

UK National Screening Committee

cfDNA testing in the fetal anomaly screening programme

19 November 2015

Aim

1. To ask the UK National Screening Committee (UK NSC) to make a recommendation based upon the evidence presented in this document on the introduction of cfDNA as a contingent test within the UK Fetal Anomaly Screening Programme (FASP).

This document provides background on the items addressing this proposed modification to the Fetal Anomaly Screening programme.

Current programme policy and area impacted by the proposed change

2. Currently fetal anomaly screening is offered to all pregnant women in the first or second trimester. Women can opt to be screened for Down's syndrome, Edwards' syndrome and Patau's syndrome (T21, 18 and 13 respectively). The proposed change to the programme is for cfDNA testing to be offered to women following a risk score of 1/150 or greater for T21 or T18/13.

Programme Modification Proposal

3. Specifically, the consultation asked for responses on the recommendation that:

A cfDNA test be offered after any of the following combined test outcomes:

- The combined test risk score for trisomy 21 (T21) is greater than or equal to 1 in 150
- The combined test risk score for trisomy 18 (T18) and trisomy 13 (T13) is greater than or equal to 1 in 150

Women are advised that a cfDNA test is not diagnostic and that an invasive diagnostic test is required to receive a definitive diagnosis.

4. Key reasons supporting this proposal:

- The RAPID study and UK NSC review both noted the number of women with unaffected pregnancies that are offered an invasive test is markedly reduced when cfDNA testing is introduced. The UK NSC review suggested that when the risk threshold is reduced and women are offered cfDNA tests with a risk lower than 1 in 150 this benefit is less clear. Although more cases are found when women with a lower risk are offered cfDNA tests, the UK NSC did not consider that this benefit outweighs the effect on the numbers of invasive tests offered.

- The UK NSC review found that this approach would not reduce the number of babies found with trisomies.
- The availability of cfDNA testing is limited in the UK. It is thought that the introduction of cfDNA testing in this way will not exceed the current capacity for testing in the UK.
- Both the systematic review and RAPID study concluded that this implementation strategy will have a minimal effect on the expenditure on the screening programme, compared to alternatives. The review has highlighted a number of uncertainties in implementing cfDNA testing in the screening programme. It is therefore pragmatic to introduce the test in this way and learn from the implementation.
- Finally, retaining the current 1 in 150 risk threshold will mean that changes to the current screening programme pathway will be minimised by the introduction of cfDNA testing. This is particularly important, as there are a number of issues with cfDNA testing that are not clear (e.g. test failure, impact on uptake). By offering the test at this threshold, the test is available to those at the highest risk without disrupting the screening programme and there is opportunity to explore these uncertainties.

Consultation

5. A three month consultation was hosted on the UK NSC website which closed on the 30th October 2015. The consultation was sent directly 38 organisations. Annex A

Responses were received from the 30 stakeholders. Annex A

Consultation responses

6. The responses received were varied. Many of the responses were positive, supporting the recommendation of implementation of Non Invasive Prenatal Testing (NIPT) as a contingent test following a combined test risk score of 1 in 150 or higher. However, a number of responses were not supportive of the recommendations. To those that were not supportive of the recommendations, a programme with termination as a possible outcome is unacceptable, and these respondents were of the view that the number of unaffected fetuses saved by the proposal would be outweighed by an increase in the number of affected fetuses terminated.
7. The current demand for the test in the health system was highlighted by a number of respondents, in terms of the number of women currently accessing the test privately and the positive response that has been received where it has been implemented already. The Royal College of Midwives (RCM) and British Pregnancy Advisory Service (BPAS) responses both highlighted the anxiety felt by women in choosing an invasive test with a potential risk of miscarriage.
8. A number of respondents raised factors relating to cfDNA as a **primary screen**. The greater cost to the NHS of implementing cfDNA as primary screen was acknowledged. It was raised that implementation of cfDNA following combined test would not alter the number of false negatives, and implementing the pathway with cfDNA as the primary screen would pick up a

much greater percentage of cases of trisomy. The lower Positive Predictive Value (PPV) of cfDNA testing in a low risk population was acknowledged.

9. A number of responses made reference to the **proposed cut-off**. Many responses agreed with the approach of using a cut-off of 1/150. A number of respondents also raised the point that the test accuracy at the proposed cut off is uncertain. One respondent suggested a cut off of 1/800, with a different approach to recall (see Annex C for further comment)
10. A large number of respondents raised points related to the **pathway** on implementation. A number of respondents expressed concerns that the consultation only looks at NIPT following the combined test, and raised that it should also be offered to women following the Quadruple test as the primary screen. A number of respondents raised points relating to the screening pathway if ultrasound abnormalities were detected or particularly raised nuchal translucency measurements (See Annex E for pathway information).
11. A number of respondents raised concerns regarding the **pathway** if following a high risk result in the combined test, women were required to have NIPT prior to invasive prenatal diagnosis (IPD). It was suggested that women should be offered the choice in order to be able to make a decision taking into account their risk and gestation. It was raised that women value being able to make an informed choice as early in a pregnancy as possible. Concerns were raised over failure rates potentially causing further delays in the pathway. The BPAS highlights that for the majority of women with a positive diagnosis who choose not to continue their pregnancy this will mean it may be harder to obtain a choice of method of termination. A number of respondents raised that cfDNA will lengthen the pathway overall and cause additional anxiety. Response from the RAPID team highlights choices made by women. (See Annex E and F for pathway options and further modelling and literature review undertaken by Warwick University).
12. It was highlighted that in conducting Chorionic Villus Sampling (CVS) following cfDNA there will be a higher risk of confined placental mosaicism being the cause, particularly for T13/18. Therefore issues around which invasive test should be used following cfDNA testing were raised.
13. There were a number of queries relating to the **economic model**, particularly in relation to some of the costs used. Points were also raised regarding the true rate of procedural loss following invasive testing, which would impact on the estimated reduction in test-related miscarriage, and comments were also made regarding the test accuracy used in the model. Comments were also made regarding study quality and risk of bias in the studies in the **systematic review**. (See appendix C for response to these comments from the systematic reviewers)
14. A number of responses related to the **specifications for the laboratory**; for example a number of respondents made reference to different failure rates from their experience, and around turn-around time. Other comments relate to varying predictive values, and fetal fraction, and ensuring sufficient throughput for cost-effectiveness. The Association for

Clinical Genetic Scientists suggest that there is currently re-configuration of laboratories that needs to be addressed by the screening programme. They note that the profession would not support a single provider for the service as part of a screening programme.

15. Respondents highlight the need for appropriate counselling and **support for women** when going through the screening pathway and making decisions. Further comments on the importance of information for women highlight that this should include information regarding failure rates, detection rates in trisomy 13 and 18, twins, and provide false positive values/ positive predictive values. It was also highlighted that information for women should be balanced and include information relating to life prospects of people with Down Syndrome, the impact on families, support available.
16. A number of responses related to the **potential impact of implementation**. It was raised that on implementation it is likely that there will be reduced numbers of invasive tests carried out, and that is important that skills in this area are maintained. Comments were also made querying the start-up costs and funding flows on implementation.
17. Responses highlighted requirements for **data collection** to inform knowledge if implemented, suggesting an early review 6 months following implementation, reviewing the 1/150 cut off, patient experience, financial impact (particularly if the cost of the test changes), assessing choice between IPD/NIPT, gathering information regarding procedural related miscarriage following IPD, failure rates , and predictive values.
18. Concerns regarding the **ethics** of the recommendations were raised. Particularly, concerns were raised that the recommendation is in conflict with the UN Convention of the Rights of People with Disabilities (CRPD) and the Report of the UNESCO International Bioethics Committee, and disability rights in general. Concerns were raised that the proposal runs counter to the principle articulated in these statements and would discriminate against a disabled unborn child, and increase stigma and stereotyping of people with disabilities. Concerns were raised that cfDNA is seen only as an approach to lead to termination of affected babies, and not to help prepare parents to take care of a disabled child and plan best medical care and support.
19. Concerns were raised by a number of respondents regarding the ethical issues relating to collecting and storage of DNA samples, and other tests that samples could be used for. Particularly, concerns were raised regarding the potential for cfDNA testing to be used to enable sex-selective abortion. (See appendix G for further information regarding ethical issues)
20. Concerns were raised that NIPT may be seen as diagnostic, and that this may lead to reproductive choices in the absence of appropriate diagnostic procedures.

Recommendation

21. The committee is asked to recommend that;

Further evaluative work is undertaken, with input from scientific and ethical expertise, to better understand

- a. what would need to be answered before full implementation, and approach to addressing these issues
- b. the practical impact to the screening programme if implemented after the following test outcomes:
 - i. The screening test risk score for trisomy 21 (T21) is greater than or equal to 1 in 150
 - ii. The combined test risk score for trisomy 18 (T18) and trisomy 13 (T13) is greater than or equal to 1 in 150

That the evaluative work be based on a pathway to test the idea that women could have the option of cfDNA testing or invasive testing following a high risk result, (see appendix D for pathway options and rationale for option a)

And that the evaluative work should be informed by work on ethics and NIPT currently being initiated by the Nuffield Council

List of organisations contacted:

1. Antenatal Results and Choices
2. Ariosa
3. BLISS
4. British Heart Foundation
5. British Maternal & Fetal Medicine Society
6. The British Medical Ultrasound Society
7. British Pregnancy Advice Service
8. CDH UK
9. Child Growth Foundation
10. Children's Heart Federation
11. CLAPA
12. Contact a Family
13. CRUSE
14. DIPex
15. Down Syndrome Education International
16. Down Syndrome Research Foundation UK
17. Down's Heart Group
18. Down's Syndrome Association
19. Down's syndrome Medical Interest Group
20. Downs Syndrome Scotland
21. Elfrida Society
22. Genetic Alliance UK
23. Little Hearts Matter
24. Marie Stopes International
25. MENCAP
26. Miscarriage Association
27. PHG Foundation
28. Restricted Growth Foundation
29. Royal College of General Practitioners
30. Royal College of Midwives
31. Royal College of Obstetricians and Gynaecologists
32. Samantha Walsh (NHSE)
33. SANDS
34. SHINE Charity
35. Society and College of Radiographers
36. Tiny Tickers
37. Together for Short Lives
38. Wolfson Institute of Preventive Medicine

List of stakeholder whom commented on the consultation

1. Guy's and St Thomas NHS Foundation Trust
2. a Screening and Immunisation Coordinator
3. the Wolfson Institute for Preventative Medicine
4. Genetic Alliance UK
5. Royal College of Obstetricians and Gynaecologists
6. Royal College of Pathologists
7. University Hospitals of Leicester NHS Trust
8. Fetal Medicine Unit, University of Leicester, East Surrey Hospital
9. British Maternal and Fetal Medicine Society
10. Guy's Genetics Centre
11. The Association for Clinical Genetic Science
12. Saving Down Syndrome
13. The Down Syndrome Research Foundation UK
14. Down Syndrome Scotland
15. RAPID Research Team
16. Roche Diagnostics Limited
17. Royal College of Midwives
18. Society and College of Radiographers
19. University Hospital Southampton NHS Trust
20. Right to Life
21. Stop Gendercide
22. Evangelical Alliance
23. Christian Concern
24. E A Mcreadie
25. LIFE Charity
26. Society for the Protection of Unborn Children
27. Society for the Protection of Unborn Children Scotland
28. Hayley Goleniowska, the Chrisian Medical Fellowship
29. Daniel Marsden, Practice Development Nurse for people with learning disabilities
30. British Pregnancy Advisory Service

Compiled consultation responses

Response from Systematic Reviewers, Warwick University

University of Warwick Comments on Consultation Responses

Sian Taylor-Phillips 3/11/2015

Detailed below are the consultation feedback responses that relate to the Warwick review and economic model (in italics) with our comments. Comments are grouped by subject for ease of interpretation. We have provided a response where comments relate to the methods or assumptions of our report, but have not provided a response when views regarding implementation, or interpretation of findings are given.

Modelling Lifetime Costs of Caring for Child with Downs Syndrome

RCOG. BMFMS: It has been queried why the lifetime costs of caring for a child with down's syndrome were not included in the economic analysis. I wondered if you had a rationale or thoughts around this decision?

Warwick Response: We agreed in collaboration with the NSC very early on that this type of modelling would be unethical. Calculating the cost of caring for a child with Down syndrome, then using this as part of a model evaluating testing with a view to abort that child is not ethical. Furthermore if we were to model the costs of caring for that child, it would make sense to model the QALY gains by the child living also. This would add further ethical issues including how to value the quality of life of a person with Down syndrome. For this and related reasons the analysis did not include any modelling of women's choices following diagnosis.

Roche Diagnostics: We believe that the assessment of the financial impact of having fewer invasive procedures should not be limited to the cost of the procedure itself but also take into account the cost associated with procedure related complications such as premature rupture of membranes and miscarriage. Other countries have also included cost directly related to consequences arising from a false negative screening test³.

Warwick Response: Similarly to above we agreed to model up to the point of test accuracy, but consistently include none of the downstream consequences of test accuracy due to the ethical complexities that arise.

Estimates in the Economic Model

Cost of cfDNA

Royal College of Pathologists: The estimated cost of £232 for cfDNA seems low – RAPID quote £250 and other UK websites quote £400 to £700. A US study quotes £518 (Song et al 2013). Another responses suggests that the cost of cfDNA testing will drop and the analysis should incorporate this

Guys Genetic's Centre: Estimated cost of NIPT at £232. Although it is acknowledged in the consultation that there is uncertainty regarding this price, in our opinion the price is remarkably low and some essential peripheral costs do not appear to have been included. These include costs for phlebotomy, counselling, sample transfer. RAPID quote £250 plus an extra £30 for phlebotomy/counselling/feedback/repeat tests. In addition does the price include any patent/licence fee, currently £50/report to Illumina/Sequenome. Will this be paid centrally? Start-up costs for the NIPT will be significant and training of health professionals must be included.

Saving Down Syndrome: Question 5 Economic Evaluation A model was constructed. The £232 figure for cfDNA is notional. There was no representative figures for the additional costs such as training, counselling, and staff which would also increase any budgets.

Warwick Response: In consultation with the UK NSC we agreed that the published quotes by Lyn Chitty's group would be the most appropriate for the UK context, recognising the inherent difficulty in predicting the future cost of a rapidly evolving technology. Therefore we used the estimate from Lyn Chitty's paper. This is unsurprisingly very similar to the £250 Lyn quoted in her economic analysis related to the RAPID trial. Because of the uncertainty in the estimate we did a sensitivity analysis (produced different versions of the economic model) with costs ranging from £100 to £500

Cost of Invasive Testing

Guys Genetic's Centre: Cost of invasive procedures and testing at £650. This is higher than the Guy's costings which come in at £465 (invasive procedure £240, QF-PCR £75, sample prep £150). Although these costs will vary nationally, we wonder if the estimated price has included aCGH/karyotyping. The cases being considered for NIPT would have a nuchal of less than 3.5mm and therefore no aCGH/karyotyping would be required in line with national guidelines which have been implemented in a number of regions. The cost of arrayCGH/karyotyping should not therefore be included in the cost of invasive procedures and testing

Warwick Response: This is a misunderstanding. Our estimates for the cost of Amniocentesis was £383.31 and CVS was £318.90 using the NHS FASP decision planning tool inflated using the Hospital & community health services pay & prices index reported in PSSRU Unit Costs of Health and Social Care 2014. We did a sensitivity analysis to determine the effects of using the higher estimates of £515 for both amniocentesis and CVS. I don't understand what the reference to £650 relates to, this was not used in the Warwick model.

Miscarriage rate following Invasive Testing

Royal College of Gynaecologists: The miscarriage risk following invasive testing has also been queried, suggesting the figures used were derived from an older study and a more recent study (Adolekar 2015) suggests figures of 0.11% for CVS and 0.22% for amnio.

Guys Genetic's Centre:

Test-related miscarriage of 0.6 to 0.7%. Much of the justification for NIPT comes from the reported risk of invasive procedures and this risk is therefore fundamental to the whole premise of the NIPT.

The systematic review discusses this on p77 and details the published variability for this figure. The figure chosen for the economic model to calculate loss is 0.6 to 0.7%. However, the UK data support the lower figure of 0.1% for AF and 0.2% for CVS. The review calculates that with this risk, introduction of cfDNA testing would avoid 10 miscarriages per year.

Warwick Response: We included the Akolekar study as a sensitivity analysis in the model. There is not consensus amongst professionals about the actual rate, so we used the most accepted rate as our main analysis, (O'Leary et al.) and did sensitivity analysis to determine the effects of using the higher estimates of Tabor et al. (2009) and lower estimates of Akolekar et al. (2015).

Right to Life: The UKNSC claims from its expert review that implementation of cfDNA testing in the FASP could reduce the number of miscarriages that occur due to IDP procedures. This is questionable given that the RAPID study projects around half the reduction in miscarriages that the systematic review does. This discrepancy seriously undermines the confidence that can be put on the UKNSC's cited data.

Warwick Response: As above there is uncertainty around the estimates of miscarriage rate from invasive testing, and therefore uncertainty around the number of miscarriages averted by a reduction of invasive testing in affected fetuses. This is described in the model sensitivity analyses.

Uptake of NIPT

Saving Down Syndrome: We also note that the review used a survey which is termed as 'antenatal clinic survey data', this is misleading. The survey results were derived from Antenatal clinic survey data together with users of the ARC website and MUMsnet website, this brings into question, again, the figures produced by the ensuing model.

The antenatal clinic survey data referred to was Lewis et al (2014) used to estimate what choices women would make if offered NIPT i.e. the uptake. We discuss in the report the difficulty in making such an estimation in advance of implementation, and in recognition of this difficulty provide a sensitivity analysis using estimates of Gil et al. of actual uptake of NIPT when offered as part of a UK study.

Results of Economic Models

Roche Diagnostics: As part of this process we believe that the assumptions behind the present health-economic assessments should be critically reviewed. For example, in the final report to the committee2 a cut-off of 1 in 1000 seemed to result in more invasive procedures and related terminations than a primary NIPT test strategy (Table 8). However, almost 50% of invasive procedures were assumed to be chosen by women without the NIPT result, which may be an over-estimate.

Warwick Response: the reason for the higher estimate for invasive procedures when implementing combined test at 1/1000 then offer of cfDNA, in comparison to cfDNA as the primary screen is that

setting the threshold for high risk at the combined test at 1/1000 will classify a large number of women as 'high risk'. These 'high risk' women will all be offered cfDNA or the choice of straight to invasive testing, which produces a large number of invasive tests. In comparison using cfDNA as the primary screen would have a higher threshold, so fewer women would be referred to invasive testing. We are happy with these model assumption, but note in the report that there is uncertainty surrounding several of the model assumptions, most of which could not be resolved without actually implementing cfDNA. We address these uncertainties will a full set of sensitivity analyses.

Alternative Pathways

BMFMS: To fully investigate cfDNA as primary screen – would want to see analysis including NT scan (no biomchemistry) for all, with IPT offered to those with a risk >1 in 10, NT>3.5 or anomalies, and all other women offered cfDNA testing (quad offered to those with failed cfDNA).

Warwick Response: This is a genuinely new suggestion that was not discussed in our scoping discussions with the UK NSC, so our report does not analyse the clinical or cost effectiveness of this implementation. Evaluating this option would require understanding of the test accuracy of NT which we did not investigate, and I am not familiar with the research literature on this. In summary this is not similar to the remit or question we addressed.

Related to this we discussed with the NSC the option of a combination of NIPT with parts of the combined test. We report that there is no evidence about test accuracy for any version of that, but one study where Dave Wright did some modelling work around the potential of this option.

Different Manufacturer's tests

Roche Diagnostics: We would like to point out that while sensitivity may be comparable among most cfDNA tests (>99%), the False-positive Rate (FPR) can differ significantly; i.e. <0.1 – 1.46%.^{4,5,6} The FPR of NIPT has significant impact on clinical management and consequently on cost-effectiveness models. A higher FPR will limit the reduction of invasive procedure rates after NIPT, increasing procedure related cost as well as cost due to procedure related complications. Thus, choosing a cfDNA test with a low FPR appears key to meet the expectations put forward by the current cost calculations.

4. Norton M et al., Am J Obstet Gynecol. 2012 Aug;207(2):137.e1-8.

5. Palomaki G et al., Genet Med. 2011 Nov;13(11):913-20.

6. Bianchi D et al., Obstet Gynecol. 2012 May;119(5):890-901.

Warwick Response: This refers to implementation, these issues and references are included in our report.

Roche Diagnostics: Robust clinical validation is key to validate the performance of NIPT. Some cfDNA tests lack validation in blinded, prospective studies published in peer-reviewed journals and rely on retrospective registry studies without outcome information on all patients.⁷ Actual clinical

performance (i.e. sensitivity/specificity), which provides the basis for a robust health economic assessment, is therefore hard to establish. We therefore believe it is critical to review the individual clinical dataset of any cfDNA test in consideration for implementation in the NHS, rather than solely relying on theoretical health-economic models produced with pooled sensitivity and specificity data.

7. Jani J, et al., *Ultrasound Obstet Gynecol.* 2015 Aug 24.

Warwick Response: This refers to implementation. In our review we give thorough assessment of study quality using QUADAS 2, and discuss issues around incomplete follow up in some studies.

Roche Diagnostics: Issue: The impact on cost efficiency, turn around times for results and test accuracy of the various cfDNA tests should be considered when implementing NIPT in the NHS. NIPT can be performed using different technical approaches. Most cfDNA tests are based on massively parallel shotgun sequencing (MPSS). MPSS is not selective in the chromosomal origin of the sequenced cfDNA. It is therefore necessary to sequence many million DNA fragments, originating from the complete genome, to ensure the analysis of sufficient chromosome 21 fragments to statistically detect significant differences between normal and trisomic fetuses. In national screening programs, where only a limited number of chromosomal conditions are to be evaluated, this is a less time- and cost-efficient approach compared to other NIPT methodologies. Targeted NIPT methods on the other hand, focus on cfDNA from the chromosomes of interest rather than analysing the complete genome where much of the information that is obtained remains unused or may even reveal conditions that were not intended to be screened for in the first place. Targeted NIPT also allows for deeper analysis, and yields more accurate results with a lower cost overall.^{8,9} Furthermore targeted approaches allow for use of methods other than costly Next-Generation Sequencing (NGS) for cfDNA quantification such as Microarray analysis - a robust, reliable method for DNA analysis that has been in use in UK for many years. Additional benefits of targeted technology result in faster turn-around times than with most MPSS systems providing laboratory results within 3 days⁹.

8. Sparks AB et al., *Prenat Diagn.* 2012 Jan;³²(1):3-9.

9. Juneau K, et al., *Fetal Diagn Ther.* 2014;³⁶(4):282-6.

Issue: Consideration should be given to including measurement of the proportion of fetal cfDNA in maternal plasma sample as a quality metric when implementing NIPT into the NHS.

For NIPT, ensuring that a sufficient proportion of cell-free DNA in the maternal plasma is "fetal" - in other words, originates from the pregnancy rather than the mother - is widely considered to be an important quality metric. Having insufficient fetal fraction for statistically reliable analysis can potentially lead to a higher likelihood of a false negative result as well as incorrect calls for fetal sex.⁷ As measuring fetal fraction is complicated and associated with an increase in cost, some NIPT providers are not measuring the cell-free fetal DNA (cffDNA) amount. This has been shown to lead to samples with insufficient cffDNA for analysis (e.g. non-pregnant samples) to be given a reassuring NIPT result.^{10,11}

7. Jani J, et al., *Ultrasound Obstet Gynecol.* 2015 Aug 24.

10. Bevilacqua E, et al., *Ultrasound Obstet Gynecol.* 2015 Jul 6.

11. Takoudes T, et al., *Ultrasound Obstet Gynecol.* 2015 Jan;⁴⁵(1):112.

Warwick Response: This refers to implementation. In our report we refer to one study which concludes that multiplexing reduces test accuracy, and discuss as follows: “The level of multiplexing affects the sequencing depth and an optimal level of multiplexing needs to be determined before consideration of cfDNA testing for implementation. While increased levels of multiplexing (lower sequencing depth) can reduce costs⁶⁰ it has also been shown to decrease the accuracy of the MPSS technology.⁵⁷ Therefore, a balance should be found between optimal test performance and costs of testing.⁶⁰ Liao et al. (2014)⁶⁰ therefore pointed out that it is important to determine the fetal fraction in the sample to be analysed and the sequencing depth required for analysis.” (pg 83)

Detailed comments from Saving Down Syndrome:

The Systematic Review often referred to the studies involved as having high risk of bias, including study bias, patient spectrum bias, publication bias and gestational bias. Thus any move to implement mass programmes would likely be very problematic and could not be ethically carried out following this review.

Twin pregnancies, multiple pregnancies (more than twin) – were certainly not discussed in the review, BMI issues, and Trisomy issues – were all singled out as possibly leading to test failure.

Question 1 a) What is the accuracy of cfDNA testing in predicting T21, T18 and T13 in pre-defined high risk (1:150) pregnant women following a test? The review told us that there were no studies reporting relevant performance and concluded that while it was a very good test even using our highest estimates of accuracy it must not be considered a diagnostic test.

Question 1b) How does changing the threshold for defining high risk following a combined test affect the accuracy of cfDNA testing? The reviewers told us that they were unable to present cfDNA testing at different risk cut-offs ranging from very high to low risk or present an optimal risk cut-off to maximise cfDNA testing performance in clinical practise. This was another major issue. There was no ideal study available in order to test accuracy; therefore a synthesis was undertaken in an attempt to answer this.

It states in the review that no firm conclusions could be drawn, regarding this question.

Question 2 What is the most accurate primary prenatal screening tool for T21, T18 and T13 in the first trimester when cfDNA testing and the combined testing are compared in a general population?

The review stated that ‘due to a lack of studies’ comparison between the current combined testing and cfDNA testing was not possible.

Question 3 What diagnostic accuracy is achievable by integrating cfDNA testing into the combined test? The review states that there were no studies which demonstrated test accuracy after implementing this approach and reviewers were unable to determine if the combination test with cfDNA would offer increased accuracy. Only a narrative could be provided for this question.

Question 4 What is the rate of cfDNA testing failure (number of inconclusive and excluded samples/ total number of samples? The studies showing failure were up to 12.7% (of course bias may be a reason for such varying results in our opinion.) There seemed to be some evidence that earlier gestational age and trisomies may lead to failure. We feel that this is a major concern in a system which currently has an extremely high level of throughput for termination, if strict guidelines weren't in place then failed tests may be wrongly perceived as diagnostic. Tables and a narrative summary were provided.

Question 5 Economic Evaluation A model was constructed. The £232 figure for cfDNA is notional. There was no representative figures for the additional costs such as training, counselling, and staff which would also increase any budgets. In addition, no model could be provided for using the combined test with the new cfDNA test. Elevated detection rates may include Trisomy pregnancies which may miscarry (a significant number of Trisomy pregnancies miscarry naturally). There is no cost included for any termination of pregnancies which may have miscarried naturally but may be detected earlier and terminated. Some of the economic models exhibited predicted high costs.

Other Points on the Systematic Review

The Systematic Review and cost consequence assessment of cell-free DNA testing for T21, T18, T13 was a truly comprehensive review of studies on the issue, most impressive. According to the authors the major limitation of the review were lack of data and no evidence of test accuracy when cfDNA and first trimester screening are combined which led to an inability to analyse the impact and model the scenario. None of the articles involved were of 'optimal quality'. Further limitation was the inability to provide a comparison of combined testing v cfDNA, therefore diagnostic performance (Question 2) was limited to narrative review. The main limitation was that it relied on published data; together with studies which may have had a high risk of bias classification due to unclear reporting. On page 16 it stated that a review to evaluate the performance of such tests is needed before implementation into UK clinical practice can be considered.

We also note that the review used a survey which is termed as 'antenatal clinic survey data', this is misleading. The survey results were derived from Antenatal clinic survey data together with users of the ARC website and MUMsnet website, this brings into question, again, the figures produced by the ensuing model.

Reviewers also said that due to publication bias, test performance may be overstated, and that the failure rate was very variable. They also state that there is limited evidence in the UK and generalising findings to the UK should be carefully considered. Oddly, there was no mention of spontaneous miscarriage for Trisomy 21, which is relevant to the review. We object to the use of the phrase 'normal fetus', there are more sensitive terms to use. On pages 25 and 81 there was also the questionable use of the term 'disease'. We object to the use of the phrase 'healthy pregnancies' on pages 65 and 76, 'unaffected' might be a more sensitive term.

Warwick Response: These are very thoughtful comments, and we are pleased that they considered our review comprehensive. Most of the comments refer to the interpretation of the review, rather than how we carried it out and so we will not comment on interpretation. However we can clarify a couple of points. Firstly the decision to conduct a meta-analysis was not driven by a lack of an 'ideal study', but rather conducting a meta-analysis is considered the best practice method to obtain an overall estimate of test accuracy rather than relying on a single study. The comments regarding estimates in the economic model are covered in the relevant sections above. Use of the term 'normal' rather than 'unaffected' fetus, and use of the term 'healthy' rather than 'unaffected' pregnancies was an error for which we apologise.

Comments from Down Syndrome Research Foundation UK:

The study was unable to provide full answers to the questions due to –

- *Bias – Some studies were sponsored by NIPT interested parties. Some studies were on selected patients, some studies were carried out on later gestations leading to more accuracy of results and publication bias where only favourable studies are published.*
- *Lack of data*
- *Other issues such as changes to the length of testing pathway, false positive results, false negative results, test failures, retest failure, diagnostic test numbers, financial implications, and termination numbers.*

Warwick Response: This refers to interpretation of our report rather than the report itself.

Society for the Protection of Unborn Children:

The research findings are presented with extensive data, but the recommendations summarising the findings are incomplete, and use misleadingly simple statistics. The unreliability of the figures is pointed up on page 55 of the Systematic Review:

"Findings should be interpreted with caution. Assessment using QUADAS-2 identified high risk of bias in included studies, particularly for selection of women and flow. Deeks' funnel plots indicated there was high risk of publication bias in included studies."

Much of the research data is from studies of commercially marketed test systems, and we recommend that the impartiality of these studies be checked very carefully. The Systematic Review's statistical analysis is highly complex, with some data derived by narrative analysis – an inherently subjective process. Furthermore it is uncertain to assume that results achieved in laboratory trials would be matched in everyday clinical application of the tests.

Warwick Response: There was a high risk of bias in many of the included studies, as described in the QUADAS2 summary. Where there were insufficient quantity of studies for meta-analysis, we have summarised the studies narratively. All included studies were described, so none were

systematically excluded based on our judgement, and the same data extraction sheet and quality assessment methods were applied to all, with comparative data tabulated where possible.

Further comment regarding consultation response 8, Wolfson Institute of Preventative Medicine:

1. The idea of not recalling the woman is appealing, but the idea of taking an extra blood sample from everyone is not appealing. I presume you would also have to consent everyone to both combined and NIPT initially, even though only 10% get NIPT.
2. Would reflex testing in this way necessitate use of a particular type of cfDNA test? I don't understand why the test and the protocol are related. Are they?
3. Does the research group have their own cfDNA test? I can't find any paper that shows the test accuracy of their particular test, just modelling of the different pathways.
4. The paper "Performance of antenatal reflex DNA screening for Down's syndrome"
 - a. Is an economic model essentially comparing primary screen with cfDNA to combined test at threshold 1/800 then cfDNA. Its similar to our model in its gist. The fact that they take both samples at the same time has little effect on the model
 - b. The accuracy of cfDNA is taken from one of the Palomaki papers (included in our review)
- c. The detection rate of 91% they refer to is the sensitivity of combined test at 1/800 followed by cfDNA, the 0.025% false positive rate they refer to is 1-specificity of combined test at 1/800 followed by cfDNA. Both are results of their economic model based on cfDNA accuracy from Palomaki

Work being undertaken to develop implementation plans

A group has been established to look at some of the issues related to the practicalities of implementing cfDNA in the fetal anomaly screening programme. The activity of this group is addressing a number of the points raised in the consultation responses. The work programme of this group and the areas being addressed are as follows:

Pathway and clinical issues:

- Pathway issues, including QUAD pathway, criteria for referral to fetal medicine following screening tests, pathway following test failures, multiple pregnancies
- Test characteristics and laboratory specifications (to feed in to procurement)
- Implications for clinical and laboratory changes

Data collection and monitoring:

- Standards - consider setting standards for the following:
 - o Coverage (cannot measure offer so cannot measure uptake at present)
 - o Turnaround times – DNA laboratories
 - o Throughput – link to lab specification
 - o Failure rate- related to gestational age- need to be clear about what failure rate we are meaning and there is more than one point where failure can occur.
- Data items and sources
 - o Number of women screened and gestational age
 - T21
 - T18/T13
 - o Number of high risk women choosing further investigation
 - cfDNA with gestational age
 - invasive testing with gestational age
 - no further testing (how do we ensure outcome on all?) Need to make links with NIPE SMART
 - o Outcome of
 - each test
 - each pregnancy
- Consider IT requirements

Patient and public information and training requirements

- Training requirements
- Patient and public information (including PPV communication)
- Communication requirements

Finance and procurement

- Procurement options and processes
- Commissioning and contracting
- Finance
- Implementation plans and impact

Pathways

Two possible pathways have been developed, the recommended pathway is pathway a, for the following reasons;

- a. A focus group held with women highlighted the importance of choice in the pathway and the importance of taking into consideration the individual circumstances of someone within the pathway, particularly regarding gestational age, risk score in primary screen, and the woman's own values and decisions.
- b. A further piece of work conducted by Warwick University completed a literature review highlighting choices that women make regarding NIPT and IPD, and women's views around NIPT. This has shown a range of uptake choices between NIPT and IPD and highlight that this is difficult to predict (appendix F)
- c. A further economic analysis conducted by Warwick University suggests that offering women the choice of NIPT or IPD does not have a large impact on the cost of implementation, at varying levels of uptake of NIPT or IPD following combined test (appendix F).

Down's (T21), Edwards' (T18) and Patau's (T13)
For Singleton Pregnancies Only

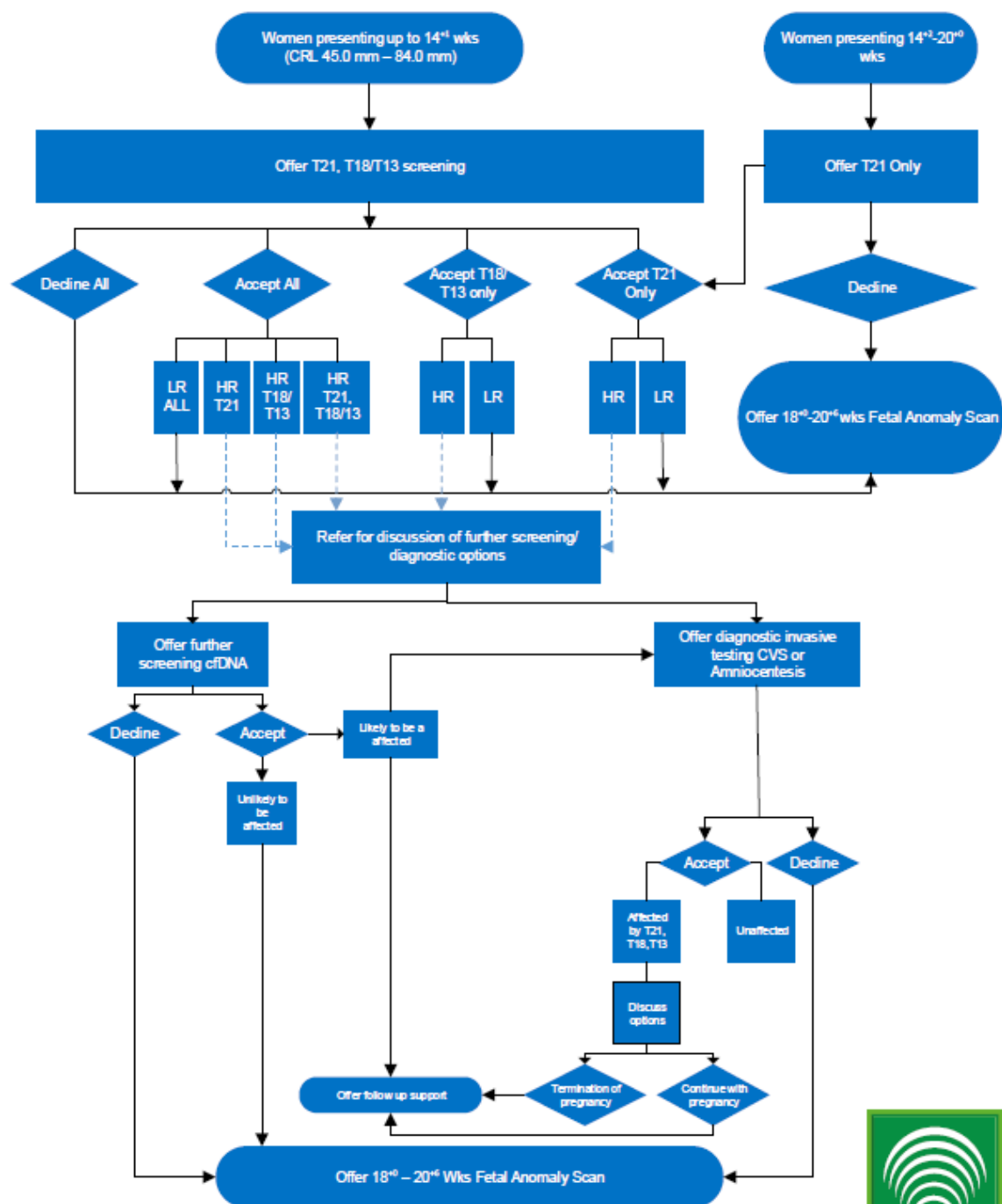


Screening Programmes

Abbreviations:

LR = Low Risk
HR = High Risk

Fetal Anomaly

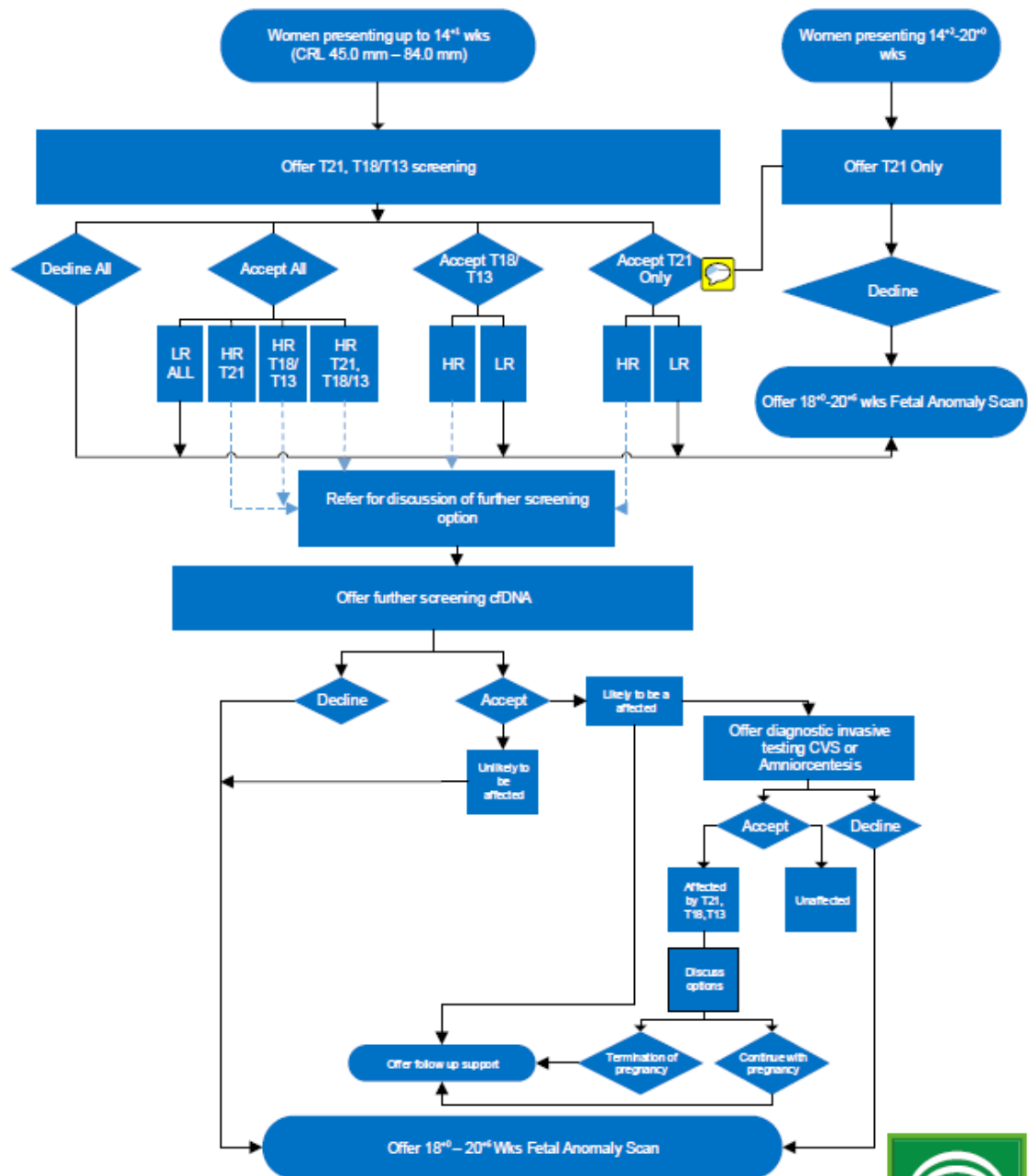


Down's (T21), Edwards' (T18) and Patau's (T13)
For Singleton Pregnancies Only



Screening Programmes

Fetal Anomaly

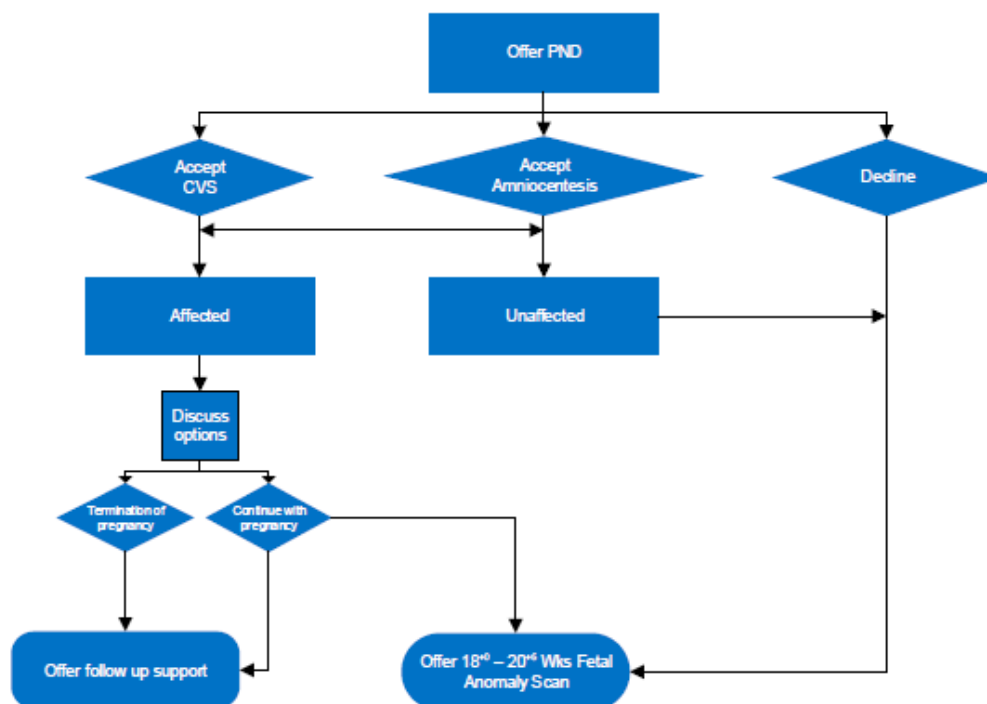


**Diagnostic Testing Pathway Following a Screen Positive Result
For Down's (T21), Edwards' (T18) and Patau's (T13)**



Screening Programmes

Fetal Anomaly



Addition to systematic review and economic model reviewing women's choices between NIPT and IPD

See separate attachment

UK National Screening Committee
Screening for cfDNA screening in pregnancy- an evidence review

Compiled Comments

1.

Name:	Claire Rozette	Email address:	xxxx xxxx
Organisation (if appropriate):	Guy's and St Thomas NHS Foundation Trust		
Role:	FMU and ADU Matron, Antenatal Screening Coordinator		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
Cut off threshold	We would certainly support the cut off of 1 in 150 at Term or 1 in 100 at time of the scan.	<p>When a fetal abnormality has been found on scan or the presence of a high NT (>3.5mm), an amnio or a CVS should potentially be recommended rather than NIPT.</p> <p>To avoid delay in getting the results back (NIPT + invasive test confirmation) and to be able obtain a more comprehensive result.</p>	
	What would you recommend for women with a low risk screening, wanting an NIPT. Previous history, older mothers, very anxious mothers.	<p>Would you allow the test on the NHS for medical reason?</p> <p>Would the maternal request cases need to pay for the test?</p> <p>For women who have a previous history of T21 and would want an NIPT for the following pregnancy as early as possible. Could we offer these ladies a test at 10 weeks? Or should all women wait for the Combined screening test first?</p>	
Failure rate	The failure rate needs to be well defined for the	Our experience with Verifi is less than 0.6%	

	laboratory	
Turn around time	Maximum of 10 days; this appear to be too long. We think that it should be a maximum of 7 days.	At present, Verifi offers a turn around of 5 to 7 days, including a flight to the US
NIPT in general	Great feed back from women so far. We cannot wait for the test to be available on the NHS.	At present, St Thomas is offering the NIPT on a semi private level (women are only paying the laboratory cost) and we use the cut off proposed. We do find that it is a successful model.

2.

Name:	xxxx xxxx	Email address:	xxxx xxxx
Organisation (if appropriate):	xxxx xxxx		
Role:	xxxx xxxx		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input type="checkbox"/> No X <input checked="" type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
Page 1 sec 2	A cfDNA test be offered after any of the following combined test outcomes:	xxxx xxxx	

3.

Name:	Tina ten Hove		Email address:	xxxx xxxx
Organisation (if appropriate):	PHE			
Role:	Screening & Immunisation Coordinator			
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">✓ Yes <input type="checkbox"/> No <input type="checkbox"/></p>				
Section and / or page number	Text or issue to which comments relate			
Section 2	A cfDNA test be offered after any of the following combined test outcomes		The offer of NIPT should be for a screen positive result regardless of whether it is a combined test or a Quadruple test, otherwise the offer is not equitable across the screening pathway and will cause confusion in practice.	

4.

Wolfson Institute Response to UK NSC consultation document on antenatal cfDNA testing

Policy options

The evidence review report 'Systematic review and cost-consequence assessment of cell-free DNA testing for T21, T18 and T13 in the UK – Final report', published on the 4th July 2015 by Taylor-Philips et al, is a comprehensive review of studies on the use of DNA testing in antenatal screening for Down's syndrome (T21), trisomy 18 (T13) and trisomy 13 (T13).

DNA testing has a higher screening performance than existing methods based on maternal age, immunoassay and ultrasound (e.g. the Combined test). The review does not give a clear recommendation or justification for a preferred method of screening given the recent advances in the DNA testing. The review considers some policy options but not all. The following policy options were considered by the review:

1. Using the 1 in 150 (at term) risk cut-off currently employed using the Combined test (nuchal translucency, free β -hCG and PAPP-A together with maternal age) to determine who is recalled and offered a DNA test.
2. Using the same approach as option 1, but with a lower risk cut-off (e.g. 1 in 800 or 1 in 1,000 at term) to determine who is recalled and offered a DNA test.
3. DNA testing for all women.

However there is a further policy option available which the evidence review did not consider:

4. Reflex DNA screening where a risk cut-off similar to option 2 is used but, instead of re-calling women to provide a blood sample for a DNA test, an extra blood sample is taken at the time of their Combined test and women with a risk at or above the risk cut-off are automatically reflexed for DNA using the plasma from the extra blood sample previously collected, so avoiding the need to recall the woman. Using a 10% reflex protocol the detection rate will be 91% for a 0.025% false-positive rate.

Implications of adopting each policy

Adopting policy option 1 will lead to a reduction in the detection rate of screening compared with current methods (the Combined test) since affected pregnancies can only be missed with the offer of a DNA test (since the detection rate of the DNA test is not 100%). There is no financial cost saving as the cost of the DNA test is similar to the cost of an amniocentesis or CVS. The only advantage is reducing the number of diagnostic tests offered to those women who are likely to be carrying an unaffected pregnancy.

Adopting policy option 2 has the advantage of increasing the detection rate by 6-7 percentage points and having the low diagnostic testing rate that is achieved by option 1. However this approach involves recalling a large proportion of women for a DNA test which will necessarily cause understandable anxiety for the women concerned and involve additional screening costs in organising for the women to return for an additional blood sample, counselling the women and then taking the second blood sample if the woman agrees. This

approach will result in women receiving more than one risk reported in their screening which can be confusing. It will also lead to some women (estimated by the review at around 6%) electing to have a diagnostic test instead of a DNA test and therefore increasing the number of unnecessary diagnostic tests.

Adopting policy option 3 has several disadvantages that weigh against switching to all women having DNA screening:

- Technical challenges such as the ability of laboratories to process the volume of DNA tests required (around 500,000 per annum based on the uptake of screening in the UK in 2014).
- Dealing with failed DNA tests e.g. due to insufficient fetal DNA in the maternal circulation. An alternative screening test would be required for these women.
- Cost – DNA testing currently costs over £200. This would add a substantial cost to the NHS screening programme for T21, T18 and T13.

Adopting policy option 4 achieves the advantages of policy option 2 while avoiding the reporting of more than one risk, avoiding the recall of women for a further blood test (with the associated anxiety) and avoiding women declining to have the DNA screening test in favour of a diagnostic test because of the worry the initial result has caused. Reflex DNA is the preferred option over those considered by the evidence review but unfortunately one not considered in the review. The only disadvantage is the additional cost of collecting a further sample for DNA testing at the same time as collecting a sample for the Combined test. Work is being undertaken to identify a low cost option for collecting the additional sample. Also, as the costs of the DNA test decrease the proportion of women who are reflexed to a DNA test can increase (say from 10% to 20% and then to 50%) reducing the additional cost in comparison to other policy options.

The reflex DNA approach has been published (Wald NJ, Bestwick JP (2013) Performance of antenatal reflex DNA screening for Down's syndrome J Med Screen OnlineFirst, published on April 16, 2015 as doi:10.1177/0969141315581005, attached) and has been implemented in a routine NHS setting as a demonstration project in April 2015 (leaflet and preliminary audit attached).

Conclusion

As the cost of DNA testing declines, using reflex DNA testing (with 10% of women being reflexed) will soon be cost neutral (when the DNA test price is about £150) compared with current practice (combined test followed by diagnostic test among screen-positive women). It will improve the detection rate and substantially reduce the false-positive rate resulting in a highly effective advance in antenatal screening for T21, T18 and T13. We believe this model of screening based on reflex DNA testing should be adopted by the National Screening Committee.

Nicholas Wald, Robert Old, Wayne Huttly, Jonathan Bestwick, Joan Morris
Wolfson Institute of Preventive Medicine

September 2015

Additional supporting documents attached below



17459 Wolfson
Antenatal Screening I



reflexDNA
(JMS2015).pdf



monthly update
flowchart v2 (sep).dc

5.



Genetic Alliance UK
Supporting. Campaigning. Uniting.

Consultation response

Cell-free DNA testing in the first trimester in the Fetal Anomaly Screening Programme

Response from Genetic Alliance UK, 2nd October 2015

Introduction

1. Genetic Alliance UK is the national charity supporting all those affected by genetic conditions. We aim to improve the lives of people affected by genetic conditions by ensuring that high quality services and information is available to all who need them. Our membership represents more than 180 voluntary organisations working for a wide range of conditions, many of which pose complex health and social care needs. We actively support research and innovation across the field of genomic medicine.

2. Rare Disease UK is a multi-stakeholder campaign run by Genetic Alliance UK, working towards the delivery and implementation of a national strategy for rare diseases in the UK. At least 80% of rare diseases have an identified genetic origin. The UK Strategy for Rare Diseases¹ was published by the Department of Health in November 2013¹. Pertinent to this consultation, in this strategy all four Governments of the UK committed to:

¹ UK Strategy for Rare Diseases. Department of Health, published November 2013, available at:

www.gov.uk/government/uploads/system/uploads/attachment_data/file/260562/UK_Strategy_for_Rare_Diseases.pdf

² Lewis. C et al (2012) *Fetal sex determination using cell-free DNA: service users' experiences of and preferences for service delivery* in Prenatal Diagnosis.

¹

¹ UK Strategy for Rare Diseases. Department of Health, published November 2013, available at:

www.gov.uk/government/uploads/system/uploads/attachment_data/file/260562/UK_Strategy_for_Rare_Diseases.pdf

“Continue to work with the UK National Screening Committee to ensure that the potential role of screening in achieving earlier diagnosis is appropriately considered in the assessment of all potential new national screening programmes and proposed extensions to existing programmes”

Commitment 9, UK Strategy for Rare Diseases, November 2013

3. We welcome the recommendation by the UKNSC to introduce screening for trisomy 21, 18 and 13 in women found to have a combined test risk score equal or greater than 1 in 150. The recommendation to introduce non-invasive prenatal testing as part of the National Health Service represents a step towards further equality in reproductive autonomy.

The value of cell-free DNA testing to women and couples

4. Couples' views and experience of non-invasive prenatal testing have been shown to be overwhelmingly positive. Women who have received news that their pregnancy was affected were found to be equally positive towards the technology as those who received good news².

5. Invasive testing is associated with a risk of miscarriage (around 0.5-1 in 100). Under the current screening programme only 5-10% of the population that undergoes invasive testing is found to have an affected pregnancy. The reduced risk of miscarriage is one of the most important, positive, aspects of the cfDNA testing for women. Women whose cfDNA test was positive for a trisomy will still have to undergo invasive testing, but the use of the non-invasive test used in the interim between the combined test and invasive test allows women to make the decision to undergo invasive testing with more accurate information. This will lower the number of women with an unaffected pregnancy undergoing invasive testing.

6. Women value the opportunity to have tests earlier, as it gives couples more time to make decisions about their pregnancy, bringing substantial psychological benefits. Women report feeling in control of the pregnancy, and having time to prepare themselves for what is to come. The test also gives women, whether found to be at risk or not, peace of mind much earlier on in their pregnancy.

Implementation

7. While we support the use of cfDNA testing for women at risk of T21, T18 and T13, it is important to make sure that testing is done in an appropriate way.

8. Non-invasive testing should be offered through specialised services. Patients have shown a preference for receiving pre and post test counselling from a specialist genetic counsellor, with specialist knowledge about the particular condition.

9. Some have argued that as tests such as this become routine in clinical practice they become normalised and present potential concerns for informed consent. This can easily be overcome by the presence of appropriate, detailed and non-directive counselling, which impresses on couples thinking about

² Lewis. C et al (2012) Fetal sex determination using cell-free DNA: service users' experiences of and preferences for service delivery in Prenatal Diagnosis.



undertaking cfDNA testing, the impact that the results of this test may have on their lives. Couples should be given them all the information available to them as well as the space to make an informed decision.

Alast Kent.

Alastair Kent OBE
Director

6.

Name:	Dr Sadaf Ghaem-Maghami	Email address:	xxxx xxxx
Organisation (if appropriate):	RCOG		
Role:	Chair, Scientific Advisory Committee		
Do you consent to your name being published on the UK NSC website alongside your response? Yes			
Section and / or page number	Text or issue to which comments relate		
General	<ul style="list-style-type: none"> The document is well written and appears to have taken on board the results of the RAPID study and the systematic review in drawing its conclusions. However, the logistics and availability of the test will be a consideration for various networks to address. The UKNSC is consulting on offering cfDNA testing to women with a 1 in 150 or greater risk of trisomy. The decision NOT to offer cfDNA testing to all women (primary screen) is based upon the cost ("the UKNSC were concerned that this represented a large opportunity cost and that these resources might be better used by the NHS"). If the decision has been made primarily on cost grounds, then a more rigorous economic analysis has to be made that includes the lifetime costs of caring for children and adults with Down's syndrome (bearing in mind that cfDNA testing as a primary screen test will identify approximately 289 more babies with trisomies). Such an economic analysis may (or may not) suggest that cfDNA testing for all is cost-effective. The document should take into account the fact that different NIPT tests have different predictive accuracies and failure rates, and that generalisation might not be appropriate. The document should take into account the timing of the diagnostic tests. A policy recommending combined testing, followed by cfDNA, then invasive testing if positive will result in second trimester termination which is more traumatic to the woman. Efforts should be made to implement a strategy where the timeline of screening and diagnosis should be able to offer timely first trimester (<14 weeks) termination. The miscarriage risk following invasive testing is derived from an old study, and is probably now much lower than this, as quoted in recent literature (Akolekar et al 2015). The procedure-related risks of miscarriage for amniocentesis and CVS were 0.11% (95% CI, -0.04 to 0.26%) and 0.22% (95% CI, -0.71 to 1.16%), respectively. These figures are significantly lower than those used in the analysis, and should be taken into account in the conclusion/recommendation. <i>Akolekar R, Beta J, Picciarelli G, Ogilvie C, D'Antonio F. Procedure-related risk of miscarriage following amniocentesis and chorionic villus sampling: a systematic review and meta-analysis. Ultrasound Obstet Gynecol 2015;45:16-26.</i> The risk cut-off should be specific, making it clear that it means a 1 in 150 risk <i>at term</i>. The cut-off of 1:150 should be re-evaluated 6-12 months after the initial implementation and availability of pilot implementation data, in order to inform a more robust predictive accuracy and economic analysis. In view of the lack of available data on a number of issues, e.g. uptake rate, consideration should be given to a pilot implementation of 		

	<p>these recommendations in a number of NHS trusts before full NHS implementation.</p> <ul style="list-style-type: none">• Minor points:<ul style="list-style-type: none">○ Delete 'of'. Add 'a' as in risk of causing a miscarriage.○ Replace 'fell from' to 'would fall' – as in 'The number of test related miscarriages would fall from', maintaining the same tense. <p>There's an extra full stop on page 2, line 25.</p>
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7.

Name:	Gail Norbury	Email address:	xxxx xxxx
Organisation (if appropriate):	Royal College of Pathologists		
Role:	Chair of Specialist Advisory Committee for Genetics & Reproductive Science		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
5.2.2 page 77	<p>Costs: The estimated cost of each cfDNA test at £232 seems remarkably low. The accompanying evaluation report from RAPID quotes £250 (plus an extra £30 for phlebotomy/ counselling /feedback/repeat tests). Another UK website quotes costs of £400-£700 (http://www.babycentre.co.uk/x557433/which-screening-tests-are-available-privately). A US cost analysis quotes around £518 (Clinical utility and cost of non-invasive prenatal testing with cfDNA analysis in high-risk women based on a US population. K. Song, Muscia TJ & Caughey AB. 2013 The Journal of Maternal-Fetal & Neonatal Medicine 26(12):1180-1185). Given the review acknowledges that the actual costs to the NHS is 'difficult to predict' then the implementation plan needs to detail how these costs are going to be audited and reviewed to ensure that the service is adequately resourced and commissioned to meet the required specification.</p>		

	Further, the estimated savings from reduced volumes of other tests, specifically QfPCR aneuploidy screening, may not be fully realised due to reduced efficiency. Again the implementation & commissioning policy needs to address this issue to ensure the service is not compromised.	
5.2.3 page 77	Risk of miscarriage from invasive tests The 0.6-0.7% figure used seems relatively high. It would be helpful to monitor the miscarriage rate alongside the introduction of NIPT to gain more assurance of the invasive test-related miscarriages.	
General	We support the introduction of cf DNA testing in the first trimester Fetal Anomaly Screening Programme and acknowledge the challenges of the cost analysis. Given these uncertainties, it is essential that this is reflected in the implementation programme and further early review.	

8.

Name:	xxxx xxxx	Email address:	xxxx xxxx
Organisation (if appropriate):	xxxx xxxx		
Role:	xxxx xxxx		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input type="checkbox"/> No X <input checked="" type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
2	Whole section	xxxx xxxx	
2	The UKNSC is also consulting on <i>not</i> offering cfDNA testing to all women (primary screen)	xxxx xxxx	
4	General comment	xxxx xxxx	
6	Turnaround times	xxxx xxxx	

9.

Name:	Tommy Mousa		Email address:	xxxx xxxx
Organisation (if appropriate):	Fetal Medicine Unit, University of Leicester			
Role:	Consultant specialist in Fetal and maternal Medicine			
Do you consent to your name being published on the UK NSC website alongside your response? <p style="text-align: center;">Yes <input type="checkbox"/></p>				
Section and / or page number	Text or issue to which comments relate			
Page 1 title	“Consultation for cell-free DNA testing in the first trimester in the Fetal Anomaly Screening Programme”	There are a certain group of women who will not be able to have first trimester combined screening and they will have second trimester screening. Are we excluding them? If yes we should be stated clearly.		
Page 2 para 1	“2. Women be advised that a cfDNA test is not diagnostic and that an invasive diagnostic test is required to receive a definitive diagnosis.”	I was unable to understand this paragraph. Please indicate what group of women we mean? The high risk or those with a positive cfDNA test?		
Page 3 para 1	Table 1	<ul style="list-style-type: none"> - The key point is really the “positive predictive value” that what matters for patients and for us. 		
Page 3 para3	It predicted that there would be 324 cases of Down’s syndrome detected, with 9 missed and 31 false positive results, 140 cases of <u>Edwards’ syndrome</u> detected with 11 missed and 26 false positive results, and 47 cases of <u>Edwards’ syndrome</u> detected, with 3 missed and 7 false positive results	<ul style="list-style-type: none"> - Should the last line be Patau syndrome not a repeat Edwards’ syndrome? - We need to provide clients with true percentage. The false positive for Down’s syndrome is 9%. The false positive for Edwards’ syndrome is 15%. False positive of Patau’s syndrome is 13%. That what matter to patients. 		

Page 5	More questions	<p>There are a number of areas and questions that we need to clarify to our pregnant women:</p> <ul style="list-style-type: none"> - Limitation of the test in twins. The document should include exclusion and inclusion criteria. - We know that increased NT will produce a high risk for trisomy. There are certain chromosomal problems in that group that we will not be able to pick up (turner syndrome, triploidy, ...). Should we classify high risk for trisomy as those with NT<3.5/4mm and those with NT>3.5/4MM. the management of the two groups are different! - Increased risk for trisomy in the presence of fetal structural malformation. An area that we need to address. - Increased risk in cases with fetal demise of one twin. - Currently our labs produce risk for Down's syndrome only? I am aware that we are aiming to produce combined risk for the three trisomies. - Quality control of labs. Is that important and who will do it? -
Page 5	Failure rate	It will be important to include repeat failure of 13.9%.
Page 6	Turn around time	IONA is currently promising turn around time of half of that time?

10.

Name:	Mrs Hina Gandhi	Email address:	xxxx xxxx
Organisation (if appropriate):	East Surrey Hospital, Redhill RH1 5RH		
Role:	Consultant Obs & Gyn with SI in Fetal Medicine		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
		<p>The implementation of the NIPT along with Combined DS screening (CS) test will not change the False negative tests of the Combined screening if it is applies to results >1:150 or higher. So the main aim will only be towards reducing IPD and make it cost effective. As the sensitivity of the CS test is only 83%, so the false negative cases will persists. NIPT though costly as a screening test, has a high sensitivity so in effect will reduce the FN cases and improve patient satisfaction and anxiety.</p>	

11.

Name:	Alec McEwan (on behalf of others as listed)		Email address:	xxxx xxxx
Organisation (if appropriate):	BMFMS			
Role:	Fetal Medicine subcommittee lead for BMFMS			
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes X <input type="checkbox"/> No <input type="checkbox"/></p>				
Section and / or page number	Text or issue to which comments relate			
General			Peter Soothill : The proposal / recommendation in this document is an important step and should be supported without reservation. It will clearly be of benefit to our patients, especially by reducing very significantly the number of invasive procedures undertaken in normal pregnancies.	
General			Alec McEwan : The NSC proposal does not state clearly if women with a high risk on combined testing, or indeed Quad testing, will be offered the option of direct access to invasive testing, or if they will <i>have</i> to go through the additional cfDNA step first. All the contributors to this response feel that this option should remain open to women with a high risk screening result.	
Page 1	Who should cfDNA testing be offered to		Peter Soothill : keeping the cut-off at 1 in 150 will make the change process much more manageable and indeed include women who are usually already currently seen within the hospital services. These points will make the introduction of this improvement smoother and controlled.	

Page 2	Not offering cfDNA to all women as a primary screen	<p>Tim Overton : stopping NT scanning would save significantly on sonographer time. cfDNA testing for all would pick up more cases of Down syndrome (virtually all).</p> <p>Sarah Bower : The problem with offering cfDNA testing as a primary screen is expense and the lower PPV of cfDNA testing in a low risk population</p> <p>Tim Overton : why aren't the costs of raising a child with T21 included in the cost analysis?</p> <p>Sarah Bower, Tommy Mousa, Sri Sankaran : losing the NT scan and reducing scanning time at the dating scan would also miss other abnormalities; it needs to be continued</p> <p>Alastair McKelvey : A three stage approach will be more complicated and slower than a 2. So I would replace the CT with cfDNA.</p>
Page 3	Economic analysis	<p>Tim Overton : The economics of offering cfDNA testing as a primary screen should be calculated, with account taken of the likely falling costs of cfDNA testing.</p> <p>Alec McEwan : The costs analysis of cfDNA testig for all would have to examine both options of NT scan + cfDNA testing for all vs dating scan + cfDNA testing for all.</p> <p>Sri Sankaran : Would like to see an analysis of NT scan (no biochemistry) for all, with IPT offered to those with a risk > 1 in 10, NT>3.5mm or anomalies, and all other women offered cfDNA testing (as primary screen) and quad test offered to those who have a failed cfDNA</p> <p>Tim Overton and Myles Taylor : why isn't the cost of caring for a child with T21 included in the analysis?</p>
Page 5	Failure rate	<p>Sarah Bower : Fetal fraction should be published/reported</p> <p>Alec McEwan : Women should be counselled about cfDNA</p>

		failure rates at the point of receiving a high risk result. Significant failure rates will further support offering women with a high risk primary screening result the option of cfDNA or direct access to IPT.
Page 5 Table 3	Uptake of cfDNA testing vs IPT	Sarah Bower : in the recent King's study, the offer of cfDNA testing to high risk women only resulted in a 40% reduction in the number of CVS performed, because so many chose to opt for IPT directly. Large NT and very high combined screening results are two factors associated with the request by women to move directly to IPT. Afro-Caribbean origin and the giving of high risk combined screening results some time after the screening is performed are associated with a greater likelihood of opting for cfDNA testing
Page 6	Turnaround time	<p>Sarah Bower : Although the turnaround time for cfDNA results should come down to 3-5 days eventually, it currently takes over a week. With the time taken to organise the CVS and wait for the result, women will be receiving their diagnosis up to 2 weeks after the primary screening result was obtained.</p> <p>Alec McEwan : This delay is one reason why I would favour offering women the option of cfDNA or direct IPT to women with a raised risk. Some women will inevitably choose an invasive test immediately if faced by added delay.</p> <p>Peter Soothill : The combined test should be undertaken as early in gestational age as possible, so that the time taken for the NIPT does not delay the final diagnosis too much.</p>
Other points	NT > 3.5 mm	<p>Sarah Bower : cfDNA tests only for the three most common trisomies and will not detect other aneuploidies. Women must be made aware of this if there NT is >3.5mm</p> <p>Alec McEwan : Screening pathways and documents will need to stress that an NT > 3.5mm takes the woman out of the</p>

		<p>normal screening pathway</p> <p>Peter Soothill : The proposal does not explicitly say what should be recommended in relation to ultrasound abnormalities (most often a NT > 3.5mm but including conditions like exomphalos). I suggest the policy state that these cases are referred to Fetal Medicine Units for individual assessment and counseling (as at present).</p> <p>Alastair McKelvey : I would continue to offer NT and diagnostic testing for abnormal NT.</p>
	Which invasive test to perform following a high probability cfDNA result	<p>Sarah Bower : CVS if the cfDNA result suggests Down syndrome, but amnio if T13/T18 likley because of the greater likelihood of placental mosaicism being the cause.</p> <p>Peter Soothill : Since it is possible that some of the 40% of false positive NIPT results will be due to placental mosaicism, it may be logical to consider / discussing amniocentesis (shortly after 15 weeks' gestation) in preference to CVS in the rare cases with a positive NIPT result (to avoid confined placental mosaicism on CVS followed by amniocentesis).</p>

12.

Name:	Kathy Mann	Email address:	xxxx xxxx
Organisation (if appropriate):	On behalf of Guy's Genetics Centre (Viapath and Guy's and St Thomas' NHS Trust)		
Role:	Clinical Scientist (Lead for Prenatal and Reproductive Genetics)		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
Whole document	UKNSC recommendation.	We support the introduction of NIPT into the FASP. The NSC have chosen the 1/150 threshold for a number of reasons; a cautious approach, no increase in costs, to minimise disruption to the current FASP and this model gives the largest reduction in invasive tests resulting in an optimum reduction in test-related miscarriage. Although given limited NHS resources we generally support this proposal, we do question some of the figures and assumptions used in the cost-benefit analysis which we have detailed below. It is important that the service is properly funded and given the uncertainties, it would be important to know how these will be monitored and addressed during implementation.	
Economic analysis	Cost of invasive procedures and testing at £650	This is higher than the Guy's costings which come in at £465 (invasive procedure £240, QF-PCR £75, sample prep £150). Although these costs will vary nationally, we wonder if the estimated price has included aCGH/karyotyping. The cases being considered for NIPT would have a nuchal of less than 3.5mm and therefore no aCGH/karyotyping would be required in line with	

		national guidelines which have been implemented in a number of regions. The cost of arrayCGH/karyotyping should not therefore be included in the cost of invasive procedures and testing.
Economic analysis	Cost of invasive procedures and testing at £650	The fall in numbers of invasive tests is likely to result in an increase in the cost of QF-PCR, which is dependent on throughput.
Economic analysis	Estimated cost of NIPT at £232	Although it is acknowledged in the consultation that there is uncertainty regarding this price, in our opinion the price is remarkably low and some essential peripheral costs do not appear to have been included. These include costs for phlebotomy, counselling, sample transfer. RAPID quote £250 plus an extra £30 for phlebotomy/counselling/feedback/repeat tests. In addition does the price include any patent/licence fee, currently £50/report to Illumina/Sequenome. Will this be paid centrally? Start-up costs for the NIPT will be significant and training of health professionals must be included.
Economic analysis		The proposal assumes that cost-neutral NIPT will be funded by savings in FMUs and Genetics Laboratories from a reduction in the number of invasive procedures. How will this be planned, as staff reductions are required for savings to be realised?
Economic analysis		An NIPT laboratory service requires extensive validation and is then dependent on a reasonable sample

		throughput to be cost-effective. How will this be funded prior and up to commissioning of NIPT?
Economic analysis, p4	Test-related miscarriage of healthy pregnancy	Test-related miscarriage of 0.6 to 0.7%. Much of the justification for NIPT comes from the reported risk of invasive procedures and this risk is therefore fundamental to the whole premise of the NIPT. The systematic review discusses this on p77 and details the published variability for this figure. The figure chosen for the economic model to calculate loss is 0.6 to 0.7%. However, the UK data support the lower figure of 0.1% for AF and 0.2% for CVS. The review calculates that with this risk, introduction of cfDNA testing would avoid 10 miscarriages per year.
UKNSC recommendation, p2	Threshold	Regarding the justification that a lower threshold would result in an increased number of invasive tests, the majority of these would be abnormal if a high performing NIPT is used and therefore this in itself does not seem an appropriate justification.
UKNSC recommendation, p2	Clarity regarding proposed testing pathways	For women found to have ultrasound abnormalities, we would recommend that an invasive test should be carried out, as this will be required whatever the result of any cfDNA testing. It would therefore be inappropriate to offer cfDNA testing to these women, and would result in wasted resources and delay in obtaining a comprehensive result. The nuchal translucency contributes to the combined test result, and if greater than 3.5mm is associated with other chromosome abnormalities. Again, this group should

		proceed directly to an invasive test.
UKNSC recommendation, p2	Clarity regarding proposed testing pathways	There has been some discussion outside of the consultation document regarding which invasive procedure and diagnostic test is the most appropriate for NIPT confirmation. Given the current 1/150 cut-off remains unchanged, it would follow that current recommended strategies apply as within this population there would be no predicted change to incidence of mosaicism etc. If the tested population changes in the future this would need to be reviewed.
UKNSC recommendation, p2	Clarity regarding proposed testing pathways	Regarding the anticipated and substantial fall in the number of invasive tests, there has been discussion around limiting the number of centres that can carry out these procedures. A similar model may also be required regarding the number of laboratories that carry out diagnostic tests in order to maintain a quality service. This is likely to be addressed by the current Genetics reconfiguration.
4. More questions, p5	NIPT failure rate	We agree with the report's conclusions regarding the importance and variability of the failure rate and that failure rate correlates with sequence depth. In our experience the failure rate is an important test parameter due to additional anxiety; if thousands of women are tested a low failure rate is crucial. A failure rate of 3.5% has been used for the cost-benefit analysis; our experience of Verifi (Illumina) is a failure rate of <0.6%

		<p>and the RAPID study reports a 0.7% failure rate. This is up to ten fold lower than some reported rates. Given this variability, it will be important that a low failure rate is stipulated for laboratory provision.</p> <p>The usefulness of measuring fetal fraction is disputed. The requirement for a FF >4% that is required by some tests undoubtedly results in a higher failure rate which, in the case of high performing tests (greater sequence depth), must be considered against the number of false negatives due to insufficient placental DNA. Whole genome sequencing approaches that use a large number of reads but do not measure FF, have similar sensitivities/specificities to those that measure FF, but a much lower failure rate.</p>
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13.

Name:	Lynn Murray	Email address:	XXXX XXXX
Organisation (if appropriate):	Saving Down Syndrome		
Role:	Administrator		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
<p>Saving Down Syndrome Stakeholder response to Consultation for cell-free DNA testing in the first trimester in the Fetal Anomaly Screening Programme</p> <p>Saving Down Syndrome is an international social justice advocacy for people with Down syndrome. We focus on providing a balanced perspective on life with Down syndrome and supporting parents with a prenatal diagnosis. We raise awareness around the discriminatory and eugenic nature of the practice of antenatal screening worldwide. We wish to ensure that prenatal screening exists only to provide unborn children with Down syndrome and their parents with life-affirming, unbiased care through advocacy, education, support and understanding; worldwide.</p> <p>The UKNSC has consulted on the following proposals:</p> <p>1) A cfDNA test be offered after any of the following combined test outcomes:</p> <ul style="list-style-type: none"> The combined test risk score for Trisomy 21 (T21) is greater than or equal to 1 in 150; <p>and</p> <ul style="list-style-type: none"> The combined test risk score for Trisomy 18 (T18) and Trisomy 13 (T13) is greater than or equal to 1 in 150. <p>2) Women be advised that a cfDNA test is not diagnostic and that an invasive diagnostic test is required to receive a definitive diagnosis.</p>			

Not offering cfDNA testing to all women (primary screen) based on the following:

- The systematic review estimated that offering cfDNA testing as the primary screening test would find approximately 289 more babies with trisomies with 5,711 fewer invasive tests, than the current combined test screening programme in one year. However, the UKNSC were concerned that this represented a large opportunity cost and that these resources might be better used by the NHS.

Saving Down Syndrome's Response to Consultation Questions

1) cfDNA test should not be offered after positive combined test outcomes, in this case, greater than or equal to 1 in 150; and

2) We agree that cfDNA is not diagnostic, only invasive diagnostic tests are required to receive a definitive diagnosis.

- We agree that cfDNA should not be offered to all women (primary screen).

International Treaty Obligations pertaining to the proposals

As this review has been undertaken as part of National policy we would like to see an action plan with regard to the areas of conflict around screening and the UN Convention of the Rights of People with Disabilities (2006) (CRPD) and the recent Report of the International Bioethics Committee on

“Updating Its Reflection on the Human Genome and Human Rights” (Oct 2015). The CRPD is an international treaty to which the UK is a signatory. The International Bioethics Committee operates under the UNESCO treaty, the UK is a signatory to this too. As signatories to these UN Treaties the Government and the UK NSC are legally bound to comply with the relevant treaty obligations as they apply to this proposal.

On the basis of the areas of the policy proposal that are in conflict with the CRPD and the recent UNESCO Bioethics Report on the Human Genome and Human Rights referred to above, we request that:

1. A full Ethical Review on the use of any prenatal DNA testing be carried out in accordance with the CRPD, the UNESCO Bioethics Report referred to above, and disability rights in general;
2. That the NSC carry out meaningful and direct consultation with people with Down Syndrome in terms of the affect of the proposal on their basic human rights; and
3. That no decision is made regarding the implementation of cfDNA testing by the NHS on any level, at least, until results of that review can be considered in conjunction with any other evaluations.

Saving Down Syndrome's cfDNA Consultation Response Narrative

Saving Down Syndrome's comments on the systematic review:

The Plain English summary refers to cfDNA testing not being diagnostic. Public perception of this is that it will be diagnostic, even the Non-invasive Prenatal Testing (NIPT) description lends itself to this idea, this is a major issue. However, this document repeatedly states that cfDNA should not be used

as a diagnostic tool. This is emphasised in the document when it points out that using cfDNA in the general obstetric population (not merely high risk), as a diagnostic test for T18 would result in more than 50% error.

The consultation made no mention of the issue of DNA samples being collected and the ethical issues thrown up, as a result.

We feel that the scientific summary within this document should have been accompanied by a summary of the ethics of the situation and would like to point out that the issue of ethics needs to be addressed.

The Systematic Review often referred to the studies involved as having high risk of bias, including study bias, patient spectrum bias, publication bias and gestational bias. Thus any move to implement mass programmes would likely be very problematic and could not be ethically carried out following this review.

Twin pregnancies, multiple pregnancies (more than twin) – were certainly not discussed in the review, BMI issues, and Trisomy issues – were all singled out as possibly leading to test failure.

Unfortunately, these are all issues occurring in the pregnant population.

Test failure was a recurring issue, and some questions could not be satisfactorily fully answered within the review, and therefore the issues relating to test failure and its consequence persist.

Several Research questions were asked within the document:

Question 1 a) What is the accuracy of cfDNA testing in predicting T21, T18 and T13 in pre-defined high risk (1:150) pregnant women following a test? The review told us that there were no studies reporting relevant performance and concluded that while it was a very good test even using our highest estimates of accuracy it must not be considered a diagnostic test.

Question 1 b) How does changing the threshold for defining high risk following a combined test affect the accuracy of cfDNA testing? The reviewers told us that they were unable to present cfDNA testing at different risk cut-offs ranging from very high to low risk or present an optimal risk cut-off to maximise cfDNA testing performance in clinical practise. This was another major issue. There was no ideal study available in order to test accuracy; therefore a synthesis was undertaken in an attempt to answer this.

We would like to point out that the concept of 'High Risk' pregnancies leads to anxiety for many women who undergo any kind of screening. Increasing the threshold would lead to many more women moved in to a 'high risk' category (for cfDNA testing), possibly increasing invasive testing and with many more having to endure the well-documented anxiety created by screening.

We would also like to highlight that the term "Risk" carries a negative connotation that may infer a discriminatory bias within the screening programmes. The correct term is "chance" and all references to probability should be referred to as chance, rather than risk.

It states in the review that no firm conclusions could be drawn, regarding this question.

Question 2 What is the most accurate primary prenatal screening tool for T21, T18 and T13 in the first trimester when cfDNA testing and the combined testing are compared in a general population?

The review stated that 'due to a lack of studies' comparison between the current combined testing and cfDNA testing was not possible. Saving Down Syndrome concludes that pregnant women and their babies may become 'Guinea pigs' if cfDNA were implemented in a mass NHS-sponsored programme. For us, this is self-evident as the programme carries no medical benefit for a Down syndrome pregnancy and is focussed on detection

rates, as presented in the consultation documentation.

Question 3 What diagnostic accuracy is achievable by integrating cfDNA testing into the combined test? The review states that there were no studies which demonstrated test accuracy after implementing this approach and reviewers were unable to determine if the combination test with cfDNA would offer increased accuracy. Only a narrative could be provided for this question.

Question 4 What is the rate of cfDNA testing failure (number of inconclusive and excluded samples/ total number of samples? The studies showing failure were up to 12.7% (of course bias may be a reason for such varying results in our opinion.) There seemed to be some evidence that earlier gestational age and trisomies may lead to failure. We feel that this is a major concern in a system which currently has an extremely high level of throughput for termination, if strict guidelines weren't in place then failed tests may be wrongly perceived as diagnostic. Tables and a narrative summary were provided.

Question 5 Economic Evaluation A model was constructed. The £232 figure for cfDNA is notional. There was no representative figures for the additional costs such as training, counselling, and staff which would also increase any budgets. In addition, no model could be provided for using the combined test with the new cfDNA test. Elevated detection rates may include Trisomy pregnancies which may miscarry (a significant number of Trisomy pregnancies miscarry naturally). There is no cost included for any termination of pregnancies which may have miscarried naturally but may be detected earlier and terminated. Some of the economic models exhibited predicted high costs.

A fall in the number of testing-related miscarriages is predicted here, although if another test is added in to the antenatal screening system (cfDNA) then this would have major implications for the timing and administration and begs the question as to how would this affect the decisions of women given positive results? Currently, they are rushed in to decision-making; the addition of a further test could lead to more; stressed women and possibly more hasty decisions with more terminations as a result. We are concerned that a mother, who may regret aborting her unborn baby, affected or not, might merely be considered a casualty of a badly administered system, if this situation were to arise.

Other Points on the Systematic Review

The Systematic Review and cost consequence assessment of cell-free DNA testing for T21, T18, T13 was a truly comprehensive review of studies on the issue, most impressive. According to the authors the major limitation of the review were lack of data and no evidence of test accuracy when cfDNA and first trimester screening are combined which led to an inability to analyse the impact and model the scenario. None of the articles involved were of 'optimal quality'. Further limitation was the inability to provide a comparison of combined testing v cfDNA, therefore diagnostic performance (Question 2) was limited to narrative review. The main limitation was that it relied on published data; together with studies which may have had a high

risk of bias classification due to unclear reporting. On page 16 it stated that a review to evaluate the performance of such tests is needed before implementation into UK clinical practice can be considered.

We also note that the review used a survey which is termed as 'antenatal clinic survey data', this is misleading. The survey results were derived from Antenatal clinic survey data together with users of the ARC website and MUMsnet website, this brings into question, again, the figures produced by the ensuing model.

Reviewers also said that due to publication bias, test performance may be overstated, and that the failure rate was very variable. They also state that there is limited evidence in the UK and generalising findings to the UK should be carefully considered.

The Symptoms and prognosis section on page 16 were short and sharp. Unfortunately, a well written paper was ruined by this section which was extremely short on sensitivity and presented the Trisomies as a list of possible health issues, few of which are exclusive to these populations; it may be perceived that there is a bias shown here in order to allow the targeting of Trisomy pregnancies. The fact that positive statistics and facts relating to those affected by Trisomies were understated perhaps exhibits a lack of general public and Health Service knowledge of how these Trisomies are working in our society today and demonstrates what happens when there is a lack of bioethical input, or even input from those actually living with the conditions. Things are changing, people with Trisomies are in society and things are getting better for them, slowly but surely. There was no differential made for those with Translocation and Mosaicism, as if the mere mention of a Trisomy label is enough! Life expectancy was understated for those with Down syndrome; people are living into their 70s and older. This review is about those affected by Trisomies, this matter should have been given due respect. Those affected by the policy should be involved, rather than excluded from matters that impact on them.

Oddly, there was no mention of spontaneous miscarriage for Trisomy 21, which is relevant to the review.

According to review figures the current uptake for screening is only 64%, this despite the Government's increased investment and the assumption that some may not realise the implications of accepting screening, when it is carried out routinely. It is worth noting that Figure 1 on page 19 draws attention to the fact that despite women refusing Trisomy testing there is still expectation that they will undergo foetal anomaly scans, which is in conflict with the woman's informed choice not to participate.

Projected test failure figures are also modelled with the assumption that some will go on to have invasive testing, but what of the women whose retests fail? Are they merely collateral damage?

Again, the related numbers are unpredictable.

There were several unpredictable factors thrown up by the review:

Screening Uptake, Test Timing, False Positives and False Negatives, Test Failure, Retest Numbers, Diagnostic Test Numbers, Test-related Miscarriage, Anxiety Levels, Financial Costs, Terminations (will even more babies with Trisomies be aborted and even more based on chance?).

We are told in the review that women's choices and ethical issues were outside the scope (if cfDNA were introduced) and it also states that the choices women make are difficult to predict. On the other hand, it also made assumptions around women's choices in order to produce financial predictions. It presented the idea of women possibly using cfDNA as a diagnostic tool thereby refusing invasive screening but didn't include these numbers in the economic model. Do they think that the genie may be out of the bottle and that women will see cfDNA testing as being as good as diagnostic testing, as we said earlier?

It's unacceptable that ethical issues are considered to be out of the scope of the review. The proposal is likely to have a significant, negative impact on the Down Syndrome Community and it is incumbent on the NSC to take these matters seriously. Failure to address ethical concerns is likely to offend the UK's obligations under the CRPD and need to be addressed.

Will amniocentesis be a requirement before termination or merely a recommendation i.e. will terminations be carried out by the NHS on the basis that the foetus may be disabled? If so, this would reduce any benefit of reduction in loss of babies through the screening process, either by miscarriage or abortion. This paper does advocate effective communication to clinicians and women that cfDNA is not diagnostic.

The review refers to the decreased inefficiency for T13 and the increased efficiency for T21; making it a more effective test for the latter. Any change to the testing pathway should allow us to stop and consider that when combined testing was first implemented, T21 was previously considered a much more serious condition. Thanks to medical development and intervention, the effects of Down syndrome are lessened. The consideration to implement more testing may not be ethically sound if the law and Public Health Ethics were applied today.

This was, as we said earlier, a very thorough review of available studies, however with the ethical issues involved in this we would therefore agree that there would be a too high a risk for NHS to consider implementing more testing.

We object to the use of the phrase 'normal fetus', there are more sensitive terms to use. On pages 25 and 81 there was also the questionable use of

the term 'disease'. We object to the use of the phrase 'healthy pregnancies' on pages 65 and 76, 'unaffected' might be a more sensitive term.

Saving Down Syndrome's Comments on RAPID non-invasive prenatal testing (NIPT) evaluation study:

Alongside the Systematic Review, the consultation documents included a brief review of this study of 1164 pregnant women recently carried out in the UK. This study unfortunately wasn't part of the rigorous Systematic study commissioned.

XXXX XXXX

XXXX XXXX We would like to

know if the study produced any information on what it means to live with Down syndrome, or whether the material was merely test-related? Is there any intention to produce more good-quality information on living with Down syndrome from a system that appears to strive to identify more and more babies with the condition? Is there an intention to involve people living with Down syndrome to have a say on matters that affect them?

We note that cfDNA is more sensitive to Trisomy 21 (Down syndrome), i.e., it is less successful in identifying other Trisomies. The study in the UK was carried out only on Trisomy 21 and did not provide any evidence at all on the efficacy of other Trisomy testing.

The balance shown in the Systematic Review wasn't to be found in this document. Therefore the consultation presented two very different perspectives, one suggesting caution and the other even talking about 'wider implementation of NIPT in DS screening'.

The Executive Summary confirms to us that introducing the new test also brought a lengthening of test time and additional anxiety. However, the summary told us that these issues were apparently not a problem for study participants.

As stated earlier, the consultation documents are throwing out clues that pregnant women may be used as 'Guinea Pigs' in a haste to implement more antenatal testing, with no perceived health benefits. For example, the consultation document in its More Questions section, talked about the necessity to 'gain a better understanding' regarding failure rates, it also stated 'uptake rates should also be monitored to better understand this issue and the likely implications on the number of invasive tests offered'. The document went on to point out '... the UK should pay particular attention to T18 and T13 to ascertain the performance of the test'. With regard to testing turnaround times, it concluded that these will be 'monitored' as the pathway is implemented.

Saving Down Syndrome's Conclusions on the Consultation

There are no positive health benefits being offered under these proposals and while we would welcome anything that improves the quality of care for pregnant women, and will continue to advocate for it, there is no strong case for introducing NIPT as part of a screening programme, because 'to improve' the 'performance of the programme as a whole' (as stated in the RAPID study conclusion) will mean that more unborn babies lives may be lost in pursuit of programme quality with no other health benefit.

Table 3.2 from the RAPID summary shows 102 extra cases of Down syndrome identified per year. Using the current UK termination rate following a prenatal diagnosis of 90% would indicate that there would be 92 more Down syndrome selective terminations annually due to the proposed policy. The same table shows a saving of 25 pregnancies from miscarriage due to the reduced number of invasive tests. This gives an increase in lost pregnancies of 67 per year, so it increases overall harm. There is a discriminatory assumption that the reduction of miscarriages is positive (and it is) whilst an increased loss of Down syndrome pregnancies is not a concern, and would seem to be an objective. The ethical approach is to reduce harm to all pregnancies without discrimination. The reference to "increased performance" in the last sentence of the RAPID report may indicate that the purpose of the proposal is to stop births of Down syndrome. Such a public health policy is prohibited under the CRPD as it offends disability rights and the core principle of non-discrimination.

Like the authors, we would also like to see less invasive tests carried out, however this should be as a result of the acceptance of an unborn baby (despite any genetic diversity), not merely due to increased testing efficacy.

Failure to address disability rights obligations and the CRPD

As stated earlier, the proposal is likely to have a significant negative impact on the Down syndrome community and it is incumbent on the NSC to take these matters seriously. Failure to address ethical concerns is likely to offend the UK's obligations under the CRPD and need to be addressed.

When addressing the issue of the Public Health Ethics in our submission it should also be noted that the CRPD requires consultation with people with Down syndrome on a programme such as this that impacts on them. We submit that the proposal cannot proceed whilst those with Down syndrome are excluded from the process.

Therefore, as the opportunity has arisen, we would like to see an action plan with regard to the areas of conflict around screening and the CRPD, as we referred to earlier. International disability rights expert Janet E. Lord published an extensive paper on the application of the CRPD in

relation to disability screening programmes. The conclusion of this paper was:

“Human rights law has, at long last, evolved in its conceptualization of disability. The human rights narrative now views disability not as medical pathology but as a human rights matter impacting a substantial and highly marginalised population. The introduction of a disability rights narrative into the human rights framework inevitably produces certain tensions that force us to confront possible disjuncture between the received obligations and the application of a reconfigured human rights analysis consistent with disability rights. One of the points of analysis contemplated by the CRPD is a review of health-related policies, the socio-contextual conditions within they are applied, and the resulting impact of such policies. The CRPD thus compels an analysis of antenatal screening and the extent to which such policies accommodate impairment as an accepted incident of human diversity and evoke respect for human difference, along with non-discrimination, inclusion and participation. Along these points of analysis, screening policies as practiced in modern medicine inevitably fail on numerous grounds. Reproductive rights are affirmed in the CRPD and the issue of reproductive choice is to be respected. This applies also to women with disabilities who so often are subjected to coercive decision-making in reproductive decision-making. As implemented in practice, however, screening policies fall afoul of CRPD principles.”

The following is a more detailed summary of the areas of the NSC proposal that is in conflict with the CRPD. We submit that a full ethical review of the proposal be carried out in accordance with the following items and the CRPD more generally.

Extracts from “Screened Out of Existence: The Convention on the Rights of Persons with Disabilities and Selective Screening Policies” by Janet E. Lord.

Introduction

A disability rights critique casts serious concerns over the wave of genetic testing, in particular antenatal screening.

The historical disadvantage of persons with disabilities has been shaped, reinforced and perpetuated by the idea that disabling conditions represent abnormality and pathological defect. Invidious stereotyping continues to exclude and isolate persons with disabilities who have not generally been accorded the full or equal enjoyment of human rights that international law demands.

The CRPD supports the accommodation of impairment as a natural feature of human diversity. It includes among its general principles respect for human difference, along with non-discrimination, inclusion and participation, all of which are salient features of a disability analysis applicable to law,

policy and programming, including prenatal screening programs that may impact whether persons with disabilities are born.

Against these developments, disability advocacy organizations and the body that monitors CRPD implementation – the Committee on the Rights of Persons with Disabilities – are starting to turn their attention to the impact of disability selective screening policies on persons with disabilities and their families, much as sex-selective screening and abortion has triggered concerns – and conflict – among human rights advocates. Some commentators assert that disability-specific screening policies impart the harmful message that persons with disabling conditions are unwelcome in society. Moreover, screening for immutable disability characteristics such as Down syndrome – where there is no potential therapeutic value – reinforces internalized oppression according to which disabled persons are devalued, tagged with their impairments and branded as a burden (Newell, 1999;

Houghton, 1994; Davis, 1987). Others suggest that the way such screening protocols are implemented in practice has a major impact on birth rates of certain groups of persons with disabilities, ultimately raising serious ethical questions about what kinds of people should be born.

Screening policies as practiced also raise human rights concerns regarding the rights of would-be parents who are, arguably, protected against disability discrimination under the CRPD, along with other rights, including the right to information and free and informed consent to medical procedures.

A disability rights critique casts serious concerns over the wave of genetic testing, in particular antenatal screening along with embryo selection, and its implications for core principles of disability human rights such as respect for difference and non-discrimination on the basis of disability.

Devaluation of Lives through Quality of Life Assessments

Traditional quality of life assessments are at the heart of disability-selective antenatal screening policies as designed and practiced in contemporary medicine (Asch, 2003). They embrace a decidedly medical model perspective that is at odds with a social model understanding of disability and a rights-based approach rooted in principles of dignity, non-discrimination, participation and respect for difference:

Some doctors hold a narrow, medically-aligned view that people with Spina Bifida and Hydrocephalus have a very poor quality of life which may not be worth living. There are many medical problems related to Spina Bifida and Hydrocephalus, but quality of life is not only a medical matter. It is difficult for doctors to accurately assess the severity of disability even if they are specialists in the condition. Those best qualified to judge are people with Spina Bifida and Hydrocephalus and the parents of those children who are convinced that their lives are definitely worthwhile (Belcher, 2012).

By contrast, the social model, rights-oriented perspective informs contemporary disability policy and is meant to drive decision-making, including health policies, as reflected in the international disability rights framework of the CRPD.

Situating Screening within a Social Model Understanding of Disability

Many health policies (and indeed other types of policies) operate on the assumption that disabling conditions are pathological and defective and not, as a social model, rights-based understanding explains, a socially ascribed deficit. The resulting impact of such a perspective is clear; as underscored by a disability rights narrative, persons with disabilities are to be avoided and/or excluded, as opposed to accommodated and included in the community. Societal responses to disability must comport with, qua disability rights principles, accommodation, inclusion and support. Health policies, as such, are required to pitch toward these principles and not, as in the case of disability-specific antenatal screening programs, invariably toward termination and exclusion (Asch, 2003; Biesecker & Hamby, 2000). A disability rights analysis, holds that antenatal screening protocols, along with other health policies, must be informed by and reflective of a social model understanding of disability.

The received disability studies critique holds that the indirect discursive effects of targeted screening programs inevitably convey the devaluation of the lives of persons with disabilities (Asch, 2003). Advocates are particularly critical of screening for immutable disability characteristics such as Down syndrome that have no potential therapeutic value or curative possibility. They argue that such screenings thus only serve to reinforce the idea among persons with disabilities themselves that they are tagged with their impairments and thereby branded as a burden, whether on their families or the public purse, with no value attributed to their role in the community. By implication, the clear signal sent across the disability community on the adoption of such policies is that persons with disabilities are, wherever possible, to be screened out, their existence avoided altogether.

The CRPD Normative Framework

At the outset, it bears mentioning that the CRPD reaffirms the right to life (CRPD, 2006, art. 10), widely recognized as a core principle of human rights law (Committee on the Rights of the Child, general Comment 5, 2003). The provision is a particularly sparse one, and, as such, is essentially stripped of any contextual elements that would link the right to the particular situation of persons with disabilities (CRPD, art. 10). It avoids mention of issue areas raised during the course of the negotiations, such as disability-based abortion or physician assisted suicide, and instead adopt language in alignment with previously-agreed upon language. Accordingly, Article 10 of the CRPD neither settles nor resolves any questions surrounding the permissibility of publicly funded disability¹¹ selective antenatal screening programs. Beyond this provision, then, the CRPD provides a detailed framework within which to analyze disability screening policy and practice.

Dignity

The reference to “respect for inherent dignity” in Article 3 of the CRPD echoes the preamble to the Universal Declaration of Human Rights which emphasizes that “recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice, and peace in the world”

Respect for dignity is denied when persons with disabilities are devalued and discounted, including when they are barred from meaningful consultation in decision-making that affects their interests. Dignitarian interests are also at stake when health policies – such as disability-selective antenatal screening policies – characterize, whether explicitly or implicitly, disabling conditions, such as Down syndrome, as burdensome, lacking in quality and the like.

Participation in decision-making

The principle of participation and inclusion – an expression of due process wherein persons whose interests are most affected are entitled to a voice in decision-making processes concerning those interests – is a fundamental principle of human rights law and is articulated in the CRPD as a general principle and obligation in Article 4(3)

The implications of the right to participate in decision-making along with recognition of legal capacity for antenatal screening policies is clear – persons with disabilities are to be accorded recognition as persons with legal capacity and, hence, the attendant right to participate in decision making, whether in relation to large life decisions such as where and with whom to live or other decision-making processes.

Where support is needed to facilitate the exercise of legal capacity, including participating in decision-making processes, it must be provided (CRPD, 2006, art. 12). Antenatal screening that ultimately impacts the number of children born with Down syndrome, as well as other disabling conditions such as Spina Bifida must, accordingly, include the participation of such persons whose interests are acutely impacted by the adoption of such policies. Studies clearly demonstrate that such screening policies invariably, as applied in practice, have an impact on the population of persons with disabilities.

Respect for difference

The principle of “respect for difference and acceptance of persons with disabilities as part of human diversity and humanity” is set forth in Article 3 of the CRPD and expresses the values that underpin the CRPD and human rights law more generally (CRPD, 2006, art. 3). This principle acknowledges, for example, a basic idea of human rights law that individuals are active subjects of human rights, as opposed to objects to be acted upon. Moreover, in recognizing disability as a natural incident of human diversity and in underscoring respect and indeed acceptance – as opposed to a lower threshold of tolerance – of difference, the provision serves as an affront to conceptualizations of disability that are grounded in outmoded models conveying paternalism, pity, charity and the like.

Health policies, including disability-selective antenatal screening policies, must, accordingly, align with the principle of respect for difference. Such a policy could in theory conform with this principle if, for example, it was directed at promoting safe birth outcomes. Policies that explicitly or implicitly pitch towards disability-selective abortion on the basis of disability are, however, decidedly at odds with this principle and the fundamental purpose of the CRPD which is to promote respect for persons with disabilities (and their families).

Equality and Non-discrimination

A principal argument put forward by opponents of prenatal screening as currently practiced is that screening policies targeting a specific population of persons with disabilities, such as persons with Down syndrome or spinal bifida, offend the principle of non-discrimination (Savings Downs). CRPD non-discrimination and equality provisions are elaborated in Article 5, which requires States Parties to ensure the equality of individuals with disabilities, and prohibits any discrimination on the basis of disability.

The CRPD defines disability discrimination as “any distinction, exclusion or restriction on the basis of disability” that “has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of all human rights and fundamental freedoms” and it extends to “all forms of discrimination, including denial of reasonable accommodation”.

A disability-selective antenatal screening policy that has the purpose or effect of birth prevention of a protected minority group, raises the specter of discrimination at least insofar as it impacts the social (and other rights) of the protected group.

The Committee on the Rights of Persons with Disabilities, in one of its first concluding observations on a state report, signaled its understanding of the corresponding practice of disability-selective screening and abortion. It observed that Spanish legislation, Act2/2010 of 3 March 2010, on sexual and reproductive health decriminalizing voluntary termination of pregnancy nonetheless incorporates a problematic distinction according to which pregnancy may be terminated beyond the regular 14 week threshold to 22 weeks provided there is a “risk of serious anomalies in the foetus” “if the

foetus has a disability” and, beyond week 22 in case of “an extremely serious and incurable illness” detected in the foetus (CRPD Committee, Concluding Observations, Spain, para. 17). In its concluding observations, the CRPD Committee recommended that Spain “abolish the distinction made in the Act 2/2010 in the period allowed under law within which a pregnancy can be terminated based solely on disability” (CRPD Committee, Concluding Observations, Spain, para. 18).

In this regard the Committee signaled its implicit linkage between disability discrimination and the termination policy in Spain.

Access to health care

Article 25 requires that individuals with disabilities have access to “the highest attainable standard of health without discrimination on the basis of disability” by ensuring their equal right to “the same range, quality and standard of free or affordable health care” and related services provided to the non-disabled general population.

States fail to respect, protect and fulfill human rights if they support or acquiesce in policies that reinforce harmful stereotypes about persons with disabilities grounded in widely discredited assertions about quality of life. The CRPD Committee, in its reporting guidelines, calls on States to report on “the measures they have taken to raise awareness of persons with disabilities, to foster respect for their rights and dignity, their capabilities and contributions, and to combat stereotypes, and prejudices against them” (CRPD Committee Reporting Guidelines). The observation by commentators that sex selection leads to invasive medical interventions in the absence of therapeutic indications and contributes to gender stereotypes that could result in child neglect of the lesser-desired sex (Nachigall, 2010) is resonant with concerns by the disability community that disability-selective screening poses risks for the kind of stereotyping that the CRPD aims to combat.

Access to information

State Parties are required to take all appropriate measures to ensure that individuals – including prospective parents – are able to find, receive and impart information on an equal basis with others (CRPD, 2006, art. 21). The right to information in the health care context requires that such information be available, accessible, acceptable and of good quality.

This right must be implemented consistent with human rights principles, including the respect for difference and diversity and in keeping with the social model understanding of disability. Under this analysis, disability-selective screening policies must, insofar as they impart information to prospective

parents, conform to the general principles of human rights, including respect for dignity (including the dignity of individuals living with Down syndrome and their families).

Within the context of disability-selective antenatal screening policies, assistance to prospective parents must be consistent with the CRPD, including its principles, and must be reflective of the social model perspective of disability. Instead, the practice suggests that counseling tends to promote outmoded ideas about disability through language likely to inspire damaging and stereotypical fear-mongering among vulnerable prospective parents. It does not meet the standard of appropriateness required in the context of health care and, tellingly, barely grazes the topic of assistance to prospective parents facing the possibility of having a child with a disability.

Conclusion

Human rights law has, at long last, evolved in its conceptualization of disability. The human rights narrative now views disability not as medical pathology but as a human rights matter impacting a substantial and highly marginalized population. The introduction of a disability rights narrative into the human rights framework inevitably produces certain tensions that force us to confront possible disjuncture between the received obligations and the application of a reconfigured human rights analysis consistent with disability rights.

One of the points of analysis contemplated by the CRPD is a review of health-related policies, the socio-contextual conditions within they are applied, and the resulting impact of such policies. The CRPD thus compels an analysis of antenatal screening and the extent to which such policies accommodate impairment as an accepted incident of human diversity and evoke respect for human difference, along with non-discrimination, inclusion and participation. Along these points of analysis, screening policies as practiced in modern medicine inevitably fail on numerous grounds. Reproductive rights are affirmed in the CRPD and the issue of reproductive choice is to be respected.

UNESCO Bioethics Report on the Human Genome and Human Rights

We would also like due consideration to be given to the recent Report of the International Bioethics Committee on Updating Its Reflection on the Human Genome and Human Rights (Oct 2015). This report raises serious ethical concerns on the application of NIPT in population screening:

“It is therefore important to develop a framework that on the one hand acknowledges the right of an individual to make autonomous choices, and on the other hand ensures what is enshrined in articles 6 and 2 of the UDHR [Universal Declaration on the Human Genome and Human Rights]: that no one shall be subjected to discrimination based on genetic characteristics and that individuals should be respected in their uniqueness and diversity.”

The pertinent sections on Non-invasive prenatal testing (NIPT), 11.4 sections 87 – 93 are noted below. We submit that a full ethical review of the proposal be carried out in accordance with the following items:

Excerpt from the Report of the IBC on Updating Its Reflection on the Human Genome and Human Rights (Oct 2015)

87. Population screening is defined as the offering of medical investigations to people who have no symptoms or other reasons to seek medical care for the conditions that are the target of the investigation. Screening is only justified if the usefulness of the intervention has been proven, and the advantages for the participants clearly outweigh the disadvantages. For most forms of screening, this means that health gains may be achieved through timely treatment or prevention. This also applies to prenatal screening programmes for infectious diseases and blood group antigens.

88. The situation is different when the purpose is not health gain but to decide, according to many domestic legislations, whether to carry a pregnancy to term, as it may be the case with serious foetal abnormalities. If they carry to term, it allows those involved to prepare for the birth of a sick or disabled child. If they do not, they avoid giving birth to a sick or disabled child. No matter how difficult or painful, many pregnant women and couples feel it is important to be given the choice. Prevention as a social objective, focused, for example, on reducing care costs for people with congenital conditions or disabilities, cannot be the goal of such screening. That would imply a discriminatory practice that sends the message that these people are unwelcome in society. Of course, these possible effects should be discussed in the overall context of ethical reflection on all prenatal diagnostic methods and not only with regard to NIPT.

89. The potential ethical disadvantages of NIPT can be summarized as routinization and institutionalization of the choice of not giving birth to an ill or disabled child. The disadvantage of a simple, safe test may be that participation is considered self-evident and presented as such by care providers, especially when financed by health insurance. This may lead to pregnant women (and their partners) not fully realising that the test results may leave them with a major and possibly extremely difficult decision. Ironically, the introduction of a test that may bring informed choice to more pregnant women may undermine this goal in practice, if NIPT is used without thinking enough about the impact. Furthermore, there is the risk that pregnant women with a positive result don't await the validation of the result through invasive diagnostics, but immediately choose to abort the embryo or foetus, without adequate counselling about the relevance of the detected abnormality. Also women may feel pressured to submit to such screening. They might be stigmatized if they refuse to take the test.

90. A widespread use of NIPT, namely as general screening in order to detect abnormalities, followed by an abortion, is perceived by some people as an evidence of the will to avoid permanent pain in a lifetime, by others as a sign of a situation of the exclusion – 23 – society gives to people affected by this illness, meaning indirectly that certain lives are worth living, and others less. The absence of or the insufficient health, education and protective structures for

these people in many countries must also be underlined for the definition of health policies in this regard.

91. Another risk lies in the cultural prejudices of preferring a child of the male sex, the sex of the baby being one of the characteristics that can obviously be discovered by NIPT. As this test can be carried out at a very early stage of the pregnancy it would be difficult, even impossible for doctors to forbid the communicating of sex to the parents, and especially at a time when many countries have liberalised abortion. This could lead to a selection based on sex, which is against ethical values of equality and non-discrimination.

92. In addition, a widespread use of NIPT to analyse more and more genetic features up to the entire genome would mean that the complexity of data would lead to a significant increase of false positives, requiring a confirmation by invasive tests or of abnormalities whose relevance is not known at all, but this unknown might lead the parents not to take any risk. Hence the following paradox: the number of invasive diagnostics would rise because of the use of the NIPT that should precisely be diminishing the use of invasive diagnostics. Given that the sequencing of the genome in many cases only enables one to determine the probability of developing an illness, a difficulty arises: how to establish an accurate relation between the gravity of the foreseen illness and the probability of it appearing? Must a weak probability of developing an illness later be considered as a major or a minor risk? Access to such tests, especially if they are not correctly interpreted, is anxiogenic; how will parents live with the knowledge that the child has the probability of developing a serious illness that may never develop? III.4.2. Practical recommendations

93. Many fear that the widespread use of NIPT as general screening may induce 'eugenic' use, even when the state is not involved. The adding up of a lot of individual choices to the 'acceptability' of aborting certain kinds of embryos or fetuses brings forward a societal phenomenon, which resembles a kind of eugenics in the search for a 'perfect child'. It is therefore important to develop a framework that on the one hand acknowledges the right of an individual to make autonomous choices, and on the other hand ensures what is enshrined in articles 6 and 2 of the UDHR: that no one shall be subjected to discrimination based on genetic characteristics and that individuals should be respected in their uniqueness and diversity."

Summary

In summary Saving Down syndrome submits that:

- 1) The cfDNA test should not be offered after positive combined test outcomes, in this case, greater than or equal to 1 in 150;
- 2) cfDNA is not diagnostic, only invasive diagnostic tests are required to receive a definitive diagnosis;
- 3) cfDNA should not be offered as a (primary screen);
- 4) A full Ethical Review on the use of any prenatal DNA testing be carried out in accordance with the CRPD, the Report of the International Bioethics Committee on "Updating Its Reflection on the Human Genome and Human Rights (Oct 2015), and disability rights in general;
- 5) The NSC carry out meaningful and direct consultation with people with Down syndrome in terms of the affect of the proposal on their basic human

rights; and

6) That no decision is made regarding the implementation of cfDNA testing by the NHS on any level, at least, until results of a full Ethical Review can be considered in conjunction with any other evaluations.

14.

Name:	Dr Elizabeth Corcoran	Email address:	XXXX XXXX
Organisation (if appropriate):		The Down Syndrome Research UK	
Role:			
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
<p>Down Syndrome Research Foundation UK Submission to:</p> <p>Cell-Free DNA Testing in the First Trimester in the Fetal Anomaly Screening Programme Consultation</p> <p>The UKNSC is consulting on testing in the following circumstances –</p> <p>1) A cfDNA test be offered after any of the following combined test outcomes:</p> <ul style="list-style-type: none"> • The combined test risk score for trisomy 21 (T21) is greater than or equal to 1 in 150 • The combined test risk score for trisomy 18 (T18) and trisomy 13 (T13) is greater than or equal to 1 in 150 <p>2) Women be advised that a cfDNA test is not diagnostic and that an invasive diagnostic test is required to receive a definitive diagnosis.</p> <p>The UKNSC is also consulting on not offering cfDNA testing to all women (primary screen) based on the following:</p> <ul style="list-style-type: none"> • The systematic review estimated that offering cfDNA testing as the primary screening test would find approximately 289 more babies with trisomies with 5,711 fewer invasive tests, than the current combined test screening programme in one year. However, the UKNSC were concerned that this represented a large opportunity cost and that these resources might be better used by the NHS. <p>Down Syndrome Research Foundation UK Response to these questions-</p> <p>Down Syndrome Research Foundation is a UK Registered Charity with International Links and a objective to improve the outcome for all people born</p>			

with Trisomy 21. Our answers to these questions are:

1) We do not agree that cfDNA test be offered after any of the following combined test outcomes:

- The combined test risk score for trisomy 21 (T21) is greater than or equal to 1 in 150
- The combined test risk score for trisomy 18 (T18) and trisomy 13 (T13) is greater than or equal to 1 in 150

2) We agree that women be advised that a cfDNA test is not diagnostic and that an invasive diagnostic test is required to receive a definitive diagnosis.

We also agree that cfDNA testing should not be offered to all women (primary screen).

We also ask that an ethical review of these proposals be carried out. The screening system has been established over a long period of time and has not been recently measured against the appropriate legislation, such as:

The Equalities Act; The Convention on the rights of people with Disabilities and the new report, just published, from the International Bioethics Committee (IBC) "Updating Its Reflection on the Human Genome and Human Rights", which covers the issues being consulted upon here.

Down Syndrome Research Foundation UK Comments on Consultation

Comments on the RAPID non-invasive prenatal testing (NIPT) evaluation study report

This was a report on a study recently carried out in the UK focussed on screening for Down syndrome. While this was a very positive report, it did highlight some of the issues that concern us as a group who want to improve the outcomes around living with Down syndrome.

We note that the RAPID Evaluation study states on its website that NIPT is not considered diagnostic 'as yet' and are concerned at this view.

XXXX XXXX

We note that the cell-free DNA test is more sensitive to T21 and that T13 and T18 were not included in the study, these are not as easily detected by NIPT.

We note that although a fall in test-related miscarriage may result if cell-free DNA testing is implemented, a rise in T21 diagnoses is expected. Bearing

in mind the current termination rate of T21 pregnancies, implementation of cell-free DNA testing would mean that there may be an overall loss of life as a result.

We note that there has been no mention of parent information materials being developed. While there is the opportunity for review, we would like to point out a 2011 study carried out by Dr Brian Skotko and others, “Having a son or daughter with Down syndrome: Perspectives from mothers and father” which indicated that - “Of the 2,044 respondents, 99% reported that they love their son or daughter; 97% were proud of them; 79% felt their outlook on life was more positive because of them; 5% felt embarrassed by them; and 4% regretted having them. The parents report that 95% of their sons or daughters without DS have good relationships with their siblings with DS. The overwhelming majority of parents surveyed report that they are happy with their decision to have their child with DS and indicate that their sons and daughters are great sources of love and pride”

A lack of good disability information materials and balanced protocol/procedures may not obtain true informed consent and, in fact, may use fear and ignorance as a motivator for compliance and require a removal of consent to 'step off' the conveyer belt of the antenatal screening pathway. There has been no mention that the RAPID study or future systems will address these issues.

There is no proof that implementation of NIPT will improve the care of pregnant women, as the system has no health benefits.

If ‘improvement of the programme as a whole’, as stated in the document, leads to more lives being lost and more women aborting a wanted baby on finding it has a disability, then programme outcomes are questionable

Comments on the Systematic Review of cell-free DNA testing

This was a thorough review of available studies (not including the RAPID study) on cellfree DNA testing. The Aim of the Review (page 22) was centred on the five questions there.

1 a) What is the accuracy of NIPT in predicting T21, T18 and T13 in pre-defined high risk (1:150) pregnant women following a combined test?

1 b) How does changing the threshold for defining high risk following a combined test affect the accuracy of NIPT?

2 What is the most accurate primary prenatal screening tool for T21, T18 and T13 in the first trimester when NIPT and the combined test are compared in a general obstetric population?

3 What diagnostic accuracy is achievable by integrating NIPT into the combined test?

4 What is the rate of NIPT failure (number of inconclusive and excluded samples / total number of samples)?

5 What are the costs and consequences (cases detected, test-related miscarriages avoided) for the current NHS screening programme when NIPT is used In sequence with the combined test (Question 1); As a replacement for the combined test as the primary screen (Question 2); In combination with (i.e. alongside) the combined test (Question 3)?

The study was unable to provide full answers to these questions due to –

- Bias – Some studies were sponsored by NIPT interested parties. Some studies were on selected patients, some studies were carried out on later gestations leading to more accuracy of results and publication bias where only favourable studies are published.
- Lack of data
- Other issues such as changes to the length of testing pathway, false positive results, false negative results, test failures, retest failure, diagnostic test numbers, financial implications, and termination numbers.

The study found that there were, indeed, a lot of issues around cell-free DNA testing and that it was not a diagnostic tool. As we referred to earlier, there seems to be some expectation in the UK that it may, in time, be accepted as a Diagnostic Tool – this issue needs to be addressed.

Symptoms and prognosis (page 16) - We felt that understating the current life quality of those affected by the trisomies showed us that NHS knowledge of these conditions must be improved, thus changing wider societal perceptions of disability today. Ethical issues should have been part of this study and, as a result, more regard may have been given to this section. This section was far from balanced, favouring a jargon heavy possibly scare-mongering approach.

Use of the phrase 'High Risk' creates a culture of anxiety due to the current perceptions. Increasing any threshold of 'risk' will mean that many more women may find themselves having the raised anxiety levels that have been previously documented in studies when cultural attitudes aren't addressed.

XXXX XXXX

On page 80, we were told that the major limitation for the review was lack of data. It went on to state that there was a lack of evidence for using NIPT with the combined test in the first trimester (the question asked); it also noted that the performance of the two couldn't be compared. A major concern was a "large proportion of studies that were sponsored by manufacturers of cfDNA testing which will inevitably bias the results". On page 83, it listed the implications for policy and practice including test failure, (high BMI and trisomy risk contributing to these), timing and handling false positive and false negatives. The costs of using NIPT as a primary screen were considered prohibitive.

We take issue with the use of "normal fetus", "healthy pregnancies" and the use of the term "disease" (pages 25, 65, 76, and 81)

Down Syndrome Research Foundation UK Conclusions on the Consultation The ethics of introducing cell-free DNA testing have to be addressed before any implementation. Due regard must be given to; the recent report from the IBC on the issue of Screening (relevant section appended), The Equalities Act and the Convention on the Rights of people with Disabilities. (relevant information appended)

We can conclude that a high bias of interested parties carrying out previous studies could mean that any implementation would create an environment where pregnant women would, effectively, be used as research participants.

There are no health benefits attributed to this system, this together with a lack of real interest in providing good-quality disability information, and a screening pathway which 'catches' women who have refused screening further down the line for a foetal anomaly scan (see figure on page 19) suggest that the purpose of screening is to increase terminations of lives affected by trisomy conditions without regard to women giving informed consent.

Equality legislation should be considered and therefore people who have Down syndrome should be meaningfully consulted on these issues which will affect them and their quality of life.

Money spent on screening could be invested in research to help improve the lives of those living with trisomy conditions.

Reference Documents referred to-

1/2

IBC Updating Its Reflection on the Human Genome and Human Rights – 2015 III.4.1. Ethical challenges

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the exclusion – 23 – society gives to people affected by this illness, meaning indirectly that certain lives are worth living, and others less. The absence of or the insufficient health, education and protective structures for these people in many countries must also be underlined for the definition of health policies in this regard.

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III.4.2. Practical recommendations

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Screened Out of Existence: The Convention on the Rights of Persons with Disabilities and Selective Screening Policies

Janet E. Lord

Abstract

The adoption of the Convention on the Rights of Persons with Disabilities introduces a disability narrative into the human rights framework and, in so doing, confronts various tensions within the received set of human rights obligations. A disability rights critique casts serious concerns over the wave of genetic testing, in particular

antenatal screening. A reproductive rights analysis situated within a traditional autonomy framework – according to which independence in reproductive decision-making by a woman is paramount – cautions against limitations and restrictions on reproductive choice. This article addresses the implications of the human rights principles in the CRPD in relation to the issue of disability-selective antenatal screening protocols that is attracting the attention of disability advocates worldwide. It argues that the CRPD calls into question the compatibility of selective screening with disability rights principles, particularly as currently practiced, and at the same time affirms the right to reproductive choice.

Introduction

The historical disadvantage of persons with disabilities has been shaped, reinforced and perpetuated by the idea that disabling conditions represent abnormality and pathological defect. Invidious stereotyping continues to exclude and isolate persons with disabilities who have not generally been accorded the full or equal enjoyment of human rights that international law demands. The adoption of the Convention on the Rights of Persons with Disabilities (CRPD, 2006) introduces a disability narrative into the human rights framework and, in so doing, confronts various tensions within the received set of human rights obligations. States are required, under the CRPD, to undertake reviews to assess, among other things, the sociocontextual conditions within which policies regarding disability are implemented and the resulting impact of such policies. The CRPD supports the accommodation of impairment as a natural feature of human diversity. It includes among its general principles respect for human difference, along with non-discrimination, inclusion and

participation, all of which are salient features of a disability analysis applicable to law, policy and programming, including prenatal screening programs that may impact whether persons with disabilities are born (CRPD, 2006, art. 3). [1]

Against these developments, disability advocacy organizations and the body that monitors CRPD implementation – the Committee on the Rights of Persons with Disabilities – are starting to turn their attention to the impact of disability selective screening policies on persons with disabilities and their families, much as sex-selective screening and abortion has triggered concerns - and conflict - among human rights advocates. Some commentators assert that disability-specific screening policies impart the harmful the message that persons with disabling conditions are unwelcome in society (Asch, 2003; Parens & Asch, 2000; Asch, 1999). Moreover, screening for immutable disability characteristics such as Down syndrome – where there is no potential therapeutic value – reinforces internalized oppression according to which disabled persons are devalued, tagged with their impairments and branded as a burden (Newell, 1999; Houghton, 1994; Davis, 1987). Others suggest that the way such screening protocols are implemented in practice has a major impact on birthrates of certain groups of persons with disabilities, ultimately raising serious ethical

questions about what kinds of people should be born. Screening policies as practiced also raise human rights concerns regarding the rights of would-be parents who are, arguably, protected against disability discrimination under the CRPD, along with other rights, including the right to information and free and informed consent to medical procedures (CRPD, 2006, arts. 21 & 25).

A disability rights critique casts serious concerns over the wave of genetic testing, in particular antenatal screening along with embryo selection, and its implications for core principles of disability human rights such as respect for difference and non-discrimination on the basis of disability. On the other hand, a reproductive rights analysis situated within a traditional autonomy framework – according to which independence in reproductive decision-making by a woman is paramount – cautions against limitations and restrictions on reproductive choice. There is thus a discernible tension between the disability rights narrative that the CRPD projects and the received human rights framework, in particular that which protects reproductive rights and reproductive choice. The adoption of the CRPD provides a fresh, if not definitive, human rights analysis on what has already prompted a rich literature grounded primarily in disability studies and bioethics. This article addresses the implications of the human rights principles in the CRPD in relation to this debate and examines the lively disability advocacy around this issue that is attracting the attention of disability advocates worldwide. It argues that the CRPD calls into question the compatibility of prenatal selective screening with disability rights principles, particularly as currently practiced, and at the same time affirms the right to reproductive choice, as reflected in and affirmed by the CRPD.

Devaluation of Lives through Quality of Life Assessments

Evaluating an individual's quality of life informs a vast range of medical decision making and evaluative processes (Schalock, Bonham & Marchand, 2000). Scholars working from a disability studies orientation emphasize that policies grounded in quality of life assessments too often have the effect of reinforcing the historical

stigmatization of a persons with disabilities (Stein, Lord, & Weiss, 2012; Groce, Chamie & Me, 2000; Silvers 1998). This perspective was highlighted by the Committee on the Rights of the Child, the treaty body that monitors implementation of the Convention on the Rights of the Child. The Committee summed up concerns surrounding the devaluation of the lives of persons with disabilities and attendant assumptions about quality of life as follows:

All children were equal members of the human race, discriminatory laws which denied their right to life should be repealed. Public debate should take place on the unspoken assumption, underlying much medical and scientific research, that we should be striving towards the goal of perfection in human beings. It was one thing to work to eliminate impairment but quite another to eliminate the person with the impairment. We must be clear what we mean when we talk about prevention. It was of course vitally important to work towards the creation of a safer world for children in which the risks of impairment and harm were minimized, but the solution was not through the denial

of life itself as a preventive strategy. Rather, we must celebrate diversity and learn to celebrate the birth of every child, with or without disability. (Committee on the Rights of the Child, para. 329).

These insights have spurred changes in conceptualizations of quality of life assessments, resulting in person-centered quality of life approaches informed by self determination, social inclusion, among other concepts. As Asch has emphasized, traditional quality of life assessments can have the effect of offending human rights principles, including human dignity and respect for difference, among others (Asch, 2003).

Traditional quality of life assessments are at the heart of disabilityselective antenatal screening policies as designed and practiced in contemporary medicine (Asch, 2003). They embrace a decidedly medical model perspective that is at odds with a social model understanding of disability and a rights-based approach rooted in principles of dignity, non-discrimination, participation and respect for difference:

Some doctors hold a narrow, medically-aligned view that people with Spina Bifida and Hydrocephalus have a very poor quality of life which may not be worth living. There are many medical problems related to Spina Bifida and Hydrocephalus, but quality of life is not only a medical matter. It is difficult for doctors to accurately assess the severity of disability even if they are specialists in the condition. Those best qualified to judge are people with Spina Bifida and Hydrocephalus and the parents of those children who are convinced that their lives are definitely worthwhile (Belcher, 2012).

By contrast, the social model, rights-oriented perspective informs contemporary disability policy and is meant to drive decision-making, including health policies, as reflected in the international disability rights framework of the CRPD.

Situating Screening within a Social Model Understanding of Disability

The disability narrative emerging from disability studies, as well as disability law, policy and advocacy, reflects a variously articulated socio-contextual understanding of disability (Hahn, 1983; Kayess and French, 2007; Stein & Lord, 2012). A social model perspective properly understood does not deny the reality of impairment or its impact on an individual. It does, however, challenge physical and

social environments – and legal frameworks – to accommodate impairment as an anticipated incident of human diversity. This perspective also emphasizes that the isolation experienced by persons with disabilities inhibits their meaningful contribution to their societies, thereby undermining community cohesion and development. As far as international law and policy goes, the preamble of the CRPD, together with Article 1, captures the idea associated with the social model of disability in describing disability as a condition arising from “interaction with various barriers [that] may hinder [disabled peoples’] full and effective participation in society on

an equal basis with others” (CRPD, 2006, art. 1).

Many health policies (and indeed other types of policies) operate on the assumption that disabling conditions are pathological and defective and not, as a social model, rights-based understanding explains, a socially ascribed deficit. The resulting impact of such a perspective is clear; as underscored by a disability rights narrative, persons with disabilities are to be avoided and/or excluded, as opposed to accommodated and included in the community. Societal responses to disability must comport with, qua disability rights principles, accommodation, inclusion and support. Health policies, as such, are required to pitch toward these principles and not, as in the case of disability-specific antenatal screening programs, invariably toward termination and exclusion (Asch, 2003; Biesecker & Hamby, 2000). A disability rights analysis, holds that antenatal screening protocols, along with other health policies, must be informed by and reflective of a social model understanding of disability.

The received disability studies critique holds that the indirect

discursive effects of targeted screening programs inevitably convey the devaluation of the lives of persons with disabilities (Asch, 2003). Advocates are particularly critical of screening for immutable disability characteristics such as Down syndrome that have no potential therapeutic value or curative possibility. They argue that such screenings thus only serve to reinforce the idea among persons with disabilities themselves that they are tagged with their impairments and thereby branded as a burden, whether on their families or the public purse, with no value attributed to their role in the community. By implication, the clear signal sent across the disability community on the adoption of such policies is that persons with disabilities are, wherever possible, to be screened out, their existence avoided altogether. For Joan Retsinas, “[b]oth premodern as well as contemporary societies have regarded disability as undesirable and to be avoided” and while “[o]ur society still does not countenance the elimination of diseased/disabled people... it does urge the termination of diseased/disabled fetuses.” (Retsinas, 1991, pp. 89-90). Reflecting the same sense that attitudes are socially constructed and can impact reproductive decision-making, the Committee on the Rights of the Child has repeatedly expressed its concern regarding sex selective screening and abortion and, trenchantly, has recommended to States parties within the context of State reporting that studies be undertaken to “determine the socio-cultural factors which lead to practices such as female infanticide and selective abortions, and develop strategies to address them” (Committee on the Rights of the Child, Concluding Observations India, para. 49). It is incumbent on States to incorporate into CRPD policy reviews pursuant to Article 4 of the CRPD – including its policies on disability

selective antenatal screening – a social model of disability assessment, including undertaking and analysis of the sociocontextual conditions within which such policies are implemented and their resulting impact (CRPD, 2006, art. 4).

The CRPD Normative Framework

The United Nations adopted the CRPD together with its Optional Protocol by consensus on December 13, 2006. The Convention provides, in the form of a legally binding core human rights convention, a disability-specific framework for the civil, political, economic, social and cultural rights of persons with disabilities.

At the outset, it bears mentioning that the CRPD reaffirms the right to life (CRPD, 2006, art. 10), widely recognized as a core principle of human rights law (Committee on the Rights of the Child, general Comment 5, 2003). The provision is a particularly sparse one, and, as such, is essentially stripped of any contextual elements that would link the right to the particular situation of persons with disabilities (CRPD, art. 10). It avoids mention of issue areas raised during the course of the negotiations, such as disability-based abortion or physician assisted suicide, and instead adopt language in alignment with previously-agreed upon language. Accordingly, Article 10 of the CRPD neither settles nor resolves any questions surrounding the permissibility of publicly funded disability-selective antenatal screening programs. Beyond this provision, then, the CRPD provides a detailed framework within which to analyze disability screening policy and practice.

CRPD Purpose and principles

Disability-selective antenatal screening, as with all health policies,

must not offend the object and purpose of the CRPD and must be consistent with its principles (Vienna Convention on the Law of Treaties 1969, art. 26). Screening policies, like all policies, are subject to review by States Parties to the CRPD and must conform also to its purpose which is “to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity” (CRPD, 2006, art. 1).

The principles in Article 3 of the CRPD are to be applied to enable the rights of persons with disabilities and, thus, must be disability-specific in their application (CRPD, 2006, art. 3). These principles are not new; they are reflected in human rights law generally and States are obligated to apply them systematically and with discipline and analytical rigor across the CRPD, including in relation to antenatal screening and, more generally, health policies (CRPD Reporting Guidelines, Annex 1, Sec. B, p. 7). The general principles in the CRPD of particular application to health policies include: Respect for inherent dignity; Non-discrimination; Full and effective participation and inclusion in society; and Respect for difference and acceptance of persons with disabilities as part of human diversity and humanity. Policies that potentially offend one or more of the general principles of human rights law must be treated with extreme caution and heightened scrutiny and are subject to immediate review.

Dignity

The reference to “respect for inherent dignity” in Article 3 of the CRPD echoes the preamble to the Universal Declaration of Human Rights which emphasizes that “recognition of the inherent dignity and of the

equal and inalienable rights of all members of the human family is the foundation of freedom, justice, and peace in the world” (Universal Declaration of Human Rights, 1948, Preamble). International human rights tribunals have repeatedly stressed the importance of interpreting human rights conventions in keeping with human dignity (Refah Partisi and others v. Turkey, 31 July 2001, para.43; Pretty v. United Kingdom, 29 April 2002, para. 65). As emphasized by the United Nations, “[w]hen the dignity of persons with disabilities is respected, their experiences and opinions are valued and are formed without fear of physical, psychological or emotional harm” (Office of the High Commissioner for Human Rights, 2012, p. 15. Respect for dignity is denied when persons with disabilities are devalued and discounted, including when they are barred from meaningful consultation in decision-making that affects their interests. Dignitarian interests are also at stake when health policies – such as disabilityselective antenatal screening policies – characterize, whether explicitly or implicitly, disabling conditions, such as Down syndrome, as burdensome, lacking in quality and the like.

Participation in decision-making

The principle of participation and inclusion – an expression of due process wherein persons whose interests are most affected are entitled to a voice in decision-making processes concerning those interests – is a fundamental principle of human rights law and is articulated in the CRPD as a general principle and obligation in Article 4(3) (CRPD, 2006, arts. 3 & 4). Laws, policies and programs, including antenatal screening policies, are to be filtered through these principles and given full effect, both in terms of substance and process. (CRPD Reporting Guidelines, 2008). As put most eloquently

by New Zealand's Ambassador Don McKay, Chairman of the Ad Hoc Committee during its second half, that the process of negotiating the CRPD "truly enshrined the slogan of the international disability movement, "nothing about us without us" (McKay, 2007, 2). Beyond the better outcomes associated with meaningful participation, protecting the due process rights of persons most affected reflects and works to ensure dignity. Historically, persons with disabilities have been subjected to laws and practices that deprived them of their legal capacity and, consequently of their autonomy and freedom to make choices about their lives such as how, with whom and where to live. Article 12 of the CRPD addresses the right to equal recognition before the law, and confirms that people with disabilities "enjoy legal capacity on an equal basis with others in all aspects of life" (CRPD, art. 12).

The implications of the right to participate in decision-making along with recognition of legal capacity for antenatal screening policies is clear – persons with disabilities are to be accorded recognition as persons with legal capacity and, hence, the attendant right to participate in decision-making, whether in relation to large life decisions such as where and with whom to live or other decisionmaking processes. Where support is needed to facilitate the exercise of legal capacity, including participating in decision-making processes, it must be provided (CRPD, 2006, art. 12). Antenatal screening that ultimately impacts the number of children born with Down syndrome, as well as other disabling conditions such as Spina Bifida must,

accordingly, include the participation of such persons whose interests are acutely impacted by the adoption of such policies. Studies clearly

demonstrate that such screening policies invariably, as applied in practice, have an impact on the population of persons with disabilities (Harmon, 2007). This raises the question as to whether the principle of participation in human rights law embodies the ability to associate with persons of one's own morphology, an issue for which there does not appear to be a definitive answer in human rights law.

Respect for difference

The principle of "respect for difference and acceptance of persons with disabilities as part of human diversity and humanity" is set forth in Article 3 of the CRPD and expresses the values that underpin the CRPD and human rights law more generally (CRPD, 2006, art. 3).

This principle acknowledges, for example, a basic idea of human rights law that individuals are active subjects of human rights, as opposed to objects to be acted upon. Moreover, in recognizing disability as a natural incident of human diversity and in underscoring respect and indeed acceptance - as opposed to a lower threshold of tolerance - of difference, the provision serves as an affront to conceptualizations of disability that are grounded in outmoded models conveying paternalism, pity, charity and the like. Here, the embrace of diversity triggers an anticipatory response according to which difference is expected and provided for, as in the provision of universal access to a built environment. Health policies, including disability-selective antenatal screening policies, must, accordingly, align with the principle of respect for difference. Such a policy could in theory conform with this principle if, for example, it was directed at promoting safe birth outcomes. Policies that explicitly or implicitly pitch towards disability-selective abortion on the basis of disability are, however, decidedly at odds with this principle and the fundamental

purpose of the CRPD which is to promote respect for persons with disabilities (and their families) (CRPD, 2006, art. 1).

CRPD Substantive Rights

Equality and Non-discrimination

A principal argument put forward by opponents of prenatal screening as currently practiced is that screening policies targeting a specific population of persons with disabilities, such as persons with Down syndrome or spinal bifida, offend the principle of non-discrimination (Savings Downs). CRPD non-discrimination and equality provisions are elaborated in Article 5, which requires States Parties to ensure the equality of individuals with disabilities, and prohibits any discrimination on the basis of disability (CRPD, 2006, arts. 2&5). The CRPD defines disability discrimination as “any distinction, exclusion or restriction on the basis of disability” that “has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of all human rights and fundamental freedoms” and it extends to “all forms of discrimination, including denial of reasonable accommodation” (CRPD, 2006, art. 2) As defined in the CRPD, disability discrimination applies not only to persons with disabilities, but also to people associated with disabled persons, such as family

members, friends, or caregivers. Further, the CPRD creates legal obligations calling for positive action in rendering all rights (right to health, information, education, among others) accessible, and requires participation and respect for autonomy (CRPD, arts. 3 & 4(3)). A disability-selective antenatal screening policy that has the purpose or effect of birth prevention of a protected minority group, raises the specter of discrimination at least insofar as it impacts the

social (and other rights) of the protected group. This analysis appears to align with the understanding of discrimination adopted by the CRC Committee in the context of sex selective screening practices where the Committee noted that “[d]iscrimination against girl children is a serious violation of rights, affecting their survival and all areas of their young lives as well as restricting their capacity to contribute positively to society” and, further, that girl children “may be victims of selective abortion, genital mutilation, neglect and infanticide, including through inadequate feeding in infancy” (CRC Committee, General Comment No. 7, para. 11).

In a similar vein, the Platform for Action adopted at the Fourth World Conference on Women states as follows:

[I]n many countries available indicators show that the girl child is discriminated against from the earliest stages of life, through her childhood and into adulthood. All forms of discrimination against the girl child and the root causes of son preference, which result in harmful and unethical practices such as prenatal sex selection and infanticide; this is often compounded by the increasing use of the necologoesi to determine foetal sex, resulting in abortion of female fetus (Beijing Platform for Action, 1995, para. 259).

The Committee on the Rights of Persons with Disabilities, in one of its first concluding observations on a state report, signaled its understanding of the corresponding practice of disability-selective screening and abortion. It observed that Spanish legislation, Act2/2010 of 3 March 2010, on sexual and reproductive health decriminalizing voluntary termination of pregnancy nonetheless incorporates a problematic distinction according to which pregnancy may be terminated beyond the regular 14 week threshold to 22 weeks

provided there is a “risk of serious anomalies in the foetus” “if the foetus has a disability” and, beyond week 22 in case of “an extremely serious and incurable illness” detected in the foetus (CRPD Committee, Concluding Observations, Spain, para. 17). In its concluding observations, the CRPD Committee recommended that Spain “abolish the distinction made in the Act 2/2010 in the period allowed under law within which a pregnancy can be terminated based solely on disability” (CRPD Committee, Concluding Observations, Spain, para. 18). In this regard the Committee signaled its implicit linkage between disability discrimination and the termination policy in Spain.

Access to health care

Article 25 requires that individuals with disabilities have access to “the highest attainable standard of health without discrimination on the basis of disability” by ensuring their equal right to “the same range,

quality and standard of free or affordable health care” and related services provided to the non-disabled general population (CRPD, 2006, art. 25). These services include sexual and reproductive health, prevention of additional disabilities, and health-related rehabilitation. A further component of the obligation is to adopt measures that raise awareness about “human rights, dignity, autonomy and needs of persons with disabilities through training and the promulgation of ethical standards for public and private health care” (CRPD, 2006, art. 25). This dovetails with the obligation in Article 8 requiring States Parties to conduct effective awareness raising to promote a positive image of person with disabilities (CRPD, 2006, art. 8). States are required to “adopt immediate, effective and appropriate measures” in

order:

- To raise awareness throughout society, including at the family level, of the rights of persons with disability, and to foster respect for the rights and dignity of persons with disability;
- To combat stereotypes, prejudices and harmful practices relating to persons with disability in all areas of life; and
- To promote awareness of the capabilities and contributions of persons with Disability (CRPD, 2006, art. 8).

States fail to respect, protect and fulfill human rights if they support or acquiesce in policies that reinforce harmful stereotypes about persons with disabilities grounded in widely discredited assertions about quality of life. The CRPD Committee, in its reporting guidelines, calls on States to report on “the measures they have taken to raise awareness of persons with disabilities, to foster respect for their rights and dignity, their capabilities and contributions, and to combat stereotypes, and prejudices against them” (CRPD Committee Reporting Guidelines). The observation by commentators that sex selection leads to invasive medical interventions in the absence of therapeutic indications and contributes to gender stereotypes that could result in child neglect of the lesser-desired sex (Nachigall, 2010) is resonant with concerns by the disability community that disabilityselective screening poses risks for the kind of stereotyping that the CRPD aims to combat.

Access to information

State Parties are required to take all appropriate measures to ensure that individuals – including prospective parents – are able to find, receive and impart information on an equal basis with others (CRPD, 2006, art. 21). The right to information in the health care context

requires that such information be available, accessible, acceptable and of good quality (Committee on Economic, Social and Cultural Rights, General Comment 14). This right must be implemented consistent with human rights principles, including the respect for difference and diversity and in keeping with the social model understanding of disability. Under this analysis, disability-selective screening policies must, insofar as they impart information to prospective parents, conform to the general principles of human rights, including respect for dignity (including the dignity of individuals

living with Down syndrome and their families).

Studies of information currently provided to prospective parents within the context of disability-selective antenatal screening policy raise concerns and suggest that the standard required of health information is not being satisfied (Committee on Economic, Social and Cultural Rights, 2000). A component of ensuring access to information consistent within human rights principles and in keeping with medical ethics is neutral, or non-directive imparting of information (Asch, 2003). Part of ensuring that information is of good quality in the context of genetic counseling and screening protocols is providing information in a way that does not favor one decision over another.

Asch, in discussing research findings, observed:

In situations where parents were raising infants and children with Down syndrome and cystic fibrosis, counselors stressed ways in which lives of the affected children would resemble those of nondisabled peers, focusing on capacities for education, stimulation, play and relationships. By contrast, the stories given to prospective parents if the diagnosis was made prenatally concentrated on medical

complications and differences from the lives of non-disabled children (Asch, 2003, p. 334).

Studies of families with children with Down syndrome have found that most cope well and report benefits as well as challenges associated with having a child with Down syndrome (Cuskelly, P. Hauser-Cram, M. Van Riper). Studies also find positive effects for many brothers and sisters growing up with a sibling with Down syndrome (Skotko & Levine, 2006).

Beyond ensuring that clinicians impart information in the context of prenatal screening in a manner that does not direct decision-making in a particular direction, human rights principles support the provision of appropriate assistance to prospective parents to facilitate their child-rearing responsibilities. More specifically, human rights law makes clear that States are obliged to undertake measures to ensure that appropriate assistance is provided to parents, legal guardians and extended families to facilitate their child rearing responsibilities (Committee on the Rights of the Child, General Comment No. 7, 2005). Within the context of disability-selective antenatal screening policies, assistance to prospective parents must be consistent with the CRPD, including its principles, and must be reflective of the social model perspective of disability. Instead, the practice suggests that counseling tends to promote outmoded ideas about disability through language likely to inspire damaging and stereotypical fear-mongering among vulnerable prospective parents. It does not meet the standard of appropriateness required in the context of health care and, tellingly, barely grazes the topic of assistance to prospective parents facing the possibility of having a child with a disability.

Conclusion

Human rights law has, at long last, evolved in its conceptualization of disability. The human rights narrative now views disability not as medical pathology but as a human rights matter impacting a

substantial and highly marginalized population. The introduction of a disability rights narrative into the human rights framework inevitably produces certain tensions that force us to confront possible disjuncture between the received obligations and the application of a reconfigured human rights analysis consistent with disability rights. One of the points of analysis contemplated by the CRPD is a review of health-related policies, the socio-contextual conditions within they are applied, and the resulting impact of such policies. The CRPD thus compels an analysis of antenatal screening and the extent to which such policies accommodate impairment as an accepted incident of human diversity and evoke respect for human difference, along with non-discrimination, inclusion and participation. Along these points of analysis, screening policies as practiced in modern medicine inevitably fail on numerous grounds. Reproductive rights are affirmed in the CRPD and the issue of reproductive choice is to be respected. This applies also to women with disabilities who so often are subjected to coercive decision-making in reproductive decisionmaking. As implemented in practice, however, screening policies, fall afoul of CRPD principles.

Name:	xxxx xxxx	Email address:	xxxx xxxx
Organisation (if appropriate):	Down's Syndrome Scotland		
Role:	xxxx xxxx		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p>Yes <input checked="" type="checkbox"/> Please use the name of the organisation itself on the website along with the response No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
UKNSC Recommendation	<p>Based on the evidence from the systematic review and the pilot study, the UKNSC wishes to consult on cfDNA testing in the following circumstances.</p> <p>1) A cfDNA test be offered after any of the following combined test outcomes:</p> <ul style="list-style-type: none"> - The combined test risk score for trisomy 21 (T21) is greater than or equal to 1 in 150 - The combined test risk score for trisomy 18 (T18) and trisomy 13 (T13) is greater than or equal to 1 in 150 <p>2) Women be advised that a cfDNA test is not diagnostic and that an invasive diagnostic test is required to receive a definitive diagnosis.</p>	<p>Down's Syndrome Scotland agrees with the UKNSC recommendations on cfDNA testing as outlined in the consultation document.</p> <p>Additionally Down's Syndrome Scotland is also keen to emphasise that at the time of screening/testing, easily understood and up-to-date information SHOULD ALWAYS be provided in a balanced way by well trained professionals.</p> <p>This should include:</p> <ul style="list-style-type: none"> • The accuracy of screening/test results and associated risks of further screening/tests; • The life prospects of people with Down's syndrome • The impact on families (challenges and joys); • The support available both from Down's Syndrome Scotland and in the community; • The offer of informed, broad and non-directive counselling from a suitable specialist. 	

15.

Name:	Lyn Chitty on behalf of the RAPID team	Email address:	xxxx xxxx
Organisation (if appropriate):	RAPID research team		
Role:	Chief Investigator		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
Section 2, page 2	With regard to retaining the 1:150 risk threshold: 'By offering the test at this threshold, the test is available to those at the highest risk without disrupting the screening programme and there is opportunity to explore these uncertainties.'	The RAPID study has shown that for the population studied, test performance was comparable to that seen in the literature. We would support monitoring the overall performance in an implementation setting to improve insight into the effect of population factors, choice behaviours <i>etc</i>	
Section 2, page 2	'The systematic review estimated that offering cfDNA testing as the primary screening test would find approximately 289 more babies with trisomies with 5,711 fewer invasive tests, than the current combined test screening programme in one year. However, the UKNSC were concerned that this represented a large opportunity cost and that these resources might be better used by the NHS.'	Apart from the opportunity cost to the NHS, it is important to note the additional benefits of serum screening that are retained by carrying out NIPT contingent on the serum screen result. In particular, in the event of a failed test the risk figure from the serum screen result can inform further testing options. In the absence of standard screening we would be concerned that invasive testing may increase as failure rates for current commercial tests vary from ~1% to 6%.	
Section 3, page 3	'Without the addition of cfDNA testing, women with a risk of 1 in 150 or more have between 5% and 10% chance of having an affected pregnancy	It is worth directly contrasting this figure with the PPV for NIPT of 91% (from systematic review and RAPID study). The benefits of this improved PPV extend beyond the outcome measures described in the RAPID report, and include benefits for women which have not	

		been captured in terms of avoiding the pain and anxiety of an invasive procedure.
General	Women's and healthcare professional's views of NIPT	<p>Women's views of NIPT are reflected in the number who seek testing in the private sector. The RAPID study also surveyed women's and healthcare professional's views of NIPT, and found that the test was well-received highlighting the safety and accuracy of the test, with no major service delivery issues reported.</p> <p>Furthermore, in the RAPID study we demonstrated uptake of follow-on testing in women with a DS screening risk of $>1/150$ of 93% (76% NIPT and 17% invasive testing) compared with 54% who opted for invasive testing prior to availability of NIPT. This increased uptake demonstrates that removing the barrier posed by the risk of miscarriage improves acceptability and thus access to testing for parents. In the RAPID study this increased uptake also resulted in a non-significant increase in detection of DS cases.</p>
	Full RAPID study data	The report to the NSC was based on the first eight months of the RAPID study with recruitment from four centres. The complete set of results for the entire study from eight recruiting centres confirm the initial findings in terms of test performance, test uptake, and outcomes.
	Support for recommendation	The RAPID study has shown that NIPT can be offered safely and effectively within an NHS setting. We strongly support the implementation of NIPT within the current DS screening pathway, and would recommend it being offered to women contingent on a DS screening risk result of $>1:150$. We believe that this will maximise the benefits of NIPT, as the programme retains the wider benefits of combined testing, whilst offering invasive testing in a much more targeted way. This should achieve better quality of care for pregnant women and improve performance of the programme as a whole. Implementation at this cut-off would result

		in minimal disruption to the current DS screening programme, whilst training for healthcare professionals is rolled out.
	Implementation strategy	<p>The consultation does not discuss in detail the implementation strategy to be used. We would suggest that the RAPID data supports implementation as a contingent test for women with a risk $>1/150$ but that these women be allowed a choice of NIPT or invasive testing. This was the strategy employed in our evaluation of NIPT in the NHS. When offered this choice only 17% of women opted directly for invasive testing, largely because of their very high risk or presence of ultrasound findings suggestive of aneuploidy, 35% of this group had an abnormal result. 74% opted for NIPT with only 2.4% having an abnormal result and requiring invasive testing for confirmation. This indicates that when offering choice to women with careful counselling they self select the group at highest risk.</p>

16.

Name:	xxxx xxxx	Email address:	xxxx xxxx
Organisation (if appropriate):	Roche Diagnostics Limited Charles Avenue Burgess Hill West Sussex RH15 9RY		
Role:	xxxx xxxx		
Do you consent to your name being published on the UK NSC website alongside your response? Yes <input checked="" type="checkbox"/> Please use the name of the organisation itself on the website along with the response No <input type="checkbox"/>			
Section and / or page number	Text or issue to which comments relate		
Consultation for cell-free DNA testing in the first trimester in the Fetal Anomaly Screening Programme. UK NSC 30/7/2015 to 30/10/2015	Introduction page 1. Support for the Introduction of NIPT into the Fetal Anomaly Screening Programme.	<p>We welcome the move to make cell-free DNA (cfDNA) testing, also referred to as Non-invasive prenatal testing (NIPT), available to women via the NHS screening programme for fetal aneuploidy. We believe by significantly reducing the number of false positives, it will allow a significant number of women falsely identified as “high-risk” with the currently available screening methods to avoid unnecessary invasive procedures.</p> <p>We recognise that roll-out of NIPT to women identified as “high-risk” after primary screening by traditional screening is a pragmatic approach that will initially minimise the organisational and financial impact on the service. We therefore would welcome a clear plan and committed timeline for roll-out after a positive decision to make NIPT available within the national screening programme.</p>	
Consultation for cell-free DNA testing in the first trimester in the Fetal Anomaly Screening	2. UKNSC recommendation Text: The systematic review estimated that offering cfDNA testing as the primary screening test would find approximately 289 more babies with trisomies with 5,711 fewer invasive tests, than the current	It should be recognised that NIPT is significantly more sensitive and specific than conventional screening methods such as the First-trimester Combined Screening (FTCS). Therefore, a primary NIPT use would be clinically more effective than the proposed use in a contingent model,	

<p>Programme. UK NSC 30/7/2015 to 30/10/2015</p>	<p>combined test screening programme in one year. However, the UKNSC were concerned that this represented a large opportunity cost and that these resources might be better used by the NHS.</p>	<p>regardless of the choice of cut-off¹. Furthermore this would also allow women who first present late in pregnancy (i.e. after 13+6 gestational weeks) to have access to the best screening method for fetal aneuploidy. In addition, primary screening by NIPT would also ensure limited organisational impact, as fewer women would have to be recalled for additional testing. As the efficient use of limited resources in the NHS is paramount we realize that the proposed model of implementation is mainly based on cost. Currently, the price of NIPT exceeds that of conventional screening; however, this cost is expected to drop swiftly as uptake and advances in technology increase. Given that significant cost reduction is expected, it is reasonable to presume that NIPT will soon be the most affordable prenatal screening option for aneuploidy. Introduction of NIPT in a contingent model with a risk cut-off of greater than 1 in 150 should therefore include provisions to review the cut-off based on patient experience, efficiency of the clinical service and financial impact soon.</p> <p>1. Norton ME et al., N Engl J Med. 2015 Apr 23;372(17):1589-97.</p>
<p>Taylor-Phillips et al., Systematic review and cost-consequence assessment of cell-free DNA testing for T21, T18 and T13 in the UK – Final report, 2015</p>	<p>Table 8. Reference case predictions for annual FASP performance in England and Wales.</p>	<p>As part of this process we believe that the assumptions behind the present health-economic assessments should be critically reviewed. For example, in the final report to the committee² a cut-off of 1 in 1000 seemed to result in more invasive procedures and related terminations than a primary NIPT test strategy (Table 8). However, almost 50% of invasive procedures were assumed to be chosen by women without the NIPT result, which may be an over-estimate. Furthermore, we believe that the assessment of the financial impact of having fewer invasive procedures should not be limited to the cost of the procedure itself but also take into account the cost</p>

		<p>associated with procedure related complications such as premature rupture of membranes and miscarriage. Other countries have also included cost directly related to consequences arising from a false negative screening test³.</p> <p>2. Taylor-Phillips et al., Systematic review and cost-consequence assessment of cell-free DNA testing for T21, T18 and T13 in the UK – Final report, 2015</p> <p>3. Hulstaert F, et al., Health Technology Assessment (HTA) Brussels: Belgian Health Care Knowledge Centre (KCE). 2014. KCE Reports 222 – accessed via http://kce.fgov.be/content/about-copyrights-for-kce-reports</p>
<p>Consultation for cell-free DNA testing in the first trimester in the Fetal Anomaly Screening Programme. UK NSC 30/7/2015 to 30/10/2015</p>	<p>3. Summary of the evidence Test Accuracy Issue: Consideration should be given to the impact on cost-effectiveness of False-positive Rates among the various cfDNA tests.</p>	<p>We would like to point out that while sensitivity may be comparable among most cfDNA tests (>99%), the False-positive Rate (FPR) can differ significantly; i.e. <0.1 – 1.46%.^{4,5,6} The FPR of NIPT has significant impact on clinical management and consequently on cost-effectiveness models. A higher FPR will limit the reduction of invasive procedure rates after NIPT, increasing procedure related cost as well as cost due to procedure related complications. Thus, choosing a cfDNA test with a low FPR appears key to meet the expectations put forward by the current cost calculations.</p> <p>4. Norton M et al., Am J Obstet Gynecol. 2012 Aug;207(2):137.e1-8.</p> <p>5. Palomaki G et al., Genet Med. 2011 Nov;13(11):913-20.</p> <p>6. Bianchi D et al., Obstet Gynecol. 2012 May;119(5):890-901.</p>
<p>Consultation for cell-free DNA testing in</p>	<p>3. Summary of the evidence Test Accuracy</p>	<p>Robust clinical validation is key to validate the performance of NIPT. Some cfDNA tests lack validation in blinded,</p>

<p>the first trimester in the Fetal Anomaly Screening Programme. UK NSC 30/7/2015 to 30/10/2015</p>	<p>Issue: Consideration should be given to review the individual clinical dataset of each cfDNA test when considering implementation in the NHS</p>	<p>prospective studies published in peer-reviewed journals and rely on retrospective registry studies without outcome information on all patients.⁷ Actual clinical performance (i.e. sensitivity/specificity), which provides the basis for a robust health economic assessment, is therefore hard to establish. We therefore believe it is critical to review the individual clinical dataset of any cfDNA test in consideration for implementation in the NHS, rather than solely relying on theoretical health-economic models produced with pooled sensitivity and specificity data.</p> <p>7. Jani J, et al., Ultrasound Obstet Gynecol. 2015 Aug 24.</p>
<p>Consultation for cell-free DNA testing in the first trimester in the Fetal Anomaly Screening Programme. UK NSC 30/7/2015 to 30/10/2015</p>	<p>3. Summary of the evidence Test Accuracy Issue: The impact on cost efficiency, turn around times for results and test accuracy of the various cfDNA tests should be considered when implementing NIPT in the NHS.</p>	<p>NIPT can be performed using different technical approaches. Most cfDNA tests are based on massively parallel shotgun sequencing (MPSS). MPSS is not selective in the chromosomal origin of the sequenced cfDNA. It is therefore necessary to sequence many million DNA fragments, originating from the complete genome, to ensure the analysis of sufficient chromosome 21 fragments to statistically detect significant differences between normal and trisomic fetuses. In national screening programs, where only a limited number of chromosomal conditions are to be evaluated, this is a less time- and cost-efficient approach compared to other NIPT methodologies. Targeted NIPT methods on the other hand, focus on cfDNA from the chromosomes of interest rather than analysing the complete genome where much of the information that is obtained remains unused or may even reveal conditions that were not intended to be screened for in the first place. Targeted NIPT also allows for deeper analysis, and yields more accurate results with a lower cost overall.^{8,9} Furthermore targeted approaches allow for use of methods other than costly Next-Generation Sequencing (NGS) for</p>

		<p>cfDNA quantification such as Microarray analysis - a robust, reliable method for DNA analysis that has been in use in UK for many years. Additional benefits of targeted technology result in faster turn-around times than with most MPSS systems providing laboratory results within 3 days⁹.</p> <p>8. Sparks AB et al., Prenat Diagn. 2012 Jan;32(1):3-9.</p> <p>9. Juneau K, et al., Fetal Diagn Ther. 2014;36(4):282-6.</p>
<p>Consultation for cell-free DNA testing in the first trimester in the Fetal Anomaly Screening Programme.</p>	<p>3. Summary of the evidence</p> <p>Test Accuracy</p> <p>Issue: Consideration should be given to including measurement of the proportion of fetal cfDNA in maternal plasma sample as a quality metric when implementing NIPT into the NHS.</p>	<p>For NIPT, ensuring that a sufficient proportion of cell-free DNA in the maternal plasma is “fetal” - in other words, originates from the pregnancy rather than the mother - is widely considered to be an important quality metric. Having insufficient fetal fraction for statistically reliable analysis can potentially lead to a higher likelihood of a false negative result as well as incorrect calls for fetal sex.⁷ As measuring fetal fraction is complicated and associated with an increase in cost, some NIPT providers are not measuring the cell-free fetal DNA (cffDNA) amount. This has been shown to lead to samples with insufficient cffDNA for analysis (e.g. non-pregnant samples) to be given a reassuring NIPT result.^{10,11}</p> <p>7. Jani J, et al., Ultrasound Obstet Gynecol. 2015 Aug 24.</p> <p>10. Bevilacqua E, et al., Ultrasound Obstet Gynecol. 2015 Jul 6.</p> <p>11. Takoudes T, et al., Ultrasound Obstet Gynecol. 2015 Jan;45(1):112.</p>

17.

Name:	Royal College of Midwives	Email address:	xxxx xxxx
Organisation (if appropriate):	Royal College of Midwives		
Role:	Practice and Standards professional Adviser		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes x <input checked="" type="checkbox"/> No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
In general		<p>RCM is supportive of the NIPT screening in pregnancy. There has been interest from women, as well as from the midwives to reduce the potential risk of miscarriage associated with the invasive tests. Therefore, the findings that “overall most parents felt that any additional anxiety and the length of time required for results were overcome by the benefits of the test, which were considered to include its safety, accuracy and simplicity, along with the reduced need for invasive procedures” would support the tone of discussion amongst midwives.</p> <p>RCM believes that implementation of the screening with quality assurance and broad approach evaluation will provide more information and improvement within this screening test as in the past with other fetal anomaly screening. (Broad approach including all stages of the screening process; clinical, laboratories, information, professional training, decision making, women and families)</p>	

18.

Name:	Nigel Thomson	Email address:	xxxx xxxx
Organisation (if appropriate):	Society and College of radiographers (SCoR)		
Role:	Professional officer (ultrasound)		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
General	<p>The SCoR welcomes all developments that can reduce the number of invasive test related miscarriages. This will be achieved if the proposals for cfDNA contingent testing are implemented.</p> <p>It is noted that the current cost is £232 per test. If costs were to come down in the future further evaluation as to whether cfDNA analysis can replace the current combined test would be also welcome. The costs of the combined test are not in themselves insignificant when all laboratory and sonographer related factors including training, twenty minutes FASP recommended scan time and quality assurance are taken into account. There is also a national shortage of appropriately qualified sonographers which extends across all areas of ultrasound provision.</p>		

Name:	Sally Boxall		Email address:	xxxx xxxx
Organisation (if appropriate):	University Hospitals Southampton NHS Trust			
Role:	Consultant Nurse, prenatal diagnosis			
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input type="checkbox"/></p>				
Section and / or page number	Text or issue to which comments relate			
1	<p>A cfDNA test be offered after any of the following combined test outcomes:</p> <p><input type="checkbox"/> The combined test risk score for trisomy 21 (T21) is greater than or equal to 1 in 150</p> <p>The combined test risk score for trisomy 18 (T18) and trisomy 13 (T13) is greater than or equal to 1 in 150</p>		<p>We support this recommendation as we feel that it will enable women to have further information about the risk of fetal aneuploidy before deciding whether to undergo invasive diagnostic testing</p>	

19.

Name:	Abigail Fitzgibbon	Email address:	xxxx xxxx
Organisation (if appropriate):	British Pregnancy Advisory Service (bpas)		
Role:	Head of Advocacy and Campaigns		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>			
<p>British Pregnancy Advisory Service (BPAS) is a reproductive health charity that provides care to 60,000 women a year on behalf of the NHS. Most of those women will have unplanned pregnancies and some will be considering ending a wanted pregnancy for other reasons. BPAS cares for women with a diagnosis of a fetal anomaly. As many women find it difficult to obtain surgical abortion in such cases, BPAS cares for pregnant women who have been through NHS screening. This submission is based on our experience caring for these patients.</p> <p>BPAS welcomes the move to offer cell-free DNA testing to NHS patients and supports the UK National Screening Committee (UKNSC) recommendation. Pregnancy can be a stressful time for women and the fetal anomaly screening programme (FASP) provides much-needed reassurance to many patients. However, for the minority with an indication of a fetal anomaly the anxiety and distress that brings cannot be overstated. The introduction of a systematic population screening programme, which would provide an offer of a cell free DNA (cfDNA) test, will be enormously beneficial to women grappling with a decision about an invasive test and consequent risk of miscarriage. This recommendation appears to place a women's needs at the heart of the screening pathway, which should be welcomed by all those working with pregnant women.</p> <p>The UKNSC, and the NHS more widely, must acknowledge that an extra layer of screening will delay diagnosis. It is inevitable that women who opt for cfDNA screening and go on to need an invasive diagnostic test will be making a decision about their pregnancy at later gestations than if they had one test. For the majority of women with a positive diagnosis who choose to end their pregnancy this will mean it may be harder to obtain a choice of method of termination. While some women will request a medical termination others will find the prospect very distressing and would prefer a surgical termination. As the NHS is unable to provide surgical abortions at later gestations in many areas it must ensure that it continues to develop its relationships with independent third sector providers. The need for surgical abortion in the second trimester is likely to grow as a result of the additional screening test and the NHS must ensure that services are able to meet women's needs post-diagnosis. It would be helpful if the UKNSC would consider this issue when making their recommendation.</p>			

20.

Name:	Sian Morgan (ACGS FASP representative)	Email address:	xxxx xxxx
Organisation (if appropriate):	The Association for Clinical Genetic Science		
Role:	The Association for Clinical Genetic Science Scientific and Quality Sub-committee member, FASP representative		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p style="text-align: center;">Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
General		<p>We support the introduction of NIPT into the T21/T18/T13 screening pathway. There is an urgent need for this test to be provided by the NHS rather than the private sector for patient safety and governance issues.</p> <p>We agree with page 2 "in summary, NIPT is very accurate, but does not give a definitive answer".</p> <p>We support a pathway that allows patients to have a choice following a positive combined test of opting for NIPT or invasive procedure.</p> <p>We recommend that a 10 day turnaround for NIPT is at the limit of acceptability.</p> <p>There are real concerns regarding the process by which the provision of NIPT testing within the contingent strategy will be delivered by NHS genetic laboratories, as it is harder to argue the case for wider availability. There are current issues around NHS England re-configuration of laboratories that needs to be addressed by the screening programme. The profession would not support a single provider for the service as part of a screening programme.</p> <p>The fall in the numbers of invasive procedures may increase</p>	

		<p>the cost of a qfPCR test.</p> <p>It is not clear how the NIPT model will be funded, and by whom. It is anticipated that offering cfDNA at a 1/150 threshold will be cost neutral – but the costs include multiple specialities, and budgets are not transferable.</p>
5.2.2 page 77, 3.6.1 page 27 Models structure and assumptions	We assume cost per cfDNA of £232 in these calculations	<p>Cost of NIPT. This seems remarkably low, and unachievable. There is no clarity within document what this cost includes or excludes within laboratory costs. It is therefore impossible to understand the economic model proposed and the projected savings anticipated. An inaccurate cost estimate risks seriously destabilising genetic services. IP cost issues which laboratories will be expected to pay are not covered.</p>
3.6.1 page 27 Models structure and assumptions	risk of miscarriage is 0.6% amniocentesis and 0.7% for CVS	UK data support a lower figure.
3.6.1 page 27 Models structure and assumptions table 2	Total cost of combined £27.11,	No clarity if this costs includes counselling, consent, USS and biochemical assay. This figure does not seem realistic.
6.3 page 82	Costs not included in the modelling include start-up costs, midwife time and counselling.	These may be significant
4.8 page 61	Test failure	Given the wide variability detected between studies it will be important that a low failure rate is stipulated for laboratory provision.

21.

Name:	Peter D. Williams	Email address:	xxxx xxxx
Organisation (if appropriate):	Right To Life		
Role:	Executive Officer		
<p>Do you consent to your name being published on the UK NSC website alongside your response?</p> <p>Yes <input type="checkbox"/></p>			
Section and / or page number	Text or issue to which comments relate		
	Effect of cfDNA implementation on disabled unborn children	<p>The UKNSC claims from its expert review that implementation of cfDNA testing in the FASP could reduce the number of miscarriages that occur due to IDP procedures. This is questionable given that the RAPID study projects around half the reduction in miscarriages that the systematic review does. This discrepancy seriously undermines the confidence that can be put on the UKNSC's cited data. What is certain however, is cfDNA implementation would certainly increase the number of abortions that are undertaken due to disability. If the findings of the RAPID study are accurate, and 102 more Down's babies are detected every year, then assuming similar annual figures to the latest reported by the National Down Syndrome Cytogenetic Register (NDSCR) for England and Wales¹ – that 90% of babies who are prenatally diagnosed with Down's Syndrome are aborted – this would result in 92 more babies being aborted for disability every year. This would mean that, based on the 2013 figures, there would be a decline of 13% reported live births of babies with Down's Syndrome. That will have a profound long-term effect on the population of the Down's Syndrome community. That is as opposed to 25 fewer miscarriages due to IDP.</p>	

		<p>Moreover, the RAPID study predicts that if in the future cfDNA were to replace combined and quadruple testing as the primary screening test, then 263 more babies would be aborted every year, and there would be 3 extra IPD-related miscarriages. Whilst we should not be utilitarian in our approach to human life, we should be concerned of the effect these developments will have on human lives.</p>
	<p>Wider effect of cfDNA implementation on other groups, and further disabled rights concerns</p>	<p>Indeed, given the problem of this abuse, it should be asked what effect the introduction of cfDNA in detecting trisomies will have on the FASP's ability to expand to detecting other groups. It would seem that normalising the practice, and ingraining it as part of the screening system, and with a lowering of overall costs, would help enable such expansion. As the recent report of the International Bioethics Committee (IBC) of the United Nations Educational, Social, and Cultural Organisation (UNESCO) has pointed out, "[t]he potential ethical disadvantages of NIPT can be summarised as routinisation and institutionalisation of the choice of not giving birth to an ill or disabled child"². This could lead to further abuses – more babies with chromosomal abnormalities could be identified and aborted, and since cfDNA allows for a test of fetal sex³, this could thus help to enable sex-selective abortions. Something that the IBC report has anticipated:</p> <p><i>"Another risk lies in the cultural prejudices of preferring a child of the male sex, the sex of the baby being one of the characteristics that can obviously be discovered by NIPT. As this test can be carried out at a very early stage of the pregnancy it would be difficult, even impossible for doctors to forbid the communicating of sex to the parents, and</i></p>

		<p><i>especially at a time when many countries have liberalised abortion. This could lead to a selection based on sex, which is against ethical values of equality and nondiscrimination</i></p> <p>4.</p> <p>In the future, NIPT techniques could allow for the testing of the entire human genome, and the targeting of unborn children for abortion based on a range of illicitly considered characteristics. How such abuses would be obviated is an important concern that the Government needs to address before allowing the implementation of this technology.</p>
	Approach taken by UKNSC consultation on value of disabled unborn children	<p>Additionally problematic is the approach that the UKNSC consultation takes towards Down's Syndrome babies, and other unborn children with trisomy. The goal that the UKNSC appears to be trying to achieve is the lowering of the number of miscarried 'healthy' babies, but without any evident concern for the babies who are detected as having trisomy as to whether they are miscarried. The fact that the UKNSC Consultation Document included the figure of 'Cost per trisomy detected', this suggests that the UKNSC reduces each trisomy baby to being merely a drain on NHS resources.</p>
	Necessary medical reforms before cfDNA implementation	<p>Given, then, the number of these babies who would be aborted, to make a change to the inclusion of cfDNA before many of the practical improvements to how parents who go through a diagnosis of fetal disability can be offered help and education to bring up a disabled child (such as were identified in the Parliamentary Inquiry on Abortion and Disability in 2011⁶), would be deeply imprudent and harmful. The assumption commonly made that women whose unborn child is disabled will want an abortion, an assumption that has led to many women being led into a decision they have deeply regretted, particularly needs to be addressed. The IBC report</p>

		<p>relates a similar concern: <i>“Ironically, the introduction of a test that may bring informed choice to more pregnant women may undermine this goal in practice, if NIPT is used without thinking enough about the impact. Furthermore, there is the risk that pregnant women with a positive result don’t await the validation of the result through invasive diagnostics, but immediately choose to abort the embryo or foetus, without adequate counselling about the relevance of the detected abnormality. Also women may feel pressured to submit to such screening. They might be stigmatised if they refuse to take the test”⁷.</i></p>
	<p>Disability Rights, and UK Government / UKNSC obligations under the Convention on the Rights of Persons with Disabilities</p>	<p>The UKNSC proposals would also appear to violate the UK Government’s obligations as a CRPD signatory⁸. This is because a disability-selective antenatal screening policy runs counter to the principles and purpose of the CRPD:</p> <ul style="list-style-type: none"> • The higher number of Down’s Syndrome detections predicted by the UKNSC’s expert review, in light of the 90% abortion rates for such pregnancies noted by the NDSCR for England and Wales, would mean as noted above that the adoption of cfDNA in the FASP would lead to more unborn Down’s Syndrome children being killed. This, much like sexselective screening practices, would run counter to the human rights principles within the CRPD, including dignity, nondiscrimination, and respect for human diversity, as well as the respect for life as reflected in the Convention on the Rights of the Child (CRC)⁹, to which the UK is also signatory, and which most pertinently provides that signatories “shall ensure to the maximum extent possible the

		<p>survival and development of the child” (its Preamble citing the Declaration of the Rights of the Child, which states that “the child, by reason of his physical and mental immaturity, needs special safeguards and care, including appropriate legal protection, before as well as after birth”). The failure to review these programmes without these principles in mind (no evidence exists of such considerations being taken into account in the expert review or final consultation document) contravenes the CRPD. Further, as the IBC reports, “Many fear that the widespread use of NIPT as general screening may induce ‘eugenic’ use, even when the state is not involved. The adding up of a lot of individual choices to the ‘acceptability’ of aborting certain kinds of embryos or foetuses brings forward a societal phenomenon, which resembles a kind of eugenics in the search for a ‘perfect child’. It is therefore important to develop a framework that on the one hand acknowledges the right of an individual to make autonomous choices, and on the other hand ensures what is enshrined in articles 6 and 2 of the UDHR: that no one shall be subjected to discrimination based on genetic characteristics and that individuals should be respected in their uniqueness and diversity”¹⁰.</p> <ul style="list-style-type: none"> • The disability-specific antenatal screening this represents, and in particular its screening for
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		<p>immutable disability characteristics (such as Down's Syndrome), would implicitly communicate and reinforce the idea that people possessing trisomy are tagged with their impairments and thereby branded as a burden, whether on their families or Government, with no further social value. Indeed, as the IBC report observes, "Prevention as a social objective, focused, for example, on reducing care costs for people with congenital conditions or disabilities... would imply a discriminatory practice that sends the message that these people are unwelcome in society... A widespread use of NIPT, namely as general screening in order to detect abnormalities, followed by an abortion, is perceived by some people as an evidence of the will to avoid permanent pain in a lifetime, by others as a sign of a situation of the exclusion society gives to people affected by this illness, meaning indirectly that certain lives are worth living, and others less"¹¹. When such programmes further lead to the elimination of specific groups of disabled children <i>in utero</i>, this clearly signals that such persons are wherever possible, to be screened out, their existence removed altogether. This perpetuates, rather than tackles, the negative stereotyping of the disabled in social discourse.</p> <ul style="list-style-type: none"> • The apparent assumption made in the consultation that saving non-trisomy 'healthy'
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		<p>pregnancies is a benefit, with no interest shown in reducing harm to trisomy pregnancies, is a bias based on genetic difference that constitutes a form of unjust discrimination prohibited under the CRPD. The UKNSC is under an ethical obligation to reduce harm to both trisomy and non-trisomy unborn children concurrently.</p> <p>Given the effect antenatal screening programmes for unborn children with trisomy have on disabled people (since such screening policies clearly, in practice, have a dramatic impact on the population of persons with disabilities), the adoption of such policies without full participation of such persons whose interests are acutely affected by them would represent a failure to implement CRPD principles of due process, participation, and inclusion. Whilst a number of disability and Down's Syndrome related groups were identified as stakeholders, it could be argued that the UKNSC consultation could have better included people who have Down's Syndrome and other trisomies by providing better advertising of the consultation itself, and by providing days through which their recommendations could be clearly presented. These might have offered the opportunity for such people to directly state how the proposed changes in policy would affect them.</p>
	Final RTL Conclusion and Recommendations to UKNSC	<p>Since the cfDNA proposal would lead overall to a worsening situation for disabled unborn children, and violates the UK's obligations as a signatory of the CRPD, RTL recommends the following in response to the UKNSC consultation:</p> <ul style="list-style-type: none"> • That the UKNSC at least delay the implementation of cfDNA procedures, to avoid

		<p>the harms they will accrue.</p> <ul style="list-style-type: none"> • That such harms be avoided by reforms being made to medical practice so that parents who are given a diagnosis of fetal disability can be offered the requisite help to take care of a child with Trisomy, in keeping with the UK's commitment under the CRPD to render appropriate assistance to prospective parents. • That the UKNSC observe its obligations to due process and right to full information by extending the consultation, publicising it more widely, and creating easier access both to an understanding of the expert review and to individuals making a submission. • That the UKNSC and all UK Governmental bodies review their approach to fetal disability (including screening) and align it with the CRPD. <p>If used properly, cfDNA testing could help prepare parents who have a disabled child to take care of their new baby, and to allow help to be provided to them in this role. Currently, however, without the culture and practices in place to enable this to happen, the implementation of any NIPT technique would worsen the current situation for both unborn children and their parents, and contribute to the pervasive perception that disabled lives are worth less than others, as well as other invidious and lethal forms of discrimination. Until our health system is fully committed to enabling, rather than</p>
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		disabling and thereby failing, patients who receive diagnoses of fetal disability, a potential good will become an actual harm. For that reason, it must be currently opposed by all those who support the equal dignity and rights of all human beings.
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RTL Submission: Consultation on National Screening Committee (NSC) Recommendations on Fetal Anomaly Screening in Pregnancy Executive Summary:

The National Screening Committee (UKNSC) is consulting on their proposal to introduce cell-free DNA (cfDNA) testing into the UK's Fetal Anomaly Screening Programme (FASP) as a means of better detecting fetal Trisomy and reducing the numbers of miscarriages caused by invasive prenatal testing techniques, in a cost-effective way.

This proposal is justified based on an 'expert review' of two studies, a ground study performed by the Reliable Accurate Prenatal non-Invasive Diagnosis (RAPID) programme, and a systematic review of studies relating to cfDNA.

□□ What the studies also show, however, is that the larger numbers of babies identified with Trisomy due to cfDNA implementation would lead to more being aborted, and a 13% decline in reported live births of babies with Down's

Syndrome¹. It could also enable easier fetal sex-identification, and thus sexselective abortion practices².

Under the current medical system, such an implementation would worsen the discrimination against disabled unborn children, and contribute to the normalisation not only of the choice of not giving birth to an ill or disabled

¹ See analysis on pp. 13-14, and conclusion on pp. 20-21.

² See analysis on p. 15, and conclusion on pp. 20-21.

child, but to the institutionalised bias and disparagement of disability within our medical system in this area³.

Due to these adverse consequences, implementing cfDNA into the FASP would violate UK obligations to the Convention on the Rights of Persons with Disabilities (CRPD), as well as other human rights conventions and declarations⁴.

RTL therefore centrally recommends to the UKNSC, that they at least delay the implementation of cfDNA procedures, to avoid the harms they will accrue, until such harms can be avoided by wider reforms being made to medical practice. Reforms, that is, such that parents who are given a diagnosis of fetal disability can be offered the requisite help to take care of a child with Trisomy, in keeping with the UK's commitment under the CRPD to render appropriate assistance to prospective parents. We also recommend that the UKNSC observe its CRPD obligations to due process and right to full information by extending the consultation, publicising it more widely, and creating easier access both to an understanding of the expert review and to individuals making a submission. Finally, we recommend that the UKNSC and all UK Governmental bodies review their approach to fetal disability (including screening) and align it with

the CRPD⁵.

³ See analysis on pp. 14-20, and conclusion on pp. 20-21.

⁴ See background on pp. 3-5, analysis on 17-20, and conclusion on pp. 20-21.

⁵ See conclusion on pp. 20-21.

Background:

Disability Rights:

On December 13th, 2006, the United Nations (UN) General Assembly adopted by consensus the **Convention on the Rights of Persons with Disabilities (CRPD)** ⁶, together with its Optional Protocol. This legally-binding core human rights Convention, which entered into force on May 03rd 2008, provides in the form of a disability-specific framework for the civil, political, economic, social and cultural rights of persons with disabilities. The United Kingdom signed the Convention and its Optional Protocol on March 30, 2007, the first day it opened for signature, and ratified both on September 08th, 2008.

The CRPD was developed in response to the fact that people with disabilities, including those with Down's Syndrome, have been historically stigmatised and devalued as human beings. This injustice is contradicted and rectified by the principles the CRPD affirms, including recognition and respect for the equal human dignity of all human beings without any distinction, the rejection of unjust discrimination, and respect for human difference and variation.

A '**social model**' rights-based understanding of disability as a socially ascribed deficit is prescribed by the CRPD, in which the reality is observed that what frequently practically 'disables' people with disabilities is not so much their condition but society, and how it is organised. This entails the corrective that disabled people and their families should be accommodated, included, and supported by society. The State signatories of the CRPD are therefore required by its provisions:

6 <http://www.un.org/disabilities/documents/convention/convoptprot-e.pdf>

To apply the general principles of the CRPD systematically and with analytical rigour to all policies affecting disabled people (including health policies), so that they are consistent with the purpose and principles of the CRPD.

To observe due process observed in the formulation and review of all policies affecting disabled people (including health policies), in keeping with the principles of participation, inclusion, and ‘nothing about us without us’. This entails that persons with intellectual disabilities must be afforded the opportunity to participate in decision-making, especially regarding policies affect them.

To undertake awareness raising measures to undo negative social constructions of disability in health policies.

To ensure that other rights are implemented consistent with disability rights principles.

To render appropriate assistance to prospective parents to facilitate their child-rearing responsibilities.

To avoid any prospective demand on public resources offending the principles of the CRPD.

To implement the right to information in a manner that provides full and adequate information to facilitate informed decision-making in

health care contexts.

To monitor the effects of antenatal screening on base population numbers, including reductions in population.

Not merely this last provision, but all the elements of the Convention, are relevant to the UK Government's work on population screening.

Population Screening for Fetal Disability:

Certain forms of population screenings⁷ are performed by the NHS in order to identify healthy people who may be at increased risk of disease or condition, and offer information, further tests, and treatment, in order to reduce associated risks or complications. The UK Government has a **National Programme Screening Committee (UKNSC)**⁸, which advises ministers and the NHS across the UK about all aspects of population screening and supports implementation of screening programmes. **xxxx xxxx**

One of the national screening programmes being run is the '**Fetal Anomaly Screening**' (**FASP**)¹⁰, which offers screening for pregnant women to check their unborn baby for fetal anomalies. In this, women are offered a '**combined test**' (of ultrasound and blood tests) in the first trimester, or a '**quadruple test**' (so-called because it is a blood test that measures four different elements) in the second trimester, to ascertain risk of **Trisomy**, also known as **Aneuploidy** (where an extra copy of a chromosome is present in the cell nuclei, causing developmental abnormalities).

⁷ <https://www.gov.uk/guidance/nhs-population-screening-explained>

⁸ <https://www.gov.uk/government/groups/uk-national-screening-committee-uk-nsc>

xxxx xxxx

¹⁰ <https://www.gov.uk/topic/population-screening-programmes/fetal-anomaly>

The most common forms of these are **Trisomy 21** (**T21**, also known as '**Down's Syndrome**'), **Trisomy 18** (**T18**, or '**Edwards's Syndrome**'), and **Trisomy 13** (**T13**, or '**Patau's Syndrome**'), the numbers corresponding to which of the 23 pairs of human chromosomes has copied.

Currently, on the basis of the risk they are given according to the screening tests mentioned above, women may choose to confirm a diagnosis of fetal disability through **Amniocentesis** or **Chorionic Villus Sampling (CVS)**. In the former, a needle is passed into the uterus to extract amniotic fluid, and in the latter a tube (inserted through the cervix) or a needle (passed into the uterus) removes tissue from the placenta for testing. The fluid/tissue is then tested for evidence of abnormalities. These are forms of **Invasive Prenatal Diagnosis (IPD)**, and both carry a 0.5-1% risk of causing miscarriage, so only some women choose to go through with either procedure.

Recently, however, a new means of detecting trisomy has been developed called '**cell-free DNA**' (**cfDNA**) **Testing** – also known as **Non-Invasive Prenatal Testing (NIPT)** – which does not carry either the risk or invasiveness of IPD procedures, but simply involves a blood test in which fetal cell-free DNA can be genetically tested. During pregnancy, a small amount of the baby's DNA can be found in her mother's blood, but the majority of the cfDNA in the blood comes from the mother herself. If the baby has trisomy 21, for example, there will be slightly more cfDNA from chromosome 21 than expected in the maternal circulation. Similarly, if the baby has trisomy 18 or trisomy 13 there will be slightly more cfDNA from chromosome 18 or 13 respectively. Analysis of this cfDNA can therefore be used as a screening test for these trisomies.

As a consequence of this development, though its availability is limited in the UK, more women have gone on to receive this test, and have been diagnosed with fetal disability. The Department of Health abortion statistics for 2014¹¹ reported that 662 abortions were performed on Down's Syndrome babies (an increase of 12%), with Down's being the most commonly reported (21%) chromosomal abnormality justifying

abortion. This is part of a 34% overall increase in such abortions in the last three years. This substantial increase in the number of babies aborted due to trisomy, has been attributed to the increased usage of NIPT.

Regardless of this, the UKNSC is currently consulting on its recommendation to include in the FASP a systematic population screening that would employ cfDNA testing in order to improve the programme. The UKNSC believe that by offering this to women who are identified through the combined or quadruple testings as having a risk of 1 in 150 or more of their unborn child possessing trisomy, those women would be provided a test that will provide a much better estimate of the chance that her baby suffers from fetal abnormality. This means that more women can avoid going through with IPD procedures, and the invasiveness and risk they involve.

The Consultation:

As part of its regular review cycle of all policies, the UKNSC has commissioned an expert review of its recommendation regarding cfDNA. It has opened a consultation on this expert review, which began on the 30th of July and ends on the 30th of October.

¹¹ Abortion Statistics, England and Wales: 2014 (Summary), section 2.19, pg. 14: <http://bit.ly/1Pjey95>

The expert review takes into account a pilot study by **RAPID (Reliable Accurate Prenatal non-Invasive Diagnosis)**¹², which is a five-year UK national programme funded by the National Institute for Health Research (NIHR). It also takes into account a systematic review that the UKNSC commissioned themselves. Based on these findings, the UKNSC has made recommendations on FASP use of cfDNA¹³. The RAPID study enquires as to the 'optimal' method of utilising NIPT in the FASP. The study looked at women recruited for the study from four NHS centres between November 2013 and June 2015, presenting results of the women who had been recruited earliest in the study (in the first seven months) to maximise data about pregnancy outcomes.

Participating centres offered NIPT to all women who, having gone through the combined or quadruple test, were given a screening risk of T21 of greater than 1:1000. Those women with a risk of greater than 1:150 were offered NIPT or invasive prenatal diagnosis (IPD). Women at some of the NHS centres were also given a risk for T18 and T13, and offered further testing if their risk was greater than 1:1000. Altogether, 1,164 women who had a risk of between 1:2 and 1:1000 for the main three trisomies took up NIPT.

The study found that:

¹² <http://www.rapid.nhs.uk/about-rapid/>

¹³ A document summarising these, as well as the systematic review and a summary of the pilot study, are available through the consultation website: http://legacy.screening.nhs.uk/policydb_download.php?sdocs=136

NIPT was very reliable in detecting T21, with a 100% detection rate and no false negatives. Only 8 (0.7%) of the NIPT tests required re-taking due to failed or inconclusive results.

Offering NIPT led to more women in the 1:150 risk group opting for further testing after the combined and quadruple test (60% before the study, 95% after), with 77% opting for NIPT. This was taken to be the removal of a barrier to further testing that IPDs represent for many women due to the risk and invasiveness of such procedures.

As more women opted for NIPT, fewer women opted for IPD. Whilst after the combined/quadruple test alone there were over 10 invasive tests carried out for each Down's pregnancy detected, when NIPT was offered there were only 2.8.

The conclusions of the RAPID study were that implementing the use of NIPT in the FASP, but limiting this to those women with a risk of 1:150, would “slightly” increase the number of Down’s cases detected, notably reduce the number of invasive tests and procedure related miscarriages, and marginally lower the estimated costs (by £337,000). Offering it to more women (those with lower risks of 1:500 to 1:1000) would increase the number of Down’s cases detected, and maintain a significant reduction in IPDs and procedure-related miscarriages, but increase the overall costs by millions of pounds (£3,365,000-£7,809,000).

By contrast, the UKNSC-commissioned study constituted a systematic review of literature dealing with the efficacy of cfDNA testing (following combined testing) in detecting trisomy, and its cost. Their combination of 41 different research studies (conducted in order to achieve an overall estimate of test accuracy) found that cfDNA testing was sufficiently capable of yielding inaccurate results that it should not be considered as a diagnostic test for trisomies. Instead, it recommends that pregnant women with positive results from cfDNA should additionally be offered an IPD to ensure a conclusive diagnosis.

The UKNSC review goes on to construct an economic model to compare three options of whether or how the NHS could use cfDNA in the FASP:

1. **Keep the current FASP:** Offer the combined test, and then IDP to those pregnant women given a screening trisomy risk of 1:150.
2. **Add the cfDNA test to the FASP after the combined test:** Offer the combined test, offer the cfDNA test to women given a consequent risk

greater than 1:150, and offer IDP to those women who test positive to the cfDNA. This option was projected to result in similar numbers of trisomies detected (1,056 compared to 1,032 currently), with 43 fewer miscarriages of healthy pregnancies because of many fewer women choosing to have invasive tests than currently, and to cost approximately the same as the current system.

3. **Replace the combined test with cfDNA test:** Offer the cfDNA test as an initial test, replacing the combined test, then offer IDP to those women who test positive. This was projected to result in more invasive tests than the second option, and to cost an extra £105 million to the NHS. The same three concerns are present both in the UK NSC Review and the RAPID study:

Improved detection of trisomy cases

Reduction of invasive testing

Overall screening programme costs

The UKNSC review is more pessimistic about the efficacy of cfDNA in detecting trisomy, due to the pooling of data from the 41 studies it looked at regarding **Sensitivity** (that is, the rate of false positives) and **Specificity** (that is, the rate of false negatives). Applying these test accuracy values to a high risk population the review found that the positive predictive values are 91% (T21), 84% (T18), and 87% (T13), respectively. This means, for example, that if 100 women were given a positive result that their baby had a replicated T21 chromosome, 91 of these would actually have Down's syndrome. Since this is sufficiently lower than a 100% success rate, the review recommends that women

be offered IPD in addition to cfDNA as a means of giving final diagnosis (this seems odd, given the comparable reliability of CVS¹⁴).

The systematic review and the RAPID pilot study come to differing conclusions about the effects of adding an offer of the cfDNA test to the FASP as an option to women given a 1:150 risk of trisomy after the combined test:

Detections of Trisomy – The RAPID study projected 102 more detections of T21, whereas the UKNSC review projected 20.2 more T21 detections (as well as statistically less than 1 more detection of T18, and T13 respectively), with 1,056 trisomies detected overall (an increase of 24).

IPD Procedures – The RAPID study projected 4,870, and the UKNSC review projected 6,476 fewer (to 3,040 and 1,434 respectively).

¹⁴ See the discussion, here: <http://www.downsyndrome prenatal testing.com/get-the-facts-about-down-syndrome prenatal-testing/>

IPD-Related Miscarriages – The RAPID study projected 25 fewer, and the UKNSC review 43 fewer (though this latter figure is of apparently specifically ‘healthy’ pregnancies), to 21 and 3 miscarriages a year respectively.

Cost to the NHS – The RAPID study projected £337,000 less cost, and the UKNSC a higher cost of £130,000. This would mean a total cost of £14,593,000 and £15,060,000 respectively.

Whilst these are disparate projections, they come to the same conclusion: that cfDNA testing should be offered to women through the FASP who have a 1:150 risk of trisomy. They both predict that the greater confidence of trisomy detections given by cfDNA will lead many more women to eschew IPDs, and for this to result in fewer

consequent miscarriages.

As a consequence of the expert review, consisting of the systematic review and the RAPID pilot study, the UKNSC is recommending:

That cfDNA testing be offered to women whom, after combined testing, receive a trisomy risk score (for either T21, T18, or T13) equal to or greater than 1:150.

That women be advised that cfDNA tests are not diagnostic and that for a definitive diagnosis they must undergo IPD.

The UKNSC's specific recommendation was based in their projection of a marked reduction of the number of women with false positive results at the 1:150 risk level that are offered an invasive test, as compared to those at lower risk. They also project that providing cfDNA to the resultant number of women at that risk level would minimally affect the cost of the FASP or change and disrupt its pathway, be least affected by the current capacity of cfDNA testing in the UK, allow uncertainties in the implementation of cfDNA (to do with sensitivity and specificity rates, patient uptake, and turnaround) to be explored and learned from, and lower the number of trisomy pregnancies detected.

As well as consulting on its recommendations, the UKNSC is also consulting on its decision not to replace combined testing as the primary screening test, which they decided not to recommend on the basis of the cost to the NHS, despite predicting that such a change would lead to approximately 289 more babies with trisomies being detected (albeit with 5,711 fewer IPDs being performed, as opposed to the 6,476 fewer that their recommendation is projected to achieve, according to the UKNSC review).

Analysis:

The UKNSC claims from its expert review that implementation of cfDNA testing in the FASP could reduce the number of miscarriages that occur due to IDP procedures. This is questionable given that the RAPID study projects around half the reduction in miscarriages that the systematic review does. This discrepancy seriously undermines the confidence that can be put on the UKNSC's cited data. What is certain however, is cfDNA implementation would certainly increase the number of abortions that are undertaken due to disability.

If the findings of the RAPID study are accurate, and 102 more Down's babies are detected every year, then assuming similar annual figures to the latest reported by the **National Down Syndrome Cytogenetic Register (NDSCR)** for England and Wales¹⁵ – that 90% of babies who are prenatally diagnosed with Down's Syndrome are aborted – this would result in 92 more babies being aborted for disability every year. This would mean that, based on the 2013 figures, there would be a decline of 13% reported live births of babies with Down's Syndrome. That will have a profound long-term effect on the population of the Down's Syndrome community. That is as opposed to 25 fewer miscarriages due to IDP. Moreover, the RAPID study predicts that if in the future cfDNA were to replace combined and quadruple testing as the primary screening test, then 263 more babies would be aborted every year, and there would be 3 extra IPD-related miscarriages. Whilst we should not be utilitarian in our approach to human life, we should be concerned of the effect these developments will have on human lives.

Indeed, given the problem of this abuse, it should be asked what effect the introduction of cfDNA in detecting trisomies will have on the FASP's ability to expand to detecting other groups. It would seem that normalising the practice, and ingraining

it as part of the screening system, and with a lowering of overall costs, would help enable such expansion. As the recent report of the **International Bioethics Committee (IBC)** of the **United Nations Educational, Social, and Cultural Organisation (UNESCO)** has pointed out, “[t]he potential ethical disadvantages of NIPT can be summarised as routinisation and institutionalisation of the choice of not giving birth to an ill or disabled child”¹⁶.

¹⁵ http://www.binocar.org/content/annrep2013_FINAL_nologo.pdf

¹⁶ ‘Report of the IBC on Updating Its Reflection on the Human Genome and Human Rights’, October 02nd 2015, section 89: <http://unesdoc.unesco.org/images/0023/002332/233258e.pdf>

This could lead to further abuses – more babies with chromosomal abnormalities could be identified and aborted, and since cfDNA allows for a test of fetal sex¹⁷, this could thus help to enable sex-selective abortions. Something that the IBC report has anticipated:

“Another risk lies in the cultural prejudices of preferring a child of the male sex, the sex of the baby being one of the characteristics that can obviously be discovered by NIPT. As this test can be carried out at a very early stage of the pregnancy it would be difficult, even impossible for doctors to forbid the communicating of sex to the parents, and especially at a time when many countries have liberalised abortion. This could lead to a selection based on sex, which is against ethical values of equality and non-discrimination”¹⁸.

In the future, NIPT techniques could allow for the testing of the entire human genome, and the targeting of unborn children for abortion based on a range of illicitly considered characteristics. How such abuses would be obviated is an important concern that the Government needs to address before allowing the implementation of this technology.

Additionally problematic is the approach that the UKNSC consultation takes

towards Down's Syndrome babies, and other unborn children with trisomy. The goal that the UKNSC appears to be trying to achieve is the lowering of the number of miscarried 'healthy' babies, but without any evident concern for the babies who are

¹⁷ <http://www.ariosadx.com/expecting-parents/faqs/>; cf. <http://www.thebirthcompany.co.uk/non-invasive-prenataltest/harmony-test/>

¹⁸ *Op cit.*, IBC report, 91.

detected as having trisomy as to whether they are miscarried. The fact that the UKNSC Consultation Document included the figure of 'Cost per trisomy detected', this suggests that the UKNSC reduces each trisomy baby to being merely a drain on NHS resources.

Given, then, the number of these babies who would be aborted, to make a change to the inclusion of cfDNA before many of the practical improvements to how parents who go through a diagnosis of fetal disability can be offered help and education¹⁹ to bring up a disabled child (such as were identified in the Parliamentary Inquiry on Abortion and Disability in 2011²⁰), would be deeply imprudent and harmful. The assumption commonly made that women whose unborn child is disabled will want an abortion, an assumption that has led to many women being led into a decision they have deeply regretted, particularly needs to be addressed. The IBC report relates a similar concern:

"Ironically, the introduction of a test that may bring informed choice to more pregnant women may undermine this goal in practice, if NIPT is used without thinking enough about the impact. Furthermore, there is the risk that pregnant women with a positive result don't await the validation of the result through invasive diagnostics, but immediately choose to abort the embryo or foetus, without adequate counselling about the relevance of the detected abnormality."

¹⁹ <http://www.downsyndromeprenataltesting.com/dont-abort-based-on-maternit21/>

²⁰ Parliamentary Inquiry into Abortion on the Grounds of Disability:
<http://abortionanddisability.org/resources/Abortion-and-Disability-Report-17-7-13.pdf>

Also women may feel pressured to submit to such screening. They might be stigmatised if they refuse to take the test”²¹.

The UKNSC proposals would also appear to violate the UK Government’s obligations as a CRPD signatory²². This is because a disability-selective antenatal screening policy runs counter to the principles and purpose of the CRPD:

□□ The higher number of Down’s Syndrome detections predicted by the UKNSC’s expert review, in light of the 90% abortion rates for such pregnancies noted by the NDSCR for England and Wales, would mean as noted above that the adoption of cfDNA in the FASP would lead to more unborn Down’s Syndrome children being killed. This, much like sexselective screening practices, would run counter to the human rights principles within the CRPD, including dignity, non-discrimination, and respect for human diversity, as well as the respect for life as reflected in the Convention on the Rights of the Child (CRC)²³, to which the UK is also signatory, and which most pertinently provides that signatories “shall ensure to the maximum extent possible the survival and development of the child” (its Preamble citing the Declaration of the Rights of the Child, which states that “the child, by reason of his physical and mental immaturity, needs special safeguards and care, including appropriate legal

²¹ *Op cit.*, IBC report, 89.

²² The implications of the CRPD for fetal screening are accounted in *Screened Out of Existence: The Convention on the Rights of Persons with Disabilities and Selective Screening Policies* by Prof. Janet E. Lord in the International Journal of Disability, Community & Rehabilitation (12:2): http://www.ijdc.ca/VOL12_02/articles/lord.shtml

²³ <http://www.ohchr.org/en/professionalinterest/pages/crc.aspx>

protection, before as well as after birth”). The failure to review these programmes without these principles in mind (no evidence exists of such considerations being taken into account in the expert review or final

consultation document) contravenes the CRPD. Further, as the IBC reports, “Many fear that the widespread use of NIPT as general screening may induce ‘eugenic’ use, even when the state is not involved. The adding up of a lot of individual choices to the ‘acceptability’ of aborting certain kinds of embryos or fetuses brings forward a societal phenomenon, which resembles a kind of eugenics in the search for a ‘perfect child’. It is therefore important to develop a framework that on the one hand acknowledges the right of an individual to make autonomous choices, and on the other hand ensures what is enshrined in articles 6 and 2 of the UDHR: that no one shall be subjected to discrimination based on genetic characteristics and that individuals should be respected in their uniqueness and diversity”²⁴.

The disability-specific antenatal screening this represents, and in particular its screening for immutable disability characteristics (such as Down’s Syndrome), would implicitly communicate and reinforce the idea that people possessing trisomy are tagged with their impairments and thereby branded as a burden, whether on their families or Government, with no further social value. Indeed, as the IBC report observes, “Prevention as a social objective, focused, for example, on reducing care costs for people with congenital conditions or disabilities... would imply a

²⁴ *Op cit.*, IBC report, 93.

discriminatory practice that sends the message that these people are unwelcome in society... A widespread use of NIPT, namely as general screening in order to detect abnormalities, followed by an abortion, is perceived by some people as an evidence of the will to avoid permanent pain in a lifetime, by others as a sign of a situation of the exclusion society gives to people affected by this illness, meaning indirectly that certain lives

are worth living, and others less”²⁵. When such programmes further lead to the elimination of specific groups of disabled children *in utero*, this clearly signals that such persons are wherever possible, to be screened out, their existence removed altogether. This perpetuates, rather than tackles, the negative stereotyping of the disabled in social discourse.

The apparent assumption made in the consultation that saving nontrisomy ‘healthy’ pregnancies is a benefit, with no interest shown in reducing harm to trisomy pregnancies, is a bias based on genetic difference that constitutes a form of unjust discrimination prohibited under the CRPD. The UKNSC is under an ethical obligation to reduce harm to both trisomy and non-trisomy unborn children concurrently. Given the effect antenatal screening programmes for unborn children with trisomy have on disabled people (since such screening policies clearly, in practice, have a dramatic impact on the population of persons with disabilities), the adoption of such policies without full participation of such persons whose interests are acutely affected by them would represent a failure to implement CRPD principles of due

²⁵ *Ibid.*, 88, 90.

process, participation, and inclusion. Whilst a number of disability and Down’s Syndrome related groups were identified as stakeholders, it could be argued that the UKNSC consultation could have better included people who have Down’s Syndrome and other trisomies by providing better advertising of the consultation itself, and by providing days through which their recommendations could be clearly presented. These might have offered the opportunity for such people to directly state how the proposed changes in policy would affect them.

Conclusion:

Since the cfDNA proposal would lead overall to a worsening situation for disabled unborn children, and violates the UK’s obligations as a signatory of the

CRPD, RTL recommends the following in response to the UKNSC consultation:

That the UKNSC at least delay the implementation of cfDNA procedures, to avoid the harms they will accrue.

That such harms be avoided by reforms being made to medical practice so that parents who are given a diagnosis of fetal disability can be offered the requisite help to take care of a child with Trisomy, in keeping with the UK's commitment under the CRPD to render appropriate assistance to prospective parents.

That the UKNSC observe its obligations to due process and right to full information by extending the consultation, publicising it more widely, and creating easier access both to an understanding of the expert review and to individuals making a submission.

That the UKNSC and all UK Governmental bodies review their approach to fetal disability (including screening) and align it with the CRPD.

If used properly, cfDNA testing could help prepare parents who have a disabled child to take care of their new baby, and to allow help to be provided to them in this role. Currently, however, without the culture and practices in place to enable this to happen, the implementation of any NIPT technique would worsen the current situation for both unborn children and their parents, and contribute to the pervasive perception that disabled lives are worth less than others, as well as other invidious and lethal forms of discrimination. Until our health system is fully committed to enabling, rather than disabling and thereby failing, patients who receive diagnoses of fetal disability, a potential good will become an actual harm. For that reason, it must be

currently opposed by all those who support the equal dignity and rights of all human beings.

22.

Submission to UKNDC Consultation October 2015 by STOP GENDERCIDE

The UK's National Screening Committee (UKNSC) has brought forward a proposal to introduce cellfree DNA (cfDNA) testing, a form of NonInvasive Prenatal Testing (NIPT) into the UK's Fetal Anomaly Screening Programme (FASP). This proposal is justified based on an 'expert review' of two studies, a ground study performed by the Reliable Accurate Prenatal NonInvasive Diagnosis (RAPID) programme, and a systematic review (SR) of studies relating to cfDNA .

Stop Gendercide are concerned about the effect the introduction of cfDNA in detecting trisomies will have on the FASP's ability to expand to detecting other groups. Normalising NIPT as part of the screening system would help enable such expansion. Most pertinently to the Stop Gendercide campaign, since cfDNA allows for a test of fetal sex , 1 this could help to enable sex selective abortions. Worryingly, the most recent report from UNESCO's International Bioethics Committee anticipates this very occurrence:

“ Another risk lies in the cultural prejudices of preferring a child of the male sex, the sex of the baby being one of the characteristics that can obviously be discovered by NIPT. As this test can be carried out at a very early stage of the pregnancy it would be difficult, even impossible for doctors to forbid the communicating of sex to the parents, and especially at a time when many countries have liberalised abortion. This could lead to a selection based on sex, which is against ethical values of equality and non-discrimination ” 2.

The concern of the Stop Gendercide campaign is that, in the absence of proper medical reforms and clarification that sexselective abortion is illegal, the implementation of cfDNA could worsen the problem of sexselective abortion in the UK by more readily enabling it. The prevention of such abuses is something the Government needs to address before allowing the implementation of this technology.

1 As we see from information generated by companies who provide such testing: <http://www.ariosadx.com/expectingparents/> faqs/; cf. <http://www.thebirthcompany.co.uk/noninvasiveprenataltest/harmonytest/>

2 'Report of the IBC on Updating Its Reflection on the Human Genome and Human Rights', October 02 nd 2015,

23.



Consultation Response

To: The UK National Screening Committee
Re: cfDNA trisomy screening consultation

This is a very short response to the call by the National Screening Committee for submissions on the issue of a new method of 'fetal anomaly screening in pregnancy'.

We commend the response from the Christian Medical Fellowship on this issue and our few short comments echo many of those made in their submission.

1. Our general position is that we reject a false dichotomy which pitches a woman's rights against those of her unborn child. We seek the life, health and wellbeing of both woman and unborn child.
2. We see value and dignity in every human being, regardless of race, gender, disability, sexual orientation, disability or any other label which people put on themselves or others.
3. When life is difficult and people receive difficult news we respond with compassion and solidarity. We seek to move the narrative from death to life, from despair to hope.

4. The idea of making screening less medically-invasive for women, on the face of it sounds like a non-contentious move. However we already have serious concerns about the underlying presumptions behind screening and the choices available following - so naturally we have concerns about making the process even more 'normalised' and easily available in pregnancy.
5. Screening can be beneficial for women and the unborn child in order to identify conditions early so that the best medical care can be provided. However, we do have questions about the purpose behind the screening for 'specific physical abnormalities and conditions.' If the purpose is to help prepare women ahead of the birth that a disability may be present or to help women and families to plan best medical care and support then there is merit in early and non-invasive diagnosis.
6. However if the purpose is to offer the 'choice' to identify and then abort unborn babies who are not physically perfect then we have very serious concerns. The State cannot on one hand set itself as the protector and champion of human rights, life and dignity while on the other offer some citizens the choice to destroy human life solely on the basis of disability. This approach undermines the humanity and dignity of everyone, especially those who live with a disability.
7. Is the proposed increase in capability and frequency of screening matched by an increased capacity of resources for support services? Will higher rates of detection be met with additional support care and treatment for those unborn babies identified as having a specified 'abnormality or condition'? Will more resources be given to disability charities, medical research and support services?
8. We have concerns that the purpose of, and presumption following, a positive screening result is towards abortion. In a culture where 90% of babies with Down's are aborted, further measures must be taken to tackle discrimination on the grounds of disability beginning even before birth. In short we are concerned that at an individual level more babies are likely to be aborted and at a cultural level, the value of the most vulnerable lives are further undermined.
9. We would be delighted to meet with the UK National Screening Committee to discuss these concerns in greater detail. Please do not hesitate to get in contact to discuss further, in fact we would very much welcome the opportunity to do so.

Ends.



The Evangelical Alliance, formed in 1846, is the largest body serving the two million evangelical Christians in the UK. We have a membership of denominations, churches, organisations and individuals. In the UK we work across 79 denominations, 3,600 churches, 750 organisations and thousands of individual members.

We are a founding member of the World Evangelical Alliance, a global network of more than 600 million evangelical Christians.

Our mission is to unite evangelicals to present Christ credibly as good news for spiritual and social transformation.

Our two main objectives are bringing Christians together - Unity, and helping them listen to, and be heard by, the government, media and society - Advocacy.

24.

Christian
Legal Centre

Christian
Concern

UK NSC's consultation on cfDNA screening

Response by: Christian Concern

Christian Legal Centre

About Us

Christian Concern is a policy and legal resource centre that identifies changes in policy and law that will affect the Christian heritage of our nation. The team of lawyers and advisers at Christian Concern conduct research into, and campaign on, legislation and policy changes that may affect Christian freedoms or the moral values of the UK. Christian Concern reaches a mailing list of over 80,000 supporters. www.christianconcern.com Christian Concern is linked to a sister and separate organisation, the Christian Legal Centre, which takes up cases affecting Christian freedoms. www.christianlegalcentre.com

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Christian Concern submission to UK NSC consultation on cfDNA screening

- We do not agree that cfDNA testing should be made available to women who identify as having a 1 in 150 or greater risk of trisomy.
- It is claimed that the proposed technology will help reduce the number of miscarriages caused by invasive testing procedures such as amniocentesis or chorionic villous sampling. However, according to the RAPID study referred to by the UKNSC, cfDNA testing will lead to 102 more T21 pregnancies being detected every year. Statistics from the National Down Syndrome Cytogenetic Register (NDSCR) demonstrate that 90% of all babies diagnosed with Down's syndrome are aborted;

based on these figures, the proposed practice will result in 92 more annual abortions on the basis of Down's syndrome. This is compared to 25 fewer miscarriages as a result of IDP. Furthermore, due to the accuracy of cfDNA, there is likely to be increased pressure for the test to be made available as part of initial antenatal screening. The NSC Review has acknowledged that, were the test to be used as part of primary screening, it would lead to the detection of an additional 289 more babies with trisomies.

- Abortion on the grounds of disability operates against a presumption towards valuing the lives of disabled and non-disabled people equally and is contrary to Article 14 ('prohibition against discrimination') of the European Convention on Human Rights and Convention of the Rights of Persons with Disabilities (CRPD). The CRPD, which was adopted by the United Nations (UN) General Assembly, is a legally binding human rights convention which was signed by the UK in 2007 (and ratified in 2009). It outlines the rights of people with disabilities, enshrining the principles of dignity, non-discrimination, full and effective participation and inclusion in society, respect for difference and acceptance of person with disabilities as part of human diversity. A recent report of the International Bioethics Committee (IBC) of the United Nations Educational, Social, and Cultural Organisation (UNESCO) said: "Prevention as a social objective, focused, for example, on reducing care costs for people with congenital conditions or disabilities... would imply a discriminatory practice that sends the message that these people are unwelcome in society... A widespread use of NIPT, namely as general screening in order to detect abnormalities, followed by an abortion, is perceived by some people as an evidence of the will to avoid permanent pain in a lifetime, by others as a sign of a situation of the exclusion society gives to people affected by this illness, meaning indirectly that certain lives are worth living, and others less."¹
- Justifying terminations on the grounds of disability also devalues the lives of those already living with a disability. In relation to Ground E of the Abortion Act 1967, which permits abortion up to birth where there is a risk that the baby will be born with a 'serious handicap', the Disability Rights Commission said: "Ground E is offensive to many people; it reinforces negative stereotypes of disability; and there is substantial support for the view that to permit terminations at any point during a pregnancy on the ground of risk of disability, while time limits apply to other grounds set out in the Abortion Act, is incompatible with valuing disability and non-disability equally." Furthermore, financial investment in in vitro neonatal research and therapies in England, Wales and Scotland is at an all-time low due to the availability of abortion

- The Abortion Act does not define the terms ‘substantial risk’ or ‘serious handicap’, and offers no guidance as to the criteria to be applied in practice. In the absence of any coherent and uniform guidance from the courts, the interpretation of these terms is left to the discretion of doctors, who continue to sanction abortions under Ground E for Down’s syndrome. This is despite the fact that Down’s syndrome does not meet the ‘serious handicap’ criteria.² On this basis, screening for Down’s syndrome should only be provided with the intention of preparing and assisting families to properly care for a child with special needs.
- There is a notable discrepancy between the figures cited by the UKNSC, leading to serious concern over the credibility of the claims made in its consultation document. Findings from the Systematic Review indicate that the proposals would lead to 20 more T21 pregnancies being detected every year, whilst RAPID has suggested an increase of 102 pregnancies. This means that according to the systematic review, there would be 18 more annual abortions on the basis of Down’s syndrome, whilst figures from RAPID indicate an increase of 92 abortions.³ Furthermore, the RAPID review has indicated half the reduction in miscarriages compared to the systematic review.
- There is additional concern that permitting the use of cfDNA will result in the normalisation of the procedure and increased pressure on regulators to expand the categories of defects eligible for screening. This in turn would lead to more abortions on the basis of disability. The IBC’s report warned that “[t]he potential ethical disadvantages of NIPT can be summarised as routinisation and institutionalisation of the choice of not giving birth to an ill or disabled child.”⁴
- Since the proposed technology would allow a baby’s gender to be identified, there is an additional risk of an increase in the practice of illegal gender-selective abortion. The IBC report said: “Another risk lies in the cultural prejudices of preferring a child of the male sex, the sex of the baby being one of the characteristics that can obviously be discovered by NIPT. As this test can be carried out at a very early stage of the pregnancy it would be difficult, even impossible for doctors to forbid the communicating of sex to the parents, and especially at a time when many countries have liberalised abortion. This could lead to a selection based on sex, which is against ethical values of equality and non-discrimination.”⁵
- The presumption that mothers with a disability diagnosis will always opt for an abortion has resulted in many women making choices they have later regretted. The IBC report has noted: “Ironically, the introduction of a test that may bring informed choice to more pregnant women may undermine this goal in practice, if NIPT is used without thinking enough about the

impact. Furthermore, there is the risk that pregnant women with a positive result don't await the validation of the result through invasive diagnostics, but immediately choose to abort the embryo or foetus, without adequate counselling about the relevance of the detected abnormality. Also women may feel pressured to submit to such screening. They might be stigmatised if they refuse to take the test". A British Parliamentary Inquiry into abortion on the grounds of disability concluded that: "...the studies have all found that around 20% of women, between one and two years after an abortion for fetal abnormality, have a psychiatric condition, usually a complicated grief reaction, a depressive disorder or post-traumatic stress disorder."6

- Other research has suggested that mothers who terminate a pregnancy on the grounds of disability experience the same degree of pain and emotional suffering as parents who lose a baby unexpectedly7 and that abortion for disability can be a "traumatic event...which entails the risk of severe and complicated grieving."8
- A recent study found that 17% of women who aborted their babies on the grounds of disability were diagnosed with psychiatric conditions, including post-traumatic stress, anxiety or depression, 14 months after the procedure.9
- An increasing body of research demonstrates that abortion itself – whether or not on the grounds of disability - increases the risk of mental health problems in women, even in cases where the pregnancy was unwanted from the outset.10
- We affirm the value of the life and well-being of both mothers and unborn children. We advocate for better specialist counselling, care and support for women and families facing a disability diagnosis. Unborn babies, whether healthy or disabled, are human beings with intrinsic worth and value. We support measures that would value and protect the life, health and well-being of both the mother and the unborn child.
- In this instance, the proposals would place the mental health of women at significant risk and fail to adequately protect the lives of babies diagnosed with disability, being primarily concerned with preventing the miscarriage of children without chromosomal abnormalities. We reiterate therefore that the plans contravene Article 2 ECHR ('right to life'), Article 14 ECHR ('prohibition against discrimination') as well as the CRPD – and should be dropped.

1 'Report of the IBC on Updating Its Reflection on the Human Genome and Human Rights', October 02nd 2015, : <http://unesdoc.unesco.org/images/0023/002332/233258e.pdf>

as a 'quick' and inexpensive option. A mother's decision to continue with her pregnancy should be based upon valuing non-disability and disability equally.

2 In 2013, 590 abortions were performed for Down's syndrome:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/319460/Abortion_Statistics_England_and_Wales_2013.pdf

3 Based on Statistics from the National Down Syndrome Cytogenetic Register (NDSCR) which demonstrate that 90% of all babies diagnosed with Down's syndrome are aborted;

4 Report of the IBC on Updating Its Reflection on the Human Genome and Human Rights', October 02nd 2015.; <http://unesdoc.unesco.org/images/0023/002332/233258e.pdf>

5 'Report of the IBC on Updating Its Reflection on the Human Genome and Human Rights', October 02nd 2015.; <http://unesdoc.unesco.org/images/0023/002332/233258e.pdf>

6 <http://www.abortionanddisability.org/resources/Abortion-and-Disability-Report-17-7-13.pdf>

7 Zeanah, 1993

8 Korenromp et al, 2005,

9 Korenromp et al, 2005,

10 Following adjustments for confounding variables, a major longitudinal survey published in 2008 by the British Journal of Psychiatry found that women who have abortions are 30% more likely to experience suicidal thoughts, substance abuse, anxiety disorders and clinical depression, compared to women with other pregnancy outcomes (DM Fergusson et.al., "Abortion and mental health disorders: evidence from a 30-year longitudinal study", The British Journal of Psychiatry, 193:444-451,2008). Research conducted by Finland's National Research and Development Centre for Welfare found that suicide rates in abortive women was three times higher than for the general population, and six times higher than for women carrying their pregnancy to term (M. Gissler et.al, "Injury deaths, suicides and homicides associated with pregnancy). In a 2009 paper, Fergusson stated: "The mental health risks associated with abortion may be larger, and certainly are not smaller, than the mental health risks associated with unwanted pregnancies that come to term (Fergusson DM et al. Abortion and mental health (correspondence). British Journal of Psychiatry 2009;195:83-84). His research found that women reporting distress at having an abortion were 40-80% more likely to experience mental ill health than those not having an abortion (Fergusson DM et al. Reactions to abortion and subsequent mental health. British Journal of Psychiatry 2009;195:420-426)

25.

As part of the submission re the recommendation for NIPT screening, It is important to consider a range of issues alongside what is presented as a practical and cost effective methodology for reducing the costs of identified abnormalities.

Not least it is known that the number of births of new born babies with Downs syndrome is 25% less than would be expected given the fact that women are having their children later in life. What does this say about the ethical approach we are taking to people with disabilities, it is stated that currently 3 abortions per day are carried out on those suspected of having Downs syndrome, but as

"Maynard rightly notes "as we explore cause and effect in genetic inheritance, we are in danger of making the same mistakes about disability as those made when germ theory first took hold" (Swain et al 2008:300) Armer notes too that James Watson the DNA pioneer, has called for the eradication of genetic disability" (2007:90) the societal view which is widespread is "that no one would want to bring into the world someone who was going to suffer the personal tragedy of disability, so being able to identify and eliminate impaired foetuses or even prevent the tragedy before conception must be the right thing to do" (Maynard 2014:301).

Goble puts it plainer when he says disability according to societal assumptions is "something that no one in their right mind would choose for themselves or their child" (Swain et al 2008:49). However as Solberg has found the view of families and individuals with Downs' syndrome is that "prenatal screening hurts, diminishes and devalues them in various ways" (Kristiansen et al 2010:189). Understandably preventing the birth of a child because of a genetic impairment does not send out a positive message to those who have this condition, on the contrary it may even suggest that such a life is not worth living. **XXXX XXXX**

If that is the case we may have to consider the full ethical implications of the screening programme and acknowledge that the "eugenic "era is far from over.

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26.

UK National Screening Committee Consultation on Screening for cfDNA in pregnancy
Submission by LIFE Charity, October 30, 2015

We are opposed to the proposal to add cfDNA analysis as a contingent test for those unborn babies in whom screening has shown a 1:150 risk of Trisomys.

We note that NIPT testing from a previous study showed that it is extremely reliable in detecting Trisomy 21, more commonly known as Down Syndrome. Adding cfDNA testing can only mean significantly higher detection rates for Down Syndrome. We are already concerned that 9 out of 10 babies diagnosed with Down Syndrome are aborted. In 2014 the abortion statistics reported that 662 abortions were performed on Down Syndrome babies (an increase of 12%), with Down Syndrome being the most commonly reported (21%) chromosomal abnormality justifying abortion. This is part of a 34% overall increase in such abortions in the last three years. This substantial increase in the number of babies aborted due to trisomy has been attributed to the increased usage of NIPT.

Given that adding cfDNA testing to other screening will increase the detection of babies with Trisomys like Down Syndrome, we wish to object to greater use and funding for it on the basis of the objections below.

1. Use of the cfDNA detection contravenes the United Nations' Convention on the Rights of Persons with Disabilities (CRPD). On March 30 2007, the United Kingdom became a signatory to the United Nations' Convention on the Rights of Persons with Disabilities (CRPD). The CRPD promotes recognition and respect for the equal human dignity of all human beings without any distinction, the rejection of unjust discrimination and respect for human difference and variation. The State signatories of the CRPD are therefore required by its provisions:

- To apply the general principles of the CRPD systematically and with analytical rigour to all policies affecting disabled people (including health policies) so that they are consistent with the purpose and principles of the CRPD.

The deliberate targeting and elimination of unborn babies with Down's Syndrome which would increase with greater use of cfDNA detection, is inconsistent with the principle of rejecting unjust discrimination and promoting respect for human difference and variation.

- To observe due process observed in the formulation and review of all policies affecting disabled people (including health policies) in keeping with the principles of participation, inclusion and 'nothing about us without us'. This entails that persons with intellectual disabilities must be afforded the opportunity to participate in decision-making, especially regarding policies which affect them.

We understand that many disability rights campaigners and groups are unaware of this consultation.

Any policy to fund the increased use of cfDNA to screen out disabled people should never be implemented before full and direct discussion and engagement with the disabled community. The absence of such robust consultation is a violation of this article of the convention.

- To undertake awareness raising measures to undo negative social constructions of disability in health policies.

The advocacy of cfDNA and other targeting and detection technology seems to assume that there is something wrong with having a disabled child and parents would want to abort that child. It feeds that negative social construction of disability which this article addresses. Rather than raise awareness of the equal value and dignity of a disabled child it promotes an opposite negative view as candidates for detection and elimination.

- To avoid any prospective demand on public resources offending the principles of the CRPD.

Having already shown how cfDNA testing would contravene the principles of CRPD, we believe the estimated cost of £105M to the NHS should not be borne by the taxpayer. To do so can mean that all members of the public who subscribe to the principle of equality and non-discrimination are being made to pay for a technology which leads to the detection and elimination of disabled children inside the womb.

- To monitor the effects of antenatal screening on base population numbers, including reductions in population.

We have already pointed out the large number of babies aborted for Down Syndrome because of detection techniques. We expect this to result in a decrease in the number of people with Down Syndrome over time. In the United States, where there is greater use of screening technology, it is estimated that there would have been a 34% increase over 16 years in the number of people with Down Syndrome had it not been for prenatal testing for Down Syndrome.

2. We are concerned about the message sent to people with Down Syndrome who become aware of increased efforts to detect Down Syndrome babies before they are born.

The medical and broader communities seem to perceive that prenatal testing is an extension of good prenatal care i.e. it helps parents have healthy babies. However, such “care” does not constitute a treatment for Down Syndrome when it is detected. On the contrary, in most cases it means the termination of babies with that condition. Advances in science should be directed at improving their lives, not preventing them.

As a society which gives equal value and respect to all groups, we cannot be seen to be saying that we value disabled people once they are born but we will pursue strategies to ensure others with disabilities are not born again.

Just earlier this month the report of the International Bioethics Committee (IBC) of the United Nations Educational, Social, and Cultural Organisation (UNESCO) pointed out that “the potential ethical disadvantages of NIPT can be summarised as routinisation and institutionalisation of the choice of not giving birth to an ill or disabled child”. Aside from sending the wrong message to disabled people, it would symbolise a eugenic philosophy in which some people are less valuable than others.

3. There is a risk that cfDNA testing could one day lead to sex selective abortions.

One feature of cfDNA is its ability to identify the sex of the foetus. This could one day lead to a large number of abortions on the basis of gender as the sex of the baby could be ascertained much earlier in the pregnancy. The IBC report referred to above made this observation: “Another risk lies in the cultural prejudices of preferring a child of the male sex, the sex of the baby being one of the characteristics that can obviously be discovered by NIPT. As this test can be carried out at a very early stage of the pregnancy it would be difficult, even impossible for doctors to forbid the communicating of sex to the parents, and especially at a time when many countries have liberalised abortion. This could lead to a selection based on sex, which is against ethical values of equality and non-discrimination.”

4. A greater availability of tests such as cfDNA and NIPT could mean that, given the negative stereotyping of disabilities like Down Syndrome, there is an expectation that women will abort their baby if it has the condition. That expectation may mean women feel pressured to submit to such screening and maybe even feel stigmatised if they refuse.

5. We also fear that more prenatal testing could lead to women rushing into abortion before receiving adequate counselling and information about the disability detected. This problem was highlighted in the IBC report when it referred to NIPT: “Ironically, the

introduction of a test that may bring informed choice to more pregnant women may undermine this goal in practice, if NIPT is used without thinking enough about the impact. Furthermore, there is the risk that pregnant women with a positive result don't await the validation of the result through invasive diagnostics, but immediately choose to abort the embryo or foetus, without adequate counselling about the relevance of the detected abnormality. Also women may feel pressured to submit to such screening. They might be stigmatised if they refuse to take the test."

Conclusion

Whilst at LIFE we acknowledge the benefit of information to help equip parents to deal with the challenges of bringing up a disabled child, we believe that in the current social context where three babies are aborted every day for Down Syndrome, increased detection will only mean greater elimination of babies with Down Syndrome. For all the reasons given above we therefore cannot support any technology which leads to greater rates of detection and elimination of the disabled.

As a society we should be reaching out to help parents with disabled children- as LIFE's daughter charity Zoe's Place does - to deal with the challenges of bringing up a disabled baby. Parents should not be made to feel that they are alone in their experience and that they would be better off if their baby was not here.

24.

Submission on behalf of Society for the Protection of Unborn Children (SPUC)

SPUC's position

SPUC upholds the right to life of unborn children regardless of chromosomal anomalies, in accordance with traditional medical ethics and human rights. Unborn children have a right to live and their parents have a right to genuine, positive support.

Summary

We regard the assumptions, analysis and recommendations in the consultation documents as flawed and unacceptable.

Analysis of the research basis

The research relies on a number of unstated assumptions concerning:

- the financial and/or other costs of caring for and supporting people with trisomies
- the risk levels for offering tests within the economic models

Ethical issues are assumed to be settled without mention or examination:

- the need to avoid the loss of non-disabled babies is assumed
- the legitimacy of destroying disabled unborn children is taken as read
- the discrimination on various levels against DS/trisomy people is not explained or defended.

The research findings are presented with extensive data, but the recommendations summarising the findings are incomplete, and use misleadingly simple statistics. The unreliability of the figures is pointed up on page 55 of the Systematic Review:

“Findings should be interpreted with caution. Assessment using QUADAS-2 identified high risk of bias in included studies, particularly for selection of women and flow. Deeks' funnel plots indicated there was high risk of publication bias in included studies.”

Much of the research data is from studies of commercially marketed test systems, and we recommend that the impartiality of these studies be checked very carefully. The Systematic Review's statistical analysis is highly complex, with some data derived by narrative analysis – an inherently subjective process. Furthermore it is uncertain to assume that results achieved in laboratory trials would be matched in everyday clinical application of the tests.

What is the rationale for the proposals?

The consultation, and the cfDNA test, are predicated on the assumption that aborting trisomy babies is a good thing, but that inadvertently causing miscarriage (of babies assumed to be non-trisomy) is a bad thing.

This position is ethically objectionable. Aborting babies because they have a trisomy is to doubly victimise them. Firstly it abuses them because they are unborn and vulnerable, and secondly it targets those individuals very specifically because of who they are: people with a trisomy (i.e. a disability).

It is questionable to designate Down's syndrome (T21) as a serious disability. This entails designating disabled people in a detrimental way. It is not possible to say that if a child in utero were born he/she would suffer “such abnormalities as to be seriously handicapped” without subjecting those who have been born with the condition to a similar designation.

What is the objective of the proposals?

The objective appears to be to maximise the possibility of aborting trisomy babies, in order to minimise the costs of caring for the affected individuals and supporting their families if they are born alive.

A secondary objective is to minimise the number of unaffected babies that are inadvertently miscarried due to invasive diagnostic tests. (In other contexts, a treatment or diagnostic technique that led to such a high miscarriage rate would be rejected out of hand.)

A tertiary (but more explicit) objective is to achieve this without incurring greater financial costs than in the present system, and if possible lower costs.

There may be a further concern to avert the impact of eugenic abortions on the mothers involved. The physical and mental health issues are significant and damaging for them. But these risks arise whether the baby is affected or not.

What difference will the proposals make?

On the face of it, the proposals will avoid the inadvertent deaths of a number of babies with unknown trisomy status, and may reduce the number of babies deliberately killed who do not have a trisomy.

These are good objectives, but could and should be achieved by immediately ceasing to abort babies, without the elaborate efforts to ensure that the killing of affected babies continues.

Who would benefit, and in what way, from introducing the cfDNA tests? Non-disabled babies would benefit, it might be argued, by not being killed. Their parents (their mothers) might benefit by not having to gamble with baby's life. Disabled babies however would not benefit (unless there was a lower overall detection rate – which does not appear to be indicated) – they will still be killed. So the introduction of this test would be intended to provide a benefit to the non-disabled, while ensuring that the benefit did not extend to the disabled. However lethal discrimination against the disabled can never serve the genuine best interests of the non-disabled.

Screening tests are only provided (those done at public expense) on the basis of saving public costs in the care of disabled children. The DoH have clearly indicated this in the past - there is no therapeutic benefit in these tests.

Conclusion

Research and resources should be concentrated on ways of improving life expectancy and ameliorating the impairments caused by chromosomal anomalies, not on more efficient ways of eliminating those affected. Recent advances in fields such as epigenetics point to possibilities for treating conditions which have hitherto been regarded as hopeless.

Paul Tully
General Secretary, SPUC

(SPUC Scotland has made a separate submission to the consultation)

Society for the Protection of Unborn Children

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27.

SPUC Scotland Consultation Response
Cell Free DNA Fetal Anomaly Screening Programme

Respondent:

Summary

SPUC Scotland has profound concerns that the proposed screening arrangements are based on non-therapeutic and eugenic principles which discriminate on a basis of disability. A driving factor for the change seems to be that foetal anomalies are detected to permit a greater rate of termination for those with disability. National statistics show that when any of the Trisomies are detected through screening, provided free by the NHS, 90% of woman end the pregnancy through abortion.

The consultation does not address the ethical basis which underpins screening and we believe that this is a grave omission.

Screening has to be ethically motivated such that it provides a therapeutic service where there is a positive finding. Abortion is not a therapeutic procedure, it destroys the affected individual instead of offering any therapeutic benefit. Our specific responses to the areas raised in the consultation are given below.

1. More screening means more abortion.

Using Table 3.2 from the RAPID summary shows 102 extra cases of Down's Syndrome (DS) identified. The current UK termination rate following a prenatal diagnosis is 90% and therefore a greater number of abortions would be expected which would outweigh the benefits of reduced miscarriages by avoiding invasive tests (the table shows a saving of 25 pregnancies from miscarriage due to the reduced number of invasive tests).

It raises the issue of how best to reduce invasive tests. It seems reasonable that such tests be discouraged should the intent be to eradicate those with disability.

2. Increased Performances

There are references to "increased performance" in the last sentence in the report, indicating that the purpose is to eliminate babies affected by DS.

3. Objections

Article 4 of the UN Convention on the Rights of Persons with Disabilities (CRPD) states that, “In the development and implementation of legislation and policies to implement the present Convention, and in other decision-making processes concerning issues relating to persons with disabilities, States Parties shall closely consult with and actively involve persons with disabilities, including children with disabilities, through their representative organizations.” There is therefore a general obligation that people with Down's syndrome be adequately consulted on how the proposed programme impacts on them.

There is no health benefit offered under the proposal, and net harm (deaths of babies) is actually increased based on the analysis provided in the studies referred to in the consultation document.

There is an assumption that saving non DS pregnancies is a benefit, with no interest shown in reducing harm to DS pregnancies. This contravenes the provisions of the CRPD explicitly laid out in articles 2, 3, 4 and 5. As the existing programme harms both DS and non DS pregnancies, the ethical obligation is to reduce harm to both groups concurrently.

The rationale for existing screening programmes is to reduce the overall financial burden of DS people on the State (an uncalculated presumption). It is simply assumed that funding a screening, diagnostic and abortion service, will generate an overall saving. Whether true or not, this assumption treats Down's Syndrome people as a cost-burden and undermines their status by using that assumption to justify aborting others like them. The State doesn't have a legitimate interest in stopping people with DS from being born and should not be party to any screening which is built on discriminatory principles which threaten those with disability.

4. Appropriate timing

Screening tests at too early a stage may give rise to unnecessary procedures given that it is known that many DS babies miscarry naturally at around 12 weeks.

5. Inherent Worth

The assumption that DS babies have no inherent worth (or not enough to be worth protecting by the State) is erroneous. DS organisations, families and people with DS can testify to how worthwhile and precious their lives are. Human rights are made arbitrary by treating those with specific disabilities as unworthy of life.



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30 October 2015

SPUC Scotland

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28.

Hayley Goleniowska's Submission to cell-free DNA testing in the first trimester in the Fetal Anomaly Screening Programme

Hayley Goleniowska is an internationally renowned, award-winning blogger, author, columnist and speaker. She works closely with the NHS and Learning Disability nurses and was named as one of 25 Rising Stars, people changing the face of the NHS, by the Health Service Journal. She is passionate about equal, quality healthcare for all and has gained the respect of many medical professionals. She is also the Mum of two girls, one of whom has Down's syndrome.

As a blogger I have contact with thousands of parents on a daily basis. Many come to me before, during or after antenatal testing. Some find me after Googling from a maternity ward bed following a postnatal diagnosis of Down's syndrome. I am privileged to have a window into the words of the personal maternity experiences of many parents, and as such feel that I can shed a little light onto the changes that are needed around the NIPT's implementation.

When the test is offered, it is often taken 'for peace of mind'. Much more counseling by midwives and ultrasound practitioners needs to take place, explaining the consequences of the various possible outcomes. The test is not diagnostic. Parents need to be aware that a further test, with a long wait for results, will be needed if the likelihood of their baby having a Trisomy is increased. Support is also needed during this stressful period, during which time all members of the family are affected. Often, women report that the stress induced by the NIPT lasted the duration of their pregnancies, the effects of which can only negatively impact the baby.

There is much talk of the 'risk to healthy unborn babies' being reduced as the need for invasive testing is diminished by the NIPT. Of course the value of the life of all unborn babies should be equal, but sadly within these words is the unspoken and almost universally accepted notion that a foetus with a disability is worth less than one that does not. What is not mentioned however, is that the risk to the lives of babies with Down's syndrome is certainly increased by this test.

We would like to see equal human rights for all, including all unborn babies. Currently, babies with a 'severe handicap' can be terminated 'up to and including during birth' as an outdated 1976 law states. It is up to consultants to interpret this law how they see fit.

Down's syndrome is however better described as a 'mild to moderate learning disability' with 'global developmental delay', rather than a severe disability. I refer you to the Multi Party Disability Law Enquiry for full details on recommendations for change surrounding this and support for prospective and new parents.

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The only way forward is to work closely with all groups concerned. Parents of a child with a disability must not be discounted out of hand, assumed to be pro-life and ignored. We want to make a very real difference to families following in our footsteps. We want to see an end to termination as the only assumed route after an antenatal diagnosis, for pro-choice means allowing parents to make one of two choices. In short, we cannot stand by and see parents coerced into a termination.

I believe that if Learning Disability nurses were on hand to discuss options with parents after a diagnosis following NIPT, we would see genuine balance. They could advise on the challenges and joys of bringing up a child with a disability. They could speak honestly about the fulfilling lives that these individuals have. Yet they would remain able to withhold emotion and personal experience. I am proud to say that some trusts are considering this option, so that those who are ignorant to Down' syndrome are not simply being advised by others who are ignorant to the realities of Down's syndrome and only know a set of co-morbidities and characteristics that are possible from a text book.

The key lies in training midwives and sonographers to think about the ethical questions the NIPT raises. To help them change their loaded, emotive language and to deliver truly unbiased support which enables families to reach life-changing decisions.

To conclude:

The test in its essence creates fear, and must be offered as an option, not as standard. Support before, during and after is needed.

Termination should only be offered along with the option of keeping the baby, who will be a unique individual, not simply a set of co-morbidities and characteristics shared with others with the same condition.

Parents who decide to continue a pregnancy following an antenatal diagnosis must be given equal respect and support. So often their care is diminished after such news.

We must not judge quality of life by our own, but look at the incredible, fulfilled lives of those with a disability and their families. Those with Down's syndrome have a life worth living indeed.

Learning Disability nurses should be deployed at point of diagnosis to give an accurate picture of life with Down's syndrome today.

The stress incurred by pregnant women during the test and whilst waiting for result is detrimental and can last the entire pregnancy. This must be considered.

In the wrong hands the NIPT is a eugenicist's tool. It can seek to eradicate certain groups, including those with disabilities, from society. This danger cannot be underestimated.

Down's syndrome is an entirely 'normal', naturally occurring condition. It is not something we should seek to actively eradicate, in the same way selective births for boys, or those without ginger hair would be morally wrong.

Seeking evidence from those paid by the test manufacturers should not be considered factual or objective as it can never be so.

29.

Daniel Marsden - Blog Post[Great news on Down's syndrome screening?](#)

In my last post sometime back I recall the ethical and humanist challenges that **xxxx xxxx** posed on Twitter relating to screening for Down's syndrome, and the parent carer perspective upon this. Interestingly -only to me perhaps - I feel it appropriate to write my initial reflections on today's **BBC story** relating to GOSH advances to make a more effective and less invasive screening system affordable to the NHS.

On the face of it this is a story that should be celebrated, but if we dig a little deeper and consider some of the other perspectives at play here, it poses some difficult questions relating to the sensitivity and perhaps even the legality of such a piece. Productivity wise the team at GOSH do need to be applauded for advances they have made, it has greater clinical efficacy and is more cost effective which is likely to make more accessible via the NHS in the future and will likely save the NHS on other more complex and costly secondary forms of screening. So far so good.

The screening will locate the genetic mutation/disorder more effectively, earlier, so offering women a 'choice' earlier. H'mmm, let's look at this briefly:-

1) Genetic disorders - Check the wiki page for [these](#). Let's use sickle cell as an example, individuals that have sickle cell are more vulnerable to significant acute and chronic health conditions such as infections, stroke, pain and an increased risk of death. For sickle cell the medical model is an important and useful lens with which to view the condition. Is Down's syndrome best viewed from this perspective though? What can be gained from this perspective? We know that someone born with Down's will possibly have heart and lung conditions and may experience hypothyroidism and dementia in later life along with a greater propensity for sensory impairments, mental health diagnoses and epilepsy. They will almost certainly have associated learning disabilities, which will impact on their ability to function independently in society as an adult. This description in itself challenges the medical model lenses which are too narrow to encompass the breadth of how Down's syndrome affects those with the 'genetic disorder'. If you will - the medical model lenses loses the added complexity in its peripheral vision.

2) Women's choice. Observations on choice have been made widely by commentators before, I'll try to avoid retreading this

territory. However in the context of this news story being a 'breakthrough', a success story, an implicit message to the public is contained, in the event of a positive blood test the correct choice is to terminate.

As discussed above, Down's is not adequately defined by the Medical model. Personhood and how society Values people is also vital. The imposition of of this news is that society values more effective ways of identifying the condition earlier which in itself encourages the assumption that the woman will choose to not carry on with the pregnancy.

If this all makes sense up to this point, this poses some questions that relate to the individual and social perspectives:-

- 1) What is the impact on the healthcare professionals who deliver babies with Down's syndrome following false negative results? Have they 'failed'? How do they handle their own emotions and are able to share this information sensitively with families?
- 2) What is the impact for women and families who have a baby with Down's syndrome, who were unaware of the possibility? Have they 'failed'? How does this impact on attachment? If attachment is so important for health and development, does this further negatively impact on the child with Down's?
- 3) At a time when society is waking up to the contribution that people with learning disabilities can make, how does this story's explicit and implicit messages contribute?
- 4) Most crucially, how does our society value people with Down's syndrome, is it the same or different from others people? And how does this impact on those individuals that have Down's syndrome?

Personally I'm not against screening, but similar to **xxxx xxxx** statements on the matter, the BBC news reports that are triumphalist on screening without thought of how this impacts on the individuals, families and society at large only serve to reinforce preconceived assumptions and stereotypes. It would be interesting to understand the BBC News Equality policies, their impact assessments and to see a full analysis of this article in line with the Equality Act 2010.

For inspiration please watch Hayley Goleniowska at [Positive Choices 2015](#)

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**UK National
Screening Committee**

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Submission on behalf of the Christian Medical Fellowship

xxxx xxxx xxxx xxxx The Christian Medical Fellowship (CMF) is an interdenominational Christian organisation with about 4,500 British doctors as members, practising in all branches of the profession. Through the International Christian Medical and Dental Association we are linked with like-minded colleagues in over 100 other countries.

CMF regularly makes submissions on ethical and professional matters to Government committees and official bodies. One of CMF's aims is 'to promote Christian values, especially in bioethics and healthcare among doctors and medical students, in the church and in society'. Many of our members are directly involved 'on the front line' in diagnosing, treating and caring for pregnant women, as well as people with disabilities.

As a Christian organisation, we encourage our members to be advocates for those who are weak, sick, marginalised and disabled and to seek to love and care for them to the utmost of their abilities.

Reflections on UK NSC recommendation

CMF is supportive of reducing the unintended adverse consequences of screening procedures but we do not welcome the proposal to add cfDNA analysis as a contingent test for those in whom initial screening has indicated a >1:150 risk, for the reasons outlined in this submission.

This development purports to reduce the overall number of referrals for invasive diagnostic procedures (amniocentesis or chorionic villous sampling) and thereby reduce the number of miscarriages that arise as the unintended result of those procedures, of babies that are almost always healthy.

However a concomitant effect would be an increase in the number of babies with Down Syndrome (DS) which would be lost.

The Convention of the Rights of Persons with Disabilities (CRPD)

The Convention of the Rights of Persons with Disabilities (CRPD) is relevant here. The United Nations (UN) General Assembly adopted the CRPDⁱ, together with its Optional Protocolⁱⁱ, by consensus on December 13, 2006ⁱⁱⁱ. The Convention provides, in the form of a legally binding core human rights convention, a disability-specific framework for the civil, political, economic, social and cultural rights of persons with disabilities. The CRPD is a legally binding core human rights convention, which has been signed by the United Kingdom in 2007 and ratified in 2009.

The general principles in the CRPD that apply to health policies include, but are not limited to:

- Respect for inherent dignity;

- Non-discrimination;
- Full and effective participation and inclusion in society;
- Respect for difference and acceptance of persons with disabilities as part of human diversity and humanity;

Policies that potentially offend one or more of the general principles of human rights law must be treated with extreme caution and heightened scrutiny and should be subject to immediate review.

Major discrepancies in figures

There is also a major discrepancy in the figures between the two projections from the Systematic Review and the RAPID study which seriously undermines confidence in the data on which the UK NSC recommendation is based.

According to the Systematic Review's projected figures, for DS there would be 20 more cases detected per year, if the cfDNA test was to be offered on a contingent basis. Assuming a 90% abortion rate among these additional cases^{iv}, it would in theory imply 18 additional abortions for DS per year. Their figures also suggest that there would be a 'saving' of 43 normal pregnancies per year, as a result of many fewer invasive procedures being necessary, and therefore proportionately fewer miscarriages. On these projections, the result would be an overall *decrease* of 25 per year in the number of fetal lives lost.

However, the RAPID study suggests that the overall number of abortions for babies with trisomy is actually likely to be much higher as a consequence of introducing the new test. The RAPID study projections suggest that there would be 102 more T21 (Down Syndrome) pregnancies detected per year, with the 1:150 threshold protocol in place. Assuming the same 90% subsequent abortion rate, this would translate into 92 'additional' abortions per year. Their figures also predict a reduction in the rate of miscarriage of 25 per year. An overall *increase* in fetal loss, therefore, of 66 per year.

Further concerns

However, we also have concerns of a more fundamental nature, that are to do with the assumptions that lie behind current screening policy, and the lack of opportunity for reflection and means of support for those women (and their families) learning that their fetus is affected by trisomy. We explain and amplify these reservations below and make a number of recommendations in conclusion.

Other reflections on the NSC documents:

- The greater accuracy of the cfDNA test (over the existing combined test) will surely lead to public demand that it be made available as part of routine initial antenatal screening, particularly given the trend towards increasing average maternal age, when risks are higher.
- The NSC summary estimates that using the new test as part of *primary* screening would detect 289 more trisomy babies annually. This figure appears at odds with the more general comment (page 4, para 2) suggesting that at lower thresholds the number of detections does not increase greatly. The impression that the threshold has been set so as to be cost-neutral is difficult to avoid.
- As awareness of the test increases, and its cost comes down, then many pregnant women will access the test privately if it is not routinely available on the NHS. They will receive results outlining all manner of variable predictive risks faced by their babies, but will not have the context in which to discuss the relevance of those results. This will increase anxiety and make abortion a more likely choice, sometimes without evidence of trisomy. What measures are in place to educate women on not making a decision to abort straight after cfDNA testing? ^v
- The same technology that allows cfDNA testing to detect trisomy also detects gender^{vi} and will in time permit the detection of a wide range of genetic 'conditions' and predispositions. A widespread use of cfDNA testing to analyse more and more genetic features up to the entire genome would mean the complexity of data would lead to a significant increase of false-positives, requiring a confirmation by invasive tests of abnormalities whose relevance is not known at all. This unknown might lead the parents not to take any risk, with the resulting paradox: the number of invasive diagnostics would rise because of the use of the new test that should precisely be diminishing the use of invasive diagnostics. With that increase in the number of invasive tests would come an increase in the number of unintended miscarriages of often normal fetuses. Further, what safeguards will be in place to prevent abortion on the grounds of gender where specific sex-linked diseases are NOT implicated? Where are lines to be drawn? Which conditions will be included in screening protocols? What data protection policies will be in place to prevent 'genetic disadvantage' leading to discrimination in the job market, insurance provision and the like? Until the ethical implications of the more widespread uses of the technique have been thoroughly considered, we consider its introduction to be irresponsible and unethical.

- On what logical grounds can permission to abort up to birth, for ‘serious’ genetic disability, be prevented from extension to infanticide for the same conditions? If it is legal and ethical to end such a life up to birth, why is it not so a day later? If it is not legal and ethical after birth, why is it so a day earlier?
- The language of ‘screening’ suggests that tests are intended to uncover conditions for which appropriate therapy will then be made available. In the case of Down Syndrome, the only ‘therapy’ on offer is to terminate the life of the fetus. The notion of ‘screening in order to eliminate’ has sinister undertones. (This is explored further in the next section.)

Concerns about assumptions

The World Health Organisation screening guidelines, often referred to as Wilson's Criteria, were published in 1968, but are still applicable today^{vii}.

In the case of prenatal screening for trisomies, the second of Wilson's ten criteria, namely that ‘there should be a treatment for the condition’, does not apply. Trisomy screening is carried out not to identify individuals with special needs in order that they may be more effectively treated, but rather with the express purpose of eliminating them from the population. This type of screening offers no benefit to the fetus being screened and also results in collateral damage in that many unaffected fetuses also die in the process. We would submit that this is contrary to the Hippocratic Oath, the Declaration of Geneva and to the general strategy of medicine. But we would also take issue with the underlying assumption that such screening benefits the health of pregnant women and their families (see below).

It is assumed that a woman who discovers that she is carrying a fetus affected by Down Syndrome will want to terminate her pregnancy. The UK Abortion Law, under Ground E, permits an abortion to take place up to birth if ‘there is a substantial risk that if the child were born it would suffer from such physical or mental abnormalities as to be seriously handicapped’. The terms ‘substantial’ and ‘serious handicap’ are not defined and have been applied in practice to cover many conditions that are compatible with life outside the womb. Down Syndrome is one such condition, and those with it may live for 50 or 60 years, depending on co-morbidities, finding fulfilment and contributing greatly to family and community life. Research published in the American Journal of Medical Genetics^{viii} found that nearly 99% of people with Down Syndrome are happy with their lives, more than three-quarters of parents of a child with Down Syndrome had a more positive outlook on life and almost 90% of siblings said they considered themselves better people because of their family member with Down Syndrome.

To assume Ground E provision should automatically apply to Down Syndrome is to stretch the law to the point of completely misshaping it. In our opinion, DS should not be classed as a ‘serious handicap’ and screening for it should only be offered to mothers in order to prepare them and their families better to be joined by a child with special needs. Further, to give DS Ground E

status implies that the life of a person with Down Syndrome would have been better terminated before birth – a life not worth living. Ultimately, it fosters in society the notion that only the (genetically) perfect are acceptable and that it is socially desirable to prevent people with disabilities from being born^{ix} – an insidious and discriminatory eugenics practised for its perceived social or economic benefit to individuals other than those directly affected. It attempts to control human reproduction in order to ‘improve’ the genetic characteristics of the next generation.

These concerns are echoed by the International Bioethics Committee of UNESCO that comments: ‘The widespread use of genetic screening and in particular of NIPT may foster a culture of ‘perfectionism’ or ‘zero defect’ and even renew some ‘eugenic trends’, with the consequence that it could become more and more difficult to accept imperfection and disability as a part of normal human life and a component of the diversity we are all called on to acknowledge and respect. The anxiogenic effect is also to be considered. The right of an individual to make autonomous choices is to be made consistent with the right not to be subjected to discrimination or stigmatization based on genetic characteristics and the duty to respect every human being in her or his uniqueness^x.

Without question, caring for a child with Down Syndrome brings added pressures to parents and siblings but also particular and rewarding joys. The possibility that raising a child with Down Syndrome could be a positive, life-affirming experience is nowhere mentioned in the NSC review. We would like to see, as a statutory requirement, provision for informed ‘reflection before decision’ for every woman receiving the news that she is carrying a fetus affected by Down Syndrome (and other trisomies). This should include the opportunity wherever possible to talk to someone with that diagnosis or a similar condition, a family who has a child with that diagnosis or a similar condition^{xi}. At the very least, printed information written by those who have the same disabilities, and their families, should be made available. Health professionals should signpost families receiving a diagnosis of disability to information leaflets covering all their options, to telephone and online helplines manned by trained professional counsellors, and to local and national support groups for those with specific conditions. Following her decision, and regardless of what choice the woman and her family may make, ongoing support must be part of that provision.

Current practices leave little room for such reflection. The assumptions behind current practice mean that opportunity for such reflection and support is bypassed in the rush to terminate. Subtle or direct pressure may be placed on parents who decide not to abort^{xii}. Parents can be made to feel that to bring into the world a child with known disability is somehow irresponsible and blameworthy^{xiii}. **We should not underestimate the coercive power present in a system where a conveyor belt of expectation moves in the direction of choosing not to give birth to children with special needs who are regarded either as a burden or as, in some sense, not fully human^{xiv}.**

Another assumption is the belief that parents and families will be damaged by having a disabled child, and that this damage can be limited through abortion. This is not supported by research; indeed, the opposite may be the case. Psychological trauma following

abortion appears to be least when the pregnancy is early, when there is no maternal ambiguity about the decision and when the child was most definitely not wanted.

Abortions for congenital abnormality usually occur in pregnancies that are both late and wanted. It is not surprising therefore that psychological morbidity is considerable. Such morbidity following termination of pregnancy for fetal disability has been shown to be both prevalent and persistent^{xv} and associated with long-lasting consequences for a substantial number of women^{xvi}. Rather than leading to psychological well-being, termination of pregnancy for fetal disability can be an emotionally traumatic major life event which leads to severe post-traumatic stress response and intense grief reactions that are still detectable some years later^{xvii}.

People do not easily 'get over it' although proper support during the loss can lessen psychological morbidity^{xviii}. In fact women who terminate pregnancies for fetal anomalies experience grief as intense as those who experience spontaneous perinatal loss with approximately a fifth developing major depression and/or requiring psychiatric intervention^{xix}. Their families are also not immune with even very young children and those sheltered from knowledge of the event showing reactions to their parents' distress and maternal absence^{xx}.

Some may experience an acute grief reaction or be plagued by guilt and fear that can precipitate marital breakdown. Additionally, there is a risk that through striving to eradicate congenital disability, a community risks promoting a culture of perfectionism that may have discriminatory effects on disabled people^{xxi}.

By contrast, current data on children and families affected by disabilities indicate that disability does not preclude a satisfying life. Many problems attributed to the existence of a disability actually stem from inadequate social arrangements that public health professionals should work to change^{xxii}. This, along with the psychological morbidity often accompanying abortion for fetal disability has led many to conclude that abortion for even severe fetal disability, as well as taking the life of a disabled person, is also worse for the parents and families concerned.

Janet Goodall, a paediatrician with a lifetime's experience in caring for severely disabled children, describes the 'pearl effect'.

'In a culture that views success and failure in materialistic terms, many perceive disabled children as an extra burden. But paradoxically, divorce rates and unhappiness are no more common in the families of disabled children than in those with healthy children. Like the grit in the oyster that causes a pearl to form, caring for a child with special needs often strengthens relational bonds and can act as a catalyst for maturity and stability.'^{xxiii}

If people with disabilities were fully integrated into society, there would be less impetus for testing and termination because those with disabilities would be seen as full, valuable and equal members of the community. The Christian ethic, which calls the strong to make sacrifices for the weak, leads to a strengthening of family and society, by combating discrimination and strengthening human virtues of patience, perseverance and altruism.

In summary, we recommend:

- Diagnostic and prognostic information, including information on the risks of abortion for fetal disability, must be conveyed in a way that is genuinely neutral, balanced, compassionate and well-informed.
- Advice and counselling should be provided by qualified and trained counsellors.
- Parents should be offered the option to meet others who have first-hand experience of the condition or disability in question. This includes affected patients and their families, disability specific support groups, healthcare professionals caring for babies, children and adults with the relevant condition. Reading testimonies of women who have chosen to continue with their pregnancies, such as those collected **xxxx xxxx**^{xxiv}, may also be helpful.
- Bringing up a child with special needs often involves substantial emotional and financial cost. Practical support for the longer term must be in place for families, and access routes to financial and emotional support as well as treatment need to be clearly signposted. These should include routes for exploring adoption for those families who feel personally ill-equipped but who wish to offer their child 'the gift of life'.
- More statutory funding should be provided for information, care and support groups and organisations for those with disabilities.
- Perinatal palliative care is an appropriate option for patients whose babies are diagnosed antenatally with a severe or terminal disability. In one British study, when parents were offered perinatal hospice as an option, 40% chose to continue with their pregnancies^{xxv}.

RJT October 2015

ⁱ Convention on the Rights of Persons with Disabilities, *opened for signature* Mar. 30, 2007, 46 I.L.M. 433 [hereinafter Convention or CRPD]. The CRPD text, along with its drafting history, resolutions, and updated list of signatories and States Parties is posted on the United Nations Enable website at <http://www.un.org/esa/socdev/enable/rights/convtexte.htm>.

ⁱⁱ Optional Protocol to the Convention on the Rights of Persons with Disabilities, *opened for signature* Mar. 30, 2007, 46 I.L.M. 433 [hereinafter Optional Protocol].

ⁱⁱⁱ See CRPD, G.A. Res. 61/106 (2007); Optional Protocol, G.A. Res. 61/106 (2007).

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- ^{iv} Morris JK, Springett A. (December 2014) The National Down Syndrome Cytogenetic Register for England and Wales: 2013 Annual Report.
http://www.binocar.org/content/annrep2013_FINAL.pdf
- ^v <http://www.downsyndromeprenataltesting.com/dont-abort-based-on-maternit21/>
- ^{vi} <http://www.ariosadx.com/expecting-parents/faqs/> (<http://www.thebirthcompany.co.uk/non-invasive-prenatal-test/harmony-test/>)
- ^{vii} Wilson JMG, Jungner G. (1968) Principles and practice of screening for disease (large pdf). WHO Chronicle Geneva:World Health Organization. 22(11):473. Public Health Papers, #34.
- ^{viii} Skotko, B. et al. 2011. 'Having a son or daughter with Down syndrome: Perspectives from mothers and fathers.' American Journal of Medical Genetics Part A. Volume 155, Issue 10, pp 2335–2347.
- ^{ix} Wyatt, J. 2001. 'Medical paternalism and the fetus'. Journal of Medical Ethics.
http://jme.bmj.com/content/27/suppl_2/ii15.full
- ^x <http://unesdoc.unesco.org/images/0023/002332/233258e.pdf>, section IV, para 125
- ^{xi} Parens E and Asch A. The Disability Rights Critique of Prenatal Genetic Testing: Reflections and Recommendations. Hastings Center Report 1999; 29(5): S1-S22
- ^{xii} <http://www.cmfblog.org.uk/2013/02/19/women-who-keep-their-disabled-babies-face-coercion-discrimination-and-disdain/>
- ^{xiii} Nuffield Council on Bioethics, Genetic Screening: Ethical Issues, London 1993, para 8.11.
- ^{xiv} **xxxx xxxx**
- ^{xv} Davies V et al. Psychological outcome in women undergoing termination of pregnancy for ultrasound-detected fetal anomaly in the first and second trimesters: a pilot study. Ultrasound Obstet Gynecol 2005;25(4):389-92(April)
- ^{xvi} Kersting A et al. Grief after termination of pregnancy due to fetal malformation. J Psychosom Obstet Gynaecol 2004;25(2):163-9(June)
- ^{xvii} Kersting A et al. Trauma and grief 2-7 years after termination of pregnancy because of fetal anomalies--a pilot study. J Psychosom Obstet Gynaecol 2005;26(1):9-14 (March)
- ^{xviii} Geerinckx-Vercaemmen CR, Kanhai HH. Coping with termination of pregnancy for fetal abnormality in a supportive environment. PrenatDiagn 2003;23(7):543-8 (July)
- ^{xix} Zeanah CH et al. Do women grieve after terminating pregnancies because of fetal anomalies? A controlled investigation. ObstetGynecol 1993;82(2):270-5 (August)
- ^{xx} Furlong RM, Black RB. Pregnancy termination for genetic indications: the impact on families. Soc Work Health Care 1984;10(1):17-34(Autumn)
- ^{xxi} Chandler M, Smith A. Prenatal screening and women's perception of infant disability: a Sophie's Choice for every mother. NursInq 1998;5(2):71-6 (June)
- ^{xxii} Asch A. Prenatal diagnosis and selective abortion: a challenge to practice and policy. Am J Public Health 1999;89(11):1649-57(November)
- ^{xxiii} Goodall J. The Pearl effect. CMF Triple Helix 2003;10-11(Winter)
- ^{xxiv} <http://amzn.to/ULiFz6>
- ^{xxv} Breeze AC et al. Palliative care for prenatally diagnosed lethal fetal abnormality. Arch Dis Child Fetal Neonatal Ed. 2007 Jan;92(1):F56-8