

## IVF & ICSI results – involving frozen embryo transfers for women using donor eggs for treatment cycles started in 2006

### ► Introduction

- The information we collect about fertility treatment can be analysed in many ways. In this report we present key information about those patients having IVF or ICSI involving frozen embryo transfer:
  - where the embryos were created using donor eggs
  - where women were having treatment with the intention of conceiving immediately rather than storing or donating eggs and embryos; surrogacy treatment is excluded
  - and the treatment cycle started in 2006 resulting in births in either 2006 or 2007.
- This report does not include information about cycles of fresh or frozen IVF or ICSI where women used their own eggs or fresh embryo transfer following IVF or ICSI where donor eggs were used.
- Similar reports are available for fresh and frozen embryo transfer in IVF and ICSI where women have used their own eggs, and IVF or ICSI involving fresh embryo transfer with donor eggs.
- At some points in the report the small numbers involved mean that some of the information cannot be presented for confidentiality reasons.
- The majority of donor eggs used in these cycles will have been from donors aged 35 and under.
- Information about how the data for this report were gathered is given in the appendix together with a glossary of terms.

### ► Summary

- In 2006 343 women started 520 cycles of treatment where the intention was to carry out a frozen embryo transfer using embryos created using donor eggs following IVF or ICSI, and treatment was undertaken with the purpose of conceiving immediately.
- Of the 520 cycles of frozen donor IVF or ICSI started 476 cycles resulted in an embryo transfer (92%).
- The majority (74%) of embryo transfers involved the transfer of two embryos; 25% of cycles involved a single embryo transfer; and 1% were three embryo transfers.
- A total of 124 treatment cycles resulted in an ultrasound confirmed pregnancy which represents 24% of treatment cycles started and 108 women gave birth to at least one baby (21%).
- The chances of a baby being born following frozen donor IVF or ICSI was affected by the number of embryos transferred but not by the age of the women when they were treated.

- Of the 124 women who had a confirmed ultrasound pregnancy 13% had a miscarriage, an ectopic pregnancy, a termination, or the baby was stillborn.
- Of the women who conceived following frozen donor IVF or ICSI 79% conceived a singleton pregnancy and 21% conceived a multiple pregnancy.
- Having conceived a pregnancy following frozen donor IVF or ICSI 87% of women gave birth to at least one baby (a live birth).

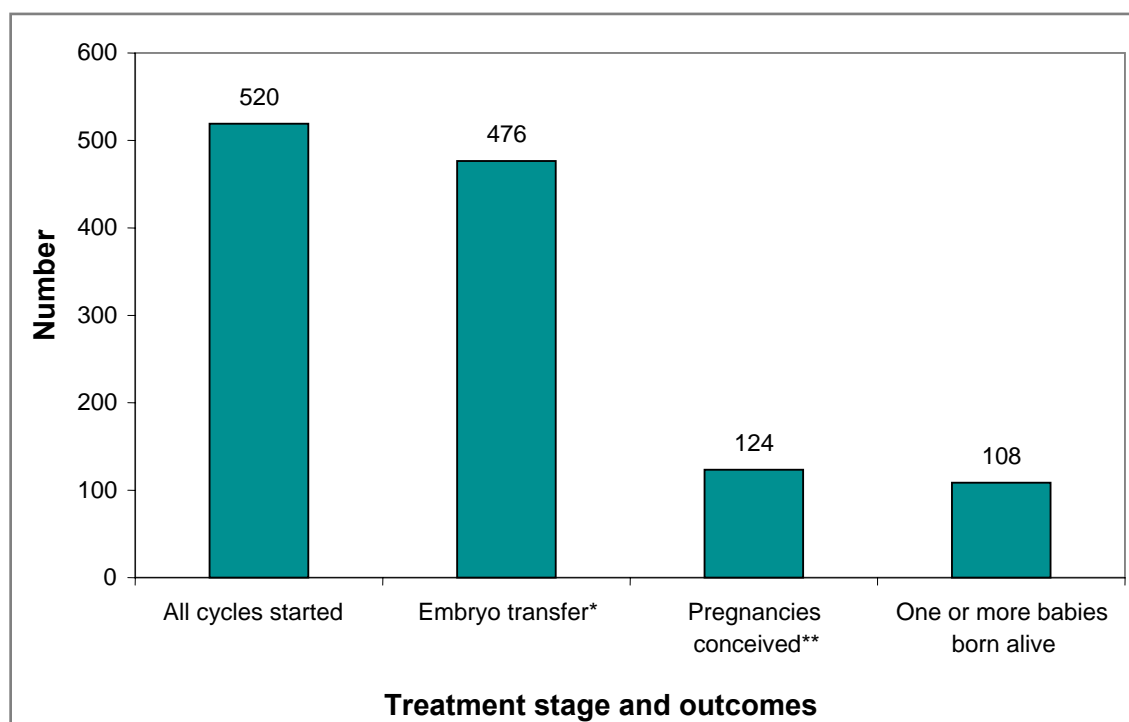
### ► How are treatment results calculated?

- The results of IVF and ICSI (both fresh and frozen) can be calculated using treatment cycles as the starting point. This gives figures which are useful to help understand what the chances of pregnancy and of having a baby are when a woman starts treatment.
- However, not all treatment cycles which are started reach the embryo transfer stage. The results of treatment can also be calculated from the point that an embryo transfer occurs. This is useful to understand what the chances of pregnancy and of having a baby are once an embryo transfer has taken place.
- In this report we show:
  - Treatment outcomes from the point of view of starting a treatment cycle and these results are given per 100 treatment cycles and
  - Treatment outcomes from the point at which the embryo transfer has been carried out and these results are given as per 100 embryo transfers.

► 1. How many women were treated with frozen donor IVF or ICSI and what were the outcomes? [7.1-7.8]

- In 2006 343 women started 520 cycles of treatment where the intention was to carry out a frozen embryo transfer cycle using embryos created following IVF or ICSI using donated eggs and the treatment was undertaken to try to conceive straight away.
- For a variety of reasons not all cycles of treatment which are started reach the embryo transfer stage.
- The majority of cycles reaching the embryo transfer stage do not result in a pregnancy (Figure 1).

Figure 1: Outcome of frozen donor IVF or ICSI cycles<sup>+</sup> started in 2006 [7.1]



+ Frozen IVF or ICSI cycles where women used donor eggs and treatment was undertaken to try to conceive immediately; excludes treatment for storage, donation and surrogacy

\* Cycles in which an embryo transfer took place

\*\* Ultrasound confirmed pregnancies

**Results relating to treatment cycles:**

- Of the 520 cycles started :
  - 476 cycles resulted in an embryo transfer; 92 in every 100 treatment cycles started reached the embryo transfer stage (92%).
  - 124 cycles resulted in a pregnancy (confirmed on ultrasound); 24 in every 100 cycles started resulted in an ultrasound confirmed pregnancy (24%)  
and
  - 108 cycles led to birth to one or more babies; 21 in 100 cycles started resulted in one or more live births (21%).

**Results relating to embryo transfers:**

- There were 476 cycles of frozen IVF or ICSI using donated eggs which reached the embryo transfer stage:
  - 124 cycles resulted in a pregnancy confirmed by ultrasound; 26 in every 100 embryo transfer procedure resulted in an ultrasound confirmed pregnancy (26%)  
and
  - 108 cycles led to the birth of one or more babies; 23 in every 100 embryo transfers resulted in one or more live births (23%).

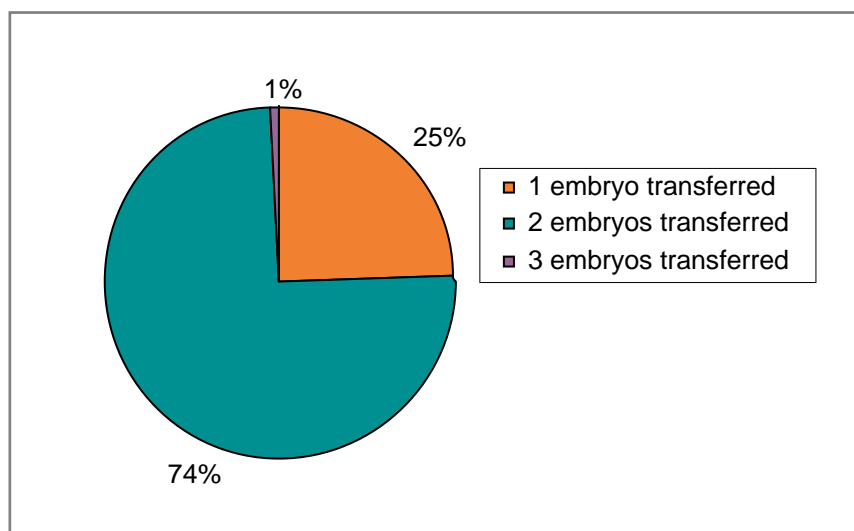
**▶ 2. Why were treatment cycles cancelled? [7.9]**

- 44 cycles were cancelled before the embryo transfer stage. The main reason that cycles were cancelled were because when the frozen embryos were taken out of storage they were damaged during the thawing process and were not of sufficiently good quality to be transferred.

▶ 3. How many embryos were transferred in each treatment cycle? [7.23]

- Overall in 2006 the majority of frozen donor IVF and ICSI embryo transfers involved the transfer of two embryos (Figure 2):
  - 25 in every 100 treatment cycles (25%) reaching the embryo transfer stage involved a single embryo transfer (1ET).
  - 74 in every 100 treatment cycles (74%) reaching the embryo transfer stage involved a double embryo transfer (2ET) and
  - Only 1 in every 100 treatment cycles (1%) reaching embryo transfer involved the transfer of three embryos (3ET).

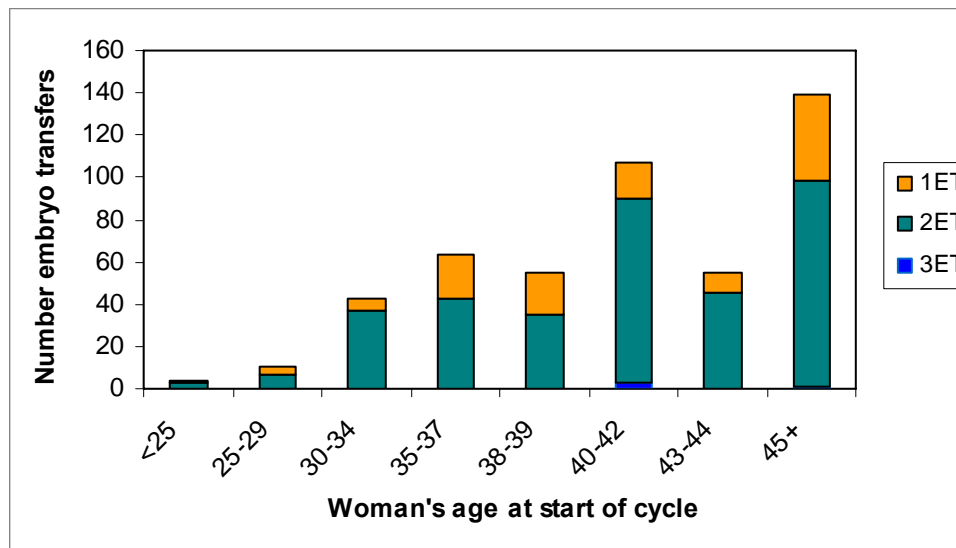
Figure 2: Number of embryos transferred in each cycle of treatment [7.24]



- Transferring a single embryo reduces the risk of a multiple pregnancy, although a small number of twins can result from spontaneous splitting of a single embryo resulting in identical twins.

- The number of frozen donor IVF and ICSI cycles increased with increasing age of the women treated (Figure 3).
- The proportion of single embryo transfer in frozen donor IVF or ICSI is not closely related to the age of the woman:
  - About 29 in every 100 women under the age of 40 yrs had a single embryo transfer (29%), whereas
  - About 23 in 100 women 40 yrs and over had a single embryo transfer (23%).
- Only four cycles of frozen donor IVF or ICSI involved the transfer of three embryos and these were all carried out in women 40 years or older.

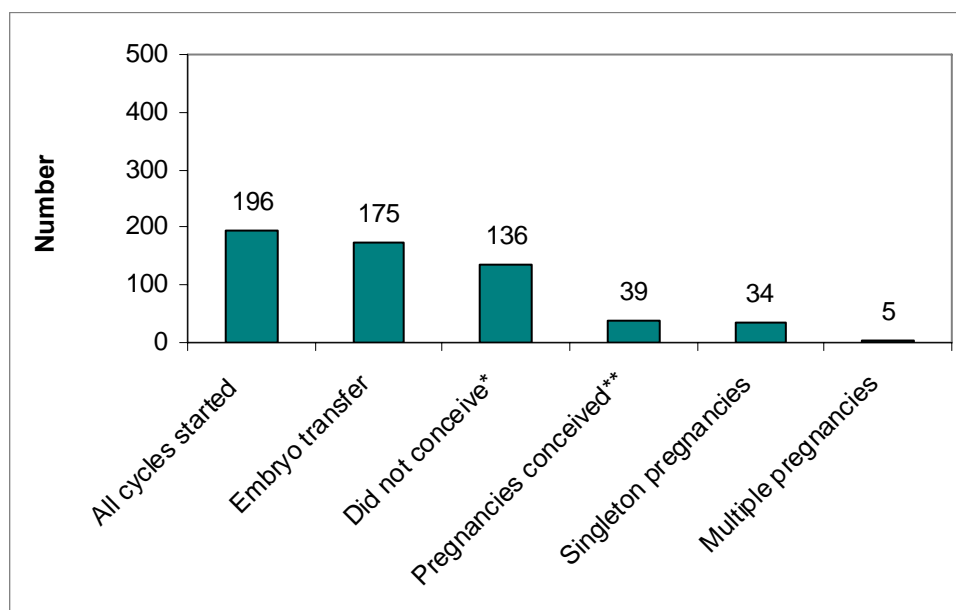
Figure 3: Number of embryos transferred by the woman's age [7.23]



► 4. How does the woman's age affect the chances of pregnancy following frozen donor IVF or ICSI? [7.18]

- The outcomes following frozen donor IVF or ICSI were not strongly affected by the age of the women when she underwent treatment. This is likely to be because the majority of donor eggs used in these cycles will have been from donors aged 35 and under. The results of treatment are shown for women in two different age groups (Figures 4 and 5).

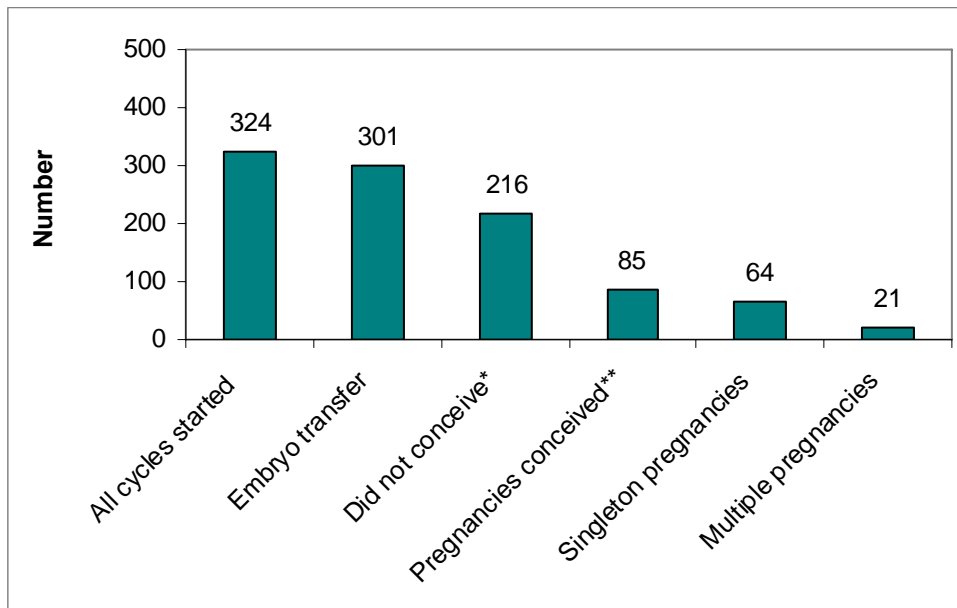
Figure 4: Treatment outcomes for women age 39 years or younger when they started treatment in 2006 [7.18a]



\* Did not conceive a pregnancy confirmed on ultrasound, although a pregnancy test may have been positive

\*\*Ultrasound confirmed pregnancies

Figure 5: Treatment outcomes for women aged 40 years and older when they started treatment in 2006 [7.18b]



\* Did not conceive a pregnancy confirmed on ultrasound, although a pregnancy test may have been positive

\*\*Ultrasound confirmed pregnancies

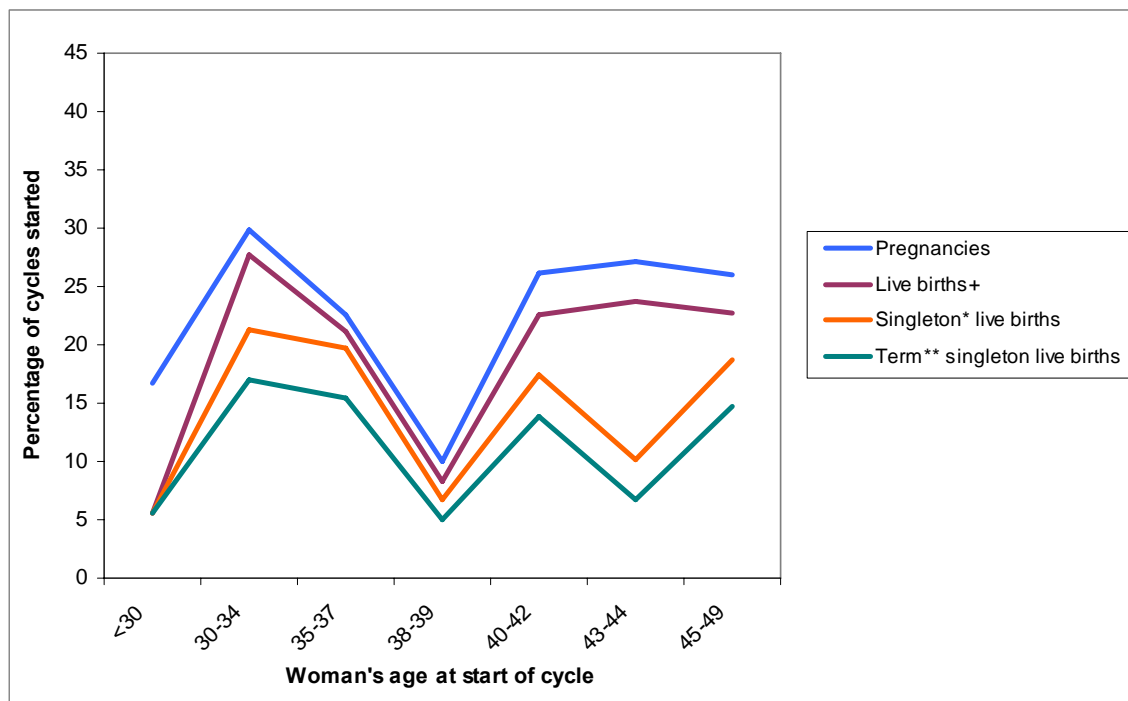
- 5. What can happen to a pregnancy conceived by frozen donor IVF or ICSI will a baby always be born? [7.10-7.17, 7.19]
- Overall 124 women conceived a pregnancy following frozen donor IVF or ICSI treatment which started in 2006:
    - 108 of these pregnancies resulted in the birth of at least one baby (live birth);
      - 87 in every 100 women who conceived a frozen donor IVF or ICSI pregnancy gave birth to at least one baby (87%).
    - 98 of these women were pregnant with a single pregnancy:
      - 79 in 100 pregnancies following frozen donor IVF or ICSI were singleton pregnancies (79%).
      - 83 of these singleton pregnancies resulted in the birth of a baby (live births);
        - 85 in every 100 women who conceived a frozen donor IVF or ICSI singleton pregnancy gave birth to a baby (85%) and
    - 11 in every 100 women who conceived a frozen donor IVF or ICSI singleton pregnancy had a miscarriage, an ectopic pregnancy, a termination or the baby was stillborn (11%).
    - 26 of these women were pregnant with a multiple pregnancy:
      - 21 in 100 pregnancies following frozen donor IVF or ICSI were multiple pregnancies (21%).
      - the outcomes of these multiple pregnancies have not been presented here because the numbers involved are too small.

► 6. How does a woman's age affect birth outcomes following frozen donor IVF or ICSI? [7.10-7.16]

Results starting from the point a treatment cycle begins:

- The effects of the woman's age on the chances of becoming pregnant and delivering a baby are shown in Figure 6 as a proportion of the treatment cycles started in 2006.

Figure 6: Pregnancy and birth outcomes for treatment cycles started in 2006 [7.10-7.16a]



+ Live births - pregnancies resulting in the delivery of one or more live births

\*Singleton live births - live births resulting from singleton pregnancies, excludes multiple pregnancies which result in just one live birth

\*\* Term – refers to a live birth born following a full-term pregnancy at 37 or more weeks gestation of pregnancy

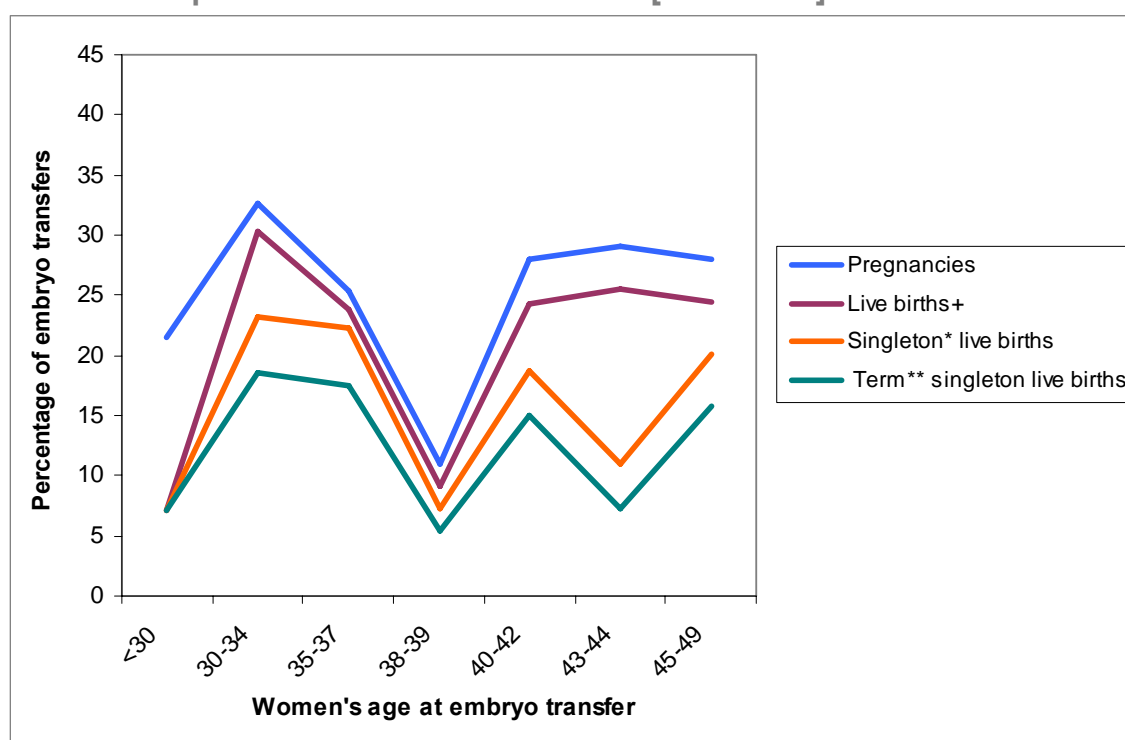
- It should be noted that these results are based on relatively small numbers of women in each age group. Given the small numbers involved there is little evidence of a significant difference in outcome by the age of the woman when she was treated. This is likely to be because the majority of donor eggs used in these cycles will have been from donors aged 35 and under. For these reasons we report the results for all ages overall rather than in age groups, as we have in the other reports in this series. Given the small numbers involved caution must be taken in the interpretation of these results.
- Overall 520 cycles of treatment were started which resulted in:
  - 124 ultrasound confirmed pregnancies;
    - 24 in every 100 treatment cycles started (24%) resulted in a pregnancy confirmed on an ultrasound scan.

- 108 pregnancies which resulted in the birth of one or more babies (live births of which some were singletons, twins or triplets);
  - 21 in every 100 treatment cycles started (21%) resulted in the birth of at least one baby.
- 83 singleton pregnancies which resulted in a live birth;
  - 16 in every 100 treatment cycles started (16%) led to a singleton pregnancy which resulted in the birth of a baby.
- 42 singleton pregnancies which resulted in the birth of a baby (live birth) following a full-term pregnancy;
  - 8 in every 100 treatment cycles started (8%) resulted in a live birth born at term.

#### Results starting from the point of embryo transfer:

- For a variety of reasons (see section 2) not all treatment cycles which are begun reach the stage of embryo transfer. The results of treatment from the point that an embryo transfer has been carried out are shown below. These figures are useful to help understand what the chances of pregnancy and of having a baby are once an embryo transfer has taken place.
- The effects of the woman's age on the chances of becoming pregnant and delivering a baby are shown from the point of embryo transfer as a proportion of the embryo transfers for treatment started in 2006 (Figure 7).

**Figure 7: Pregnancy and birth outcomes for frozen donor IVF or ICSI embryo transfers as part of treatment started 2006 [7.10-7.16b]**



+ Live births - pregnancies resulting in the delivery of one or more live births

\*Singleton live births - live births resulting from singleton pregnancies, excludes multiple pregnancies which result in just one live birth

\*\* Term – refers to a live birth born following a full-term pregnancy at 37 or more weeks gestation of pregnancy

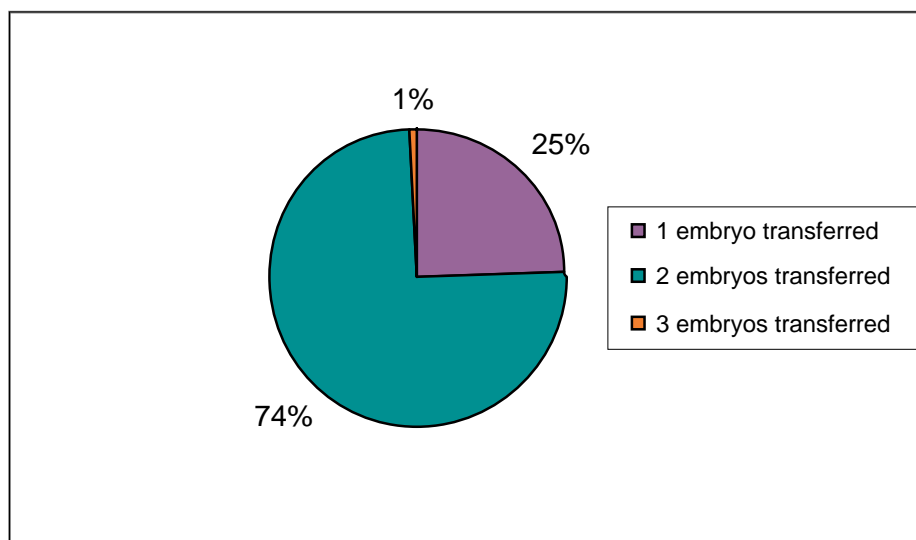
- Overall 473 embryo transfers were carried out following frozen donor IVF or ICSI which resulted in:
  - 124 ultrasound confirmed pregnancies;
    - 26 in every 100 embryo transfers (26%) resulted in a pregnancy confirmed on an ultrasound scan.
  - 108 pregnancies which resulted in the birth of one or more babies (live births of which some were singletons, twins or triplets);
    - 23 in every 100 embryo transfers (23%) resulted in the birth of at least one baby.
  - 83 singleton pregnancies which resulted in a live birth;
    - 17 in every 100 (17%) embryo transfers led to the conception of a singleton pregnancy which resulted in the birth of a baby.
  - 42 singleton pregnancies which resulted in the birth of a baby (live birth) following a full-term pregnancy;
    - 9 in every 100 embryo transfers (9%) resulted in a live birth born at term.

▶ **7. Are the outcomes of treatment affected by whether the sperm used comes from the woman's partner or a donor? [7.43]**

- In 2006 only 97 (19%) of the 520 cycles of frozen donor IVF or ICSI involved the use of donor sperm. The other 423 (81%) of cycles involved the use of the woman's partner's sperm. Because of the very small numbers involved it is not possible to present the treatment outcomes when donor sperm has been used. Since the majority of cycles involve the use of partner sperm the results overall give a close indication of the outcomes following frozen donor IVF or ICSI where the woman's partner's sperm was used to fertilise the donated eggs.

- ▶ 8. What is the effect of the number of embryos transferred on the number of babies born? [7.24]
- 520 cycles of frozen donor IVF or ICSI which started in 2006 reached the embryo transfer stage, of these (Figure 8):
    - 25% involved the transfer of a single embryo (SET).
    - 74% involved the transfer of two embryos (DET) – a double embryo transfer.
    - 1% involved the transfer of three embryos.

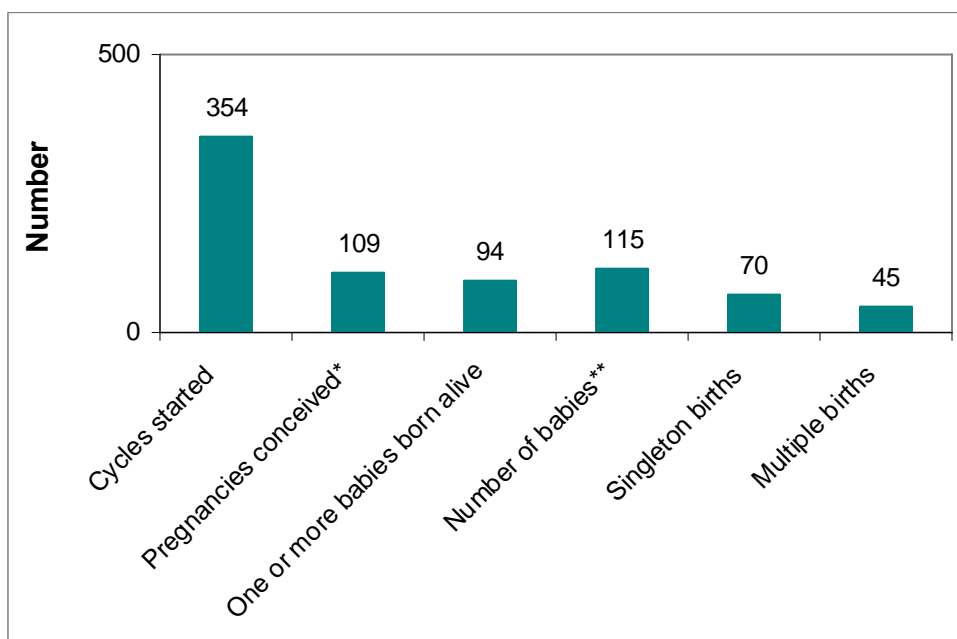
Figure 8: Number of embryos transferred in each cycle of treatment [7.24]



- The outcomes of single embryo transfers have not been presented here because the numbers involved are too small.

- 354 double embryo transfers (DET) led to 109 pregnancies and 94 women gave birth to at least one baby. In total 115 babies were born (live births) and 45 of them were multiple births (Figure 9), that is:
  - 69 in every 100 double embryo transfer procedures did not lead to the conception of an ultrasound confirmed pregnancy (69%) whereas
  - 31 in every 100 double embryo transfers led to a pregnancy (31%).
  - 27 in every 100 women who had a double embryo transfer gave birth to at least one baby (27%).

**Figure 9: Outcome of frozen donor IVF or ICSI cycles<sup>+</sup> involving double embryo transfer (DET) started in 2006 [7.24c]**



+ Frozen IVF or ICSI cycles where women used donor eggs and treatment was undertaken to try to conceive immediately; excludes treatment for storage, donation and surrogacy

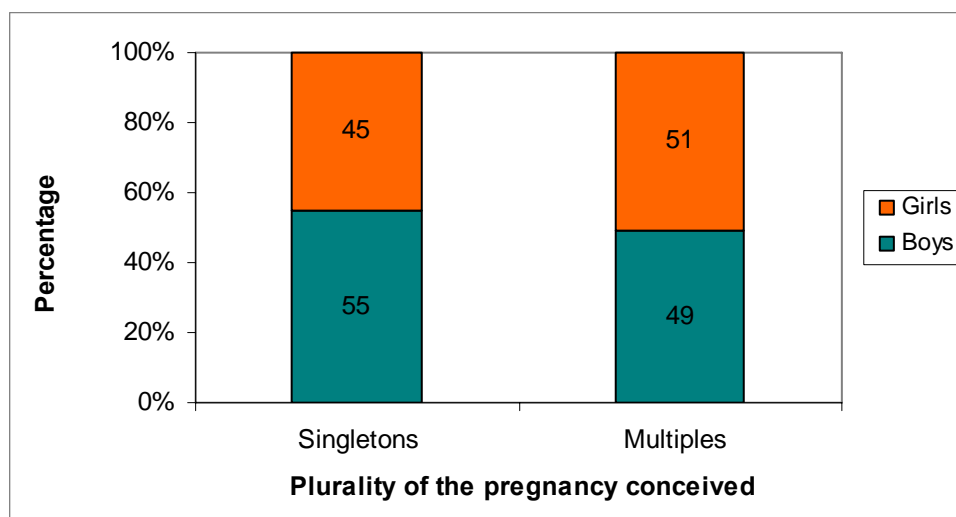
\*Ultrasound confirmed pregnancies

\*\* The total number of babies born alive

► 9. How many boys and girls are born following frozen donor IVF or ICSI? [7.51]

- Following frozen donor IVF or ICSI which started in 2006 130 babies were born alive and of these just over half (53%) were boys and just less than half (47%) were girls.
- Nearly two-thirds of the babies were born to women carrying a singleton pregnancy and of these just over half (53%) were boys and just less than half (45%) were girls (Figure 10).
- For the babies born from a multiple pregnancy the split between boys and girls was 49% boys and 51% girls (Figure 10).

Figure 10: Sex of the babies\* born following frozen donor IVF or ICSI+ started in 2006 [7.51]



+ Frozen IVF or ICSI cycles where women used donor eggs and treatment was undertaken to try to conceive immediately; excludes treatment for storage, donation and surrogacy

\*Includes only babies born alive

## Appendix F

### ▶ How we gathered the data

- Clinics are required by law to provide information to the HFEA Register about all licensed fertility treatments they carry out. The Register started operating in August 1991 and is a rich source of information about fertility treatment, its outcomes and the factors that contribute to the birth of a baby following treatment.

### ▶ Understanding the results presented

- This analysis is of just treatment cycles involving frozen embryo transfers using embryos created following IVF or ICSI using donor eggs in treatment cycles started at some stage during 2006. While the outcomes of some treatment started in 2006 may not be known until 2007 these treatment outcomes are nevertheless included in this analysis.
- Clinics are not always told by every patient the outcome of each treatment cycle, especially if the woman has travelled to the UK for treatment from abroad. A small number of pregnancy outcomes are therefore not included in the Register. However, since most of the pregnancy outcomes are known, it is likely that any underestimate in the outcome rates is very small.
- The information that the HFEA publishes is a snapshot of data provided to us by licensed clinics at a particular time. This information may be subject to change as individual centres notify us of amendments. Before publication, we perform a preliminary checking process on the data, and ask the clinic to confirm the accuracy, for which they remain responsible.