



Department
of Health

Mitochondrial Donation

Government response to the consultation on draft regulations to permit the use of new treatment techniques to prevent the transmission of a serious mitochondrial disease from mother to child

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Prepared by the Health Science and Bioethics Division, Department of Health

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Executive summary

Introduction

The Government conducted a 12 week public consultation between February and May 2014 on draft regulations that would enable mitochondrial donation techniques to be used in clinical practice in the United Kingdom. This response sets out the results of that consultation and the Government's intended approach in relation to the introduction of the regulations.

Mitochondrial disease is passed from mother to child through faults in the mitochondrial or nuclear DNA. It is estimated that 1 in 6,500 children are born every year in the UK with a serious mitochondrial DNA disorder. Serious mitochondrial disease can have a devastating effect on families, including the premature death of children, painful debilitating and disabling suffering, long-term ill-health and low quality of life.

A review of the Human Fertilisation and Embryology Act 1990 in 2007/08 recognised the potential of developing science in this area and the Human Fertilisation and Embryology Act 2008 introduced a regulation-making power into the 1990 Act to allow the use of eggs and embryos in treatment in which the affected mitochondria is replaced by mitochondria from a donor that is free of any DNA disorder. The intention is that these techniques would prevent the transfer of serious mitochondrial disease from mother to child whilst allowing the mother to have her own genetically related child.

This consultation on proposed regulations has been the culmination of detailed consideration over a four year period, where the Government has aimed to ensure that full account is taken of all the available evidence on the science, ethics and safety of the techniques and that all voices are heard.

General overview

The consultation reached a wide audience and received 1857 responses from research bodies, patient bodies, professional organisations, faith organisations, parliamentarians and a large number of individuals. We have carefully considered all responses in deciding how to move forward with the regulations, recognising that there is a broad spectrum of widely different views.

The Government is grateful to all of those responding to this consultation for taking the time to do so. We are confident that the responses from both individuals and a wide variety of organisations provides us with a robust base for our decisions.

Although the purpose of the consultation was to invite views on the detail of the draft regulations, four out of five respondents simply expressed a view for or against the principle of mitochondrial donation. Those supporting the introduction of regulations did so primarily because the treatment techniques offered the only hope of avoiding children being born with serious mitochondrial disease - a view often reinforced by personal experience. Research bodies and other professional organisations expressed support for the regulations as they saw the techniques as the means of preventing disease and improving quality of life. Where comments were made about the detail of the regulations, respondents were generally positive about the proposed individual provisions.

Amongst those opposed to the regulations, most believed that the techniques crossed unacceptable ethical lines and should never be allowed. Some felt it created children with three genetic parents or was a form of genetic modification. A smaller number felt that the safety of the techniques was not yet proven and that the pace of introduction was inappropriate.

Whilst various points have been made in respect of each of the consultation questions, addressed in Chapter Three of this response, the Government has taken the view that our policy position on the key issues remains the correct one. As such, we will:

- retain the principle behind the definition of the mitochondrial donation techniques as currently set out in the draft regulations;
- retain the provision that the HFEA would have to be satisfied that there is both a particular risk of mitochondrial abnormality and a significant risk that a person with that abnormality would have or develop a serious physical or mental disability, a serious illness or other serious medical condition;
- retain the provision that the HFEA will consider each application on a case-by-case basis;
- retain the provision that the HFEA will release only non-identifying information about the mitochondrial donor to people born following mitochondrial donation when they reach age 16.

We will also include additional provisions in the regulations to clarify the consent requirements around the use and storage of eggs and embryos used in the mitochondrial donation techniques.

Alongside the consultation exercise, the Department also asked the HFEA to reconvene the Expert Panel to undertake a further review of the efficacy and safety of the mitochondrial donation techniques. A report of that review was published in June 2014. The report found that the techniques of Maternal Spindle Transfer and Pro-Nuclear Transfer are potentially useful for a specific and defined group of patients and that the evidence does not suggest that

these techniques are unsafe. The Panel was of the view that research has progressed well since its previous two reviews, although it recommended that some experiments should be completed before clinical treatment is offered.

The Government has decided to proceed with putting regulations before Parliament, subject to giving further consideration to the Expert Panel's recommendations, refining the draft regulations to take account of changes identified during the consultation, and discussion with the HFEA about an appropriate approval process. The Government will consider the timing of the regulations in the light of these actions. The regulations will be subject to full scrutiny by the public and Parliament through the affirmative procedure.

Chapter 1: Background

Introduction

On 27 February 2014 the Government launched a public consultation on draft regulations that would enable mitochondrial donation techniques to be used in clinical practice in the United Kingdom to prevent the transmission of serious mitochondrial disease from mother to child.

Mitochondrial disease is passed from mother to child through faults in the mitochondrial or nuclear DNA. It is estimated that 1 in 6,500 children are born every year in the UK with a serious mitochondrial DNA disorder. Serious mitochondrial disease can have a devastating effect on families, including the premature death of children, painful debilitating and disabling suffering, long-term ill-health and low quality of life.

The Human Fertilisation and Embryology Act 1990 is the primary legislation that governs assisted reproduction and embryology procedures in the UK. In 2009, following a review of the Act, a power was introduced into the 1990 Act to enable the Government to make regulations to allow the use of eggs and embryos in treatment in which the affected mitochondria is replaced by mitochondria from a donor that is free of any DNA disorder. The intention is that these techniques would prevent the transfer of serious mitochondrial disease from mother to child whilst allowing the mother to have her own genetically related child. At that time, the Government of the day gave an assurance that such regulations would not be made until any proposed techniques were considered to be effective and safe for use in treatment.

Reason for consultation

In 2010 the Government was asked by researchers working in this field to use the power in the Act to make regulations. This request was supported by a number of medical research bodies. Two treatment techniques were proposed for use in the UK:

- **Maternal spindle transfer (MST).** The “maternal spindle” is the group of maternal chromosomes within the egg, which are shaped in a spindle. MST involves removing the spindle from the mother’s egg before it is fertilised by the father’s sperm. The spindle is then placed into a donor egg with healthy mitochondria (from which the donor’s spindle, and therefore her nuclear material, has been removed).

- **Pro-nuclear transfer (PNT).** The pro-nucleus is the nucleus of a sperm or an egg cell during the process of fertilisation after the sperm enters the egg but before they fuse. PNT involves removing the pro-nuclei (nuclear material) from a newly fertilised egg (which is regarded as an embryo under the Human Fertilisation and Embryology Act 1990) that has unhealthy mitochondria. The pro-nuclei are then transferred into a donated embryo, with healthy mitochondria, that has had its own, original pro-nuclei removed.

Following this request, Ministers from the Department of Health (DH) and Department of Business, Innovation and Skills (BIS) asked the UK's national fertility regulator, the Human Fertilisation and Embryology Authority (HFEA), to convene an Expert Panel to consider the safety and efficacy of the two techniques. The Panel concluded, in April 2011, that both techniques had merit but that there was insufficient evidence to recommend one technique over the other. The Panel also considered that, while there was no evidence that either technique was unsafe, there was a need for further experiments.

While this additional experimental work was undertaken, DH and BIS asked the HFEA to conduct a public dialogue and consultation exercise that focused on the ethical issues that these treatment techniques raise, including whether these techniques should be permitted for use in clinical practice in the UK. The HFEA reported the outcome of this exercise in March 2013. Overall, the balance of views from stakeholders and the members of public who took part was that the treatment techniques should be allowed but that their use should be carefully controlled. The HFEA also recognised that there was a body of opposition to allowing these procedures.

At the request of the DH, the Expert Panel was reconvened by the HFEA to provide an updated view on the science to support the assessment of the efficacy and safety of MST and PNT techniques, including any recently published findings and the extent to which the Panel's recommendations had been addressed. In March 2013, the Expert Panel expressed the view that there remained insufficient research currently available to recommend one particular technique over the other. The Panel also concluded that, although there was still nothing to indicate that the techniques were unsafe, further research on some specific aspects should be undertaken. The Panel also recommended long-term follow-up monitoring of any children born as a result of the use of these techniques in treatment.

In June 2013, the Government announced that, based on the findings of the HFEA's public dialogue and consultation exercise and the views of the Expert Panel, it would move forward with draft regulations for public consultation. The consultation exercise ran from 27 February to 21 May 2014. The consultation document set out a number of key questions on which responses were invited. To ensure the consultation received as wide an audience as

possible, a wide range of organisations: patient groups, professional bodies, research bodies, genetic interest and faith and community organisations as well as individuals were alerted to the exercise. The HFEA also informed all those who took part in its public dialogue and consultation exercise.

1857 responses were received from a range of interested parties including: faith organisations, parliamentarians, research bodies, professional organisations and a large number of individuals have given their personal views on the draft regulations. A list of respondents is at Annex A. Chapters 2 and 3 set out the findings of the consultation.

Chapter 2: Overall picture of consultation

Introduction

The consultation ran from 27 February to 21 May and was about the detail of the draft regulations. It covered 8 specific areas in particular. These included definitions of the mitochondrial donation techniques, a requirement for the HFEA to make decisions on applications on a case-by-case basis, the status of the mitochondrial donor, and the power of the HFEA to provide non-identifying about the donor to a person born following the donation. Some 316 people responded specifically to the questions about these 8 areas and were largely in support of the position taken in the draft regulations.

Although the consultation was about the detail of the draft regulations, not the policy as to whether to allow mitochondrial donation at all, the vast majority of these responses were one-liners either in support or opposing the introduction of the regulations, in principle. Where additional information was provided by the responder in these short responses, it was clear that opposition was informed by faith-based views. Where support was expressed this was generally informed by personal/family experience of mitochondrial disease. There was evidence of a co-ordinated campaign approach. From the total of 1,857 responses, around 700 expressed general support for the regulations and 1,152 opposed the introduction of the regulations with the remainder not expressing a view either way.

Responses in support

Those in support overwhelmingly held this view because the treatment techniques offered the only hope that mothers affected by mitochondrial DNA disorders had of preventing their genetically-related children being born without a serious mitochondrial disease.

Many respondents had first-hand experience of the impact of such conditions with their own children or children of family members or friends, many of whom had died at an early age:

“I am the parent of a 1 year old son with a mitochondrial disorder... I strongly support any legislation that could spare parents the torture we must go through. The heartache of having a child with such a severe disorder is so immense that I cannot possibly find the words to describe it.” (Individual respondent)

“My friends have a child with mitochondrial disease. Their son is 4 and his deterioration in the last 18 months has been devastating. Every day they live with the knowledge that one day their son will die as there is no cure.” (Individual respondent)

Even where the experience was not personal, there was clear - and strong - support for techniques that would prevent disease or improve life. The Association of Medical Royal Colleges and Genetic Alliance UK joint response said:

“We welcome and support the publication of these draft regulations. The development of innovative techniques for mitochondrial donation which will prevent debilitating and life-limiting diseases is evidence of the UK’s continuing global leadership in the life sciences sector. Ensuring couples can access the new techniques must take priority”

The British Medical Association supports the use of mitochondria replacement techniques to avoid severe disease or disability and welcomed the regulations. It believed:

“..... there is a moral imperative to pursue this work, without delay, for the benefit of those who would wish to use this option as their only chance to have a healthy, genetically related, child.” (British Medical Association)

One Member of the House of Lords said:

“The draft regulations are timely, wholly acceptable to me, and welcome, and I trust that matters leading to their acceptance in both Houses of Parliament and in Law will now proceed expeditiously.” (Member, House of Lords)

Responses against

A range of reasons were given for why it was inappropriate to make regulations at this time or, in fact, at all. These are discussed in the section on responses to Question 9 but the key concerns are set out below. Although these did not directly address the detail of the regulations, which was the purpose of the consultation, they reflect issues that some respondents nevertheless raised.

Regulations should not be made at this time

There were many respondents who opposed the principle of introducing the regulations at this time on the basis that the safety of both techniques had not yet been proven:

“The techniques being consulted on by HEFA are highly experimental and will result in new genetic material being introduced which will be inherited down the germ-line. The consequences of this are unknown. Whilst this technique appears to be safe in experiments concerning monkeys this has not been shown to be true in humans. I am concerned that mitochondrial IVF techniques will be made available prematurely, before the safety and effect of the techniques have really been established.” (Individual respondent)

Mitochondrial donation should never be permitted

The bulk of responses which clearly opposed the introduction of regulations expressed a view that regulations should never be made and that the proposed treatment techniques crossed ethical lines that were unacceptable:

“Very few other countries are considering this treatment with good reason. I believe those who are promoting this treatment in Britain have not given enough thought to the problems it will create. Neither has there been sufficient effort to investigate cures for people with mitochondrial abnormality. This process is so extreme there must be far greater effort to look for a cure first.” (Individual respondent)

The question of the safety of the techniques and concerns about the long-term implications of the techniques were also raised by respondents fundamentally opposed to the regulations:

“Advancing this legislation is a waste of public time and money, and should be halted at this stage while further evidence is found. The HFEA is still asking for proof of safety – a matter of great concern given the reckless pace of this legislation.” (Individual respondent)

For many respondents opposed to the principle of mitochondrial donation, they believed the proposed techniques would create children with three genetic parents and did not accept the proposition that this was not the case because no nuclear DNA, which is considered to provide the physical characteristics and other traits that children inherit from their parents, would be contributed from the donated female egg or embryo. People holding those

views considered that this may result in serious issues of identity for the resulting child.

A number of respondents considered this to be genetic modification of a human being and, in a few cases, a eugenic practice. Many also pointed out that no other country permitted these techniques to be used in treatment. Some went on to say that the techniques were opposed by the World Health Organisation and would breach international conventions on human rights:

“No other country in the world allows this so called treatment. Genetic modification of human beings is a step too far. I am all for scientific discoveries, breakthroughs etc. but interfering with the way humans reproduce in this way is fraught with dangers.” (Individual respondent)

We have noted that a significant number of people had drawn these threads of argument directly from the 'points of concern' contained in the briefing *Three Parent Children*, which was produced by Christian Action Research and Education (CARE) and published on its website

Government's response

Safety and efficacy of techniques

The Government has always accepted that the safety and efficacy of the mitochondrial donation techniques are important questions to be considered and regulations could not be put before Parliament until the suitability of the techniques for use in clinical practice was established.

To support the Government's considerations, the HFEA was asked to reconvene the Expert Panel that had previously reviewed the evidence on the safety and efficacy of methods to avoid mitochondrial disease through assisted conception in April 2011 and March 2013, to review the latest evidence.

The Expert Panel reported on 3 June 2014 in the *Third scientific review of the safety and efficacy of methods to avoid mitochondrial disease through assisted conception: update, 2014*¹.

The Panel's view was that:

- the techniques of MST and PNT are potentially useful for a specific and defined group of patients: those wishing to have their own genetically-

¹Third scientific review of the safety and efficacy of methods to avoid mitochondrial disease through assisted conception: update, 3 June 2014, Human Fertilisation & Embryology Authority <http://www.hfea.gov.uk/8807.html>

related child, but whose offspring are at risk of severe or lethal genetic disease, due to mutations in the mitochondrial DNA which the mother carries;

- that the evidence it has seen does not suggest that these techniques are unsafe;
- that research in this area has progressed well since the previous two reviews.

The Panel's view was, however, that there are experiments that should be completed before clinical treatment is offered.

Genetic modification

While the Government accepts the techniques do result in germ-line modification, in that the result of mitochondrial donation – the avoidance of the transmission of a serious mitochondrial disease – will be passed down to future generations, it has consistently rejected claims that the techniques constitute genetic modification and remains firmly of that view.

The proposed mitochondrial donation techniques only allow for unaltered nuclear DNA to be transferred to an egg or embryo that has unaltered healthy mitochondria. The key consideration is that these techniques only replace, rather than alter, a small number of unhealthy genes in the “battery pack” of the cells with healthy ones. Most importantly, mitochondrial donation techniques do not alter personal characteristics and traits of the person.

There is no universally agreed definition of ‘genetic modification’ in humans – people who have organ transplants, blood donations or even gene therapy are not generally regarded as being ‘genetically modified’. While there is no universally agreed definition, the Government has decided to adopt a *working* definition for the purpose of taking forward these regulations. The working definition that we have adopted is that genetic modification involves the germ-line modification of nuclear DNA (in the chromosomes) that can be passed on to future generations. This will be kept under review.

On the basis of that working definition, the Government's view is that the proposed mitochondrial donation techniques do not constitute genetic modification.

Three parent children

While the Government does not question the sincerity of the views expressed that any resulting child would have three genetic parents (two mothers and a father), it cannot accept this claim. In using these techniques, the resulting child will have nuclear DNA (99.9 per cent) from their father and mother and healthy mitochondrial DNA (0.1 per cent) from a female donor. Genetically, the child will, indeed, have DNA from three individuals but all available scientific evidence indicates that the genes contributing to personal characteristics and

traits come solely from the nuclear DNA, which will only come from the proposed child's mother and father. The donated mitochondrial DNA will not affect those characteristics.

It should also be remembered that the legal mother of a child is the woman who carries and gives birth to that child². This principle remains true even where the child is the result of egg or embryo donation.

As we do not accept the view that the mitochondrial donor is a "second" mother, we also cannot accept the arguments that mitochondrial donation results in uncertainty about identity. However, we do recognise that some young people born as a result of these techniques may wish to know more about the donor. This issue is explored further in Chapter 3.

International opinion

Some respondents said that allowing mitochondrial donation techniques in treatment would go against various international conventions, opinions and bodies such as UNESCO and the Council of Europe.

In respect of UNESCO's Universal Declaration on the Human Genome and Human Rights (DHGHR), the UK is a member of UNESCO. However, UNESCO declarations are statements of principles or a common standard of achievement, which are not signed or ratified and are not legally binding.

In respect of the Council of Europe's Convention on Human Rights and Biomedicine, the UK has not signed or ratified the Convention and is therefore not legally bound by it.

The Government supports good practice in informed choice for all patients or parents to aide prevention of serious illness or disease and does not support human eugenic practices in the UK.

²Section 33 of the Human Fertilisation and Embryology Act 2008.

Chapter 3: Summary of responses to the consultation questions

Introduction

A number of questions were posed in the consultation to assist us in drafting effective legislation that could be put before Parliament for consideration.

As expected, the questions that prompted the greatest level of comment concerned the status of the mitochondrial donor and the information that should be given to the donor and, particularly, the mitochondrial donation-conceived young person. The number of responses received about each question is set out at Annex B.

Question 1

Regulation 2 defines the removal or insertion of nuclear DNA involved in mitochondrial donation. Do you agree with this definition?
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Background to question

Mitochondrial donation techniques involve the transfer of nuclear material between eggs and embryos, and the detail in the regulations describing this process reflects discussions held with expert scientists and researchers working in the field.

In defining “nuclear DNA” for the purposes of the regulations, regulation 2 refers to ‘*material which is necessarily removed or inserted along with that DNA, and may include any associated organelles*’. This reflects that some material closely associated with the nucleus sits outside it in the cytoplasm of the cell, and that close association means that it may need to be transferred as part of the transfer of the nuclear material.

Comments received

Most comments received on this question agreed with the proposed definition.

Chapter 3: Summary of responses to the consultation questions

This was one of the more technical questions posed in the consultation so, understandably, only a small number of the comments received directly addressed the wording of the proposed definition:

“We agree with the definition of “nuclear DNA” in the regulations including the reference to “material which is necessarily removed or inserted along with that DNA, and may include associated organelles”. (Association of Medical Research Charities and Genetic Alliance UK)

“We agree with the definition, as it reflects the necessary removal or insertion of other cellular material due to its close proximity to the nucleus.” (Medical Research Council)

A few respondents did suggest amendments that they considered would help to make the definition more precise:

“Regulation 2 defines nuclear DNA as “material which is necessarily removed or inserted along with that DNA and may include any associated organelles”. A eukaryotic cell contains many organelles and these include the nucleus itself, endoplasmic reticulum, golgi apparatus and mitochondria. Thus, as it stands this definition could be interpreted as allowing/permitting transfer of some mitochondrial material. If this happened to include ‘faulty’ mtDNA [mitochondrial DNA] the reason for the transfer (to ‘correct the faults’) might be thwarted. Should the regulation not clarify this concern?” (Individual Respondent)

“I broadly agree with the definition laid down in regulation 2 (“material which is necessarily removed or inserted along with that DNA, and may include any associated organelles”) though to be strictly accurate would change the phrasing to be ‘any closely-associated organelles’ to better reflect any transferred organelles would be those in close spatial association with the nuclear material.” (Individual Respondent)

The majority of respondents that disagreed with the definition, including most individual respondents, commented only that the definition described nuclear not mitochondrial DNA transfer:

“The procedure that is defined is nuclear donation not mitochondrial donation. Such a procedure should not be made legal in the UK.” (Christian Action Research Education)

“Neither MST nor PNT involve the “replacement” or “donation” of mitochondria. Both processes require a transfer of the nucleus of an

unfertilised or fertilised egg to another fertilised or unfertilised egg – it is not the mitochondria itself that is transferred from one egg to another. As such, the procedure would be more accurately described as “nuclear donation” or “chromosomal transplantation” not mitochondrial “replacement”. The ethical and safety concerns surrounding MST and PNT are such that neither procedure should be permitted in the UK.”
(Christian Concern and Christian Legal Centre)

In nearly all cases, the respondents that made this point were also opposed to allowing mitochondrial donation techniques to be used in clinical practice in the UK.

Government’s response

The Government is grateful for the suggestions on how the definition might be adjusted. We have taken advice on the comments made in the responses but our view remains that the definition in the regulations should cover the MST and PNT techniques. For that reason the principle behind the definition of the permitted mitochondrial donation techniques in the draft regulations will be retained. However, since the consultation closed further comments have been received on the need to take account of the presence of polar bodies in the egg/embryo, which we intend to do by further refining the definition.

Question 2

Regulations 4 (eggs) and 7 (embryos) only allow mitochondrial donation where all the nuclear DNA is transferred from an egg or embryo to another egg or embryo from which all the nuclear DNA has been removed. Do you agree with this description and restriction?

Background to question

The treatment techniques proposed by researchers are Maternal Spindle Transfer (MST) and Pronuclear Transfer (PNT) which Regulations 4 and 7 will allow. Both techniques have been subject to detailed scientific reviews, with regard to their safety and efficacy, by an Expert Panel convened by the HFEA. The draft regulations only allow treatment where all the nuclear DNA is transferred from an egg or embryo to another egg or embryo from which all the nuclear DNA has been removed. Any new treatment technique which did not fall within this definition would require further legislation to be allowed and we would expect further consideration of the safety and efficacy of any such technique.

Comments received

Most responses to this question agreed with the definition, with respondents considering that this point needed clear boundaries to be set on what techniques could be used:

“There needs to be careful regulation of the donation boundaries.”
(Individual Respondent)

A number of respondents, who supported the regulations, considered that there should be some flexibility to allow new techniques to be used, as these develop, without the need for new regulations:

“Any form of mitochondrial donation should be allowed in principle. It is conceivable that a technique of injecting healthy mitochondria into an egg with faulty ones might be developed. This would avoid disrupting the cytoplasmic structure of the egg... There is no need to close off this possibility as the arguments are the same as for MST and PNT.”
(Individual Respondent)

“At this time it seems necessary to stick to this restricted clause... However, as therapies progress new techniques will become available which may well require additional amendments to the act. It would perhaps be sensible to consider giving more flexibility and “powers” to make decisions on a case by case basis to the HFEA.”
(Individual Respondent)

A small number of people raised the point that there is the potential that not all the nuclear DNA would be removed and this might leave clinicians at risk of creating an offence under the legislation if those embryos were then used in treatment. Set against this, it was pointed out by other respondents that there are genetic screening tests which would check this possibility and they suggested that these could be stipulated as part of regulation by the HFEA.

A number of those respondents who were against the regulations in principle did not think that the description of mitochondrial donation was correct (as in responses to Q1) because it was the nuclear DNA that was being transferred between eggs or embryos rather than the mitochondrial DNA.

Government's response

The techniques that would be permitted by these regulations have been subject to three reviews by the HFEA convened Expert Panel specifically to ensure their safety and efficacy for use in clinical practice. The Government's position is that any new techniques proposed for clinical practice must

undergo the same rigorous assessment as maternal spindle transfer (MST) and pronuclear transfer (PNT).

The comment that the regulations should allow for new techniques to be used in clinical practice if approved for use by the HFEA does mirror the process followed when new assisted reproduction techniques are proposed for use in the UK. However, this approach is not an option in this case as the regulation making power in subsection 3ZA(5) of the 1990 Act, requires that regulations must prescribe the processes to be used, so this matter cannot be left to the discretion of the HFEA.

Question 3

Regulations 5 (eggs) and 8 (embryos) require that, in order for mitochondrial donation to go ahead, the HFEA must decide that there is both a particular risk that the egg or embryo of the patient has a mitochondrial abnormality and a significant risk that a person with the particular mitochondrial abnormality will have or develop a serious physical or mental disability, a serious illness or other serious medical condition. Do you agree that the HFEA should have this role?

Background to question

Regulations 5 and 8 reflect the requirement in the 1990 Act that mitochondrial donation may only be used in cases to avoid the transmission of serious mitochondrial disease. The regulations set two tests that must be satisfied before an egg or embryo will be considered to be permitted for use in treatment:

- that the HFEA has determined that there is a particular risk that the egg or embryo of the patient has a mitochondrial abnormality, and
- that the HFEA has determined that there is a significant risk that a person with that abnormality will have or develop a serious physical or mental disability, a serious illness or other serious medical condition.

Most of those who commented on this question agreed that these roles should be for the HFEA.

Comments received

The comments from those who agreed that the HFEA should have this role generally provided additional insight as to the reason for the support, such as emphasising the need for the HFEA to regulate this area:

“HFEA is probably best suited to this function” (Individual Respondent)

but also provided supplementary comments. For example, a small number of respondents suggested that this only needed to be a time limited requirement until the treatment process was established and no longer considered ‘novel’:

“In the first instance, given the novelty of the treatment and the need to determine its safety, I agree that the HFEA, guided by expert scientific advice, should have this role. However, after a “proving” period (say, 3 years), decisions should be devolved to a qualified medical practitioner, such as a consultant.” (Individual Respondent)

Other respondents commented that such approval could be relaxed with time and that the need for HFEA approval could be based on the type of condition. The Medical Research Council supported case by case regulation initially but thought that when procedures become more routine (and less novel) it may be appropriate for HFEA to review a centre's ability to determine risk for each case and determine whether treatment is appropriate, rather than the HFEA itself making the decision. One respondent agreed that HFEA should have a role but suggested that HFEA guidelines for certain cases was sufficient rather than have the HFEA approve each case individually.

The Association of Medical Research Charities/Genetic Alliance UK joint response accepted the need for the HFEA to make decisions on a case by case basis initially but recognised that, as the process became more routine, this could be burdensome and impact negatively on families hoping to benefit from the treatment. They urged that consideration be given to a ‘condition by condition’ regulatory framework at some point in the future where:

“ the HFEA should decide which mitochondrial diseases are serious enough to require mitochondria replacement and, for these diseases, permit licensed clinics, licensed clinicians and patients to make informed decisions about when to use the techniques and the risks they are prepared to take. This method of regulation is analogous to the system that currently regulates PGD and has fostered a stable environment for the provision of PGD in the UK since 2008”

This theme (including the model of Pre-implantation Genetic Diagnosis authorisation) was developed by others who also made clear that they thought the decision should be made by those closer to the patient.

“... it should be the doctors/centres dealing with the patients who make that decision. They would be closer to the situation, people and facts involved. Passing the information on to the HFEA to allow them to make the decision adds an unnecessary level of bureaucracy.”

(Individual Respondent)

The Association of Clinical Embryologists (ACE) supported a process which regulates mitochondrial donation practices via a treatment licence provided by the HFEA but did not believe it appropriate for the HFEA to:

“..... make an individual decision on individual referrals for treatment on a case by case basis; the expertise within the licensed centre(s) performing the treatment should be such that they are able to make an informed decision on the basis of the two defined criteria themselves as they would for any other patient referred for any form of licensed fertility treatment.....” (Association of Clinical Embryologists)

This view was also expressed by the Newcastle Fertility Centre and was echoed by the Nuffield Council on Bioethics (NCOB) which said:

“... for the HFEA to have a central determination on each individual case seems unnecessarily burdensome in terms of procedure. We don't believe that it should be the HFEA's role to assess the risk or seriousness of the condition – this should be the role of the clinician(s) with the patient.” (Nuffield Council on Bioethics)

ACE highlighted the risk of the decision pathway becoming too complex which could impact negatively on a centre's ability to provide timely and effective treatment. NCOB said that the role of the HFEA should be to ensure that clinical judgement is properly made, not assess the clinical aspects. Indeed, although a number of responses noted the importance of approval being required for these procedures, one questioned whether there was a potential for a conflict of interest in the HFEA taking on this role ie the HFEA would be both approving the procedure and licensing the establishment carrying out the procedure.

In agreeing with the HFEA's proposed role, some respondents expressed the view that the HFEA should ensure that the wider healthcare team were involved in the decision and believed that the HFEA must ensure full

transparency, making publicly available the criteria that it intended to use to make its decision.

Although many of those who did not believe this function should be given to HFEA did not give a reason, comments indicate that, in the main, respondents opposing the HFEA taking on this role were from those who are opposed to mitochondrial donation in principle and who did not believe that the procedure should be allowed in the UK. A number stated clearly that there was a need to wait for the results of the current HFEA tests before making regulations.

Government's response

The Government is firmly of the view that there must be strict regulatory controls on the use of the mitochondrial donation techniques in treatment so that an assessment must be made of the cases for which approval is sought to ensure they fulfil the requirements with regard to the risk of an embryo or egg having an abnormality and the severity of the likely condition arising from that abnormality. The Government acknowledges the very important points made by respondents in respect of ensuring that the process of assessment of risk is kept under review as the technique develops. However the Government does not believe that the consultation has identified any viable alternative approach to assessment that would ensure the necessary level of safeguards and consistency of approach and has therefore concluded that Regulations 5 and 8, as currently drafted, with the HFEA as the assessing body, will provide for the most robust and effective regulation.

Question 4

Do you agree with the principle that licensed clinics should not be permitted to undertake mitochondrial donation without first obtaining authorisation to do so from the HFEA?

Background to question

Regulation 9 makes provision to ensure that HFEA treatment licences, whenever granted, which allow clinics to provide treatment, such as IVF, using permitted embryos and eggs, do not extend to authorising mitochondrial donation treatment services without the further specific approval of the HFEA.

Comments received

Most of those who commented on this question agreed that further HFEA authorisation of clinics is necessary, rather than all clinics who hold treatment licences being allowed to carry out mitochondrial donation.

Whilst those commenting were mainly individuals, professional bodies and research organisations did also comment. For example, the Association of Clinical Embryologists (ACE), the Academy of Medical Sciences (AMS) and the Nuffield Council on Bioethics (NCOB) all agreed with the proposal :

We support a mechanism whereby centres wishing to perform mitochondrial donation processes are licensed to do so by the HFEA as part of their licensing and inspection process. This is important to ensure that clinics wishing to perform the process can demonstrate they have the facilities, equipment, experience and skill to safely and effectively do so.” (Association of Clinical Embryologists)

“We agree with the position described in the draft regulations that would require clinics to apply to the HFEA for a licence to be able to provide mitochondrial donation treatments.” (Academy of Medical Sciences)

“Yes, we agree that these treatments should only be carried out in premises licensed by the HFEA for that purpose.” (Nuffield Council on Bioethics)

The All-Party Parliamentary Pro-life Group also supported this proposal saying:

“Yes, this is an excellent safeguard against possible abuses”

but cautioned against ‘mission creep’

The Medical Research Council also supported the principle of the HFEA authorising centres to undertake mitochondrial donation. This is in line with its comments on Question 3 expressing the view that the HFEA is well-established as an effective regulator with considerable expertise in making such judgements. MRC went on to say that they believe that:

“the HFEA could move to regulating centres’ processes once a centre has proven its excellence in decision-making and in performing this treatment.”

Some of those commenting, whilst supporting HFEA licensing, said that regulation should not delay access for patients. This view was expressed almost wholly by individual respondents:

“I agree with HFEA overseeing and providing licenses to regulate this technique. I would hope that long term regulation of this technique would not delay access to patients.” (Individual Respondent)

As with the previous question, where respondents disagreed, they did so largely on the basis that they disagreed in principle with mitochondrial donation. Some of those responding to this question felt that no clinic should be allowed to carry out these procedures. Even where they disagreed, some went on to express the view that the authorisation of clinics would be essential.

“No clinic or any other body should be allowed to undertake nuclear donation or “mitochondrial” donation in the UK.” (Individual Respondent)

“The procedure should definitely require authorisation but as stated I am totally opposed to the authorisation being granted in any cases.” (Individual Respondent)

Government’s response

As stated previously, the Government considers that there must be robust regulatory control on the use of these techniques and no clinic should be able to provide this treatment without prior approval from a regulatory authority. We note that, almost without exception, those supporting the regulations agreed that this was an appropriate role for the HFEA. Even where the HFEA was not thought to be appropriate for this role, no respondent could nominate another body. For this reason, the Government has decided that in order for a clinic to carry out mitochondrial donation they must have express authorisation to do so from the HFEA as the existing specialist regulator for the fertility sector.

Question 5

Do you agree that people donating eggs and embryos for the purposes of mitochondrial donation should *not* have the same status as those donating eggs and embryos for use in fertility treatment, but rather be regarded more like organ or tissue donors?

Background to question

The regulations clarify that a mitochondrial donor is *not* to be treated as a person who would or might be the parent of a resulting child if it was not for the provisions in the 1990 and 2008 Acts removing parenthood. This is in contrast to the legal position for sperm and egg donors, who *are* treated as people who would or might be the legal parent of a child born from their donation but for the provisions in the 1990 and 2008 Acts. Provision is made in the regulations to reflect this different status by only allowing mitochondria-conceived people access to limited non-identifying information about mitochondrial donors and by clarifying that mitochondrial donation alone is not sufficient to allow a person to obtain a parental order.

Comments received

This question prompted the greatest number of comments, with a wide range of views expressed. Views were very evenly split between those that agreed that donors should be regarded in the same way as organ or tissue donors and, therefore, their identity should not be disclosed, and those that were opposed to this approach (many of whom were strongly opposed).

Some respondents were firmly of the view that the position set out in the draft regulations was the correct one:

“Mitochondria donation is a single donation which allows a person at risk of having a child with a serious condition to avoid the occurrence of that condition in their offspring. In terms of the medical gain to the recipient and the recipient’s relationship to the donor, this is similar to bone marrow or organ donation.

Mitochondria contain a very small amount of DNA. This is germ line DNA but changes to this will only affect the mitochondria’s operation. No other heritable characteristics are likely to be affected. For these reasons, we agree that people donating eggs and embryos for the purposes of mitochondrial donation should not have the same status as those donating gametes for fertility treatment.”(Association of Medical Research Charities)

Unlike the responses to the other consultation questions a number of respondents who supported the principle of mitochondrial donation, and agreed with most or all of the other consultation questions, disagreed with this proposal. Some of these respondents raised the concern that donor anonymity could leave the mitochondrial donation-conceived person with questions of identity that could never be adequately addressed within a non-identifying system:

“Our interest in the lifelong implications of assisted reproduction techniques for child and family welfare informs our belief that the identity of individuals conceived through such techniques is affected not only by the transmission of genes from genetic parents or the involvement of individuals directly involved in gestation (e.g. gestational surrogates; ‘social parents’ using embryo or double donation) but also by the meaning that such origins holds for them as well as a wealth of subsequent influences, including social environment. The combination of influences on the formation of identity and well-being varies from individual to individual and can assume differing significance over time...

To deny the significance of any party or part in the process whereby someone is conceived, carried, born and then develops further is dangerous.....,

The evidence is robust that identity needs are not shaped by simplistic notions of genetic essentialism and hence dependent on percentages of DNA transmitted but by the complexity of the biographical/cultural map that develops for each individual...

Where donation leads to the formation of life, it carries different meanings and responsibilities to the donation of body parts (e.g. heart, kidney) from one individual to another for their own use in their existing life.” (PROGAR)

“... the resulting person has a natural relation with the provider of the mitochondrial material, and it seems proper for these people to have access to the identity of the other.” (Individual Respondent)

One particular respondent answered only this question as part of their consultation response. He referred to the evidence from the Nuffield Council on Bioethics report *‘Donor conception: ethical aspects of information sharing’* that for donor-conceived children the importance of finding out identifying information about their donor lies not only in the contribution the donor has made to their identity but also in other factors such as the desire to thank the donor, to understand something missing, to find out the donor's motivations etc. He argued these principles would also apply to children born following mitochondrial donation. In contrast Nuffield Council on Bioethics responded to this consultation question by agreeing *“...with the view that a donor of mitochondria should not be given the same status in all aspects of regulation as a reproductive egg or embryo donor”* and lists how these two donations are distinctly different.

For most respondents disagreeing with this approach, the mitochondrial donor was a third genetic parent and, therefore, had the rights but also the responsibilities of a parent in respect of the resulting child and, for that

reason, should not be considered as a donor. These responses also highlighted concerns about identity issues arising for the children born as a result of the donation:

“If you are donating for this procedure, your genes are being passed on and therefore you are a parent to the child.”(Individual Respondent)

“These new procedures have significant implications for the understanding of human life. More than two individuals are participating in creating new life and therefore three people must be considered as parents.” (Individual Respondent)

In all cases, respondents expressing the view that the donor should be regarded as a third parent were also opposed to the techniques being allowed in the UK.

Government’s response

We recognise that the issue of whether a mitochondrial donor should be treated like a gamete (sperm or egg) donor, or more like an organ or tissue donor, is a very finely balanced one, and we have considered at length the consultation responses.

We note that the term ‘three parent families’ has been used in responses that wish to make a case for a strong link between the mitochondrial donor and the child. We regard this term as completely inappropriate. Gamete donors, who contribute 50 per cent of the genes of a child born as a consequence of their donation, are not treated as the legal parent of any resulting child and there is therefore no justification to regard mitochondrial donors, who would provide only 0.1 per cent of the child’s genes, as such.

We have had regard to consultation responses that expressed reservations about comparing mitochondrial donation to organ or tissue donation. We recognise that the comparison is by no means absolute, not least because mitochondrial donation, unlike organ or tissue donation, would be a form of germ-line therapy. Our view is that mitochondrial donation would be a new and distinct form of donation that falls somewhere between gamete donation and organ/tissue donation.

Although we have considered the arguments that there is an important connection between mitochondrial donors and any children born from those donations the Government’s view remains that mitochondrial donation is very different from gamete donation in that the mitochondrial donor does not

contribute in any material or significant way to the identity, personal characteristics or traits of the person born following mitochondrial donation. In reaching this view we note that evidence of the sequencing of the whole mitochondrial DNA genome (the Revised Cambridge Reference Sequence of the Human Mitochondrial DNA) indicates that all of the mitochondrial DNA genes are involved in mitochondrial energy production and none are involved in governing personal characteristics and traits. Any relationship between the mitochondrial donor and any resulting child is remote, and in so far that there is any connection this is recognised by the regulations allowing for the sharing of non-identifying information in the same way. We do not think that research relating to genetic donation can be argued to apply to mitochondrial donation.

We have therefore decided to retain the policy of sharing only non-identifying information of the mitochondrial donor (which is covered in more detail in questions 6 and 7 below)

Question 6

Regulation 10 provides that the HFEA should tell a person aged 16, on request, if they were born following mitochondrial donation. Do you agree with this?

Background to question

Regulation 10 enables a person, on reaching the age 16, who thinks they may have been born as the result of mitochondrial donation, to apply to the HFEA to see if it holds any information about them on its register.

The Government is of the view that if the HFEA's register does show that the applicant was born as a result of the use of mitochondrial donation, the applicant should be able to access non identifying information about their donor. This reflects the HFEA's public dialogue and consultation and feedback from the Nuffield Council on Bioethics 2012 report, *Novel techniques for the prevention of mitochondrial DNA disorders*.³ as well as being informed by the responses to this consultation.

³ Nuffield Council on Bioethics June 2012

[http://www.nuffieldbioethics.org/sites/default/files/Novel techniques for the prevention of mitochondrial DNA disorders compressed.pdf](http://www.nuffieldbioethics.org/sites/default/files/Novel_techniques_for_the_prevention_of_mitochondrial_DNA_disorders_compressed.pdf)

Comments received

Most of those who commented on this proposal agreed with it.

Disclosure of information by HFEA

Although some respondents disagreed with the detail of this regulation, there was almost complete agreement that a person born as a result of mitochondrial donation should be able to access information about his or her conception, with many respondents considering this to be a basic human right:

“I do not see how this could be avoided. A person should be able to access their full medical history.” (Individual response)

“I think people should be told the truth about what is known about their medical history but I do not agree with mitochondrial donation.”
(Individual response)

A couple of respondents did question whether age 16 might be too young for someone to fully assimilate the information and age 18 might be more appropriate but no other response suggested an alternative access age. A couple of respondents disagreed with the HFEA providing this information but this was because they considered this to be best done by the parents or the family's GP.

Respondents with direct experience of mitochondrial disease, while agreeing with the proposal, were of the view that this option would, in practice, be rarely used because families suffering from a mitochondrial DNA disorder are, by necessity, open about it:

“We think, in reality, the situation is unlikely to ever arise as children born using this technique will have parents, grandparents or siblings living with (or who have lost their lives to) severe mitochondrial disease and therefore the condition would feature very prominently in everyday life. Knowing the families we work with, the use of this technique would have been communicated to the child at the very earliest opportunity and the child is likely to already know before they reach 16.” (The Lily Foundation)

A number of respondents expressed the view that access to counselling would be important not only for patients considering this treatment but also persons seeking this information from the HFEA.

Key areas of disagreement

Disagreement with the proposal centred on two points:

- the age at which information should be made available to a mitochondrial donor conceived person, and
- the requirement for that person to make an application to the HFEA to be given this information.

Most of the respondents who objected to the age 16 access point thought that the child should have this information as early as possible:

“As an adopted person myself, I think the child should be told much earlier. This procedure is much like a tissue donation of some sort, and no one would think of keeping it from a child that they had a heart transplant at a young age.” (Individual response)

“Absolutely and younger. Children should be told at any age...”
(Christian People’s Alliance)

Many respondents disagreeing with the proposal also considered that young people should not have to apply to be given this information, considering that withholding the information in the absence of an application would be a violation of that person’s human rights:

“It is alarming that the Government should even consider creating a child with three parents and yet not be prepared to say who the parents are unless the child requests the information at age 16. Surely the child has more rights than this.” (Individual response)

“The children have a right to know. This information should not be available only on request, it should be automatically given to the child.”
(Individual response)

However, no respondent expressing these views offered a suggestion on how a mandatory notification system might operate.

It should be noted that, in the vast majority of cases, these particular objections were directly linked to the respondent's belief that the mitochondrial donor was the third parent of the child and that a child had a fundamental right to know who his or her parents were.

Government's response

That a mitochondrial donor conceived person should be able to access to information about his or her genetic origins was, perhaps, the most common area of agreement among respondents, regardless of their overall view of the regulations

The Government is in complete agreement with the view that parents should tell their children about the circumstances of their conception and, ideally, this should happen as soon as the child is able to understand the somewhat complex nature of mitochondrial donation and its implications. However, as with assisted reproduction treatments involving donor conception, parents may not, for a number of reasons, choose to tell their children about the circumstances of their birth. For that reason, the Government believes that the option of seeking this information from the HFEA must be retained in the regulations. The Government also remains of the view that the requirement for a person to apply to the HFEA for this information, so that their identity can be verified before any personal information is disclosed, and that the applicant must be at least 16 years of age remains the correct approach.

Question 7

Regulation 10 also provides that the information that the HFEA should provide in response to such a request should not identify the mitochondrial donor and be limited to screening tests carried out on the donor and about her family medical history, and any other non-identifying information that the donor has provided with the intention that it is made available in these circumstances. Do you agree with this approach?

Background to question

The list of non-identifying information to be made available about mitochondrial donors under Regulation 10 includes screening tests and family medical history and pen picture type information provided by the donor.

Comments received

Responses to this proposal were fairly evenly split with some broadly agreeing with the proposal for disclosure of non-identifying information about the mitochondrial donor, and some disagreeing. None of the disagreement concerned particular items of information. Rather, responses either considered that no information should be disclosed or full and identifying information should be released.

As already indicated in some of the responses to Question 5, some respondents believe that donor anonymity is fundamentally wrong. Generally, as shown in the responses to Questions 5 and 6, disagreement was focused on the rights of the child to have full knowledge about its genetic origins, including identifying information about the mitochondrial donor:

“... the information should be complete so that the individual “created” knows the reason for the procedure to help them know who they really are.” (Individual respondent)

“Mitochondrial donors should be identifiable in exactly the same way as egg or sperm donors are now and exactly the same information should be provided...” (Individual respondent)

It is important to point out that many responses supporting full disclosure of donor information were from people who believed the mitochondrial donor was, in fact, the child's third parent and should be recognised as such:

“A child should always have a means to find and identify with her/his parents.” (Individual respondent)

“If adults chose to play a part in creating a child they need to understand that, as with all parents, it is a lifetime responsibility and be willing to be identified if the child sought them out.” (Individual respondent)

A number of those who disagreed with this provision also expressed the view that providing non-identifying information would deny human rights to the resulting child of mitochondrial donation:

‘..... hiding the identity of the third mother for perpetuity must be a violation of human rights law’ (Individual respondent)

Some respondents who supported the provision of non-identifying information additionally supported a voluntary system (similar to those run locally by organ transplant centres) where donors and mitochondrial donation-conceived children might make contact, if they wished:

“We further suggest that should mitochondrial donation techniques be permitted for treatment use in future, a voluntary system for contact between mitochondrial donors, set up and mediated by an appropriate central body, would offer the maximum flexibility to donors and the resulting people if they wished to become identifiable to each other or to make contact.” (Nuffield Council on Bioethics)

Government’s response

We recognise that the consultation responses on this point were very evenly split between those that thought identifying information should be provided and those who supported the provision of non-identifying information. We note that the Nuffield Council on Bioethics and the HFEA both considered this issue in their respective 2012 review and 2012/2013 consultation on mitochondrial donation and both concluded that identifying information should not be provided.

We recognise that a child born following mitochondrial donation will inherit a very small number of genes from the mitochondrial donor, and we understand why a considerable number of respondents consider this link should be sufficient for the regulations to provide for identifiable information about the mitochondrial donor to be released. However, the Government’s view remains that a child born following mitochondrial donation would have two biological parents, who provide 99.9 per cent of their genes and that any relationship between the child and the mitochondrial donor is remote.

We also note concerns that according a mitochondrial donor the same status as a gamete donor could ‘devalue’ the position of gamete donors, who have a significantly greater link to the child and whose situation provides much greater justification for identifying information about the gamete donor being made available to the child (at age 18). We can also envisage that patients considering mitochondrial donation treatment would probably need more

convincing about the justification for providing identifying information about the mitochondria donor than would patients considering gamete donation.

We have taken note of consultation comments that the importance to children of finding out identifying information about their donor lies not only in the contribution that the donor has made to the identity but also in other factors such as the desire to thank the donor and to find out about the donor's information. The 2013 report by the *Nuffield Council on Bioethics Donor Conception: Ethical aspects of information sharing* was referred to in responses in this context, which considered the views of children born following gamete donation. We have considered these points carefully. Our position is that any findings in relation to gamete donation should not be simply read as applying to mitochondrial donation. As a matter of biological fact, the contribution made by a mitochondrial donor is quite different to that of a full genetic donor. We remain of the view that the difference between mitochondrial donation and gamete donation is so significant that providing identifiable information is not warranted.

We believe that enabling the child, at age 18, to obtain non-identifying information about the mitochondrial donor, ie medical history and any other non-identifying information that the donor has provided for sharing, is the right approach given the remote relationship between the donor and the child (compared to gamete donation). Although not an identical situation by any means, we see some comparisons between this approach and the information that sometimes passes between organ donors/their families and the recipient of the donated organ.

We have therefore decided to retain the policy position in the regulations that information about the mitochondrial donor will be available to a child born following the donation on a non-identifying basis when they reach age 18.

Question 8

<p>Regulation 13 provides that the HFEA should tell a mitochondrial donor, on request, when a child has been born from their donation, how many and their sex. Do you agree with this approach?</p>
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Background to question

The Government considers that mitochondrial donors should also be able to access non-identifying information on live births resulting from their donation.

Regulation 13 will enable donors to request information on the number of children born plus the sex and year of birth of each child.

Comments received

Most of those responding on this proposal agreed with the approach and others disagreed with the HFEA providing information to mitochondrial donors on request. Respondents to this question included further comments discussing issues of anonymity versus full disclosure, the rights of the donor, the rights of the child born as a result of donation and the risks in releasing information but also the benefits.

Overall, there was a divergence of views ranging from those who thought that donors did not have any parental rights and there should therefore be no disclosure of information, to those who clearly stated that this technique resulted in three parents and all had the right to know about the existence of a child.

Some of those who agreed with the proposal considered the information would give the donor the satisfaction of knowing their donation had helped a family:

“Yes, as long as the recipients remain anonymous. This would give a measure of pleasure and contentment to the donor.” (Individual Respondent)

One respondent emphasised the commitment made by donors and believed they should have knowledge of the outcome:

“Yes – it seems fair and right that a person should know the outcome of what is a huge undertaking for them. There is no need to provide identifying information to achieve this.” (Individual Respondent)

The British Fertility Society (BFS) noted that its members were generally positive about this approach but some concerns were expressed. BFS raised the question that:

“If mitochondrial donation is considered to have parallels with organ donation where this information would not be provided, what is the rationale to offer the donor “rights” akin to that for egg donors?” (British Fertility Society)

In agreeing with the approach, the Progress Educational Trust felt that it was important that this regulation was not seen as conferring any parental rights or obligations on the donor. They thought the regulations allowed flexibility but that:

“..... ultimately, a mitochondrial donor should not be made to feel that they are under any obligation to have contact with any children born as a result of their donation.” (Progress Educational Trust)

Although opposed in principle to the techniques proposed in the regulations, both the LIFE charity and the All Party Parliamentary Pro-life Group felt that the provisions in questions 6, 7 and 8 were good but that:

“.... the denial of detailed and complete information to children about their exact genetic heritage is profoundly wrong and an infringement of their rights.” (LIFE and All Party Parliamentary Pro-life Group)

They both believed that the end of donor anonymity in conventional fertility treatment that happened some years ago was an excellent model for regulations concerning mitochondrial donors.

Others against the proposal made very similar points to those made in response to Question 5, 6 and 7:

“Donation should be private and confidential and the information should not be made available. Once a donation is made, the donor has no right to know that information. If you donate blood you don't have a right to know who it goes to. The donor has no rights to that child so what would be the point.” (Individual respondent)

“I don't see what can possibly be gained from this. They are a donor, not a parent and it may potentially create many emotional problems that could easily be avoided by refusing to give details of a child.” (Individual respondent)

On the other hand, even where a respondent disagreed with mitochondrial donation, they expressed the view that information about a child should be given as the donor had parental responsibilities.

“A donor should be informed who is his/her child. A parent has responsibilities and if 3/4 people are involved then they would have to work out their responsibilities.” (Individual Respondent)

As before, the view that a donor is the resulting child's third parent was expressed here:

“The third parent will be like a parent who has given a child up for adoption, and cannot be left in the dark – the child may want to make contact later.” (Individual respondent)

Some believed that the act of donation should be the end of the donor's involvement but did not disagree with the donor knowing simply that a child had been born.

Government's response

The arguments made against disclosure of this information are not considered to be of such strength as to justify withholding basic information about the result of the person's donation. As set out in response to consultation questions 5 and 7, the Government recognises that the mitochondrial donor will have an interest in their altruistic donation and shares the view that access to this information will allow the donor to know that their donation has been of value, which may help encourage donation.

Question 9

Do you have comments on any other aspect of the draft regulations?

Background to question

This question was included to ensure respondents had the opportunity to submit any additional comments they wished to make that were not directly linked to the previous questions.

Comments received

As some of the respondents to the consultation pointed out, a number of the questions were technical in nature and, therefore, somewhat difficult for members of the public with no scientific or medical background to comment on. However, for the majority of the respondents, the questions did not address the issues on which they wished to comment. For these reasons, 83 per cent of the comments submitted were solely in response to Question 9.

As stated in Chapter 2, the overwhelming majority of comments addressed the basic issue of whether it was appropriate to make regulations to permit the use of mitochondrial donation techniques in clinical practice in the UK.

Campaigns

Also, as discussed in Chapter 2, in analysing the comments received it quickly became clear that the majority of the individual responses had been inspired by campaigns, both in support and in opposition to the regulations. They followed similar formats or used very similar terminology.

Those writing in support largely had the single aim of informing the Government that they wanted the regulations to be made so that mitochondrial donation treatment could take place in the UK. The majority of these respondents had personal experience of mitochondrial disease, either within their family or the families of friends or had cared for people with these conditions. They spoke movingly of the impact of mitochondrial disease, with many having lost children to the disorder.

“I am writing to register my support of the regulations regarding mitochondrial donation. My wife and I have a son with a life limiting mitochondrial disease and it has had a devastating effect on our life. We considered long and hard about extending our own family but decided against, due to the high risk of having another affected child. Mitochondrial donation would give parents like us, the option to extend their family without the worry that their child may be born with this terrible disease.” (Individual respondent)

“I wish to let it be known that I strongly support this technique. I watched my granddaughter suffer and then die at 8 months from an incurable mitochondrial disease. Also I had to stand back, watch and support my daughter, her husband and two younger daughters struggle through this terrible time. I can't understand the objections to this technique when organ donation is so strongly supported.” (Individual respondent)

Many of those writing in opposition to the regulations followed a consistent format. The majority of these responses made all or a combination of the following points:

- that the Government had not waited for the results of experiments recommended by the Expert Panel, coordinated by the HFEA, before publishing draft regulations for consultation.;
- the techniques might be unsafe and the consequences for future generations were unknown;
- faulty mitochondria might be transferred to the donated egg or embryo and the resulting child could still have a mitochondrial disease;
- that the Government ignored the outcome of the HFEA public consultation exercise;
- that no other country is considering mitochondrial donation and in some countries it is prohibited by law;
- the techniques potentially represent the first step towards the acceptability of human reproductive cloning or “designer babies”;
- objection to human embryos being discarded during the techniques;
- that the techniques will not help people already suffering from a mitochondrial disease;
- that they are eugenic practices;

- the benefit to a very small number of people was outweighed by the risk to society;
- women afflicted with a mitochondrial DNA disorder could undergo IVF treatment using donated eggs to avoid their children inheriting a mitochondrial disease.

In addition, respondents asked the Government to focus resources toward research of less controversial techniques or pointed out that such research was already underway.

Government's response

The Government recognises that allowing the use of mitochondrial donation techniques in treatment in the UK provokes strong opinions on both sides of the debate. The Government did not pose the question of whether it was appropriate to allow mitochondrial donation in the consultation because this specific point had been the subject of a public dialogue/ consultation exercise carried out by the HFEA in 2012/13 and did not consider it would be appropriate to cover the issue again in this consultation exercise, as the Government had decided on and announced its policy position.

The Government is grateful to those who felt able to share their personal experiences of the impact of a mitochondrial disease on their families. It should not be forgotten that these diseases can shatter families afflicted with them, especially as there is no cure and only very limited means of alleviating their children's suffering.

In considering allowing the use of these techniques in treatment, it must be remembered that the UK has long had a robust regulatory framework, established in 1991 by the Human Fertilisation and Embryology Act 1990, applicable to the use of human gametes and embryos in treatments to assist a woman to carry a child. The 1990 Act was ground breaking legislation that is viewed as the benchmark for other countries seeking to introduce their own regulatory systems. Today, many countries still do not have any regulation of this type. The framework created by the 1990 Act has allowed the UK to introduce treatment techniques that might elsewhere be banned because of the strict controls the Act applies to the use of assisted reproduction techniques and, especially, to the use of human embryos both in treatment and research. The regulations that would allow mitochondrial donation would be made under the 1990 Act and the techniques would be subject to those same careful controls. It should also be noted that the 1990 Act expressly prohibits human reproductive cloning, and it prevents the use of gamete or embryo selection techniques for any purpose other than preventing a child being born with a serious disease or disability.

The Government readily accepts the points made by respondents about the importance of follow-up research and agrees this is vital if the impact of the mitochondrial donation techniques is to be fully understood. While the Government recognises that participation in follow-up studies cannot be a condition of access to treatment, it is important that families are made aware of the vital role they have to play in developing the understanding of the long-term effects of these techniques. For that reason, the HFEA's guidance to clinics will stress the importance of discussing follow-up research with patients and encouraging their participation in such studies.

Chapter 4: Next Steps

The Government is grateful to all who took the time to respond to the consultation. Their comments have been considered carefully in deciding how to go forward.

We recognise that this is an issue that provokes widely differing views. As indicated earlier, we do not question the sincerity of the view held by those that oppose the use of mitochondrial donation in clinical practice but we cannot accept some of the claims that have been made, such as the resulting child having three genetic parents or that the techniques amount to genetic modification.

Alongside the consultation exercise, the Department also asked the HFEA to reconvene the Expert Panel to undertake a further review of the efficacy and safety of the mitochondrial donation techniques. A report of that review was published in June 2014. The report found that the techniques of Maternal Spindle Transfer and Pro-Nuclear Transfer are potentially useful for a specific and defined group of patients and the evidence does not suggest that these techniques are unsafe. The Panel was of the view that research has progressed well since its previous two reviews, although it recommended that some experiments should be completed before clinical treatment is offered.

An Equality Assessment has been carried out for these regulations and has helped inform our decisions.

The Government has decided to proceed with putting regulations before Parliament, subject to giving further consideration to the Expert Panel's recommendations, refining the draft regulations to take account of changes identified during the consultation, and discussion with the HFEA about an appropriate approval process. The Government will consider the timing of the regulations in the light of these actions. The regulations will be subject to full scrutiny by the public and Parliament through the affirmative procedure.

ANNEX A

Respondents to consultation

The Academy of Medical Sciences
Affinity – Gospel Churches in Partnership
The Anscombe Bioethics Centre
Association of Clinical Embryologists
Association of Medical Charities and Genetic Alliance UK
Aston Clinton Baptist Church
Board of Deputies of British Jews
British Fertility Society
British Heart Foundation
British Medical Association
Centre for Genetics and Society
Christian Action Research Education (CARE)
Christian Concern and Christian Legal Centre
Christian People’s Alliance
Christian Medical Association
Christian Medical Fellowship
Church of England, Mission and Public Affairs Council
Church of Scotland, Church and Society Council
Comment on Reproductive Ethics
Cookstown Independent Methodist Church
Evangelical Alliance
Faculty of Advocates
Family Education Trust
Individual responses (1,816)
Lawford Davies Dennon
LIFE Charity
The Lily Foundation
Medical Research Council
Mick Knighton Mesothelioma Research Fund
Muscular Dystrophy Campaign

Nuffield Council on Bioethics
Parliamentarians (3)
PROGAR
Progress Educational Trust
ProLife Alliance
Scottish Council on Human Bioethics
Society for the Protection of the Unborn Child
Surrey Chapel Free Church
Twickenham Christian Concern
Wellcome Trust

ANNEX B

Consultation questions

Question 1: Regulation 2 defines the removal or insertion of nuclear DNA involved in mitochondrial donation. Do you agree with this definition?

228 people responded to this question, 152 of respondents agreed with the definition, while 76 did not.

Question 2: Regulations 4 (eggs) and 7 (embryos) only allow mitochondrial donation where all the nuclear DNA is transferred from an egg or embryo to another egg or embryo from which all the nuclear DNA has been removed. Do you agree with this description and restriction?

196 people responded to this question, 142 agreed with this description, while 54 did not.

Question 3: Regulations 5 (eggs) and 7 (embryos) require that, in order to agree that mitochondrial donation can go ahead, the HFEA must decide if there is both a particular risk that the egg or embryo of the patient has a mitochondrial abnormality and a significant risk that a person with the particular mitochondrial abnormality will have or develop a serious physical or mental disability, a serious illness or other serious medical condition. Do you agree that the HFEA should have this role?

234 people responded to this question, 159 agreed that the HFEA should have this role, while 75 did not.

Question 4: Do you agree with the principle that centres should not be permitted to undertake mitochondrial donation without first obtaining authorisation to do so from the HFEA ?

224 people responded to this question, 175 agreed with this principle, while 49 did not.

Question 5: Do you agree that people donating eggs and embryos for the purposes of mitochondrial donation should not have the same status as those donating eggs and embryos for use in fertility treatment but rather regarded

more like organ or tissue donors, so should not be identifiable to young people born as a result of the treatment?

Respondents were very evenly split on this question, with 289 responding, 143 people were in favour of mitochondrial donors not having the same status as gamete donors, while 146 were against.

Question 6: Regulation 10 provides that the HFEA should tell a person aged 16, on request, if they were born following mitochondrial donation. Do you agree with this?

239 people responded to this question, 152 people agreed with this provision, while 87 were against.

Question 7: Regulation 10 also provides that the information that the HFEA should provide in response to such a request should not identify the mitochondrial donor and be limited to screening tests carried out on the donor and about her family medical history, and any other non-identifying information that the donor has provided with the intention that it is made available in these circumstances. Do you agree with this approach?

240 people responded to this question, 129 people agreed with this approach, while 111 were against.

Question 8: Regulation 13 provide that the HFEA should tell a mitochondrial donor, on request, when a child has been born from their donation, how many and their sex. Do you agree with this approach?

230 people responded to this question, 170 people agreed with this approach, while 60 were against.