Down's syndrome screening is unethical: views of today's research ethics committees

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Background: Screening for Down's syndrome forms part of routine obstetric practice. Ethical considerations relating to genetic screening form a major part of the workload of research ethics committees. This study investigated the attitudes of research ethics committee members to several conditions varying in clinical severity and prognosis, including Down's syndrome.

Methods: The members of 40 randomly chosen research ethics committees were surveyed. A simple questionnaire comprising 19 clinical scenarios based around four "clinical" conditions was designed to review conditions that were potentially embarrassing, affecting life span but not mental ability, premature death, and intellectual impairment with a risk of neonatal cardiac defects (Down's syndrome). Screening tests with different degrees of effectiveness were described and the diagnostic test descriptions ranged from having no risk to an unaffected fetus to causing spontaneous abortion of two normal fetuses for each affected fetus identified. Replies were graded on a scale of 1 to 5.

Results: Seventy seven replies were received from 28 different research ethics committees. Screening was supported for treatment of a life threatening condition (95% in favour) but screening for conditions of a slight increase in premature death (14% in favour) or cosmetic features (10% in favour) were considered unethical. Views were ambiguous (49% in favour) about conditions involving significant shortening of lifespan. Down's syndrome screening was considered more ethical when described as a serious condition (56% in favour) than when the clinical features were described (44% in favour). Once increased rates of spontaneous abortion on confirmatory testing were added, 79% (21% in favour) and 86% (14% in favour) stated that screening was unethical (for "serious" and "clinical features" descriptions, respectively).

Conclusions: Down's syndrome screening raises ethical concerns about genetic testing in general that need to be dealt with before the introduction of any prenatal screening test.

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Down's syndrome screening began in the late 1980s following the publication of Wald et al.¹ At that time, ethical assessment was not as prominent as now and screening was introduced based on small scale preliminary studies and without ethical review.

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The National Screening Committee is currently designing standards to be applied to all Down's screening programmes.² These standards include offering testing to all women based on individual informed consent, defining a maximum false positive rate and minimum detection rate, time limits for procedural steps, and national standardisation of risk thresholds. Because not all women are currently offered screening and risk thresholds are not currently all identical, this represents both an attempt at standardisation and an appreciable extension to current screening provision. It is commonly believed that medical attitudes are excessively paternalistic and may be prejudiced against the birth of a "non-normal" child, when compared with the general population. Furthermore, discussion has taken place about whether Down's screening is primarily a eugenic exercise. The human genome project will allow us to carry out screening programmes for a wider variety of characteristics (desirable or undesirable) and will pose ethical dilemmas for the future. Therefore, it seemed appropriate to survey research ethics committees to identify their positions with respect to Down's screening, a currently available genetic screen.

METHODS

A simple questionnaire comprising 19 clinical scenarios was compiled and pilot tested on the South Staffordshire local research ethics committee. Questions were based around four "clinical" conditions: potentially embarrassing (red hair and freckles), cystic fibrosis (premature adolescent death but no effect on mental ability), type 2 diabetes (premature adult death), and Down's syndrome (intellectual impairment, with increased risk of cardiac defects at birth). Screening tests with different degrees of effectiveness were described and the diagnostic test description ranged from having no risk to an unaffected fetus to causing spontaneous abortion of two normal fetuses for each affected fetus identified.

The administrators and chairmen of 189 local research ethics committees and 10 multi-centre research ethics committees were identified from the website of the Central Office for Research Ethics Committees (www.corec.org.uk). Forty research ethics committees (38 local research ethics committees and two multi-centre research ethics committees) were chosen at random. Each relevant chairman was sent 10 copies of the questionnaire and asked to distribute them to committee members. Table 1 shows the questions used. Questions were grouped into seven blocks, namely: (A), Down's described as a "serious" condition; (B), testing ethics field boundaries (red hair versus life saving treatment); (C), type 2 diabetes; (D), cystic fibrosis; (E), reduced education potential; (F), clinical descriptions of Down's syndrome; and (G), effects of government policy.

For analysis, answers of 1 or 2 were considered as "ethical"; 3 was considered as undecided; and 4 or 5 were considered "unethical".

Table 1 Research ethics committee members were asked to indicate their opinion of each scenario on a scale of 1 (totally ethical) to 5 (totally unethical)

Block	Q	Scenario description	Ethical?		
			Yes	??	No
A	1	Screen for a serious condition (Down's syndrome). No risk to unaffected fetus	43	11	21
	2	Screen for a serious condition: 1 unaffected fetus spontaneously aborted for every 2 affected fetuses diagnosed	6	10	60
	3	Screen for a serious condition: 2 unaffected fetuses spontaneously aborted for every 1 affected fetus diagnosed	5	2	69
B	4	Screen for red hair and freckles	5	3	68
	5	Screen for a life threatening condition to allow surgery/neonatal intensive care when the baby is born	73	2	2
C	6	Screen for reduction in life expectancy by 10 years	4	7	66
	7	Screen for reduction in life expectancy by 10 years—will need drug treatment	9	7	61
D	8	Screen for reduction in life expectancy by 50 years	20	18	39
	9	Screen for reduction in life expectancy by 50 years: a cure is likely in the next 15 years	16	18	43
E	10	Screen for slight lowering of education potential	2	3	72
	11	Screen for moderate lowering of education potential	1	6	70
F	12	Screen for severe lowering of education potential	5	11	61
	13	Screen for severe lowering of education potential; 10% may have severe heart defect; others have life expectancy reduced by 10 years (Down's clinical description). Only affected identified	7	27	43
	14	As 13 above but the screening test identifies 60% of affected and 5% of unaffected pregnancies: no risk to unaffected	14	19	43
	15	Screen for Down's clinical description: 1 unaffected fetus spontaneously aborted for every 2 affected fetuses diagnosed	4	7	66
	16	Screen for a Down's clinical description: 2 unaffected fetuses spontaneously aborted for every 1 affected fetus diagnosed	3	1	73
G	17	A screening test similar to 15 above is in existence. Do extra lab test. Each extra case detected costs £5000	10	11	54
	18	As 17 above but the cost/extra case detected is £100 000	6	10	58
	19	Add directive counselling to screening programme	11	11	54

Full questions are available on JCP website (<http://jcp.bmjournals.com/supplemental/>).

RESULTS

Seventy seven replies were received from 28 different research ethics committees (range, one to seven replies/committee), but a few questions were left blank.

Question block B tested the boundaries of the ethics decision field: for a treatable life threatening condition, 94% (73 of 77) of replies indicated that screening to allow treatment would be ethical, compared with 10% (eight of 76) of replies indicating that screening for red hair with termination of affected fetuses would be ethical.

Question block C tested whether screening for small reductions of life expectancy with termination of affected fetuses would be acceptable. Where no treatment was indicated 14% (11 of 77) indicated that screening would be ethical and when drug treatment was included 21% (16 of 77) said screening was ethical, with the increase in choice of ethical possibly resulting from patient knowledge allowing earlier diagnosis and treatment.

Question block D tested whether screening for large reductions of life expectancy with termination of affected fetuses would be acceptable. Screening was considered ethical by 49% (38 of 77), which decreased to 44% (34 of 77) when a cure within 15 years was suggested.

Question block E tested whether screening for large reductions in intellectual capacity with termination of affected fetuses would be acceptable. For mild and moderate reductions, 6% (five of 77) and 9% (seven of 77), respectively, indicated that screening would be ethical and for severe learning difficulties 21% (16 of 77) indicated that screening would be ethical.

Question blocks A and F both represented Down's syndrome. Block A described it as a serious condition, whereas block G described some clinical features. When described as a serious condition, 72% (54 of 75) considered screening ethical, whereas when clinical features of severe learning difficulty, heart defects, and slight reduction of life span were described, 44% (34 of 77) considered screening ethical when there was no risk of damage to an unaffected fetus. When loss of one unaffected fetus for every two affected fetuses was added, 21% (16 of 76) and 14% (11 of 77) considered screening ethical for blocks A and G, respectively. When two unaffected fetuses are

lost for every affected fetus detected, 9% (seven of 76) and 5% (four of 77) considered screening ethical, respectively.

Question block G examined the effects of changes of government policy on the Down's screening programme as currently practised. A small increase in expenditure to improve case detection was considered ethical by 28% (22 of 76), and 23% (17 of 75), indicating that a large increase in cost would be ethical. Similarly, 29% (22 of 76) felt that directive counselling to improve take up rates would be ethical.

DISCUSSION

Antenatal Down's syndrome screening is acceptable to the general public, as is clearly shown by the high acceptance rate of this "opt in" screening service. Local audit data show a 69% uptake rate in 2001. However, many women tend to accept screening without considering the implications, and large differences in acceptance rates may occur in close geographical areas.³ Truly informed consent for Down's screening may be difficult to achieve in practice and the high acceptance rate may be misleading. Furthermore, there have been objections to screening and criticisms of current medical attitudes raised by women who have delivered babies affected by Down's syndrome.⁴⁻⁵

It is clearly recognised that Down's syndrome screening is driven by several primary forces, namely: parental fear of having a disabled child, the marketing efforts of the "testing industry", and government efforts to reduce costs.⁶⁻⁸ Surveys of individuals have shown more reluctance to consider termination for Down's syndrome than for spina bifida or haemophilia⁹; surveys of physicians have demonstrated greater reluctance to terminate haemophilia than Down's syndrome affected fetuses,¹⁰ and opinions of English and French physicians differ¹¹; a survey of Lutheran pastors demonstrated that only 23% considered Down's syndrome to be a sufficiently serious condition to warrant termination.¹² The situation is further complicated by the fact that pregnant women regard the prospect of a Down's syndrome affected birth to be more burdensome than a procedure related miscarriage,¹³ and by studies showing that women's views about screening are affected by available resources, their own feelings about having a child with Down's syndrome, their

moral beliefs, family and social influences, perceptions of their own health, and any difficulty in becoming pregnant.¹⁴

Opinions also vary between countries: 33% of respondents in a survey in Russia indicated that they favoured compulsory termination of pregnancy if testing identified a genetic disorder in the fetus, and Russians were more in favour of prenatal screening, selective termination, and genetic manipulation to improve a child's intelligence or reduce the probability of homosexuality.¹⁵ In Denmark, a postal survey identified considerable controversy with respect to abortion for Down's syndrome,¹⁶ indicating that opinions in one country cannot be used to inform decisions in another.

"One could conclude that it is impossible for physicians, and by implication for a national screening committee made up of healthcare professionals, to make decisions on such a controversial matter on behalf of a population"

This survey indicates that where screening is carried out for benefit, by allowing treatment of a life threatening condition, there is clear support (95% in favour), but where screening is for a trivial condition it is considered unethical (10% in favour). Screening for conditions causing slight shortening of lifespan was considered as unethical as screening for trisomy (14% in favour) and for significant shortening of lifespan, the position was ambiguous (49% in favour). For Down's syndrome, screening was considered more ethical when the syndrome was described as a serious condition (56% in favour) than when the clinical features were described (44% in favour). However, once the fact that screening leads on to a diagnostic test that puts unaffected fetuses at risk of spontaneous abortion is added, the consensus opinion was that screening is unethical; for current risk levels (one unaffected lost for every two affected diagnosed), 21% and 14% said that screening was ethical (for serious and clinical feature descriptions, respectively). Finally, the overall consensus was that spending extra money to improve detection was not ethical but one respondent stated that money and ethics do not mix.

Clearly, however, a mere survey of research ethics committee members does not necessarily indicate that Down's screening should be abandoned because prejudices against abortion may correlate with reasons that make people wish to be research ethics committee members. Indeed, one respondent specified that although screening tests were ethical the termination of affected fetuses was not. Similarly, it is impossible for a chemical pathologist with strong links to both Down's syndrome screening and ethics to define what is and what is not ethical in this clinical area. One could conclude that it is impossible for physicians, and by implication for a national screening committee made up of healthcare professionals, to make decisions on such a controversial matter on behalf of a population. The human genome project will soon make it possible for us to screen antenatally for a wide variety of characteristics, some of which may be undesirable, although others may be less important. For example, it is already well known that sex screening (and selective termination) is carried out to ensure male offspring in some countries. Down's syndrome screening represents a line in the sand, which may already represent a step too far because it indicates a lack of value for the disabled. The spectre of eugenics loomed in the 1940s; now it could be applied with even better precision. It is essential that we as a society urgently debate and decide precisely what we wish to become.

Take home messages

- Screening was supported for the treatment of a life threatening condition but screening for conditions of a slight increase in premature death or cosmetic features was considered unethical
- There was no consensus of opinion for conditions involving significant shortening of lifespan
- When described as a serious condition, Down's syndrome screening was considered more ethical than when the clinical features were described
- Once increased rates of spontaneous abortion on confirmatory testing were added, 79% and 86% of respondents stated that screening was unethical (for "serious" and "clinical features" descriptions, respectively)
- Thus, Down's syndrome screening raises ethical concerns about genetic testing in general that need to be dealt with before the introduction of any new prenatal screening test

CONFLICTS OF INTEREST

I am a consultant chemical pathologist who runs a laboratory that carries out Down's syndrome screening tests, and wrote software that many laboratories used to make Down's risk calculations. I am also chairman of a local research ethics committee, a member of an multi-centre research ethics committee, and a member of the Department of Health genetics and insurance committee.

REFERENCES

- 1 Wald NJ, Cuckle HS, Densem JW, *et al.* Maternal serum screening for Down's syndrome in early pregnancy. *BMJ* 1988;**297**:883-7.
- 2 Department of Health: National Screening Committee. *Draft standards for antenatal screening including specific standards for Down syndrome screening*. London: Department of Health, 2002.
- 3 Santalahti P, Hemminki E, Latikka AM, *et al.* Women's decision-making in prenatal screening. *Soc Sci Med* 1998;**46**:1067-76.
- 4 Boston S. Give Down's babies a chance. *BMA News Review* 1994;August:34.
- 5 Boston S. Too deep for tears: eighteen years after the death of Will, my son. London: Rivers Oram Press, 1994.
- 6 Gill M, Murday V, Slack J. An economic appraisal of screening for Down's syndrome in pregnancy using maternal age and serum alpha fetoprotein concentration. *Soc Sci Med* 1987;**24**:725-31.
- 7 Alderson P. Down's syndrome: cost, quality and value of life. *Soc Sci Med* 2001;**53**:627-38.
- 8 Baldus M. [From diagnosis to decision—decision processes of women in the context of prenatal diagnosis]. *Prax Kinderpsychol Kinderpsychiatr* 2001;**50**:736-52.
- 9 Bell M, Stoneman Z. Reactions to prenatal testing: reflection of religiosity and attitudes toward abortion and people with disabilities. *Am J Ment Retard* 2000;**105**:1-13.
- 10 Julian C, Huard P, Gouvernet J, *et al.* Physicians' acceptability of termination of pregnancy after prenatal diagnosis in southern France. *Prenat Diagn* 1989;**9**:77-89.
- 11 Bouchard L, Renaud M, Kremp O, *et al.* Selective abortion: a new moral order? Consensus and debate in the medical community. *Int J Health Serv* 1995; **25**:65-84.
- 12 Stuck J, Faine J, Boldt A. The perceptions of Lutheran pastors toward prenatal genetic counseling and pastoral care. *J Genet Couns* 2001;**10**:251-63.
- 13 Kuppermann M, Nease RF, Learman LA, *et al.* Procedure-related miscarriages and Down syndrome-affected births: implications for prenatal testing based on women's preferences. *Obstet Gynecol* 2000;**96**:511-16.
- 14 Moyer A, Brown B, Gates E, *et al.* Decisions about prenatal testing for chromosomal disorders: perceptions of a diverse group of pregnant women. *J Womens Health Gend Based Med* 1999;**8**:521-31.
- 15 Gudkov L, Tichtchenko P, Yudin B. Human genetic improvement: a comparison of Russian and British public perceptions. *Bull Med Ethics* 1998;**134**:20-3.
- 16 Norup M. Attitudes towards abortion in the Danish population. *Bioethics* 1997;**11**:439-49.