

Xenotransplantation (30 October 1997)

Xenotransplantation - the transplantation of animal organs, cells and tissues to humans - offers one new approach towards overcoming the shortage of human organs for transplantation, the demand for which is expected to increase in both the developed and developing world in years to come.

The use of this technology could contribute to the World Health Organization's (WHO) goal of improving human health worldwide. As part of its regular activities to foster international consensus on issues related to human health, WHO invited 25 specialists from different areas and disciplines - microbiology, immunology, veterinary science, regulatory affairs, ethics, religion and law - and from various parts of the world - Africa, the Americas, Asia and Europe - to exchange their experiences and views on the feasibility and acceptability of this technology.

"Xenotransplantation is still experimental but holds potential for clinical applications," the participants agreed.

One of the major obstacles to xenotransplantation is rejection of the grafted animal tissues or organs by the recipient. Recent advances to overcome the problem of xenograft rejection include not only the development of new immunosuppressive protocols, but also the genetic engineering of animals to produce organs and tissues which will cause less possibility of rejection.

At the same time, "advances in programmes for infectious disease monitoring and prevention have to go hand-in-hand with advances in technology and science," said Dr Francois Meslin of WHO's Division of Emerging and Other Communicable Diseases Surveillance and Control (EMC). These programmes must be capable of detecting, in animals from which organs are obtained, known and newly recognized infectious agents which could be passed to humans from transplanted organs, the participants said.

The capacity of many recognized infectious agents of animals to infect humans and cause disease in them remains undefined and should be the subject of further research, the participants concluded. Risk management systems developed in association with specific xenotransplant applications must be periodically reassessed in the light of new scientific and technical knowledge. The prevention of disease will also depend on the aseptic procurement, processing, delivery and transplantation of xenografts into human recipients.

"The development and implementation of this technology is not solely a biomedical issue," the participants said. "It is also a philosophical issue, encompassing questions of ethical appropriateness, social, cultural and religious tolerance and acceptance."

People's ethical, social, religious perceptions and attitudes, and legal norms, need to be examined when considering the development of national policies on this technology, they concluded. "Public acceptance should not be assumed. Psychological, cultural and societal concerns need to be addressed through frank public debate, and the dissemination of accurate information and education."

In their recommendations, the experts stressed the importance of the development

and implementation of mechanisms at the national and international levels to ensure the health and safety of graft recipients, people they come in contact with, and the community as a whole. They also emphasized the special attention which must be paid to finding the right balance between the rights and interests of the recipients of the technology and those of the community as a whole, and to ensuring that principles of animal welfare are respected.

The use of transgenic, cloned or otherwise genetically modified animals as a source of cells, tissues or organs was considered by the participants to be acceptable as long as the health of humans is protected and human dignity is respected.

This meeting is the first in a series planned by WHO xenotransplantation, the implications of which need to be carefully assessed and continuously monitored.