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TAB

Preimplantation diagnostics

Practice and statutory regulation in
seven selected countries

Summary



TAB

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TAB

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SUMMARY

CONTEXT AND OBJECTIVE OF THE REPORT

Preimplantation diagnostics involve genetic testing of embryos prior to transfer to a woman's uterus. Preimplantation genetic diagnosis (PGD) is performed after artificial insemination (in vitro fertilisation, or IVF). The goal of PGD is mostly to identify and select embryos for which specific chromosomal anomalies or genetic mutations can be ruled out with a high degree of probability. Discussion of PGD within the context of the parliamentary debate about stem cell research during the past legislative period has shown that – apart from the fundamental ethical assessment of the process – the decisive question for a possible decision on allowing or banning it in Germany is if and how the use of PGD can be limited to a narrowly defined group of users (e.g. to couples with a demonstrated high risk of bringing a child into the world with a serious genetically-caused disease or handicap), or whether it is not realistically possible to prevent expansion to other indications over time.

The goal of the TAB project was to use case studies from other countries to compare statutory regulation and practical use of preimplantation diagnostics, to achieve a better understanding of the relationship between different regulatory models and the evolution of supply and demand in the use of PGD. The study included both countries with comparatively restrictive regulation of PGD and countries where there is no legal regulation or the existing statutory framework permits PGD without establishing individual indications or prerequisites for examining embryos in individual cases.

STATUTORY REGULATION AND MEDICAL PRACTICE

The seven country studies carried out in the TAB projects show not only (as was to be expected) differences in the degree of use of PGD and in the degree of state control, but also very different forms and concepts for statutory regulation of biomedicine in general and reproductive medicine and PGD in particular.

Belgium

PGD has been performed at Belgian IVF centres since 1994, without initially any statutory regulation. A law passed in 2003 which regulates research on embryos



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adds hardly any restriction to the previous comparatively permissive practice. PGD is permitted for a wide range of medical indications.

Denmark

Under the law, genetic testing of fertilised eggs in vitro is allowed if there is a risk of severe genetically-caused disease and to diagnose chromosomal defects. Currently, PGD is still subject to special control by the health ministry, as PGD tests are treated as research projects. The procedure has only been used in a few cases since approval of the first PGD in 1999.

France

There are various laws covering bioethical issues in France, under which PGD has been subject to concrete statutory regulation since 1997. These allow PGD only in special cases to prevent serious genetic diseases. The first licence to perform PGD was granted in 1999. The December 2003 amendment to the French bioethics act provides for the creation of an agency on UK lines to supervise reproductive medicine.

United Kingdom

PGD, which has been performed in the UK since 1990, is allowed as long as it is for the purpose of identifying serious diseases or spontaneously occurring chromosomal defects. The entire area of work on embryonic tissue (including PGD) is subject to supervision by an agency created specifically for this purpose. This licences all research projects, including practical application in reproductive medicine.

Italy

Until 2003, there was no statutory regulation of PGD in Italy. However, under a 1985 ministerial order on artificial insemination, it could not be performed at institutions in the public health system. This order did not apply to private institutions. Since the first PGD at the start of the 1990s, a largely unregulated market for PGD has developed, with a large number of private providers (particularly for aneuploidy screening). In the face of substantial protest by Italian practitioners of reproductive medicine, the Italian Senate passed a law in December 2003 which had been under consideration for two years, and which substantially limits the practice of IVF and bans PGD generally.

Norway

The Norwegian biomedicine act passed in 1994 explicitly permits PGD but bans research on human embryos. As PGD was regarded as a research project by the health ministry, there was a de facto ban on PGD. An amendment to the act submitted by the health ministry would have confirmed this ban. Under the amended biomedicine act passed by the Norwegian parliament in November 2003, PGD is allowed only in special cases of gender-linked hereditary diseases.

USA

PGD has been performed in the USA since 1990, and is now performed at a large number of IVF clinics. There is no state regulation of PGD. Concrete details of practice are almost entirely subject to voluntary self-policing by doctors. However, there is no apparent binding restriction of the range of indications for PGD, and even the use of PGD for nonmedical purposes - such as choosing the sex of the embryo to be carried - is widely regarded as legitimate.

The country studies show clearly that the practical application of PGD is further advanced internationally than is often assumed in the discussion. However, even the data collected in the present TAB study is far from giving a complete picture of the number of active centres and the figures for births in the individual countries. Summarising the incomplete data gives a figure of at least 1,600 children born after PGD testing up to the start of 2003 in the six countries studied. The actual number is probably much higher, as a significant number of centres performing PGD are not documented, at least in the USA and Italy.

It is clear that if PGD is introduced without strong statutory or other regulatory barriers, we can expect rapid expansion in practice after a brief initial phase. The expansion in the use of PGD in Belgium, and also in the USA and Italy, is due primarily to the use of the procedure for aneuploidy screening, i.e. PGD is mainly used to improve the prospects for success of IVF by identifying embryos with chromosomal anomalies. PGD for diagnosing single-gene diseases and chromosomal defects with couples with known genetic risk is now in the minority.



STATUTORY REGULATION AND RESTRICTION OF THE SPECTRUM OF INDICATIONS

In the course of establishing itself in all the countries studied, PGD provoked discussion of the legitimate purposes or expanding the use of PGD, although the scope and consequences of these discussions differed. This applies to aneuploidy screening, HLA matching (selecting an embryo which is a suitable tissue donor for treating an ill sibling), diagnosing genetic features indicating above-average susceptibility to disease (e.g. breast cancer) and also the use of PGD for sex selection, even where this is not indicated medically (»social sexing«). Generally, we can say that once PGD has been allowed, regardless of the statutory regulation in place, every new (medical) option for the use of PGD can raise the question of the value and legitimacy of (statutory or de facto) restriction of the use of PGD, and may require a new decision.

In the event of a total absence of regulation and largely free development of supply and demand, it can be assumed that PGD will not be limited to individual cases with special risks, or even to medical indications. In line with the evolution of prenatal diagnostics from a procedure indicated in exceptional cases to a routine test in pregnancy care practices, PGD can be expected to establish itself over time as a routine test in IVF.

In particular, aneuploidy screening to improve the success rate of IVF, which (apart from Norway) is only banned in one of the countries studied (France), can lead to expansion of the use of PGD beyond the group of couples with known genetic risks, to the point where it becomes at least potentially attractive as a standard IVF procedure. Stepwise expansion (»ratchet effect«) cannot be excluded from the analysis of chromosomal abnormalities in the event of a known risk (e.g. several prior miscarriages), i.e. in cases which are generally still regarded as an indication of »known risk of serious hereditary disease«, to aneuploidy testing for women with (age-related) statistically increased risk to a routine procedure with every IVF.

The UK and France are countries with comparatively extensive regulation of PGD. A comparison between the two shows clearly that the most effective constraint possible of the use of PGD is most likely to emerge from a combination of extensive controls of practice based on statutory provisions which are as precise as possible. A relatively vague or open statutory definition of the permissible range of use of PGD, as in the UK (even though in this case this was deliberate on the part of the legislature), tends to lead to case-by-case decisions by the



agency responsible, which comes under pressure in its decision-making as new options for PGD open up.

The French regulatory model, characterised by licensing and control by a commission or agency within a range of indications very narrowly defined by law, seems most suitable for ensuring the restriction of PGD – as intended by the legislature – to »particularly serious and incurable hereditary diseases«, as the French law puts it. The identification required by law of the problematic genetic feature in one of the parents restricts the scope of the licensing agency's decision from the start to cases where there is a risk of hereditary disease. The only decision that is left is how »serious« the case is. However, it rules out stepwise extension of the use of PGD to spontaneously occurring chromosomal anomalies, and hence to screening to increase the rate of pregnancy and birth in artificial insemination.

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