

Chapter 3

Medical information and
family history

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Chapter 3: overview

- Family histories of particular conditions are often presumed to be much more predictive than they really are. It is important that all health professionals, in their routine practice, regularly question the basis for seeking information about a person's family history, and only do so where this will be genuinely useful for the person's care.
- Lack of information about the medical history of the donor is a source of much concern among donor-conceived people and their parents. However, in most cases, such information would be of little medical relevance for the donor-conceived person because of the screening and assessment that potential donors undergo before being accepted as donors, and because of the low predictive value of much family history information. If a donor does not have an inherited condition him or herself, then there will only be very rare situations where a family history of a condition will be medically significant to the donor-conceived person.
- Potential donors will be excluded from donating altogether if their personal or family medical history could pose significant health risks to future offspring. Details of the major conditions that have been 'screened out' in this way before a donor is allowed to donate should be provided to prospective parents in an easily accessible and comprehensible format, thus providing substantial reassurance that their child will have a low risk of inheriting a serious genetic condition from their donor. A clear explanation should also be provided that the donor has no known family history of any other condition that would pose a serious risk to the health of any resulting person. Some parents of donor-conceived children may interpret 'no information' about the donor's family history as resulting from a lack of willingness to share information, rather than as reassurance that there is no relevant information to provide. Clear communication on this point is essential.
- The situation may, however, occasionally arise where factors in the donor's own medical history or family history are insufficient to exclude the donor from donating, but may be of future relevance to the health care of the donor-conceived person. Disclosure of such information to prospective parents should be encouraged and facilitated. Given the developing nature of knowledge in this area, however, parents should not place undue weight on such information, as information that is believed to be potentially relevant at the time of donation may later prove not to be so.
- A sound evidence base underpinning what information should be sought from donors in their clinic assessment is essential, so that donor-conceived people and their parents may be confident that information that may indeed be clinically relevant for the donor-conceived person's health care will be collected before donation and passed on appropriately. It is not useful to collect and share information about the health of the donor or their family that is unlikely to have any effect on the donor-conceived person's health or health care.
- Circumstances may arise where significant information only comes to light after donation. In such cases, it is beneficial both for donors and donor-conceived people for there to be a clear and easily accessible mechanism through which such information may readily be communicated.

Introduction

- 3.1 One particular concern that arises repeatedly in connection with access to information about the donor by donor-conceived people and their parents relates to the potential relevance of medical information about the donor for the future health and health care of the donor-conceived person.¹⁸¹ The Working Party concluded from the evidence available to it that the value of such information in the context of licensed treatment is in fact widely overestimated, and that only in rare cases will a lack of personal or family medical history about a donor make any significant difference to the health or health care of the donor-conceived person. However, given the degree of concern that the question of access to medical information clearly generates, the Working Party found it helpful to set out its findings on this issue in a separate chapter. For some people, it may also be the case that an interest in knowing about the medical history of

¹⁸¹ See, for example, Hershberger PE (2007) Pregnant, donor oocyte recipient women describe their lived experience of establishing the "family lexicon" *Journal of Obstetric, Gynecologic, & Neonatal Nursing* **36**(2): 161-7; Cushing AL (2010) "I just want more information about who I am": the search experience of sperm-donor offspring, searching for information about their donors and genetic heritage *Information Research* **15**(2): 1; Ravitsky V (2012) Conceived and deceived: the medical interests of donor-conceived individuals *Hastings Center Report* **42**(1): 17-22. See also: Nuffield Council on Bioethics (2013) *Donor conception: ethical aspects of information sharing - summary of call for evidence*, available at: <http://www.nuffieldbioethics.org/donor-conception/donor-conception-evidence-gathering>.

their donor constitutes part of their more general interest in ‘knowing about’ their donor in a biographical sense, rather than because of concerns about the impact on their own health, and we discuss the interests of donor-conceived people and others in obtaining such ‘narrative’ information about donors in the next chapter. In this chapter, we focus more narrowly on issues relating to the clinical relevance of personal or family medical information from the donor for donor-conceived people: that is, on circumstances in which a failure to provide information about the family history of the donor might be detrimental to a person’s health or health care.

- 3.2 Concerns raised by donor-conceived people and their parents about their lack of access to such medical information fall into two broad categories, as illustrated in Box 3.1 below. The first area of concern relates to general requests for information about a person’s family history. Anyone who comes in contact with health services will be asked at some point for details of their ‘family history’, and both parents and donor-conceived people themselves report how difficult they find it to respond to such questions, when they feel they know nothing about one part of that ‘family history’. We discuss below (see paragraphs 3.7 and 3.23) why such questions may be asked, and the potential relevance of the donor assessment and screening progress in responding to them. A separate set of concerns, however, arise in the context of the possibility of donor-conceived people inheriting rare but significant conditions from their donor: in such cases, the donor-conceived person could potentially be at a medical disadvantage compared with a person who has full genetic links with both their parents, as they will be unable to benefit from the earlier diagnosis and treatment that might be available to those who are aware of a significant diagnosis in their immediate family.¹⁸² This latter category of concern may also arise in reverse: it is possible that information about a genetic condition diagnosed in a donor-conceived person may also be relevant for the future health care of their donor, his or her family, and any donor-conceived siblings. Donors are, of course, tested far more thoroughly than a person who has a child through a natural conception (see paragraph 3.11). Despite this, however, examples of donor-conceived people inheriting major genetic conditions from their donor still occur (and indeed, as we note later, screening must always have its limitations), and this issue was raised repeatedly with the Working Party as a major source of concern for donor-conceived people.¹⁸³
- 3.3 For donor-conceived people, anxieties about conditions or dispositions to disease that they may have inherited from their donor can clearly only emerge if and when they find out that they are donor-conceived. Separate issues arise for donor-conceived people who do *not* know that they are donor-conceived, in that they may provide information to doctors about their non-genetic parent’s medical history: at best this will be irrelevant, and at worst may be harmful by, for example, leading to unnecessary investigations. False reassurance deriving from a non-genetic parent’s medical history may potentially also lead to a lost opportunity of an earlier diagnosis. Such issues similarly arise for those who are in this position for other reasons (such as misattributed paternity – see paragraph 1.26 – or who do not know that they are adopted): the potential disadvantage relates not to the fact of donor conception itself, but rather to an incorrect belief about genetic connection with a social parent.

¹⁸² We note here that this is distinct from questions of the ‘right not to know’, in the sense of a person choosing not to be tested for a particular serious genetic condition because they prefer not to obtain that information. Donor-conceived people are not in a position to exercise such a ‘right not to know’ if they have no means of knowing about the diagnosis in the donor.

¹⁸³ Nuffield Council on Bioethics (2013) *Donor conception: ethical aspects of information sharing - summary of call for evidence*, available at: <http://www.nuffieldbioethics.org/donor-conception/donor-conception-evidence-gathering>. See also: Daily Mail (7 March 2012) ‘*I didn’t want children to die: a mother’s mission to save sperm donor’s 35 kids never told about his fatal, genetic illness*’, available at: <http://www.dailymail.co.uk/news/article-2111623/Sperm-Donors-35-Kids-Never-Told-About-Fatal-Genetic-Illness.html>; New York Times (14 May 2012) ‘*In choosing a sperm donor, a roll of the genetic dice*’, available at: http://www.nytimes.com/2012/05/15/health/in-sperm-banks-a-matrix-of-untested-genetic-diseases.html?_r=1&pagewanted=all.

Box 3.1: Concerns raised about lack of medical information about the donor

Concerns about lack of 'family history' information in general health care

"[I]n the first few days/weeks of my son's life I was asked if there was family history of tongue tie and neonatal jaundice, but I could only answer from my side of the family." – Respondent to Working Party's online questionnaire

"I would have liked more medical history information - my older son has astigmatism and glasses, so when I'm asked if there's family history of sight problems I can't answer 50% of the info." – Respondent to Working Party's online questionnaire

"[Information which] gives some information about medical conditions that either develop or might develop (such as allergy, eczema, asthma etc)." – Respondent to Working Party's online questionnaire

"The greatest impact would be regarding lack of medical background. We can only answer for my half of the family, and I think there is a risk that 'unknown' for a condition might be interpreted as 'not present' at a critical moment." – Andrea Powell, responding to the Working Party's call for evidence

(See paragraph 3.23 below for a discussion of the extent to which such information, if available, would affect a person's health care)

Concerns about inheriting a serious genetic condition from the donor

"In another recent case, a sperm donor did not notify the three sperm banks through which he helped conceive 24 offspring that he had been diagnosed with a genetic heart defect. The mother of one of these children looked for information about the donor, discovered his identity, and subsequently learned about his medical condition. Following these discoveries, her son's asymptomatic aortic aneurysm – which could have ruptured at any moment – was also diagnosed, and surgery was performed that probably saved his life."¹⁸⁴

"I know several instances of this – two severely autistic children, twins with an inherited skin condition, Narelle Grech, who has been very active in the Australian Donor Conception Support Group and might have had her genetically linked bowel cancer diagnosed earlier than Stage 4, had she known to seek screening." – anonymous respondent to the Working Party's call for evidence

"I'd also like continued health updates on diseases/conditions that developed later in life that may be hereditary." – Respondent to Working Party's online questionnaire

Inappropriate care arising out of belief that non-genetic parent was genetically-related

"When I was 20 my dad was diagnosed with kidney failure as the result of Polycystic Kidney Disease (PKD). There is a 50 per cent chance somebody afflicted with this will pass it on to their offspring, about half of people with PKD ultimately develop kidney failure and there is no conclusive test for the PKD gene. Consequently, not knowing I was DC [donor-conceived] and so believing I could be affected, I went for a course of genetic counselling and yearly ultrasound scans of my kidneys until the truth came out when I was 25." – Rachel Pepa, responding to the Working Party's call for evidence

Background on genetic information and family history

- 3.4 Inherited medical conditions may be associated with a mutation in a single gene ('single gene' or 'Mendelian' conditions), or with a complex combination of genetic mutations or variations in many genes and environmental factors ('multifactorial' conditions). Both types of conditions may become apparent at different stages in life.
- 3.5 There are thousands of different single gene conditions, and while most of them are individually rare, collectively they are significant.¹⁸⁵ Such single gene conditions may be recessive (a person will only develop the condition if they inherit the particular gene mutation from both parents) or dominant (the condition will manifest itself in a person if they inherit the particular gene mutation from either parent).¹⁸⁶ Identifying the presence of a particular gene mutation within a genetic family allows for accurate testing of relatives to see whether or not they have inherited the condition. Knowledge of the particular familial mutation reduces the risk of 'false negative' results in unaffected relatives because it allows clinicians to test specifically for that mutation.

¹⁸⁴ Ravitsky V (2012) Conceived and deceived: the medical interests of donor-conceived individuals *Hastings Center Report* 42(1): 17-22. See also: ABC News (21 July 2011) *Sperm donor's 24 kids never told about fatal illness*, available at: <http://abcnews.go.com/Health/sperm-donors-24-children-told-fatal-illness-medical/story?id=14115344>.

¹⁸⁵ Approximately one in 17 people will be affected by a rare condition, although not all these are single gene conditions: see Rare Disease UK (2013) *Rare Disease UK homepage*, available at: <http://www.raredisease.org.uk/>.

¹⁸⁶ 'X-linked' conditions, where the condition is due to a mutation on the X chromosome, can have different manifestations in males (who have just one X chromosome) from those in females (who have two).

Although accurate genetic testing is currently available only for a small proportion of the many single gene conditions, the risk that an individual with no family history of a particular condition, and no signs or symptoms of it, will transmit a strongly heritable condition to their offspring is usually extremely low.

- 3.6 Many common conditions such as cancer and heart disease are ‘multifactorial’ diseases: that is they result from the interaction of several different genetic variations with several different environmental factors. Only if certain groups of variants and factors are present in a particular combination will the condition eventuate (a comparison might be a highly complex fruit machine). Each variation and each factor alone may have only a small, if any, effect, and hence it may not be particularly helpful to identify one or some of the variations (such as a particular gene mutation) in an individual, especially as the environment in which they happen to exist will also be influential. The pre-birth environment in the womb, amongst others, is likely to affect how certain genes are switched ‘on’ or ‘off’ so that the same gene mutation may be ‘silent’ in one person, but result in clinical effects in another.¹⁸⁷ In one family a particular mutation (for example of a gene influencing electrical impulses in the heart) may confer a high probability of sudden cardiac death; in others it might be present in many family members without any clinical effects. Using a mutation as a predictor of a condition depends on knowing what the other components of the ‘fruit machine’ are, and in most common diseases this is still unknown.
- 3.7 There is thus a spectrum of ‘genetic’ conditions: from dominant or recessive single gene conditions (such as cystic fibrosis, haemophilia and Huntington’s disease) where the presence of a particular mutation has high predictive value, to multifactorial conditions (such as many forms of heart disease, cancer and diabetes), where the presence of any one gene mutation or variation will have only low predictive value. In between these two poles are a number of subgroups of common conditions such as certain cancers or types of heart disease, where a single gene mutation confers a considerable risk, but additional risk factors are necessary before the effects of this gene mutation are seen. In this case, the number of factors that need to coincide (as in the ‘fruit machine’ metaphor above) is lower, and hence the presence of a particular mutation may have moderate predictive value. For example a ‘BRCA 1 or 2’ gene mutation will tell a woman she has a 60-80 per cent chance of developing breast cancer (as opposed to ten per cent in the general population). However, it is not yet known why 20-40 per cent of those with the mutation do *not* develop cancer. Although there have now been several decades of successful research discovering links between DNA variations and particular diseases, their individual predictive powers in the clinical setting will remain low until the particular combination of risk factors for that disease has been discovered. Often the predictive value of such gene associations is still less than that from taking a detailed medical family history. One of the reasons why patients are routinely asked about their family history of conditions such as heart disease and cancer is thus with the aim of identifying people who may fall into one of these higher-risk groups, rather than because *any* history of heart disease or cancer in the family will necessarily affect decisions about the patient’s care.
- 3.8 While the study of the human genome has become much faster and cheaper (the ‘thousand dollar genome’)¹⁸⁸, clinical interpretation still lags behind. Genetic testing in the clinical setting is changing from one where only certain genes, based on particular signs and symptoms or on family history, are tested, to one where the whole genome is tested to look for *any* abnormality. These new genomic technologies are highly effective at obtaining much more data at a much lower cost than previously possible. However, not enough is yet known about the functions or interactions of many genes to interpret the data that come from such testing: for example in analysing what is a normal variation (such as those causing differences in hair or eye colour) and what variation increases the chance of disease; or how important any particular variant may

¹⁸⁷ See, for example, Bird A (2007) Perceptions of epigenetics *Nature* **447(7143)**: 396-8.

¹⁸⁸ The Telegraph (10 January 2012) *Entire DNA sequence now available for less than £700*, available at: <http://www.telegraph.co.uk/science/science-news/9004186/Entire-DNA-sequence-now-available-for-less-than-700.html>.

be in predicting anything about that condition. The move from targeted testing to whole genome testing not only means that the clinical significance of the results are often harder or impossible to determine, but can also raise ethically difficult decisions if unexpected or 'incidental' findings about, for example, future cancer risks, are found.¹⁸⁹

- 3.9 It is a common assumption that more genetic screening of donors would provide more information for donor-conceived offspring and their families. However, the rarity of individual single gene conditions combined with the multifactorial nature of most common conditions as described above, means that the predictive value of such screening, in the absence of particular symptoms or family history in the donor, is likely to be low. Most early-onset strongly heritable conditions can be excluded in a donor if he or she is well at the time of donation and has no close family with a history of the condition. Later-onset conditions may be more difficult to exclude, but the absence of a family history in previous generations will nevertheless be of significant reassurance.
- 3.10 Many common diseases may also be present in more than one family member, simply because they *are* common. To say something 'runs in the family' is not the same as saying that it is a genetic condition, or that a relative has a high chance of also developing the condition. Families may share environmental risk factors: for example, a family of heavy smokers may find that lung cancer 'runs' in the family.

Law and guidance on medical screening and selection of donors

- 3.11 Potential donors are required to undergo detailed medical screening before they are accepted by clinics. The primary rationale for such screening is the provision of good quality care to the prospective parents, coupled with the responsibility of fertility professionals to take into account the welfare of the future child (see paragraphs 5.57 to 5.62). In this context, good quality care includes avoiding the use of gametes that might increase the chance of an inherited condition in the donor-conceived child, even if that chance is small. Obviously, excluding *all* conceivable risks would not be reasonably possible without undermining the practice of donor conception, as no suitable donors would then be left. The fact that donors are screened in a way that those seeking reproductive help with their own gametes are not,¹⁹⁰ can be justified on the basis that donors are in a quite different position from prospective parents. Helping people have a child with their own gametes implies accepting the risks that may be inherent in their combined genetic material: although, in cases of a known familial risk of transmitting a serious genetic condition, prospective parents may be informed of prenatal or preimplantation genetic testing options, it would not be regarded as acceptable to advise them to look for a different partner. By contrast, donors are, in principle, replaceable. Donors may also be excluded if there is concern about the effect of donating on their own health, for example concern about the risk of OHSS (ovarian hyper stimulation syndrome) in egg donors.
- 3.12 The HFEA *Code of practice* sets out a number of legally binding 'licence conditions' with respect to testing potential donors for infectious diseases.¹⁹¹ All donors must be negative for HIV,

¹⁸⁹ See: Joint Committee on Medical Genetics (2011) *Consent and confidentiality in clinical genetic practice: guidance on genetic testing and sharing genetic information - a report of the Joint Committee on Medical Genetics*, available at: http://www.bshg.org.uk/consent_and_confidentiality_2011.pdf; PHG Foundation (2012) *Whole genome sequencing in health services*, available at: <http://www.phgfoundation.org/pages/wholegenome.htm>.

¹⁹⁰ Note, however, that as part of the requirement for clinics to take account of the welfare of a future child before providing any assisted conception treatment, clinics are required to consider factors that may cause a risk of significant harm to the child, including circumstances that are likely to lead to prospective parents being unable to care for a child throughout their childhood. Examples cited of where such circumstances could arise include a medical condition in the parent, or a family medical history indicating that "any child who may be born is likely to suffer from a serious medical condition": Human Fertilisation and Embryology Authority (2011) *Code of practice 8th edition*, available at: http://www.hfea.gov.uk/docs/8th_Code_of_Practice.pdf, at paragraph 8.10.

¹⁹¹ Human Fertilisation and Embryology Authority (2011) *Code of practice 8th edition*, available at: http://www.hfea.gov.uk/docs/8th_Code_of_Practice.pdf, Chapter 11. See also: Commission of the European Communities (2006) *Commission Directive 1006/17/EC (the EU Tissue and Cells Directive)*, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:038:0040:0052:EN:PDF>, at Annex III; Advisory Committee on the Safety of Blood, Tissues and Organs (2011) *Guidance on the microbiological safety of human organs, tissues and cells*

hepatitis B and C, syphilis and (for sperm donors) chlamydia. In addition, the *Code of practice* notes that additional testing may be required, depending on donor's geographical area of origin or their own medical history.¹⁹² These additional tests primarily relate to further infectious diseases, such as the Human T Cell lymphotropic viruses (HTLV) or malaria. Donor sperm must ordinarily be quarantined for a minimum of 180 days, after which repeat testing is routinely required.¹⁹³

- 3.13 Apart from these mandatory tests, the *Code of practice* requires clinics to consider the suitability of the prospective donor, with particular attention paid to their personal or family history of heritable conditions and their personal history of transmissible infection; and specifies that “donors of gametes and embryos should be screened in accordance with current professional guidance produced by the relevant professional bodies” (see paragraph 3.14).¹⁹⁴ Finally, the *Code of practice* highlights the legal requirement that donors must not be chosen precisely because they *have* a particular genetic or chromosomal abnormality, even if this abnormality exists in the prospective parents.¹⁹⁵
- 3.14 Professional guidance on the assessment and screening of (sperm) donors dates back at least to 1979, where information on artificial insemination provided by the Royal College of Obstetricians and Gynaecologists for prospective parents explained that donors are “carefully selected” and are required to be “fit and healthy and on questioning to have given no family history of hereditary disease.”¹⁹⁶ The “current professional guidance” referred to in the latest *Code of practice* was produced in 2008 by the Association of Biomedical Andrologists in partnership with the Association of Clinical Embryologists, British Andrology Society, British Fertility Society, and Royal College of Obstetricians and Gynaecologists.¹⁹⁷ These guidelines require clinics to undertake a detailed clinical assessment of potential donors, through face-to-face interviews, as well as through reference to medical records as necessary. They note that “this assessment should consider the age of the potential donor, as well as relevant medical and surgical history, reproductive and sexual history, genetic history, family genetic history and the risk of transmissible disease including blood-borne viral infections and spongiform encephalopathies. It should also include a physical examination.”¹⁹⁸ All donors should also have their blood group and rhesus status recorded for matching purposes where required.

used in transplantation, available at:

<http://www.bts.org.uk/Documents/Publications/Guidance%20on%20the%20microbiological%20safety%20of%20human%20organs,%20tissues%20and%20cells%20used%20in%20transplantation.pdf>, pp12-5.

¹⁹² For example, HTLV-1 antibody testing must be performed for donors living in or originating from high incidence areas (or whose partners or parents originate from those areas); and testing for RhD, malaria and *T. cruzi* may be required depending on the donor's history and the characteristics of the gametes being donated.

¹⁹³ Human Fertilisation and Embryology Authority (2011) *Code of practice 8th edition*, available at: http://www.hfea.gov.uk/docs/8th_Code_of_Practice.pdf, Chapter 11, licence condition T53c. If the blood donation sample is additionally tested by the nucleic acid amplification technique (NAT) for HIV, HBV and HCV, quarantining of the gametes and re-testing of a repeat blood sample is not, however, required.

¹⁹⁴ Human Fertilisation and Embryology Authority (2011) *Code of practice 8th edition*, available at: http://www.hfea.gov.uk/docs/8th_Code_of_Practice.pdf, at paragraphs 11.14 and 11.21.

¹⁹⁵ HFE Act 1990, Schedule 3, as amended, T55. This might arise, for example, in the case of deaf prospective parents preferring a deaf child.

¹⁹⁶ Royal College of Obstetricians and Gynaecologists (1979) *Artificial insemination* (London: Royal College of Obstetricians and Gynaecologists). More detailed guidance was subsequently issued, including reference to the requirements for laboratory screening for a number of sexually transmitted diseases: Royal College of Obstetricians and Gynaecologists (1992) *Recommendations for centres using donor semen and those planning to set up a donor insemination service* (London: Royal College of Obstetricians and Gynaecologists).

¹⁹⁷ Association of Biomedical Andrologists, Association of Clinical Embryologists, British Andrology Society, British Fertility Society, and Royal College of Obstetricians and Gynaecologists (2008) UK guidelines for the medical and laboratory screening of sperm, egg and embryo donors (2008) *Human Fertility* **11(4)**: 201-10.

¹⁹⁸ Association of Biomedical Andrologists, Association of Clinical Embryologists, British Andrology Society, British Fertility Society, and Royal College of Obstetricians and Gynaecologists (2008) UK guidelines for the medical and laboratory screening of sperm, egg and embryo donors (2008) *Human Fertility* **11(4)**: 201-10, at 202. In addition to the infectious diseases singled out in the *Code of practice*, these guidelines further state that the donor should screen negative for gonorrhoea, and should be screened for the cytomegalovirus (CMV). CMV negative donors are stated to be preferable, although CMV IgG positive (IgM negative) donors may be used for CMV IgG positive recipients.

- 3.15 With respect to heritable conditions, the guidelines state that potential donors should not have a “significant heritable condition: this being defined as one that has a major adverse effect on lifestyle or life prognosis”. Enquiries should be made to establish that the donor has not been diagnosed with:
- “familial disease with a major genetic component” (cited examples include cleft lip or palate, congenital heart malformation and neural tube defects);
 - “any significant Mendelian disorders” (such as haemophilia, haemoglobin disorders, or tuberous sclerosis);
 - “familial disease with a known or reliably indicated major genetic component” (cited examples include juvenile diabetes mellitus or rheumatoid arthritis); or
 - “a chromosomal rearrangement that may result in unbalanced gametes”; that is, a chromosomal rearrangement that, while it might carry no health consequences for the donor, could result in any offspring having an imbalance of their chromosomes with associated and significant health or developmental problems.
- 3.16 The guidance further requires that enquiries should be made regarding the potential donor’s family history (to include their genetic parents, siblings and offspring), in order to make sure that these members of the potential donor’s family are free of:
- any of the familial diseases with a major genetic component cited above;
 - “non-trivial disorders showing Mendelian inheritance” that are autosomal dominant (such as Huntington’s disease), X-linked (such as haemophilia), or autosomal recessive, particularly if there is a high frequency in the relevant population (such as cystic fibrosis in Northern European populations);
 - a chromosomal abnormality;
 - a history of mitochondrial disorders (egg and embryo donors only).
- If there is evidence of any of the above, the potential donor should be offered a referral to a clinical genetic service who can arrange relevant testing.
- 3.17 All donors should further be subject to laboratory screening for chromosomal abnormalities (‘karyotyping’), and should screen negatively for relevant autosomal recessive conditions depending on their family’s geographical area of origin:
- α^0 - and β -thalassaemia (Mediterranean, Middle East, Indian subcontinent);
 - sickle-cell anaemia (African and Afro-Caribbean);
 - Tay-Sachs disease (Jewish of Eastern European descent);
 - cystic fibrosis (Northern European).
- 3.18 In order to facilitate future monitoring and surveillance, the guidance recommends that, as a matter of best practice, serum and/or DNA from all donors should be stored “in order to facilitate the future provision of genetic information to the donor-conceived in the event that advances in technology meant that information about late onset genetic diseases became available after the time of donation”. Recruitment centres should “have mechanisms in place to manage any information they may generate”, and should closely monitor all donor pregnancies so that any birth abnormality may be “carefully documented and discussed with a clinical geneticist so that the risk to other donor-conceived siblings and the donor’s own children (if applicable) can be assessed”. The decision to inform a donor or parents about any new genetic information “should be a matter of clinical judgement”.
- 3.19 The requirements of the *Code of practice* and current professional practice described above apply to gamete donors who donate through UK-licensed clinics. Prospective parents who travel abroad for treatment cannot assume that the screening and assessment regime will be exactly the same in other countries, although broadly similar professional guidance is likely to be in

place.¹⁹⁹ The position is rather different where prospective parents obtain sperm informally from known donors or through ‘dating-agency’ type websites, without involving a licensed clinic. While the donor may be willing to provide detailed information about his personal and family medical history, no medical screening will take place (unless separately arranged) and recipients will not have the additional reassurance of knowing that the sperm has been quarantined for 180 days (see paragraph 3.12 above).

Access to medical information by donor-conceived people and parents

- 3.20 The ‘donor information form’ requires the clinic to list “any screening tests other than HFEA mandatory tests carried out for this donor”, and also includes space to “list any physical illness or disability, history of mental illness or learning difficulties” and “any known medical conditions within the donor’s biological family”.²⁰⁰ The guidance accompanying the form more specifically states that “any known relevant medical conditions within the donor’s biological family background” should be included, but does not indicate how ‘relevance’ is to be determined.²⁰¹
- 3.21 Parents of donor-conceived children now have access to the donor information form completed by the donor and clinic; indeed ‘prospective parents’ considering the possibility of treatment with donor gametes are similarly able to access the information contained in the form (see paragraphs 2.11 and 2.12). The information that parents, and subsequently donor-conceived people themselves, will be able to access in future is thus determined first by the level of information sought by the doctor undertaking the health assessment of the donor, and secondly by the level of information transferred on to the form, or conveyed to parents in other ways (for example through a clear explanation of what has been excluded through the screening process). It should, however, be noted that the policy on sharing information included on the donor information form, and indeed the design of the form itself, has evolved considerably in recent years, and hence parents of older donor-conceived children may have less medical information about their child’s donor than that encouraged through the current policy. Donor-conceived people who have already reached adulthood may have potential access to little, if any, information.
- 3.22 Clinicians with expertise in genetic medicine who contributed to a factfinding meeting on the medical significance of information about a person’s donor were of the view that the tests donors currently undergo, and the information sought from them, were “extensive”, and that this screening should identify most potential donors with any form of serious disease, genetic or otherwise. As a result, parents should be reassured that in the vast majority of cases the risk that their children would inherit a significant condition from their donor would be very low.²⁰² It was felt to be very important that this information should be clearly conveyed to parents, perhaps in the form of a letter explaining that their child’s donor was assessed for a range of serious heritable conditions (and that these conditions had hence specifically been ‘screened out’), that they could keep and refer to in the future. The HFEA *Code of practice* currently emphasises that clinics should “give people seeking treatment with donated gametes or embryos information about genetic and other screening of people providing gametes” including “details about the sensitivity and suitability” of the tests used and “information that explains the

¹⁹⁹ See, for example, the ASRM guidance in the US: The Practice Committee of the American Society for Reproductive Medicine and the Practice Committee of the Society for Assisted Reproductive Technology (2012) *Recommendations for gamete and embryo donation: a committee opinion*, available at: http://www.asrm.org/uploadedFiles/ASRM_Content/News_and_Publications/Practice_Guidelines/Guidelines_and_Minimum_Standards/2008_Guidelines_for_gamete%281%29.pdf. See also the requirements of the EU Tissues and Cells Directive that apply to all member states of the European Union.

²⁰⁰ Human Fertilisation and Embryology Authority (2010) *Donor information form*, available at: http://www.hfea.gov.uk/docs/HFEA_Form_Donor.pdf.

²⁰¹ Human Fertilisation and Embryology Authority (2012) *HFEA donor information form (v2012): completion guidance notes*, available at: http://www.hfea.gov.uk/docs/HFEA_form_guidance_-_Donor_Info_Form.pdf.

²⁰² Factfinding meeting on the medical significance of information about the donor, 2 October 2012.

limitations of testing procedures”.²⁰³ However, it would appear from the very widely-expressed concerns about lack of medical information that the reassurance that such information should provide is not being clearly communicated.

- 3.23 Given the assurance that should be provided by the level of screening currently carried out, it was suggested in the factfinding meeting that in most cases, a desire for more information would be related to anxiety rather than because such information would, in practice, have a significant medical impact. As described above, the multifactorial nature of most familial conditions is such that knowledge about the possibility of increased risk for one particular factor associated with a condition has little direct relevance for the health care of the individual, while inherited conditions where gene mutations have greater predictive weight (as in some forms of cancer and heart disease described above) should have been identified, and hence excluded, by a competently-taken family history at the time of the donor assessment (see paragraph 3.7). In many cases answers to the question “Is there a family history of...?” asked of donor-conceived people or their parents (examples of which are set out in Box 3.1 above) would not, in fact, significantly affect the health care they are likely to receive. Indeed, it was noted as a general point that health professionals needed to challenge their own practice, and to consider before asking the question about family history whether or not the answer would in fact make any difference to the subsequent care provided.
- 3.24 Thus in most cases, the fact that a donor has been carefully screened and assessed, coupled with the very low predictive value of much family history information²⁰⁴ will mean that there is no ‘relevant’ information (other than the fact of their having been screened for numerous conditions) to include on the donor information form for the future use of parents and donor-conceived people. Occasionally, however, there may be circumstances where particular medical information about a donor *could* potentially influence health care decisions in a significant way for future offspring, even though that information would not be regarded as sufficiently serious to justify excluding the donor from donating in the first place. The clinicians contributing to the Working Party’s factfinding meeting on these issues highlighted the importance of a clear evidence base to underpin decisions that particular medical information about a donor might in the future be relevant to offspring’s health care, and recognised, too, that such an evidence base would continue to evolve. It was agreed that where there *is* a clear evidence base that information about a particular condition might be relevant for a donor-conceived person’s future care (while being insufficiently serious to exclude the donor from donating in the first place), then such information should be sought and documented in the original pre-donation screening so that it is available for the future for parents and offspring. Given the extent of pre-donation screening and the low predictive value of much family history information, however, those present at the meeting were not able to identify specific circumstances when this might arise.
- 3.25 Given that the medical information routinely available to parents, and subsequently to donor-conceived people themselves (including the reassurance that there is no significant information to impart), is based on the clinical assessment and screening of the donor undertaken by the clinic, participants in the factfinding meeting emphasised the importance of the *form* of this assessment: the face-to-face interview recommended in the current guidance was thought to be essential, and it was suggested that the history taken should cover three generations of the donor’s family, in line with the standard approach of clinical genetic services. It would clearly be important that those undertaking such assessments were encouraged to liaise as necessary with clinical genetic services to help assess the significance of particular family histories.
- 3.26 The situation may also arise where significant information only becomes available after donation: particularly in the context of the donor developing a late onset strongly heritable condition (see paragraph 3.9 above). It is clearly important that in such cases there is a clear

²⁰³ Human Fertilisation and Embryology Authority (2011) *Code of practice 8th edition*, available at: http://www.hfea.gov.uk/docs/8th_Code_of_Practice.pdf, at paragraphs 20.3-4.

²⁰⁴ See, for example, National Institutes of Health (2009) *NIH state-of-the-science conference statement on family history and improving health*, available at: http://consensus.nih.gov/2009/Fhx%20images/familyhistory_final_stmt.pdf.

route of communication from the donor to the donor-conceived person and/or their parents, as envisaged by the current professional guidance (see paragraph 3.18 above).²⁰⁵ Similar issues will arise where the donor-conceived person is diagnosed with a serious inherited condition, where this information may potentially be of relevance to the donor, their family, and any other donor-conceived siblings.²⁰⁶ Examples were cited in the factfinding meeting, where methods had, in practice, been found for communicating this information, via the fertility clinic, as recommended in the HFEA *Code of practice*.²⁰⁷ However, it was felt to be very important that the system by which this should be done should be as clear and straightforward as possible, and well-publicised to prospective parents and donors, to maximise the likelihood of it being used in the rare cases where it might be necessary. In the case of informal sperm donation outside the clinic setting, donors and donor-conceived people will clearly be reliant on any existing information channels to share such information, as contact will not be possible either via a clinic or the HFEA.

- 3.27 As we noted at the start of this chapter, rather different issues related to medical history arise for donor-conceived people who do not know that they are donor-conceived: in particular, if asked for information about their ‘family history’, they will inevitably provide doctors with incorrect information relating to the parent with whom they have no biological link. In many cases such misinformation will not significantly affect their own health care: however in some it may potentially lead either to false reassurance about the person’s own risk of developing a particular condition (although this should not be overstated given the assurance provided by screening), or to the person undergoing unnecessary tests or preventive measures because of an identified ‘risk factor’ that in fact is irrelevant (see example in Box 3.1 above). This latter concern becomes particularly pertinent in circumstances where parents chose to conceive using donor gametes precisely in order to avoid the risk of transmitting a serious genetic condition. Exceptionally, cases may arise where it becomes absolutely crucial for the donor-conceived person to learn information about risk factors that they may have inherited from their donor (as where a serious treatable late-onset strongly heritable condition is diagnosed in the donor), and in such cases the clinicians participating in the meeting felt strongly that a means must be found for ensuring that the information reaches the person concerned, regardless of their parents’ earlier decisions regarding non-disclosure. We return to this point in Chapter 6.

Conclusions on access to medical information

- 3.28 The primary focus of the pre-donation clinical assessment and screening of potential donors is to ensure that those who might pose a significant health risk to potential recipients or resulting children are ‘screened out’. The Working Party supports the current threshold for such screening, on the basis that donors, unlike natural conception parents, are ‘replaceable’, and that it is justifiable to set a minimum health threshold with respect both to infectious diseases

²⁰⁵ See, for example, Callum P, Messiaen LM, Bower PV *et al.* (2012) Gonosomal mosaicism for an NF1 deletion in a sperm donor: evidence of the need for coordinated, long-term communication of health information among relevant parties *Human Reproduction* **27**(4): 1223-6. See also: BioNews (1 August 2011) *Sperm donor had 24 kids and a fatal genetic mutation*, available at: http://www.bionews.org.uk/page_102689.asp?hlight=cardiomyopathy; Hansen A (2012) Danish sperm donor passed neurofibromatosis on to five children *BMJ* **345**: e6570. If the condition is one that will not manifest in childhood, the child would not usually be offered testing until the condition is one that will not manifest in childhood, the child would not usually be offered testing until they were older. See: The British Society for Human Genetics (2010) *Report on the genetic testing of children 2010*, available at: http://www.bshg.org.uk/GTOC_Booklet_Final_new.pdf, although it will still be important for the information to be communicated to parents, so that they are aware of the future implications. If a mechanism is in place to inform the parents, this will put the parents in the same position of knowledge as they would have been if the diagnosis had been made in a biologically-connected member of the social family. They can then make their own choices on how to respond to that information.

²⁰⁶ See, for example, Ravitsky V (2012) Conceived and deceived: the medical interests of donor-conceived individuals *Hastings Center Report* **42**(1): 17-22, which notes that in 2006, “a sperm donor passed a rare and dangerous genetic condition – severe congenital neutropenia – to five children born to four couples. The sperm bank could not contact the donor and warn him not to make additional donations because contact with him had been lost.”

²⁰⁷ Human Fertilisation and Embryology Authority (2011) *Code of practice 8th edition*, available at: http://www.hfea.gov.uk/docs/8th_Code_of_Practice.pdf, at paragraphs 11.27-9. One way in which such requests are handled is via ‘The Genetics Club’: www.geneticsclub.org.

and serious strongly heritable conditions when helping create families through the use of donated gametes. We note here, however, that such screening should *not* be confused with proactive recruitment of donors with particular characteristics. Moreover, regular review of the guidance on screening will inevitably be required, as knowledge about the clinical implications of particular genetic mutations and variations develops.

- 3.29 The current level of screening, and the assurance provided thereby that there is no known family history of serious genetic disease, is likely in most cases to mean that there will be no further medical information about the donor or the donor's family that is relevant to the health of any resulting donor-conceived person. It is clearly important that information about the screening tests undertaken, and an explanation that the donor's family history contains no known serious genetic conditions, should be provided to the parents in an easily accessible and comprehensible format. This should provide substantial reassurance of a 'negative family history' for donor-conceived people, although it should also be noted that it is never possible to exclude all risks (see paragraphs 3.9 and 3.22).
- 3.30 On occasion, in the process of undertaking the donor assessment, information about the health or family history of the donor may be obtained that is likely to be of value in future decisions regarding the donor-conceived person's health care, while not constituting sufficient reason for excluding the donor. Such information should be regarded as 'relevant' medical information, and included on the donor information form as currently advised (see paragraph 3.20). However, much clearer guidance, supported by a clear evidence base, is required as to what constitutes such 'relevant' information, a point to which we return in Chapter 6 (see paragraphs 6.47 and 6.48). It is not helpful to include information about the personal or family medical history of the donor that is highly unlikely to affect the health or health care of any resulting donor-conceived people.
- 3.31 Circumstances may arise where significant information only comes to light after donation, and it is important that a clear and easily accessible mechanism is established to ensure that such information may be communicated, both from donor to the donor-conceived person, and vice-versa. Particular difficulties may arise where the person does not know that they are donor-conceived, and we return to this point in Chapter 6.