

HFEA Consultation: Medical Frontiers

HFEA

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These are the recorded submissions for Session 1. Only sections to which responses have been recorded are listed below.

Permissibility of new techniques

Q1: Having read the information on this website about the two mitochondria replacement techniques – maternal spindle transfer and pro-nuclear transfer, what are your views on offering (one or both of) these techniques to people at risk of passing on mitochondrial disease to their child? You may wish to address the two techniques separately.

Your response:

All responses to this consultation are based on the Council's report 'Novel techniques for the prevention of mitochondrial DNA disorders: an ethical review' (published June 2012). For a full account of the background to our response, this report is available at http://www.nuffieldbioethics.org/sites/default/files/Novel_techniques_for_the_prevention_of_mitochondrial_DNA_disorders_compressed.pdf

Paragraph numbers in brackets relate to the paragraph numbers of the report.

With regard to both of the techniques, the Council's view is that they could be of benefit to both prospective parents and the resulting children who might be born free from mitochondrial disorders. This health benefit appears to be likely to extend to descendants of any women born via these therapies, although this would not ordinarily be the primary objective of the treatment. In light of this, we believe that, provided the PNT and MST techniques are proven to be acceptably safe and effective, on balance it would be ethical for families wishing to use them to do so. This should, however, be subject to the offer of an appropriate level of information and support (paragraphs 5.2-5.3).

Given the above and subject to the appropriate oversight, we believe that as a research objective it is ethical to gather further information about pronuclear transfer and maternal spindle transfer in order that they can be considered for treatment use. Neither research in respect of PNT, nor in the respect of MST appears to us to be ethically preferable to the other, and to conduct both is likely to be necessary in order to establish which, if either, is most likely to offer an acceptably safe and effective treatment (paragraph 5.4).

Changing the germ line

Q2: Do you think there are social and ethical implications to changing the germ line in the way the techniques do? If so, what are they?

Your response:

The Council noted that there is disagreement about whether PNT and MST should be regarded as 'germline therapies'. We felt that it is correct to refer to them as 'germline therapies' because they introduce a change that is incorporated into the (mitochondrial) genes of the resulting people, and so will be incorporated into the germline that they will go on to develop (paragraph 4.35).

The Council noted a number of ethical and social implications, including that using these techniques might create health risks to the resulting child and his or her descendants, particularly as it will not be possible to exhaustively assess the safety of the procedures until several generations have been born using them (paragraph 4.37).

The issue of consent has been raised in the context of germline therapies, given that no child born from such procedures can have consented to them. However, this issue is common to all reproductive technologies, as well as other prenatal and childhood medical intervention (paragraph 4.38). Questions have also been raised about whether, in a publicly funded health system, the resources available within the existing 'social order' would be unduly constrained by the introduction of these new technologies (paragraph 4.44).

The Council took into account concerns that any Parliamentary authorisation of treatments that would include changes to the mitochondrial genome would be seen by some as creating a 'slippery slope' towards the approval of comparable interventions made in the nuclear genome, were these to be proposed in future. However, we

concluded that the clear material difference between mitochondrial and nuclear genes means that in practice the adoption of PNT or MST would not necessitate the adoption of nuclear transfer or nuclear modification technologies if they were to emerge in future. These would have to be judged separately and on their own merits (paragraph 5.5).

The wider policy debate could benefit from a fuller discussion of the ethics of the different kinds of prospective and theoretical germline therapies. This would include potential therapies that would act on the cell nucleus with heritable effects, and therapies which might involve nuclear transfer in its various forms.

Implications for identity

Q3: Considering the possible impact of mitochondria replacement on a person's sense of identity, do you think there are social and ethical implications? If so, what are they?

Your response:

In our report, we considered some ways in which 'identity' is commonly used in discussion of this area, and the possible social and ethical implications relating to the concept of identity.

If the technique allowed the resulting person to avoid developing a possibly life-limiting mitochondrial DNA disorder, this could have a range of effects on them which encompass several different notions of identity, including having a different mitochondrial genome than they would otherwise have had, and permitting them very different life choices and experiences. However, many other medical interventions, whether they involve genetic materials or not, are 'identity-altering' according to a variety of notions of identity, so MST and PNT would not be exceptional in this (paragraphs 4.11-4.19).

People who have been made aware that they were born via cell reconstruction therapies may form a self-conception specifically related to their view of themselves as the product of a particular variant of donor-assisted conception (paragraphs 4.7 – 4.10). We will touch on this issue in our response to question 4.

The Council also discussed the idea of a 'genetic identity', noting that this is used to encompass many different things and as such its coherency can be contested. Although variations in the nuclear (but not mitochondrial) genome can be used to identify most people as unique individuals compared to others, this information alone is not enough to establish individual identity. The use of cell reconstruction techniques could be seen to affect the (mitochondrial) genetic identity of the resulting child, in that the techniques would enable a person to be born who is genetically distinct from the person who might have been naturally conceived by his or her parents. The Council felt, however, that the fact that the child's genetic profile is changed by a therapeutic intervention, cannot be assumed to affect (or to negatively affect) their conception of 'who they are', although it may have this effect (paragraphs 4.20-4.27).

The Council concluded that a key ethical test connected to identity is whether a proposed therapy safeguards the resulting child's right to an 'open future', as compared to not performing the therapy. If it were concluded in a particular case that creating a child who is less likely to develop a serious genetic disease fulfils this criterion, on this view offering such a therapy may be acceptable (paragraph 4.25).

The status of the mitochondria donor

Q4 (a) In your view how does the donation of mitochondria compare to existing types of donation? Please specify what you think this means for the status of a mitochondria donor.

Your response:

The Council notes that the status of the mitochondrial donor should be carefully considered by Parliamentarians and regulators, particularly where this may bring with it implications for the perception of the potential social relationships engendered by the donation (paragraph 5.13).

While it is difficult to predict what a resulting person's perception may be of any social relationship brought about by a genetic connection to a mitochondrial donor, this seems likely to depend on various factors, such as how the resulting person feels the balance of social relationships and genetic connections inform personal identity (paragraph 4.90).

Having said that, we have not found any expressions of a cultural concept of the mitochondrial 'family' in popular discourse, nor any widespread emphasis on mitochondrial origins as a key part of personal identity. Moreover, while women donating mitochondria would also be egg donors, in this instance their intention is solely that the relevant parts of their egg should be used in the reconstruction of another egg or embryo for the avoidance of genetic disease (paragraph 5.13). While the perception of personal and social relationships created by egg or embryo reconstruction would be essentially a matter for the individuals concerned, the Council concluded that

mitochondrial donation does not indicate, either biologically or legally, any notion of the child having either a 'third parent', or 'second mother' (paragraph 5.7).

Accordingly, we do not take the view that the donor of mitochondria should have the same status in all aspects of regulation as a reproductive egg or embryo donor. We do not believe mitochondrial donors should be required to be mandatorily identifiable to the adults born from their donation (though voluntary systems for contact may be set up – see paragraph 5.15). We also see no reason for the regulator to establish sibling registries intended to enable those born using the mitochondria of the same donor to contact each other. We do not see the need for a regulatory limit on the number of families to whom a mitochondrial donor could donate, which should be a matter for discussion between the woman and her doctor. However, we believe other aspects of the current regulation and safeguards for egg donors should be applied equally to mitochondrial donors, including the number of times they receive ovarian stimulation drugs for this purpose and in respect of financial compensation (paragraph 5.14).

Q4 (b): Thinking about your response to 4 (a), what information about the mitochondria donor do you think a child should have? (Choose one response only)

Your response:

Option1

Please explain your choice

Your response:

See our entry under Q4(a).

Regulation of mitochondria replacement

Q5: If the law changed to allow mitochondria replacement to take place in a specialist clinic regulated by the HFEA, how should decisions be made on who can access this treatment? (Choose one response only)

Your response:

Option1

Should the law be changed?

Q6: In Question 1, we asked for your views on the mitochondria replacement techniques MST and PNT. Please could you now tell us if you think the law should be changed to allow (one or both of) these techniques to be made available to people who are at risk of passing on mitochondrial disease to their child?

Your response:

More research is needed to establish whether the techniques in question are safe and effective as treatment options. As previously stated, we would consider it ethical to gather more information about these techniques, in order that they can be considered for treatment use. If the treatments were proved to be adequately safe and effective we think it would be an ethical treatment option, on the condition that it would be accompanied by appropriate support and information.

Further considerations

Q7: Are there any other considerations you think decision makers should take into account when deciding whether or not to permit mitochondria replacement?

Your response:

If these techniques are introduced, we wish to see protection and promotion of the autonomy of the various parties that may be affected. This may require additional stipulations beyond current safeguards on matters such as counselling and information for couples and donors. At present, those seeking licensed assisted reproduction treatments in the UK are offered, under the HFEA act, "proper" information and a "suitable opportunity to receive proper counselling about the implications" of the treatment. If introduced, the provision of cell reconstruction treatments should follow this model. Furthermore, given the complex nature of mitochondrial inheritance and the issues of novelty around reconstructing embryos, we suggest that while the initial discussions about the procedure could be within a routine setting, there should be further opportunity offered for prospective parents to speak to a specialist with appropriate training and up to date information in a dedicated unit accustomed to dealing with mitochondrial disorders (paragraphs 5.9-5.10).

We believe that in the first instance that PNT and MST (or any comparable future treatment) should only be offered as part of a research trial in centres specialising in mitochondrial disorders. Consent to follow up would need to be included as a mandatory part of parental consent to participating in the trial (paragraph 5.6).

Researchers have strongly recommended that if, in the future, families use cell reconstruction techniques, they should commit to allowing very long term follow-up of their children and families over generations in order to further knowledge about the outcomes of these techniques. To support this aim, we recommend that a centrally-funded register be created of such procedures performed in the UK, maintained and kept for a length of time that is deemed appropriate, and accessible to researchers over several decades (paragraphs 5.11-5.12).

Assurances would need to be obtained from the Department of Health that funding can be made available in the long term for a national treatment register. This could require Government to make a commitment that would endure over several decades. We would be concerned if a commitment was not available for sustained funding to retain the details of mitochondrial donors and the resulting people (paragraph 5.20).