Government of Western Australia
Department of Health

# Preimplantation genetic testing applications to the Reproductive Technology Council

## Guidelines for clinics

### Purpose

These guidelines aim to support Assisted Reproductive Technology (ART) clinics on the updated process and requirements for preimplantation genetic testing (PGT) applications to the Reproductive Technology Council (the Council).

These updates aim to reduce the administrative burden on clinics and the Council and enable more timely responses for patients.

There are two significant changes – an expanded list of pre-approved conditions for PGT that no longer require applications to the Council, and an automated application process.

### Directions and regulations

The 2004 amendments to the *Human Reproductive Technology Act 1991* (*HRT Act*) permit diagnostic testing of embryos (including PGT) in Western Australia. All diagnostic procedures carried out on or with a fertilising egg or embryo must have the prior approval of the Council.

The Council may approve PGT if (*HRT Act* s14 2b):

(a) the embryo is for use in the reproductive treatment of a woman and the Council is satisfied, on the basis of existing scientific and medical knowledge, that-

(i) the diagnostic procedure is unlikely to leave the embryo unfit to be implanted in the body of a woman; and

(ii) where, the diagnostic procedure is for the genetic testing of the embryo, there is a significant risk of a serious genetic abnormality or disease being present in the embryo; or

(b) the diagnostic procedure consists of a use referred to in section 53 W(2) (d) or (f).

### Definitions

PGT refers to a range of techniques used to test embryos for known genetic conditions or chromosomal abnormalities.

## PGT for aneuploidy (PGT-A)

PGT-A was previously known as preimplantation genetic screening (PGS).

These tests check embryonic cells collected via IVF treatment to assess for chromosomal abnormality and identify embryos that may fail to implant, lead to miscarriage or result in a child with a chromosomal abnormality.

PGT-A aims to identify embryos that are:

- euploid (correct number of chromosomes)
- aneuploid (missing or additional chromosomes)
  or
- mosaic (both euploid and aneuploid cells).

These tests may increase the chance of embryo implantation and reduce the likelihood of miscarriage or birth of a baby with a chromosomal abnormality.

## PGT for monogenic disorders (PGT-M)

These tests may be used when the parents are known carriers of a genetic condition that affects a single gene. It involves embryos, created in an IVF cycle, being tested for that specific condition. Carrier embryos or embryos without the genetic mutation are then considered for embryo transfer.

PGT-M may be appropriate when:

- a person is affected by a genetic condition
- a woman is a carrier of an X-linked condition
  or
- a person and their partner or donor are both carriers of the same genetic condition.

These tests reduce the risk of miscarriage and the likelihood of a baby born with that specific genetic condition.

## PGT for structural rearrangements (PGT-SR)

These tests may be used to assess for chromosomal structural rearrangements and identify embryos that may be unsuitable for transfer in an IVF cycle.

Chromosomal structural rearrangements include:

- translocations
- duplications
- insertions
- Inversions
- microdeletions

If the chromosomal set is complete the structural rearrangement is known as balanced. Where there is missing or extra chromosomal information the structural rearrangement is known as unbalanced.

Some rearrangements (particularly deletions and duplications) cause significant genetic abnormalities or disease. Others may not have an immediate effect but can impact on the carrier's ability to conceive.

PGT-SR may be used to reduce the risk of miscarriage and avoid developmental defects.

## Approved conditions

In January 2024, the Council expanded the pre-approved list of genetic conditions (including structural rearrangements) for PGT on embryos. ART clinics are no longer required to submit an application to the Council for PGT approval if the condition (and the online mendelian inheritance in man (OMIM®) number) is on the approved conditions list.

The conditions on the list are identified by their phenotype number that has # in front, genotypes are identified by * before the number. The clinical geneticist or genetic counsellor should state the phenotype OMIM® number to clarify the specific type of the condition for PGT. The phenotype OMIM® number should be included in the patient's clinic records.

PGT-SR, for translocations and other chromosomal abnormalities that cause repetitive pregnancy failure or developmental defects, do **not** require an application to Council.

The approved conditions list is available from the Council's website and is updated regularly as Council approves new conditions to be added**.**

The initial updated list is based on genetic conditions that have been approved by the Council in the past and conditions the UK Human Fertilisation & Embryology Authority has approved for PGT testing in the United Kingdom with clear justification provided for the inclusion.

**Factors for determination**

The PGT Committee, a sub-committee of the Council, considers applications principally by the extent to which a condition causes symptoms that strongly impair daily life or threaten survival, and for which there is no effective treatment to avoid such symptoms or for which highly advanced and invasive treatment is necessary.

It uses a range of criteria as outlined in the framework for approval to determine whether an individual application should be approved, and whether that condition should then be added to the approved conditions list. Appendix 1 is the flowchart to approve PGT applications.

**Criteria**

a. **Mortality:** Are symptoms of the condition fatal, life-threatening, or do they reduce life expectancy?
b. **Age of onset**: Do symptoms of the condition present at birth, childhood, early adulthood or later?
c. **Quality of life:** How quickly does someone worsen once the condition presents? What is the extent of any physical or intellectual impairment? What is the lived experience of people with this condition?
d. **Treatment:** Is there treatment available? If so, to what extent are the symptoms mitigated? How invasive is the treatment and what is the life-time cost of treatment?
e. **Impact**. Impact of the condition on the affected person and their family and/or carers.
f. **Penetrance**: Is the abnormality fully penetrant (where there is 100% certainty that the person will develop the condition) or is there incomplete penetrance (where only a subset of people with the mutation will develop the condition?)
   If the latter, the GRP will base its decision on the highest penetrance figures available.
g. **Variability of symptoms**: How do symptoms vary in their intensity between individuals and between families? What is the range of variability and are some forms of the

condition so mild that they are not considered serious. The GRP will base its decision on the worse possible symptoms of the condition.

h. **Genetic variant is causative of the clinical features**: Is this a variant of unknown significance? Is there evidence that the gene variant causes the family genetic condition? If the gene variant explains only some of the clinical features, are the couple aware their next child may have the problems not explained by the gene variant.

When making a determination on a genetic condition, and the specific type, about which there is limited experience, it may be necessary to request the opinion of a clinical geneticist, Genetic Alliance Australia or another patient advocacy group to advise on the seriousness of the genetic condition.

## When to submit an application

If a condition is not on the list, or it is a request for PGT-A that is not pre-approved, a clinic needs to apply to the Council.

**PGT-M**

- for conditions **on** the list, an application is not required, however clinics must keep good records of all diagnostic testing, feasibility studies, consents and clinical geneticists or genetic counsellor letters that include the condition, type and phenotype OMIM number.
- for conditions **not** on the approved conditions list, an application is required using https://redcap.link/PGT

**PGT-SR**

- Translocations and other chromosomal abnormalities that cause repetitive pregnancy failure or developmental defects, do **not** require an application to Council.
- Clinics must keep good records of all diagnostic testing, feasibility studies, consents and clinical geneticist or genetic counsellor letters that include details on the translocation type.

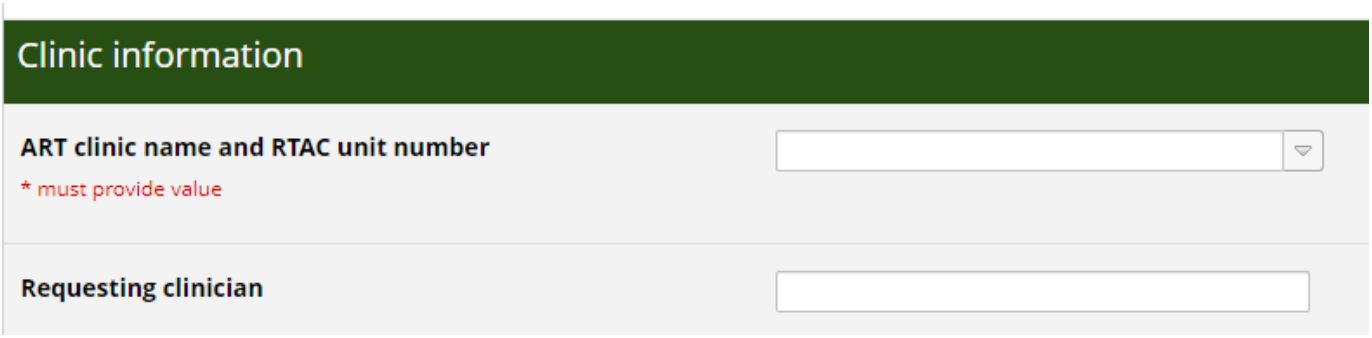
**PGT-A**

- An application is required using https://redcap.link/PGT **unless** the patient providing the eggs:
    - is greater than 35 years of age
    - has experienced 2 or more miscarriages
    - has experienced 3 or more failed IVF attempts after embryo transfer (fresh or frozen) or
    - has been referred by a geneticist and has a family history of aneuploidy.

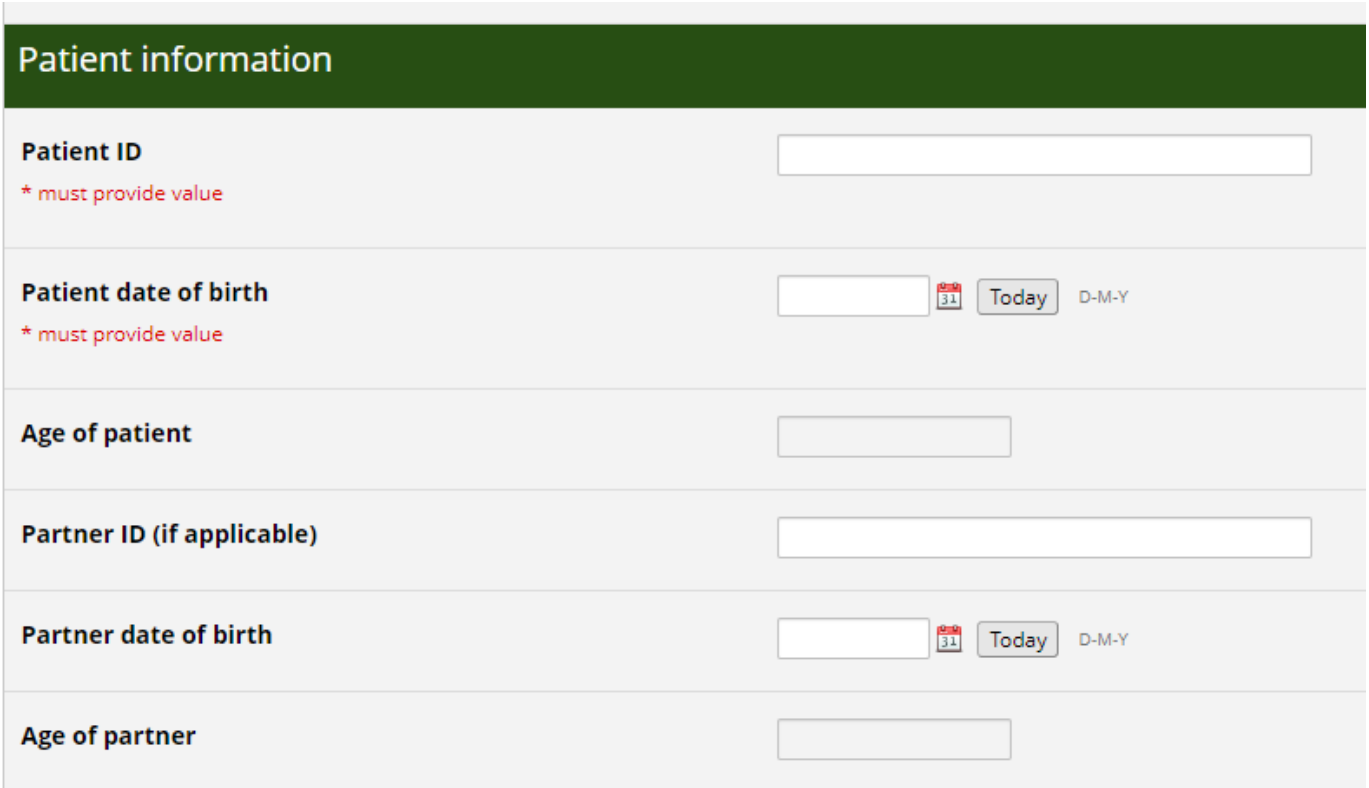
## PGT application form

PGT applications can be made using https://redcap.link/PGT The link can also be found on the RTC website too.

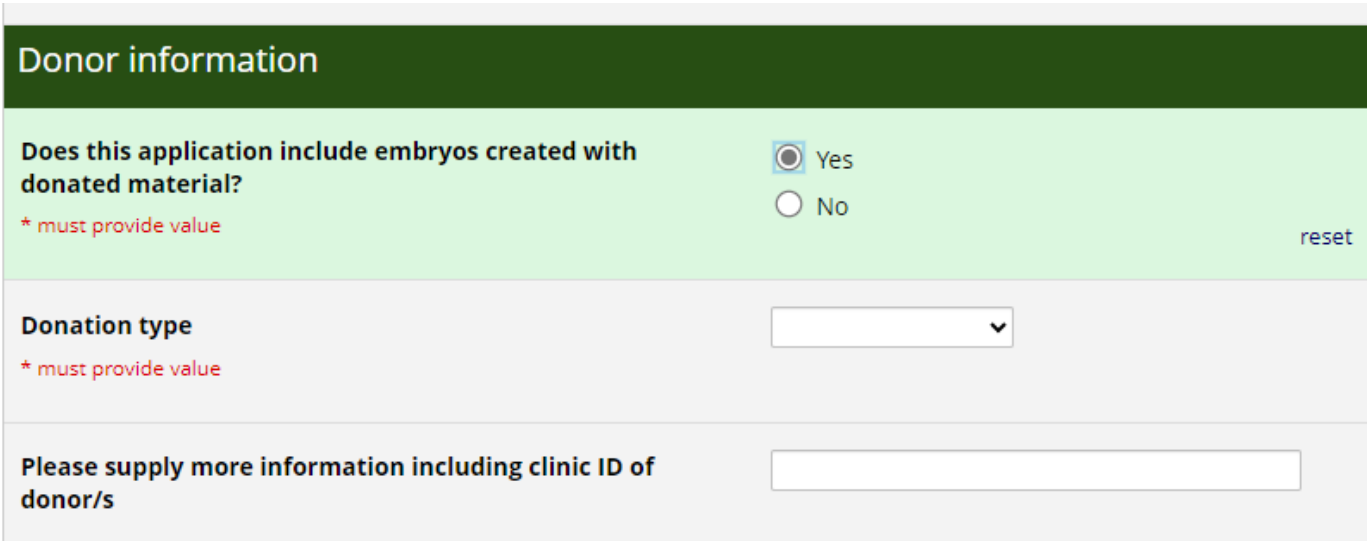
The ART clinic identifiers include the clinic name, Reproductive Technology Accreditation Committee (RTAC) licence number and requesting clinician.




Patient and partner (if applicable) information regarding the clinic's patient ID number and patient date of birth, the age is calculated automatically.

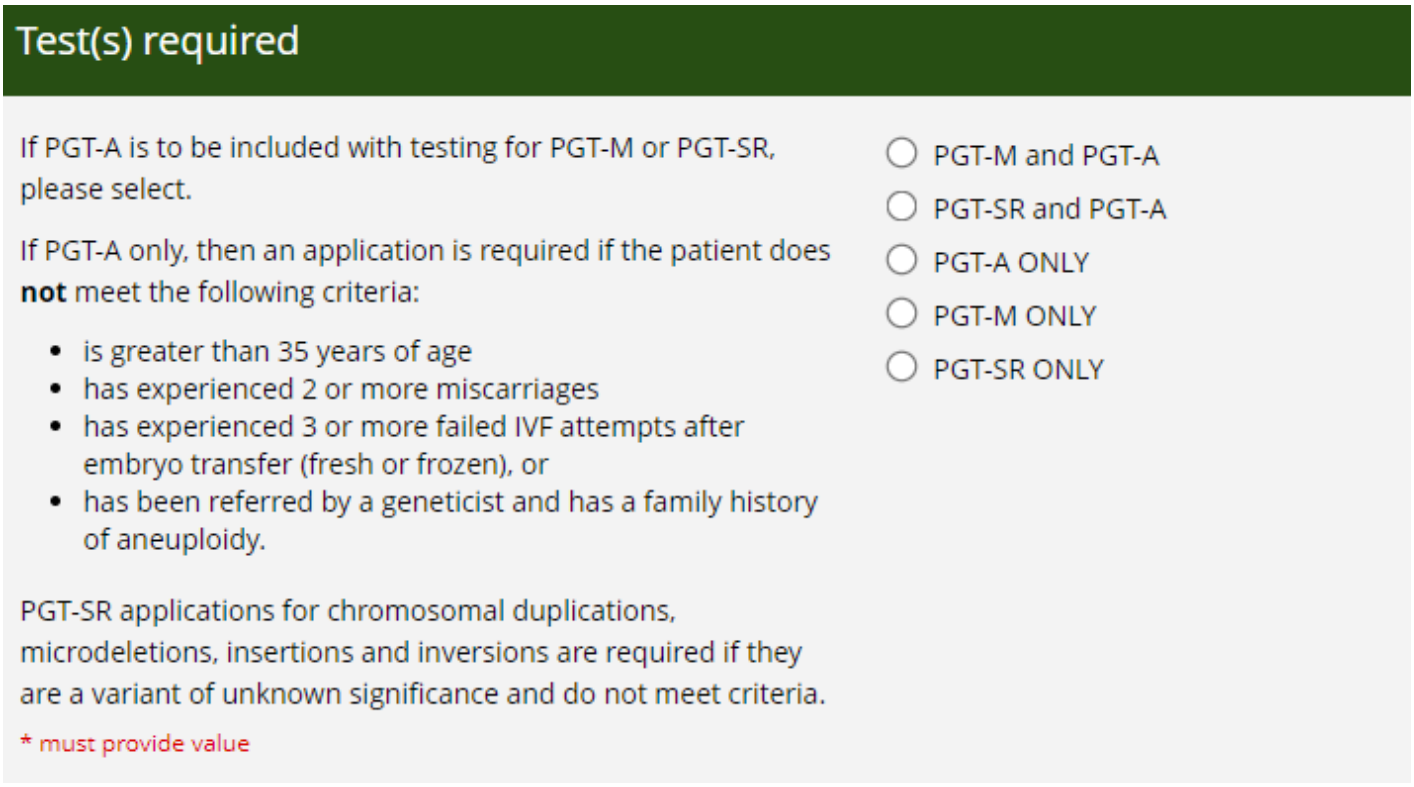


Information about any donor material in the embryos must be considered due to the inherited nature of genetic conditions. If a donor is used, supply information about the egg, sperm or embryo donor/s.




Check if the condition is already on the approved conditions list (check by phenotype OMIM number as some conditions have multiple types). An application to the Council is not required if the OMIM number is on the list or if it is for PGT-SR and the chromosomal variation causes repetitive pregnancy failure or developmental defects.

Mark which tests are required whether it is for both or only one. PGT-A is automatically approved if an application for PGT-M is requested



Complete information regarding the name of the condition/s and the phenotype OMIM number/s. If the application is for PGT-SR, provide information about the specific chromosomal abnormality.

| | |
|---|---|
| **Please check the Approved Conditions List - if the phenotype OMIM® number is listed, an application to Council is NOT required.** | |
| **What is the name of the genetic condition (including type)?**<br>* must provide value | |
| **What is the phenotype OMIM® number for this condition and type?** | |
| **If required - what is the phenotype OMIM® number for the second condition and type?** | |
| **PGT testing laboratory** | |

## Supporting documentation

The application form requires a supporting letter from a clinical geneticist or genetic counsellor, who has assessed the risk and seriousness of the condition and discussed relevant issues with the participants.

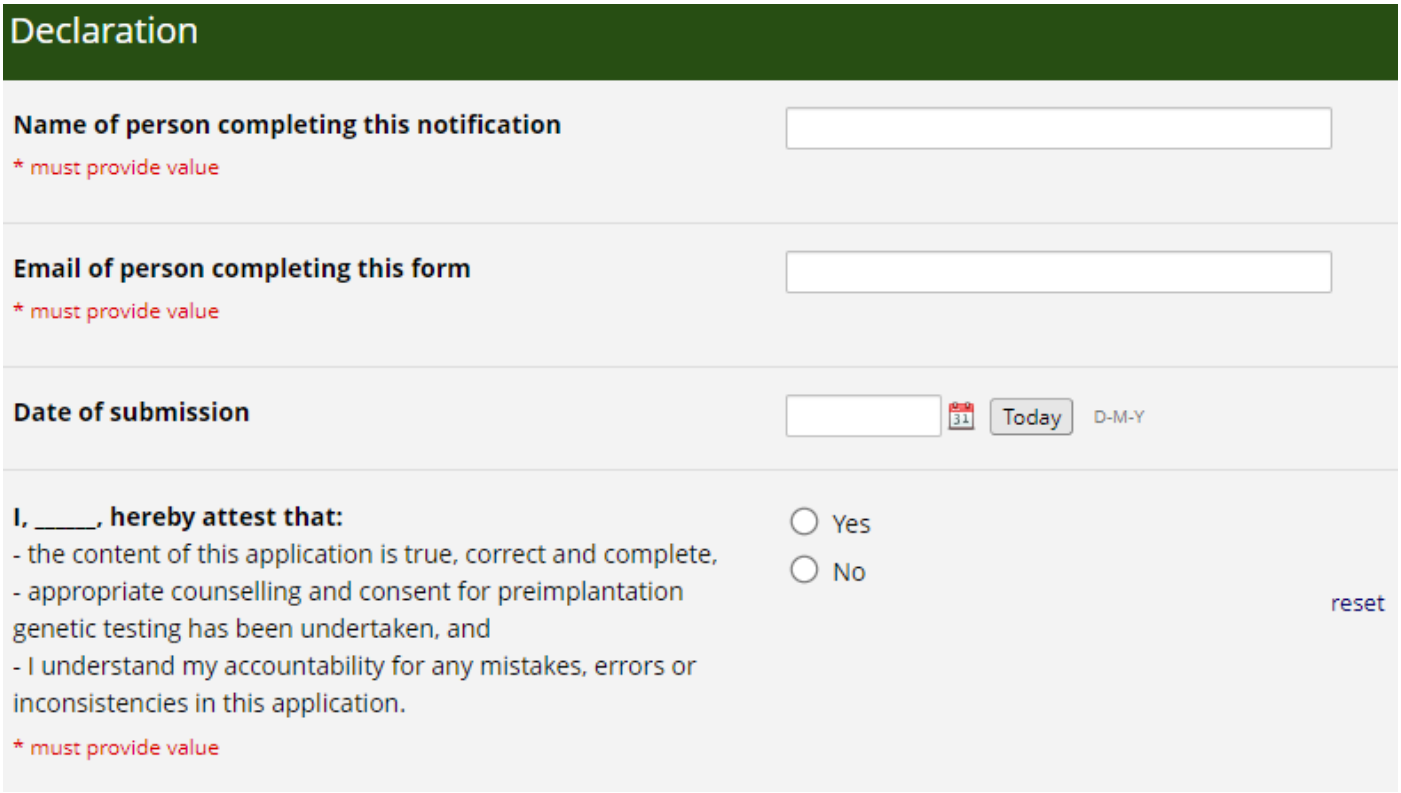
For PGT-A only cases that do not meet the eligibility criteria for preapproval, a clinical geneticist letter is required to support the application.

For very rare conditions that have not previously been tested, feasibility studies may have been requested to ascertain if it is possible to perform the diagnostic test. If so, this documentation should also be uploaded with the form.

| Supporting documentation | |
|---|---|
| **Genetic counselling letter(s)**<br>* must provide value | Upload file |
| **Feasibility study (if applicable)** | Upload file |
| **Upload any additional documents here** | Upload file |

## Declaration

The declaration must be completed by the person submitting the PGT application to attest for attached documents. An email will be sent to this address to confirm receipt of application.




## Addition to approved conditions list

New conditions may be added to the list after support by the PGT Committee and approval by Council.

The approved conditions list will be updated regularly.

# Clinic reporting requirements

Clinics must keep good records of all diagnostic testing, feasibility studies, consents and clinical geneticists or genetic counsellor letters that include the condition and type (and OMIM phenotype number) for **all** PGT cases undertaken.

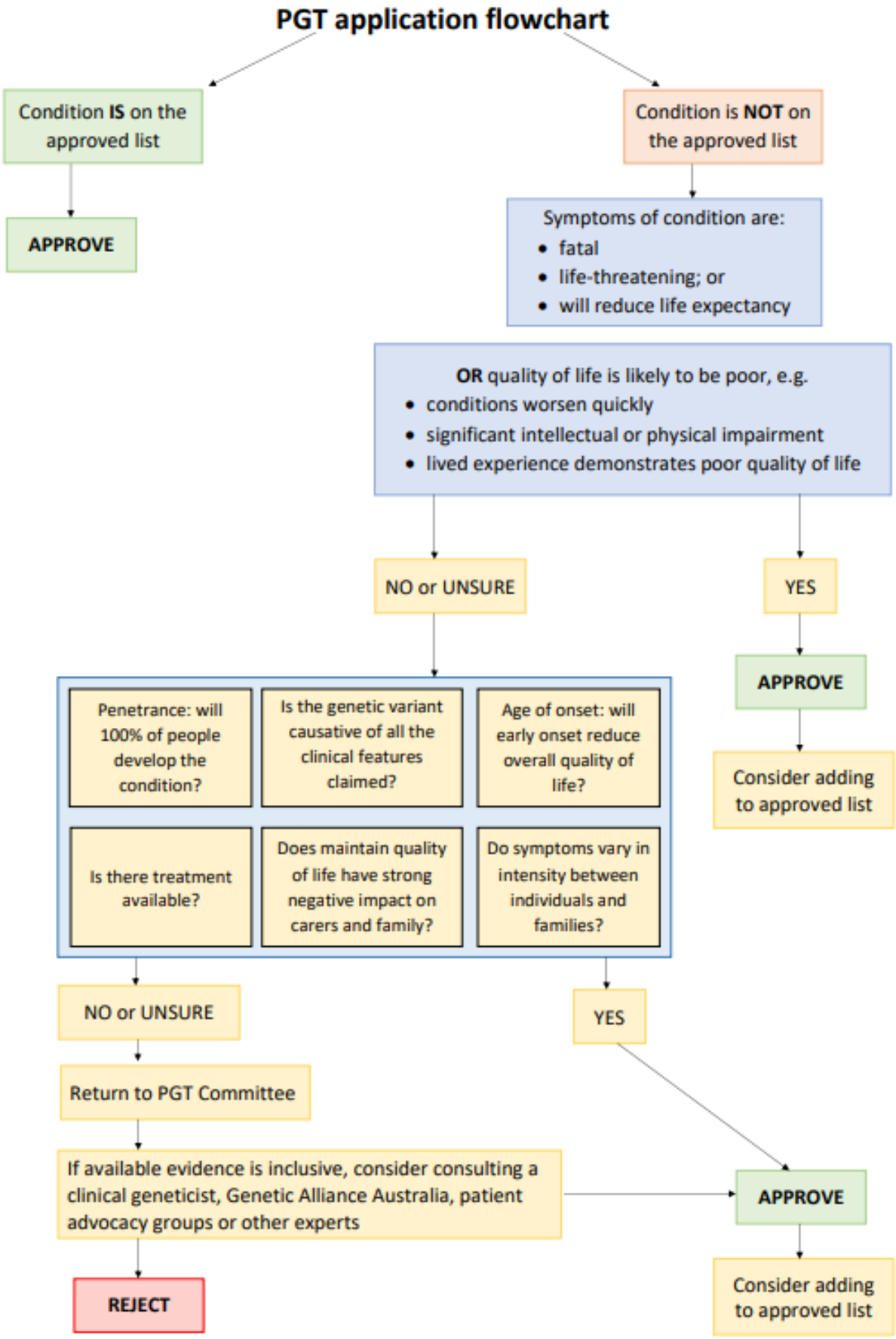
Clinics are required to submit a record of all patients who required PGT as part of their usual annual reporting processes to the Reproductive Technology Unit.

# Further information

If you are unsure if a condition requires an application to the Council, or have questions regarding these processes or the application form, visit the Council website or contact the Reproductive Technology Unit:

Phone: (08) 6373 2336
Email: rtu@health.wa.gov.au

## Appendix 1: Flowchart to approve PGT applications



**This document can be made available in alternative formats on request for a person with disability.**



health.wa.gov.au