

**Guy's Assisted  
Conception Unit**

**'A patient's journey'**

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**Evelina  
London**

# Background

- @ 1 in 7 heterosexual couples in the UK seek advice about difficulties in getting pregnant.
- About 84% of couples conceive naturally within a year with regular unprotected sex (every 2 or 3 days).
- For couples who've been trying to conceive for > 3 years without success, the likelihood of getting pregnant naturally within the next year is  $\leq 25\%$
- Time taken to conceive naturally varies, age an important factor, especially for women.
- A woman of reproductive age who has not conceived after 1 year of unprotected vaginal sexual intercourse, in the absence of any known cause of infertility, should be offered further clinical assessment and investigation along with her partner.

# Background

New data from the Human Fertilisation & Embryology Authority (HFEA) shows treatment numbers and pregnancy rates have risen overall as:

- Average age of first-time fertility patients is now over 35 years old
- 8,000 (11%) more IVF cycles across the UK in 2022 compared to 2019

*Average age of women starting fertility treatment increases to just over 35 for first time*

Fertility patients are starting treatment when chances of having a baby fall, says HFEA

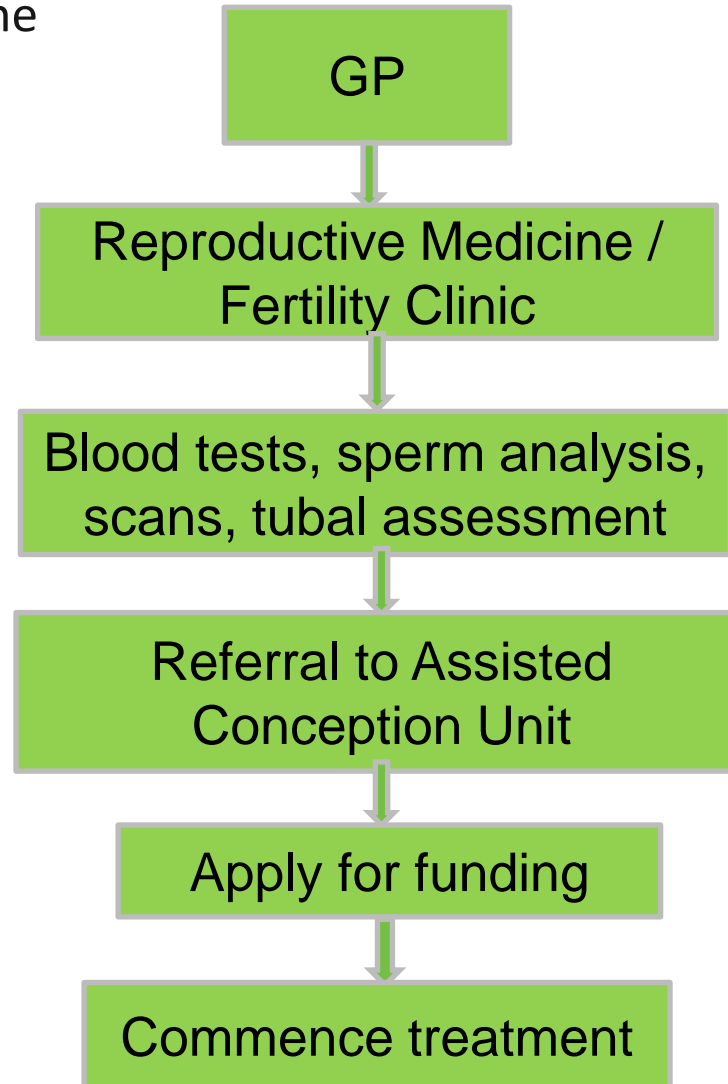
*Fertility rate in England and Wales drops to new low*

# The Referral Pathway

How do patient's get referred to an Assisted Conception Unit?

The first point of contact is usually the GP. The GP may request some initial blood tests / hormone profile/ scans

Further investigations such as blood tests, sperm analysis, ultrasound scans may be performed.



The GP will assess the patient's situation and refer the patient to a gynaecology clinic that specialises in reproductive medicine or to a fertility clinic.

IVF – In vitro fertilisation  
ICSI – Intracytoplasmic sperm injection  
IUI – Intrauterine insemination

# Who can access NHS Funded Fertility Treatment?

- Eligibility to receive NHS funding for fertility treatment (and how much) depends on where in the UK the patient lives. Scotland, Wales, Northern Ireland each have a set of criteria while in England the decision is made locally by the Integrated Care Board (ICB).
- ICB's often have additional criteria that need to be met before a patient can access IVF treatment, such as:

BMI 19-30



No smoking



Not having any children already



Falling into a certain age range



# Funding continued...

NICE, guidelines women < 40 yrs should be offered 3 cycles of IVF treatment on the NHS if:

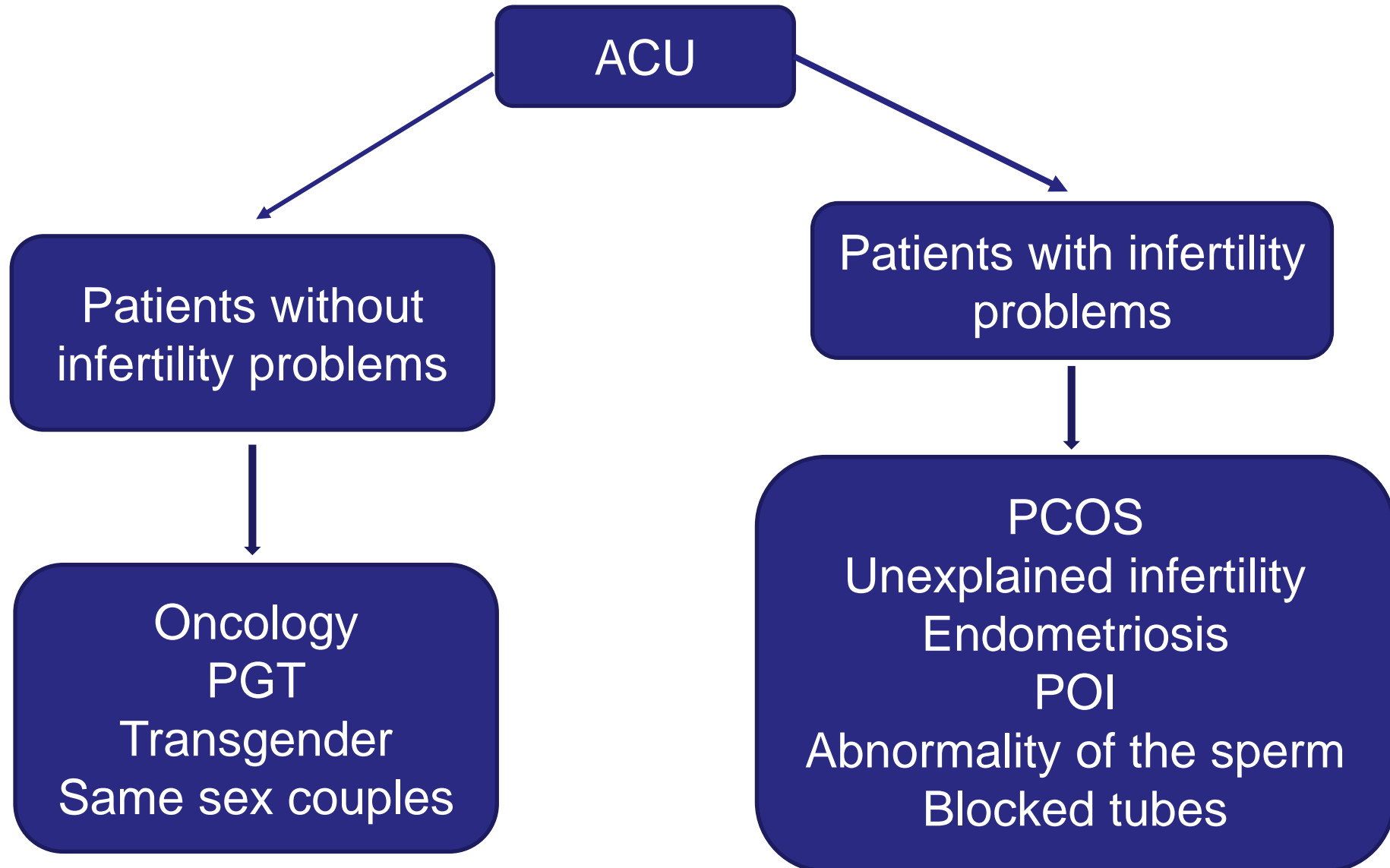
- they've been trying to get pregnant through regular unprotected sex for 2 years
- they've not been able to get pregnant after 12 cycles of AI, with at least 6 of the cycles using intrauterine insemination (IUI)
- ICB's make the final decision about who can have funded fertility treatments and their criteria may be stricter than NICE.

## EXAMPLE

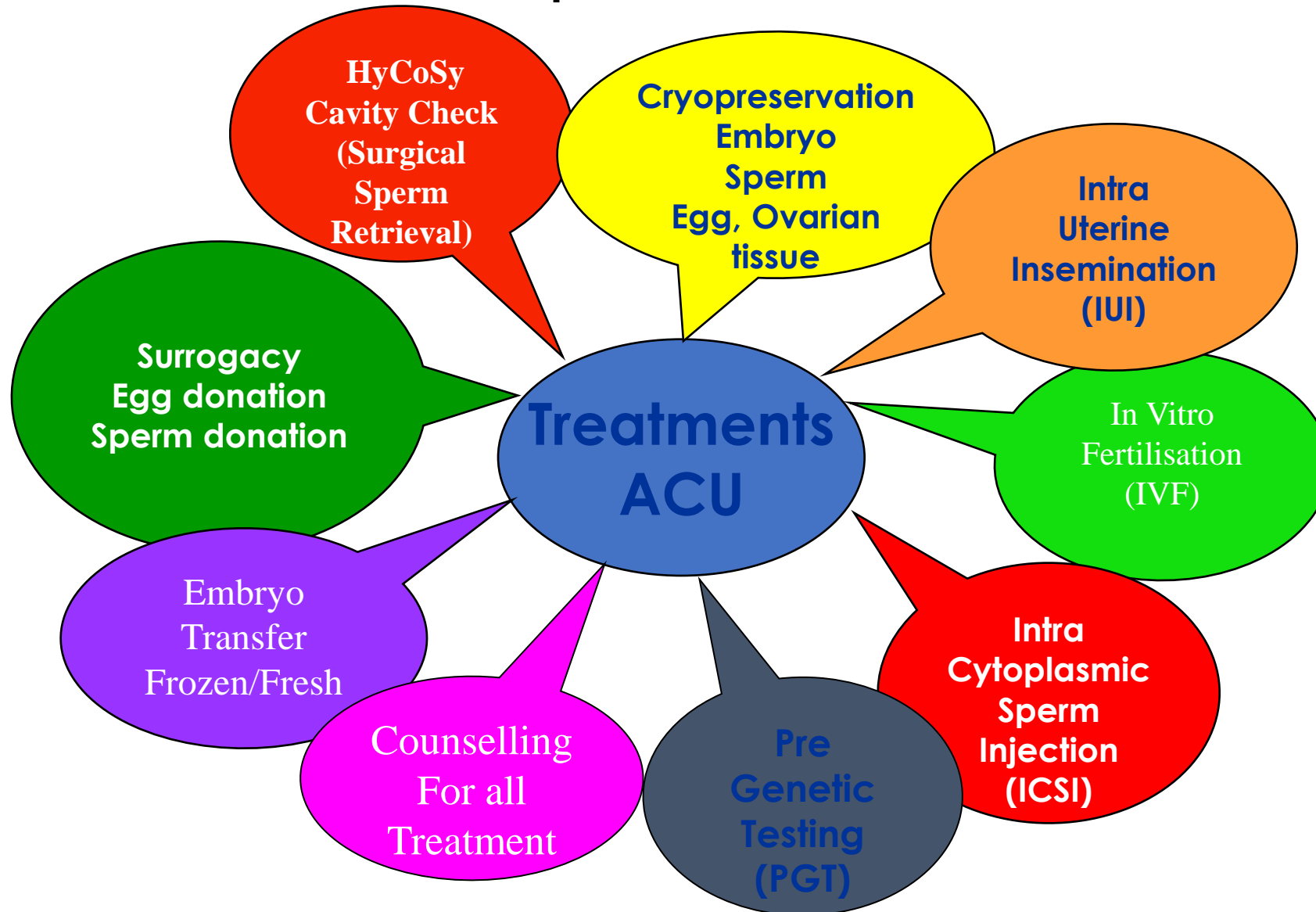
If a patient lives in Sussex – they can have 3 NHS funded cycles of IVF, up to the age of 40 and at least 1 person in the couple should have no children from current/ previous relationship

However, if a patient lives in Buckinghamshire, Oxfordshire and Berkshire West, they are only entitled to 1 cycle of IVF (not full cycle), up to the age of 35 and they must not have had any children from any previous relationships.

# Who might you see in an ACU?



# Assisted Conception Unit Treatments



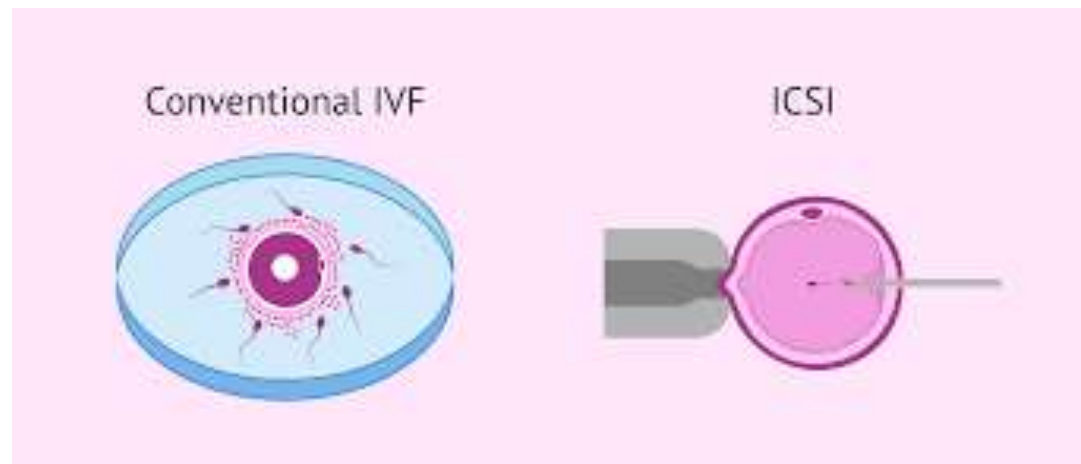


# What is IVF?

- In Vitro Fertilisation involves the fertilisation of an egg outside of the body. 'In vitro' means 'in glass'.
- It is one of the main methods to help people conceive.
- Treatment begins with stimulation of the ovaries and includes collection of both the egg and the sperm, fertilising the eggs outside of the woman's body and placing 1 or 2 embryos into the uterus.
- 1 full cycle of IVF treatment should comprise of 1 episode of ovarian stimulation and the transfer of any resultant fresh or frozen embryos.

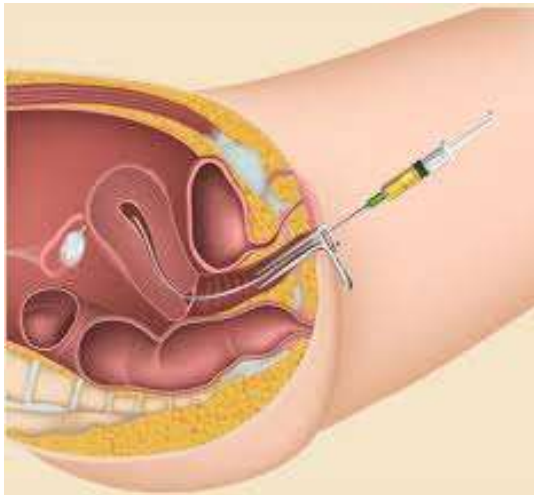
# ICSI – Intracytoplasmic sperm injection

- For around half of heterosexual couples who are having problems conceiving, the cause of infertility is sperm related.
- ICSI is the most common and successful treatment for male infertility.
- The treatment for ICSI is almost exactly the same as IVF. The only difference is that instead of mixing the sperm with the eggs and leaving them to fertilise, a skilled embryologist will inject a single sperm into the egg.



# IUI – Intrauterine insemination

- IUI is a type of fertility treatment often used for people who need donated sperm but have no fertility issues, such as single women and same sex couples.
- Couples who are unable to or find it very difficult to have vaginal intercourse e.g physical disability or psychosexual problem
- Those who have a specific condition, need help to achieve a pregnancy safely (e.g., HIV positive men, had sperm washing to ↓risk of passing on the disease to their partner and potential child).



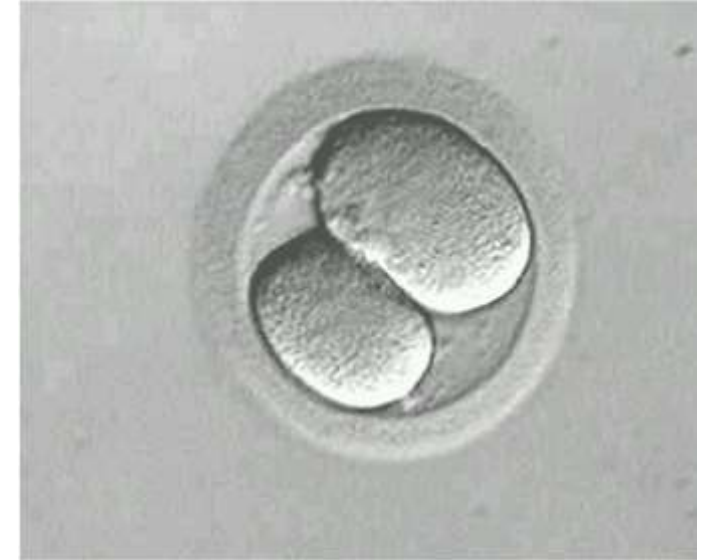
- Over half of women under 40 using IUI will get pregnant within 6 cycles.
- IUI is not likely to increase chances of getting pregnant if the woman or her partner have any infertility problems.

# Pre-Implantation Genetic Testing (PGT)

- Helps couples who are at risk of having a child with a serious genetic condition. Special type of IVF whereby embryos are created and tested for the genetic condition in the family. Only unaffected embryos are transferred into the uterus.
- Testing can be done for over 300 conditions. Examples of genetic conditions that can be tested for include:
  - Cystic fibrosis
  - Huntington's Disease
  - Sickle cell disease
- Turnaround for genetic testing of the embryo is 100 days or so, therefore all PGT embryos are always transferred to the uterus as a FET
- Guy's is the largest centre in the UK and one of the most successful in Europe. There are satellite clinics in Leeds, Sheffield and Exeter.

## What is the treatment pathway in ACU?

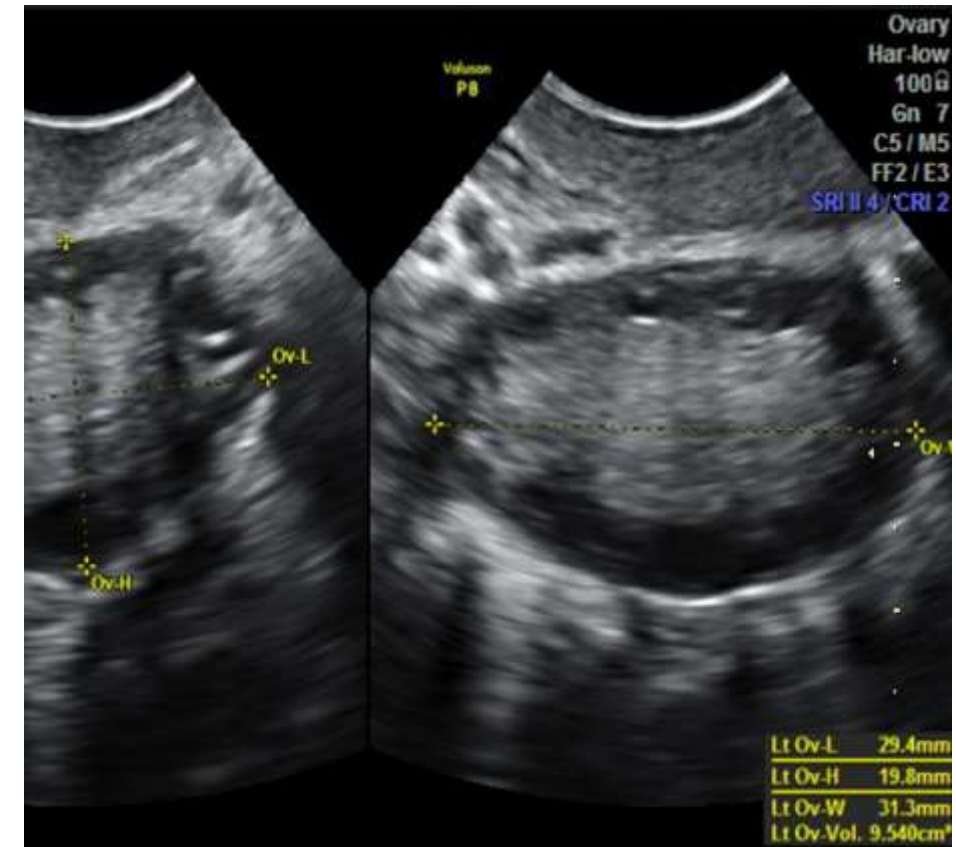
- Doctor Consultation (medication and cycle regime)
- Funding confirmed by Admin funding team.
- Given treatment slot allocation based on LMP (every treatment starts with a period. If the patient is not having periods, medication would be given to induce a period).
- Medication ordered and delivered to patient's home.
- See Nurse for Schedule appointment (explanation of treatment and injection teach)
- Contact team and come in for scan Day 2 - 4 of bleeding and start injections.



# Scans during IVF

## Baseline scan ( Pre FSH Scan day 2-4 of bleeding)

- Orientation of the uterus
- Ultrasound assessment of the uterus and ovaries
- Measurement of the endometrium ( $\leq 5\text{mm}$ )
- Ultrasound assessment of the ovaries (should be quiet, no actively growing follicles)
- Ultrasound assessment of the adnexa
- If the endometrium is thin and ovaries are quiet the patient can start on stimulation injections.



# Stimulation of the ovaries by daily injection

Gonal-F - follicle stimulating hormone



Menopur – contains FSH and LH







## Types of responses to stimulation on USS

Poor response = too few follicles.

- Cancelling the cycle with patients who present with this picture (from day 11 of stimulation onwards) would be discussed and restarting stimulation would be considered.



## Types of responses to stimulation on USS

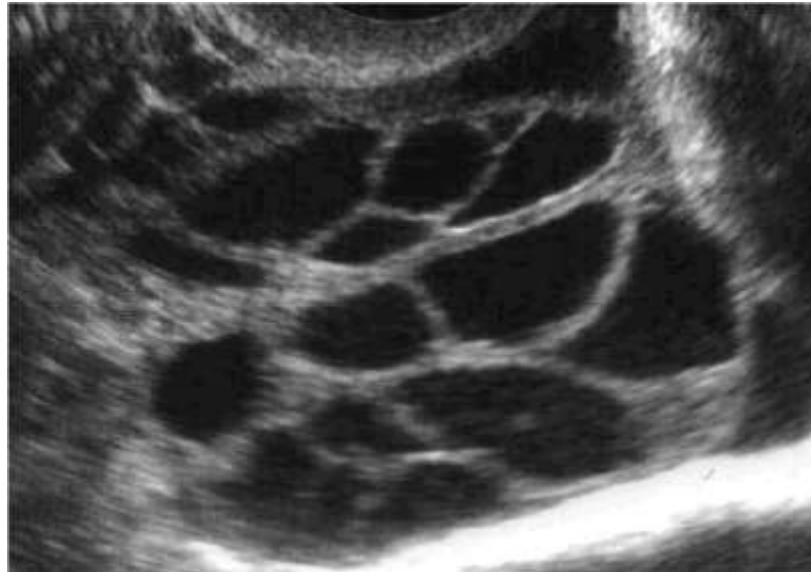
The below image would be considered a good, normal response.



# Types of responses to stimulation on USS

Over response, typically seen in patients with PCO.

- In patients presenting with this picture the plan/ conversation would be to freeze all embryos and transfer in a subsequent cycle to avoid ovarian hyperstimulation syndrome OHSS.



# Ovarian Hyperstimulation Syndrome (OHSS)

- At least 1 - 5% of patients can develop OHSS as a result of IVF treatment.
- The risk of hospitalisation is around 0.3% (Kupka et al., 2010)
- OHSS is a recognised complication of ovarian stimulation. Ovaries respond excessively to the FSH injections during IVF treatment. It is then exacerbated by the body being exposed to HCG hormone either extrinsically (medication used to prepare for egg collection) or intrinsically (HCG produced by the body when a pregnancy has implanted).
- **Who is at a risk of OHSS?**
  - Patients with polycystic ovaries or high egg reserve
  - Patients who produce more than 20 eggs at egg collection.
  - OHSS had developed in previous treatment cycles.
- Now much much better equipped to prevent OHSS in the first instance by planning to freeze all embryos for patients with a high antral follicle count / high Anti Mullerian Hormone.

## 'Trigger' injection HCG/ Agonist

Final injection during stimulation - this matures the eggs ready for collection.

**This is given 36-40 hours before the egg collection – always in the evening or early hours of the morning. This the most important injection!**

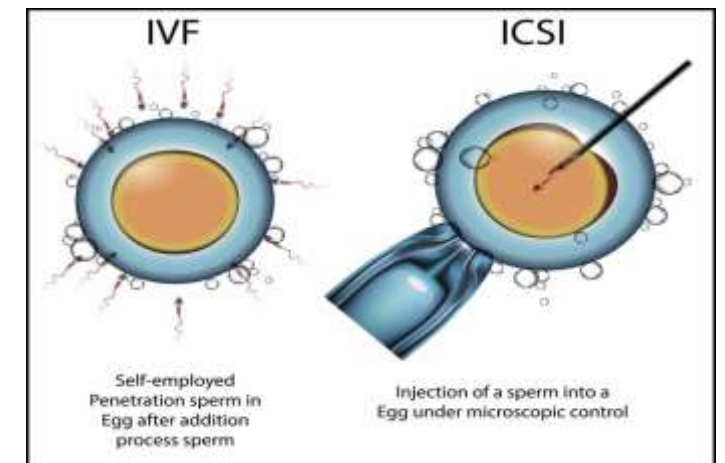
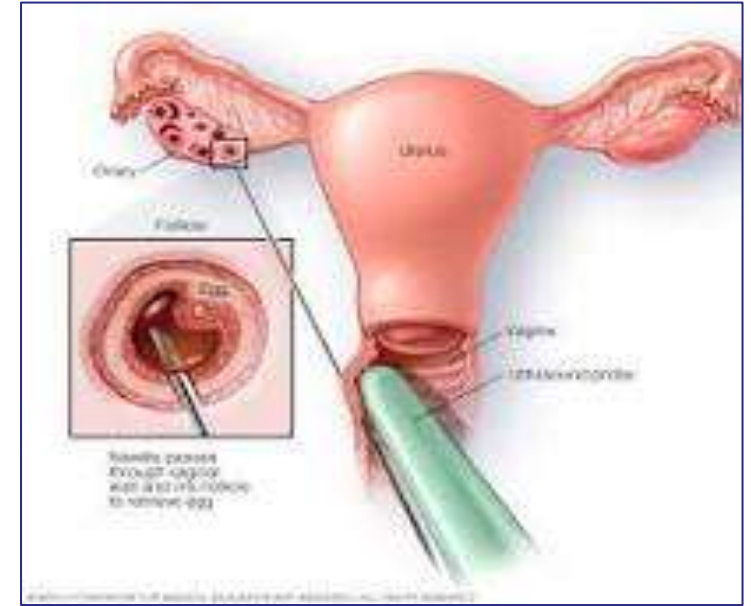
**Ovitrelle** – HCG (normal responders)

**Buserelin** – Agonist – for high responders to prevent OHSS and patients who are not having a fresh transfer to reduce even the slightest chance of OHSS complications



# Egg Collection

- Egg collection is carried out under US guidance. A long aspiration needle is attached to the TV probe and follicular fluid is collected and analysed for the presence of egg under the microscope. The patient is usually either under deep or conscious sedation.
- Depending on the treatment, eggs are either frozen on the day or if embryos are being created, they will mix the egg with the sperm in which ever method is prescribed for the couple. **(This is the date of conception for IVF pregnancy scans).**
- Embryo transfer is carried out 2-5 days post egg collection and pregnancy tests 11 days post transfer.



# Frozen Embryo Transfer Cycles (FET)

- Patients that have responded well to stimulation and have excess embryos of good quality can freeze and store their embryos for future use.
- FET cycles are about preparing the endometrium for transfer (thickening). This can be done with either of two following methods:
  - **Medicated cycle** (oestradiol tablets from day 2 of bleeding for approx. 12-14 days then scan). Once the lining has thickened to  $\geq 7\text{mm}$ , progesterone is started to prepare for the embryo. Transfer would happen on day 6 of taking progesterone (**day 1 of progesterone would be the 'date' of conception for calculation**)
  - **Natural cycle** (using the natural cycle as long as the patient has regular 28-30 day cycles) once a leading follicle is identified, the patient is asked to start using LH testing kits and once they record a positive, an embryo transfer would be booked for 7 days later.

## Endometrial thickness in a Frozen embryo cycle.

Ideally, the endometrium should ideally demonstrate a trilaminar appearance and measure a minimum of 7mm.

FIGURE 1  
TRANSVAGINAL SONOGRAM VIEW OF  
NORMAL ENDOMETRIUM ON DAY 11 OF  
THE MENSTRUAL CYCLE





## How do I date an IVF pregnancy?

- IVF pregnancies are **always** dated by date of conception rather than by CRL as we always know the date of conception which is the date of egg collection.
- For fresh cycles, the date of egg collection is the date of conception.
- For FET (frozen embryo transfer) cycles, ask the patient the date of embryo transfer and count backwards by 6 days from the date of transfer.



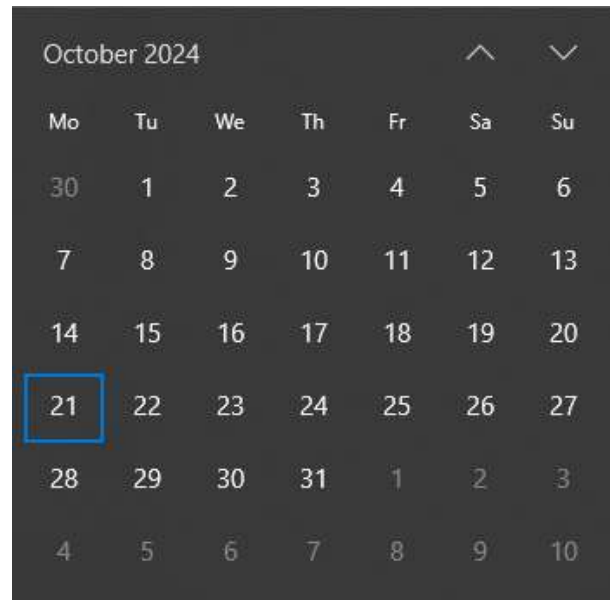
# Case Study

A same sex female couple attend for their antenatal first trimester ultrasound scan. The patient had become pregnant after having had IVF and had used donor sperm and the egg had been donated from her partner.

The couple inform you that it was a **frozen embryo** transfer, using a **5 day** blastocyst. What information do we need to know to date the pregnancy?

**DATE OF  
EMBRYO  
TRANSFER**

**'date of  
conception' =  
16/10/2024**



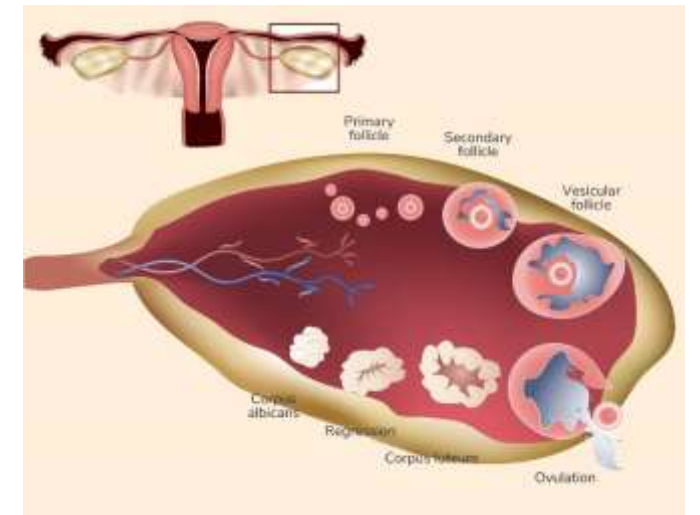
A calendar for October 2024. The days of the week are abbreviated as Mo, Tu, We, Th, Fr, Sa, Su. The date 21 is highlighted with a blue square. The calendar shows the following dates:

Mo	Tu	We	Th	Fr	Sa	Su
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

**EDD =  
9/7/2025**

# Ovulation Induction

- Often used for patients with anovulatory disorders – where ovulation does not occur e.g PCOS, hormone imbalance, overweight, underweight
- Normal sperm parameters
- No sexual function problems
- Heterosexual couples.
- Medicated cycles (Clomiphene and letrozole tablets and follicle stimulating injections).
- USS tracking of one or two leading follicles.
- Instructed about timed intercourse at time of ovulation
- Progesterone blood test 7 days post ovulation to confirm
- Pregnancy dated by CRL.



## Points to remember when dealing with IVF patients.

- Fertility couples have been on a long and emotional journey by the time they reach their end goal. They may have been through many failed cycles and so this feels so precious to them, which of course it is.
- These couples have a sense of loss of control as they have not been able to perform a 'normal function' . It is important to give them back that control.
- They can appear very anxious but this is due to being used to being disappointed constantly throughout their journey. Give them time and space. Don't take things personally.
- IVF couples are used to having detailed information and encouraged to ask questions as well as being encouraged to be an active partner within treatment.
- Being able to break bad news is essential to this group of patients. We do not want to add to their trauma.
- Keep within your scope of practice as some findings might not have any influence on the outcome
- Please feel free to check with Fertility Nurses/ Doctors if you need any advise.

**The End!**

Any Questions?