The ARC/bpas conference on 9 September discussed a number of pressing issues in antenatal testing and its consequences, including choice of method in termination of pregnancy for fetal anomaly, advances in non-invasive prenatal testing and ultrasound, and new challenges in fetal medicine.

Cathy Warwick, head of the Royal College of Midwives (RCM), opened the conference by welcoming the opportunity to bring together midwives, sonographers and doctors working in the antenatal service and abortion care. This interdisciplinarity, she said, is important in enabling women to receive the best care, and the main reason for delegates to attend the conference was to further their knowledge of choice. Warwick acknowledged the work that Antenatal Results and Choices (ARC) and British Pregnancy Advisory Service (BPAS) do in ‘lobbying tirelessly’ so that women have choice, and stated that she was proud to be on the BPAS’s Board of Trustees.

Providing choice of method

Jane Fisher, Director of ARC, spoke about supporting parents’ choices after prenatal diagnosis. She began by delivering a message from Catherine Calderwood, NHS Clinical Director, Maternity and Women’s Health, in support of the work done by both ARC and bpas, and affirming that in the current climate, choice must remain at the forefront of thinking about woman-centred care. Fisher’s presentation aimed to provide a sense of how important it is to give women choices at very difficult time.

In the 25 years since ARC was established, said Fisher, technology and care have moved on incredibly – but issues to do with the difficulty of the process of decision-making following a diagnosis of fetal anomaly remain the same. ARC supports more women who terminate a pregnancy following a diagnosis than continue, partly because most women in this situation opt for termination, and partly because, for those who continue their pregnancies, there are many good condition-specific support groups.

There is lots of screening and testing about now; the system is very well organised; and a lot more is happening earlier in pregnancy – for conditions such as Down’s, Edwards, Patau, most cases are diagnosed after first trimester screening. This will increase with non-invasive screening, a development that is highly accurate, and which women want. However, Fisher emphasised that no matter when the diagnosis is made, the emotional impact is huge.

Following a diagnosis of fetal anomaly, couples have to adjust to a new reality; and Fisher suggested that the ubiquity of ultrasound images can make that adjustment especially hard. People have often put their first scan on social media sites, and when they have a diagnosis of anomaly, ‘that image can be all they have left of their baby’. The shock of a diagnosis can be compounded by having to end the pregnancy through medical induction, as is the case in many parts of the NHS service, where surgical terminations are not available in the second trimester. She cited one woman, who ended her first pregnancy after a diagnosis of anomaly, saying that the thought of going through labour with no reward makes the whole process so much worse.
It is clear from literature, Fisher said, that women should have a choice of method in how they terminate a pregnancy. The Royal College of Obstetricians and Gynaecologists’ guideline on this question states that all women should have that choice, and the scientific evidence shows that the relative risks of surgical termination and medical induction are comparable. Research also shows that what makes a difference to women’s emotional response to the procedure is their ability to decide which method works best for them.

Some clinicians may worry that an increase in the proportion of surgical terminations might result in a drop in the number of fetal post-mortems, but in many cases – such as chromosomal disorders – post-mortem is not necessary. Research by ARC has found that most women were only offered a medical induction, even where a post-mortem would not be carried out. A further effect of denying women a choice of method in later gestations, argued Fisher, is that they can feel ‘railroaded into a quick decision’, because they feel that if they waited for a week or two the option of a surgical method would be taken away.

There are huge challenges to providing choice of method for terminations following fetal anomaly, Fisher stated. We know that there are not enough NHS clinicians skilled in D&E post 13 weeks’ gestation, and these services have moved to the independent sector (largely charities such as BPAS and Marie Stopes International, which provide termination services under NHS contract). The screening and antenatal services within the NHS need to find ways of working with the independent sector, in order to share expertise and provide women with this choice.

Fisher concluded by stating that termination of pregnancy for fetal anomaly is a tough area of healthcare – ethically, and emotionally. The most important thing for women in these circumstances is the kindness and compassion of staff: ending a wanted pregnancy can make women particularly sensitive to idea that they are being judged.

Dr Rich Lyus, a treatment doctor at BPAS, spoke about choice of method in termination of pregnancy for fetal anomaly (TFA) and the role of the independent sector. He began by affirming the importance of helping women with a diagnosis of fetal anomaly to access D&E in the second trimester. His presentation was directed at the current research on the safety of D&E compared to medical induction, which indicates that both methods are equally safe, but women’s experience of the methods is completely different.

Dr Lyus noted the stark contrast between second-trimester abortions that took place for all reasons in England and Wales in 2012, three-quarters of which were surgical, and those that took place under Ground E, where only 20 per cent were surgical. Why is there such a big difference? Dr Lyus argued that we know that it is difficult to access D&E in the NHS. There is also an over-emphasis on the importance of delivering an intact fetus for post-mortem – in cases of karyotypic abnormality, fetal post-mortem provides little or no clinical benefit; and even if post-mortem always provided useful information, Dr Lyus argued, the decision should be the woman’s. The safety and subsequent outcomes of D&E and medical induction are ‘all entirely comparable’, which indicates that from a medical ethics perspective, D&E should be provided.
Dr Lyus ended with a quote from an eminent US gynaecologist, who stated that D&E has ‘two prerequisites – an open cervix and an open mind’. In Britain today, he said, the latter prerequisite is missing.

Karen Creed, antenatal screening coordinator for Brighton and Sussex University Hospitals NHS Trust, presented on the NHS experience of providing choice of TFA method. She noted that today, their services work very closely with BPAS to provide women with the best range of options, and explained how this collaboration came about.

Before 2009, Creed said, women who had a diagnosis of fetal anomaly would become caught up in a combination of delays in seeing the doctor once they had made the decision to terminate, and the that doctors working within the service had variable gestational limits for providing surgical terminations. This sometimes meant that women would rush their decision, in order that they could get a surgical procedure rather than a medical induction. The service also experienced difficulties due to conscientious objections from staff, and lack of theatre space or cancelled operations because emergency cases would come in.

As a result of this, Creed and her colleagues began to ask why they didn’t refer women outside the NHS: and realised that there were no barriers to doing so. ‘Suddenly we had a situation where we could offer women an operation up to 24 weeks,’ she explained. There were some initial difficulties in establishing that women referred to BPAS with fetal anomaly needed to be treated slightly differently to the clinic’s other clients – for example, not being routinely offered contraception, counselled about whether they wanted to proceed with the termination, and having a procedure for the sensitive disposal of fetal remains when required. All these issues were resolved, both through BPAS changing some elements of its practice with clients undergoing termination for fetal anomaly, and through Brighton hospitals talking to women in advance about what to expect when they visited the clinic.

Creed ended her presentation by outlining how the service works now. First, women are assessed to see if a surgical procedure is best for them, and discussions are held about such issues as the location and timing of the procedure, the need (or not) for post mortem, and whether funeral arrangements are made. Counselling is offered via Brighton NHS trust, as is follow-up – though most women prefer to talk on the telephone. Women are now offered the choice of method, location, and increased screening/testing options – they do not to rush for a CVS in order to get a surgical procedure. This gives them more time to make decisions, and the increased choice is better both for women and for NHS staff.

**Non-invasive prenatal testing**

Professor Jenny Hewison, Professor of the Psychology of Healthcare at the University of Leeds, spoke about the ‘choices, means and ends’ employed by individuals in avoiding disability. Probably the main purpose of reproductive technologies, she said, is that they enable people who choose to do so to do everything they can to avoid the birth of a baby with a disability. This involves, she suggested, ‘three trade-offs’. The first is the diagnostic quality information about Downs Syndrome versus risk of miscarriage. Avoiding miscarriage risk is not the overwhelming priority for everyone – so the question is, what choices do
women want to have, should they be allowed by law, and should they be publicly or privately funded?

The second ‘trade-off’ relates to non-invasive prenatal testing. The ‘Holy Grail’, suggested Professor Hewison, was that non-invasive prenatal diagnosis (NIPD) would be a substitute for invasive diagnostic tests, but NIPT has a small false positive rate so is not yet seen as a replacement. Now the aim is to offer as non-invasive prenatal testing (NIPT) as an add-on to reduce the false positive rate of the current screening test. NIPT should reduce the number of women having an invasive test – but it will also mean that some women have three tests. Screening choices would be altered for those who are put off by the current pathway.

An additional issue is raised by the fact that NIPT can give information about conditions other than Downs. What would be the effect of this, and what do women want? Studies show that people’s attitudes to prenatal testing, and to whether they would consider a termination should the test be positive, differ between conditions. A 1999 study showed that very few people want no prenatal testing at all, and very few indicate that there are no conditions for which they would consider a termination: but for many conditions, a large proportion of people say they would not consider a termination.

Professor Hewison also suggested that NIPD would not necessarily be less stressful in emotional terms. Avoidance of miscarriage risk may have provided a ‘psychological shelter’, protecting people from making decisions: for example, by providing a rationale for not having a test for Down’s Syndrome, which in turn means that the only people who can decide to terminate the pregnancy are those who are determined to have the test. NIPT has the potential to change the size and composition of the group offered invasive diagnosis.

The third ‘trade-off’ discussed by Professor Hewison related to the question of whether avoiding a birth means ending a pregnancy. New technologies such as preimplantation genetic diagnosis (PGD) might change the testing decisions of people who want to avoid the birth of a child with Downs, but wouldn’t consider termination. People’s views about whether they would terminate for particular condition depends on the condition and the action that people prepared to take.

A key decision, Professor Hewison suggested, is what – if anything – is an individual prepared to do to avoid the birth of affected baby? Some complicated means are juggled with some starkly simple ends. Even without NIPD, the health service is already struggling to give people adequate information, and supporting women’s decision making may get harder with risk-free tests.

**Lyn Chitty**, Professor of Genetics and Fetal Medicine at UCL Institute of Child Health, talked about the current and future situation with Non-Invasive Prenatal Testing (NIPT). She began by noting that NIPD/T is based on cell free fetal DNA: the proportion of cfDNA in maternal plasma increases with gestational age, comes from maternal DNA, cleared from maternal circulation within 30 min delivery – so it is specific to each pregnancy. NIPT has been in use in UK since 2003 to find out fetal sex, RhD in Rhesus negative mothers; and some paternally inherited or de-novo single gene disorders. Aneuploidy testing has been available in the private sector since 2012, and there is potential for further applications.
Fetal sex determination, Professor Chitty explained, is carried out for serious X-linked conditions, such as Duchennes Muscular Dystrophy (DMD) and haemophilia. In the NHS, there has been an increase in fetal sex determination for these reasons. NIPD is also used in RHD typing, in order to direct immunoprophylaxis, so that anti-D does not have to be given for women who don’t need it. The use of NIPD in diagnosing monogenic disorders is becoming increasingly important, because of improvements in Downs screening and the use of NIPT in private clinics. A number of further conditions are now being tested for.

In general, women and health professionals are extremely positive about their experience, they value its safety very highly, and the opportunity for early diagnosis. Where they have concerns, these are to do with the extent to which women might not consider the implications of the tests (as they might be perceived as just another blood test given in pregnancy), and about misuse – such as anxiety arising from ‘peer pressure’ rather than the actual risk of discovering an anomaly. Professor Chitty proposed caution about how NIPT is offered, and noted that there was still a prohibitive cost. However, she stated, this is the future for prenatal diagnosis – it is here already, and we urgently need to work out how best to deliver it in public sector.

Professor Kypros Nicolaides, Director of the Harris Birthright Trust Research Centre for Fetal Medicine in London, presented on latest developments in detecting fetal anomaly through ultrasound. He began by stating that ‘there is no development in ultrasound that has improved diagnostics – it is a change in the way of thinking’. While new machines can smooth out images and add colour, he said, they have little additional diagnostic value. ‘The biggest problem that has tortured us in ultrasound is how to see the problem in something defined by measurements, he stated: the important thing is to ‘connect what you see with what you’re thinking’.

Professor Nicolaides suggested that sonographers sometimes raise concerns that non-invasive prenatal diagnosis will diminish the role of sonography. In fact, he argued, ‘sonography will become much more important with NIPD’: what is important is to develop the objective of scans and the best timing for them. Currently, suggested Professor Nicolaides, the optimal times are 12 weeks, and 22 weeks, where you can see more than at the current 18-20 week scan.

New developments and challenges in fetal medicine

Dr Rebecca Spencer, clinical research fellow at University College London, gave a presentation on the issues posed by severe prenatal growth retardation, IUGR (intrauterine growth restriction). This phenomenon, she stressed, is not about constitutionally small babies, but about those not meeting their growth potential. Severe early onset IUGR happens in about 1 in 500 pregnancies, and generally results in delivery or stillbirth by 27 weeks’ gestation. There is a low survival rate with IUGR, and it results in many chronic health problems for those babies that do survive.

The time spent in utero makes a big difference to outcomes, so the challenge for fetal medicine is to increase the time in utero. Umbilical artery dopplers and other predictors can be used to time delivery, but this is a very difficult decision at these gestations, and we need
more evidence about what best time for these babies is. Work is being carried out to find a treatment for the condition, and Dr Spencer is currently working on study at UCL looking at the potential of fetal gene therapy to improve outcomes. Currently, it is difficult to know what to tell women about the outcomes in babies diagnosed with severe early IUGR – serial scans can indicate the progression but not what it means, and we know the condition has high mortality and morbidity. For that reason some women do decide to terminate the pregnancy.

Eva Karampetsou, clinical scientist in genetics at Great Ormond Street Hospital, gave a presentation on Advances in Prenatal Chromosomal Evaluation. Karampetsou began by explaining that until now, examination of fetal chromosomes has been done with karyotyping. The newer technique of array-GCH provides much higher resolution, and can identify any unbalanced chromosome rearrangements, microdeletion and microduplication.

In postnatal setting, this technique is used for children and adults with learning difficulties and/or congenital abnormalities. It can also be used in prenatal setting. However, there are some things it cannot detect, and there remain challenges about what those things that are detected prenatally mean. In postnatal settings, she explained, it is easy to see if the syndrome is there; prenatally is not, and therefore follow-up is needed – for example, by checking parental samples.

Karampetsou presented some of the work being carried out in the EACH study (Evaluation of Array Comparative Genomic Hybridisation), whose main objective is to compare array-GCH with normal karyotyping. She argued that array-GCH will eventually become first-line testing, but there will still be a need to do karyotyping. As time goes on, we will get a better understanding of what each change means.

**Take-home messages**

The conference underlined that antenatal testing is a fast-moving field, with advances in the science of testing technologies and in ways of applying them. We were also reminded that the current and potential impact on women of prenatal testing and the information it brings must be at the forefront of our thinking. When dealing with difficult news about fetal anomaly in a wanted pregnancy, women and their partners need adequate support and the appropriate services in place to make the choices that are individually right for them.