centres nearly twice as many women (63 per cent) had causes related to previous infection. In fact 40 per cent of African women who had been pregnant had tubal blockage.

There is a well established connection between gonorrhoea and subsequent infertility due to tubal blockage. This is particularly important in view of the almost epidemic proportions of the post-World War II outbreak of this disease, its increasing resistance to antibiotic therapy and the fact that it is frequently symptomless or produces only transient symptoms.

Recently, a newly identified bacterial organism called Chlamydia has been shown to be more important than gonorrhoea in causing infertility. Like gonorrhoea, Chlamydia is a sexually transmitted disease; but infection with this organism may cause no
symptoms in either the female or her male partner. Such infections can be effectively treated with antibiotics, but successful treatment carries no protection against reinfection.

Tuberculosis may affect the lining of the uterus and prevent implantation of the fertilised ovum as well as causing blocked tubes. It is held to be the cause of female infertility in up to 5 per cent of cases.

In some cases of infertility, normal sexual intercourse has never taken place and therefore ejaculation has never occurred in the vagina. This may result from ignorance on the part of both partners, or there may be underlying psychological fears about intercourse held by the woman.

Among acquired causes of infertility in men, the testis can be infected by the mumps virus. Tuberculosis and syphilis can affect the testis and the duct leading from the testis, causing an obstruction to the passage of sperm.

Improperly performed surgical operations to correct testes that have not descended into the scrotum, or the repair of inguinal hernias in rare instances, may damage the blood supply to the testis and so impair its function.

One of the more frequently recognised causes of male infertility is a varicocele which takes a form of varicose veins around the testis. These can increase the amount of blood surrounding the testis and raise its temperature. It is well known that sperm production is greatly reduced by increasing testicular temperature, and indeed tight-fitting underwear has been suggested as one cause of male infertility. These varicose veins can be treated surgically, but it is not yet clear whether this will result in an improvement in sperm production and an increased chance of the female partner becoming pregnant.

Men suffering from alcoholism have reduced libido and thus reduced fertility. Certain drugs, including some antibiotics and anti-depressants, are known to reduce sperm production.

Less is known about male causes of infertility than female and, of those causes that can be identified in the male, fewer are open to corrective treatment. What is known is that the male is responsible for the couple's infertility in at least 40 per cent of cases.

There remain a number of couples who, when investigated, appear normal but still fail to conceive. There are many unanswered questions about infertility although recent research into the mechanism of ovulation, fertilisation and implantation has resulted in many couples now being successfully treated for their infertility. In vitro fertilisation or the "test tube baby" technique has been used mainly for women with blocked tubes, but is now being used for more and more cases where the cause of infertility cannot be determined. This treatment has received enormous publicity over the past decade, but is very expensive and requires highly trained personnel and causes considerable inconvenience to the patient. Although in developed countries there are now many centres offering this treatment, the best results have shown no more than a one in four or five chance of pregnancy.

The cornerstone to the management of any disease, including infertility, is prevention. Obviously it would be very difficult, if not impossible, to prevent the congenital causes of infertility and the disorders of sperm production or ovulation not caused by drugs, the environment or psychological stress. But genital tract infection in either partner can be prevented. The major causes of these infections are sexually transmitted diseases such as Chlamydia and gonorrhoea, but it will take a major effort in health education and significant changes in social behaviour and sexual practices to make a significant reduction in these preventable causes of infertility.