diagnostic test of fetuses that are small for dates. The definitive studies have yet to be described, but intrauterine growth retardation with normal blood velocities in the umbilical artery will probably prove to be a largely benign condition not requiring much monitoring or intervention whereas with no diastolic flow the fetus may decompensate at any time and should be monitored accordingly. These investigations—which are not difficult to do—should therefore become a useful part of fetal assessment. But if abnormal results are taken as a cue for immediate delivery then the test is being misused and may unnecessarily acquire a bad reputation.

Because the measurement is simple it might also be used to screen unselected low risk pregnant women for placental insufficiency. Any pattern less extreme than absent diastolic flow in the umbilical artery, however, is unlikely to be worth detecting. The benefit of screening would be to identify fetuses that merit closer monitoring, not immediate intervention. Studies have still to be done to show whether this would be useful.

The second placental circulation—the uteroplacental circulation—is more complex. It is fed by four arteries (ovarian and uterine), the relative importance of each being determined by the position of the placenta. Their branches form an anastomotic network of arcuate arteries within the uterine wall. Those underlying the placental bed carry higher flows at lower resistances so there is considerable regional variation, which may be increased by focal pathology such as infarcts within the placenta. One standard artery cannot therefore be used to characterise the uteroplacental circulation, and variation caused by inadvertently sampling different arteries will be high. Moreover, visualising the relevant vessels with a duplex system is impossible without colour systems. And if the placenta is posterior then the appropriate vessels are inaccessible to examination.

Examination of the uteroplacental circulation is, therefore, more difficult and less likely to yield useful information. An initial report suggested that “high resistance” patterns in the

arcuate arteries, detected as early as mid-gestation, could predict a range of fetal problems common to placental insufficiency.¹¹ Similar results have been reported by another group¹² but could not be confirmed by a third, who found no differences in the uteroplacental arterial waveforms between women with pregnancy induced hypertension and matched control cases.¹³ The selection criteria may have been too non-specific, focusing on maternal hypertension rather than placental insufficiency. But what is clear is that the technical problems of assessing the uteroplacental circulation are both formidable and unresolved, and the methods are a long way from application in clinical practice.

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Anencephalic organ donors

Guidelines available from Britain and North America

Hearts are now being transplanted into neonates with congenital cardiac malformations; hence healthy beating neonatal hearts are needed, raising profound ethical issues. Donors may be either infants born with non-cardiac malformations that will kill them within hours or days—for example, anencephaly—or normal infants who have suffered severe brain injury from which they cannot recover. Difficulties arise in diagnosing death in both categories. In anencephaly the criteria of brain stem death used in adults are inappropriate because the brain stem functions when little else does; neonates with brain injuries have a much greater facility to recover than adults, and the standard criteria of brain death may not apply.

The first neonatal cardiac transplant was performed in Britain in 1986. Because of the uncertainty that then existed about what constituted brain death in neonates the chief medical officer issued a moratorium on further transplants. He sought the advice of the conference of the medical royal colleges, which produced a report in February 1988.¹ The moratorium was then lifted. The report of the colleges sits

neatly alongside the recently published account of a meeting held in Canada in January 1987, which was convened by Dr Calvin Stiller to discuss the use of anencephalic donors.²

The precise need for neonatal transplantation has still to be established. The royal colleges' report considered that the cardiac malformations of a hypoplastic left heart, heterotaxy, and pulmonary atresia with a ventricular septal defect might be treated by transplantation and estimated that about 160 patients with these conditions are born each year in England and Wales. The yearly incidence of these conditions (0.25 deaths for every 1000 live births) is similar to that recorded for anencephalic babies in California (0.23 for every 1000 live births). In the United States as a whole the incidence of anencephalic babies born alive is 0.5 for every 1000 live births; the greater incidence may be explained by poorer screening programmes.

Clearly such screening programmes will influence profoundly the number of anencephalic babies who reach term. Raised maternal serum α fetoprotein concentrations are detectable from the seventeenth week of gestation, and the

diagnosis of anencephaly may usually be confirmed by amniocentesis and ultrasonography. A termination of pregnancy may then be offered to the parents. Because of the antenatal surveillance programme in Britain the number of anencephalic babies who survive to gestational age is probably much smaller than that in the United States. The royal colleges' report estimates that no more than 20 such donors might be available for heart donation.

It might be thought that parents of an anencephalic baby would find the question of organ donation repugnant. The North American experience suggests otherwise. Dr Stiller reports: "I have been approached by several women carrying anencephalics and their physicians, who have sought to redeem the pregnancies by the use of the organs from these babies after birth to give life to others." Professor Bayley, a professor of surgery from California, has stated: "My experience at a transplant centre has been that most parents who give birth to an anencephalic infant are not only willing for their infant's organs to be donated but are usually insistent." The generally favourable attitude to transplantation suggests that similar sentiments would be found in Britain.

If anencephalic babies are to be used as organ donors then we must establish precisely when they may be regarded as being brain dead. After much deliberation the British and Canadian groups arrived at the same conclusion—that absence of spontaneous respiration would signify death. The British document states that "organs for transplantation can be removed from anencephalic infants when two doctors who are not members of the transplant team agree that spontaneous respiration has ceased." In the adult the diagnosis of brain death together with apnoea is recognised as death.³ The colleges thought that by analogy the absence of the forebrain in these infants together with apnoea might similarly be recognised as death. In practice, respiration is likely to stop within 24 hours after birth, and only a few infants survive for up to seven days. Once respiration has stopped the infant may be ventilated and the organs removed. Diagnosing death in other infants such as those with brain injuries remains a problem. The colleges advised that organs should not be removed within the first seven days of life from neonates with

beating hearts even if they satisfy the brain stem death criteria for older children and adults. In effect, therefore, a moratorium remains on these donors. Both groups emphasised that no pressure should be put on parents to continue with a pregnancy solely for organ retrieval.

Using abortion material for transplantation into the brains of patients with Parkinson's disease should not be confused with transplanting neonatal organs as the legal considerations are different: an aborted embryo will never have been legally viable whereas a neonate of more than 28 weeks' gestation will have been. The clinical implications are, however, similar and complex. At the Canadian conference Caplan addressed the topic as it related to anencephaly and concluded that: "The fact that anencephalic infants lack the minimal capacities and abilities requisite for generating a duty of respect for their humanness does not thereby allow those in medicine to do anything they like with such children. The interest and sensibilities of parents and of society must still be taken into account in considering whether or not such children should be used as tissue or organ sources. . . . If the parents of an anencephalic infant wish to donate their child as a tissue or organ source, and if this can be accomplished in a manner that does not violate the sensibilities and values of the medical profession or society concerning the treatment of human materials, then it would seem desirable to amend existing laws governing organ procurement to include anencephalics as possible organ and tissue sources." In Britain there is no legal definition of death, and therefore no change in the law is required. The colleges' report, nevertheless, gives a strong lead on what is permissible, and its proposals are likely to become accepted practice.

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Genital ulcers, other sexually transmitted diseases, and the sexual transmission of HIV

The first two may be important risk factors for the third

Several gaps remain in our understanding of the spread of HIV in the population. Firstly, there is considerable variation in its infectivity by sexual transmission: partners of people infected with HIV show widely different infection rates. Thus while some people remain uninfected after hundreds of penetrative sexual exposures with a partner with HIV infection others may become infected with HIV after only one or several such exposures. Several studies have shown no correlation between the number of sexual acts with an infected person and the risk of infection in a heterosexual relationship.^{1,2} Secondly, in contrast to the rarity of its occurrence among heterosexuals in Europe, the cause of the rapid heterosexual spread of HIV infection in some populations in sub-Saharan Africa remains an enigma, though several partial explanations have been suggested.³

Hence besides behavioural variables, biological factors

possibly also influence the sexual transmission of HIV. Evidence is growing that genital ulcerations, and perhaps other sexually transmitted diseases as well, increase the risk of sexual transmission of HIV infection. Thus a history of sexually transmitted diseases was significantly more common in both homosexual men and in heterosexual men and women with HIV antibody.^{4,7} This association was independent of the number of sexual partners and became stronger with an increasing number of episodes of sexually transmitted diseases.⁶

Several cross sectional studies in various populations, including homosexual men and heterosexuals, have found a strong association between a history of genital ulcer disease or markers for syphilis, or both, or antibody to *Haemophilus ducreyi*, or antibody against herpes simplex virus type 2, or both, and HIV infection, which is independent of sexual