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# PRE-IMPLANTATION GENETIC TESTING OF IVF EMBRYOS
## A Statement by the National Council of Churches of Singapore

## BACKGROUND

On 10 November 2016, Dr Amy Khor announced in Parliament that the government is launching a three-year pilot programme to study pre-implantation genetic screening (PGS) for in-vitro fertilisation (IVF) embryos. The PGS programme will begin in early 2017 at the National University Hospital to detect chromosomal disorders in IVF embryos.

According to Dr Khor, although this procedure is currently not allowed in Singapore, MOH is reviewing it because in recent years 'new technologies for PGS have emerged and some jurisdictions have now allowed PGS'. Dr Khor added that MOH will be consulting relevant stakeholders as well as the public on their views, especially the ethical concerns they might have regarding the programme.[1]

## TYPES OF PRE-IMPLANTATION GENETIC TESTING

Pre-implantation Genetic Testing (PGT) evaluates the chromosomal and genetic health of embryos created during in-vitro fertilisation (IVF). There are basically two types of PGT.

***Pre-implantation Genetic Screening*** (PGS) aims to detect chromosomal abnormalities in embryos created through in-vitro fertilisation (IVF) and used in assisted reproduction. Chromosomal disorders are known to cause conditions such as Down syndrome, which affects 1 out of every 800 babies.

MOH intends to use PGS to screen embryos for chromosomal abnormalities (aneuploidy) so that only healthy embryos are selected for implantation.

***Pre-implantation Genetic Diagnosis*** (PGD) is used to analyse the embryo to ascertain the presence of genetic disorders associated with an illness.

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[1] 'Singapore to Study Genetic Screening of IVF Embryos', http://www.channelnewsasia.com/news/singapore/singapore-to-study-genetic-screening-of-ivf-embryos/3277180.html, assessed on 14 November 2016. See also Salma Khalik, 'Criteria Set for IVF Embryo Screening Trial', *The Straits Times*, November 15, 2016, B1 and Janice Heng, 'Hope for Fewer Miscarriages With Genetic Screening', *The Straits Times,* November 5, 2016, B2.

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PGD can be used for many different purposes.

Mendelian Diseases

PGD can be used to screen embryos for single genetic disorders because it enables specific sections of the genome to be examined for mutations. This is especially pertinent for couples that are carriers of autosomal, dominant or sex-linked diseases like cystic fibrosis, sickle cell anaemia, Duchenne muscular dystrophy, and haemophilia.

Susceptibility Conditions

PGD could also be employed to test embryos for their susceptibility to certain genetic diseases later in life, such as breast cancer.

Late-Onset Conditions

PGD could be used to prevent late-onset conditions like Alzheimer's Disease (AD) or Huntington's Disease (HD). For example, a woman who tested positive for Alzheimer's Disease (AD) could use PGD to ensure that any foetus she carried does not have the gene responsible for the disease.

HLA Matching

More controversially, a woman could use PGD to have a second child with its human leukocyte antigen (HLA) matched to her first child who is suffering from Fanconi anaemia. The second child could then serve as a source of haematopoietic stem cells (obtained from its umbilical cord) to its older sibling.

Gender Selection

PGD can also be used for gender selection. This use of PGS is perhaps the most controversial not only because of its non-medical nature but also because it panders to the parents' desire to have a child of a certain sex or gender.

PGD is a controversial technique and many countries have introduced restrictions to its application, especially with regard to sex-selection. In Singapore, PGD is available at both public and private hospitals. However, non-medical use of PGD like sex-selection is not allowed here.

## ETHICAL ISSUES SURROUNDING PGT

While the National Council of Churches in principle does not have any serious ethical objections to PGT, it has grave concerns that this technology is used to select only 'normal' or 'healthy' embryos for implantation, while embryos with chromosomal or genetic abnormalities are either destroyed or used for research (and subsequently destroyed).

Like prenatal screening, which is mostly used in relation to abortion decisions, PGT is almost always used to identify and subsequently discard 'defective' or 'undesirable' embryos.

The Council would therefore regard PGT as immoral if it is used to select embryos created through IVF on chromosomal or genetic grounds, resulting in the implantation of some embryos and the destruction of others.

**Moral Status of the Human Embryo**

The Council holds that human life begins at conception. This means that the early human embryo is a human being that bears the image and likeness of God (Genesis 1:26-27), and therefore worthy of dignity, respect and protection.

The Council therefore holds that human embryos should not be created by IVF unless they will be transferred to the woman's uterus.[2] No human embryo should be created in this way and then discarded because it is found to be genetically unfit for implantation.

The Council therefore opposes PGT if it leads to the destruction of embryos deemed unsuitable for implantation.

**Commodification of Children**

PGT could also result in the commodification of children. This is because through PGT, parents could select the child's genes and/or gender to satisfy their wishes and aspirations.

By making the selection of the genes of the prospective child possible, PGT has disturbingly introduced quality-control measures to having children.
When children become the products of their parents' reproductive decisions, and when they are admitted to their parents' sphere of affection and attention only because they are desirable and not unconditionally, the parent-child relationship is itself is debased.

Consequently, parents – and indeed society itself – would no longer regard children as gifts whom they must cherish and love, but merely as the continuation of their own projects. Children are no longer seen as ends in themselves, but merely the means to an end.

**Eugenics**

With the power to select the genome of one's offspring, a new eugenics has appeared on the horizon.

[2] While the Council does not have serious ethical objections to *homologous* IVF (as long as all embryos created are implanted in the uterus and no embryo is deliberately discarded), it opposes *heterologous* IVF, which uses third party reproductive materials.

'Eugenics' is the combination of two Greek words that mean 'good' and 'genes'. As is widely known, the eugenics movement has to do with the creation of 'better humans through breeding'.

But eugenics is not confined only to breeding; it also involves the elimination of 'undesirable' human beings either by preventing them from reproducing or from being born. The mandatory sterilisation laws in the United States in the 1930s are an example of such eugenics.

PGT has not only made the detection of chromosomal and genetic disorders in early human embryos possible, it has also encouraged a 'eugenics mindset' by making the distinction between 'acceptable' embryos that should be implanted and 'undesirable' embryos that should be discarded and destroyed.

In our pursuit of good health, we wrongly assume the authority to decide which human beings should live and which ones are not worthy of life. In eliminating individuals with certain genetic conditions or unwanted diseases, we encourage a utilitarian approach that undergirds all eugenics.

And in developing ideas of 'health' and 'illness', a 'healthy' and a 'diseased' gene, and what is 'desirable' and 'undesirable' we provide a rationale that justifies 'human selection'. We decide which human being is worthy of life on the basis of these notions.

In opting for elimination, we betray the fundamental goal of medicine, which is to always care and never kill.

The Council opposes eugenics and the eugenics mindset because they violate the sanctity of human life and the dignity of the human being. A eugenics mindset will harm the human community because it will create a society that can no longer tolerate, much less care, for the sick, the disabled and the vulnerable.