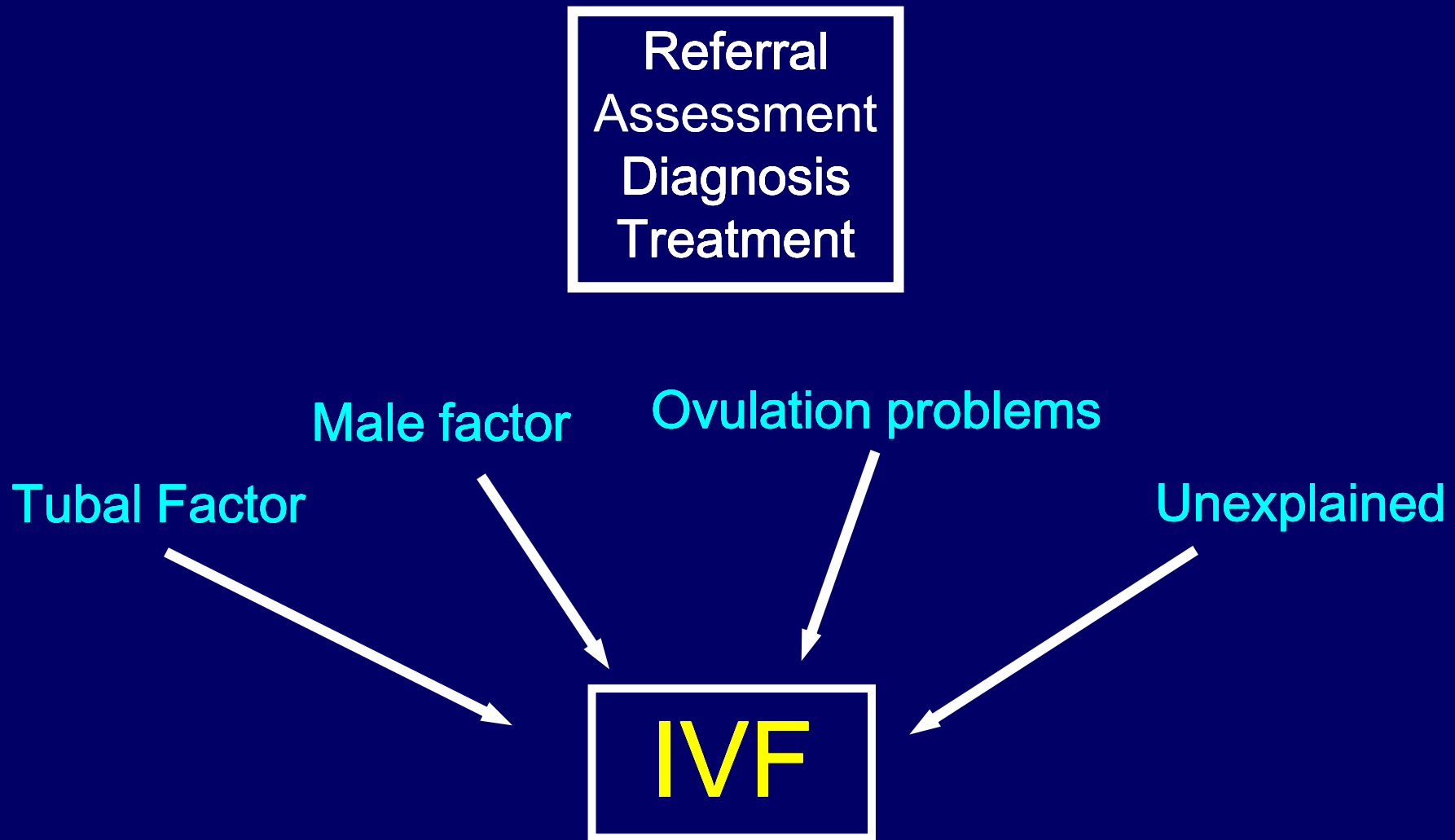




# Aberdeen Fertility Centre

Patient Guide to  
IVF Treatment and Research

# Modern Management of Infertility

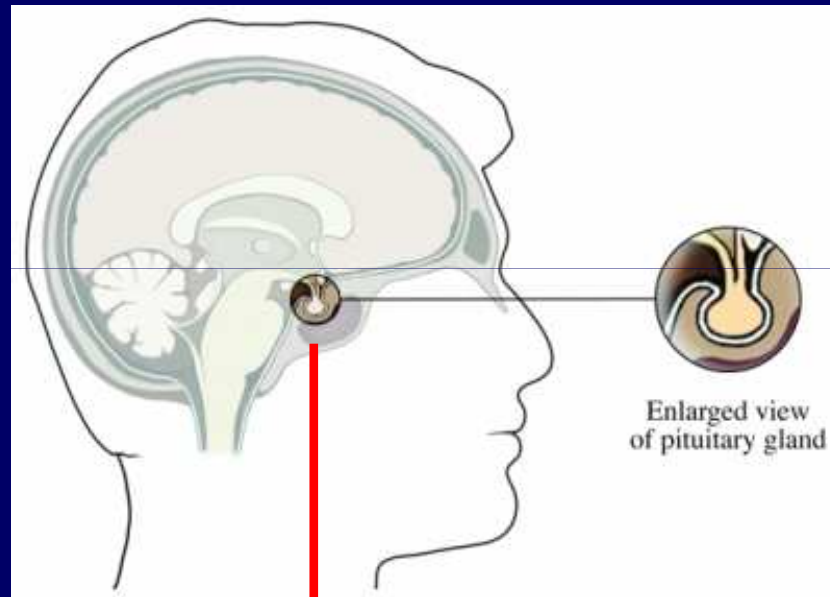


# Patient Guide to IVF Treatment

- Natural conception
- In vitro fertilisation (IVF)
- The patient's journey through IVF treatment

# Natural Conception

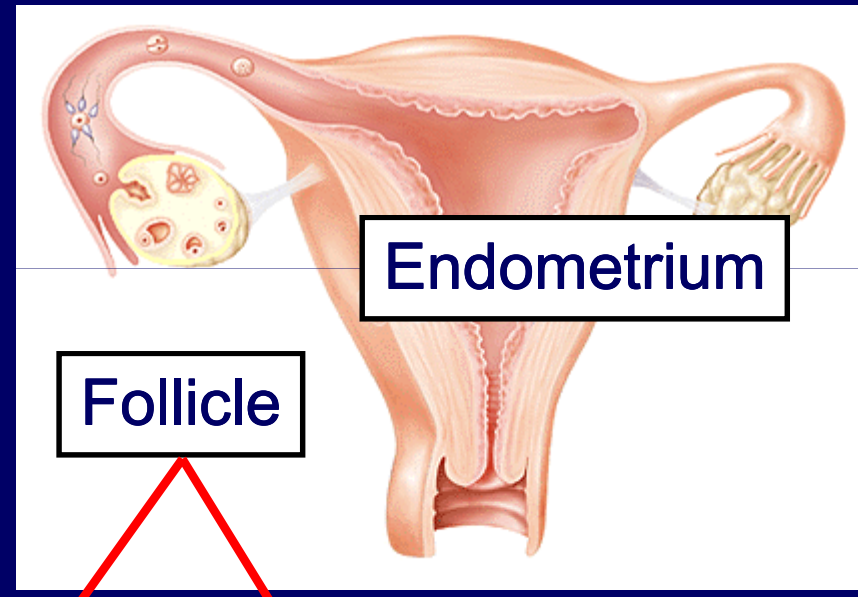
- Pituitary Gland



**FSH**

Follicle Stimulating Hormone

- Ovary + Tubes + Uterus



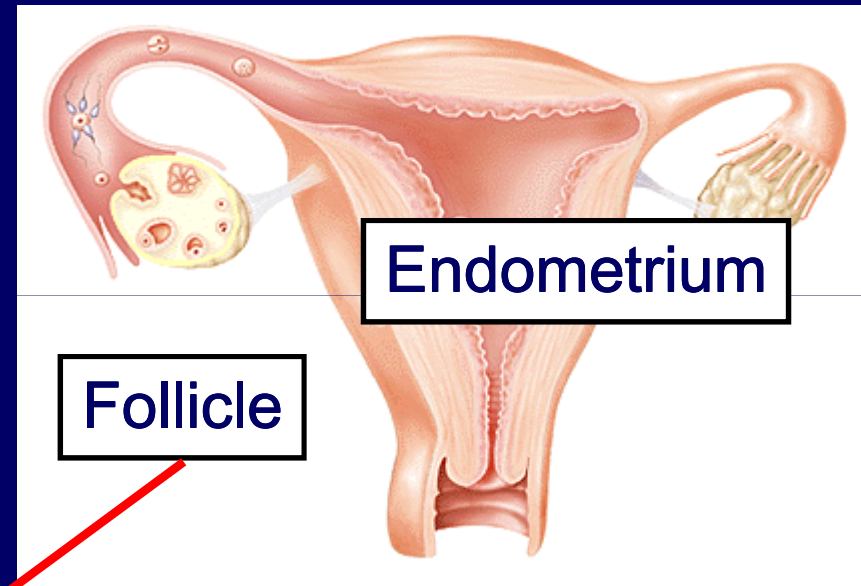
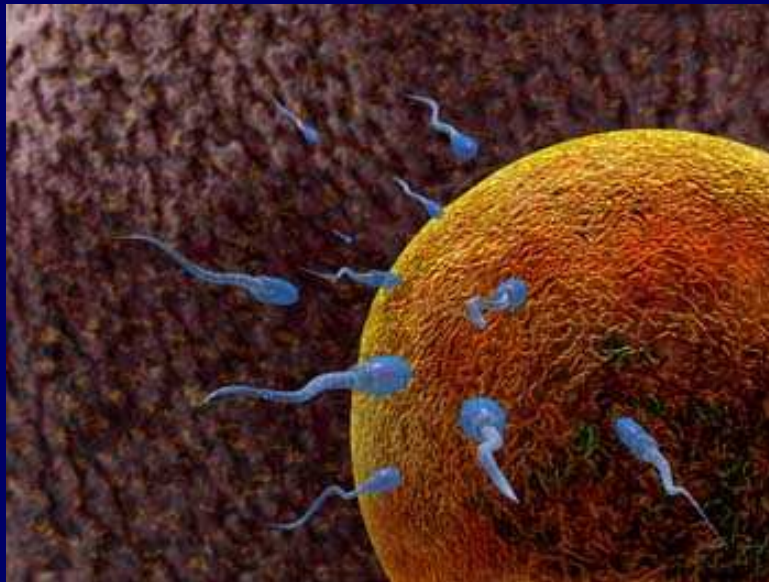
Estrogen

Egg

**Progesterone**  
(after ovulation)

# Natural Conception

Sperm + egg → Fertilisation in tube → Uterus in 4-5 days

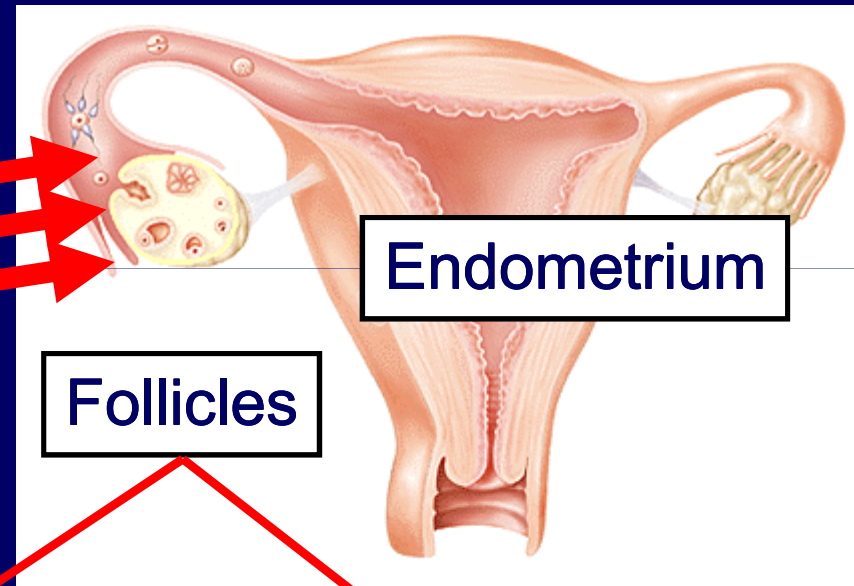
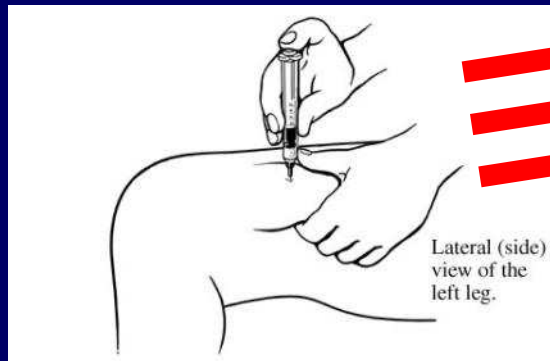


Estrogen  
+  
Progesterone

Implantation  
or Menstruation

# In vitro fertilisation - Medication

1. Blockage of the pituitary (**Buserelin**)
2. Ovarian stimulation (**FSH**)

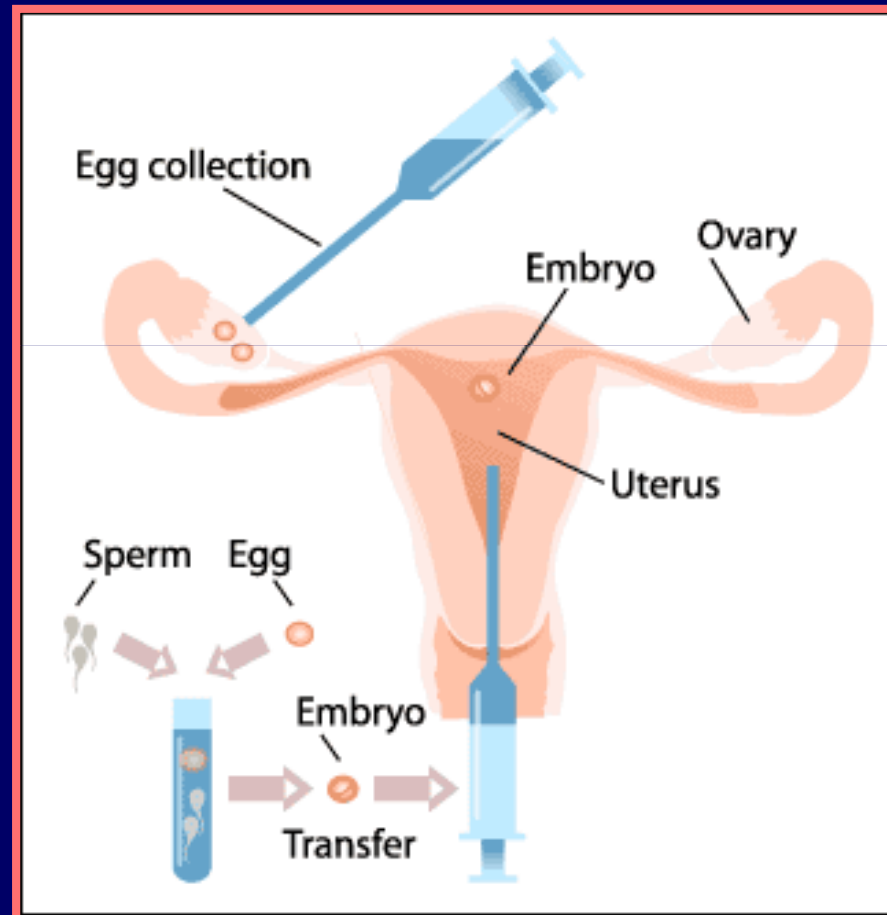


**Estrogen**  
Higher levels

**Eggs**  
Increased numbers

# In vitro fertilisation

## Embryology Laboratory Procedures



# What does IVF Treatment Involve?

- Blockage of pituitary activity
- Ovarian stimulation
  - Monitoring: blood tests (estradiol) & scans
- Egg recovery
- Sperm specimen
- Fertilisation of eggs in lab (in vitro)
- Transfer of embryo
- Hormone support
  - Progesterone
- Pregnancy test

# Healthy Lifestyle?

- Moderate exercise/BMI



- Reduce or stop
- (both partners)



# What happens at the First Visit

- Medical history
- Discuss all aspects of IVF treatment
- Screening for HIV, Hep B and C
- Complete consent forms
  - Treatment
  - Finance (costed treatment plan)
  - HFEA

# Costed Treatment Plan

## PRE-TREATMENT

- Consultation
- Investigations
  - Female
    - Scan
    - Blood tests
  - Male
    - Semen analysis
    - Genetic tests
    - Investigations
- Screening tests
  - HIV, Hepatitis
  - Chlamydia
  - Rubella

## TREATMENT

- Treatment cycle
  - IVF
  - ICSI supplement
  - HFEA charge
  - Drugs 10 days
  - Drugs supplement if >10days
  - Cancellation refunds
- Embryo freezing/storage
  - 2yrs initially then annual charge
- Frozen replacement cycles
  - Single embryo transfer
  - Double embryo transfer
  - Refund of failed survival

# HFEA Consent Forms

- Consent to disclosure of identifying information
  - (CD Form)
- Consent to use and storage of your sperm and embryos for partner's treatment
  - (MT Form)
- Consent to use and storage of your eggs and embryos for your treatment
  - (WT Form)

[www.hfea.gov.uk](http://www.hfea.gov.uk)

# HFEA Consent Forms (CD) Forms

- Both of you need to fill in separate forms
- Consent to disclosure of identifying information
  - GP
  - Others involved in healthcare
  - Administration/audit staff
- Consent to information being given for research
  - Non-contact research
    - further consent not requested e.g. for database linkage studies – no direct contact with you necessary
  - Contact research
    - contact from the Unit + further consent would be required since this involves your direct participation

# HFEA Treatment (MT and WT) Forms

- Personal (+ Partner's) details
- Consent to use of eggs or sperm + embryos
  - Treatment
  - Training of staff
    - Using eggs or embryos NOT suitable for treatment
  - Research
    - Consent only to being approached if there is a possible project
- Consent to storage of embryos
  - 10 years initially
  - Maximum 55 years

# HFEA Treatment (MT and WT) Forms

- Instructions to the Unit if Death or Mental Incapacity
- For both Male and Female
  - “Do you wish embryos to remain in storage?”
  - If yes:
    - Male - can allow partner still to have treatment
    - Male - posthumous use – can opt to be registered as father of child but does not confer any inheritance or legal rights on child
    - Female - with male can permit use of embryos for others or research

[www.hfea.gov.uk](http://www.hfea.gov.uk)

# Before Treatment can Start

- Telephone discussion about outstanding results
- Patient telephones Unit with date of period
  - Treatment schedule will be discussed
  - Date of first injection will be confirmed

# Treatment Schedules

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Individualised treatment schedules  
will be used

# Downregulation Schedule

Period starts **Day 1**



Start Buserelin **Day 21** (occasionally **Day 2**)



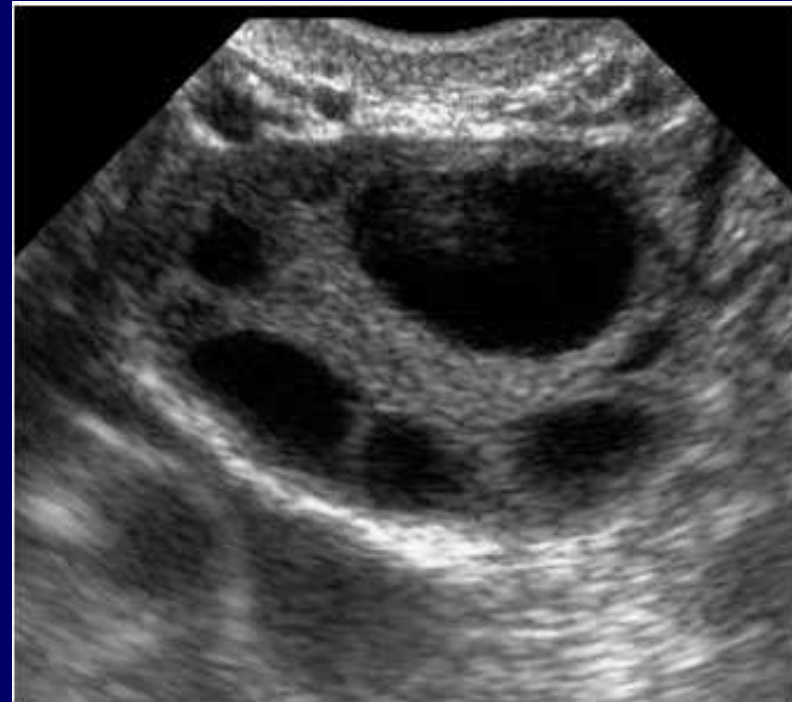
Continue until Baseline scan (approx. 18 days)



Baseline scan satisfactory – **continue** Buserelin  
Start 2<sup>nd</sup> injection to stimulate ovaries (approx. 14 days)

# Treatment Cycle: Stimulation

- Starts after baseline blood test and scan
  - Continue Buserelin
- 2nd injection (FSH)
- Day 8 - blood test
- Day 10 - blood test / scan
  - Final injection to trigger ovulation (hCG)



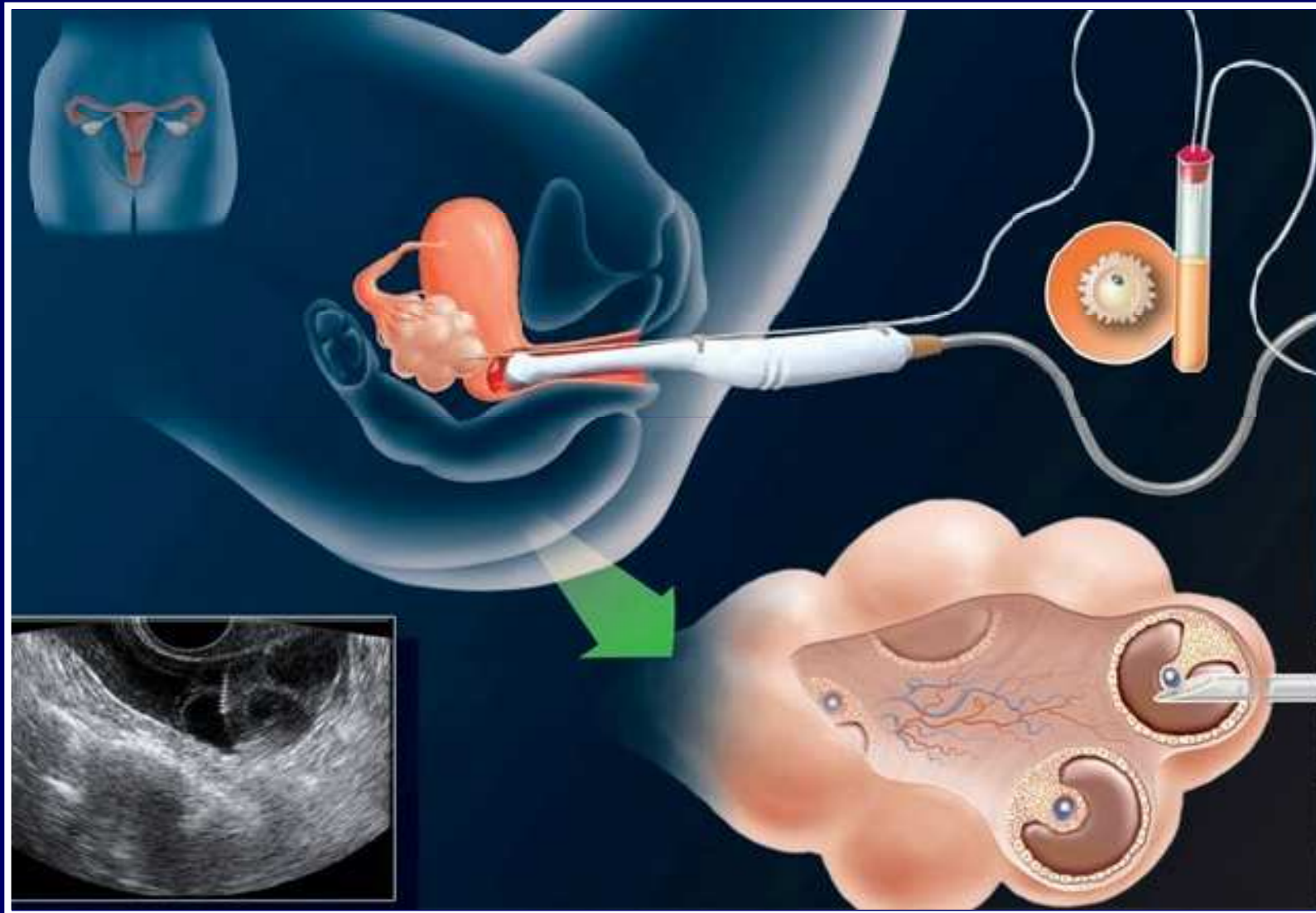
# The Day Ward



# Egg Recovery

- 36 – 38 hours after final injection
- Procedure takes about 20-25 minutes
- Pain relief and sedation given
- Partner present
- Gown provided
- Sperm sample required on the day

# Ultrasound Guided Egg Recovery



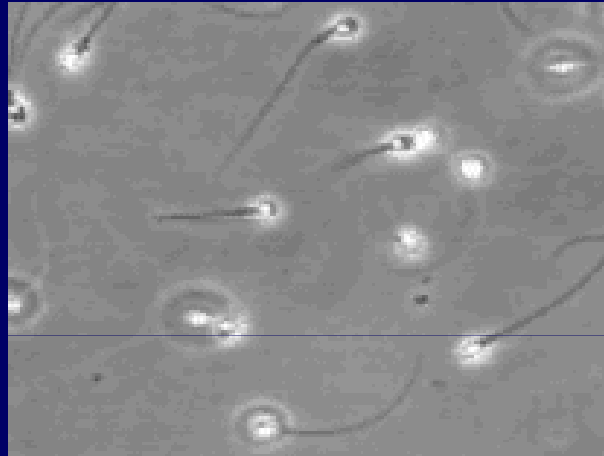
# The Egg Recovery Room



# The Laboratory



# What happens in the Laboratory?



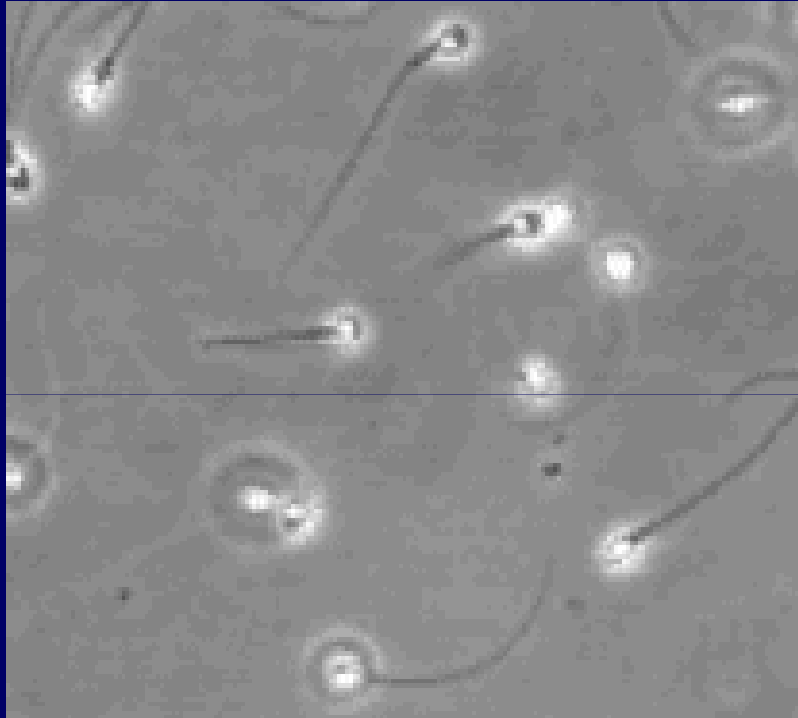
**Egg (Oocyte) + Sperm = Embryo**

# Egg Recovery



- Follicles accessed transvaginally guided by ultrasound probe
- Follicles punctured and fluid drained
- Tubes of follicular fluid passed to lab
- Embryologist examines fluid under the microscope
- May not always get an egg from every follicle

# Sperm Preparation



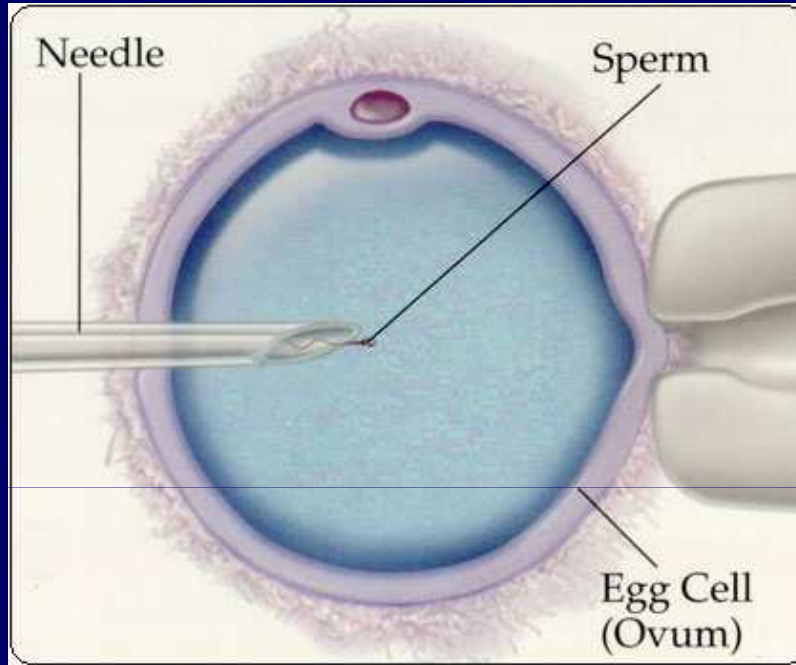
- Semen sample collected or frozen sample thawed on day of egg recovery
- Sperm is washed and prepared

# IVF Insemination



- Semen parameters normal
- Sperm added to eggs 4 to 6 hours after egg recovery
- Sperm and eggs incubated overnight

# Intracytoplasmic Sperm Injection (ICSI)



- Injection of mature eggs with single sperm
- Incubation overnight

# When do we use Intracytoplasmic Sperm Injection (ICSI)

- Sperm Problems
  - Low numbers (density)
  - Low activity (motility)
- Clinical circumstances
  - After vasectomy reversal (sperm antibodies)
  - Surgically retrieved sperm (MESA/TESE)
- Poor Outcomes with previous IVF Treatment
  - Poor fertilisation
  - Failed fertilisation

# Incubation



- Incubator
  - Separate compartment per couple
  - Constant monitoring of temperature and CO2 levels
- All lab activity is witnessed both electronically and manually

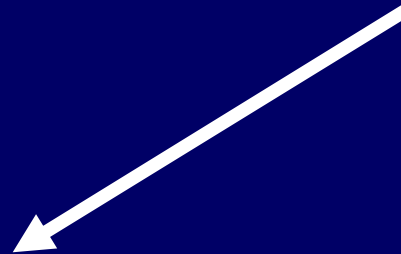
# Fertilisation to Embryo



**Day 1**



**Day 2**



**Day 3**



Possible  
Extended Culture



**Day 5**

# Criteria for Extended Culture/Blastocyst Transfer



Day 5 Blastocyst

- 4 or more top quality embryos on Day 3
- Age/Number of cycles
- If eligible for extended culture embryologist will phone and rearrange ET time
- ET on Day 5
- Single blastocyst transferred
- Not suitable for everyone

# Embryo Transfer Catheter

- Usually one embryo transferred
- Any remaining good quality embryos can be frozen



**Embryos pre-loaded in fine tube**

# Freezing and Storage of Embryos



- Embryos are frozen in liquid nitrogen
- Embryos frozen in label/colour coded straws
- Storage of embryos for ten years initially
- Tanks controlled by 24 hour alarm system

# Frozen Replacement Cycles



- More embryos may need to be thawed than are replaced as not all embryos survive
- Thawing may be the day prior to ET or the day of ET and transferred back to uterus on appropriate day

# After Embryo Transfer

- Progesterone pessaries for 14 days
- Pregnancy test 15 days after transfer (some women may have bled before this)
- Long wait for outcome – contact Unit for support

# Outcome

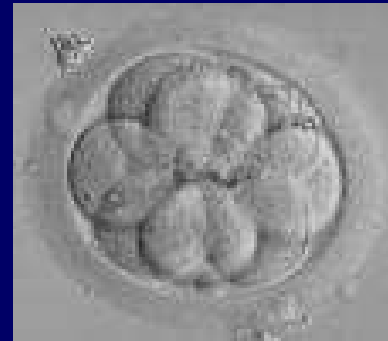
- Pregnancy test positive :
  - scan performed at seven weeks
- Pregnancy test negative :
  - Team will review notes
  - Appointment given to discuss future plans

# Other Outcomes to Consider

- Cycle cancellation before embryo transfer
- Poor ovarian response
  - less than 3 follicles
- Failed fertilisation
- Over response : risk of hyperstimulation
  - more than 30 follicles or 20 eggs (OHSS)
- How many embryos to transfer?
- Other health considerations
  - Early pregnancy problems
  - Infection
- Health & development of child

# Number of Embryos to Transfer

- Patient factors
  - Female age
  - Previous conception with or without treatment
  - Maternal health
    - Medical conditions
    - Uterus
- Embryo factors
  - Number available
  - Quality of embryos
    - Milestones in development
    - Cell quality



Day 3 → Day 5

**Dynamic situation**

# Patient Information

	<p>Aberdeen Fertility Centre Aberdeen Maternity Hospital Foresterhill Aberdeen AB25 2ZL</p>	<p><b>Patient Information Embryo Transfer Policy</b></p>
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## **1 BACKGROUND: THE GOAL OF TREATMENT**

The goal of fertility treatment is the delivery of a single, healthy baby, born at full term. This is the safest outcome for both the mother and child and is the aim of all the treatment programmes, including IVF, undertaken within Aberdeen Fertility Centre.

In offering treatment we are committed to maximising the chance of a live birth for our patients but at the same time minimising the risks of pregnancy and birth for both mothers and babies.

It is our belief that we have a duty to ensure that the interests of potential children are recognised as being of major importance when it comes to decisions about treatment.



search  Search

# The single biggest risk of fertility treatment is multiple pregnancy.



One at a time is a professionally-led site aimed at reducing the risks of multiple pregnancies from fertility treatment.

### What the experts say

Prof Peter Braude says...

"Multiple birth is the single biggest risk to the health and welfare of children born after IVF; we can no longer sit back and do nothing about it. IVF babies also deserve the best start in life!"



### Patients



#### What should I know?

▶ Multiple births - What are the risks?

### Professionals



#### What should I know?

▶ Multiple births - What are the risks?

### Latest developments

- ▶ 08-07-08: Fertility experts criticise new twin research
- ▶ 27-06-08: Professionals come

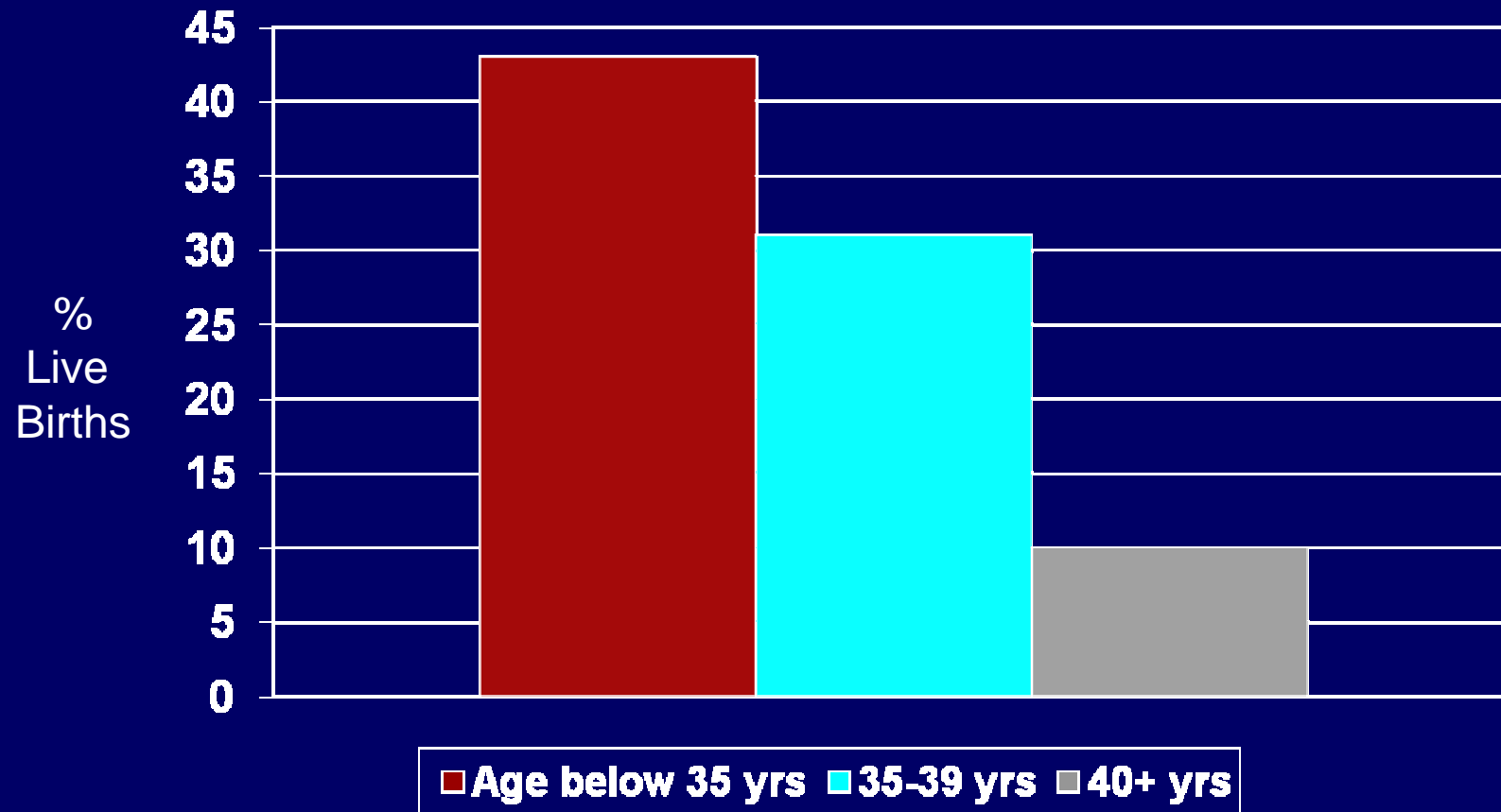
# Aberdeen Fertility Centre Results

1<sup>st</sup> January 2010 – 31<sup>st</sup> December 2010

<b>Cycles Started</b>	<b>489</b>	
Poor Stimulation	24	5% per start
Hyperstimulation	2	0.4% per start
<b>Egg Recovery</b>	<b>437</b>	89% of cycles started
All Frozen (OHSS risk)	3	0.5% per start
Failed Fertilisation	16	3% per start
<b>Embryo Transfers</b>	<b>409</b>	83% of cycles started 94% of egg recoveries
<b>Clinical Pregnancies</b>	<b>140</b>	29% of cycles started 32% per egg recovery 34% per embryo transfer
<b>Live Births</b>	<b>129</b>	26% of cycles started 30% per egg recovery 32% per embryo transfer

# The Effect of Female Age (Live Birth Rate/Ongoing Pregnancy per Patient)

01-Jan-10 to 31-Dec-10



# Independent Counsellor

- Jayne Williamson
- You can make direct contact
  - 01224 552628
- Confidential

# Aberdeen Fertility Centre



Tour of Day Ward  
Lab and Clinical Demonstrations  
Questions