The Royal College of Pathologists
Pathology: the science behind the cure

Making babies, designer babies?

Objects in 'A History of Pathology in 50 Objects' this resource links to:

IVF: *www.rcpath.org/the-college/50th-anniversary/50-objects/objects1_10/object-9-ivf*

Frog: *www.rcpath.org/the-college/50th-anniversary/50-objects/objects11-20/object-12-the-frog*

Learning Objectives

- Understanding of social, ethical and moral implications (this activity links to GCSE Religious Studies)
- Learning about inherited conditions and assisted conception
- Empathising with differing viewpoints, discussing and developing own views
- Developing critical and creative thought
- Learning to question and discuss issues that may affect students own lives or have impact on the world and the directions of societies.

Materials required

- **Pregnancy cards** (Print out a 1:4 ratio, so for a class of 28: Print 7 'You Are Pregnant' cards and 21 'You Are Not Pregnant' cards)
- **'Why do couples opt for IVF?' cards**

Time taken: 15-20 minutes (depending on the length of the discussion)

Picture link

Ask the students what they think is the link between tadpoles and a baby?
Show the slide of the frog.

Frogs were used in the first reliable and simple method of confirming pregnancy up until the 1950s.

Can the students work out how the frogs were used?

Female frogs were injected with a woman's urine. If the woman was pregnant, the frog would lay eggs. This is because when a woman is pregnant she has high levels of β-hCG (beta human chorionic gonadotropin), produced by the placenta, causing the frog to lay eggs. Pregnancy tests work on the same principle of detecting β-hCG in the urine or blood.

What if a woman, isn't pregnant…but wants to be?

Ask students, 'What does IVF stand for? In Vitro Fertilisation.' Mention this as a form of *assisted conception*. Ask them about the term '*in vitro*' and what it refers to: '*in glass*' which is how babies born through IVF are sometimes called '*test tube babies*'.

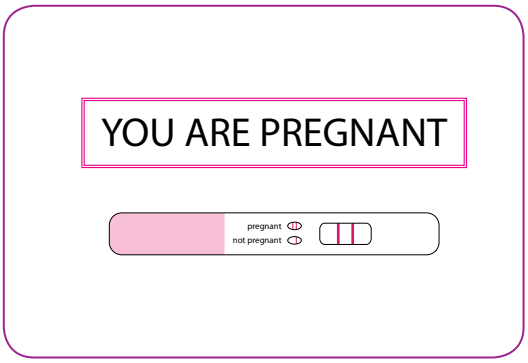
Discussion activity

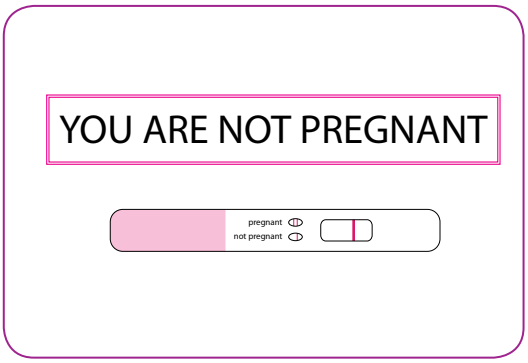
Ask the pupils how successful they think IVF is?

Do they think IVF is more successful now than when it was a new technology in the 1970s? Why? Statistics show that more women are having IVF. But there are different success rates for getting pregnant via IVF depending on the woman's age, reasons for infertility, whether donor eggs or sperm are used and importantly, the clinic used and the number of eggs replaced.

Shuffle and place all 28 'pregnancy' cards upside down in front of each student. (If more than 28 in a class, ask them to share a card between them). Say that they have all had IVF, and are getting tested to see if they are pregnant. Ask them to turn over their cards, and those who are pregnant, to stand up. Only four students should be standing, meaning there is only a 1 in 4 chance of getting pregnant with IVF.

Could it be that people hear more in the media about IVF and just presume it works? Whilst there are lots of new technologies and methods, there is still roughly only a 1 in 4 chance of pregnancy with each cycle.





Ask the students a few questions to get the discussion started:

- Should everyone who can't have children be allowed to, through IVF?
- If so, on the NHS?
- And if so, should people also be allowed to choose the qualities of their baby too?
- If there is only 1 in 4 chance should they be allowed to have unlimited attempts until they get pregnant?
- Should you be allowed to have multiple babies by IVF on NHS?

Gauge the students' knowledge. Find out what the pupils understand about designer babies and saviour siblings (and explain if they are unsure). The term 'designer' suggests that parents, in theory, could control the physical 'look' of their child. It may be something as trivial as wanting to choose eye colour through to ensuring that the child does not have a serious disease. However there is a more practical (and controversial) side: saviour siblings. This is where parents wish to create a child to save the life of one of an existing child who is suffering from a life-threatening condition.

Ask if any of the students have seen the film, *My Sister's Keeper*? This film features the story of a girl who is created through IVF to help save her sister's life. You may wish to play the trailer or a clip of the film to help set the scene for the discussion. (See useful links for details)

Who do the students think should be allowed IVF? Explain healthcare rationing to them, i.e. the NHS only has a certain amount of money and it has to decide what to spend it on. IVF is expensive, costing around £3000 for each attempt. There is not enough money to pay for every type of healthcare that people want. So if a hospital decides to spend all its money on treating cancer, there will be none left to deliver babies or pay for hip replacements. A certain amount of rationing is therefore essential. Some people think that being unable to have a baby is not an illness and should not be treated on the NHS at all. What do the students think?

Get the students into groups of 5-6. Hand out sets of the statement cards to each group. Each card represents a different couple and their decision to have IVF.

Ask the students to discuss in their groups who they think should be allowed IVF (if any) and their reason(s) why.

◆ Statement 1 from an older couple who can't have children due to previously being sterilised:

'We are in our late forties. In our previous relationships, neither of us wanted children, so we were sterilised. Now we would like to have our own children.'

◆ Statement 2 from a lesbian couple who can't get pregnant naturally, and do not want to adopt; they want their own biological children:

'We want our own biological children with our genes. It's not fair…we can't get pregnant naturally, and we don't want to start the adoption process which is very difficult.'

◆ Statement 3 from a couple who want to have a 'designer baby': they want a boy:

'In our culture, men are respected in society. We do not want another girl. We want to be able to choose which gender our baby will be.'

◆ Statement 4 from a couple who want to have a 'designer baby': they want a child who is deaf:

'My partner and I are deaf, and we would like to have a baby who is also deaf so that they fit in with our lifestyle.'

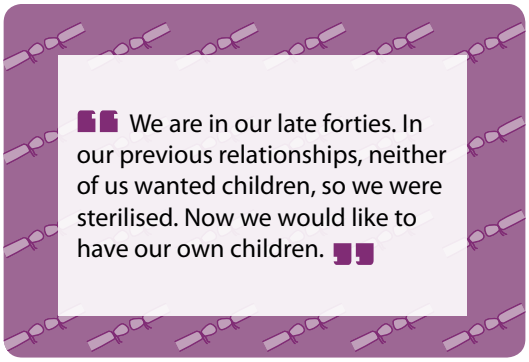
◆ Statement 5 from an older couple who want to have a 'designer baby': they are worried about a genetic condition and wish to only have the embryos without the genetic defect to be implanted:

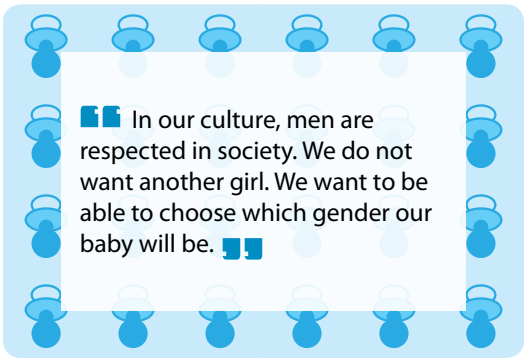
'We are in our late forties. Our doctor said if we get pregnant now, there is a chance our child will have Down's Syndrome. We want to be able to choose a non-Down's Syndrome embryo.'

◆ Statement 6 from a couple who have an older child who has a genetic condition and need a 'saviour sibling/ spare part baby':

'Our older child has thalassaemia. We need another baby with the same blood type, so that we have someone who will be available for a bone marrow transplant.'

Allow pupils enough time to discuss, and then feedback their thoughts to the rest of the class.





Useful links

***A Storm in a Test Tube*? and *Embryonic Choices* resources**: *www.ilovepathology.org/resources/Working+with+Schools*

Human Fertilisation and Embryology Authority (HFEA): *www.hfea.gov.uk/history-of-ivf.html*

Test tube baby Louise Brown pays tribute to Robert Edwards: *www.guardian.co.uk/society/2013/apr/11/test-tube-baby-louise-brown-robert-edwards*

IVF pioneer Robert Edwards will never be forgotten by those he helped: *www.guardian.co.uk/commentisfree/2013/apr/11/robert-edwards-ivf-pioneer*

Angelina Jolie's double mastectomy: *www.nytimes.com/2013/05/14/opinion/my-medical-choice.html?smid=tw-share&_r=1&"* - if you could screen a baby for the BRCA1 and BRCA2 genes (linked to an increased risk of breast and ovarian cancer), would you?

Film: *My Sister's Keeper*:*www.imdb.com/title/tt1078588*
Trailer: *http://www.youtube.com/watch?v=HP4NxUFgFrs*
or clip: *http://www.youtube.com/watch?v=bX0dxizzjME*