Xenotransplantation: Cultural, Spiritual and Ethical Issues.  

Questions are taken from Part 2 of the discussion document.

1. **What spiritual or cultural perspectives influence your view of xenotransplantation?**

The Interchurch Bioethics Council was formed to express balanced and considered Christian views on spiritual, ethical and cultural issues surrounding biotechnology in Aotearoa-New Zealand. The nine members represent the Anglican, Methodist and Presbyterian churches. The issues we have identified would be differently expressed by different groups within the churches, but are shared by many within and without the church. These issues are:

**Humility before the Creator** is a fundamental attitude which allows Christians to realise that they are part of something far greater than themselves. There is an awareness that we are a small part of creation, that our knowledge is partial, and a fear that decisions made with insufficient knowledge will be irreversible and may be regretted.

**Responsibility for/to the whole of creation** is another fundamental attitude. This responsibility is not only for what we may think we have power over, but also to that which gives us that power. We come from the earth, we are rooted in (or arise from) it, so that we have a two-fold responsibility, to the Creator and to creation. Therefore we may not exploit creation solely for our benefit. There is a strong sense of stewardship, and concern that we may affect our environment and the safety of future generations by encouraging the development of diseases by xenotransplantation. Our duty of stewardship extends to all living things, and there is also the question of whether
the animals used, particularly in research of animal-to-animal transfer, will be treated humanely.

**The Truth of God is eternal**, our knowledge is limited and we do not know all the results of our actions.

**Compassion is an essential part of Christianity**, and of many world religions. The church is very aware that all people are part of a community in which care for one another is indispensable. Therefore we have a role in using our knowledge and abilities to relieve suffering and pain. At the same time we recognise that death and suffering are part of life and there may be times when the means which could be used to prolong life are not in keeping with our need to care for the community and the environment, and to have respect for all living beings.

There is a general belief that the distinctions between species, while not absolute, are very deep-rooted, and represent major biological divides that make us what we are. This shows in the doubts of some people as to whether we should violate the integrity of species.

There are concerns about justice and equity, that we have a duty of care for the vulnerable and needy, and a question as to whether high cost benefit to the few may limit the care available to the many.

**2. What concerns do you have about the effect of various types of xenotransplantation on the recipient’s identity?**

We believe in the integrity of species and that we must respect that as human beings we are spiritual beings. Therefore xenotransplantation which could affect the phenotype of a human being, so that the recipient acquires characteristics of a non-human being, would not be acceptable.

The identity of the recipient may also be affected in terms of how the recipient feels about him/herself after undergoing xenotransplantation. It has been shown that if non-human cells/tissues/organs are transplanted into a human being they are found throughout the body, and the DNA of the donor cells/tissues/organs will remain as part of the human being. During the GM debate, there has been concern expressed by many New Zealanders regarding the possibility of eating food which has been modified by foreign DNA. Therefore one wonders whether the idea of non-human cells/tissues/organs in a human being may cause the recipient to feel uneasy about this, perhaps after the event and after the realisation of the persistence of the non-human living parts.

The cultural concerns expressed by many people, particularly Maori who are concerned about the interference with the life force or mauri, need to be considered in terms of how it would affect the feelings of the recipient about themselves.
3. To what extent should cultural and spiritual views about xenotransplantation be taken into account when the government is making decisions about the use of this technology?

The New Zealand Royal Commission on Genetic Modification 2000 concluded that ethical, spiritual and cultural beliefs are important to many New Zealanders. The Maori belief that living tissue has its own dynamics or life principle, or mauri, should be respected.

We recognise that consideration has to be given to individual autonomy, and individuals may wish to give informed consent to particular procedures such as xenotransplantation. However, it is widely recognised that there are some procedures which are just not acceptable, for example research on vulnerable members of the community who are not able to protect themselves. If it were to be decided that xenotransplantation is not acceptable, then this would have to be respected.

4. What is important to think about when deciding whether or not xenotransplantation is an acceptable use of animals?

We need to respect the cultural and spiritual values of those who believe we should respect species integrity. In fact, it could be said that it is species integrity and respect for species which is the basis of much of the conservation work which is concerned with the survival of endangered species. There is concern about the welfare of other species and whether we have the right to manipulate them e.g. to genetically modify them in order to reduce their production of an immune response in humans. The risk of introducing animal diseases into humans (see Question 7) is also a risk in reverse i.e. it is possible that human diseases could be modified and affect non-human animals.

5. How should we weigh the welfare of animals against that of humans?

See questions 4 and 6.

6. Does it matter which animals (for example, primates, domesticated farm animals, mice, fish) are being used for xenotransplantation? If so, why?

There are several reasons why the animal to be used is significant in xenotransplantation.

Firstly, primates are not acceptable because they are so closely related to human beings that there is a high risk of diseases being transferred from non-human primates to humans, for example HIV appears to be similar to several simian viruses.

Secondly, there is a continuum of animals which might be acceptable, and the idea of using animals closely related to humans is not acceptable to many people. Equally, some animals such as mice are not appealing because they are not liked by some people.
Thirdly, the use of endangered species would not be acceptable, and animals which are household pets or seen as part of a family may be also less likely to be used in some cultures.

7. **How should the interests of the individual be weighed against those of the public, community, iwi, hapu or whanau?**

The interests of the individual against those of various groups need to be looked at in several different ways:

(i) **Scientific risks:** Xenotransplantation which may benefit an individual should not be used until the possible risks to the community from viruses which could enter the human population have been fully assessed. This is a matter which will require a lengthy period. Not only are there known and unidentified viruses, it is possible that new viruses may be created by modification of animal viruses by human viruses (or the reverse).

(ii) **Justice and equity, and balance of risks and benefits:** These are well-recognised ethical issues. The benefits of xenotransplantation to an individual must be set against the risks of rejection of cells/tissues/organs, the risks of diseases being transferred and the risks unknown effects e.g. the possibility that growth living tissues will not be controlled raise queries. At the present state of knowledge it is questionable whether the cost in terms of resources is justified. In some instances, this cost may be offset by a reduction in the need for ongoing care.

(iii) **The need to consider ethical, cultural and spiritual issues** is discussed in question 4.

8. **What is your view about exposing non-consenting third parties to the risks that xenotransplantation might create? Does it make a difference which type of xenotransplantation is involved?**

We recognise that no procedure is completely without risks. However, the risks that xenotransplantation might pose to a third party, in fact to the human population and to succeeding generations, are not acceptable until they have been further assessed.

The type of xenotransplantation may make a difference to the risk e.g. external procedures to detoxify blood may pose less at risk, but this would need to be determined.

9. **What would be your response if a family member living with you wanted to undergo xenotransplantation?**

I would be concerned for others, as discussed in Question 8. I would also be concerned whether there would be unknown risks such as introduced tissues proliferating and not being controlled.
10. What public health restrictions would it be right to impose on the recipients of xenografts performed in New Zealand? Does it make a difference which type of xenotransplantation is involved?

In discussing the question of xenotransplantation, the Food and Drug Administration (FDA) in the US has talked about the need for monitoring. This would require draconian and therefore unrealistic processes. Monitoring of the recipient, family and other contacts would need to be maintained for an undetermined time. This would be intrusive, and would put at risk the confidentiality and privacy of the people involved. The unanswered question is what would be done if someone was found to be carrying a ‘new’ virus. Would such a person be quarantined or sterilised? The cost of monitoring would be considerable, and there is the risk that the whole question would ultimately be put in the ‘too hard’ or too expensive’ basket.

To the second part of the question, yes, it probably would make a difference what type of xenotransplantation is involved, but this has yet to be determined.

11. What public health restriction would it be right to impose on xenotourists? Does it make a difference which type of xenotransplantation is involved?

The answer is the same as for Question 10, except that it might cause problems with tourists, who may not like being asked personal questions, and in any case may not tell the situation as it is!

12. What decisions do you think the New Zealand government should make about xenotransplantation?

The current work being done in the area of allotransplantation (human-to-human transplantation) such as the use of neural foetal stem cells to treat brain injury, and the use of nasal neural stem cells to treat spinal injury, suggest this area is a profitable one to pursue. The use of autotransplantation or autografting, where a patient is the recipient of his/her own tissues, is a promising direction in which to move, for some illnesses. These procedures may present fewer problems than xenotransplantation in areas such as that of immune response and whether the tissues/organs/cells would function in the human recipient. In addition they would not raise the same spiritual and cultural issues of crossing species boundaries. The scientific risks such as transferring animal viruses to humans would also be reduced. There would still be the question of the origin of cells or tissues used, and the possibility of creating a market-led traffic in human foetuses, but the research underway suggests this may be overcome by the use of adult cells, where informed consent can be given.

Therefore we recommend that the resources available be directed to allotransplantation, rather than xenotransplantation.
13. Are there any other issues you would like to raise concerning xenotransplantation?

Three examples of xenotransplantation are described in detail in the discussion document, using pig pancreatic cells to produce insulin, using pig liver cells to detoxify blood, and replacing an organ, in this case with a pig kidney. There is a brief mention of the possible use of porcine neural cells for Parkinson’s disease. We are concerned that if xenotransplantation is approved in principle by the New Zealand government, it will cover all types of xenotransplantation such as putting neural cells into brain or spinal tissues, as has been described for allotransplantation.

This could raise particular problems. Firstly, from a cultural and spiritual point of view, people may not wish animal neural cells to be disseminated and to persist in their brain tissues. Secondly, from information known at present, e.g. nvCJD being transmissible to humans from infected neural animal material, there may be a greater risk of animal to human infection by slow growing viruses or prions from the use of neural cells. We therefore suggest that the different types of xenotransplantation which may be researched or ultimately used clinically need to be described in more detail to give a realistic idea of possible future proposals. We also believe that recommendations regarding the acceptability of any type of xenotransplantation should be specific for that type of procedure.