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Assisted conception Australia and New Zealand 1998 and 1999

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and
Paul Lancaster

AIHW National Perinatal Statistics Unit
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Requests for data

Any enquiries about data for individual IVF units should be directed to the unit concerned. Other enquiries should be made to the AIHW National Perinatal Statistics Unit.

The report may be obtained from AusInfo Mail Order Sales:

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http://www.aihw.gov.au/npsu/

Collaborating IVF and GIFT units

New South Wales

North Shore Assisted Reproductive Technology, Sydney (Professor Douglas M. Saunders)

St George Fertility Centre, Sydney (Dr David C. Macourt)

Lingard Fertility Centre, Newcastle (Dr Robert Woolcott)

Westmead Fertility Centre, Sydney (Associate Professor Peter Illingworth)

City West IVF, Sydney (Dr Geoffrey L. Driscoll)

Royal Prince Alfred Hospital, Sydney (Dr Mark Bowman)

Sydney IVF, Sydney (Professor Robert P.S. Jansen)

IVF NSW, Sydney (Dr Trevor Johnson)

Albury Reproductive Medicine Centre, Albury (Dr Scott Giltrap)

IVF South, Sydney (Professor Michael Chapman)

Fertility First, Sydney (Dr Anne Clark)

Victoria

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Monash IVF Queensland, Sunnybank (Dr Kevin Forbes)

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South Australia

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Flinders Reproductive Medicine, Adelaide (Associate Professor Stephen J. Judd)

Western Australia

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Concept Fertility Centre, Perth (Dr Graeme Thompson)

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ARTEMIS North Shore Fertility, Auckland (Dr Barry Lowe)

The Fertility Centre, Christchurch (Dr Peter Benny)

Fertility Associates, Wellington (Professor John Hutton)

Fertility Associates, Hamilton (Dr Stewart Hastie)

Abbreviations

NSW	New South Wales
Vic	Victoria
Qld	Queensland
WA	Western Australia
SA	South Australia
Tas	Tasmania
ACT	Australian Capital Territory
NT	Northern Territory
NZ	New Zealand
AIHW	Australian Institute of Health and Welfare
NPSU	National Perinatal Statistics Unit
GIFT	gamete intrafallopian transfer
GnRH	gonadotrophin-releasing hormone
hCG	human chorionic gonadotrophin
ICSI	intracytoplasmic sperm injection
IVF	in-vitro fertilisation
MESA	microepididymal sperm aspiration
na	not available
PESA	percutaneous epididymal sperm aspiration
SUZI	Subzonal insemination
TESE	testicular sperm extraction

Highlights

- In Australia, infertile couples were treated by in-vitro fertilisation (IVF), intracytoplasmic sperm injection (ICSI) and gamete intrafallopian transfer (GIFT) in 31 IVF units in 1999. New Zealand had 7 IVF units in this period. There were 3,873 births after assisted conception in Australia in 1998, accounting for 1.5% of all births. In New Zealand, there were 309 births after assisted conception in 1998.

- Between 1992 and 1999, the total number of cycles with oocyte retrieval or embryo transfer for all techniques of assisted conception increased by 63% from 16,288 in 1992 to 26,579 in 1999. There was a relatively greater increase in transfer cycles using frozen embryos than for fresh embryos.

- When all techniques of assisted conception are included together, the viable pregnancy rate increased from 13.0 per 100 embryo transfer cycles in 1992 to 15.9 in 1999.

- For IVF with transfer of fresh embryos, the viable pregnancy rate almost doubled from 8.6 per 100 oocyte retrieval cycles in 1992 to 15.4 in 1999. For IVF with transfer of frozen embryos, the viable pregnancy rate varied between 9.6 per 100 embryo transfer cycles in 1993 and 12.5 in 1996.

- There has been a marked increase in treatment cycles in which intracytoplasmic sperm injection (ICSI) was used for fertilisation. Oocyte retrieval cycles for microinsemination increased each year from 812 in 1992 to 8,022 in 1999. For ICSI with transfer of fresh embryos, the viable pregnancy rate increased from 6.8 per 100 oocyte retrieval cycles in 1992 to 16.3 in 1999. For ICSI with transfer of frozen embryos, the viable pregnancy rate fluctuated between 11.1 per 100 embryo transfer cycles in 1996 and 13.3 in 1994. Microinsemination accounted for 47.1% of transfer cycles for all types of assisted conception in 1999. The overall proportion of assisted conception pregnancies resulting from ICSI and other types of microinsemination increased rapidly from 18.3% (584/3,195) in 1994 to 46.0% (2,309/5,020) in 1999.

- The use of gamete intrafallopian transfer (GIFT) for treating infertility declined sharply during the 1990s, from 3,831 oocyte retrieval cycles in 1992 to 1,265 cycles in 1999, accounting for only 5.1% (1,239/24,521) of all transfer cycles in that year. The viable pregnancy rate varied between 18.2 per 100 oocyte retrieval cycles in 1999 and 22.0 in 1996.

- Between 1997 and 1999, the proportion of IVF and ICSI cycles in which one or two fresh embryos were transferred increased, from 64.9% to 76.4% for IVF and from 66.9% to 74.0% for ICSI. For thawed embryos, the proportion increased from 79.3% to 86.6% for IVF in the same period, and from 82.5% to 86.1% for ICSI. For GIFT, one or two oocytes were transferred in 51.6% of cycles in 1997, decreasing to 47.8% in 1999. Four or more oocytes were transferred in 10.8% of GIFT cycles in 1999.

- Information about artificial insemination performed at IVF units is included in this report for the first time. In 1998 and 1999, there were approximately 12,500 cycles of treatment by artificial insemination of husband's sperm or donor sperm reported by IVF clinics for each year. The viable pregnancy rate for artificial insemination in 1999 was 9.6 per 100 insemination cycles.

- In 1998, multiple pregnancy occurred in 27.8% of GIFT pregnancies, compared with 19.8% for IVF pregnancies and 19.0% for ICSI pregnancies. There were 3 quadruplet pregnancies and 44 sets of triplets among all assisted conception pregnancies in 1998.

- In the three-year period 1996–1998, multiple pregnancy for all types of assisted conception occurred in 20.2% of viable pregnancies and varied considerably among the IVF units. When IVF units were ranked into four groups, the multiple pregnancy rate among units in the highest group (26.1%) was almost twice that of units in the lowest group (13.4%).

- In 1998, 61% (61/100) of perinatal deaths after assisted conception occurred in multiple births.

- The perinatal death rate for all assisted conception births in 1998 was 23.9 per 1,000 births, similar to that in 1997 but lower than in earlier years. Perinatal death was more likely for multiple births than for singletons, increasing from 14.2 per 1,000 births for singletons, to 31.8 for twins, 113.6 for triplets, and 416.7 for quadruplets.

1 Introduction

This report contains a summary of the results of treatment of infertility by assisted conception in all IVF units in Australia and New Zealand in 1998 and 1999, and also the outcomes of pregnancies conceived in 1998. The report includes data on in-vitro fertilisation (IVF), intracytoplasmic sperm injection (ICSI) and gamete intrafallopian transfer (GIFT). GIFT was first used in 1985. The first microinsemination technique for treating mainly male infertility, subzonal insemination (SUZI), was introduced in 1990 but this was superseded by ICSI within several years. The data on ICSI include those treatment cycles in which SUZI was used and also the subsequent pregnancies. Treatment of infertility by artificial insemination at an IVF unit is included in this report for the first time, but information on other infertility treatment, such as ovulation induction without IVF, ICSI or GIFT, is not available.

In 1999, there were 31 IVF units in Australia and 7 IVF units in New Zealand. Some IVF units have set up satellite clinics that are linked to major IVF centres in capital cities. Regional centres where satellite clinics have been established include: Albury, Coffs Harbour, Gosford, Lismore, Orange, Tamworth, Wagga Wagga and Wollongong in New South Wales; Ballarat, Benalla, Bendigo, Broadmeadows, Casterton, Geelong, Maryvale, Morwell, Sale, Shepparton and Wangaratta in Victoria; Cairns, Mackay, Nambour, Rockhampton and Townsville in Queensland; Attadale and Joondalup in Western Australia; and Darwin in the Northern Territory.

Each IVF unit reports summary data on treatment cycles for each year and also notifies pregnancies on a standard form (Appendix 2). The data include the number of cycles commenced each year and the number progressing to the stages of oocyte retrieval, embryo transfer, clinical pregnancy, and viable pregnancies of at least 20 weeks' gestation. The IVF units report mutually exclusive results for IVF with uterine transfer of fresh embryos, IVF with tubal transfer of fresh embryos, IVF with transfer of frozen embryos, ICSI with uterine transfer of fresh embryos, ICSI with tubal transfer of fresh embryos, ICSI with transfer of frozen embryos, GIFT, and the use of IVF, ICSI or GIFT with donor oocytes or donor embryos.

IVF units also provide tabulated data on the age distribution, causes of infertility, drugs used to stimulate ovulation, and the number of embryos or oocytes transferred for women treated by IVF (fresh and frozen), ICSI (fresh and frozen), GIFT, and transfer of donated oocytes or embryos. Tabulated summaries of results and notified pregnancies are returned to each IVF unit to check their accuracy and completeness.

All analyses of treatment cycles and pregnancy outcome in this report are based on the year of treatment and conception. Data on pregnancy outcome are given for 1998 and include births up to September 1999. In previous reports, the data on IVF pregnancies have included ICSI pregnancies as well. Because the number of ICSI pregnancies conceived each year has continued to increase, this report provides separate tabulations on IVF (excluding ICSI), ICSI and GIFT pregnancies.

2 Trends and regional variations in assisted conception

Between 1992 and 1999, the total number of treatment cycles (oocyte retrievals and embryo transfers) for all types of assisted conception increased each year. In 1992, there were 16,288 cycles, increasing to 20,181 in 1995, and 25,235 and 26,579, respectively, in 1998 and 1999.

2.1 Trends in assisted conception, 1992–1999

The number of IVF units in Australia and New Zealand increased from 28 in 1992 to 38 in 1999. The total number of cycles with oocyte retrieval or embryo transfer increased by almost two-thirds (63%), from 16,288 in 1992 to 26,579 in 1999, with increases of 144% for transfers of frozen embryos and 36% for fresh transfers (Figure 1). Viable pregnancy rates also increased during this period, the most marked increases being for IVF fresh transfers and ICSI fresh transfers (Figure 2).

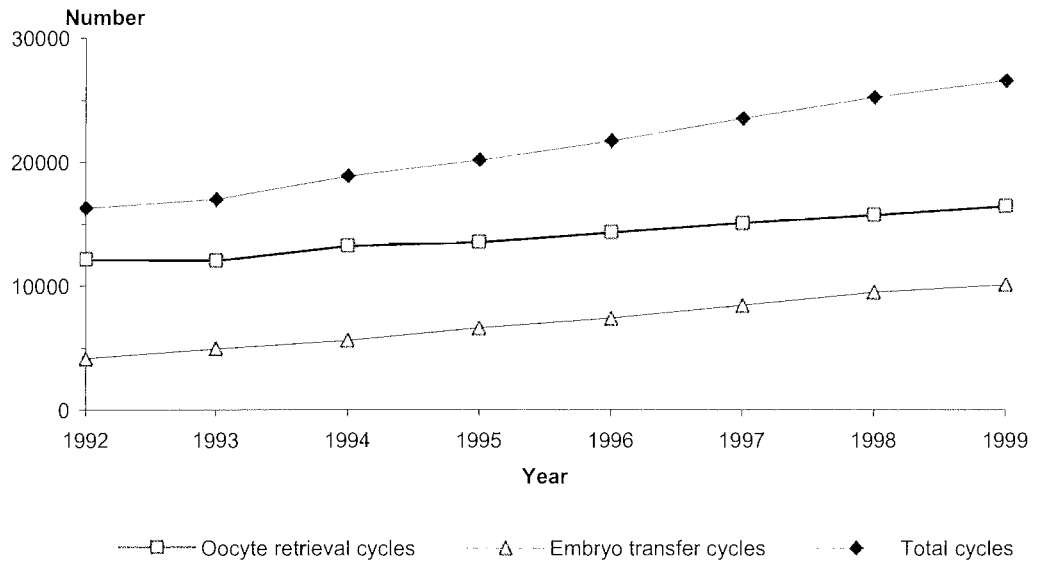


Figure 1: Oocyte retrieval cycles for fresh transfers and embryo transfer cycles for frozen or donor embryos, 1992–1999

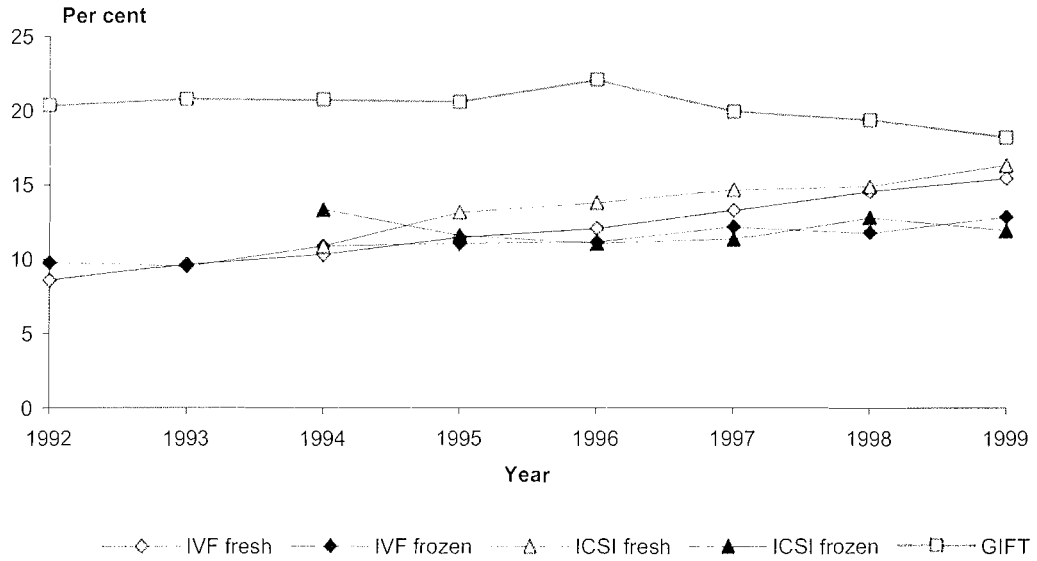


Figure 2: Viable pregnancy rates by method of assisted conception, 1992 -1999

The number of treatment cycles commenced for IVF and transfer of fresh embryos changed little, from 8,474 in 1992 to 8,591 in 1999 (Table 1). The number of cycles with oocyte retrieval and embryo transfer declined slightly, from 7,501 and 6,190, respectively, in 1992 to 7,174 and 6,066 in 1999. The viable pregnancy rate nearly doubled during this period, increasing each year from 8.6 per 100 oocyte retrieval cycles in 1992 to 15.4 in 1999. IVF cycles with embryo transfer after embryo freezing increased during this period, from 3,813 in 1992 to 4,951 in 1998, then declining to 4,667 in 1999 (Table 2). The viable pregnancy rate also increased from a low of 9.6 per 100 embryo transfer cycles in 1993 to 12.5 in 1999.

Following the trend of recent years, the use of ICSI to treat mainly male infertility continued to increase in 1998 and 1999. This pattern has been reflected in the resulting clinical pregnancies (Figure 3). There were 337 oocyte retrieval cycles for microinsemination in 1990, the number then rising each year to 7,093 cycles in 1998, and 8,022 cycles in 1999. ICSI with transfer of fresh or frozen embryos accounted for 19.8% of all embryo transfers for all types of assisted conception in 1994. This proportion doubled to 40.5% of all embryo transfers by 1997 and then increased to account for nearly half (47.1%) of all embryo transfers in 1999.

ICSI pregnancies after transfer of fresh embryos have increased rapidly since 1994 (Table 3), the first year in which separate data were obtained for fresh and frozen ICSI cycles. The number of cycles with oocyte retrieval and embryo transfer almost trebled, from 2,786 and 2,436, respectively, in 1994 to 8,022 and 7,098 in 1999. The viable pregnancy rate increased each year from 10.9 per 100 oocyte retrieval cycles in 1994 to 16.3 in 1999. The number of ICSI cycles with embryo transfer after embryo freezing increased almost fivefold during this period, from 929 in 1994 to 4,463 in 1999 (Table 4). The viable pregnancy rate varied between 11.1 per 100 embryo transfer cycles in 1996 and 13.3 in 1994.

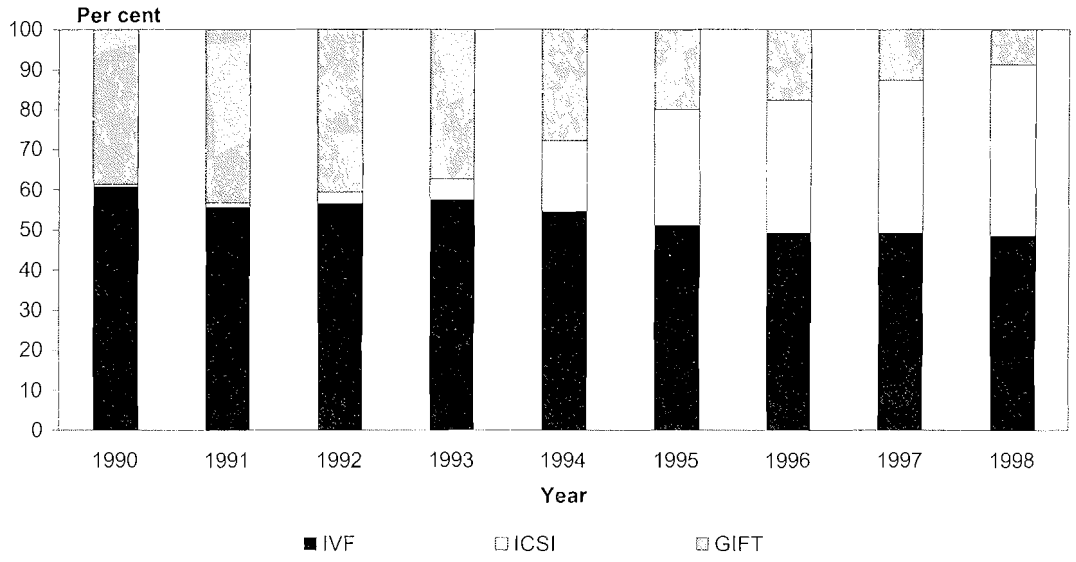


Figure 3: Assisted conception pregnancies by method of conception, 1990 -1998

During 1992 to 1999 the number of GIFT cycles with gamete transfer declined by two-thirds, from 3,757 in 1992 to 1,239 in 1999 (Table 5). The viable pregnancy rate varied between a high of 22.0 per 100 oocyte retrievals in 1996 and a low of 18.2 in 1999.

The total number of embryo transfer cycles after use of donor oocytes or donor embryos, combined with IVF, ICSI or GIFT, increased threefold between 1992 and 1999 (Tables 6 and 7). Separate data for fresh and frozen embryos were not collected prior to 1996. The viable pregnancy rate for transfer of fresh embryos with donor oocytes or donor embryos varied between a low of 9.5 per 100 embryo transfer cycles in 1994 and 18.1 in 1999. Transfers of embryos after embryo freezing with donor oocytes, or donor embryos, doubled between 1996 and 1999, from 317 to 624. The viable pregnancy rate was in the range of 11 -12 per 100 embryo transfer cycles in this period.

Despite the fluctuations occurring for the various techniques of assisted conception, the number of embryo transfer cycles nearly doubled (from 14,607 to 24,521) between 1992 and 1999 and the overall viable pregnancy rate for all assisted conceptions increased annually from 13.0 in 1992 to 15.9 in 1999 (Table 8).

There was variable use of assisted hatching between 1994, the first year for which data were collected, and 1999. The viable pregnancy rates were generally lower than for conventional IVF and ICSI, varying between 6.4 per 100 embryo transfer cycles in 1996 and 11.5 in 1998 (Table 9).

By using blastocyst culture, embryos are at a more advanced stage of development when embryo transfer occurs. Information on these transfers was first collected in 1998. The viable pregnancy rates after blastocyst culture were generally higher than for conventional IVF and ICSI (Table 10).

Embryo freezing avoids the necessity for repeated ovarian stimulation in every treatment cycle. As more couples have their infertility treated by assisted conception, more embryos are frozen each year. Since 1994, the number of embryos that were frozen, and the number of embryos thawed, has increased annually, doubling from 19,563 frozen and 14,375 thawed in 1994 to 39,682 frozen and 28,286 thawed in 1999 (Table 11). The number of embryos that are frozen each year exceeds the number thawed, thus increasing the total number of embryos in storage. The number of embryos in storage has nearly trebled during this same period, from 22,280 in 1994 to 65,518 in 1999. Policies on how long frozen embryos are kept in storage vary among the IVF units.

Cycles of treatment resulting from artificial insemination at an IVF unit were reported for the first time in 1998 for husband's sperm and donor sperm. In 1999, the number of pregnancies for each technique was also reported. There were approximately 12,500 cycles of artificial insemination in each of the two years. Insemination with husband's sperm accounted for nearly 60% of all artificial inseminations (Table 12). The viable pregnancy rates in 1999 were similar for insemination of husband's sperm and donor sperm, 9.6 and 9.5 per 100 insemination cycles, respectively. It should be noted that the information about artificial insemination in this report was obtained only from clinics and practitioners also treating infertility by assisted conception. The full extent of the use of artificial insemination in Australia and New Zealand cannot be estimated from these data.

2.2 Regional variations in the use of assisted conception

The use of assisted conception to treat infertility can be compared in different populations by relating the number of treatment cycles during a year to the number of women in the reproductive age group. The total number of treatment cycles can be estimated by adding those that reach the stage of oocyte retrieval for IVF, ICSI and GIFT to the number of transfer cycles for frozen IVF and ICSI embryos and donor oocytes/donor embryos. As most women treated by assisted conception are aged between 25 and 44 years, the ratio of the number of treatment cycles is expressed per 100,000 women aged 25–44 years. In the figures for 1998 and 1999, South Australia and the Northern Territory are reported together because the only IVF clinic in Darwin is a satellite clinic of The Queen Elizabeth Hospital in Adelaide. Also, the figures for Tasmania and the Australian Capital Territory are combined because there are only three IVF units between the two regions.

There were considerable variations in treatment ratios among the Australian States, and marked differences between Australia and New Zealand (Table 13, Figures 4 and 5). In 1998, the treatment ratio in Australia was 818 cycles per 100,000 women, increasing to 850 cycles per 100,000 women in 1999. This ratio was about three times higher than in New Zealand

which had a ratio of 259 per 100,000 women in 1998, and 310 in 1999. In Australia, the highest treatment ratios were in Victoria and the Australian Capital Territory/Tasmania and the lowest ratios were in Queensland, Western Australia and South Australia. As these ratios are based on the States in which the IVF units are located, comparisons between States may be slightly affected by interstate movements of infertile women for treatment.

In 1998, IVF was used relatively more in Tasmania/Australian Capital Territory and relatively less in Queensland than in the other States. The highest relative use of ICSI was in Victoria and the lowest was in Western Australia and Queensland. In 1999, Victoria again had a relatively high use of ICSI, while IVF and ICSI were relatively underutilised in Queensland. In both years, GIFT was more likely to be used in Queensland than in the other States.

In 1998, 47.8% of all treatment cycles in Australia were IVF, 43.0% were ICSI, 6.1% were GIFT and 3.1% were donor oocytes/embryos. In 1999, the proportion of ICSI treatment cycles in Australia increased to 47.2%, with a relatively smaller proportion of IVF and GIFT treatment cycles, 43.9% and 5.1%, respectively. In New Zealand, where the treatment ratios were much lower than in Australia, IVF accounted for a slightly higher proportion of all treatment cycles than in Australia (51.9% in 1998 and 52.6% in 1999). The proportion of ICSI cycles was similar in the two countries, but GIFT was rarely used in New Zealand (0.6% in 1998 and 0.1% in 1999).

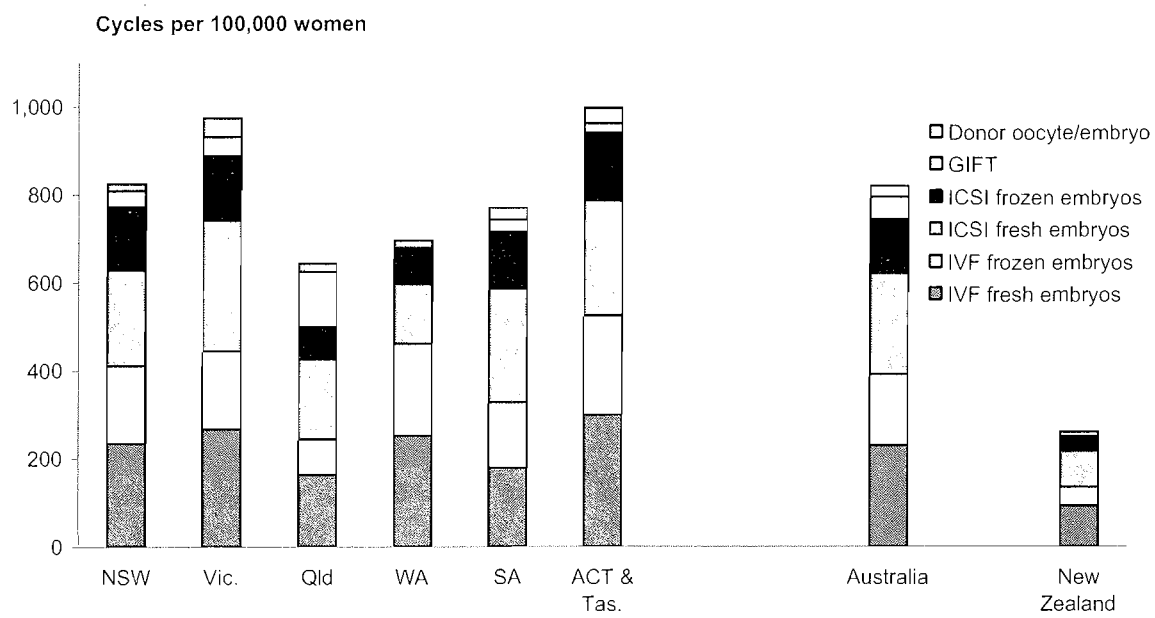


Figure 4: Ratio of treatment cycles to number of women in reproductive age group, 1998

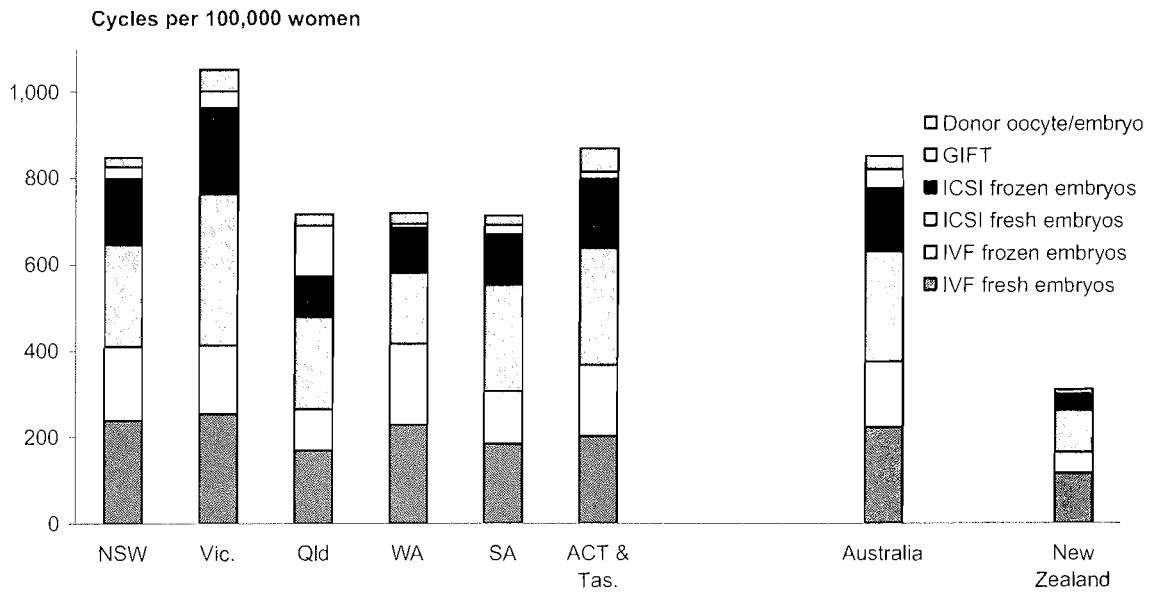


Figure 5: Ratio of treatment cycles to number of women in reproductive age group, 1999

3 Variations in pregnancy rates among IVF units

In this report, the pregnancy rates for each technique of assisted conception are given for all IVF units and also for IVF units grouped into four quarters to enable comparison of results among the various groups. Depending on the total number of IVF units using a particular technique, the number of units in each of the four groups may vary. The four quarters are ranked in descending order from Q1, which includes IVF units with the highest pregnancy rates, to Q4, which has the lowest rates. Data are given for the total number of treatment cycles, pregnancies and pregnancy rates for all units in each of the four groups, as well as the range of pregnancy rates within each group. This method of reporting pregnancy rates differs from that in previous reports where rates were given for individual IVF units which were not identified.

For transfers to the uterus or fallopian tubes of fresh embryos, and for transfers of oocytes to the fallopian tubes, clinical and viable pregnancies are reported as rates per 100 oocyte retrievals (egg collections), or per 100 embryo transfers. Results are expressed in this manner for IVF (excluding ICSI), ICSI and GIFT. For transfers of frozen embryos, clinical and viable pregnancies are reported as rates per 100 embryo transfer cycles. In general, any comparisons of pregnancy rates are based on viable pregnancies, which result in births, rather than clinical pregnancies which also include early pregnancy losses of less that 20 weeks' gestation.

3.1 Viable pregnancy rates

The interpretation of pregnancy rates for the various techniques of assisted conception, and comparison of results between IVF units, are influenced not only by factors such as the age of treated women and number of embryos or oocytes transferred but also by the relative use of a constantly changing array of techniques.

Combining the results for IVF, ICSI and GIFT (but excluding cycles in which frozen embryos or donor oocytes/embryos were transferred), the overall viable pregnancy rates were 14.6 per 100 oocyte retrieval cycles in 1998 (Table 14) and 15.5 per 100 cycles in 1999 (Table 15). When all techniques of assisted conception are included, the viable pregnancy rates for all cycles in which embryos or oocytes were transferred were 15.5 per 100 transfer cycles in 1998 and 15.9 per 100 transfer cycles in 1999.

The viable pregnancy rates were higher in 1999 than in 1998 for all IVF and fresh ICSI transfers. For GIFT and frozen ICSI transfers, the pregnancy rates were lower in 1999 than in 1998.

3.2 Characteristics of treated women

The IVF units provided summary data on the age of treated women, causes of infertility, drugs used for ovarian stimulation, and number of embryos or oocytes transferred for treatment cycles which progressed to this stage of treatment. Separate data were given for oocyte retrieval cycles and transfers of fresh embryos or oocytes for IVF, ICSI, and GIFT (Tables 16, 17, 18 and 19) and for frozen embryo transfers for IVF, ICSI and donor oocytes (Tables 20 and 21).

There were relatively more older women among those treated by assisted conception in 1998 and 1999, continuing the trend of recent years. The proportion of women aged 35 years and over in 1998 was 51.7% for IVF, 46.2% for ICSI and 47.7% for GIFT (Table 16), compared with 53.8%, 47.0%, and 51.6%, respectively, in 1999 (Table 18). For women with frozen embryo transfers, the proportion aged 35 years and over in 1998 was 45.6% for IVF, 36.2% for ICSI and 75.6% for donor oocytes (Table 20); in 1999, this proportion was 48.7% for IVF, 40.7% for ICSI and 75.6% for donor oocytes (Table 21).

The causes of infertility and the drugs used to stimulate ovulation generally showed a pattern similar to that in previous years. The main causes of infertility were tubal abnormalities for women treated by IVF, male factor for those treated by ICSI, unexplained infertility for women treated by GIFT and other female causes for those using donor oocytes.

For IVF, ICSI and GIFT, the main ovarian stimulants were GnRH analogues, accounting for more than 90% of all stimulated cycles in both years.

Between 1997 and 1999, there was an increase in the proportion of IVF and ICSI cycles in which fewer than three embryos were transferred. For fresh IVF embryos, the proportion increased from 64.9% in 1997 to 76.4% in 1999 and, for fresh ICSI embryos, from 66.9% to 74.0%. For thawed IVF embryos, the proportion increased from 79.3% in 1997 to 86.6% in 1999 and, for thawed ICSI embryos, from 82.5% to 86.1%. On the other hand, the proportion of GIFT cycles in which fewer than three oocytes were transferred declined from 51.6% in 1997 to 47.8% in 1999. Four or more oocytes were transferred in 10.8% of GIFT cycles in 1999, an increase since 1997 when the proportion was 6.9%. The data for fresh embryo transfers and GIFT in 1998 and 1999 are given in Tables 17 and 19 and for thawed embryos in Tables 20 and 21, respectively.

3.3 IVF, ICSI and GIFT treatment cycles and pregnancy rates

In 1998, 8,928 treatment cycles were commenced for IVF with a view to subsequent transfer of fresh embryos (Table 22). Oocyte retrieval was attempted in 7,361 cycles and embryos were transferred in 6,006 cycles. There were 1,337 clinical pregnancies (18.2 per 100 oocyte

retrieval cycles) and 1,052 viable pregnancies (14.3 per 100 oocyte retrieval cycles). In 1999, the number of treatment cycles commenced for fresh IVF transfers decreased to 8,764. Oocyte retrieval was attempted in 7,347 cycles and embryos were transferred in 6,239 cycles. There were 1,478 clinical pregnancies (20.1 per 100 oocyte retrieval cycles) and 1,141 viable pregnancies (15.5 per 100 oocyte retrieval cycles).

The viable pregnancy rates of 14.3 per 100 oocyte retrieval cycles in 1998 and 15.5 in 1999 for transfer of fresh IVF embryos were higher than in previous years. The pregnancy rates in the highest ranked group of IVF units (Q1) were almost three times higher than those in the lowest group (Q4) in each year (Table 22). For example, in 1999, the viable pregnancy rate for the highest group was 25.0 per 100 oocyte retrieval cycles and, for the lowest group, it was 8.9, with intermediate rates of 17.9 and 14.7, respectively, for the second and third ranked groups.

In 1998 and 1999, 36 of the 38 IVF units in Australia and New Zealand used ICSI to treat infertility. There were 7,184 attempted oocyte retrieval cycles in 1998 and 8,201 in 1999. The viable pregnancy rate was 14.9 per 100 oocyte retrieval cycles in 1998 and 16.3 in 1999 (Table 22). Again, there were about threefold differences between the pregnancy rates in the highest and lowest ranked groups of IVF units.

As already indicated, the use of GIFT to treat infertility has declined considerably in recent years. There were 1,615 treatment cycles commenced for GIFT in 1998 and 1,396 in 1999 (Table 22). The viable pregnancy rates for GIFT have been consistently higher than for IVF and ICSI, partly due to differences in the underlying causes of infertility. The viable pregnancy rate for GIFT was 20.7 per 100 oocyte retrieval cycles in 1998 and 18.2 in 1999. There were again marked variations between the GIFT pregnancy rates for IVF units in the highest and lowest ranked groups. Some IVF units perform only occasional GIFT cycles, resulting in no pregnancies in a specified year and accounting for the zero value in the lowest group of IVF units in 1998 and 1999.

The pregnancy rates after transfer of frozen embryos are usually lower than after transfer of fresh embryos, partly attributable to fewer frozen embryos being transferred. In 1998, there were 5,337 embryo transfer cycles for IVF and 3,888 cycles for ICSI, and in 1999, there were 5,075 embryo transfer cycles and 4,679 cycles, respectively. For thawed IVF embryo transfers, the viable pregnancy rate was 11.7 per 100 embryo transfers in 1998 and 12.4 in 1999. For thawed ICSI embryo transfers, the rate was 12.5 in 1998 and 11.7 in 1999 (Table 23). Again, there were three- to fourfold or more differences in viable pregnancy rates between IVF units in the highest and lowest ranked groups.

For all techniques of assisted conception in 1998 and 1999, there were marked variations in the range of viable pregnancy rates for individual IVF units in each of the four ranked groups of IVF units (Table 24).

4 Assisted conception pregnancies

This section contains data on all pregnancies resulting from assisted conception, including IVF, ICSI and GIFT. It also includes pregnancies occurring after transfer of fresh embryos to the uterus or fallopian tubes, transfer of frozen embryos, and the use of donor oocytes. Unless otherwise stated, the data for pregnancies conceived in 1998 are generally presented separately for IVF (excluding ICSI), ICSI and GIFT, often in conjunction with data for earlier years. A copy of the pregnancy notification form used in 1998 is in Appendix 2.

There were 4,461 clinical pregnancies after assisted conception in 1998 (Table 25, Figure 6), more than in any previous year and an increase of 406 (10.0%) above the number conceived in 1997. In 1998, live birth was the outcome in 76.3% of all assisted conception pregnancies (77.9% of ICSI pregnancies, 75.5% of IVF pregnancies and 73.0% of GIFT pregnancies). Spontaneous abortion was the outcome in 20.0% of all assisted conception pregnancies in 1998. There were slightly fewer spontaneous abortions among ICSI pregnancies (18.6%) and relatively more among GIFT pregnancies (25.0%). Ectopic pregnancy was more likely for IVF pregnancies (2.9%) and less likely after GIFT (1.3%).

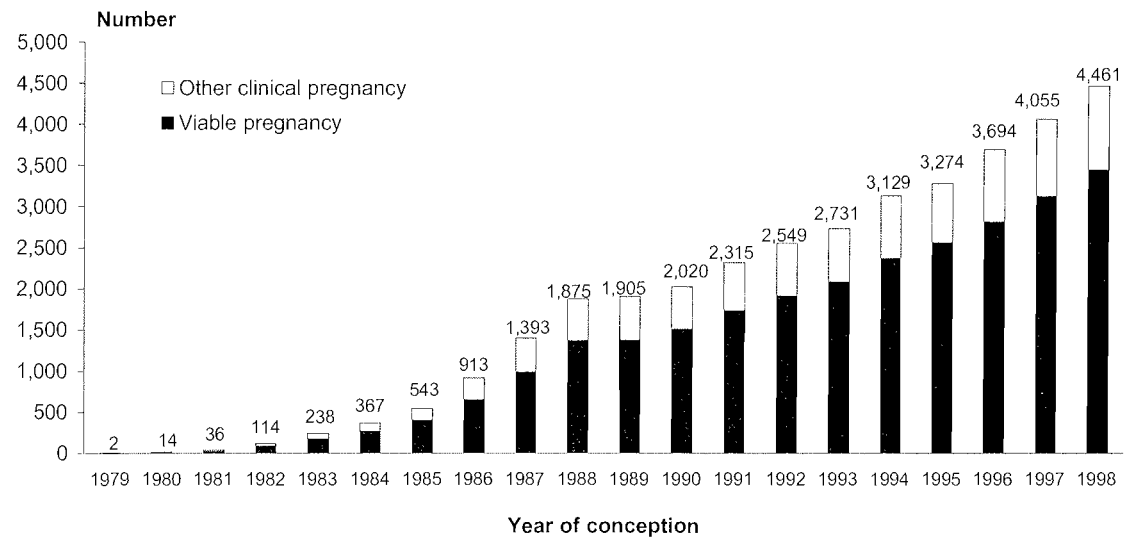


Figure 6: Outcome of assisted conception pregnancies by year of conception, 1979 –1998

4.1 Maternal and paternal characteristics

4.1.1 Place of residence

The number of assisted conception pregnancies has continued to increase in most Australian States and Territories and in New Zealand during the 1990s. There were relatively fewer pregnancies in South Australia in 1998 than in 1997. The regional occurrence of assisted conception pregnancies generally reflects population size and the extent to which clinical services are used. GIFT has been relatively more likely to be used in Queensland (47.6% of GIFT pregnancies) than elsewhere over the past two decades (Table 26, Figure 7).

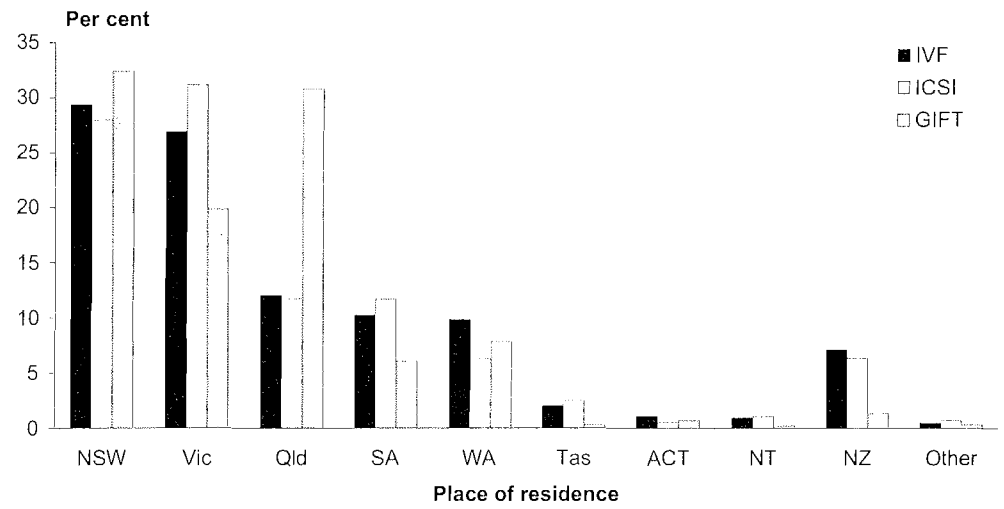


Figure 7: Place of parental residence, assisted conception pregnancies, 1979 -1998

4.1.2 Parental age

The majority (77.8%) of women who conceived by assisted conception in 1997 were in their 30s or 40s; this proportion increased slightly to 79.5% in 1998 (Table 27). The proportion of women aged 40 years and over was 7.9% in 1998, more than three times higher than the proportion for all mothers giving birth in Australia in 1998 (2.3%). There were relatively more women conceiving by ICSI in their 20s (24.5%) than there were for IVF or GIFT conceptions (17.4% and 17.9%, respectively). Women seeking assisted conception ranged in age from 19 to 57 years of age, with a median age of 33 years. There were four women aged 50 and over.

The male partners of women treated by assisted conception were generally older than the women. Men aged 40 years and over increased from 22.8% in 1997 to 24.9% in 1998 (Table 28). The proportion of men aged 50 years and over varied from 5.1% for ICSI pregnancies to

3.1% for GIFT pregnancies and 1.9% for IVF pregnancies. Only 12.1% of the men were aged in their 20s. Male partners of women who were pregnant after assisted conception in 1998 varied in age between their early 20s and their 70s, with a median age of 35 years. There were 150 men aged 50 years and over.

4.1.3 Previous pregnancies

Women who conceived in 1998 had similar previous reproductive experiences to those who conceived in earlier years, but there was a slight decrease in the proportion of women who had not been pregnant previously. Women who conceived with ICSI were more likely not to have been pregnant previously (59.9%) than other women seeking assisted conception (52.5% of GIFT pregnancies and 44.7% of IVF pregnancies) (Table 29). Women who conceived after IVF were more likely to have been pregnant on two or more occasions than women treated by the other techniques (IVF 27.7%, GIFT 18.2% and ICSI 14.0%).

4.1.4 Duration of infertility

There were relatively more women with shorter periods of infertility in 1998 than in previous years (Figure 8). The proportion of women infertile for a period of less than four years was 52.0% for IVF conceptions, 55.2% for ICSI, and 57.4% for GIFT (Table 30). Women who had been infertile for 8 years or more were less likely to achieve a live birth (73.4%) than those who had been infertile for shorter periods (76.7%), were more likely to have a spontaneous abortion (24.1% and 19.4%, respectively), but were less likely to have an ectopic pregnancy (1.2% and 2.6%, respectively).

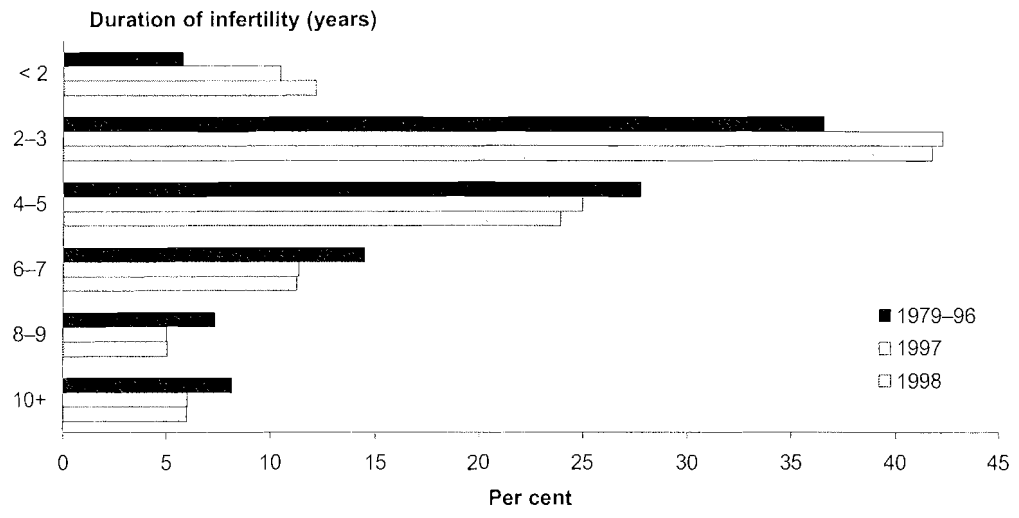


Figure 8: Duration of infertility, assisted conception pregnancies, 1979 -1998

4.1.5 Causes of infertility

Among women who conceived after IVF in 1998, multiple causes (23.0%), unexplained infertility (22.7%) and tubal causes (20.7%) accounted for two-thirds of the stated causes (Table 31). Endometriosis and other stated causes were relatively more common as the reason for treatment than in earlier years.

Women conceiving after ICSI in 1998 were most likely to have infertility due to male factor (62.2%) or multiple causes (25.6%). The most common cause of infertility among women who conceived with GIFT in 1998 was unexplained infertility, accounting for one-third (34.3%) of all GIFT conceptions.

Among all assisted conception pregnancies, male factor has been the leading stated cause of infertility since 1991 (Figure 9). This also contributes to 'multiple causes', another category that has become more prominent in recent years. With increasing use of ICSI during the 1990s, tubal abnormalities have declined in significance as an indication for assisted conception but may also contribute to the 'multiple causes' group. Unexplained infertility accounts for about 15% of couples treated by assisted conception.

The expected high occurrence of male infertility among women who were pregnant after ICSI is shown when the broad causal categories of infertility are compared for IVF, ICSI and GIFT (Figure 10).

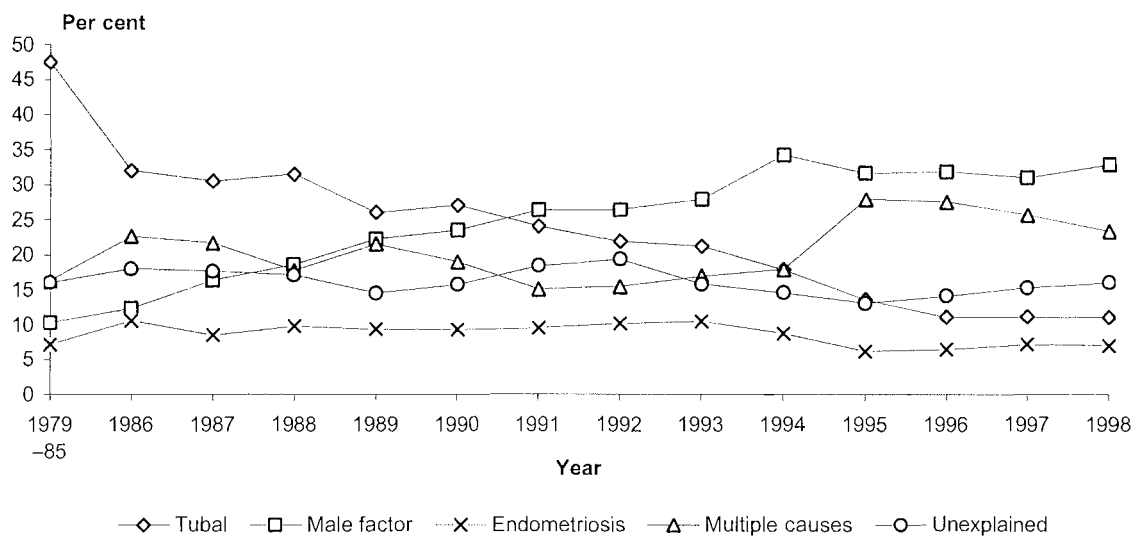


Figure 9: Causes of infertility, assisted conception pregnancies, 1979 -1998

The proportion of pregnancies resulting in live births was highest for male infertility (79.0%) and lowest for multiple causes of infertility (74.2%) but these differences were not substantial (Table 32). Spontaneous abortion varied little for the different causes of infertility and was more strongly associated with the woman's age. Ectopic pregnancy was more likely among women treated for tubal causes of infertility (3.9%) than for other causes. Stillbirth was more likely among women treated for endometriosis (1.6%) than for other causes, but the number of stillbirths in each group was relatively small.

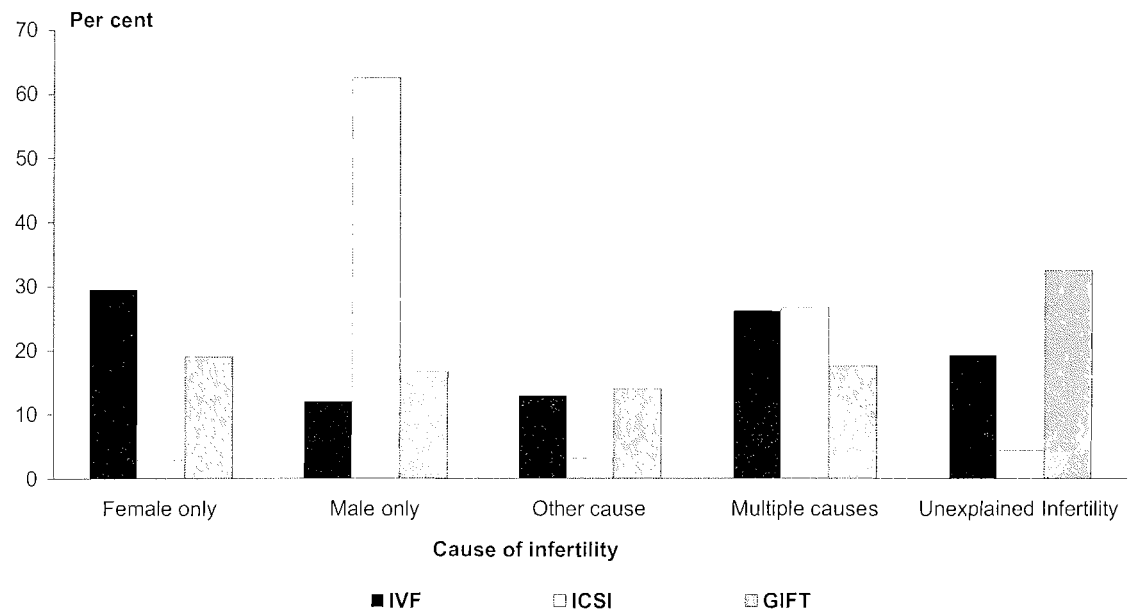


Figure 10: Cause of infertility by method of conception, 1996 -1998

4.2 Management of IVF pregnancies

4.2.1 Ovarian stimulation

Continuing the trend of recent years, gonadotrophin-releasing hormone analogues (GnRHa) combined with gonadotrophins were the main drugs used for stimulating ovulation. In 1998, these drugs were used in over 95% of treatment cycles that resulted in pregnancies (Table 33, Figure 11). The use of clomiphene to stimulate ovulation has declined from over 90% of treatment cycles in the mid-1980s to less than 2% of treatment cycles in 1998. There has been an increase in the number of natural cycles during this period (0.4% in 1979-1996, 0.7% in 1997 and 2.2% in 1998).

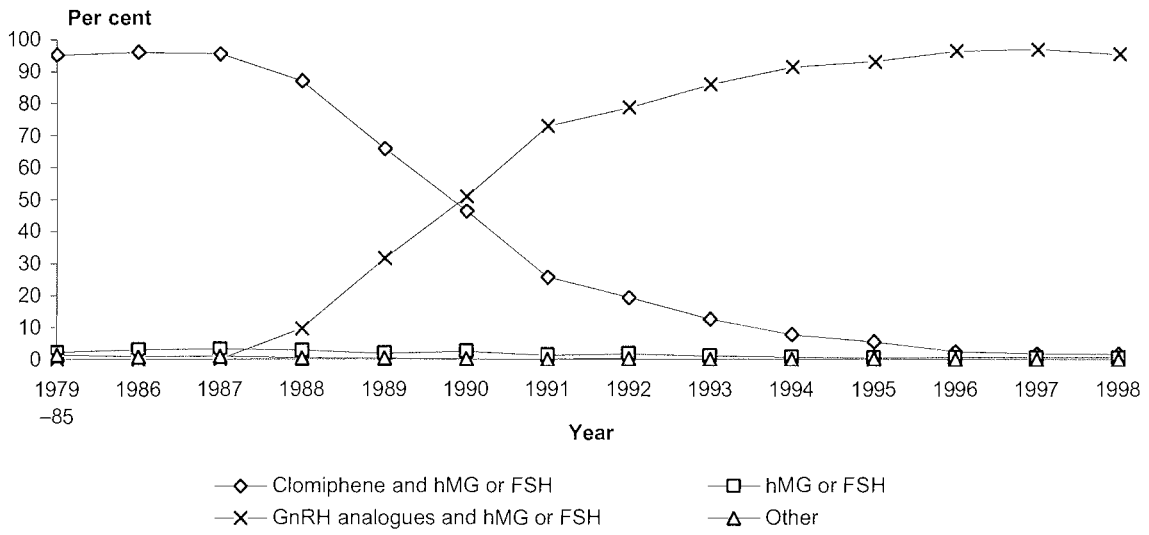


Figure 11: Drugs used to stimulate ovulation, assisted conception pregnancies, 1979 –1998

4.2.2 Treatment cycle in which pregnancy occurred

Over half (57.3%) of all IVF pregnancies occurred in the first treatment cycle, and more than two-thirds (78.4%) occurred in the first or second treatment cycle (Table 34). Similarly, 60.1% of all GIFT pregnancies occurred in the first treatment cycle, and more than two-thirds (81.3%) occurred in the first or second treatment cycle. Almost two-thirds (65.6%) of ICSI pregnancies occurred in the first or second treatment cycle.

4.2.3 Number of oocytes collected

The average number of oocytes collected by laparoscopy or ultrasound guidance has shown a continuing upward trend, more oocytes being collected for IVF or ICSI than for GIFT (Table 35, Figure 12). The mean number of oocytes collected in 1998 was 12.8 for ICSI, 12.0 for IVF, and 9.0 for GIFT. There was a further increase in the proportion of oocyte retrievals in which 15 or more oocytes were collected compared to previous years, occurring in almost one-third (29.9%) of all retrievals.

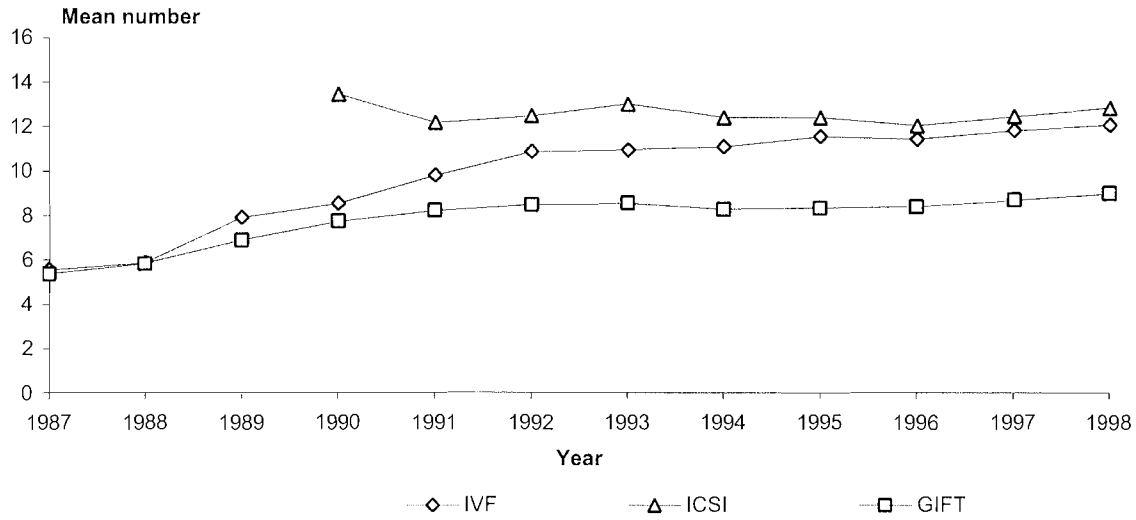


Figure 12: Mean number of oocytes collected by laparoscopy or ultrasound guidance, assisted conception pregnancies, 1987–1998

4.2.4 Ovarian hyperstimulation syndrome (OHSS)

In 1998, 3.5% of women pregnant after assisted conception required hospitalisation for OHSS as a complication of ovarian stimulation (Table 36). The proportion of women hospitalised for OHSS increased with the number of oocytes collected, from none for those with 1–2 oocytes, 1.9% for 7–8 oocytes, and increasing to 6.2% for 15 or more oocytes.

4.2.5 Number of embryos/oocytes transferred

There has been a continuing decline in the proportion of assisted conception pregnancies that resulted from transfer of 3 or more embryos or oocytes. However, still more than half of the pregnancies resulting from GIFT followed transfer of 3 or more oocytes (Figures 13, 14 and 15). In 1998 1.4% of IVF pregnancies, 2.1% of ICSI pregnancies and 8.3% of GIFT pregnancies followed transfer of 4 or more embryos or oocytes (Table 37). At least 70% of IVF and ICSI pregnancies followed transfer of 1 or 2 embryos, compared to 45.7% for GIFT pregnancies. The average number of embryos transferred for IVF and ICSI has continued to decline, being similar for these two techniques since 1994 (Figure 16). In 1998, the average number of embryos transferred for IVF and ICSI was 2.2 and 2.3, respectively. The average number of oocytes transferred for GIFT in 1998 was 2.6, similar to that in previous years. Except in the small group of pregnancies following transfer of 5 or more embryos or oocytes, in which 6 of the 15 (40%) pregnancies resulted in spontaneous abortion, pregnancy outcomes did not differ substantially in the other groups (Table 38).

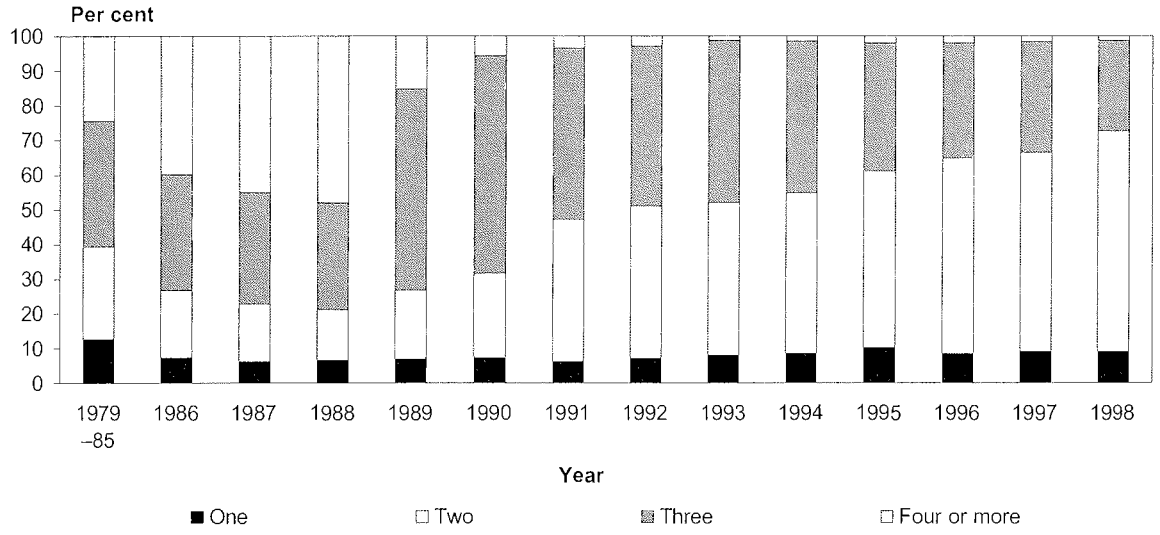


Figure 13: Percentage distribution of number of embryos transferred, IVF pregnancies, 1979–1998

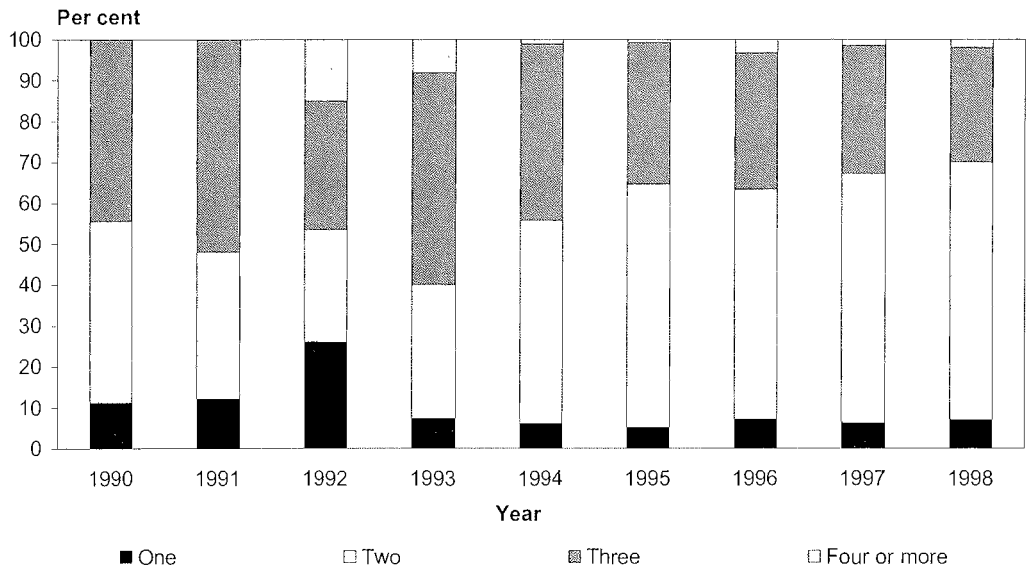


Figure 14: Percentage distribution of number of embryos transferred, ICSI pregnancies, 1990–1998

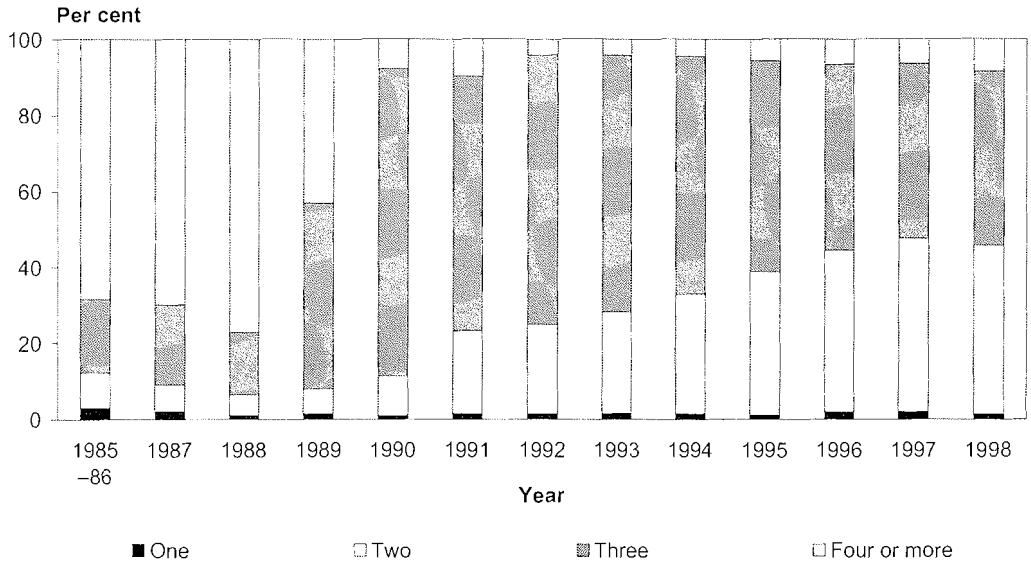


Figure 15: Percentage distribution of number of oocytes transferred, GIFT pregnancies, 1985–1998

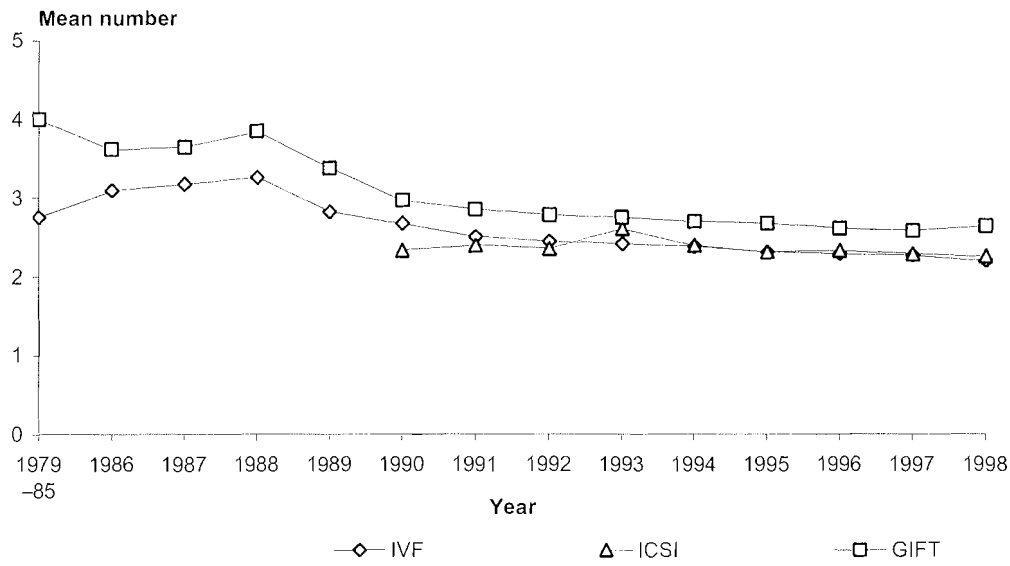


Figure 16: Mean number of embryos/oocytes transferred, assisted conception pregnancies, 1979–1998

4.2.6 Donor or frozen gametes and embryos

The number of assisted conception pregnancies that followed transfer of frozen embryos has continued to increase each year from 530 in 1992 to 1,412 in 1998. The number of pregnancies after use of donor embryos or donor oocytes increased from 104 in 1995 to 171 in 1998. The outcome of pregnancies after donor sperm or frozen embryos was similar to that of all assisted conception pregnancies (Table 39). Among pregnancies resulting from donor oocytes or donor embryos, there were relatively more spontaneous abortions and fewer live births (65.5%) when compared with all assisted conception pregnancies.

4.2.7 Drugs used in luteal phase of pregnancy

Over 85% of women who became pregnant in 1998 were treated with drugs during the luteal phase (Table 40). Human chorionic gonadotrophin (hCG) and Proluton were the most commonly used drugs, in 40.4% and 28.2% of IVF pregnancies, in 43.7% and 26.9% of ICSI pregnancies, and in 63.4% and 24.7% of GIFT pregnancies, respectively.

5 Outcomes of assisted conception pregnancies

5.1 Characteristics of assisted conception pregnancies

5.1.1 Maternal deaths

No maternal deaths were reported among women who conceived by assisted conception in 1998. Six maternal deaths have previously been reported among a total of 35,628 assisted conception pregnancies.

5.1.2 Maternal age and outcome of pregnancy

The likelihood of achieving a live birth after assisted conception decreases with advancing maternal age. Almost 80% of women aged less than 35 years gave birth to liveborn infants compared with 75.7% of women aged 35 to 39 years and 62.8% of women aged 40 years and over (Table 41). Spontaneous abortion and termination of pregnancy were more likely among women of 40 years and over. There was little variation in the occurrence of stillbirths in the various age groups, except for a slightly higher proportion among women aged 40 or more.

5.1.3 Spontaneous abortion

There has been little change in the occurrence of spontaneous abortion in assisted conception pregnancies in recent years (Figure 17). Spontaneous abortion was more likely for older women, increasing from 17.0% for women less than 30 years to 33.7% for women 40 years and over (Table 42, Figure 18).

5.1.4 Ectopic pregnancy

The proportion of ectopic pregnancies has declined from 5.2% in 1979–1985 to 2.8% in 1996, 2.6% in 1997 and 2.4% in 1998 (Table 43, Figure 17). This declining trend is partly attributable to relatively fewer ectopic pregnancies among the increasing proportion of women whose infertility was due to male factors.

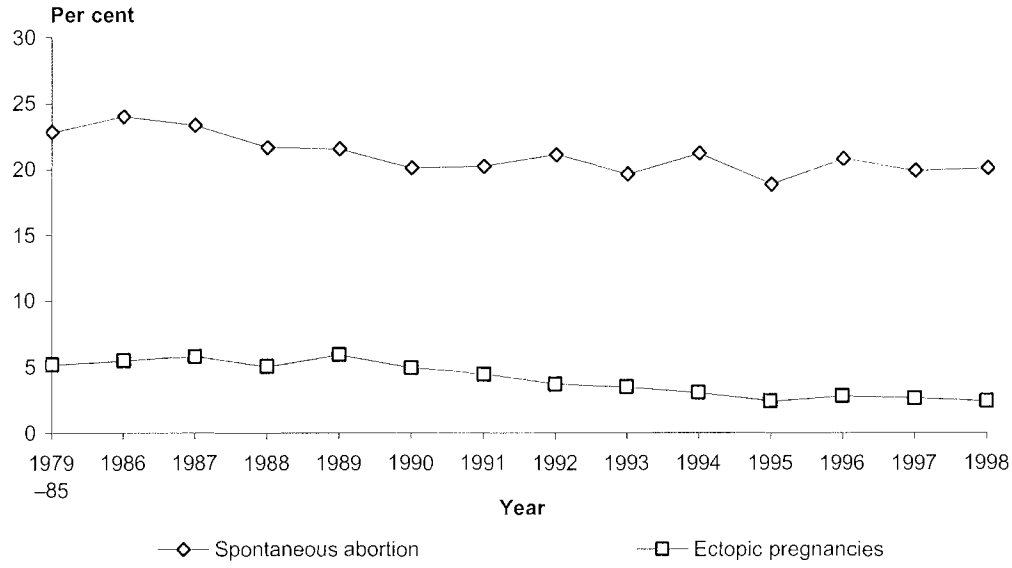


Figure 17: Incidence of ectopic pregnancy and spontaneous abortion, assisted conception pregnancies, 1979–1998

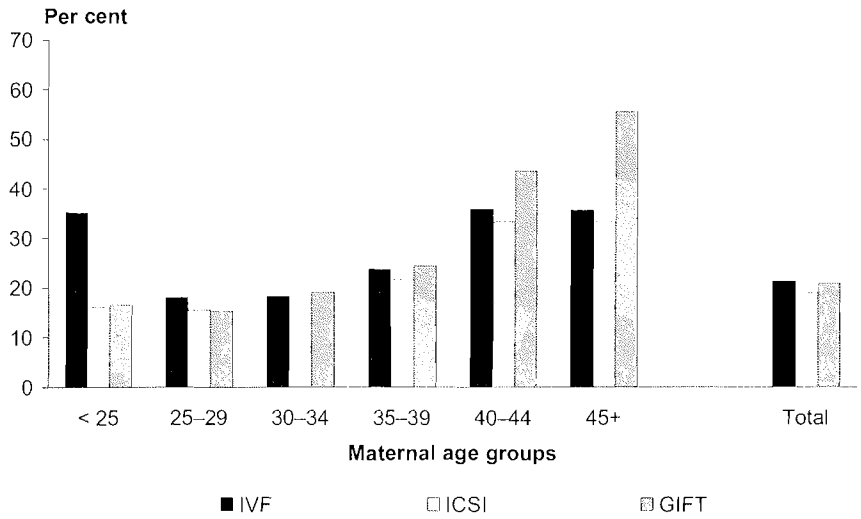


Figure 18: Spontaneous abortions by maternal age groups, assisted conception pregnancies, 1979–1998

5.1.5 Heterotopic pregnancies

Heterotopic pregnancies are those in which there is both a uterine and tubal (ectopic) pregnancy simultaneously. The uterine pregnancy may abort or continue on to a birth. Heterotopic pregnancies are uncommon. Since assisted conception began in Australia and New Zealand, 177 cases of heterotopic pregnancies (112 leading to abortion and 65 continuing to a birth) have been reported, accounting for 0.5% of all assisted conception pregnancies (Table 44). There were no reported IVF heterotopic pregnancies prior to 1984 and the first GIFT heterotopic pregnancy was reported in 1986. There have been 20 ICSI heterotopic pregnancies (11 leading to abortion and 9 continuing to a birth). In 1998 there were 2 heterotopic IVF pregnancies, 6 heterotopic ICSI pregnancies and 1 heterotopic GIFT pregnancy.

5.1.6 Selective reduction of fetuses

Selective reduction of fetuses may be performed in early pregnancy to abort a severely malformed fetus in a multiple pregnancy or to avoid multiple births. Among pregnancies conceived in 1998, selective reduction was performed in 2 IVF pregnancies and 4 ICSI pregnancies but not in any GIFT pregnancies. Fetal reduction had previously been performed in 59 pregnancies between 1988 and 1997. Of the 6 pregnancies with selective reduction in 1998, three fetuses were reduced to two in 1 IVF and 1 ICSI pregnancies and three fetuses were reduced to one in 1 ICSI pregnancy. Two fetuses were reduced to one in 1 IVF and 2 ICSI pregnancies. In one ICSI pregnancy in which two fetuses were reduced to one, the indication for fetal reduction was trisomy 21. None of the other selective reductions was for fetal malformations. Among the 6 pregnancies in which selective reduction was performed in 1998, spontaneous abortion of the remaining fetuses occurred in 1 pregnancy.

5.1.7 Complications of pregnancy

Significant complications of pregnancy are recorded in tick boxes on the forms used to notify assisted conception pregnancies. Ascertainment of pregnancy complications is improving; this data item was not completed in only 0.2% of pregnancies conceived in 1997 and in 0.1% of pregnancies conceived in 1998, compared with 15.8% in the period from 1990 to 1996. Any comparison of these reported complications between assisted conception and other pregnancies should take account of how the information is collected. Pregnancy complications were similar for all methods of assisted conception. Pregnancy-induced hypertension was reported in 5-6% of pregnancies, threatened abortion in 2-3%, antepartum haemorrhage in almost 2%, and placenta praevia in about 1% (Table 45). Other complications such as maternal medical conditions, fetal growth restriction and premature labour were reported in 12.5% of ICSI pregnancies, 15.0% of IVF pregnancies and 18.2% of GIFT pregnancies. No pregnancy complications were reported for slightly more ICSI pregnancies (77.3%) than for IVF (73.4%) or GIFT (69.4%) pregnancies.

5.1.8 Viable pregnancies of at least 20 weeks' gestation

Reflecting the overall increase in assisted conception pregnancies in 1998, there was also a considerable increase in births conceived in that year. In Australia, there were 3,873 births after assisted conception in 1998, accounting for 1.5% of all births in the population, compared with 3,514 infants conceived in 1997, 3,162 in 1996, 2,947 in 1995, and 2,719 in 1994. In New Zealand, the numbers of infants were 309 for conceptions in 1998, 297 for 1997, 268 for 1996, 175 for 1995, and 161 for 1994.

Preterm births of less than 37 weeks' gestation occurred in 24.7% of all IVF pregnancies, 20.7% of all ICSI pregnancies, and 28.9% of all GIFT pregnancies in 1998 (Table 46). The incidence of preterm births was higher with increasing plurality, ranging from 13.4% for singleton assisted conception pregnancies to 60.1% for twin pregnancies and 100% for triplet pregnancies. Preterm births among singleton assisted conception pregnancies declined to their lowest level of 12.9% in 1997, increasing slightly to 13.4% in 1998 (Figure 19), but this proportion was more than double that for all Australian singleton pregnancies (6.0% in 1997, and 6.1% in 1998). Extremely preterm births of less than 28 weeks' gestation occurring among singleton assisted conception pregnancies declined to their lowest level of 1.5% in 1998, compared with 0.7% for all Australian singleton pregnancies.

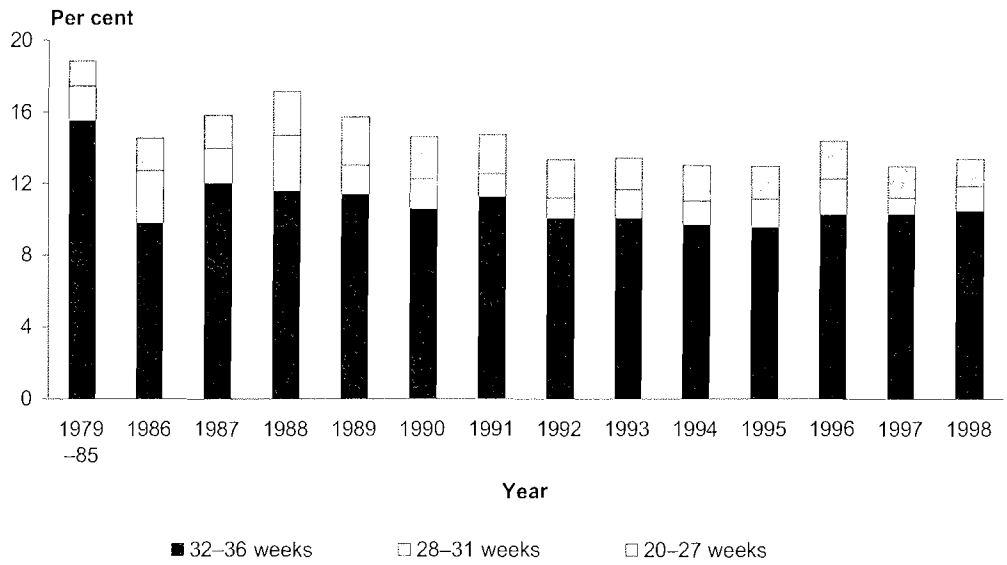
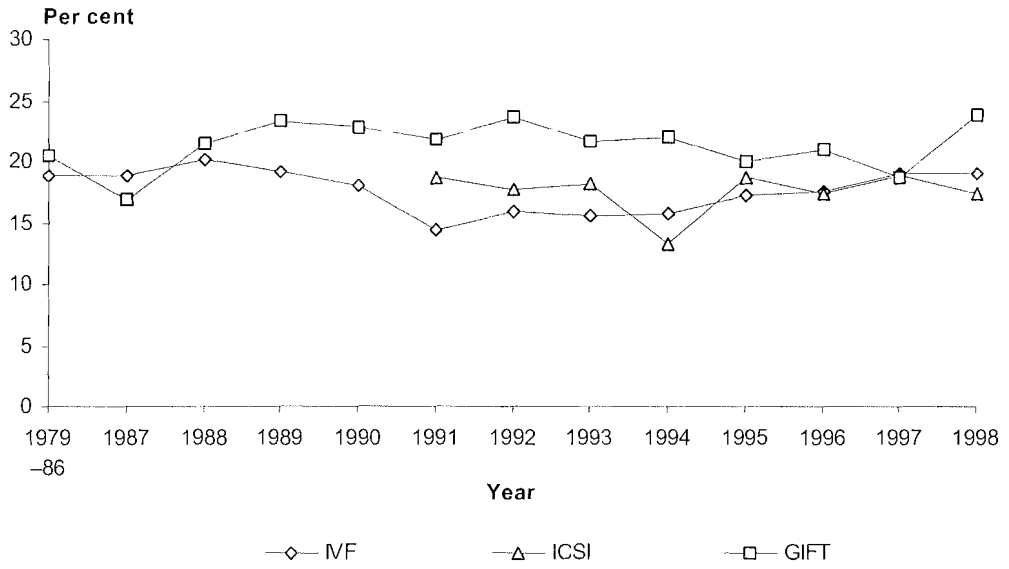


Figure 19: Incidence of preterm birth in singleton assisted conception pregnancies, 1979 –1998

As in previous years, there was a high proportion of preterm births among singleton assisted conception pregnancies in all maternal age groups (Table 47) and for all causes of infertility (Table 48). The proportion was lowest for mothers aged 30–34 (11.6%) and highest for mothers aged less than 25 years (17.5%) and for those aged 40 and over (19.6%). Preterm birth was less likely if infertility was due to male factor infertility (9.1%) or unexplained infertility (9.8%) than if it was due to other causes; the highest incidence (19.9%) was among women whose infertility was due to tubal causes.

5.1.9 Multiple pregnancies

Multiple pregnancy occurred in 19.8% of IVF pregnancies, 19.0% of ICSI pregnancies and 27.8% of GIFT pregnancies in 1998, showing little change in recent years except for an increase among GIFT pregnancies (Table 49). Multiple pregnancies after all types of assisted conception (20.1%) were much more likely than for all Australian births (1.5% in 1998). The incidence of twin pregnancy after IVF declined from 20.2% in 1988 to 14.4% in 1991 but has since risen again to 19.1% in 1998 (Figure 20). The incidence of twin pregnancy after ICSI has varied between 13.2% in 1994 and 17.4% in 1998. After GIFT, the incidence of twin pregnancy has generally been higher than for IVF or ICSI, having declined from 23.5% in 1992 to 18.7% in 1997 but then rising again to 23.7% in 1998. Triplet pregnancies declined to their lowest level of 0.6% among IVF pregnancies in 1998, but increased for both ICSI and GIFT, to 1.5% and 3.8%, respectively (Figure 21). Three quadruplet pregnancies occurred in 1998.

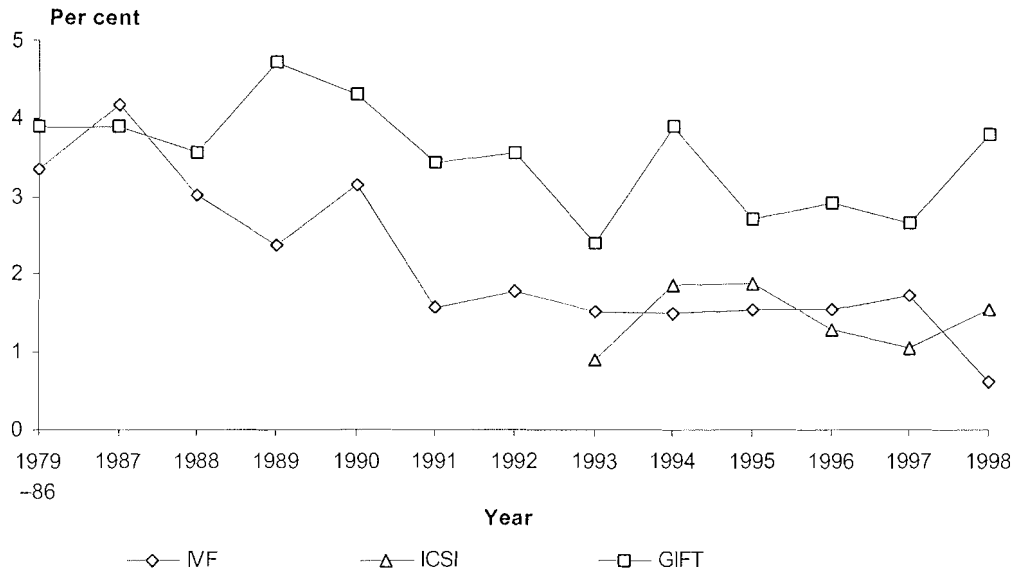


Note: In 1990, there were no twin pregnancies in the ICSI group, which in the earlier years was mostly made up of other forms of microinsemination, such as SUZI

Figure 20: Incidence of twin pregnancy, assisted conception pregnancies, 1979 –1998

Multiple pregnancy was more likely after transfer of fresh embryos than after transfer of frozen embryos. In 1998, twins occurred in 20.6% of pregnancies after transfer of fresh embryos, triplets in 1.4% and there were 2 quadruplet pregnancies. Among pregnancies after transfer of frozen embryos, twins occurred in 13.8%, triplets in 0.4% and there were no quadruplet pregnancies.

The likelihood of multiple pregnancy is usually related to the number of embryos or oocytes transferred. In 1998, twins occurred in 19.4% of all assisted conception pregnancies after



Note: In 1990–1992, there were no triplet pregnancies in the ICSI group, which in those years was mostly made up of other forms of microinsemination, such as SUZI

Figure 21: Incidence of triplet pregnancy, assisted conception pregnancies, 1979 -1998

transfer of 2 embryos or oocytes, in 21.8% after transfer of 3 embryos or oocytes, and in 16.4% after transfer of 4 embryos or oocytes (Table 50). Among all assisted conception pregnancies, triplets occurred in 3.4% after transfer of 3 embryos or oocytes, in 6.0% after transfer of 4 embryos or oocytes, and in 14.3% (1 pregnancy) after transfer of 5 or more embryos or oocytes.

The occurrence of multiple pregnancies after assisted conception was very similar in Australia (20.1%) and New Zealand (20.2%) (Table 51, Figure 22). Victoria and Western Australia had the highest multiple pregnancy rates, 21.7% and 21.0%, respectively, and the Australian Capital Territory and Tasmania had the lowest, 16.2%. There were relatively more triplets and quadruplets in Queensland (2.4%), Victoria (2.0%) and the Australian Capital Territory/Tasmania (2.0%) than in other States. There were no assisted conception triplets or quadruplets in South Australia in 1998.

The incidence of multiple pregnancy varied considerably among the 38 IVF units, ranging from 4.3% to 50.0%, with one small unit having no multiple pregnancies (Table 52). Some of this variation may be due to the relatively small number of pregnancies reported in many of the IVF units. In 1998, 42.1% reported fewer than 100 pregnancies and 68.4% reported fewer than 200 pregnancies. There were only 8 pregnancies in the IVF unit that had 50% multiple births. The incidence of multiple pregnancy for all assisted conceptions was 20.2%. For the grouped IVF units, multiple pregnancy occurred in 26.1% of 2,107 pregnancies in the group with the highest incidence, almost double that of 13.4% among 1,150 pregnancies in the lowest group.

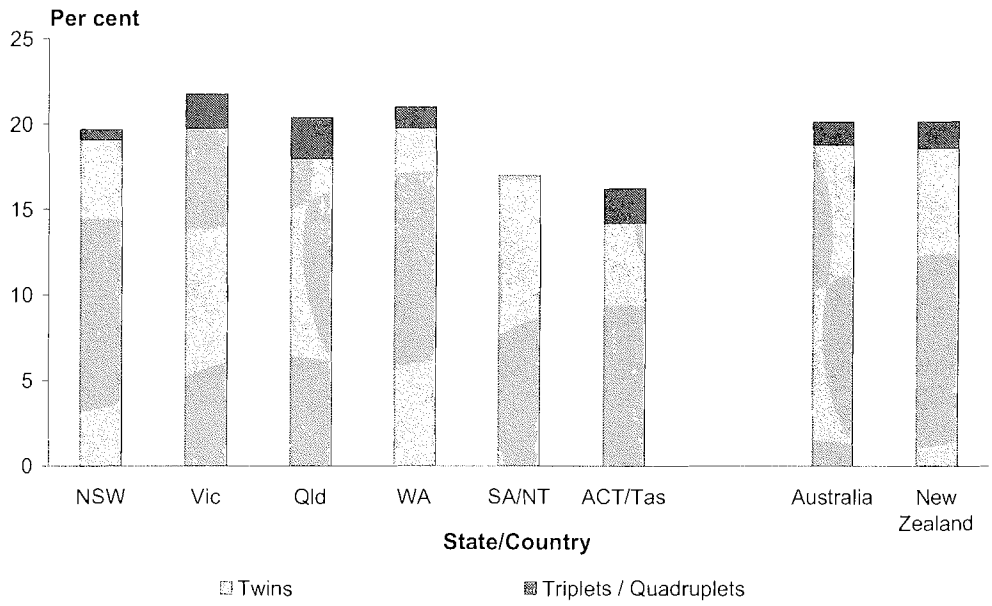


Figure 22: Multiple pregnancies after assisted conception, Australia and New Zealand, 1998

5.1.10 Method of delivery

As in previous years, caesarean rates were higher for multiple than for singleton assisted conception pregnancies (Figure 23). In 1998, the caesarean rate was 37.5% for singleton pregnancies, 63.1% for twin pregnancies and 90.9% for triplet pregnancies (Table 53). The caesarean rate for singleton GIFT pregnancies, 43.3%, was higher than that for IVF and ICSI pregnancies, 39.5% and 34.2%, respectively, all of which were considerably higher than the rate of 20.6% for singleton Australian births in 1998. The caesarean rate for singleton assisted conception pregnancies increased with maternal age, from 32.3% for mothers under 30 years of age to 58.6% for mothers aged 40 years and over.

5.2 Characteristics of infants born after assisted conception

5.2.1 Sex of infants

The sex ratio of infants born after assisted conception was 108.7 in 1998, similar to previous years (Table 54). The sex ratio of infants born after IVF was 114.3, after ICSI, 103.7, and after GIFT, 104.8. The sex ratio of infants born in all years after use of donor sperm and assisted conception was 112.1 among 3,143 births; after use of donor oocytes, it was 111.5 among 755 births; and after use of frozen embryos, it was 106.6 among 6,540 births.

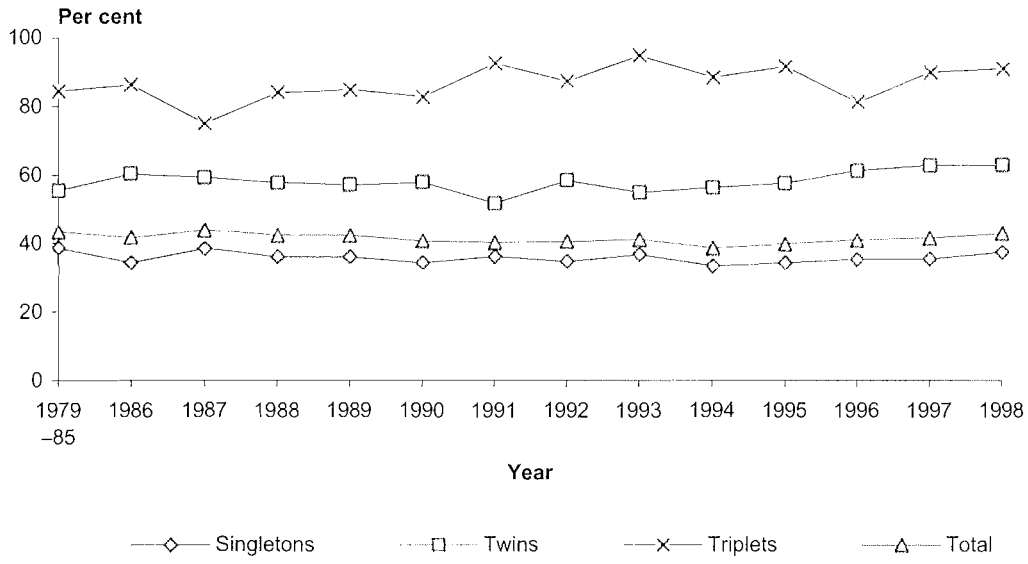


Figure 23: Caesarean birth rates, singleton and multiple assisted conception pregnancies, 1979–1998

5.2.2 Birthweight

The mean birthweight and the incidence of low birthweight (less than 2500g) for infants born after assisted conception in 1998 differed considerably from the birthweights for all Australian births. The mean birthweight of assisted conception births in 1998 was 2,913g (Table 55), 450g less than the mean birthweight of 3,363g for all Australian births in 1998. The high incidence of multiple births after assisted conception accounted for much of this difference (Table 56). For singleton births, the mean birthweight was 3,241g after assisted conception and 3,393g for all Australian births; for twins, 2,369g and 2,407g, respectively; and for triplets, 1,541g and 1,745g, respectively. Among singleton IVF births in 1998, low birthweight occurred in 9.8%, compared with 5.2% for all singleton births in Australia.

The mean birthweight of singleton births after IVF was 3,223g, after ICSI, 3,282g, and after GIFT, 3,112g. In 1998, low birthweight occurred in 9.8% of singleton births after IVF, in 9.1% after ICSI, and in 13.9% after GIFT. Low birthweight in singleton births in all years occurred in 11.0% after assisted conception using donor sperm, in 12.8% after donor oocytes, and in 7.6% after embryo freezing.

There were relatively fewer low birthweight infants born after ICSI than after IVF or GIFT (Figure 24). The incidence of low birthweight in singleton assisted conception births has declined during the last decade but is still about 9–10% in the most recent years (Figure 25).

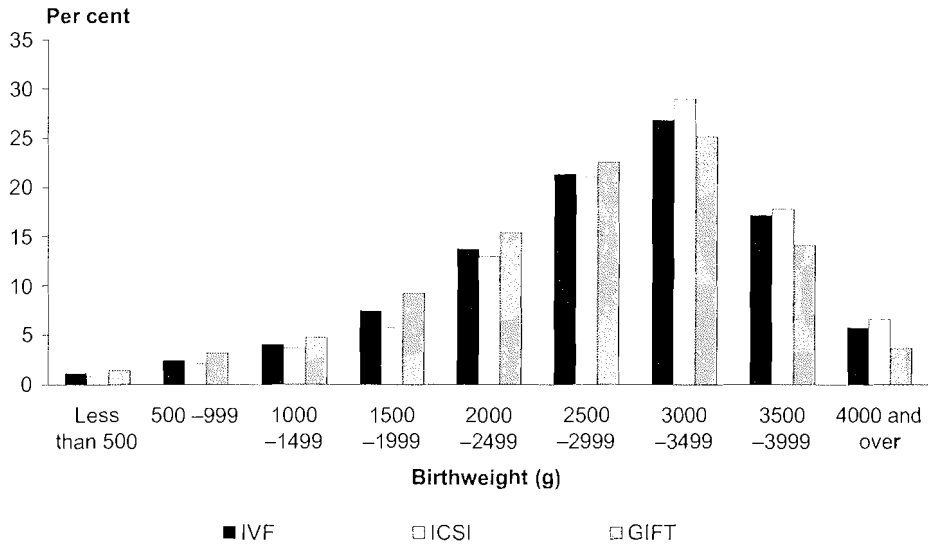


Figure 24: Birthweight of assisted conception births, 1979 -1998

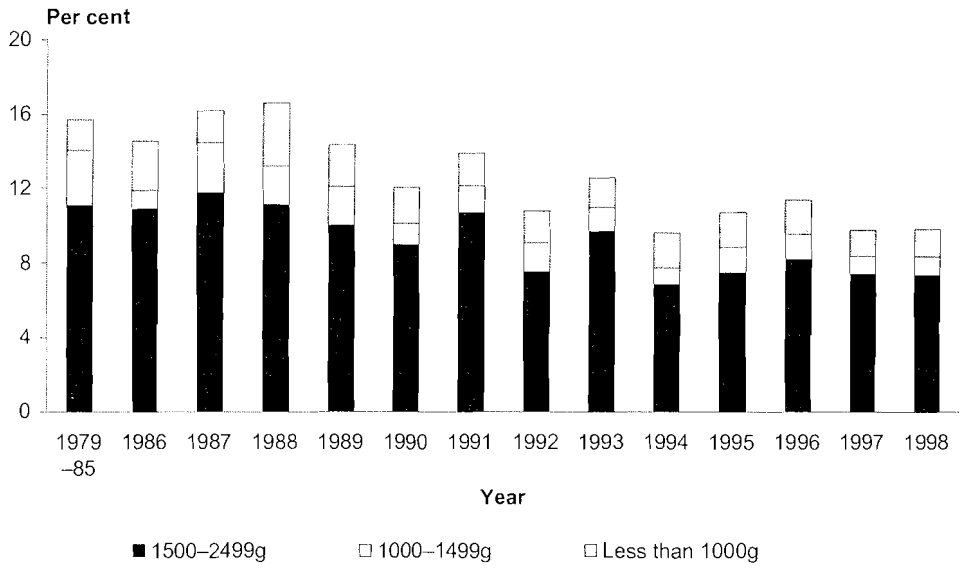


Figure 25: Incidence of low birthweight in singleton assisted conception births, 1979 -1998

5.2.3 Perinatal mortality

Perinatal deaths include fetal deaths (stillbirths) of at least 20 weeks' gestation and neonatal deaths of liveborn infants occurring within 28 days of birth. The perinatal death rate for all assisted conception births in 1998 was 23.9 per 1,000 births (Table 57), similar to 1997 but lower than in earlier years (Figure 26). For singleton births, the death rate was 14.2 per 1,000 births, for twins, 31.8 per 1,000 births, for triplets, 113.6 per 1,000 births, and for quadruplets, 416.7 per 1,000 births. Among 1,988 births after IVF in 1998, the perinatal death rate was 25.2 per 1,000 births; for singleton births, it was 15.1 per 1,000 births, for twins, 41.3 per 1,000 births, and there were no triplet perinatal deaths. Among 1,809 births after ICSI in 1998, the perinatal death rate was 18.8 per 1,000 births; for singleton births, it was 13.2 per 1,000 births, for twins, 13.4 per 1,000 births, and for triplets, 159.4 per 1,000 births. Among 385 births after GIFT in 1998, the perinatal death rate was 41.6 per 1,000 births; for singleton births, it was 14.3 per 1,000 births, for twins, 58.0 per 1,000 births, and for triplets, 121.2 per 1,000 births.

The perinatal death rate after assisted conception is considerably higher than for all Australian births. In 1998, the perinatal death rate among all births of at least 20 weeks' gestation or 400g birthweight in Australia was 9.6 per 1,000 births (Australian Bureau of Statistics 2000). Factors contributing to the higher perinatal death rate after assisted conception include relatively more older mothers, their underlying causes of infertility, and the much higher incidence of multiple births than in the general population.

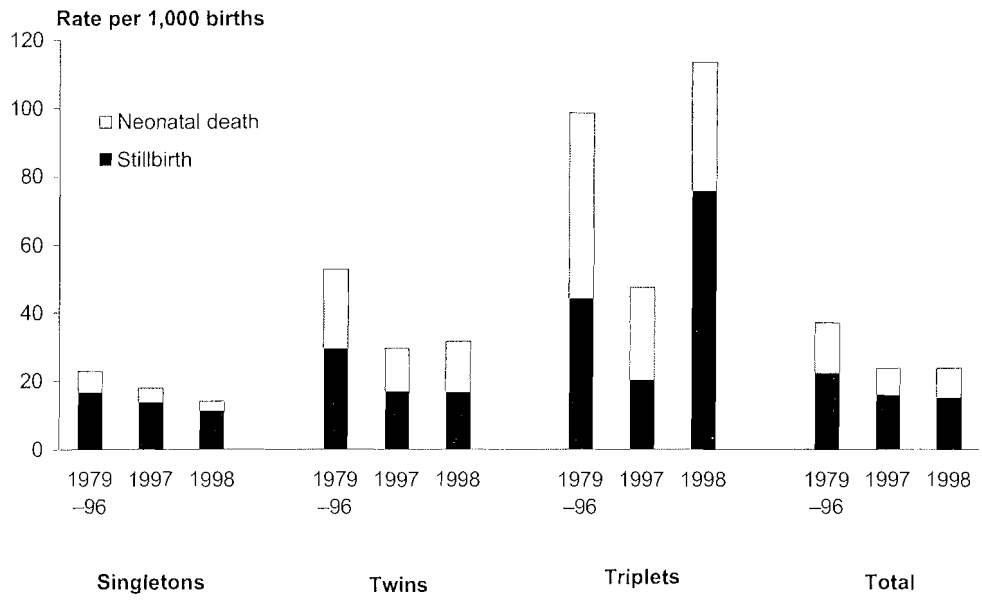


Figure 26: Perinatal mortality in singleton and multiple assisted conception births, 1979–1998

5.2.4 Congenital malformations

Among 4,182 live births and stillbirths and 14 pregnancies terminated for fetal abnormality after assisted conception in 1998, there were 85 (2.0%) infants and fetuses with major congenital malformations (Table 58). The malformation rate was slightly higher in singleton births (1.7%) than in multiple births (1.6%).

Among pregnancies conceived in 1998 after IVF, there were 7 pregnancies terminated for fetal abnormality and 1,988 births. Major congenital malformations were notified in 44 fetuses and infants, a malformation rate of 2.2%. There were 24 (1.8%) malformations among 1,324 singleton births and 13 (2.0%) among 664 multiple births.

Among pregnancies conceived after ICSI in 1998, there were 7 pregnancies terminated for fetal abnormality and 1,809 births. Major congenital malformations were notified in 31 fetuses and infants, a malformation rate of 1.7%. There were 17 (1.4%) malformations among 1,214 singleton births and 7 (1.2%) among 595 multiple births.

There were 385 births conceived after GIFT in 1998 and no pregnancies were terminated for fetal abnormality. Major congenital malformations were notified in 10 infants, a malformation rate of 2.6%. There were 7 (3.3%) malformations among 210 singleton births and 3 (1.7%) among 175 multiple births.

6 Tables

Table 1: IVF pregnancies after transfer of fresh embryos, numbers and pregnancy rates, 1992–1999

Stage of treatment	Year of treatment							
	1992	1993	1994	1995	1996	1997	1998	1999
Treatment cycles commenced	8,474	8,297	8,638	8,573	8,297	8,275	8,744	8,591
Cycles with oocyte retrieval	7,501	7,144	7,298	6,833	6,825	6,839	7,177	7,174
Cycles with embryo transfer	6,190	5,836	5,889	5,547	5,659	5,593	5,822	6,066
Clinical pregnancies	925	969	1,025	990	1,087	1,171	1,294	1,426
Viable pregnancies	644	693	753	783	823	911	1,021	1,106
Clinical pregnancies per 100 oocyte retrieval cycles	12.3	13.6	14.0	14.5	15.9	17.1	18.0	19.9
Viable pregnancies per 100 oocyte retrieval cycles	8.6	9.7	10.3	11.5	12.1	13.3	14.2	15.4

Table 2: IVF pregnancies after embryo freezing, numbers and pregnancy rates, 1992–1999

Stage of treatment	Year of treatment							
	1992	1993	1994	1995	1996	1997	1998	1999
Cycles with embryo transfer	3,813	4,607	4,309	4,404	4,504	4,520	4,951	4,667
Clinical pregnancies	513	622	657	637	655	715	745	772
Viable pregnancies	373	440	469	487	502	551	571	583
Clinical pregnancies per 100 embryo transfer cycles	13.5	13.5	15.2	14.5	14.5	15.8	15.0	16.5
Viable pregnancies per 100 embryo transfer cycles	9.8	9.6	10.9	11.1	11.1	12.2	11.5	12.5

Table 3: ICSI pregnancies after transfer of fresh embryos, numbers and pregnancy rates, 1992–1999

Stage of treatment	Year of treatment							
	1992	1993	1994	1995	1996	1997	1998	1999
Treatment cycles commenced	n.a.	n.a.	n.a.	n.a.	5,816	6,840	7,736	9,046
Cycles with oocyte retrieval	812	1,243	2,786	4,261	5,220	6,308	7,093	8,022
Cycles with embryo transfer	516	937	2,436	3,778	4,741	5,438	6,085	7,098
Clinical pregnancies	80	136	430	698	913	1,135	1,316	1,644
Viable pregnancies	55	110	303	560	720	928	1,052	1,309
Clinical pregnancies per 100 oocyte retrieval cycles	9.9	10.9	15.4	16.4	17.5	18.0	18.6	20.5
Viable pregnancies per 100 oocyte retrieval cycles	6.8	8.8	10.9	13.1	13.8	14.7	14.8	16.3

Note : Data for 1992–1995 include treatment cycles using subzonal insemination and other types of microinsemination.

Table 4: ICSI pregnancies after embryo freezing, numbers and pregnancy rates, 1994–1999

Stage of treatment	Year of treatment					
	1994	1995	1996	1997	1998	1999
Cycles with embryo transfer	929	1,794	2,297	3,203	3,769	4,463
Clinical pregnancies	154	262	318	457	603	665
Viable pregnancies	124	208	254	364	480	518
Clinical pregnancies per 100 embryo transfer cycles	16.6	14.6	13.8	14.3	16.0	14.9
Viable pregnancies per 100 embryo transfer cycles	13.3	11.6	11.1	11.4	12.7	11.6

Note : Separate data for pregnancies after ICSI and embryo freezing were not collected prior to 1994.

Table 5: GIFT pregnancies, numbers and pregnancy rates, 1992–1999

Stage of treatment	Year of treatment							
	1992	1993	1994	1995	1996	1997	1998	1999
Treatment cycles commenced	4,342	4,215	3,653	2,884	2,613	2,195	1,608	1,384
Cycles with oocyte retrieval	3,831	3,663	3,163	2,462	2,292	1,924	1,458	1,265
Cycles with gamete transfer	3,757	3,637	3,012	2,387	2,250	1,858	1,415	1,239
Clinical pregnancies	1,042	1,015	873	666	629	506	390	319
Viable pregnancies	780	761	655	506	505	384	301	230
Clinical pregnancies per 100 oocyte retrieval cycles	27.2	27.7	27.6	27.1	27.4	26.3	26.7	25.2
Viable pregnancies per 100 oocyte retrieval cycles	20.4	20.8	20.7	20.6	22.0	20.0	20.6	18.2

Table 6: Assisted conception pregnancies using donor oocytes, transfer of fresh embryos or GIFT, numbers and pregnancy rates, 1992–1999

Stage of treatment	Year of treatment							
	1992	1993	1994	1995	1996	1997	1998	1999
Cycles with embryo transfer[(a)]	331	342	391	427	284	342	282	364
Clinical pregnancies	55	67	56	86	64	80	64	98
Viable pregnancies	42	48	37	65	43	59	48	66
Clinical pregnancies per 100 embryo transfer cycles	16.6	19.6	14.3	20.1	22.5	23.4	22.7	26.9
Viable pregnancies per 100 embryo transfer cycles	12.7	14.0	9.5	15.2	15.1	17.3	17.0	18.1

(a) Data prior to 1996 include transfers after embryo freezing

Table 7: Assisted conception pregnancies using donor oocytes or donor embryos, transfers after embryo freezing, numbers and pregnancy rates, 1996–1999

Stage of treatment	Year of treatment			
	1996	1997	1998	1999
Cycles with embryo transfer	317	376	505	624
Clinical pregnancies	62	62	82	96
Viable pregnancies	40	46	56	77
Clinical pregnancies per 100 embryo transfer cycles	19.6	16.5	16.2	15.4
Viable pregnancies per 100 embryo transfer cycles	12.6	12.2	11.1	12.3

Table 8: Assisted conception pregnancies, numbers and pregnancy rates, 1992–1999

Stage of treatment	Year of treatment							
	1992	1993	1994	1995	1996	1997	1998	1999
Cycles with oocyte retrieval [(a)]	12,144	12,050	13,247	13,556	14,337	15,071	15,728	16,461
Cycles with embryo transfer	14,607	15,359	16,966	18,337	20,052	21,330	22,829	24,521
Clinical pregnancies	2,615	2,809	3,195	3,339	3,728	4,126	4,494	5,020
Viable pregnancies [(a)]	1,479	1,564	1,711	1,849	2,048	2,223	2,374	2,645
Viable pregnancies	1,894	2,052	2,341	2,609	2,887	3,243	3,529	3,889
Viable pregnancies per 100 oocyte retrieval cycles [(a)]	12.2	13.0	12.9	13.6	14.3	14.8	15.1	16.1
Viable pregnancies per 100 embryo transfer cycles	13.0	13.4	13.8	14.2	14.4	15.2	15.5	15.9

(a) Exclude data on cycles with frozen/thawed embryos or donor eggs/embryos

Table 9: Embryo transfer cycles after assisted hatching, numbers and pregnancy rates, 1994 - 1999

Stage of treatment	Year of treatment					
	1994	1995	1996	1997	1998	1999
Cycles with embryo transfer	125	273	626	397	435	576
Clinical pregnancies	17	24	56	38	57	80
Viable pregnancies	12	19	40	26	50	62
Clinical pregnancies per 100 embryo transfer cycles	13.6	8.8	8.9	9.6	13.1	13.9
Viable pregnancies per 100 embryo transfer cycles	9.6	7.0	6.4	6.5	11.5	10.8

Note: Cycles with assisted hatching are included in earlier IVF and ICSI tables

Table 10: Embryo transfer cycles after blastocyst culture, numbers and pregnancy rates, 1998 - 1999

Stage of treatment	Year of treatment	
	1998	1999
Cycles with embryo transfer	343	437
Clinical pregnancies	70	160
Viable pregnancies	60	121
Clinical pregnancies per 100 embryo transfer cycles	20.4	36.6
Viable pregnancies per 100 embryo transfer cycles	17.5	27.7

Note: Cycles with blastocyst culture are included in earlier IVF and ICSI tables

Table 11: Embryo freezing, thawing and storage of frozen embryos, 1994 -1999

Stage of treatment	Year of treatment					
	1994	1995	1996	1997	1998	1999
Number of patients having embryos frozen	n.a.	n.a.	n.a.	n.a.	n.a.	7,834
Number of patient cycles having embryos frozen	4,404	4,912	6,213	6,391	7,462	8,669
Number of embryos that were frozen	19,563	22,499	26,550	32,327	37,057	39,682
Number of patients having thawed embryos transferred	n.a.	n.a.	n.a.	n.a.	n.a.	6,771
Number of patient cycles having thawed embryos transferred	4,105	4,872	5,495	5,719	8,159	9,995
Number of embryos thawed	14,375	17,313	19,027	22,611	25,521	28,286
Number of embryos transferred after thawing	10,581	12,515	13,430	15,959	18,085	18,907
Frozen embryos in storage on 31 December	22,280	30,475	41,662	46,322	56,136	65,518

Table 12: Cycles of treatment resulting from artificial insemination, 1998-1999

Type of insemination	Year of treatment		
	1998	1999	
	Number of cycles	Number of cycles	Pregnancy rate per 100 transfer cycles
Husband's sperm	7,246	7,505	
Clinical pregnancies		875	11.7
Viable pregnancies		724	9.6
Donor sperm	5,405	4,912	
Clinical pregnancies		564	11.5
Viable pregnancies		466	9.5
All artificial inseminations	12,651	12,417	
Clinical pregnancies		1,439	11.6
Viable pregnancies		1,190	9.6

Table 13: Use of assisted conception to treat infertility, selected States, Australia and New Zealand, 1998–1999

State / Country	Women aged 25–44 years (thousands)		Treatment cycles [(a)]		Ratios [(b)]	
Year	1998	1999	1998	1999	1998	1999
New South Wales	975	981	8,031	8,311	824	847
Victoria	728	733	7,085	7,695	973	1,050
Queensland	531	536	3,417	3,837	644	716
Western Australia	286	288	1,992	2,068	696	718
South Australia [(c)]	255	253	1,964	1,803	771	712
Australian Capital Territory and Tasmania	121	119	1,203	1,033	997	868
Australia	2,895	2,910	23,692	24,747	818	850
New Zealand	596	593	1,544	1,837	259	310

(a) Includes oocyte retrieval cycles for fresh IVF & ICSI, and GIFT, and all frozen transfer cycles (including donor oocytes/embryos)
(b) Treatment cycles per 100,000 women aged 25–44 years
(c) Includes external unit based in the Northern Territory

Table 14: Viable pregnancy rates for all techniques of assisted conception, 1998

Type of assisted conception	Oocyte retrieval cycles	Embryo/gamete transfer cycles	Viable pregnancies	Viable pregnancy rate per 100 oocyte retrievals	Viable pregnancy rate per 100 embryo transfers
IVF: fresh embryos	7,177	5,822	1,021	14.2	17.5
IVF: frozen embryos	-	4,951	571	-	11.5
IVF: donor oocytes	-	570	82	-	14.4
IVF: donor sperm [b]	258	210	35	13.6	16.7
ICSI: fresh embryos	7,093	6,085	1,052	14.8	17.3
ICSI: frozen embryos	-	3,769	480	-	12.7
ICSI: donor oocytes	-	210	20	-	9.5
ICSI: donor sperm [b]	131	112	14	10.7	12.5
GIFT	1,458	1,415	301	20.6	21.3
GIFT: donor oocytes	-	7	2	-	28.6
GIFT: donor sperm [b]	145	138	35	24.1	25.4
All techniques	**15,728** [a]	**22,829**	**3,529**	**14.6** [a]	**15.5**

(a) Exclude data on cycles with frozen embryos and donor oocytes

(b) Cycles with donor sperm are not mutually exclusive, therefore they are not included in all techniques

Table 15: Viable pregnancy rates for all techniques of assisted conception, 1999

Type of assisted conception	Oocyte retrieval cycles	Embryo/gamete transfer cycles	Viable pregnancies	Viable pregnancy rate per 100 oocyte retrievals	Viable pregnancy rate per 100 embryo transfers
IVF: fresh embryos	7,174	6,066	1,106	15.4	18.2
IVF: frozen embryos	-	4,667	583	-	12.5
IVF: donor oocytes	-	581	83	-	14.3
IVF: donor sperm [b]	249	205	48	19.3	23.4
ICSI: fresh embryos	8,022	7,098	1,309	16.3	18.4
ICSI: frozen embryos	-	4,463	518	-	11.6
ICSI: donor oocytes	-	395	58	-	14.7
ICSI: donor sperm [b]	161	142	21	13.0	14.8
GIFT	1,265	1,239	230	18.2	18.6
GIFT: donor oocytes	-	12	2	-	16.7
GIFT: donor sperm [b]	125	123	23	18.4	18.7
All techniques	**16,461** [a]	**24,521**	**3,889**	**15.5** [a]	**15.9**

(a) Exclude data on cycles with frozen embryos and donor oocytes

(b) Cycles with donor sperm are not mutually exclusive, therefore they are not included in all techniques

Table 16: Oocyte retrieval cycles for IVF, ICSI and GIFT, by maternal age, cause of infertility, and drugs used to stimulate ovulation, 1998

Characteristic	Oocyte retrieval cycles attempted					
	IVF		ICSI		GIFT	
	Number	Per cent	Number	Per cent	Number	Per cent
Maternal age (at start of treatment)						
<20	-	-	8	0.1	-	-
20–24	96	1.3	146	2.1	16	1.1
25–29	933	13.0	1,224	17.2	245	16.8
30–34	2,434	33.9	2,440	34.4	501	34.4
35–39	2,539	35.4	2,318	32.7	444	30.5
40–44	1,056	14.7	897	12.6	227	15.6
45+	117	1.6	66	0.9	25	1.7
Not stated	2		-		-	
All ages	**7,177**	**100.0**	**7,099**	**100.0**	**1,458**	**100.0**
Cause(s) of infertility						
Tubal only	2,028	29.2	340	4.9	66	4.5
Other female only	1,053	15.2	331	4.8	391	26.9
Male factors only	698	10.1	3,932	56.6	210	14.5
Multiple causes	1,517	21.9	1,620	23.3	253	17.4
Unexplained	1,638	23.6	726	10.4	533	36.7
Not stated	243		150		5	
All causes	**7,177**	**100.0**	**7,099**	**100.0**	**1,458**	**100.0**
Ovarian stimulation						
GnRH analogues + other	6,604	92.0	6,539	92.1	1,344	92.2
No GnRH analogues						
— clomiphene + any other	365	5.1	430	6.1	50	3.4
— other drugs	23	0.3	13	0.2	7	0.5
— natural cycles	183	2.6	117	1.6	57	3.9
Not stated	2		-		-	
Total	**7,177**	**100.0**	**7,099**	**100.0**	**1,458**	**100.0**

Table 17: Embryo transfer cycles for IVF, ICSI and GIFT, by number of embryos or oocytes transferred, 1998

Number of embryos / oocytes transferred	Embryo transfer cycles					
	IVF		ICSI		GIFT	
	Number	Per cent	Number	Per cent	Number	Per cent
One	881	15.1	802	13.2	76	5.4
Two	3,211	55.2	3,298	54.1	610	43.1
Three	1,610	27.7	1,832	30.1	572	40.4
Four	112	1.9	149	2.4	109	7.7
Five	6	0.1	9	0.1	14	1.0
Six or more	2	0.0	1	0.0	34	2.4
Not stated	-		-		-	
Total	**5,822**	**100.0**	**6,091**	**100.0**	**1,415**	**100.0**

Table 18: Oocyte retrieval cycles for IVF, ICSI and GIFT, by maternal age, cause of infertility, and drugs used to stimulate ovulation, 1999

Characteristic	Oocyte retrieval cycles attempted					
	IVF		ICSI		GIFT	
	Number	Per cent	Number	Per cent	Number	Per cent
Maternal age (at start of treatment)						
<20	4	0.1	5	0.1	-	-
20–24	88	1.2	169	2.1	18	1.4
25–29	888	12.3	1,285	15.8	174	13.6
30–34	2,363	32.7	2,842	35.0	427	33.4
35–39	2,604	36.0	2,694	33.2	385	30.1
40–44	1,190	16.4	1,034	12.7	253	19.8
45+	100	1.4	91	1.1	23	1.8
Not stated	-		-		-	
All ages	**7,237**	**100.0**	**8,120**	**100.0**	**1,280**	**100.0**
Cause(s) of infertility						
Tubal only	1,921	27.7	412	5.2	70	5.5
Other female only	1,316	19.0	426	5.4	377	29.5
Male factors only	714	10.3	4,283	54.5	162	12.7
Multiple causes	1,228	17.7	1,815	23.1	227	17.7
Unexplained	1,760	25.4	920	11.7	444	34.7
Not stated	298		264		-	
All causes	**7,237**	**100.0**	**8,120**	**100.0**	**1,280**	**100.0**
Ovarian stimulation						
GnRH analogues + other	6,740	93.1	7,477	92.1	1,169	91.3
No GnRH analogues						
— clomiphene + any other	295	4.1	467	5.8	60	4.7
— other drugs	69	1.0	62	0.8	44	3.4
— natural cycles	133	1.8	114	1.4	7	0.5
Not stated	-		-		-	
Total	**7,237**	**100.0**	**8,120**	**100.0**	**1,280**	**100.0**

Table 19: Embryo transfer cycles for IVF, ICSI and GIFT, by number of embryos or oocytes transferred, 1999

Number of embryos / oocytes transferred	Embryo transfer cycles					
	IVF		ICSI		GIFT	
	Number	Per cent	Number	Per cent	Number	Per cent
One	872	14.3	929	12.9	73	6.2
Two	3,794	62.1	4,386	61.1	493	41.6
Three	1,341	21.9	1,750	24.4	492	41.5
Four	98	1.6	104	1.4	110	9.3
Five	4	0.1	7	0.1	10	0.8
Six or more	4	0.1	8	0.1	8	0.7
Not stated	-		-		-	
Total	**6,113**	**100.0**	**7,184**	**100.0**	**1,186**	**100.0**

Table 20: Number of embryo transfer cycles after cryopreservation, by maternal age, cause of infertility, and number of embryos transferred, 1998

Characteristic	Embryo transfer cycles					
	IVF		ICSI		Donor oocytes	
	Number	Per cent	Number	Per cent	Number	Per cent
Maternal age (at start of treatment)						
<20	1	0.0	4	0.1	-	-
20–24	84	1.7	147	3.9	6	1.2
25–29	777	15.7	844	22.4	23	4.6
30–34	1,833	37.0	1,410	37.4	93	18.6
35–39	1,719	34.7	1,069	28.4	128	25.5
40–44	497	10.0	273	7.2	144	28.7
45+	41	0.8	21	0.6	107	21.4
Not stated	-		-		-	
All ages	**4,952**	**100.0**	**3,768**	**100.0**	**501**	**100.0**
Cause(s) of infertility[(a)]						
Tubal only	1,101	25.4	124	3.7	48	10.9
Other female only	700	16.2	132	3.9	199	45.2
Male factors only	432	10.0	1,915	56.9	25	5.7
Multiple causes	1,040	24.0	911	27.1	112	25.5
Unexplained	1,057	24.4	284	8.4	56	12.7
Not stated	622		402		61	
All causes	**4,952**	**100.0**	**3,768**	**100.0**	**501**	**100.0**
Number of embryos transferred						
One	1,036	20.9	761	20.2	114	22.8
Two	3,021	61.0	2,347	62.3	285	56.9
Three	857	17.3	632	16.8	94	18.8
Four	32	0.6	24	0.6	8	1.6
Five	6	0.1	4	0.1	-	-
Six or more	-	-	-	-	-	-
Not stated	-		-		-	
Total	**4,952**	**100.0**	**3,768**	**100.0**	**501**	**100.0**

(a) Four units were unable to provide this data

Table 21: Number of embryo transfer cycles after cryopreservation, by maternal age, cause of infertility, and number of embryos transferred, 1999

Characteristic	Embryo transfer cycles					
	IVF		ICSI		Donor oocytes	
	Number	Per cent	Number	Per cent	Number	Per cent
Maternal age (at start of treatment)						
<20	-	-	3	0.1	-	-
20–24	48	1.0	102	2.3	6	1.0
25–29	664	14.2	840	18.7	44	7.1
30–34	1,689	36.1	1,722	38.3	102	16.3
35–39	1,689	36.1	1,416	31.5	158	25.3
40–44	563	12.0	391	8.7	187	30.0
45+	30	0.6	21	0.5	127	20.4
Not stated	-		-		-	
All ages	**4,683**	**100.0**	**4,495**	**100.0**	**624**	**100.0**
Cause(s) of infertility[(a)]						
Tubal only	942	25.8	153	4.2	21	4.5
Other female only	674	18.5	190	5.3	221	47.2
Male factors only	295	8.1	1,873	51.8	31	6.6
Multiple causes	678	18.6	971	26.8	125	26.7
Unexplained	1,057	29.0	432	11.9	70	15.0
Not stated	1,037		876		156	
All causes	**4,683**	**100.0**	**4,495**	**100.0**	**624**	**100.0**
Number of embryos transferred						
One	1,050	22.4	973	21.6	128	20.5
Two	3,007	64.2	2,900	64.5	397	63.6
Three	595	12.7	578	12.9	92	14.7
Four	31	0.7	42	0.9	6	1.0
Five	-	-	1	0.0	1	0.2
Six or more	-	-	1	0.0	-	-
Not stated	-		-		-	
Total	**4,683**	**100.0**	**4,495**	**100.0**	**624**	**100.0**

(a) Five units were unable to provide this data

Table 22: Assisted conception pregnancies after transfer of fresh embryos or oocytes, numbers and pregnancy rates for grouped IVF units, 1998 -1999

IVF treatment cycles	1998					1999				
Stage of treatment	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
IVF units (n)	9	9	10	9	37	9	9	10	9	37
Treatment cycles commenced	1,783	1,578	4,203	1,364	8,928	1,504	2,165	2,516	2,579	8,764
Cycles with oocyte retrieval	1,454	1,341	3,446	1,120	7,361	1,275	1,783	2,108	2,181	7,347
Cycles with embryo transfer	1,254	1,148	2,756	848	6,006	1,093	1,539	1,823	1,784	6,239
Clinical pregnancies	362	286	553	136	1,337	411	399	382	286	1,478
Viable pregnancies	318	224	427	83	1,052	319	319	309	194	1,141
Clinical pregnancies per 100 oocyte retrieval cycles	24.9	21.3	16.0	12.1	18.2	32.2	22.4	18.1	13.1	20.1
Viable pregnancies per 100 oocyte retrieval cycles	21.9	16.7	12.4	7.4	14.3	25.0	17.9	14.7	8.9	15.5

ICSI treatment cycles	1998					1999				
Stage of treatment	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
IVF units (n)	9	9	9	9	36	9	9	9	9	36
Treatment cycles commenced	1,305	3,008	2,346	1,168	7,827	1,931	2,857	2,054	2,383	9,225
Cycles with oocyte retrieval	1,223	2,688	2,182	1,091	7,184	1,758	2,545	1,871	2,027	8,201
Cycles with embryo transfer	1,064	2,359	1,837	916	6,176	1,580	2,328	1,624	1,745	7,277
Clinical pregnancies	341	527	353	114	1,335	563	525	350	249	1,687
Viable pregnancies	274	445	274	74	1,067	463	431	253	191	1,338
Clinical pregnancies per 100 oocyte retrieval cycles	27.9	19.6	16.2	10.4	18.6	32.0	20.6	18.7	12.3	20.6
Viable pregnancies per 100 oocyte retrieval cycles	22.4	16.6	12.6	6.8	14.9	26.3	16.9	13.5	9.4	16.3

GIFT treatment cycles	1998					1999				
Stage of treatment	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
IVF units (n)	6	6	6	6	24	6	7	7	6	26
Treatment cycles commenced	789	499	312	15	1,615	119	1,021	243	13	1,396
Cycles with oocyte retrieval	733	453	266	13	1,465	103	949	215	10	1,277
Cycles with embryo transfer	724	428	257	13	1,422	94	934	213	10	1,251
Clinical pregnancies	235	120	42	-	397	39	255	28	-	322
Viable pregnancies	180	90	33	-	303	33	180	19	-	232
Clinical pregnancies per 100 oocyte retrieval cycles	32.1	26.5	15.8	-	27.1	37.9	26.9	13.0	-	25.2
Viable pregnancies per 100 oocyte retrieval cycles	24.6	19.9	12.4	-	20.7	32.0	19.0	8.8	-	18.2

Table 23: Assisted conception pregnancies after transfer of thawed embryos, numbers and pregnancy rates for grouped IVF units, 1998–1999

IVF treatment cycles	1998					1999				
Stage of treatment	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
IVF units (n)	9	9	10	9	37	9	10	10	9	38
Cycles with embryo transfer	856	1,370	2,577	534	5,337	1,490	2,330	864	391	5,075
Clinical pregnancies	199	221	357	37	814	333	373	100	29	835
Viable pregnancies	162	175	263	22	622	257	287	69	18	631
Clinical pregnancies per 100 embryo transfer cycles	23.2	16.1	13.9	6.9	15.3	22.3	16.0	11.6	7.4	16.5
Viable pregnancies per 100 embryo transfer cycles	18.9	12.8	10.2	4.1	11.7	17.2	12.3	8.0	4.6	12.4

ICSI treatment cycles	1998					1999				
Stage of treatment	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
IVF units (n)	9	9	9	9	36	9	9	9	9	36
Cycles with embryo transfer	623	1,987	970	308	3,888	522	1,374	2,024	750	4,679
Clinical pregnancies	146	339	107	24	616	155	208	257	75	698
Viable pregnancies	125	262	87	11	485	120	174	202	48	547
Clinical pregnancies per 100 embryo transfer cycles	23.4	17.1	11.0	7.8	15.8	29.7	15.1	12.7	10.0	14.9
Viable pregnancies per 100 embryo transfer cycles	20.1	13.2	9.0	3.6	12.5	23.0	12.7	10.0	6.4	11.7

Table 24: Assisted conception pregnancy rates after IVF, ICSI and GIFT, 1998–1999

Viable pregnancy rates [a]	1998					
Method of conception	Units (n)	Q1	Q2	Q3	Q4	Total
IVF fresh	37	20.0 – 27.5	14.8 – 19.7	11.1 – 14.7	3.5 – 10.8	14.3
IVF frozen	37	15.4 – 28.0	11.6 – 15.4	8.9 – 11.0	0.0 – 8.4	11.7
ICSI fresh	36	18.9 – 32.7	14.1 – 18.4	11.3 – 13.3	2.4 – 11.1	14.9
ICSI frozen	36	15.0 – 27.3	11.1 – 14.8	6.8 – 11.0	0.0 – 6.2	12.5
GIFT	24	21.2 – 75.0	15.8 – 21.2	0.0 – 15.7	0.0 – 0.0	20.7

Viable pregnancy rates [a]	1999					
Method of conception	Units (n)	Q1	Q2	Q3	Q4	Total
IVF fresh	37	22.5 – 34.7	16.5 – 22.3	10.3 – 16.0	3.6 – 10.0	15.5
IVF frozen	37	13.8 – 21.4	11.1 – 13.6	6.3 – 10.5	0.0 – 5.5	12.4
ICSI fresh	36	20.5 – 35.1	15.1 – 19.6	12.2 – 15.0	4.7 – 12.0	16.3
ICSI frozen	36	17.6 – 33.3	12.0 – 17.2	9.4 – 11.4	0.0 – 9.0	11.7
GIFT	24	25.0 – 100.0	15.1 – 22.8	0.0 – 13.4	0.0 – 0.0	18.2

(a) Viable pregnancy rates are expressed per 100 oocyte retrieval cycles for fresh embryo transfers and GIFT, and per 100 embryo transfer cycles for frozen embryo transfers.

Table 25: Numbers and outcomes of assisted conception pregnancies by year of conception, 1979–1998

Outcome of pregnancy and method of assisted conception	Year of conception					
	Number			Per cent		
IVF conceptions	**1979–96**	**1997**	**1998**	**1979–96**	**1997**	**1998**
Spontaneous abortion	3,333	410	438	21.0	20.5	20.3
Termination of pregnancy	79	14	10	0.5	0.7	0.5
Ectopic pregnancy	745	63	62	4.7	3.1	2.9
Stillbirth	219	21	20	1.4	1.0	0.9
Live birth [(a)]	11,480	1,493	1,630	72.4	74.6	75.5
All IVF outcomes	**15,856**	**2,001**	**2,160**	**100.0**	**100.0**	**100.0**
ICSI conceptions	**1990–96**	**1997**	**1998**	**1990–96**	**1997**	**1998**
Spontaneous abortion	584	277	355	19.7	18.0	18.6
Termination of pregnancy	20	7	11	0.7	0.5	0.6
Ectopic pregnancy	59	27	40	2.0	1.8	2.1
Stillbirth	31	12	15	1.0	0.8	0.8
Live birth [(a)]	2,270	1,219	1,484	76.6	79.1	77.9
All ICSI outcomes	**2,964**	**1,542**	**1,905**	**100.0**	**100.0**	**100.0**
GIFT conceptions	**1985–96**	**1997**	**1998**	**1985–96**	**1997**	**1998**
Spontaneous abortion	1,709	114	99	20.6	22.3	25.0
Termination of pregnancy	46	7	1	0.6	1.4	0.3
Ectopic pregnancy	267	16	5	3.2	3.1	1.3
Stillbirth	87	7	2	1.0	1.4	0.5
Live birth [(a)]	6,183	368	289	74.6	71.9	73.0
All GIFT outcomes	**8,292**	**512**	**396**	**100.0**	**100.0**	**100.0**
All assisted conceptions	**1979–96**	**1997**	**1998**	**1979–96**	**1997**	**1998**
Spontaneous abortion	5,626	801	892	20.8	19.8	20.0
Termination of pregnancy	145	28	22	0.5	0.7	0.5
Ectopic pregnancy	1,071	106	107	4.0	2.6	2.4
Stillbirth	337	40	37	1.2	1.0	0.8
Live birth [(a)]	19,933	3,080	3,403	73.5	76.0	76.3
All outcomes	**27,112**	**4,055**	**4,461**	**100.0**	**100.0**	**100.0**

(a) Multiple pregnancies with both stillbirths and live births are included only in the live birth category

Table 26: Place of parental residence, assisted conception pregnancies, 1998

Place of usual residence	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
New South Wales	707	570	94	32.9	30.1	23.8
Victoria	526	544	71	24.4	28.8	18.0
Queensland	220	265	188	10.2	14.0	47.6
South Australia	128	164	27	5.9	8.7	6.8
Western Australia	276	120	4	12.8	6.3	1.0
Tasmania	44	72	3	2.0	3.8	0.8
Australian Capital Territory	37	9	5	1.7	0.5	1.3
Northern Territory	21	14	2	1.0	0.7	0.5
New Zealand	185	124	-	8.6	6.6	-
Other countries	8	9	1	0.4	0.5	0.3
Not stated	8	14	1			
All regions	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**

Table 27: Maternal ages, assisted conception pregnancies, 1998

Age group (years)	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
Less than 20	-	1	-	-	0.1	-
20–24	42	53	6	1.9	2.8	1.5
25–29	333	413	65	15.4	21.7	16.4
30–34	860	781	160	39.8	41.0	40.4
35–39	715	547	133	33.1	28.7	33.6
40–44	188	104	32	8.7	5.5	8.1
45 and over	22	6	-	1.0	0.3	-
Not stated	-	-	-			
All ages	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**

Table 28: Paternal ages, assisted conception pregnancies, 1998

Age group (years)	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
Less than 20	-	-	-	-	-	-
20–24	8	9	2	0.4	0.5	0.5
25–29	257	216	45	12.0	11.4	11.5
30–34	687	561	121	32.0	29.6	30.9
35–39	732	568	127	34.0	29.9	32.4
40–44	327	310	63	15.2	16.3	16.1
45 and over	139	233	34	6.5	12.3	8.7
Not stated	10	8	4			
All ages	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**

Table 29: Previous pregnancies for pregnant women, assisted conception pregnancies, 1998

Number of previous pregnancies	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
None	965	1,141	208	44.7	59.9	52.5
One	597	498	116	27.7	26.1	29.3
Two	316	175	47	14.6	9.2	11.9
Three	143	56	16	6.6	2.9	4.0
Four or more	138	35	9	6.4	1.8	2.3
Not stated	1	-	-			
All women	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**

Table 30: Duration of infertility, assisted conception pregnancies, 1998

Duration of infertility (years)	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
Less than 2	234	256	48	10.9	13.5	12.2
2–3	881	792	178	41.1	41.7	45.2
4–5	527	430	103	24.6	22.6	26.1
6–7	252	208	39	11.8	11.0	9.9
8–9	109	102	12	5.1	5.4	3.0
10 or more	141	111	14	6.6	5.8	3.6
Not stated	16	6	2			
All pregnancies	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**

Table 31: Causes of infertility, assisted conception pregnancies, 1998

Causes of infertility and method of assisted conception	Year of conception					
	Number			Per cent		
IVF conceptions	**1979–96**	**1997**	**1998**	**1979–96**	**1997**	**1998**
Tubal	5,650	410	442	35.7	20.5	20.7
Male factor	2,662	234	220	16.8	11.7	10.3
Endometriosis	1,045	180	209	6.6	9.0	9.8
Other stated causes	1,035	281	290	6.5	14.1	13.6
Multiple causes	3,684	511	492	23.3	25.6	23.0
Unexplained infertility	1,764	384	485	11.1	19.2	22.7
Not stated	16	1	22			
All causes	**15,856**	**2,001**	**2,160**	**100.0**	**100.0**	**100.0**
ICSI conceptions	**1990–96**	**1997**	**1998**	**1990–96**	**1997**	**1998**
Tubal	29	28	43	1.0	1.8	2.3
Male factor	2,062	941	1,183	69.7	61.0	62.2
Endometriosis	23	16	31	0.8	1.0	1.6
Other stated causes	59	48	68	2.0	3.1	3.6
Multiple causes	706	429	486	23.9	27.8	25.6
Unexplained infertility	80	80	91	2.7	5.2	4.8
Not stated	5	-	3			
All causes	**2,964**	**1,542**	**1,905**	**100.0**	**100.0**	**100.0**
GIFT conceptions	**1985–96**	**1997**	**1998**	**1985–96**	**1997**	**1998**
Tubal	391	14	8	4.7	2.7	2.0
Male factor	2,311	81	63	27.9	15.8	15.9
Endometriosis	1,263	95	71	15.3	18.6	18.0
Other stated causes	740	66	54	8.9	12.9	13.7
Multiple causes	1,142	100	63	13.8	19.5	15.9
Unexplained infertility	2,434	156	136	29.4	30.5	34.4
Not stated	11	-	1			
All causes	**8,292**	**512**	**396**	**100.0**	**100.0**	**100.0**
All assisted conceptions	**1979–96**	**1997**	**1998**	**1979–96**	**1997**	**1998**
Tubal	6,070	452	493	22.4	11.1	11.1
Male factor	7,035	1,256	1,466	26.0	31.0	33.1
Endometriosis	2,331	291	311	8.6	7.2	7.0
Other stated causes	1,834	395	412	6.8	9.7	9.3
Multiple causes	5,532	1,040	1,041	20.4	25.7	23.5
Unexplained infertility	4,278	620	712	15.8	15.3	16.1
Not stated	32	1	26			
All causes	**27,112**	**4,055**	**4,461**	**100.0**	**100.0**	**100.0**

Table 32: Outcome of pregnancy by causes of infertility, assisted conception pregnancies, 1998

Outcome of pregnancy	Causes of infertility					
	Tubal	Male	Endometriosis	Multiple	Unexplained	All causes [b]
			Number			
Spontaneous abortion	102	261	59	215	154	892
Termination of pregnancy	1	5	3	8	3	22
Ectopic pregnancy	19	29	2	36	10	107
Stillbirth	4	13	5	10	3	37
Live birth [a]	367	1,158	242	772	542	3,403
All outcomes	**493**	**1,466**	**311**	**1,041**	**712**	**4,461**
			Per cent			
Spontaneous abortion	20.7	17.8	19.0	20.7	21.6	20.0
Termination of pregnancy	0.2	0.3	1.0	0.8	0.4	0.5
Ectopic pregnancy	3.9	2.0	0.6	3.5	1.4	2.4
Stillbirth	0.8	0.9	1.6	1.0	0.4	0.8
Live birth [a]	74.4	79.0	77.8	74.2	76.1	76.3
All outcomes	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Multiple pregnancies with both stillbirths and live births are included only in the live birth category
(b) Includes 438 pregnancies with 'other' or 'not stated' causes of infertility

Table 33: Drugs used to stimulate ovulation, assisted conception pregnancies, 1998

Drugs	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
Natural cycles	48	44	5	2.3	2.4	1.3
Clomiphene and hMG or FSH	39	30	5	1.9	1.6	1.3
hMG or FSH	17	6	4	0.8	0.3	1.0
GnRH analogues and hMG or FSH	1,946	1,789	379	94.8	95.6	96.4
Other	2	3	-	0.1	0.2	-
Not stated / Donor	108	33	3			
All drugs	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**

Table 34: Assisted conception treatment cycle in which conception occurred, 1998

Treatment cycle	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
1	1,236	785	238	57.3	41.2	60.1
2	454	465	84	21.1	24.4	21.2
3	224	301	36	10.4	15.8	9.1
4	108	178	15	5.0	9.3	3.8
5 or more	134	176	23	6.2	9.2	5.8
Not stated	4	-	-			
All cycles	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**

Table 35: Number of oocytes collected by laparoscopy or ultrasound guidance, assisted conception pregnancies, 1998

Number of oocytes collected	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
1–2	61	43	16	3.0	2.3	4.1
3–4	170	104	54	8.3	5.6	13.7
5–6	212	191	81	10.4	10.2	20.6
7–8	279	206	55	13.6	11.0	14.0
9–10	269	254	59	13.1	13.6	15.0
11–12	234	235	40	11.4	12.6	10.2
13–14	216	205	39	10.5	11.0	9.9
15 or more	607	631	49	29.6	33.8	12.5
Not stated / Donor	112	36	3			
All pregnancies	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**
Mean number of oocytes	12.0	12.8	9.0			

Table 36: Women hospitalised for ovarian hyperstimulation syndrome (OHSS) by number of oocytes collected, assisted conception pregnancies, 1998

Outcome of pregnancy	Number of oocytes collected [(a)]							
	1–2	3–4	5–6	7–8	9–10	11–12	13–14	15+
				Number				
No hospitalisation	120	324	477	530	563	499	437	1,207
Hospitalised	-	4	7	10	19	10	23	80
All outcomes	**120**	**328**	**484**	**540**	**582**	**509**	**460**	**1,287**
				Per cent				
No hospitalisation	100.0	98.8	98.6	98.1	96.7	98.0	95.0	93.8
Hospitalised	-	1.2	1.4	1.9	3.3	2.0	5.0	6.2
All outcomes	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Among 151 pregnant women with number of oocytes collected 'not stated', there were 2 (1.3%) hospitalised for OHSS.

Table 37: Number of embryos or oocytes transferred, assisted conception pregnancies, 1998

Number of embryos or oocytes transferred	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
1	198	131	5	9.2	6.9	1.3
2	1,367	1,201	176	63.3	63.1	44.4
3	564	532	182	26.1	27.9	46.0
4	27	34	26	1.3	1.8	6.6
5 or more	2	6	7	0.1	0.3	1.8
Not stated	2	1	-			
All pregnancies	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**
Mean number of oocytes	2.2	2.3	2.6			

Table 38: Outcome of assisted conception pregnancies by number of embryos or oocytes transferred, 1998

Outcome of pregnancy	Number of embryos or oocytes transferred					
	1	2	3	4	5+	All [b] pregnancies
			Number			
Spontaneous abortion	83	518	265	19	6	892
Termination of pregnancy	1	14	7	-	-	22
Ectopic pregnancy	4	66	36	1	-	107
Stillbirth	3	22	12	-	-	37
Live birth [a]	243	2,124	958	67	9	3,403
All outcomes	**334**	**2,744**	**1,278**	**87**	**15**	**4,461**
			Per cent			
Spontaneous abortion	24.9	18.9	20.7	21.8	40.0	20.0
Termination of pregnancy	0	1	1	-	-	0
Ectopic pregnancy	1	2	3	1	-	2
Stillbirth	1	1	1	-	-	1
Live birth [a]	73	77	75	77	60	76
All outcomes	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Multiple pregnancies with both stillbirths and live births are included only in the live birth category
(b) Includes 3 pregnancies in which the number of embryos transferred was not stated

Table 39: Outcome of assisted conception pregnancies after use of donor gametes, donor or frozen embryos, 1998

Outcome of pregnancy	Number				Per cent			
	Donor sperm	Donor oocytes	Donor embryos	Frozen embryos	Donor sperm	Donor oocytes	Donor embryos	Frozen embryos
Spontaneous abortion	37	41	10	309	20.7	28.7	35.7	21.9
Termination of pregnancy	-	-	-	8	-	-	-	0.6
Ectopic pregnancy	1	4	-	23	0.6	2.8	-	1.6
Stillbirth	3	2	2	12	1.7	1.4	7.1	0.8
Live birth [a]	138	96	16	1,060	77.1	67.1	57.1	75.1
All outcomes	**179**	**143**	**28**	**1,412**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Multiple pregnancies with both stillbirths and live births are included only in the live birth category

Table 40: Drugs used in the luteal phase after embryo/oocyte transfer, assisted conception pregnancies, 1998

Drugs	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
Proluton	609	512	98	28.2	26.9	24.7
Human chorionic gonadotrophin (hCG)	872	832	251	40.4	43.7	63.4
Human chorionic gonadotrophin / Proluton	73	74	19	3.4	3.9	4.8
Progestagen	238	175	12	11.0	9.2	3.0
Other drugs	23	16	1	1.1	0.8	0.3
None	345	296	15	16.0	15.5	3.8
Not stated	-	-	-			
All pregnancies	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**

Table 41: Outcome of pregnancy by maternal age group, assisted conception pregnancies, 1998

Outcome of pregnancy	Maternal age (years)					
	Less than 25	25–29	30–34	35–39	40 and over	All ages
			Number			
Spontaneous abortion	19	130	333	295	115	892
Termination of pregnancy	-	5	5	7	5	22
Ectopic pregnancy	2	30	44	25	6	107
Stillbirth	-	8	12	12	5	37
Live birth [(a)]	81	638	1,407	1,056	221	3,403
All outcomes	**102**	**811**	**1,801**	**1,395**	**352**	**4,461**
			Per cent			
Spontaneous abortion	18.6	16.0	18.5	21.1	32.7	20.0
Termination of pregnancy	-	1	0	1	1	0
Ectopic pregnancy	2	4	2	2	2	2
Stillbirth	-	1	1	1	1	1
Live birth [(a)]	79	79	78	76	63	76
All outcomes	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Multiple pregnancies with both stillbirths and live births are included only in the live birth category

Table 42: Incidence of spontaneous abortions by maternal age group, assisted conception pregnancies, 1998

Maternal age (years)	Number of assisted conception pregnancies [(a)]	Spontaneous abortions	
		Number	Per cent
Less than 25	100	19	19.0
25–29	776	130	16.8
30–34	1,752	333	19.0
35–39	1,363	295	21.6
40–44	314	108	34.4
45 and over	27	7	25.9
Not stated	-	-	
All ages	**4,332**	**892**	**20.6**

(a) Spontaneous abortions and pregnancies of at least 20 weeks' gestation

Table 43: Ectopic pregnancies after assisted conception, 1998

Outcome of pregnancy	IVF	ICSI	GIFT	All assisted conceptions
Ectopic pregnancies	62	40	5	107
Clinical pregnancies	2,160	1,905	396	4,461
% ectopic pregnancies	2.9	2.1	1.3	2.4
Total abortions and births	2,098	1,865	391	4,354
Ectopic pregnancy ratio [(a)]	1:33.8	1:46.6	1:78.2	1:40.7

(a) Ratio of ectopic pregnancies: total abortions and births

Table 44: Heterotopic pregnancies after assisted conception, 1979 -1998

Outcome of pregnancy	1979–94	1995	1996	1997	1998
			Number		
Heterotopic - abortion	82	6	9	7	8
Heterotopic - birth	50	6	6	2	1
All heterotopic pregnancies	**132**	**12**	**15**	**9**	**9**
Clinical pregnancies	20,144	3,274	3,694	4,055	4,461
			Per cent		
Heterotopic - abortion	0.41	0.18	0.24	0.17	0.18
Heterotopic - birth	0.25	0.18	0.16	0.05	0.02
All heterotopic pregnancies	**0.66**	**0.37**	**0.41**	**0.22**	**0.20**

Table 45: Reported complications of pregnancy, assisted conception pregnancies, 1998

Pregnancy complications	Number			Per cent		
	IVF	ICSI	GIFT	IVF	ICSI	GIFT
None	1,583	1,471	275	73.4	77.3	69.4
Threatened abortion	65	42	15	3.0	2.2	3.8
Antepartum haemorrhage	36	30	7	1.7	1.6	1.8
Pregnancy-induced hypertension	116	102	23	5.4	5.4	5.8
Placenta praevia	35	20	4	1.6	1.1	1.0
Other complications	323	238	72	15.0	12.5	18.2
Not stated	2	2	-			
All pregnancies	**2,160**	**1,905**	**396**	**100.0**	**100.0**	**100.0**

Table 46: Duration of singleton and multiple assisted conception pregnancies of at least 20 weeks' gestation, 1998

Gestational age (weeks)	Plurality							
	Singleton	Twin	Triplet	All pluralities [(a)]	Singleton	Twin	Triplet	All pluralities [(a)]
	Number				Per cent			
IVF conceptions								
20–23	12	6	-	19	0.9	1.9	-	1.2
24–27	14	13	1	28	1.1	4.2	10.0	1.7
28–31	19	18	4	41	1.4	5.8	40.0	2.5
32–36	161	152	5	318	12.2	48.7	50.0	19.3
37–41	1,112	123	-	1,235	84.2	39.4	-	75.1
42 or more	3	-	-	3	0.2	-	-	0.2
20–36	206	189	10	406	15.6	60.6	100.0	24.7
Not stated	3	3	-	6				
All gestational ages	**1,324**	**315**	**10**	**1,650**	**100.0**	**100.0**	**100.0**	**100.0**
ICSI conceptions								
20–23	3	2	1	6	0.2	0.8	4.3	0.4
24–27	10	3	4	18	0.8	1.1	17.4	1.2
28–31	13	24	9	46	1.1	9.2	39.1	3.1
32–36	105	125	9	239	8.7	47.9	39.1	16.0
37–41	1,069	107	-	1,176	88.3	41.0	-	78.7
42 or more	10	-	-	10	0.8	-	-	0.7
20–36	131	154	23	309	10.8	59.0	100.0	20.7
Not stated	4	-	-	4				
All gestational ages	**1,214**	**261**	**23**	**1,499**	**100.0**	**100.0**	**100.0**	**100.0**
GIFT conceptions								
20–23	1	1	1	3	0.5	1.4	9.1	1.0
24–27	2	3	-	5	1.0	4.3	-	1.7
28–31	6	8	3	18	2.9	11.6	27.3	6.2
32–36	20	31	7	58	9.5	44.9	63.6	19.9
37–41	177	26	-	203	84.3	37.7	-	69.8
42 or more	4	-	-	4	1.9	-	-	1.4
20–36	29	43	11	84	13.8	62.3	100.0	28.9
Not stated	-	-	-	-				
All gestational ages	**210**	**69**	**11**	**291**	**100.0**	**100.0**	**100.0**	**100.0**
All assisted conceptions								
20–23	16	9	2	28	0.6	1.4	4.5	0.8
24–27	26	19	5	51	0.9	3.0	11.4	1.5
28–31	38	50	16	105	1.4	7.8	36.4	3.1
32–36	286	308	21	615	10.4	48.0	47.7	17.9
37–41	2,358	256	-	2,614	86.0	39.9	-	76.2
42 or more	17	-	-	17	0.6	-	-	0.5
20–36	366	386	44	799	13.4	60.1	100.0	23.3
Not stated	7	3	-	10				
All gestational ages	**2,748**	**645**	**44**	**3,440**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Includes 3 quadruplet pregnancies

Table 47: Maternal age and duration of singleton assisted conception pregnancies of at least 20 weeks' gestation, 1998

Gestational age (weeks)	Maternal age (years)					
	Less than 25	25–29	30–34	35–39	40 and over	All ages
			Number			
20–27	2	8	11	13	8	42
28–31	2	5	12	15	4	38
32–36	7	56	106	92	25	286
37 or more	52	436	987	748	152	2,375
Not stated	-	2	2	1	2	7
All gestational ages	**63**	**507**	**1,118**	**869**	**191**	**2,748**
20–36	11	69	129	120	37	366
			Per cent			
20–27	3.2	1.6	1.0	1.5	4.2	1.5
28–31	3.2	1.0	1.1	1.7	2.1	1.4
32–36	11.1	11.1	9.5	10.6	13.2	10.4
37 or more	82.5	86.3	88.4	86.2	80.4	86.6
All gestational ages	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
20–36	17.5	13.7	11.6	13.8	19.6	13.4

Table 48: Causes of infertility and duration of singleton assisted conception pregnancies of at least 20 weeks' gestation, 1998

Gestational age (weeks)	Causes of infertility					
	Tubal	Male	Endometriosis	Multiple	Unexplained	All causes [(a)]
			Number			
20–27	8	8	2	17	1	42
28–31	10	4	3	11	8	38
32–36	42	74	20	78	34	286
37 or more	242	859	169	505	395	2,375
Not stated	-	4	-	2	1	7
All gestational ages	**302**	**949**	**194**	**613**	**439**	**2,748**
20–36	60	86	25	106	43	366
			Per cent			
20–27	2.6	0.8	1.0	2.8	0.2	1.5
28–31	3.3	0.4	1.5	1.8	1.8	1.4
32–36	13.9	7.8	10.3	12.8	7.8	10.4
37–or more	80.1	90.9	87.1	82.7	90.2	86.6
All gestational ages	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
20–36	19.9	9.1	12.9	17.3	9.8	13.4

(a) Includes 251 pregnancies with 'other' or 'not stated' causes of infertility

Table 49: Plurality of assisted conception pregnancies of at least 20 weeks' gestation, 1979–1998

Plurality and method of assisted conception	Year of conception					
	Number			Per cent		
	1979–96	1997	1998	1979–96	1997	1998
IVF conceptions						
Singletons	9,411	1,200	1,324	80.4	79.3	80.2
Twins	2,020	288	315	17.3	19.0	19.1
Triplets	258	26	10	2.2	1.7	0.6
Quadruplets	9	-	1	0.1	-	0.1
Quintuplets	1	-	-	0.0	-	-
All pregnancies	**11,699**	**1,514**	**1,650**	**100.0**	**100.0**	**100.0**
	1979–96	1997	1998	1979–96	1997	1998
ICSI conceptions						
Singletons	1,869	986	1,214	81.2	80.1	81.0
Twins	392	232	261	17.0	18.8	17.4
Triplets	35	13	23	1.5	1.1	1.5
Quadruplets	5	-	1	0.2	-	0.1
Quintuplets	-	-	-	-	-	-
All pregnancies	**2,301**	**1,231**	**1,499**	**100.0**	**100.0**	**100.0**
	1985–96	1997	1998	1985–96	1997	1998
GIFT conceptions						
Singletons	4,673	294	210	74.5	78.4	72.2
Twins	1,359	70	69	21.7	18.7	23.7
Triplets	220	10	11	3.5	2.7	3.8
Quadruplets	16	1	1	0.3	0.3	0.3
Quintuplets	2	-	-	0.0	-	-
All pregnancies	**6,270**	**375**	**291**	**100.0**	**100.0**	**100.0**
	1979–96	1997	1998	1979–96	1997	1998
All assisted conceptions						
Singletons	15,953	2,480	2,748	78.7	79.5	79.9
Twins	3,771	590	645	18.6	18.9	18.8
Triplets	513	49	44	2.5	1.6	1.3
Quadruplets	30	1	3	0.1	0.0	0.1
Quintuplets	3	-	-	0.0	-	-
All pregnancies	**20,270**	**3,120**	**3,440**	**100.0**	**100.0**	**100.0**

Table 50: Plurality of assisted conception pregnancies of at least 20 weeks ' gestation and number of embryos or oocytes transferred, 1998

Number of embryos or oocytes transferred	Plurality							
	Singleton	Twin	Triplet	All pluralities [(a)]	Singleton	Twin	Triplet	All pluralities [(a)]
	Number				Per cent			
IVF conceptions								
1	143	2	-	145	98.6	1.4	-	100.0
2	830	227	2	1,059	78.4	21.4	0.2	100.0
3	332	84	7	424	78.3	19.8	1.7	100.0
4	16	2	-	18	88.9	11.1	-	100.0
5 or more	1	-	1	2	50.0	-	50.0	100.0
Not stated	2	-	-	2				
All pregnancies	**1,324**	**315**	**10**	**1,650**	**80.2**	**19.1**	**0.6**	**100.0**
ICSI conceptions								
1	97	1	-	98	99.0	1.0	-	100.0
2	798	156	3	957	83.4	16.3	0.3	100.0
3	299	95	18	413	72.4	23.0	4.4	100.0
4	20	7	2	29	69.0	24.1	6.9	100.0
5 or more	-	2	-	2	-	100.0	-	100.0
Not stated	-	-	-	-				
All pregnancies	**1,214**	**261**	**23**	**1,499**	**81.0**	**17.4**	**1.5**	**100.0**
GIFT conceptions								
1	3	-	-	3	100.0	-	-	100.0
2	95	34	1	130	73.1	26.2	0.8	100.0
3	92	32	8	133	69.2	24.1	6.0	100.0
4	16	2	2	20	80.0	10.0	10.0	100.0
5 or more	2	1	-	3	66.7	33.3	-	100.0
Not stated	2	-	-	2				
All pregnancies	**210**	**69**	**11**	**291**	**72.2**	**23.7**	**3.8**	**100.0**
All assisted conceptions								
1	243	3	-	246	98.8	1.2	-	100.0
2	1,723	417	6	2,146	80.3	19.4	0.3	100.0
3	723	211	33	970	74.5	21.8	3.4	100.0
4	52	11	4	67	77.6	16.4	6.0	100.0
5 or more	3	3	1	7	42.9	42.9	14.3	100.0
Not stated	4	-	-	4				
All pregnancies	**2,748**	**645**	**44**	**3,440**	**79.9**	**18.8**	**1.3**	**100.0**

(a) Includes 3 quadruplet pregnancies

Table 51: Multiple assisted conception pregnancies, States and Territories, 1998

Plurality	IVF Unit							
	NSW	Vic	Qld	WA	SA/NT	ACT/Tas	Australia	New Zealand
					Number			
Singletons	821	713	394	260	234	124	2,546	202
Twins	195	180	89	65	48	21	598	47
Triplets	6	18	10	4	-	3	41	3
Quadruplets	-	-	2	-	-	-	2	1
All pregnancies	1,022	911	495	329	282	148	3,187	253
					Per cent of viable pregnancies			
Twins	19.1	19.8	18.0	19.8	17.0	14.2	18.8	18.6
Triplets / Quadruplets	0.6	2.0	2.4	1.2	-	2.0	1.3	1.6

Table 52: Multiple assisted conception pregnancies for grouped IVF units, 1996 -1998

Plurality	1996–1998				
	Q1	Q2	Q3	Q4	Total
Number of IVF units (n)	9	10	10	9	38
			Number		
Singletons	1,557	2,509	2,416	996	7,478
Twins	486	636	478	143	1,743
Triplets	58	59	15	9	141
Quadruplets	6	1	-	2	9
All pregnancies	2,107	3,205	2,909	1,150	9,371
			Per cent		
Twins	23.1	19.8	16.4	12.4	18.6
Triplets/Quadruplets	3.0	1.9	0.5	1.0	1.6
All multiple pregnancies	26.1	21.7	16.9	13.4	20.2
			Range		
Twins	18.9 – 50.0	17.8 – 21.7	12.8 – 18.3	0.0 – 14.5	
Triplets/Quadruplets	0.0 – 6.3	0.3 – 4.4	0.0 – 2.7	0.0 – 2.1	
All multiple pregnancies	25.3 – 50.0	20.2 – 24.6	15.5 – 19.0	0.0 – 15.1	

Table 53: Method of delivery for singleton and multiple assisted conception pregnancies of at least 20 weeks' gestation, 1998

Plurality	Method of delivery				
	Vaginal		Caesarean section		All methods [(a)]
	Number	Per cent	Number	Per cent	Number
Singleton	1,715	62.5	1,028	37.5	2,748
Twin	237	36.9	405	63.1	645
Triplet	4	9.1	40	90.9	44
Quadruplet	1	33.3	2	66.7	3
All pregnancies	**1,957**	**57.0**	**1,475**	**43.0**	**3,440**

(a) Includes 8 pregnancies in which the method of delivery was not stated

Table 54: Sex of infants in singleton and multiple assisted conception births of at least 20 weeks ' gestation, 1979–1998

Plurality	Male			Female			Sex ratio (M:F)		
	1985–96	1997	1998	1985–96	1997	1998	1985–96	1997	1998
Singletons	8,230	1,298	1,406	7,654	1,181	1,339	107.5	109.9	105.0
Twins	3,866	615	687	3,649	564	595	105.9	109.0	115.5
Triplets	795	77	73	735	70	58	108.2	110.0	125.9
Quadruplets	65	3	6	55	-	6	118.2	-	100.0
Quintuplets	5	-	-	10	-	-	50.0	-	-
All births	**12,961**	**1,993**	**2,172**	**12,103**	**1,815**	**1,998**	**107.1**	**109.8**	**108.7**
All births, all years		**17,126**			**15,916**			**107.6**	

Note: Infant's sex was not stated or indeterminate for 120 births

Table 55: Birthweight of assisted conception live births and stillbirths, 1998

Birthweight (g)	Number			Per cent		
	Livebirth	Stillbirth	All births [a]	Livebirth	Stillbirth	All births [a]
Less than 500	11	27	38	0.3	49.1	0.9
500–999	80	10	93	2.0	18.2	2.2
1000–1499	139	4	143	3.4	7.3	3.4
1500–1999	246	8	256	6.0	14.5	6.2
2000–2499	543	3	548	13.3	5.5	13.2
2500–2999	923	0	926	22.6	0.0	22.3
3000–3499	1,166	2	1,169	28.5	3.6	28.1
3500–3999	707	1	709	17.3	1.8	17.1
4000 and over	275	0	275	6.7	0.0	6.6
Not stated	10	9	25			
All birthweights	**4,100**	**64**	**4,182**	**100.0**	**100.0**	**100.0**
Mean birthweight (g)	2,942	927	2,913			

(a) Includes 18 infants with unstated outcome

Table 56: Birthweight of infants, singleton and multiple assisted conception births of at least 20 weeks' gestation, 1998

Birthweight (g)	Number				Per cent			
	Singleton	Twin	Triplet	All births [a]	Singleton	Twin	Triplet	All births [a]
Less than 500	12	15	7	38	0.4	1.2	5.6	0.9
500–999	28	44	15	93	1.0	3.4	11.9	2.2
1000–1499	28	76	37	143	1.0	5.9	29.4	3.4
1500–1999	48	168	40	256	1.8	13.1	31.7	6.2
2000–2499	152	373	23	548	5.6	29.1	18.3	13.2
2500–2999	503	419	4	926	18.4	32.7	3.2	22.3
3000–3499	1,010	159	-	1,169	36.9	12.4	-	28.1
3500–3999	681	28	-	709	24.9	2.2	-	17.1
4000 and over	274	1	-	275	10.0	0.1	-	6.6
Less than 2500	268	10	122	97	9.8	0.8	96.8	2.3
Not stated	12	7	6	25				
All birthweights	**2,748**	**1,290**	**132**	**4,182**	**100.0**	**100.0**	**100.0**	**100.0**
Mean birthweight (g)	3,241	2,369	1,541	2,913				

(a) Includes 12 quadruplet births

Table 57: Outcome of infants in singleton and multiple assisted conception births of at least 20 weeks' gestation, 1998

Outcome	Singleton	Twin	Triplet	Quadruplet	All births
Live births [(a)]	2,717	1,268	122	11	4,118
Stillbirths	31	22	10	1	64
All births	**2,748**	**1,290**	**132**	**12**	**4,182**
Neonatal deaths	8	19	5	4	36
Perinatal deaths	39	41	15	5	100
Stillbirth rate per 1,000 total births	11.3	17.1	75.8	83.3	15.3
Neonatal death rate per 1,000 live births	2.9	15.0	41.0	363.6	8.7
Perinatal mortality rate per 1,000 total births	14.2	31.8	113.6	416.7	23.9

(a) Live births include births for which birth status was not recorded

Table 58: Major congenital malformations in singleton and multiple assisted conception births of at least 20 weeks' gestation, 1998

Outcome	Singleton	Multiple	All births [(a)]
Total births			
IVF	1,324	664	1,995
ICSI	1,214	595	1,816
GIFT	210	175	385
All assisted conception births	**2,748**	**1,434**	**4,196**
Congenital malformations			
— number			
IVF	24	13	44
ICSI	17	7	31
GIFT	7	3	10
All assisted conception births	**48**	**23**	**85**
— rate (per cent)			
IVF	1.8	2.0	2.2
ICSI	1.4	1.2	1.7
GIFT	3.3	1.7	2.6
All assisted conception births	**1.7**	**1.6**	**2.0**

(a) Includes 14 induced abortions for fetal abnormality

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Appendix 1 Definitions and glossary

Artificial insemination (AI): Insemination, or injection of semen or prepared spermatozoa, into the vagina, cervix, uterus, or fallopian tube, to aid fertility. The male partner's sperm (AIH) or donated sperm (DI) can be used.

Assisted hatching: An in-vitro fertilisation micromanipulation in which a small opening is made in the zona pellucida of the embryo to help the blastocyst emerge prior to implantation.

Biochemical pregnancy: The evidence of pregnancy is derived only from raised levels of serum b human chorionic gonadotrophin (bhCG), but without any sign of a gestational sac on ultrasound and in the absence of chorionic villi if curettage is done.

Blastocyst: Stage of development of the embryo about 5-6 days after fertilisation.

Clinical pregnancy: Any type of pregnancy except that diagnosed only by measuring levels of human chorionic gonadotrophin. This definition includes ectopic pregnancy, blighted ovum and spontaneous abortion.

Clinical pregnancy rate: The percentage of treatment cycles that result in a clinical pregnancy, including ectopic pregnancies, spontaneous and induced abortions, and viable pregnancies of at least 20 weeks' gestation but excluding biochemical pregnancies. Pregnancy rates are usually expressed per 100 treatment cycles commenced, or per 100 cycles reaching the stage of attempted oocyte retrieval or embryo transfer.

Conception cohort: A designated group of pregnancies resulting from conception in a specified period of time (usually either a single year or several years combined).

Cryopreservation: Embryo freezing.

Donor embryo: A fertilised egg where the sperm and oocyte used do not belong to the couple attempting to conceive. A donor embryo may be donated from a couple, or may be made up from a donated oocyte and donated sperm.

Donor oocyte: An unfertilised egg (oocyte) not belonging to the female member of the couple attempting to conceive. The donor may or may not be known to the couple.

Donor sperm: Sperm not belonging to the male member of the couple attempting to conceive. The donor may or may not be known to the couple.

Ectopic pregnancy: Pregnancy occurring outside the uterus.

Embryo: Fertilised egg.

Embryo transfer: Procedure by which the embryo (usually aged 1 to 2 days but may be more if developed to blastocyst stage) is placed into the uterus or the fallopian tube after IVF or ICSI.

Embryo transfer cycle: The transfer of embryos to the uterus or fallopian tube, that were either donated, frozen and thawed, or both.

Fetal death (stillbirth): Death prior to the complete expulsion or extraction from its mother of a product of conception of 20 or more completed weeks of gestation or of 400g or more birthweight; the death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

Fresh embryo: Fresh embryos result from fertilisation in the laboratory of oocytes collected by aspiration from ovarian follicles. These embryos are subsequently transferred within several days to the uterus or fallopian tube.

Frozen embryo: Freezing (cryopreservation) of fresh embryos produces frozen embryos which are subsequently thawed prior to transfer to the uterus or fallopian tube.

Gamete intrafallopian transfer (GIFT): An assisted conception procedure in which unfertilised eggs plus sperm (i.e. gametes) are transferred to the fallopian tube, so that fertilisation occurs in the normal place.

Heterotopic pregnancy: Heterotopic pregnancies are those in which there is both a uterine and tubal (ectopic) pregnancy simultaneously. The uterine pregnancy may abort or may continue on to a birth.

In-vitro fertilisation (IVF): Fertilisation of the egg by a sperm in-vitro, i.e. in the laboratory. In this report, IVF excludes ICSI.

Induced abortion: Termination of pregnancy of less than 20 weeks' gestation.

IVF unit: An infertility treatment unit where the assisted conception techniques of IVF, ICSI and GIFT are used.

Intracytoplasmic sperm injection (ICSI): An in-vitro fertilisation technique for overcoming infertility due to oligospermia (reduced number of sperm in the ejaculate) or azoospermia (complete absence of sperm in the semen) involving sperm microinjection, in which one or more sperm are injected through the zona pellucida, across the perivitelline space, through the vitelline membrane (the egg cell's membrane), and into the substance (or cytoplasm) of the egg itself.

Live birth: Infant with signs of life after pregnancy of at least 20 weeks' gestation.

Live-birth pregnancy: A pregnancy resulting in one or more live births.

Low birthweight: A liveborn or stillborn infant weighing less than 2500g at birth.

Microepididymal sperm aspiration (MESA): Use of microsurgery to dissect the epididymis to find motile sperm cells suitable to be aspirated, isolated and prepared for ICSI.

Neonatal death: A death of a liveborn infant within 28 days of birth (expressed as a rate per 1,000 live births).

Oocyte: An unfertilised egg (ovum).

Perinatal death: Includes both stillbirths and neonatal deaths (expressed as a rate per 1,000 total births).

Postneonatal death: A death of a liveborn infant more than 28 days after birth but within the first year (expressed as a rate per 1,000 live births).

Pregnancy rate: See 'clinical pregnancy rate' and 'viable pregnancy rate'.

Preterm birth: A liveborn or stillborn infant of less than 37 weeks' gestation.

Spontaneous abortion: Loss of an intrauterine pregnancy detected clinically or by ultrasound, and less than 20 weeks' gestation (from the first day of the last menstrual period).

Stillbirth: See fetal death.

Subzonal insemination (SUZI): An IVF technique involving sperm microinjection, in which one or more sperm are injected through the zona pellucida into the perivitelline space of the oocyte.

Testicular sperm extraction (TESE): Dissection into the testis itself to recover immature sperm cells from the (often small) fraction of testicular tubules there which still contain such cells, for use with ICSI.

Thawed embryo: See frozen embryo.

Treatment cycle: procedure for collecting eggs (oocytes), usually after ovarian stimulation, involving the passing of a needle into a mature follicle either directly at laparoscopy or (more usually) via the vagina guided by transvaginal ultrasound.

Viable pregnancy: A pregnancy of at least 20 weeks' gestation.

Viable pregnancy rate: The percentage of treatment cycles that result in a viable pregnancy of at least 20 weeks' gestation, most commonly expressed per 100 attempted oocyte retrievals (egg collections). A multiple pregnancy is counted as one pregnancy. Pregnancies resulting in live births and/or stillbirths are included.

Appendix 2 Notification form

AIHW NATIONAL PERINATAL STATISTICS UNIT / FERTILITY SOCIETY OF AUSTRALIA

REGISTER OF PREGNANCIES AFTER IVF OR RELATED PROCEDURES

Please complete all data items by ticking relevant boxes

IVF Unit/Hospital: _____ Identification number: _____

Usual home address	Marital status	Date of birth	Age
Suburb/Town _____	[ ] Married/De facto	Mother __/__/__	___ yrs
State _____ Postcode _____	[ ] Single [ ] Other	Father __/__/__	___ yrs

NUMBER OF PREVIOUS PREGNANCIES:

Current marriage	Previous marriages	
Livebirths _____	Mother:livebirths	_____
Abortions _____	other	_____
Other _____	Father:livebirths	_____
	other	_____

TYPE OF CONCEPTION IN CURRENT PREGNANCY:

[ ] IVF [ ] PROST/ZIFT [ ] TEST

[ ] GIFT [ ] ICSI [ ] SUZI

[ ] Epididymal sperm [ ] Assisted hatching

[ ] Other (specify) _____

Did this pregnancy result from use of:

[ ] Donor sperm [ ] Donor oocyte [ ] Frozen embryo

[ ] Donor embryos [ ] Frozen oocytes

What was the date of embryo freezing? ---/---/---

What was the date of embryo transfer? __/__/__

If donor oocyte or embryo, what was the age of the donor? _____ yrs

CAUSE OF INFERTILITY PRIOR TO THIS PREGNANCY [ ] Unknown cause

Tubal [ ] Tubal obstruction [ ] Previous ectopic [ ] Salpingectomy

[ ] Sterilization [ ] Pelvic adhesions [ ] Pelvic inflammatory disease

[ ] Other tubal (specify)_____

Male factor [ ] Azoospermia [ ] Oligospermia

[ ] Increased abnormal sperm [ ] Male sperm antibodies

[ ] Decreased motility [ ] Other male (specify)_____

[ ] Endometriosis [ ] Ovulation defects [ ] Maternal sperm antibodies

[ ] 'Hostile' cervical mucus [ ] Other cause (specify)_____

DURATION OF INFERTILITY (before first IVF/GIFT pregnancy) _____ years

DRUGS USED TO INDUCE OVULATION IN <u>OOCYTE RETRIEVAL CYCLE</u> (specify each separately)

[ ] Clomiphene [ ] hMG [ ] hCG [ ] Endogenous LH surge

[ ] FSH [ ] Recomb DNA FSH [ ] Recomb DNA LH

[ ] GnRH-agonist (specify)_____ [ ] short protocol [ ] long protocol (previous luteal phase)

[ ] None [ ] Other (specify) _____

<u>DRUGS USED DURING CYCLE IN WHICH FROZEN EMBRYOS WERE TRANSFERRED</u>(specify each separately)

[ ] None [ ] Oestrogen/progesterone [ ] Other (specify) _____

SPECIFY IN WHICH OOCYTE RETRIEVAL CYCLE THE PREGNANCY OCCURRED _____ Number of oocytes collected _____ IF DONOR OOCYTES WERE USED, IN WHICH INDUCTION CYCLE DID PREGNANCY OCCUR _____	**METHOD OF COLLECTING OOCYTES** [ ] Laparoscopy [ ] Ultrasound-guided transvaginal [ ] Other (specify) _____
Date of fertilization (or GIFT, etc) --/--/--	Number of embryos/ova transferred ____

Was the patient hospitalised for ovarian hyperstimulation syndrome? [ ] Yes [ ] No

DRUGS USED IN LUTEAL PHASE [ ] hCG: specify dose and duration _____ [ ] Progesterone: specify dose and duration _____ [ ] Oestrogen/progesterone (frozen embryo transfer) _____ [ ] Other (specify) _____ [ ] None	**OBSTETRIC COMPLICATIONS** [ ] None [ ] Pregnancy-induced hypertension [ ] Threatened abortion [ ] Placenta praevia [ ] Antepartum haemorrhage [ ] Embryo reduction [ ] Other _____

NUMBER OF SACS SEEN IN EARLY PREGNANCY ON ULTRASOUND EXAMINATION _____ [ ] Ultrasound not done

PREGNANCY OUTCOME

[ ] Spontaneous abortion (date __/__/__)

[ ] Missed abortion (date of curette --/--/--)

[ ] Induced abortion (date __/__/__, specify malformations_____)

[ ] Other (e.g. combined pregnancy) _____

[ ] Pregnancy of 20 weeks or more Date of birth __/__/__

[ ] Multiple births (number _____)

[ ] Ectopic pregnancy

[ ] Ovarian pregnancy

[ ] Blighted ovum

METHOD OF DELIVERY [ ] Vaginal [ ] Caesarean section

LIVEBIRTHS AND STILLBIRTHS	1	2	3
Sex	M F	M F	M F
Birthweight	_____g	_____g	_____g
Condition at birth (delete one)	Live birth/ Stillbirth	Live birth/ Stillbirth	Live birth/ Stillbirth
If baby died, date of death	__/__/__	__/__/__	__/__/__
Any congenital malformations?	[ ] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No
Specify malformations or other abnormalities			