

PICSI

What is PICSI?

Physiological-ICSI (PICSI) is a modified form of ICSI, which includes an additional method of sperm selection. During standard intra-cytoplasmic sperm injection (ICSI), the ICSI practitioner selects the best sperm available for injection, based on how the sperm looks (morphology) and moves (motility). Just by looking at the outside of the sperm, the practitioner does not know if the sperm is good quality or 'mature' and therefore less likely to contain DNA damage. We know that 'immature' sperm containing DNA damage can look normal and move well.

The egg is surrounded by a group of cells which contain a compound called Hyaluronan. In natural conception and standard IVF, the sperm binds to hyaluronan, which allows it to push through these cells to reach and fertilise the egg. Sperm that can bind to hyaluronan are known to be more 'mature', contain less DNA damage and are considered better quality.

The PICSI procedure is very similar to ICSI but instead of the practitioner selecting the sperm based on how it looks and moves alone, the sperm are also selected based on their ability to bind to hyaluronan in the laboratory. This is done by putting the sperm in a dish which has hyaluronan on its surface. Sperm that stick to the hyaluronan (the surface of the dish) are selected and then assessed for how they look and move, before injecting into the egg.



Will PICSI improve my chance of a healthy live birth?

Several studies have shown PICSI may reduce the risk of miscarriage in certain groups of patients compared to ICSI. The largest randomised controlled trial to date, the HABselect trial, showed that PICSI significantly reduces the risk of miscarriage. This finding was a secondary outcome, which means the study was not designed to look at the effects of PICSI on miscarriage, making this result less reliable. However, when researchers looked more closely at the miscarriage data from this trial, they were able to show that in couples where the egg provider is 35 or over, PICSI significantly reduces the risk of miscarriage compared to ICSI. Although the trial did not show a significant difference in overall live birth rates, by reducing the risk of miscarriage in older patients, it gave them a comparable chance of a live birth to a younger patient when using PICSI.

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Can PICSI improve the quality of my embryos?

There are a small number of studies showing that PICSI improves embryo quality, however the quality of these studies is poor. There is no reliable data showing PICSI improves embryo quality.

Are there any risks associated with PICSI?

The risks of PICSI are the same as ICSI which include:

- Damage to a small number of eggs during preparation for injection
- Damage to a small number of eggs during injection
- No eggs suitable for injection after being prepared for the procedure
- ICSI has previously been linked with certain genetic and developmental defects in a very small number of children born using this treatment. However, it is difficult to determine whether this is a result of the ICSI procedure or the underlying cause of infertility. Follow up studies from children born using ICSI and PICSI are still on-going.
- There is a possibility that if your child conceived from PICSI is a boy, they may inherit their father's infertility. At this stage, it is too early to know if this is the case.

PICSI does not have any additional known risks for the person having treatment or for children born from PICSI. However, there is a chance that during the PICSI procedure, no sperm bind to the hyaluronan coated surface. In this case, the embryologist will need to perform standard ICSI.

If you need more information about the genetic risks of PICSI, please contact us.

It is important that you discuss possible risks with your doctor before going ahead with treatment. You may also find it helpful to discuss your concerns with a counsellor.

How could PICSI help me?

PICSI could help reduce your risk of miscarriage if you are already having ICSI (please see ICSI information leaflet) and the egg provider is 35 or older.

There is limited evidence that PICSI could help you if you have a history of recurrent miscarriage and in cases where the sperm provider has a high level of DNA damage as shown by a DNA damage test.

Please note that whereas ICSI can be performed if the sperm are moving but not swimming, PICSI does require some sperm to be swimming. In some cases, where the egg provider is 35 or older, we may not be able to perform PICSI if there aren't enough swimming sperm.

If after reading this, you are unsure if PICSI would benefit you, please contact us and ask to speak to our embryology team or email our embryology team using the email addresses at the end of this leaflet.

What is the cost of PICSI?

There is an additional charge per treatment cycle for PICSI. Please see our fee schedule or website for more information. <https://www.thehewittfertilitycentre.org.uk/costs-and-funding/costs/>

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The Human Fertilisation and Embryology Authority (HFEA) and PICSI:

PICSI is regarded by the HFEA as a treatment 'add on' and its current status is 'red' according to the HFEA 'traffic light' system. This means that there is a conflicting body of evidence and further research is required to prove its benefit. However, this does not take into consideration the latest published evidence.

For more information on treatment add-ons please refer to the HFEA traffic-light system on the website:

<https://www.hfea.gov.uk/treatments/treatment-add-ons/>

What should I do next?

If you have any questions after reading this leaflet or if you wish to have PICSI in your next treatment cycle, please email the embryology team at your designated treatment centre as below:

For treatment at Knutsford: lwt.embryohfcknutsford@nhs.net

For treatment at Liverpool: lwt.emrbyologyenquiries@nhs.net

This leaflet can be made available in different formats on request. If you would like to make any suggestions or comments about the content of this leaflet, then please contact the Patient Experience Team on 0151 702 4353 or by email at pals@lwh.nhs.uk

The Hewitt Fertility Centre (Liverpool)
Crown Street
Liverpool
L8 7SS
Tel: 0151 702 4121/ 4123
Email: Hewitt.Centre@lwh.nhs.uk

The Hewitt Fertility Centre (Knutsford)
4 The Pavilions
Knutsford Business Park
Mobberley Road
Knutsford
WA16 8ZR
Tel: 01565 653287

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