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**NEW SOUTH WALES**  
**MOTHERS AND BABIES**  
**1998**

**NSW HEALTH DEPARTMENT**

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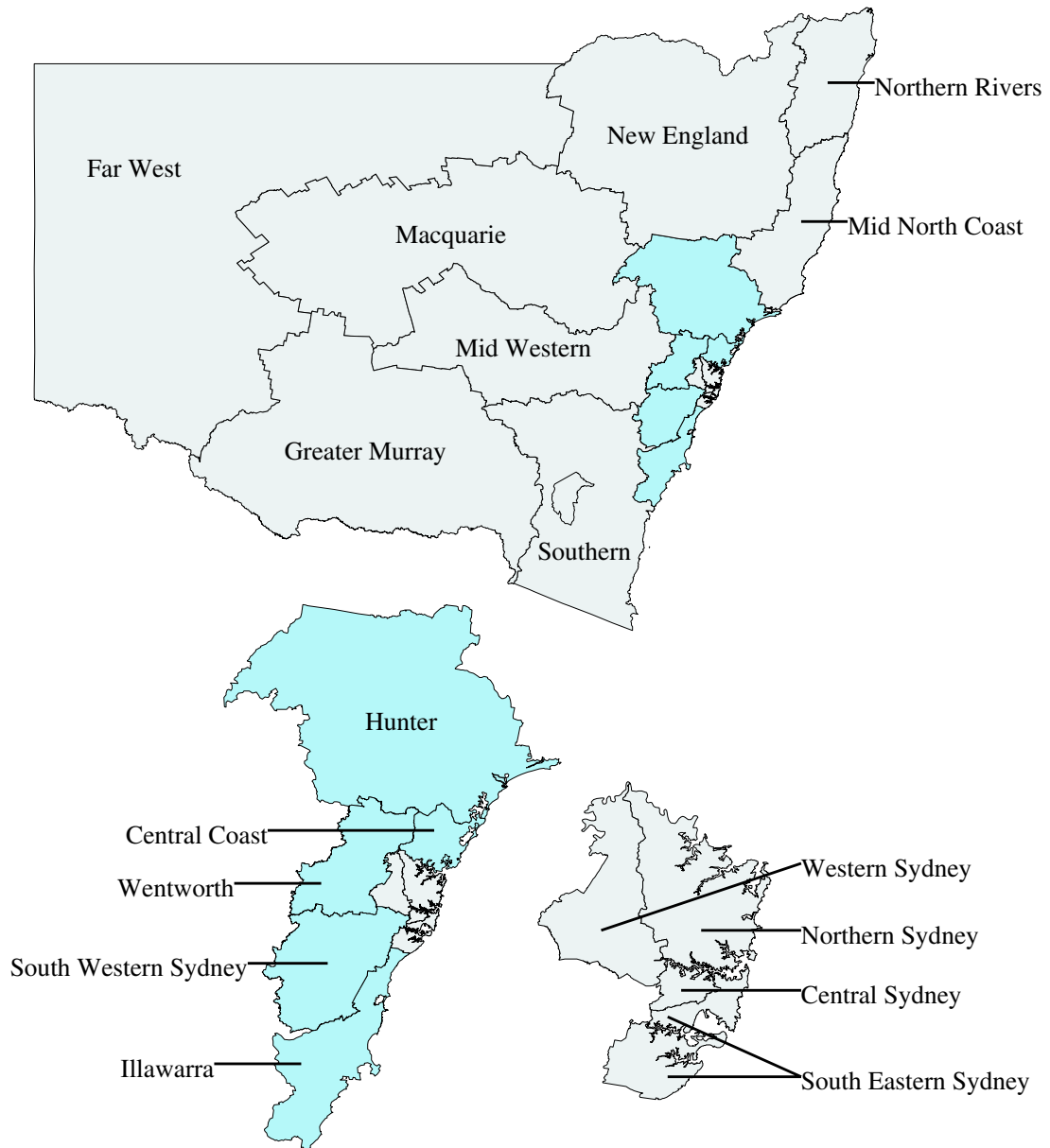
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# NSW HEALTH AREAS





# NEW SOUTH WALES MOTHERS AND BABIES 1998

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## INTRODUCTION

This is the second report on mothers and babies in NSW to combine the annual reports of the NSW Midwives Data Collection (MDC), the Neonatal Intensive Care Units' Data Collection and the NSW Birth Defects Register. Information on causes of maternal and perinatal deaths in NSW was obtained through the work of the NSW Maternal and Perinatal Committee and is also included.

From 1 January 1998, the MDC includes data elements necessary for most of the Australian Council on Healthcare Standards/Royal Australian and New Zealand College of Obstetricians and Gynaecologists (ACHS/RANZCOG) clinical indicators for obstetrics. A summary of the indicators for all NSW hospitals combined and comparative information for participating Australian hospitals is included in Part 7 of this report.

A validation study of the 1998 MDC was carried out in 1999. The results of the study are included in Part 8.

## SUMMARY

### Trends in NSW

The number of births in NSW remained stable at about 86,000 to 88,000 between 1994 and 1998. The number of teenage mothers decreased from 4,370 (5.0 per cent of all mothers) in 1994 to 4,118 (4.8 per cent) in 1998; while the number of mothers aged 35 years and over increased from 11,535 in 1994 to 13,839 in 1998, an increase from 13.1 to 16.3 per cent of all confinements.

The reported number of Aboriginal or Torres Strait Islander mothers giving birth increased from 1,531 in 1994 (1.8 per cent of all mothers) to 2,043 in 1998 (2.4 per cent of all mothers). Part of this increase is likely to be due to an increased willingness of mothers to be identified as Aboriginal or Torres Strait Islander.

The trend over recent years towards increasing numbers of confinements to mothers born in Pacific Island countries continued in 1998, accompanied by decreasing numbers of confinements to mothers born in European countries.

The number of mothers planning to give birth in a birth centre rose slightly from 3,252 in 1994 to 3,668 in 1998, while the reported number of mothers planning a homebirth decreased from 265 to 202 over the same period.

The rate of normal vaginal birth has remained stable at about 70 per cent between 1994 and 1998. The caesarean section rate increased from 17.3 to 19.0 per cent and the rate of instrumental delivery declined remained steady at about 10.5 per cent.

Since 1994, the rate of low birth weight (less than 2,500 grams) was steady at about 6 per cent. The rate was 6.1 per cent in 1998. The rate of premature births (less than 37 weeks gestation) was also stable at 6 to 7 per cent and was 6.9 per cent in 1998. The perinatal mortality rate varied from 8.8 to 9.6 per 1,000. About two-thirds of all perinatal deaths were stillbirths and one third were neonatal deaths.

In the period 1990-96, 81 deaths were reported among pregnant women or women who gave birth less than six weeks previously. Fifty-three of these were classified as directly or indirectly associated with the pregnant state.

### Area Health Services

In 1998, the largest numbers of births occurred among mothers resident in the Western Sydney and South Western Sydney Areas. These two Areas contributed over one quarter of the State's births.

In 1998, as in previous years, there were large variations between Areas in the distribution of women giving birth. The proportion of women giving birth at less than 20 years of age varied from 1.1 per cent in the Northern Sydney Area to 14.0 per cent in the Far West Area, while the proportion of mothers giving birth at 35 years of age or more ranged from 8.4 per cent in the Far West Area to 27.1 per cent in the Northern Sydney Area.

The proportion of Aboriginal or Torres Strait Islander mothers varied from 0.1 per cent in the Northern Sydney Area to 30.4 per cent in the Far West Area.

The highest proportions of mothers born in non-English speaking countries were in the Central Sydney and South Western Sydney Areas. In South Western Sydney, the majority of mothers born in non-English speaking countries were born in South-East Asia (39.7 per cent). In Central Sydney, the majority of mothers born in non-English speaking countries were born in South-East Asia (12.9 per cent).

The highest rate of normal vaginal birth was among residents of Far West Area (75.9 per cent), while the highest rate of instrumental delivery was among residents of South Eastern Sydney Area (16.0 per cent). The caesarean section rate varied from 14.8 per cent among mothers resident in the South Western Sydney Area to 23.7 per cent in the Northern Sydney Area.

The highest rates of low birth weight occurred in the Far West Area (9.0 per cent) and the lowest rate occurred in the Southern Area (4.6 per cent). The highest rate of preterm birth was in the Hunter (8.4 per cent). The lowest rate was 4.4 per cent in the Southern Area, which may result from referral of high risk pregnancies to the ACT.

The perinatal mortality rate in 1998 was 9.4 per 1,000 births. The rate varied from 5.0 per 1,000 in the Greater Murray Area to 16.0 per 1,000 in the Far West Area.

### Aboriginal and Torres Strait Islander mothers and babies

In 1998, there were 2,068 babies born to Aboriginal/Torres Strait Islander mothers, 2.4 per cent of all babies born in NSW. About two thirds of Aboriginal/Torres Strait Islander mothers who gave birth in 1998 lived in rural areas. One quarter lived in the New England or Macquarie Areas. About one in five Aboriginal/Torres Strait Islander mothers were teenagers.

In 1998, 87.3 per cent of Aboriginal/Torres Strait Islander mothers were booked into the hospital of birth. This is lower than the 98.3 per cent of non-Aboriginal/Torres Strait Islander mothers who were booked into the hospital of birth in 1998.

In 1998, 66.3 per cent of Aboriginal/Torres Strait Islander mothers commenced antenatal care before 20 weeks gestation compared with 85.4 per cent of non-Aboriginal/Torres Strait Islander mothers.

Following statewide trends, the rate of induction of labour among Aboriginal/Torres Strait Islander mothers increased from 15.7 to 19.6 per cent between 1994 and 1998, while the rate of spontaneous onset of labour decreased from 77.3 to 71.8 per cent. However, the rate of induction of labour among Aboriginal/Torres Strait Islander mothers continued to be lower than the statewide rate, which was 24.2 per cent in 1998. Also following statewide trends, the caesarean section rate increased from 15.7 per cent in 1994 to 17.3 per cent in 1998.

Since 1994, the rates of low birth weight (less than 2,500 grams) and prematurity (less than 37 weeks gestation) in Aboriginal/Torres Strait Islander babies has been over 10 per cent. These rates are about one and a half times higher than the rates for NSW overall. The perinatal mortality rate in babies born to Aboriginal/Torres Strait Islander mothers was 15.5 per 1,000 in 1998, about twice the rate of 9.4 per 1,000 for NSW overall.

#### **Maternal country of birth**

Between 1994 and 1998, about 20 per cent of mothers were born in non-English speaking countries. The proportion of mothers from Asian countries increased slightly from 9.2 to 10.1 per cent, while the proportion of mothers from southern European countries decreased slightly from 2.0 to 1.6 per cent.

In 1998, the proportion of mothers born in non-English speaking countries was highest in the Central Sydney Area (45.4 per cent), followed by the South Western Sydney and Western Sydney Areas (36.4 and 35.3 per cent respectively).

Births to teenage mothers were less common among mothers born in non-English speaking countries than among mothers born in English speaking countries, as was smoking in pregnancy.

In 1998, 84.9 per cent of all mothers commenced antenatal care before 20 weeks gestation. There was some variation between country of birth groups, with 86.9 per cent of mothers born in English speaking countries commencing antenatal care before 20 weeks gestation, compared with 55.8 per cent of mothers born in Melanesia, Micronesia and Polynesia and 68.4 per cent of mothers born in the Middle East and Africa.

Mothers born in non-English speaking countries were more likely to have a spontaneous onset of labour than mothers born in English speaking countries and less likely to be induced.

Mothers born in Melanesia, Micronesia and Polynesia and the Middle East and Africa were more likely to have a normal vaginal delivery than mothers in other country of birth groups. The highest caesarean section rates were in mothers born in Central and South America (23.9 per cent).

The highest rate of low birth weight was in babies of mothers born in Southern Asian countries (9.0 per cent). Babies of mothers born in Central and South America and North East Asia were least likely to be low birth weight.

The highest rate of prematurity was in babies of mothers born in Melanesia, Micronesia and Polynesia (7.8 per cent) and Southern Europe (7.7 per cent). Babies of mothers born in Central and South America or Western and Northern Europe were least likely to be premature.

Babies of mothers born in Melanesia, Micronesia and Polynesia were far more likely than other country of birth groups to be stillborn or die in the neonatal period, though the total number of perinatal deaths in this group is small.

#### **Neonatal Intensive Care**

There were 1,899 infants registered in the Neonatal Intensive Care Units' Data Collection in 1998 representing a registration rate of 21.0 per 1,000 live births. Sixty-two (3.3 per cent) infants registered in 1998 were born to Aboriginal/Torres Strait Islander mothers.

The 1,899 infants were born to 1,768 mothers. The age of mothers ranged from 12 to 45 years with a mean age of 29 years. Antenatal complications were reported for 86.1 per cent of mothers. The proportion of women receiving antenatal corticosteroids for lung maturation has increased each year since 1992, with 70.2 per cent of mothers receiving steroids in 1998.

Thirty three per cent of infants registered in 1998 were born following a booked tertiary centre birth. Thirty three per cent were transferred to a tertiary centre following birth and 11 per cent were transferred from one tertiary centre to another immediately after birth.

Boys comprised 58.5 per cent of the 1998 cohort and girls 41.5 per cent. Most infants (82.5 per cent) were from a singleton pregnancy, 16.0 per cent were from a twin pregnancy and 1.3 per cent were from a triplet pregnancy.

During 1998, 74.4 per cent of infants registered were preterm (less than 37 weeks gestation), 46.1 per cent were very preterm (less than 32 weeks) and 15.1 per cent were extremely preterm (less than 28 weeks). One in six (16.9 per cent) infants had a major or minor congenital anomaly.

Infants with major congenital anomalies were excluded from the analysis of mortality and morbidity. The majority of infants registered in 1998 (89.9 per cent) received assisted ventilation (intermittent mandatory ventilation or continuous positive airways pressure ventilation). The main indication for assisted ventilation varied with gestational age: respiratory distress syndrome, immature lung and transient tachypnoea were more common among the preterm groups, whereas meconium aspiration and perinatal asphyxia were more common in term infants.

Proven systemic infection was present in 22.9 per cent of all infants and necrotising enterocolitis in 4.6 per cent. Among babies less than 37 weeks gestation, intraventricular haemorrhage was present in 16.6 per cent, 14.7 per cent of infants were treated for patent ductus arteriosus, and 4.2 per cent had major surgery. Severe grades (Grade 3 or 4) of retinopathy of prematurity were present in 5.0 per cent of infants less than 32 weeks gestation, of

whom 57.8 per cent had either cryo or laser therapy to prevent retinal detachment. Surfactant was given to 51.8 per cent of infants; the majority (74.3 per cent) of ventilated infants with a diagnosis of Respiratory Distress Syndrome received surfactant.

Overall, 92.5 per cent of infants without a major congenital anomaly survived to six months of age. Survival improved with gestational age up to 34 weeks after which it decreased slightly. Of the infants who died, most (63.0 per cent) died at less than one week of age and a further 21.0 per cent died at less than 29 days of age. The six-month survival rate for infants born at 22 to 27 weeks gestation was higher for those born in a tertiary centre (75.4 per cent) compared with those born in a non-tertiary centre (45.8 per cent). Among infants born at higher gestational ages the proportion surviving to six months of age was similar for those born in a tertiary centre and those born in a non-tertiary centre.

### **Birth defects**

About 2,000 infants are born with birth defects each year in NSW, and for about half of these infants the malformation is detected after birth. Over the period 1992-98, defects of the cardiovascular system were most commonly reported, followed by defects of the musculoskeletal system and defects of the genitourinary system. The number of infants born with neural tube defects slowly decreased from 80 in 1992 to 51 in 1997. There was no trend in the number of reported terminations of pregnancy associated with neural tube defects. As terminations of pregnancy were reported on a voluntary basis until 1997, it is likely that these are under-reported to the Register.

Between 1992 and 1998, there was no trend observed in the number of infants born nor the number of terminations of pregnancy for chromosomal abnormalities. Similarly, there was no trend observed in the number of Down syndrome cases, which comprise about half of all cases with chromosomal abnormalities.

In 1998, the number of reported terminations of pregnancy associated with birth defects was 151. Almost half the reported terminations are associated with chromosomal defects, most commonly Down Syndrome, and about one in five with neural tube defects.

Birth defects were more common among premature infants compared to full term infants; and among male infants compared to female infants. The rate of birth defects increases with increasing maternal age, especially after age 35. However, as most babies are born to mothers aged less than 35 years, the majority of babies with birth defects were born to younger mothers.

## **DATA SOURCES**

### **The New South Wales Midwives Data Collection**

The New South Wales Midwives Data Collection (MDC) is a population-based surveillance system covering all births in NSW public and private hospitals, as well as homebirths. It encompasses all livebirths and stillbirths of at least 20 weeks gestation or at least 400 grams birth weight.

The MDC relies on the attending midwife to complete a notification form when a birth occurs. The form, a copy of which is shown at Appendix 4, includes demographic items and items on maternal health, the pregnancy, labour, delivery and perinatal outcomes. Completed forms are sent to the Patient Data Management Unit of the Information Management and Clinical Systems Branch of the NSW Health Department, where they are compiled into the MDC database.

The MDC receives notifications of women whose usual place of residence is outside NSW but who give birth in NSW. However, the MDC does not receive notifications of births outside NSW to women usually resident in NSW.

### **The Neonatal Intensive Care Units' Data Collection**

The Neonatal Intensive Care Units' (NICUS) Data Collection is a statewide audit of infants admitted to neonatal intensive care units in New South Wales (NSW) and the Australian Capital Territory (ACT) during the neonatal period for one of the following reasons:

- ♦ gestational age less than 29 weeks;
- ♦ gestational age less than 32 weeks (since 1/1/94);
- ♦ birth weight less than 1,000 grams;
- ♦ birth weight less than or equal to 1,500 grams (since 1/1/94);
- ♦ mechanical ventilation for four hours or more;
- ♦ continuous positive airways pressure (CPAP) for four hours or more; or
- ♦ major surgery (opening of a body cavity).

In 1998 the ten neonatal intensive Care units in NSW and ACT were situated at the following perinatal centres: John Hunter Children's Hospital - Newcastle, King George V Hospital, Liverpool Health Service (joined 12/10/94), Nepean Hospital, Royal Hospital for Women, Royal North Shore Hospital, The Canberra Hospital - Woden Valley (joined 1/1/95), Westmead Hospital, and at the two paediatric hospitals: Sydney Children's Hospital and Royal Alexandra Hospital for Children.

The neonatal, maternal and perinatal data which comprise the NICUS Data Collection are collected and collated within each neonatal intensive care unit by a designated Clinical Audit Officer. The data are compiled into a database located at the NSW Centre for Perinatal Health Services Research, University of Sydney.

### **The New South Wales Birth Defects Register**

The NSW Birth Defects Register (BDR) is a population-based surveillance system established to monitor birth defects detected during pregnancy or at birth, or diagnosed in infants up to one year of age. The BDR was established in 1990. It is administered by the Epidemiology and Surveillance Branch of the NSW Health Department and located at the NSW Centre for Perinatal Health Services Research, University of Sydney.

The activities of the BDR include: annual publication of information on birth defects in NSW; provision of information to Area Health Services to assist in service planning and monitoring of child health, and investigation of specific issues; provision of information in response to specific requests from the public, health professionals, and other government departments; and provision of data to the AIHW National Perinatal Statistics Unit (NPSU) for monitoring of birth defects at a national level. The NPSU is also responsible for providing Australian information on birth defects to the International Clearinghouse for Birth Defects Monitoring Systems, a Non-Governmental Organisation of the World Health Organisation.

Sources of notifications to the BDR include: The NSW Midwives Data Collection (MDC), specialist paediatric hospitals, cytogenetic laboratories and individual health care providers. The BDR is supported by an Advisory Committee, comprising a panel of clinical experts representing the following specialities: genetics, dysmorphology, neonatology, obstetrics and gynaecology, bioethics and epidemiology; and a community representative from the Association of Genetic Support of Australasia.

Data for research purposes may be provided in two formats: aggregate information similar to that contained in this report, and data concerning individuals with identifying information removed. All requests for data should be submitted in writing to the Director, Epidemiology and Surveillance Branch. Requests for data concerning individuals for sufficiently important research purposes will be referred to the Statewide Health Confidentiality and Ethics Committee. Procedures for release of personal information are described in the Department's Information Privacy: Code of Practice, copies of which are available from the Department's Information and Data Services Branch on (02) 9391 9091 or through the NSW Health Department's World Wide Web site at <http://www.health.nsw.gov.au>.

### **The NSW Inpatient Statistics Collection**

For this report data from the NSW Inpatient Statistics Collection (ISC) was linked to MDC data to produce information on postnatal length of stay in NSW Hospitals.

The ISC covers demographic and episode related data in respect of every inpatient who is separated from any Public, Private, and Repatriation Hospital, Private Day Procedure Centre or Public Nursing Home in NSW. Separation can result from discharge, transfer, death, or change in service category. The ISC is maintained by the NSW Health Department's Information Management and Clinical Systems Branch.

### **Maternal deaths**

Maternal and perinatal deaths are reported by hospitals to the NSW Health Department's Epidemiology and Surveillance Branch. The NSW Maternal and Perinatal Committee, an advisory committee appointed by the Minister for Health, reviews each death to identify any possible avoidable factors and to determine whether the death was related to pregnancy (or its management) or whether it was incidental.

The information obtained from these reviews assists in the development of policies aimed at improving the health of mothers and newborns in NSW. Information considered by the Committee is confidential.

## **DEFINITIONS**

The following definitions refer to terms used in the text and tables of this report.

### **Aboriginal and/or Torres Strait Islander**

Includes all women who identify themselves to be of Australian Aboriginal and/or Torres Strait Islander heritage.

### **Amniocentesis**

The sampling of the amniotic fluid to help determine foetal maturity or disease, by aspiration of the fluid through the mother's abdomen.

### **Apgar score**

A numerical scoring system routinely administered one and five minutes after birth to evaluate the condition of the baby. The score ranges from 0 to 10 (10 being perfect).

It takes account of five physical signs, each of which is assigned a component score of 0, 1 or 2: heart rate, respiration, muscle tone, reflexes and colour.

### **Augmentation**

Artificial rupture of the membranes or use of oxytocic drugs after spontaneous onset of labour (excludes induced labour).

### **Birth defect**

Any structural defect or chromosomal abnormality detected during pregnancy, at birth, or in the first year of life excluding birth injuries and minor anomalies such as skin tags, talipes, birthmarks or clefty hips.

A list of common exclusions used by the NSW Birth Defects Register is shown in Appendix 1 and descriptions of some of the birth defects included in this report are shown in Appendix 2. From 1994, the following additional conditions were included in the NSW Birth Defects Register: congenital hypothyroidism, cystic fibrosis, phenylketonuria and thalassaemia major.

### **Birth weight**

The newborn infant's first bare weight in grams, obtained soon after birth.

*Low birth weight:* birth weight less than 2,500 grams.

*Very low birth weight:* birth weight less than 1,500 grams.

*Extremely low birth weight:* birth weight less than 1,000 grams.

### **Caesarean section**

Delivery of the fetus through an abdominal incision.

*Elective caesarean section:* a caesarean section (planned or unplanned) performed before the onset of labour.

*Emergency caesarean section:* a caesarean section performed after the onset of labour, whether or not the onset of labour was spontaneous.

**Confinement**

Refers to a woman having given birth. Note: with a multiple pregnancy, one confinement will result in more than one birth.

**Congenital anomaly**

See Birth defect.

**Country of birth**

The mother's country of birth.

**CVS**

Chorionic villus sampling (CVS) is the aspiration of a sample of chorionic tissue for biochemical and chromosome analysis.

**Epidural**

Injection of analgesic agent outside the dura mater which covers the spinal canal; includes lumbar, spinal and epidural anaesthetics.

**Episiotomy**

An incision of the perineum and vagina to enlarge the vulval orifice.

**Gestational age**

The duration of pregnancy in completed weeks from the first day of the last normal menstrual period. Where accurate information on the date of the last menstrual period is not available, a clinical estimate of gestational age may be obtained from ultrasound during the first half of pregnancy or by examination of the newborn infant. The 'best estimate' is used here.

**Induction of labour**

*Oxytocics/prostaglandins*: the initiation of labour by the use of drugs (oral, intravaginal or intravenous) such as oxytocic agents, prostaglandins, or their derivatives (medical induction).

*ARM only*: the initiation of labour by artificial rupture of membranes (surgical induction).

*Oxytocics/prostaglandins and ARM*: both medical and surgical induction as defined above (combined medical/surgical induction).

**Intraventricular haemorrhage (IVH)**

Worst level of intraventricular haemorrhage (IVH) seen on either right or left side by either ultrasound or post-mortem examination.

*None*: ultrasound / post-mortem shows no haemorrhage

*Grade 1*: subependymal germinal matrix haemorrhage.

*Grade 2*: intraventricular haemorrhage with no ventricular dilatation

*Grade 3*: intraventricular haemorrhage with ventricle distended with blood.

*Grade 4*: intraparenchymal haemorrhage.

*Not examined*: by ultrasound or post-mortem.

**Live birth**

The complete expulsion or extraction from its mother of a baby of at least 400 grams or 20 weeks gestation who, after being born, breathes or shows any evidence of life such as a heartbeat.

**Major surgery**

Any surgery which requires opening of a body cavity.

**Mechanical ventilation**

The use of a mechanical ventilator to provide intermittent positive pressure respiration for a baby for four hours or more.

**Necrotising enterocolitis (NEC)**

*Clinically diagnosed*: received treatment for NEC (includes suspending feeds, blood cultures and treatment with antibiotics such as clindamycin/gentamycin).

*Proven radiologically or at operation*: radiological signs include intra-mural or intra-hepatic air, perforation or a 'fixed loop'.

**Neonatal death**

The death of a live born infant within 28 days of birth.

**Neonatal period**

The first 28 completed days of life.

**Neonatal mortality rate**

The number of neonatal deaths per 1,000 live births.

**Patent ductus arteriosus (PDA)**

Clinical signs of PDA such as typical murmur, active precordium, bounding pulses, cardiomegaly, or pulmonary vascular congestion on X-ray. May be confirmed on ultrasound examination.

**Parity**

The total number of livebirths and stillbirths of the mother before the pregnancy or birth under consideration.

**Perinatal death**

A stillbirth or neonatal death.

**Perinatal mortality rate**

The number of perinatal deaths (stillbirths and neonatal deaths) per 1,000 total births in a year (livebirths and stillbirths combined).

**Plurality**

The number of fetuses or babies from the pregnancy. On this basis pregnancy may be classified as single or multiple.

**Premature infant**

An infant born before 37 completed weeks gestation.

### **Premature labour**

The spontaneous onset of labour (regular painful contractions with progressive cervical changes) before 37 completed weeks of gestation.

### **Prolonged rupture of membranes**

The spontaneous rupture of membranes for at least 24 hours before the onset of regular contractions with cervical dilatation.

### **Retinopathy of prematurity**

Worst stage of retinopathy of prematurity (ROP) in either eye during the initial hospital admission.

None seen:	no changes seen
Stage I:	demarcation line present
Stage II:	ridge present
Stage III:	ridge with extra-retinal fibrovascular proliferation
Stage IV:	retinal detachment

### **Systemic infection in the infant**

Clinical or radiological signs of infection together with growth of a known pathogen from a systemic site - does not include tracheal aspirate.

### **Transfer (NICUS only)**

Maternal transfer before birth (prenatal): the transfer of a pregnant woman to a tertiary obstetric hospital.

Neonatal transfer after birth (postnatal): the transfer of an infant from the hospital of birth to a tertiary NICU.

### **Spontaneous abortion**

The spontaneous expulsion of a fetus less than 20 weeks gestation and less than 400 grams birth weight.

### **Stillbirth**

The complete expulsion or extraction from its mother of a product of conception of at least 20 weeks gestation or 400 grams birth weight who did not, at any time after delivery, breathe or show any evidence of life such as a heartbeat.

### **Termination of pregnancy**

A procedure intentionally performed to terminate a pregnancy before 20 completed weeks gestation.

### **Third degree tear**

A perineal laceration or tear, passing through the anal sphincter and involving the anal canal.

## **EXPLANATORY NOTES**

### **Antenatal complications (NICUS)**

These specifically include antepartum haemorrhage, placenta praevia, placenta abruptio, prolonged rupture of membranes, gestational diabetes, threatened preterm labour, hypertensive disease of pregnancy and rhesus isoimmunisation. There is also an open-ended 'other antenatal complications' option. The most common problems specified in this option are cervical incompetence, polyhydramnios, oligohydramnios, chorioamnionitis, threatened miscarriage and problems secondary to multiple pregnancy.

### **Rates of birth defects**

The BDR collects data pertaining to birth defects regardless of the outcome of pregnancy. This includes notifications of livebirths, stillbirths, terminations of pregnancy and spontaneous abortions. Birth defect rates are calculated using births (ie. livebirths and stillbirths) as the denominator, because denominator populations for pregnancies less than 20 weeks gestation are unknown. The numerators are described in the relevant sections.

The source of denominator population data on births is the MDC. The MDC was selected because its definitions are consistent with those applied by the BDR.

Denominator populations compatible with the BDR were derived from the MDC by including only those births which occurred to NSW residents.

Caution should be exercised when comparing the birth defect rates tabled in this document with those reported within the NPSU's Congenital Malformations Australia Report. This report covers birth defects detected during pregnancy and up to one year of age while the Congenital Malformations Australia Report covers birth defects detected during pregnancy and up to 28 days of life.

Variations in data published by the BDR and interstate birth defects registers may be due to differences in coding practices, in categories of birth defects included in each Register and differences in the upper age limit for notification of cases.

### **Place of residence of mother**

The mother's usual residence was the basis for coding to statistical local areas and NSW Health Areas.

### **Labour**

The category "labour - spontaneous with oxytocics/prostaglandins" was used where labour was augmented with artificial rupture of membranes as well as oxytocics or prostaglandins.

## Levels of neonatal care

### *Tertiary*

*Level 3:* Neonatal Intensive Care Unit (NICU) - a unit that provides high-dependency specialist nursing and medical care for all newborn infants including sustained "life support" such as mechanical ventilation and has staff neonatologists and neonatal registrars.

### *Non-tertiary*

*Level 2a:* Neonatal Care - a unit which can give high-level oxygen, can start mechanical ventilation if necessary and has paediatric house staff.

*Level 2b:* Neonatal Care - a unit which can give low-level oxygen and has a paediatrician on call.

## Level of obstetric hospitals

*Level 1:* local hospitals (no births), postnatal only.

*Level 2:* small isolated hospitals, low-risk births only. Staffed by general practitioners and midwives.

*Level 3:* country district and smaller metropolitan hospitals, care for mothers and infants at low/moderate risk. Full resuscitation and theatre facilities available. Rostered obstetricians, resident medical staff and midwives. Accredited general practitioners/specialist anaesthetist on call. Has level 2b neonatal care.

*Level 4:* country base/metropolitan district hospitals. Delivery and care for mothers and/or babies with moderate risk factors. Obstetricians and paediatrician available 24 hours a day, seven days a week. Rostered resident medical staff, specialist anaesthetist on call. Has level 2b neonatal care.

*Level 5:* country base/metropolitan district hospitals, care for mothers and infants known to be at high risk. Able to cope with complications arising from these risk factors. Has level 2a neonatal care.

*Level 6:* (tertiary) - specialist obstetric hospitals (supra regional). All functions - low, moderate and high-risk births. Has level 3 neonatal intensive care.

## No labour

The "no labour" category was used where an elective caesarean section was carried out, i.e. a caesarean section before the onset of spontaneous labour.

## Presentation

The "other" category contains presentation types such as transverse or oblique lie and compound presentation.

## Type of delivery

The "vaginal breech" category covers all forms of vaginal breech delivery, including forceps to the after-coming head.

## Maternal medical conditions

*MDC:* Four tick box categories were listed on the MDC form for existing maternal medical conditions: diabetes mellitus, gestational diabetes, chronic hypertension and pre-eclampsia.

## Obstetric complications

Eight tick box categories of obstetric complications are listed on the MDC: antepartum haemorrhage (due to placenta praevia, abruptio placentae or other causes), pregnancy induced hypertension, gestational diabetes, prolonged rupture of membranes, threatened premature labour and blood group isoimmunisation.

## Perinatal mortality rate

Birth and perinatal death registration data provided by the Australian Bureau of Statistics (ABS) give the most complete ascertainment of perinatal deaths for calculation of rates. However, the definition of a stillbirth or perinatal deaths used by the MDC differs from that of the Australian Bureau of Statistics (ABS). Calculated rates based on MDC data are therefore not comparable with those published by the ABS.

## ACKNOWLEDGEMENTS

The New South Wales Midwives Data Collection, depends entirely on the State's midwives who provide information on each birth. We gratefully acknowledge their contribution.

We thank the Directors, Neonatologists and Clinical Audit Officers of the 10 neonatal intensive care units and the liaison officers representing all of the obstetric hospitals in NSW and ACT who have provided maternal and neonatal data to the Neonatal Intensive Care Units' Data Collection. Finally and not least, the families who participated in the study are acknowledged and thanked for their continued patience and support.

We would like to thank all those who have contributed to the NSW Birth Defects Register since its establishment in 1990. The Register is dependent on families, health care institutions and individual health care providers for the supply of information about birth defects. We gratefully acknowledge their support.

We thank health information managers in hospitals throughout NSW for their cooperation and assistance. The staff of the medical record departments at The New Childrens Hospital, The Sydney Children's Hospital and The John Hunter Hospital have also provided much assistance to the NSW Birth Defects Register.

We would also like to express our appreciation to members of the NSW Maternal and Perinatal Committee and the NSW Birth Defects Register Advisory Committee for their advice and support.

This report was generated using HOIST (Health Outcomes Information and Statistical Toolkit) which is developed and maintained by Tim Churches and Devon Indig of the Health Department's Epidemiology and Surveillance Branch. We would like to thank Ms Kim Lim for her assistance with data management.

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# PART 1: TRENDS IN NEW SOUTH WALES

## 1.1 CONFINEMENTS AND BIRTHS BY PLURALITY

The number of births per year has remained fairly stable over the past 5 years (Table 1). There were 86,305 births to 85,072 women reported to the MDC for 1998. Of the 85,072 confinements reported in 1998, 1,174 (1.4 per cent) were for twins, 28 for triplets and one for quadruplets.

**TABLE 1**

**BIRTHS AND CONFINEMENTS BY PLURALITY, NSW 1994-98**

Plurality	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Confinements</b>										
Singleton	85523	98.6	85155	98.7	84201	98.7	85740	98.6	83869	98.6
Twins	1185	1.4	1088	1.3	1076	1.3	1147	1.3	1174	1.4
Triplets	30	0.0	20	0.0	24	0.0	32	0.0	28	0.0
Quadruplets	0	0.0	0	0.0	1	0.0	1	0.0	1	0.0
<b>TOTAL</b>	<b>86738</b>	<b>100.0</b>	<b>86263</b>	<b>100.0</b>	<b>85302</b>	<b>100.0</b>	<b>86920</b>	<b>100.0</b>	<b>85072</b>	<b>100.0</b>
<b>Births</b>										
Singleton	85524	97.2	85155	97.4	84201	97.4	85740	97.3	83869	97.2
Twins	2370	2.7	2176	2.5	2152	2.5	2293	2.6	2348	2.7
Triplets	90	0.1	60	0.1	72	0.1	96	0.1	84	0.1
Quadruplets	0	0.0	0	0.0	4	0.0	4	0.0	4	0.0
<b>TOTAL</b>	<b>87984</b>	<b>100.0</b>	<b>87391</b>	<b>100.0</b>	<b>86429</b>	<b>100.0</b>	<b>88133</b>	<b>100.0</b>	<b>86305</b>	<b>100.0</b>

Source: NSW Midwives Data Collection, Epidemiology and Surveillance Branch, NSW Health Department.

## 1.2 HEALTH AREA OF RESIDENCE

The number of mothers giving birth in most Health Areas remained fairly stable over the last five years (Table 2). The largest increases occurred in the South Eastern Sydney and Western Sydney Areas. There was a decrease in births reported in the Greater Murray Area in 1998 due to the closure of the obstetric unit at the Mercy Care Centre Albury, in June 1998 and referral of women to Wodonga Hospital in Victoria.

**TABLE 2**

**CONFINEMENTS BY AREA HEALTH SERVICE OF RESIDENCE, NSW 1994-98**

Health Area	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Central Sydney	6919	8.0	6553	7.6	6839	8.0	6657	7.7	6574	7.7
Northern Sydney	8658	10.0	8634	10.0	8552	10.0	8985	10.3	8824	10.4
Western Sydney	10094	11.6	10225	11.9	10250	12.0	10559	12.1	10541	12.4
Wentworth	5094	5.9	4811	5.6	4836	5.7	4827	5.6	4825	5.7
South Western Sydney	11957	13.8	12198	14.1	12034	14.1	12511	14.4	12050	14.2
Central Coast	3754	4.3	3795	4.4	3677	4.3	3792	4.4	3736	4.4
Hunter	7232	8.3	7105	8.2	6997	8.2	7034	8.1	6875	8.1
Illawarra	4629	5.3	4522	5.2	4320	5.1	4434	5.1	4350	5.1
South Eastern Sydney	8660	10.0	8861	10.3	8706	10.2	9148	10.5	9135	10.7
Northern Rivers	2873	3.3	2994	3.5	2956	3.5	2963	3.4	2941	3.5
Mid North Coast	3082	3.6	3028	3.5	3038	3.6	3073	3.5	2954	3.5
New England	2530	2.9	2536	2.9	2472	2.9	2463	2.8	2381	2.8
Macquarie	1637	1.9	1688	2.0	1734	2.0	1595	1.8	1589	1.9
Mid Western	2425	2.8	2425	2.8	2355	2.8	2437	2.8	2339	2.7
Far West	594	0.7	602	0.7	568	0.7	600	0.7	556	0.7
Greater Murray	3743	4.3	3524	4.1	3440	4.0	3357	3.9	2946	3.5
Southern	2143	2.5	2023	2.3	1812	2.1	1776	2.0	1782	2.1
Other/Not stated	714	0.8	739	0.9	716	0.8	709	0.8	674	0.8
<b>TOTAL</b>	<b>86738</b>	<b>100.0</b>	<b>86263</b>	<b>100.0</b>	<b>85302</b>	<b>100.0</b>	<b>86920</b>	<b>100.0</b>	<b>85072</b>	<b>100.0</b>

Source: NSW Midwives Data Collection Epidemiology and Surveillance Branch, NSW Health Department.

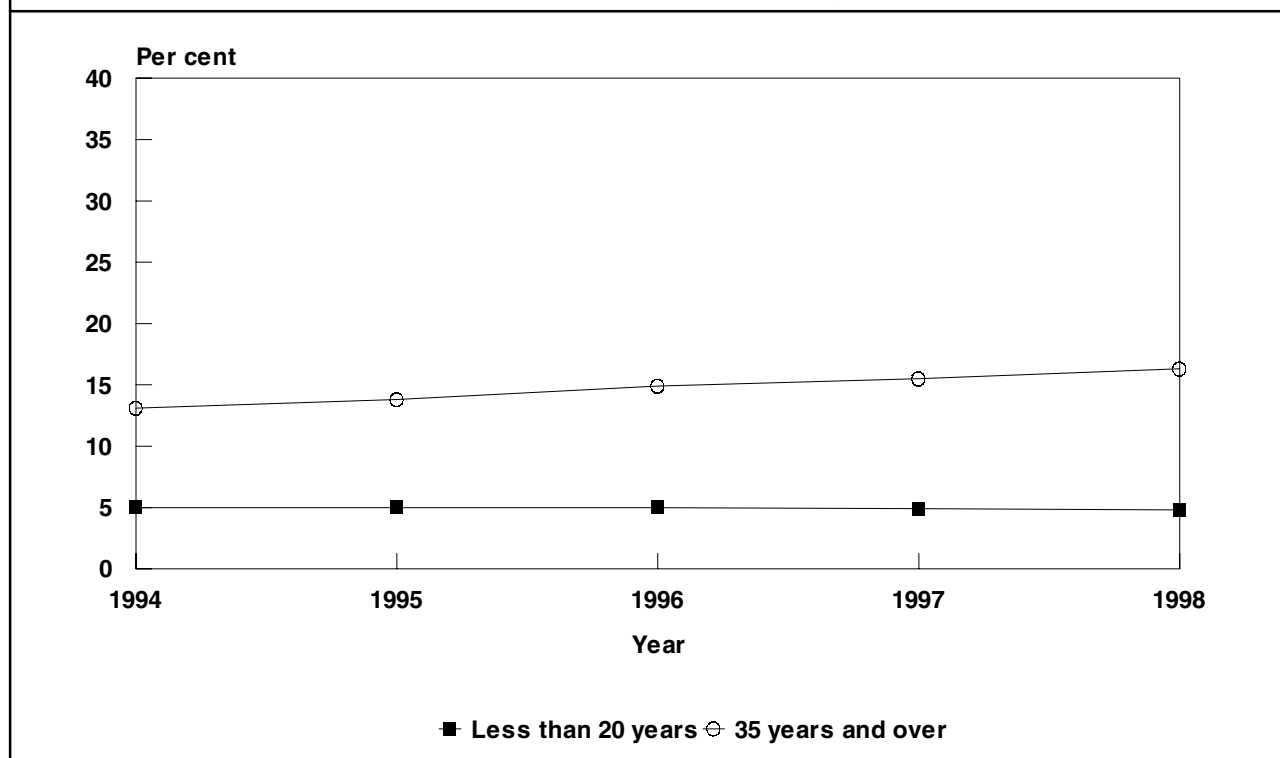
### 1.3 MATERNAL AGE

The number of teenage mothers decreased from 4,370 in 1994 to 4,118 in 1998 (Figure 1, Table 3).

The number of mothers 35 years of age or over giving birth increased from 11,358 in 1994 to 13,839 in 1998, an increase

from 13.1 to 16.3 per cent of all confinements. The trend towards later childbirth is evident among both primiparous and multiparous mothers: the proportion of mothers aged 35 years or more who gave birth for the first time increased from 7.1 to 9.7 per cent over the five year period, and the proportion of multiparous mothers increased from 17.0 to 20.7 per cent.

**FIGURE 1**  
CONFINEMENTS AMONG MOTHERS AGED LESS THAN 20 YEARS AND 35 YEARS AND OVER, NSW 1994-98



Source: NSW Midwives Data Collection Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 3**  
CONFINEMENTS BY MATERNAL AGE, NSW 1994-98

Maternal age (years)	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
12-19	4370	5.0	4349	5.0	4295	5.0	4291	4.9	4118	4.8
20-34	70892	81.7	69976	81.1	68239	80.0	69114	79.5	67034	78.8
35+	11358	13.1	11906	13.8	12712	14.9	13465	15.5	13839	16.3
Not stated	118	0.1	32	0.0	56	0.1	50	0.1	81	0.1
TOTAL	86738	100.0	86263	100.0	85302	100.0	86920	100.0	85072	100.0

Source: NSW Midwives Data Collection Epidemiology and Surveillance Branch, NSW Health Department.

## 1.4 MATERNAL COUNTRY OF BIRTH

In the period 1994-98, almost three-quarters of confinements were to mothers who were born in Australia. The trend over recent years towards increasing numbers of confinements to mothers born in Asian countries stabilised in 1998. Numbers of confinements to mothers born in European countries continued to decline while confinements to mothers born in Pacific Island countries increased steadily over the five year period (Table 4). Further information on maternal country of birth is shown in Part 4.

**TABLE 4**

**CONFINEMENTS BY MATERNAL COUNTRY OF BIRTH, NSW 1994-98#**

Country of birth	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Australia	63758	73.5	63619	73.8	62301	73.0	63287	72.8	62600	73.6
United Kingdom	3086	3.6	2850	3.3	2707	3.2	2593	3.0	2471	2.9
Lebanon	2299	2.7	2153	2.5	2042	2.4	1983	2.3	1942	2.3
China	1562	1.8	1649	1.9	1950	2.3	2111	2.4	1892	2.2
New Zealand	1814	2.1	1821	2.1	1790	2.1	1826	2.1	1762	2.1
Vietnam	1658	1.9	1828	2.1	1865	2.2	1853	2.1	1462	1.7
Philippines	1163	1.3	1245	1.4	1266	1.5	1275	1.5	1308	1.5
Former Yugoslavia	698	0.8	746	0.9	689	0.8	714	0.8	659	0.8
Fiji	585	0.7	577	0.7	602	0.7	603	0.7	640	0.8
India	555	0.6	587	0.7	576	0.7	673	0.8	634	0.7
Hong Kong	669	0.8	676	0.8	659	0.8	531	0.6	433	0.5
Indonesia	313	0.4	312	0.4	381	0.4	398	0.5	424	0.5
South Korea	291	0.3	299	0.3	261	0.3	308	0.4	370	0.4
Iraq	147	0.2	164	0.2	234	0.3	326	0.4	360	0.4
Western Samoa	163	0.2	276	0.3	280	0.3	312	0.4	349	0.4
Turkey	358	0.4	367	0.4	376	0.4	364	0.4	340	0.4
United States of America	331	0.4	317	0.4	322	0.4	330	0.4	340	0.4
South Africa	271	0.3	263	0.3	310	0.4	349	0.4	329	0.4
Tonga	224	0.3	272	0.3	263	0.3	292	0.3	312	0.4
Ireland	269	0.3	274	0.3	276	0.3	275	0.3	280	0.3
Sri Lanka	225	0.3	256	0.3	274	0.3	279	0.3	276	0.3
Malaysia	309	0.4	299	0.3	308	0.4	307	0.4	259	0.3
Japan	199	0.2	228	0.3	215	0.3	226	0.3	239	0.3
Cambodia	290	0.3	325	0.4	311	0.4	305	0.4	238	0.3
Italy	353	0.4	312	0.4	285	0.3	272	0.3	230	0.3
Chile	222	0.3	242	0.3	220	0.3	209	0.2	214	0.3
Egypt	250	0.3	236	0.3	254	0.3	253	0.3	202	0.2
Pakistan	96	0.1	98	0.1	137	0.2	202	0.2	200	0.2
Thailand	148	0.2	164	0.2	166	0.2	186	0.2	194	0.2
Germany	224	0.3	176	0.2	208	0.2	213	0.2	187	0.2
Canada	162	0.2	160	0.2	170	0.2	155	0.2	177	0.2
Syria	139	0.2	151	0.2	154	0.2	141	0.2	143	0.2
Greece	234	0.3	203	0.2	174	0.2	178	0.2	140	0.2
Bangladesh	53	0.1	82	0.1	94	0.1	125	0.1	140	0.2
Iran	159	0.2	158	0.2	134	0.2	147	0.2	139	0.2
Portugal	152	0.2	131	0.2	145	0.2	121	0.1	136	0.2
Papua New Guinea	120	0.1	115	0.1	130	0.2	150	0.2	131	0.2
Laos	129	0.1	135	0.2	140	0.2	133	0.2	126	0.1
Uruguay	111	0.1	119	0.1	105	0.1	102	0.1	123	0.1
France	98	0.1	98	0.1	93	0.1	85	0.1	114	0.1
Singapore	108	0.1	114	0.1	109	0.1	89	0.1	102	0.1
Poland	134	0.2	157	0.2	125	0.1	120	0.1	100	0.1
Other/Not stated	2609	3.0	2009	2.3	2201	2.6	2519	2.9	2355	2.8
TOTAL	86738	100.0	86263	100.0	85302	100.0	86920	100.0	85072	100.0

Source: NSW Midwives Data Collection, Epidemiology and Surveillance Branch, NSW Health Department.

# Countries of birth for which there were 100 or more confinements in 1998.

## 1.5 MATERNAL ABORIGINALITY

The reported number of Aboriginal or Torres Strait Islander mothers giving birth increased from 1,531 in 1994 (1.8 per cent of all mothers) to 2,043 in 1998 (2.4 per cent of all mothers) (Table 5). Part of this increase is likely to be due to an increased willingness of mothers to be identified as Aboriginal or Torres Strait Islander. Further information on maternal Aboriginality is shown in Part 3.

<b>TABLE 5</b>											
<b>CONFINEMENTS BY MATERNAL ABORIGINALITY, NSW 1994-1998</b>											
Aboriginality	1994		1995		Year 1996		1997		1998		
	No.	%	No.	%	No.	%	No.	%	No.	%	
Aboriginal and Torres Strait Islander	1531	1.8	1739	2.0	1712	2.0	1842	2.1	2043	2.4	
Non-Aboriginal or Torres Strait Islander	84917	97.9	84450	97.9	83486	97.9	84854	97.6	82787	97.3	
Not stated	290	0.3	74	0.1	104	0.1	224	0.3	242	0.3	
<b>TOTAL</b>	<b>86738</b>	<b>100.0</b>	<b>86263</b>	<b>100.0</b>	<b>85302</b>	<b>100.0</b>	<b>86920</b>	<b>100.0</b>	<b>85072</b>	<b>100.0</b>	

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 1.6 NUMBER OF PREVIOUS PREGNANCIES

In recent years there were no substantial changes in the reported number of previous pregnancies greater than 20 weeks gestation (Table 6). About 40 per cent of mothers gave birth for the first time, about 58 per cent gave birth to a second to fourth baby and less than 2 per cent reported more than 5 previous births.

<b>TABLE 6</b>											
<b>CONFINEMENTS BY NUMBER OF PREVIOUS PREGNANCIES, NSW 1994-98</b>											
Number of previous pregnancies (>20 weeks gestation)	1994		1995		Year 1996		1997		1998		
	No.	%	No.	%	No.	%	No.	%	No.	%	
0	34288	39.5	34459	39.9	34267	40.2	34984	40.2	34376	40.4	
1-4	50897	58.7	50449	58.5	49692	58.3	50451	58.0	49462	58.1	
5+	1207	1.4	1256	1.5	1237	1.5	1267	1.5	1184	1.4	
Not stated	346	0.4	99	0.1	106	0.1	218	0.3	50	0.1	
<b>TOTAL</b>	<b>86738</b>	<b>100.0</b>	<b>86263</b>	<b>100.0</b>	<b>85302</b>	<b>100.0</b>	<b>86920</b>	<b>100.0</b>	<b>85072</b>	<b>100.0</b>	

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 1.7 DURATION OF PREGNANCY AT FIRST ANTENATAL VISIT

Since 1994, the proportion of mothers starting antenatal care at 20-plus weeks gestation has been stable at about 13 per cent (Table 7).

Duration of pregnancy (weeks)	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
0-19	71485	82.4	73331	85.0	72726	85.3	73666	84.8	72257	84.9
20-plus	11760	13.6	11395	13.2	10972	12.9	11549	13.3	11410	13.4
Not stated	3488	4.0	1537	1.8	1604	1.9	1705	2.0	1405	1.7
TOTAL	86733	100.0	86263	100.0	85302	100.0	86920	100.0	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 1.8 SMOKING IN PREGNANCY

The proportion of mothers reporting any smoking during pregnancy declined slightly between 1994 and 1998: in 1994, 19,188 (22.1 per cent) mothers reported smoking in pregnancy, compared to 18,549 (21.5 per cent) in 1995, 17,957 (21.1 per cent) in 1996, 17,871 (20.6 per cent) in 1997 and 16,859 (19.8 per cent) in 1998.

Of mothers who smoked during pregnancy, only about 4 per cent stopped smoking in the second half of pregnancy and about half smoked more than 10 cigarettes per day in the second half of pregnancy (Table 8).

Cigarettes smoked in the second half of pregnancy	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
None	598	3.1	556	3.0	556	3.1	570	3.2	690	4.1
More than ten per day	9797	51.1	9542	51.4	8842	49.2	8574	48.0	8171	48.5
1 - 10 per day	8109	42.3	7928	42.7	7925	44.1	7872	44.0	7634	45.3
Smoked, amount not stated	587	3.1	511	2.8	623	3.5	833	4.7	358	2.1
Not stated	97	0.5	12	0.1	11	0.1	22	0.1	6	0.0
TOTAL	19188	100.0	18549	100.0	17957	100.0	17871	100.0	16859	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 1.9 PLACE OF BIRTH

The majority of mothers plan to give birth in a hospital labour ward and 4 to 5 per cent of mothers plan to give birth in a birth centre (Table 9, Figure 2). The reported number of mothers planning a homebirth in NSW fell from 265 in 1994 to 202 in 1997 and 1998.

**TABLE 9**

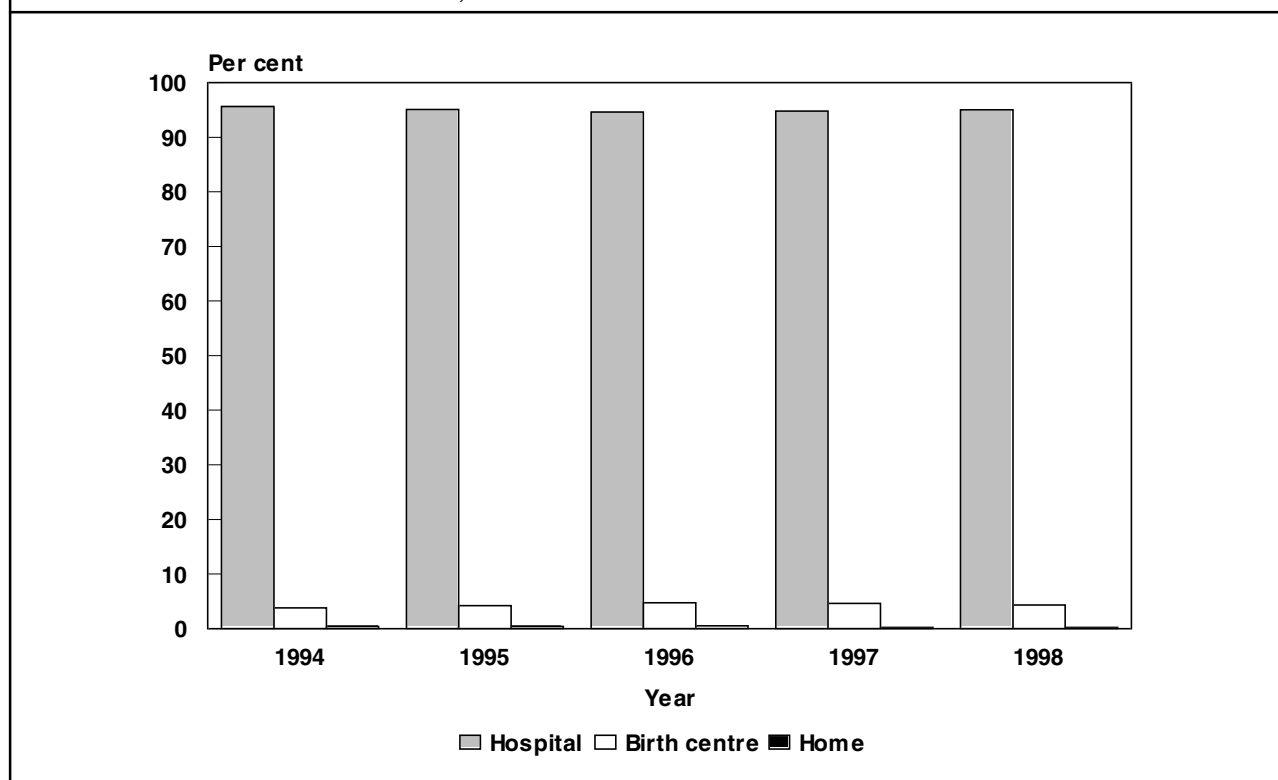
**CONFINEMENTS BY PLACE OF BIRTH, NSW 1994-98**

Place of birth	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Hospital	82893	95.6	82074	95.1	80714	94.6	82410	94.8	80835	95.0
Birth centre	2502	2.9	2741	3.2	2899	3.4	2795	3.2	2514	3.0
Planned birth centre/hospital admission	750	0.9	881	1.0	1116	1.3	1188	1.4	1154	1.4
Planned homebirth	172	0.2	179	0.2	192	0.2	159	0.2	147	0.2
Planned homebirth/hospital admission	93	0.1	90	0.1	55	0.1	43	0.0	55	0.1
Born before arrival	298	0.3	297	0.3	324	0.4	297	0.3	366	0.4
Not stated	30	0.0	1	0.0	2	0.0	28	0.0	1	0.0
TOTAL	86738	100.0	86263	100.0	85302	100.0	86920	100.0	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**FIGURE 2**

**CONFINEMENTS BY PLANNED PLACE OF BIRTH, NSW 1994-98**



Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 1.10 LABOUR AND DELIVERY

The rate of induction of labour rose from 20.2 per cent in 1994 to 24.2 per cent in 1998. About one in 10 labours were augmented with oxytocics or prostaglandins in 1998. The rate of spontaneous onset of labour fell from 70.3 to 65.5 per cent (Table 10).

The rate of normal vaginal birth has remained stable at about 70 per cent since 1994 (Table 11). The caesarean section rate increased from 17.3 to 19.0 per cent, with most of this increase

due to an increased rate of elective caesarean section. The rate of instrumental delivery remained steady at about 10.5 per cent, accompanied by a change in the pattern of instrumental delivery: the rate of vacuum extraction rose from 3.1 to 5.2 per cent and the rate of forceps delivery declined from 7.6 to 5.3 per cent.

**TABLE 10**

**CONFINEMENTS BY ONSET AND AUGMENTATION OF LABOUR, NSW 1994-98**

Onset of labour	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous	40745	47.0	40150	46.5	39891	46.8	39839	45.8	39281	46.2
Spontaneous augmented with ARM	11585	13.4	11062	12.8	10564	12.4	9764	11.2	7997	9.4
Spontaneous augmented with oxytocics/prostaglandins	8655	10.0	8961	10.4	9222	10.8	9622	11.1	8411	9.9
No labour	8067	9.3	8231	9.5	8052	9.4	8616	9.9	8800	10.3
Induced-oxytocics/prostaglandins	5304	6.1	5514	6.4	5644	6.6	5934	6.8	7893	9.3
Induced- ARM only	1637	1.9	1155	1.3	1211	1.4	1238	1.4	1462	1.7
Induced- ARM+oxytocics/prostaglandins	10546	12.2	11071	12.8	10601	12.4	11722	13.5	11069	13.0
Induced- other#	26	0.0	61	0.1	67	0.1	87	0.1	138	0.2
Not stated	173	0.2	58	0.1	50	0.1	98	0.1	21	0.0
<b>TOTAL</b>	<b>86738</b>	<b>100.0</b>	<b>86263</b>	<b>100.0</b>	<b>85302</b>	<b>100.0</b>	<b>86920</b>	<b>100.0</b>	<b>85072</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# This category includes other forms of induction such as at Foley's catheter.

**TABLE 11**

**CONFINEMENTS BY TYPE OF DELIVERY, NSW 1994-98**

Type of delivery	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Normal vaginal	61199	70.6	61215	71.0	60339	70.7	61175	70.4	59097	69.5
Forceps	6619	7.6	6083	7.1	5724	6.7	5014	5.8	4478	5.3
Vacuum extraction	2714	3.1	2943	3.4	3286	3.9	3919	4.5	4453	5.2
Vaginal breech	924	1.1	918	1.1	874	1.0	921	1.1	805	0.9
Elective caesarean section	8067	9.3	8231	9.5	8052	9.4	8616	9.9	8800	10.3
Emergency caesarean section#	6980	8.0	6818	7.9	6955	8.2	7195	8.3	7416	8.7
Not stated	235	0.3	55	0.1	72	0.1	80	0.1	23	0.0
<b>TOTAL</b>	<b>86738</b>	<b>100.0</b>	<b>86263</b>	<b>100.0</b>	<b>85302</b>	<b>100.0</b>	<b>86920</b>	<b>100.0</b>	<b>85072</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 1.11 BABY SEX

There were no significant changes in the pattern of baby sex since 1994, with slightly more male babies born than females in each year. In 1998, 44,283 (51.3 per cent) of babies were male, 41,960 (48.6 per cent) were female, 14 were of indeterminate sex, and the sex was not reported for 48 babies. This compares with babies born in 1994, when 45,200 (51.4 per cent) were male, 42,589 were female, 15 were of indeterminate sex and the sex was not reported for 180 babies.

## 1.12 GESTATIONAL AGE

There were no substantial changes in the pattern of gestational age since 1994 (Table 12). The rate of premature births (less than 37 weeks gestation) was stable at 6 to 7 per cent and was 6.9 per cent in 1998. There was no change in the proportions of babies who were very premature (less than 32 weeks) or extremely premature (less than 28 weeks).

**TABLE 12**

**BIRTHS BY GESTATIONAL AGE, NSW 1994-98**

Gestational age (weeks)	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
20-27	506	0.6	484	0.6	531	0.6	562	0.6	588	0.7
28-31	611	0.7	570	0.7	574	0.7	596	0.7	607	0.7
32-36	4541	5.2	4471	5.1	4689	5.4	4852	5.5	4758	5.5
37-41	79445	90.3	79367	90.8	78406	90.7	79987	90.8	78463	90.9
42 +	2768	3.1	2480	2.8	2187	2.5	2091	2.4	1871	2.2
Not stated	113	0.1	19	0.0	42	0.0	45	0.1	18	0.0
TOTAL	87984	100.0	87391	100.0	86429	100.0	88133	100.0	86305	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 1.13 BIRTH WEIGHT

Since 1994, the rate of low birth weight (less than 2,500 grams) was constant at about 6 per cent (Table 13). The rate was 6.1 per cent in 1998.

**TABLE 13**

**BIRTHS BY BIRTH WEIGHT, NSW 1994-98**

Birth weight (grams)	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 500	123	0.1	140	0.2	158	0.2	182	0.2	190	0.2
500-999	414	0.5	378	0.4	362	0.4	414	0.5	398	0.5
1000-1499	494	0.6	446	0.5	454	0.5	467	0.5	481	0.6
1500-1999	935	1.1	921	1.1	906	1.0	1033	1.2	1017	1.2
2000-2499	3146	3.6	3206	3.7	3158	3.7	3318	3.8	3147	3.6
2500-2999	13440	15.3	13314	15.2	13098	15.2	13487	15.3	12810	14.8
3000-3499	32013	36.4	31879	36.5	31378	36.3	31863	36.2	30974	35.9
3500-3999	27171	30.9	26835	30.7	26793	31.0	26957	30.6	26818	31.1
4000-4499	8637	9.8	8644	9.9	8593	9.9	8816	10.0	8807	10.2
4500+	1515	1.7	1592	1.8	1477	1.7	1535	1.7	1597	1.9
Not stated	96	0.1	36	0.0	52	0.1	61	0.1	66	0.1
TOTAL	87984	100.0	87391	100.0	86429	100.0	88133	100.0	86305	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.



## 1.14 APGAR SCORE

In 1998, 2.3 per cent of babies were born with an Apgar score of less than 7 at 5 minutes and 1.2 per cent were born with a score less than 4 (Table 14). These rates are similar to those of previous years.

**TABLE 14**  
BIRTHS BY APGAR SCORE AT FIVE MINUTES, NSW 1994-98#

Apgar score	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
0-4	1008	1.1	993	1.1	989	1.1	1065	1.2	1001	1.2
5-7	1149	1.3	1220	1.4	1127	1.3	1116	1.3	990	1.1
7+	83918	95.4	85025	97.3	84153	97.4	85788	97.3	84114	97.5
Not stated	1909	2.2	153	0.2	160	0.2	164	0.2	200	0.2
TOTAL	87984	100.0	87391	100.0	86429	100.0	88133	100.0	86305	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.  
# Includes stillbirths and live births.

## 1.15 PERINATAL OUTCOMES

In the period 1994-98 the perinatal mortality rate varied from 8.9 to 9.4 per 1,000 (Table 15). In 1998, about three-quarters of all perinatal deaths were stillbirths and one quarter were neonatal deaths.

In 1998, of the 811 perinatal deaths in NSW, 782 (96.4 per cent) were reported among planned hospital births, 18 (2.2 per cent) were among planned birth centre births, 2 were among planned home births, and 9 were among babies born before arrival at hospital.

**TABLE 15**  
BIRTHS BY PERINATAL OUTCOME, NSW 1994-98#

Year	Liveborn surviving		Stillborn		Perinatal Outcome Neonatal death		Not stated		Total births		Perinatal mortality rate / 1,000 births
	No.	%	No.	%	No.	%	No.	%	No.	%	
1994	86947	98.8	496	0.6	287	0.3	254	0.3	87984	100.0	8.9
1995	86600	99.1	521	0.6	248	0.3	22	0.0	87391	100.0	8.8
1996	85627	99.1	545	0.6	227	0.3	30	0.0	86429	100.0	8.9
1997	87200	98.9	587	0.7	262	0.3	84	0.1	88133	100.0	9.6
1998	85376	98.9	595	0.7	216	0.3	118	0.1	86305	100.0	9.4

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.  
# Perinatal deaths include deaths reported to the MDC only. As the MDC form is completed at discharge or transfer of the baby, deaths occurring after this time may not be reported to the MDC.

**TABLE 16**
**PERINATAL DEATHS BY MAIN OBSTETRIC CAUSE AND PERINATAL OUTCOME, NSW 1997#**

SA modified Whitfield classification		Perinatal outcome					
		Stillbirth		Neonatal death		TOTAL	
		No.	%	No.	%	No.	%
Spontaneous preterm	- Multiple pregnancy	12	2.9	11	5.0	23	3.6
	- Previous bleeding	0	0.0	2	0.9	2	0.3
	- Previous spontaneous	10	2.4	22	10.0	32	5.0
	- Cervical incompetence	2	0.5	2	0.9	4	0.6
	- Other	1	0.2	1	0.5	2	0.3
	- Idiopathic	7	1.7	25	11.3	32	5.0
Intrauterine growth retardation (IUGR)		77	18.4	6	2.7	83	13.0
Unexplained intrauterine death		127	30.3	0	0.0	127	19.8
Intrapartum asphyxia	- Unspecified	4	1.0	1	0.5	5	0.8
	- Cord complications	1	0.2	3	1.4	4	0.6
	- Breech delivery	1	0.2	3	1.4	4	0.6
	- Caesarean section	0	0.0	2	0.9	2	0.3
	- Forceps delivery	1	0.2	2	0.9	3	0.5
	- Ventouse delivery	1	0.2	0	0.0	1	0.2
	- Other delivery	1	0.2	3	1.4	4	0.6
Hypertension	- Unspecified	4	1.0	0	0.0	4	0.6
	- Pre-existing hypertension	2	0.5	0	0.0	2	0.3
	- Pre-eclamptic toxemia	22	5.3	6	2.7	28	4.4
	- Pre-existing + PET	2	0.5	1	0.5	3	0.5
Maternal disease	- Maternal injury	1	0.2	2	0.9	3	0.5
	- Diabetes/gestational diabetes	3	0.7	0	0.0	3	0.5
	- Infection	1	0.2	0	0.0	1	0.2
	- Other	4	1.0	4	1.8	8	1.3
Antepartum haemorrhage	- placental abruption	20	4.8	6	2.7	26	4.1
	- APH undetermined origin	4	1.0	2	0.9	6	0.9
	- vasa praevia	1	0.2	0	0.0	1	0.2
Fetal abnormality	- Central nervous system	11	2.6	9	4.1	20	3.1
	- Cardiovascular system	6	1.4	17	7.7	23	3.6
	- Urinary tract	6	1.4	6	2.7	12	1.9
	- Gastrointestinal system	0	0.0	1	0.5	1	0.2
	- Chromosomal	12	2.9	4	1.8	16	2.5
	- Metabolic	0	0.0	1	0.5	1	0.2
	- Multiple	10	2.4	17	7.7	27	4.2
	- Other	8	1.9	17	7.7	25	3.9
Haemolytic disease	- Rhesus incompatibility	0	0.0	1	0.5	1	0.2
	- Other feto-maternal blood group incompatibility	1	0.2	0	0.0	1	0.2
Infection	- Unspecified	9	2.1	12	5.4	21	3.3
	- Streptococcus Group B	1	0.2	3	1.4	4	0.6
	- E Coli	3	0.7	3	1.4	6	0.9
	- Syphilis	1	0.2	0	0.0	1	0.2
	- Cytomegalovirus	1	0.2	0	0.0	1	0.2
	- Other viral	0	0.0	2	0.9	2	0.3
	- Fungal	1	0.2	0	0.0	1	0.2
	- Other	0	0.0	6	2.7	6	0.9
Other	- Non-immune hydrops	4	1.0	1	0.5	5	0.8
	- Feto-maternal haemorrhage	5	1.2	0	0.0	5	0.8
	- Twin to twin transfusion	12	2.9	7	3.2	19	3.0
	- Accident, poisoning or violence (postnatal)	0	0.0	1	0.5	1	0.2
	- SIDS	0	0.0	1	0.5	1	0.2
	- Unknown/unexplained	4	1.0	8	3.6	12	1.9
	- Other	15	3.6	0	0.0	15	2.3
<b>TOTAL</b>		<b>419</b>	<b>100.0</b>	<b>221</b>	<b>100.0</b>	<b>640</b>	<b>100.0</b>

Source: NSW Maternal and Perinatal Committee

# Results of reviews of 640 perinatal deaths of at least 500 grams birth weight or 22 weeks gestation.

**TABLE 17****NEONATAL DEATHS BY CAUSE, NSW 1997#**

Neonatal classification	No.	%
Cardio-respiratory - Hyaline membrane disease	4	1.8
Cardio-respiratory - Other	8	3.6
Cardio-respiratory - Persistent pulmonary hypertension	1	0.5
Congenital Abnormality	69	31.2
Extreme Prematurity - life support initiated	41	18.6
Extreme Prematurity - life support not initiated	34	15.4
Extreme Prematurity - life support not stated	11	5.0
Gastrointestinal - Necrotising enterocolitis	3	1.4
Infection - Acquired bacterial	5	2.3
Infection - Acquired viral	1	0.5
Infection - Congenital bacterial	4	1.8
Infection - Other	1	0.5
Metabolic/ Endocrine	1	0.5
Neurological - Asphyxia	20	9.0
Neurological - Haemorrhage	7	3.2
Neurological - Other	1	0.5
Other	10	4.5
TOTAL	221	100.0

Source: NSW Maternal and Perinatal Committee

# Results of reviews of 221 neonatal deaths of at least 500 grams birth weight or 22 weeks gestation.

The NSW Maternal and Perinatal Committee carried out reviews of perinatal deaths among fetuses and infants who died in 1997, whose death was registered in 1997 and who were of at least 500 grams birth weight or 22 weeks gestation. Of 698 eligible perinatal deaths, confidential reports were received for 640, giving a response rate of 91.7 per cent.

Of the 640 deaths for which information was received, 419 were stillbirths (65.5 per cent) and 221 were neonatal deaths (34.5 per cent) (Table 16).

Almost one third (30.8 per cent) of perinatal deaths reviewed were among term babies. Sixty seven (10.5 per cent) of perinatal deaths were among babies born after twin pregnancies and two were among babies born after triplet pregnancies.

The majority of stillbirths were unexplained (30.3 per cent), and a further 18.4 per cent were due to intrauterine growth retardation. Extreme prematurity accounted for 38.9 per cent of neonatal deaths and congenital abnormalities accounted for a further 31.2 per cent (Table 17). Hypertension was present in 67 (10.5 per cent) of pregnancies resulting in a perinatal death, and classified as the main obstetric cause in 30 (4.7 per cent) deaths.

Post mortem examinations were carried out on 232 (36.3 per cent) of fetuses and infants: 44.1 per cent of stillborn babies and 21.2 per cent of infants who died in the neonatal period. Of the 127 unexplained intrauterine deaths, a postmortem examination was carried out in 67 (52.8 per cent).

## 1.16 MATERNAL DEATHS

In the period 1990-96, 81 deaths were reported among pregnant women or women who gave birth less than six weeks previously. Of these, 28 (34.6 per cent) died of incidental causes not related to the pregnancy or its management; 40 (49.0 per cent) deaths

were found to be directly due to pregnancy or its management; and 13 (16.0 per cent) deaths were found to result from pre-existing disease or disease which developed during pregnancy (not due to direct obstetric causes), but which may have been aggravated by the physiologic effects of pregnancy (Table 18).

**TABLE 18**

**MATERNAL DEATHS BY YEAR, NSW 1990-98#**

Year	Direct		Indirect		Classification Total Direct & Indirect		Incidental		TOTAL	
	No.	Rate/ 100,000	No.	Rate/ 100,000	No.	Rate/ 100,000	No.	Rate/ 100,000	No.	Rate/ 100,000
1990	4	4.6	6	6.9	10	11.6	2	2.3	12	13.9
1991	4	4.7	1	1.2	5	5.8	1	1.2	6	7.0
1992	5	5.7	1	1.1	6	6.8	5	5.7	11	12.5
1993	6	6.9	1	1.2	7	8.1	6	6.9	13	15.0
1994	8	9.2	1	1.2	9	10.4	3	3.5	12	13.8
1995	7	8.1	2	2.3	9	10.4	6	7.0	15	17.4
1996	6	7.0	1	1.2	7	8.2	5	5.9	12	14.1
1997##									14	16.1
1998##									12	14.1

Source: NSW Maternal and Perinatal Committee.

# Includes all deaths of women who were pregnant at the time of death, or who died within 42 days of childbirth.

Direct deaths include those resulting from obstetric complications of the pregnant state, including its management.

Indirect deaths include those resulting from preexisting disease or disease which developed during pregnancy and was not due to direct obstetric causes but which may have been aggravated by the physiological effects of pregnancy<sup>1</sup>.

Incidental deaths are those where the pregnancy is unlikely to have contributed significantly to the death.

## Classification incomplete for 1997 and 1998.

**TABLE 19**

**MATERNAL DEATHS BY CAUSE, NSW 1995 AND 1996#**

Year	Classification	Cause	No.
1995	Direct	Pregnancy induced hypertension complicated by adult respiratory distress syndrome and renal failure	1
		Pregnancy induced hypertension and rheumatic heart disease	1
		Hypoglycaemia due to insulin dependent diabetes and pregnancy	1
		Intra-abdominal hemorrhage due to ruptured uterus following termination of pregnancy	1
		Ruptured ectopic pregnancy	1
		Amniotic fluid embolism following placental abruption	1
		Pulmonary thromboembolism	1
	Indirect	Acute myocardial infarction	1
		Cerebral haemorrhagic infarction following rupture of cerebral aneurysm.	1
		Incidental	Subarachnoid haemorrhage
	Asthma		1
	Multiple injuries incurred in motor vehicle accident		1
	Suicide		1
	1996	Direct	Pulmonary thrombo-embolism
Subarachnoid and intra-cerebral haemorrhage due to severe high blood pressure occurring as a complication of pregnancy			1
Intraventricular and subarachnoid haemorrhage following hypertension in pregnancy.			1
Amniotic fluid embolism			1
Indirect		Cardiac failure due to severe anaemia following post partum haemorrhage	1
		Suicide	1
Incidental		Cerebral haemorrhage following rupture of cerebral aneurysm	1
	Asthma	1	
	Metastatic breast cancer	1	
	Group A beta haemolytic streptococcal septicemia	1	
		Disseminated intravascular coagulation associated with staphylococcal septicemia and acute haemorrhagic pericarditis	1

Source: NSW Maternal and Perinatal Committee.

# Includes all deaths of women who were pregnant at the time of death, or who died within 42 days of childbirth.

Direct deaths include those resulting from obstetric complications of the pregnant state, including its management.

Indirect deaths include those resulting from preexisting disease or disease which developed during pregnancy and was not due to direct obstetric causes but which may have been aggravated by the physiological effects of pregnancy<sup>1</sup>.

Incidental deaths are those where the pregnancy is unlikely to have contributed significantly to the death.

<sup>1</sup> National Health and Medical Research Council (NHMRC). Report on Maternal Deaths in Australia 1991-93. NHMRC 1998.

## PART 2: AREA HEALTH SERVICES

Information on the health of Aboriginal and Torres Strait Islander mothers, and mothers born in non-English speaking countries is shown in Parts 3 and 4 respectively.

### 2.1 CONFINEMENTS

Continuing the trend over recent years, the largest numbers of confinements in 1998 were among mothers resident in the South Western Sydney (12,050, 14.2 per cent) and Western Sydney Areas (10,541, 12.4 per cent). These two Health Areas contributed over one quarter of the State's births. Seventy-nine per cent of confinements were to mothers resident in the metropolitan Areas (including the Central Coast, Hunter and Illawarra Areas), and 20.6 per cent were to mothers resident in rural Areas.

### 2.2 MATERNAL AGE

As in previous years, there were large variations in the distribution of the age of women giving birth throughout the State (Table 20). The proportion of women giving birth at less than 20 years of age varied from 1.1 per cent in the Northern Sydney Area to 14.0 per cent in the Far West Area, while the proportion of mothers giving birth at 35 years of age or more ranged from 8.4 per cent in the Far West Area to 27.1 per cent in the Northern Sydney Area.

### 2.3 MATERNAL COUNTRY OF BIRTH

Eighty per cent of women who gave birth in NSW in 1998 were born in English speaking countries, 10.1 per cent were born in Asian countries and 4.3 per cent were born in the Middle East or Africa (Table 21).

The highest proportions of mothers born in non-English speaking countries were in the Central Sydney and South Western Sydney Areas. In Central Sydney, the majority of mothers born in non-English speaking countries were born in North East Asia (11.7 per cent) and the Middle East and Africa (10.0 per cent). In South Western Sydney, the majority of mothers born in non-English speaking countries were born in South-East Asia (12.9 per cent).

### 2.4 MATERNAL ABORIGINALITY

In 1998, 2.4 per cent of mothers were reported to be Aboriginal or Torres Strait Islander (Table 22). The proportion of Aboriginal or Torres Strait Islander mothers varied from 0.1 per cent in the Northern Sydney Area to 30.4 per cent in the Far West Area.

### 2.5 PLACE OF BIRTH

Ninety-five per cent of mothers chose to delivery in a hospital labour ward in 1998, compared to 4.3 per cent who planned a birth centre birth and 0.2 per cent who planned a homebirth (Table 23). Planned birth centre births were most common in the Hunter and Central Sydney Areas, and planned homebirths were most common in the Northern Rivers Area.

### 2.6 LABOUR AND DELIVERY

In 1998, the onset of labour was spontaneous in 65.5 per cent of confinements (Table 24). Labour was induced in 24.2 per cent of confinements and no labour (elective caesarean section) was reported in 10.3 per cent of confinements.

The rate of spontaneous onset of labour was highest among residents of the Southern Area (71.5 per cent). The highest rate of induction of labour was among residents of the New England Area (26.8 per cent).

Seventy per cent of confinements were by normal vaginal birth, 10.5 per cent were instrumental and 19.1 per cent were by caesarean section (Table 25). The highest rate of normal vaginal birth was among residents of Far West Area (75.9 per cent), while the highest rate of instrumental delivery was among residents of South Eastern Sydney Area (16.0 per cent). The caesarean section rate varied from 14.7 per cent among mothers resident in the South Western Sydney Area to 23.7 per cent in the Northern Sydney Area.

**TABLE 20****CONFINEMENTS BY MATERNAL AGE AND HEALTH AREA OF RESIDENCE, NSW 1998**

Health Area	Maternal age (years)																TOTAL	
	12 - 19		20-24		25-29		30 - 34		35 - 39		40 - 44		45+		Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Central Sydney	157	2.4	824	12.5	1838	28.0	2209	33.6	1288	19.6	237	3.6	11	0.2	10	0.2	6574	100.0
Northern Sydney	98	1.1	535	6.1	2216	25.1	3565	40.4	2031	23.0	355	4.0	9	0.1	15	0.2	8824	100.0
Western Sydney	492	4.7	1854	17.6	3624	34.4	2975	28.2	1340	12.7	238	2.3	5	0.0	13	0.1	10541	100.0
Wentworth	267	5.5	983	20.4	1803	37.4	1195	24.8	474	9.8	94	1.9	4	0.1	5	0.1	4825	100.0
South Western																		
Sydney	584	4.8	2432	20.2	4243	35.2	3172	26.3	1364	11.3	247	2.0	7	0.1	1	0.0	12050	100.0
CentralCoast	205	5.5	620	16.6	1294	34.6	1072	28.7	472	12.6	73	2.0	0	0.0	0	0.0	3736	100.0
Hunter	465	6.8	1339	19.5	2356	34.3	1903	27.7	711	10.3	93	1.4	5	0.1	3	0.0	6875	100.0
Illawarra	235	5.4	817	18.8	1532	35.2	1148	26.4	516	11.9	79	1.8	1	0.0	22	0.5	4350	100.0
South Eastern																		
Sydney	155	1.7	971	10.6	2718	29.8	3331	36.5	1645	18.0	302	3.3	13	0.1	0	0.0	9135	100.0
Northern Rivers	195	6.6	610	20.7	972	33.0	731	24.9	354	12.0	74	2.5	2	0.1	3	0.1	2941	100.0
Mid North Coast	234	7.9	642	21.7	949	32.1	716	24.2	357	12.1	53	1.8	1	0.0	2	0.1	2954	100.0
New England	240	10.1	509	21.4	795	33.4	582	24.4	226	9.5	27	1.1	2	0.1	0	0.0	2381	100.0
Macquarie	146	9.2	347	21.8	552	34.7	391	24.6	131	8.2	20	1.3	1	0.1	1	0.1	1589	100.0
Mid Western	192	8.2	496	21.2	828	35.4	544	23.3	236	10.1	37	1.6	3	0.1	3	0.1	2339	100.0
Far West	78	14.0	134	24.1	178	32.0	119	21.4	38	6.8	8	1.4	1	0.2	0	0.0	556	100.0
Greater Murray	213	7.2	602	20.4	1022	34.7	757	25.7	299	10.1	50	1.7	3	0.1	0	0.0	2946	100.0
Southern	120	6.7	380	21.3	617	34.6	439	24.6	193	10.8	32	1.8	0	0.0	1	0.1	1782	100.0
Other/Not stated	42	6.2	166	24.6	222	32.9	165	24.5	70	10.4	7	1.0	0	0.0	2	0.3	674	100.0
TOTAL	4118	4.8	14261	16.8	27759	32.6	25014	29.4	11745	13.8	2026	2.4	68	0.1	81	0.1	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 21****CONFINEMENTS BY MATERNAL COUNTRY OF BIRTH AND HEALTH AREA OF RESIDENCE, NSW 1998#**

Health Area	Country of birth group																				TOTAL	
	English speaking		Central & South America		Melanesia, Micronesia & Polynesia		Southern Europe		Western & Northern Europe		Eastern Europe, Russia, Central Asian & Baltic States		Middle East & Africa		South East Asia		North East Asia		Southern Asia			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Central Sydney	3582	54.6	77	1.2	276	4.2	241	3.7	69	1.1	34	0.5	656	10.0	643	9.8	766	11.7	220	3.4	6564	100.0
Northern Sydney	6930	78.7	72	0.8	122	1.4	117	1.3	163	1.9	46	0.5	196	2.2	341	3.9	639	7.3	177	2.0	8803	100.0
Western Sydney	6808	64.7	112	1.1	444	4.2	193	1.8	58	0.6	63	0.6	1029	9.8	711	6.8	633	6.0	471	4.5	10522	100.0
Wentworth	4401	91.3	26	0.5	41	0.9	52	1.1	36	0.7	11	0.2	53	1.1	112	2.3	27	0.6	63	1.3	4822	100.0
South Western																						
Sydney	7598	63.4	238	2.0	429	3.6	377	3.1	54	0.5	69	0.6	1155	9.6	1548	12.9	349	2.9	169	1.4	11986	100.0
Central Coast	3575	95.8	13	0.3	12	0.3	10	0.3	23	0.6	7	0.2	15	0.4	44	1.2	24	0.6	10	0.3	3733	100.0
Hunter	6672	97.1	6	0.1	27	0.4	18	0.3	23	0.3	7	0.1	13	0.2	74	1.1	23	0.3	9	0.1	6872	100.0
Illawarra	4000	92.2	26	0.6	21	0.5	104	2.4	26	0.6	14	0.3	51	1.2	64	1.5	19	0.4	14	0.3	4339	100.0
South Eastern																						
Sydney	6799	74.5	97	1.1	141	1.5	235	2.6	117	1.3	98	1.1	442	4.8	470	5.2	568	6.2	154	1.7	9121	100.0
Northern Rivers	2831	96.3	2	0.1	10	0.3	8	0.3	23	0.8	4	0.1	9	0.3	32	1.1	12	0.4	8	0.3	2939	100.0
Mid North Coast	2864	97.0	6	0.2	7	0.2	4	0.1	10	0.3	3	0.1	7	0.2	33	1.1	2	0.1	16	0.5	2952	100.0
New England	2323	97.6	1	0.0	10	0.4	0	0.0	6	0.3	3	0.1	6	0.3	15	0.6	7	0.3	9	0.4	2380	100.0
Macquarie	1563	98.4	1	0.1	3	0.2	0	0.0	4	0.3	0	0.0	5	0.3	7	0.4	5	0.3	0	0.0	1588	100.0
Mid Western	2287	97.9	2	0.1	7	0.3	3	0.1	8	0.3	1	0.0	7	0.3	15	0.6	1	0.0	5	0.2	2336	100.0
Far West	542	97.5	0	0.0	1	0.2	0	0.0	5	0.9	0	0.0	1	0.2	2	0.4	4	0.7	1	0.2	556	100.0
Greater Murray	2839	96.4	2	0.1	24	0.8	6	0.2	10	0.3	1	0.0	12	0.4	22	0.7	8	0.3	22	0.7	2946	100.0
Southern	1722	97.1	0	0.0	6	0.3	8	0.5	8	0.5	0	0.0	9	0.5	13	0.7	7	0.4	0	0.0	1773	100.0
Other/Not stated	635	94.4	2	0.3	9	1.3	4	0.6	3	0.4	1	0.1	4	0.6	11	1.6	3	0.4	1	0.1	673	100.0
TOTAL	67971	80.1	683	0.8	1590	1.9	1380	1.6	646	0.8	362	0.4	3670	4.3	4157	4.9	3097	3.6	1349	1.6	84905	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Excludes 167 mothers for whom country of birth was not stated.

Maternal countries of birth and country of birth groups are shown in Appendix 3.

**TABLE 22****CONFINEMENTS BY MATERNAL ABORIGINALITY AND HEALTH AREA OF RESIDENCE, NSW 1998**

Health Area	Aboriginality						TOTAL	
	Aboriginal/ Torres Strait Islander		Non-Aboriginal/ Torres Strait Islander		Not stated		No.	%
	No.	%	No.	%	No.	%		
Central Sydney	71	1.1	6485	98.6	18	0.3	6574	100.0
Northern Sydney	10	0.1	8799	99.7	15	0.2	8824	100.0
Western Sydney	172	1.6	10331	98.0	38	0.4	10541	100.0
Wentworth	77	1.6	4738	98.2	10	0.2	4825	100.0
South Western Sydney	108	0.9	11920	98.9	22	0.2	12050	100.0
Central Coast	42	1.1	3693	98.8	1	0.0	3736	100.0
Hunter	103	1.5	6763	98.4	9	0.1	6875	100.0
Illawarra	119	2.7	4149	95.4	82	1.9	4350	100.0
South Eastern Sydney	47	0.5	9084	99.4	4	0.0	9135	100.0
Northern Rivers	161	5.5	2772	94.3	8	0.3	2941	100.0
Mid North Coast	167	5.7	2782	94.2	5	0.2	2954	100.0
New England	267	11.2	2113	88.7	1	0.0	2381	100.0
Macquarie	212	13.3	1377	86.7	0	0.0	1589	100.0
Mid Western	113	4.8	2220	94.9	6	0.3	2339	100.0
Far West	169	30.4	386	69.4	1	0.2	556	100.0
Greater Murray	120	4.1	2825	95.9	1	0.0	2946	100.0
Southern	64	3.6	1701	95.5	17	1.0	1782	100.0
Other/Not stated	21	3.1	649	96.3	4	0.6	674	100.0
TOTAL	2043	2.4	82787	97.3	242	0.3	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 23****CONFINEMENTS BY PLACE OF BIRTH AND HEALTH AREA OF RESIDENCE, NSW 1998**

Health Area	Place of birth														TOTAL	
	Hospital		Birth centre		Planned birth centre/ hospital admission		Planned homebirth		Planned homebirth/ hospital admission		Born before arrival		Not stated		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Central Sydney	5955	90.6	443	6.7	135	2.1	11	0.2	1	0.0	29	0.4	0	0.0	6574	100.0
Northern Sydney	8622	97.7	114	1.3	50	0.6	22	0.2	6	0.1	10	0.1	0	0.0	8824	100.0
Western Sydney	9893	93.9	335	3.2	241	2.3	14	0.1	4	0.0	53	0.5	1	0.0	10541	100.0
Wentworth	4693	97.3	45	0.9	38	0.8	22	0.5	3	0.1	24	0.5	0	0.0	4825	100.0
South Western Sydney	11656	96.7	150	1.2	165	1.4	5	0.0	2	0.0	72	0.6	0	0.0	12050	100.0
Central Coast	3695	98.9	13	0.3	6	0.2	3	0.1	1	0.0	18	0.5	0	0.0	3736	100.0
Hunter	5811	84.5	832	12.1	195	2.8	0	0.0	2	0.0	35	0.5	0	0.0	6875	100.0
Illawarra	4254	97.8	36	0.8	19	0.4	10	0.2	5	0.1	26	0.6	0	0.0	4350	100.0
South Eastern Sydney	8442	92.4	468	5.1	201	2.2	7	0.1	6	0.1	11	0.1	0	0.0	9135	100.0
Northern Rivers	2864	97.4	14	0.5	21	0.7	18	0.6	13	0.4	11	0.4	0	0.0	2941	100.0
Mid North Coast	2877	97.4	30	1.0	25	0.8	4	0.1	1	0.0	17	0.6	0	0.0	2954	100.0
New England	2359	99.1	8	0.3	6	0.3	0	0.0	0	0.0	8	0.3	0	0.0	2381	100.0
Macquarie	1541	97.0	11	0.7	22	1.4	1	0.1	4	0.3	10	0.6	0	0.0	1589	100.0
Mid Western	2311	98.8	2	0.1	5	0.2	5	0.2	6	0.3	10	0.4	0	0.0	2339	100.0
Far West	546	98.2	0	0.0	2	0.4	1	0.2	0	0.0	7	1.3	0	0.0	556	100.0
Greater Murray	2923	99.2	6	0.2	7	0.2	0	0.0	0	0.0	10	0.3	0	0.0	2946	100.0
Southern	1736	97.4	4	0.2	11	0.6	19	1.1	1	0.1	11	0.6	0	0.0	1782	100.0
Other/Not stated	657	97.5	3	0.4	5	0.7	5	0.7	0	0.0	4	0.6	0	0.0	674	100.0
TOTAL	80835	95.0	2514	3.0	1154	1.4	147	0.2	55	0.1	366	0.4	1	0.0	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 24**

**CONFINEMENTS BY ONSET AND AUGMENTATION OF LABOUR AND HEALTH AREA OF RESIDENCE, NSW 1998**

Health Area	Spontaneous		Spontaneous augmented with ARM		Spontaneous augmented with oxytocics/prostaglandins		No labour		Onset of labour Induced-oxytocics/prostaglandins		Induced ARM only		Induced-ARM+ oxytocics/prostaglandins		Induced-other#		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	Central Sydney	3385	51.5	313	4.8	898	13.7	624	9.5	935	14.2	47	0.7	359	5.5	9	0.1	4	0.1	6574
Northern Sydney	3219	36.5	792	9.0	1212	13.7	1249	14.2	807	9.1	176	2.0	1349	15.3	18	0.2	2	0.0	8824	100.0
Western Sydney	5070	48.1	948	9.0	1137	10.8	942	8.9	610	5.8	99	0.9	1716	16.3	19	0.2	0	0.0	10541	100.0
Wentworth	2287	47.4	488	10.1	359	7.4	452	9.4	399	8.3	78	1.6	759	15.7	3	0.1	0	0.0	4825	100.0
South Western																				
Sydney	5533	45.9	1320	11.0	1167	9.7	983	8.2	1007	8.4	147	1.2	1858	15.4	35	0.3	0	0.0	12050	100.0
Central Coast	1653	44.2	333	8.9	349	9.3	424	11.3	390	10.4	114	3.1	468	12.5	5	0.1	0	0.0	3736	100.0
Hunter	4024	58.5	244	3.5	227	3.3	692	10.1	587	8.5	240	3.5	852	12.4	9	0.1	0	0.0	6875	100.0
Illawarra	1873	43.1	531	12.2	357	8.2	424	9.7	424	9.7	82	1.9	643	14.8	7	0.2	9	0.2	4350	100.0
South Eastern																				
Sydney	3658	40.0	921	10.1	1360	14.9	1065	11.7	895	9.8	108	1.2	1118	12.2	8	0.1	2	0.0	9135	100.0
Northern Rivers	1464	49.8	314	10.7	235	8.0	267	9.1	303	10.3	54	1.8	303	10.3	1	0.0	0	0.0	2941	100.0
Mid North Coast	1376	46.6	325	11.0	227	7.7	380	12.9	260	8.8	44	1.5	337	11.4	5	0.2	0	0.0	2954	100.0
New England	943	39.6	351	14.7	191	8.0	257	10.8	278	11.7	73	3.1	285	12.0	3	0.1	0	0.0	2381	100.0
Macquarie	770	48.5	219	13.8	111	7.0	148	9.3	117	7.4	27	1.7	195	12.3	2	0.1	0	0.0	1589	100.0
Mid Western	1044	44.6	305	13.0	190	8.1	276	11.8	221	9.4	40	1.7	258	11.0	5	0.2	0	0.0	2339	100.0
Far West	291	52.3	66	11.9	29	5.2	50	9.0	29	5.2	29	5.2	61	11.0	1	0.2	0	0.0	556	100.0
Greater Murray	1438	48.8	248	8.4	153	5.2	321	10.9	409	13.9	85	2.9	288	9.8	4	0.1	0	0.0	2946	100.0
Southern	937	52.6	195	10.9	142	8.0	174	9.8	174	9.8	16	0.9	137	7.7	3	0.2	4	0.2	1782	100.0
Other/Not stated	316	46.9	84	12.5	67	9.9	72	10.7	48	7.1	3	0.4	83	12.3	1	0.1	0	0.0	674	100.0
<b>TOTAL</b>	<b>39281</b>	<b>46.2</b>	<b>7997</b>	<b>9.4</b>	<b>8411</b>	<b>9.9</b>	<b>8800</b>	<b>10.3</b>	<b>7893</b>	<b>9.3</b>	<b>1462</b>	<b>1.7</b>	<b>11069</b>	<b>13.0</b>	<b>138</b>	<b>0.2</b>	<b>21</b>	<b>0.0</b>	<b>85072</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.  
 # This category includes other forms of induction such as Foley's catheter.

**TABLE 25**

**CONFINEMENTS BY TYPE OF DELIVERY AND HEALTH AREA OF RESIDENCE, NSW 1998**

Health Area	Type of delivery														TOTAL	
	Normal vaginal		Forceps		Vacuum extraction		Vaginal breech		Elective caesarean section		Emergency caesarean section		Not stated		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Central Sydney	4420	67.2	393	6.0	399	6.1	58	0.9	624	9.5	674	10.3	6	0.1	6574	100.0
Northern Sydney	5343	60.6	533	6.0	798	9.0	50	0.6	1249	14.2	846	9.6	5	0.1	8824	100.0
Western Sydney	7516	71.3	728	6.9	371	3.5	136	1.3	942	8.9	846	8.0	2	0.0	10541	100.0
Wentworth	3515	72.8	230	4.8	160	3.3	41	0.8	452	9.4	427	8.8	0	0.0	4825	100.0
South Western																
Sydney	9080	75.4	438	3.6	586	4.9	169	1.4	983	8.2	794	6.6	0	0.0	12050	100.0
Central Coast	2471	66.1	81	2.2	312	8.4	39	1.0	424	11.3	408	10.9	1	0.0	3736	100.0
Hunter	4970	72.3	270	3.9	305	4.4	59	0.9	692	10.1	579	8.4	0	0.0	6875	100.0
Illawarra	3197	73.5	131	3.0	240	5.5	40	0.9	424	9.7	315	7.2	3	0.1	4350	100.0
South Eastern																
Sydney	5588	61.2	788	8.6	674	7.4	68	0.7	1065	11.7	951	10.4	1	0.0	9135	100.0
Northern Rivers	2165	73.6	120	4.1	85	2.9	29	1.0	267	9.1	275	9.4	0	0.0	2941	100.0
Mid North Coast	2110	71.4	145	4.9	38	1.3	28	0.9	380	12.9	253	8.6	0	0.0	2954	100.0
New England	1715	72.0	105	4.4	107	4.5	18	0.8	257	10.8	178	7.5	1	0.0	2381	100.0
Macquarie	1159	72.9	82	5.2	61	3.8	15	0.9	148	9.3	124	7.8	0	0.0	1589	100.0
Mid Western	1614	69.0	103	4.4	76	3.2	13	0.6	276	11.8	257	11.0	0	0.0	2339	100.0
Far West	422	75.9	24	4.3	7	1.3	7	1.3	50	9.0	45	8.1	1	0.2	556	100.0
Greater Murray	2014	68.4	199	6.8	151	5.1	21	0.7	321	10.9	239	8.1	1	0.0	2946	100.0
Southern	1299	72.9	85	4.8	66	3.7	8	0.4	174	9.8	148	8.3	2	0.1	1782	100.0
Other/Not stated	499	74.0	23	3.4	17	2.5	6	0.9	72	10.7	57	8.5	0	0.0	674	100.0
<b>TOTAL</b>	<b>59097</b>	<b>69.5</b>	<b>4478</b>	<b>5.3</b>	<b>4453</b>	<b>5.2</b>	<b>805</b>	<b>0.9</b>	<b>8800</b>	<b>10.3</b>	<b>7416</b>	<b>8.7</b>	<b>23</b>	<b>0.0</b>	<b>85072</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.



## 2.7 BIRTH WEIGHT

Overall, 6.1 per cent of births were of low birth weight (less than 2,500 grams). These comprised 0.7 per cent with birth weight less than 1,000 grams, 0.6 per cent in the 1,000 to 1,499 gram birth weight range, and 4.8 per cent in the 1,500 to 2,499 gram range (Table 26). The highest rates of low birth weight occurred in the Far West Area (9.0 per cent) and the lowest rate occurred in the Southern Area (4.6 per cent).

## 2.8 GESTATIONAL AGE

The majority of births (90.9 per cent) were at term and 2.2 per cent were post-term (42-plus weeks gestation). The 6.9 per cent of births which were preterm consisted of 0.7 per cent born at 20-27 weeks gestation, 0.7 per cent at 28-31 weeks gestation and 5.5 per cent at 32-36 weeks gestation. The highest rates of preterm birth was in the Hunter Area (8.4 per cent), while the lowest rate was 4.4 per cent in the Southern Area (Table 27).

**TABLE 26**

**BIRTHS BY BIRTH WEIGHT AND HEALTH AREA OF RESIDENCE, NSW 1998**

Health Area	Birth weight (grams)																		TOTAL No. %						
	Less than 500		500- 999		1000- 1499		1500- 1999		2000- 2499		2500- 2999		3000- 3499		3500- 3999		4000- 4499			4500+		Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%
Central Sydney	18	0.3	42	0.6	39	0.6	72	1.1	246	3.7	1011	15.2	2527	37.9	1942	29.1	648	9.7	113	1.7	10	0.1	6668	100.0	
Northern Sydney	16	0.2	43	0.5	51	0.6	94	1.0	301	3.4	1181	13.2	3294	36.7	2917	32.5	907	10.1	158	1.8	4	0.0	8966	100.0	
Western Sydney	20	0.2	41	0.4	62	0.6	112	1.0	365	3.4	1660	15.6	3960	37.1	3220	30.2	1007	9.4	221	2.1	7	0.1	10675	100.0	
Wentworth	17	0.3	20	0.4	30	0.6	53	1.1	194	4.0	736	15.0	1697	34.6	1484	30.2	575	11.7	99	2.0	1	0.0	4906	100.0	
South Western																									
Sydney	25	0.2	68	0.6	80	0.7	160	1.3	487	4.0	1930	15.8	4439	36.4	3694	30.3	1124	9.2	192	1.6	9	0.1	12208	100.0	
Central Coast	12	0.3	23	0.6	26	0.7	60	1.6	130	3.4	518	13.7	1282	33.9	1238	32.7	416	11.0	78	2.1	0	0.0	3783	100.0	
Hunter	20	0.3	44	0.6	39	0.6	90	1.3	274	3.9	969	13.9	2323	33.3	2275	32.6	798	11.4	147	2.1	1	0.0	6980	100.0	
Illawarra	9	0.2	16	0.4	23	0.5	53	1.2	168	3.8	697	15.8	1540	34.8	1336	30.2	478	10.8	93	2.1	9	0.2	4422	100.0	
South Eastern																									
Sydney	20	0.2	39	0.4	53	0.6	111	1.2	320	3.4	1396	15.0	3418	36.8	2869	30.9	922	9.9	141	1.5	5	0.1	9294	100.0	
Northern Rivers	3	0.1	4	0.1	8	0.3	27	0.9	101	3.4	426	14.3	1045	35.1	967	32.5	334	11.2	62	2.1	0	0.0	2977	100.0	
Mid North Coast	7	0.2	10	0.3	16	0.5	42	1.4	118	3.9	481	16.0	1037	34.6	911	30.4	314	10.5	55	1.8	6	0.2	2997	100.0	
New England	5	0.2	12	0.5	14	0.6	34	1.4	87	3.6	376	15.6	887	36.7	756	31.3	212	8.8	31	1.3	3	0.1	2417	100.0	
Macquarie	2	0.1	7	0.4	6	0.4	29	1.8	65	4.0	205	12.7	560	34.8	537	33.4	160	9.9	37	2.3	2	0.1	1610	100.0	
Mid Western	6	0.3	12	0.5	19	0.8	26	1.1	79	3.3	357	15.0	835	35.2	741	31.2	245	10.3	54	2.3	1	0.0	2375	100.0	
Far West	4	0.7	6	1.1	1	0.2	8	1.4	32	5.7	118	20.9	193	34.2	152	27.0	44	7.8	6	1.1	0	0.0	564	100.0	
Greater Murray	2	0.1	5	0.2	8	0.3	30	1.0	98	3.3	391	13.1	1039	34.8	977	32.7	374	12.5	59	2.0	1	0.0	2984	100.0	
Southern	2	0.1	3	0.2	4	0.2	13	0.7	60	3.3	253	14.0	643	35.7	591	32.8	187	10.4	40	2.2	5	0.3	1801	100.0	
Other/Not stated	2	0.3	3	0.4	2	0.3	3	0.4	22	3.2	105	15.5	255	37.6	211	31.1	62	9.1	11	1.6	2	0.3	678	100.0	
TOTAL	190	0.2	398	0.5	481	0.6	1017	1.2	3147	3.6	12810	14.8	30974	35.9	26818	31.1	8807	9.2	1597	1.9	66	0.1	86305	100.0	

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 27**

**BIRTHS BY GESTATIONAL AGE AND HEALTH AREA OF RESIDENCE, NSW 1998**

Health Area	Gestational age (weeks)										Not stated		TOTAL	
	20-27		28-31		32-36		37-41		42+		No.	%	No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%				
Central Sydney	61	0.9	46	0.7	371	5.6	6031	90.4	157	2.4	2	0.0	6668	100.0
Northern Sydney	62	0.7	68	0.8	429	4.8	8245	92.0	161	1.8	1	0.0	8966	100.0
Western Sydney	60	0.6	71	0.7	537	5.0	9679	90.7	327	3.1	1	0.0	10675	100.0
Wentworth	37	0.8	39	0.8	293	6.0	4427	90.2	110	2.2	0	0.0	4906	100.0
South Western														
Sydney	84	0.7	98	0.8	719	5.9	11054	90.5	251	2.1	2	0.0	12208	100.0
Central Coast	33	0.9	35	0.9	217	5.7	3447	91.1	51	1.3	0	0.0	3783	100.0
Hunter	67	1.0	62	0.9	456	6.5	6252	89.6	141	2.0	2	0.0	6980	100.0
Illawarra	20	0.5	27	0.6	244	5.5	4067	92.0	61	1.4	3	0.1	4422	100.0
South Eastern														
Sydney	58	0.6	68	0.7	547	5.9	8483	91.3	137	1.5	1	0.0	9294	100.0
Northern Rivers	7	0.2	5	0.2	152	5.1	2680	90.0	133	4.5	0	0.0	2977	100.0
Mid North Coast	17	0.6	22	0.7	183	6.1	2687	89.7	86	2.9	2	0.1	2997	100.0
New England	21	0.9	13	0.5	108	4.5	2228	92.2	46	1.9	1	0.0	2417	100.0
Macquarie	11	0.7	14	0.9	94	5.8	1471	91.4	20	1.2	0	0.0	1610	100.0
Mid Western	20	0.8	18	0.8	122	5.1	2176	91.6	39	1.6	0	0.0	2375	100.0
Far West	10	1.8	2	0.4	32	5.7	511	90.6	9	1.6	0	0.0	564	100.0
Greater Murray	8	0.3	8	0.3	162	5.4	2749	92.1	56	1.9	1	0.0	2984	100.0
Southern	6	0.3	8	0.4	65	3.6	1666	92.5	54	3.0	2	0.1	1801	100.0
Other/Not stated	6	0.9	3	0.4	27	4.0	610	90.0	32	4.7	0	0.0	678	100.0
TOTAL	588	0.7	607	0.7	4758	5.5	78463	90.9	1871	2.2	18	0.0	86305	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 2.9 PERINATAL OUTCOMES

The perinatal mortality rate in 1998 was 9.4 per 1,000 births. This rate includes all births and deaths of babies of at least 400 grams birth weight or at least 20 weeks gestation (Table 28). The rate varied from 5.0 per 1,000 in the Greater Murray Area to 16.0 per 1,000 in the Far West Area.

**TABLE 28**

**PERINATAL OUTCOMES BY HEALTH AREA OF RESIDENCE, NSW 1998#**

Health Area	Liveborn surviving		Stillborn		Perinatal outcome Neonatal death		Not stated		Total births		Perinatal mortality rate/1,000 births
	No.	%	No.	%	No.	%	No.	%	No.	%	
Central Sydney	6571	98.5	66	1.0	22	0.3	9	0.1	668	100.0	13.2
Northern Sydney	8897	99.2	44	0.5	24	0.3	1	0.0	8966	100.0	7.6
Western Sydney	10586	99.2	62	0.6	25	0.2	2	0.0	10675	100.0	8.1
Wentworth	4855	99.0	36	0.7	14	0.3	1	0.0	4906	100.0	10.2
South Western											
Sydney	12031	98.6	69	0.6	27	0.2	81	0.7	12208	100.0	7.9
Central Coast	3741	98.9	31	0.8	11	0.3	0	0.0	3783	100.0	11.1
Hunter	6904	98.9	53	0.8	23	0.3	0	0.0	6980	100.0	10.9
Illawarra	4374	98.9	33	0.7	8	0.2	7	0.2	4422	100.0	9.3
South Eastern											
Sydney	9193	98.9	71	0.8	24	0.3	6	0.1	9294	100.0	10.2
Northern Rivers	2949	99.1	18	0.6	4	0.1	6	0.2	2977	100.0	7.4
Mid North Coast	2960	98.8	28	0.9	9	0.3	0	0.0	2997	100.0	12.3
New England	2396	99.1	13	0.5	7	0.3	1	0.0	2417	100.0	8.3
Macquarie	1595	99.1	10	0.6	5	0.3	0	0.0	1610	100.0	9.3
Mid Western	2349	98.9	23	1.0	3	0.1	0	0.0	2375	100.0	10.9
Far West	555	98.4	5	0.9	4	0.7	0	0.0	564	100.0	16.0
Greater Murray	2969	99.5	12	0.4	3	0.1	0	0.0	2984	100.0	5.0
Southern	1786	99.2	11	0.6	2	0.1	2	0.1	1801	100.0	7.2
Other/Not stated	665	98.1	10	1.5	1	0.1	2	0.3	678	100.0	16.2
<b>TOTAL</b>	<b>85376</b>	<b>98.9</b>	<b>595</b>	<b>0.7</b>	<b>216</b>	<b>0.3</b>	<b>118</b>	<b>0.1</b>	<b>86305</b>	<b>100.0</b>	<b>9.4</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Perinatal deaths include deaths reported to the MDC only. As the MDC form is completed at discharge or transfer of the baby, deaths occurring after this time may not be reported to the MDC.

# PART 3: ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS AND BABIES

## 3.1 TRENDS IN BIRTHS

Indigenous status is under-reported in health data collections in NSW, due to unwillingness of health staff to seek and record this information, and unwillingness of mothers to identify themselves as Aboriginal or Torres Strait Islander. The extent of under-reporting of indigenous status in the NSW Midwives Data Collection is unknown. It appears, though, that reporting is increasing. Between 1994 and 1998, the reported number of

babies born to Aboriginal/Torres Strait Islander mothers increased from 1,543 to 2,068 (Table 29), an increase from 1.8 to 2.4 per cent of all babies born in NSW. Twin pregnancies were reported for about one per cent of mothers.

**TABLE 29**

**ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS AND BABIES BY PLURALITY, NSW 1994-98**

Plurality	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Confinements</b>										
Singleton	1519	99.2	1719	98.8	1700	99.3	1828	99.2	2017	98.7
Twins	12	0.8	20	1.2	12	0.7	14	0.8	26	1.3
TOTAL	1531	100.0	1739	100.0	1712	100.0	1842	100.0	2043	100.0
<b>Births</b>										
Singleton	1519	98.4	1719	97.7	1700	98.6	1828	98.6	2017	97.5
Twins	24	1.6	40	2.3	24	1.4	26	1.4	51	2.5
TOTAL	1543	100.0	1759	100.0	1724	100.0	1854	100.0	2068	100.0

Source: NSW Midwives Data Collection, Epidemiology and Surveillance Branch, NSW Health Department.

## 3.2 PREVIOUS PREGNANCIES

In 1998, about 30 per cent of Aboriginal/Torres Strait Islander mothers gave birth for the first time, and 63 per cent gave birth to their second to fourth baby (Table 30). This pattern has not changed substantially since 1994. Eight per cent of mothers had given birth to five or more babies.

**TABLE 30**

**NUMBER OF PREVIOUS PREGNANCIES AMONG ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS, NSW 1994-98**

No. previous pregnancies (>20 weeks)	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
0	470	30.7	510	29.3	510	29.8	554	30.1	599	29.3
1-4	957	62.5	1094	62.9	1065	62.2	1147	62.3	1280	62.7
5+	94	6.1	134	7.7	134	7.8	139	7.5	161	7.9
Not stated	10	0.7	1	0.1	3	0.2	2	0.1	3	0.1
TOTAL	1531	100.0	1739	100.0	1712	100.0	1842	100.0	2043	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

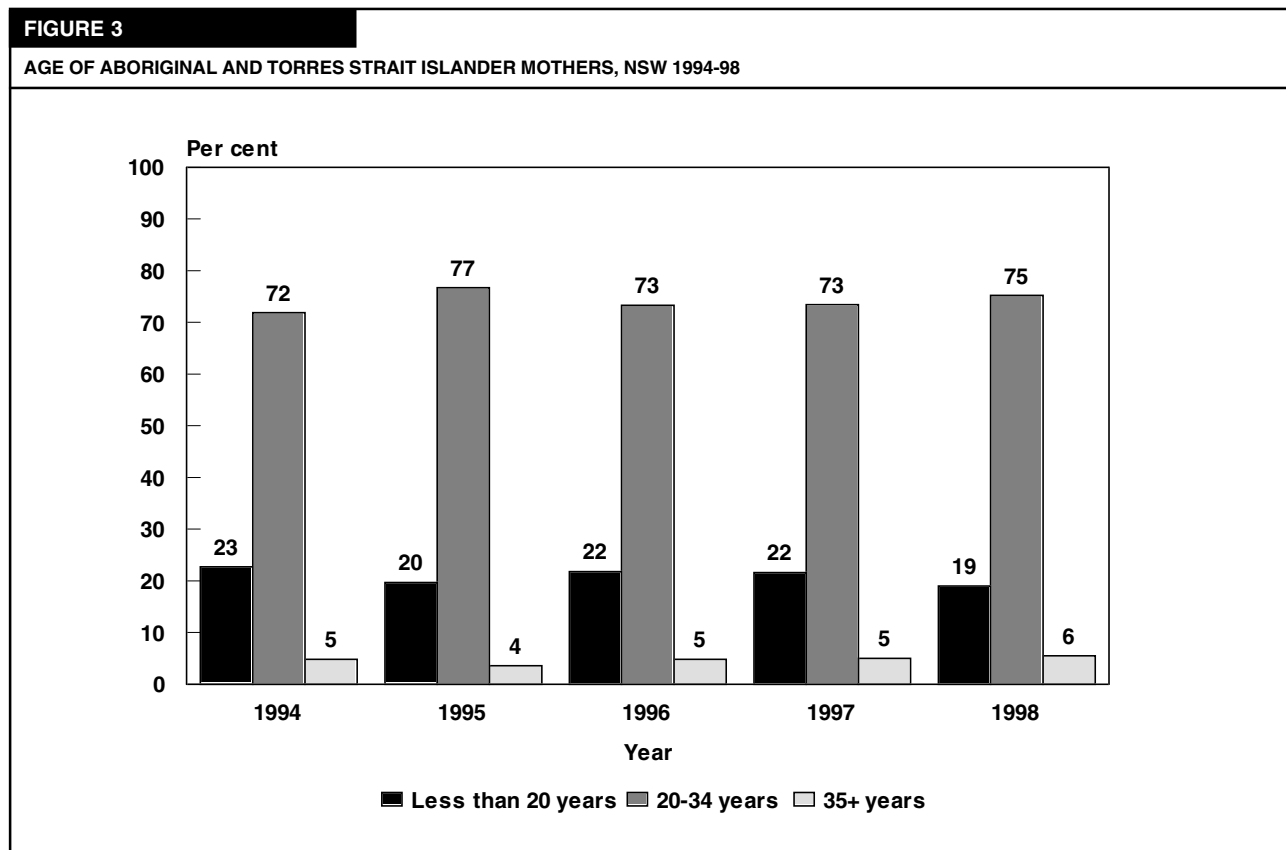
### 3.3 MATERNAL AGE

While the reported number of babies born to Aboriginal/Torres Strait Islander mothers has increased at all ages, including teenagers, the proportion of mothers who were teenagers fell from 22.7 to 19.0 per cent between 1994 and 1998. The proportion of mothers aged 35-plus years increased from 4.8 in 1994 to 5.5 per cent in 1998 (Table 31, Figure 3).

**TABLE 31**  
**AGE OF ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS, NSW 1994-98**

Maternal age (years)	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
12-19	348	22.7	342	19.7	374	21.8	398	21.6	389	19.0
20-34	1101	71.9	1334	76.7	1255	73.3	1352	73.4	1536	75.2
35+	74	4.8	63	3.6	83	4.8	92	5.0	113	5.5
Not stated	8	0.5	0	0.0	0	0.0	0	0.0	5	0.2
Total	1531	100.0	1739	100.0	1712	100.0	1842	100.0	2043	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.



Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

### 3.4 HEALTH AREA OF RESIDENCE

The number of Aboriginal/Torres Strait Islander mothers who gave birth in 1998 ranged from 10 (0.5 per cent) in the Northern Sydney Area to 267 (13.1 per cent) in the New England Area (Table 32). Since 1994, the reported number of Aboriginal/Torres

Straight Islander mothers giving birth increased in all Health Areas except the Central Sydney and Northern Sydney Areas.

In 1998, about one quarter of Aboriginal/Torres Strait Islander mothers in the Mid North Coast, New England and Far West Areas were teenagers (Table 33).

**TABLE 32**

**HEALTH AREA OF RESIDENCE OF ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS, NSW 1994-98**

Health Area	1994		1995		1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Central Sydney	97	6.3	89	5.1	66	3.9	70	3.8	71	3.5
Northern Sydney	13	0.8	12	0.7	9	0.5	7	0.4	10	0.5
Western Sydney	110	7.2	124	7.1	108	6.3	105	5.7	172	8.4
Wentworth	31	2.0	38	2.2	43	2.5	47	2.6	77	3.8
South Western Sydney	79	5.2	90	5.2	93	5.4	89	4.8	108	5.3
Central Coast	16	1.0	21	1.2	27	1.6	37	2.0	42	2.1
Hunter	63	4.1	82	4.7	100	5.8	107	5.8	103	5.0
Illawarra	81	5.3	112	6.4	101	5.9	125	6.8	119	5.8
South Eastern Sydney	41	2.7	42	2.4	30	1.8	36	2.0	47	2.3
Northern Rivers	116	7.6	153	8.8	132	7.7	146	7.9	161	7.9
Mid North Coast	142	9.3	153	8.8	157	9.2	181	9.8	167	8.2
New England	192	12.5	209	12.0	238	13.9	255	13.8	267	13.1
Macquarie	149	9.7	148	8.5	171	10.0	202	11.0	212	10.4
Mid Western	99	6.5	109	6.3	111	6.5	99	5.4	113	5.5
Far West	155	10.1	177	10.2	157	9.2	172	9.3	169	8.3
Greater Murray	94	6.1	98	5.6	120	7.0	100	5.4	120	5.9
Southern	43	2.8	69	4.0	39	2.3	51	2.8	64	3.1
Other/Not stated	10	0.7	13	0.7	10	0.6	13	0.7	21	1.0
<b>TOTAL</b>	<b>1531</b>	<b>100.0</b>	<b>739</b>	<b>100.0</b>	<b>1712</b>	<b>100.0</b>	<b>1842</b>	<b>100.0</b>	<b>2043</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 33**

**HEALTH AREA OF RESIDENCE OF ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS BY AGE, NSW 1998**

Health Area	Maternal age (years)						TOTAL	
	Less than 20		20+				No.	%
	No.	%	No.	%	No.	%	No.	%
Central Sydney	6	8.5	65	91.5	0	0.0	71	100.0
Northern Sydney	0	0.0	10	100.0	0	0.0	10	100.0
Western Sydney	26	15.1	145	84.3	1	0.6	172	100.0
Wentworth	12	15.6	64	83.1	1	1.3	77	100.0
South Western Sydney	17	15.7	91	84.3	0	0.0	108	100.0
Central Coast	10	23.8	32	76.2	0	0.0	42	100.0
Hunter	21	20.4	82	79.6	0	0.0	103	100.0
Illawarra	21	17.6	96	80.7	2	1.7	119	100.0
South Eastern Sydney	3	6.4	44	93.6	0	0.0	47	100.0
Northern Rivers	23	14.3	138	85.7	0	0.0	161	100.0
Mid North Coast	42	25.1	125	74.9	0	0.0	167	100.0
New England	64	24.0	203	76.0	0	0.0	267	100.0
Macquarie	41	19.3	171	80.7	0	0.0	212	100.0
Mid Western	22	19.5	91	80.5	0	0.0	113	100.0
Far West	41	24.3	128	75.7	0	0.0	169	100.0
Greater Murray	25	20.8	95	79.2	0	0.0	120	100.0
Southern	12	18.8	51	79.7	1	1.6	64	100.0
Other/Not stated	3	14.3	18	85.7	0	0.0	21	100.0
<b>TOTAL</b>	<b>389</b>	<b>19.0</b>	<b>1649</b>	<b>80.7</b>	<b>5</b>	<b>0.2</b>	<b>2043</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

### 3.5 BOOKING STATUS

Between 1994 and 1998, there was no substantial change in the proportion of mothers who were booked into the hospital of birth – 87.5 per cent in 1994 and 87.3 per cent in 1998.

This compares with 98.3 per cent of non-Aboriginal/Torres Strait Islander mothers who were booked into the hospital of birth in 1998.

### 3.6 DURATION OF PREGNANCY AT FIRST ANTENATAL VISIT

Between 1994 and 1998, there was no substantial change in the proportion of mothers who commenced antenatal care at less than 20 weeks gestation – 63.0 per cent in 1994 and 66.3 per cent in 1998. This compares with 85.4 per cent of non-Aboriginal/Torres Strait Islander mothers who commenced antenatal care at less than 20 weeks gestation in 1998.

In 1998, over one quarter of Aboriginal or Torres Strait Islander mothers commenced antenatal care after 20 weeks gestation in most Health Areas (Table 34).

**TABLE 34**

**DURATION OF PREGNANCY AT FIRST ANTENATAL VISIT AMONG ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS BY HEALTH AREA OF RESIDENCE, NSW 1998**

Health Area	Duration of pregnancy at first antenatal visit (weeks)						TOTAL	
	0-19		20+		Not stated		No.	%
	No.	%	No.	%	No.	%	No.	%
Central Sydney	49	69.0	20	28.2	2	2.8	71	100.0
Northern Sydney #	-		-		-		10	100.0
Western Sydney	112	65.1	53	30.8	7	4.1	172	100.0
Wentworth	51	66.2	24	31.2	2	2.6	77	100.0
South Western Sydney	67	62.0	34	31.5	7	6.5	108	100.0
Central Coast	25	59.5	17	40.5	0	0.0	42	100.0
Hunter	66	64.1	34	33.0	3	2.9	103	100.0
Illawarra	80	67.2	33	27.7	6	5.0	119	100.0
South Eastern Sydney	34	72.3	12	25.5	1	2.1	47	100.0
Northern Rivers	111	68.9	41	25.5	9	5.6	161	100.0
Mid North Coast	121	72.5	34	20.4	12	7.2	167	100.0
New England	208	77.9	47	17.6	12	4.5	267	100.0
Macquarie	125	59.0	69	32.5	18	8.5	212	100.0
Mid Western	71	62.8	23	20.4	19	16.8	113	100.0
Far West	89	52.7	62	36.7	18	10.7	169	100.0
Greater Murray	78	65.0	33	27.5	9	7.5	120	100.0
Southern	42	65.6	15	23.4	7	10.9	64	100.0
Other/Not stated	16	76.2	3	14.3	2	9.5	21	100.0
TOTAL	1354	66.3	555	27.2	134	6.6	2043	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Information not shown for Health Areas where the number of mothers is less than 5 in a group.

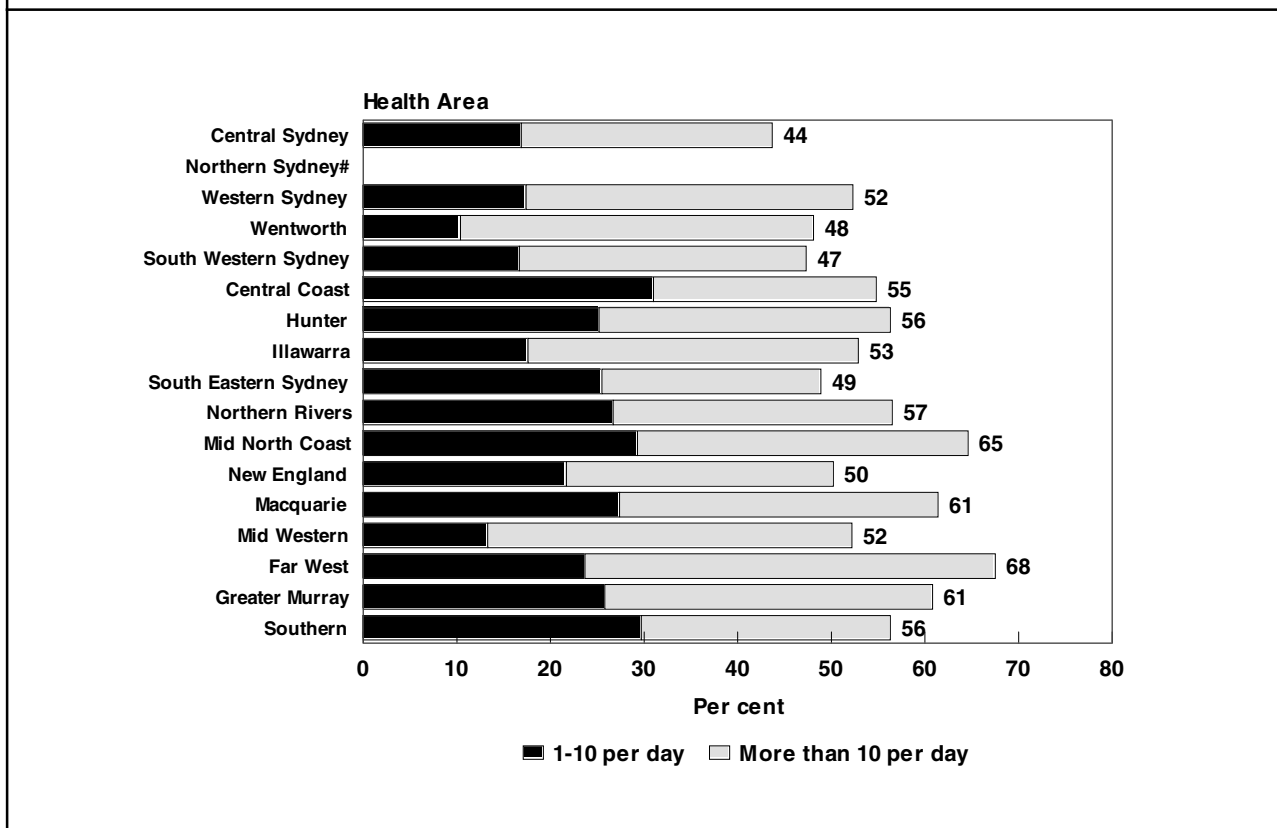
### 3.7 SMOKING IN PREGNANCY

In 1998, 58.2 per cent of Aboriginal/Torres Strait Islander mothers reported smoking at some time during pregnancy, compared to 60.3 per cent in 1994. This compares with 19.8 per cent of all mothers who reported smoking at some time during pregnancy in 1998 (see Section 1.8).

Smoking in the second half of pregnancy poses the greatest risk to the health of both mother and baby. In 1998, the proportion of Aboriginal/Torres Strait Islander mothers who smoked in the second half of pregnancy varied from 44.0 per cent in the Central Sydney Area to 68.0 per cent in the Far West Area (Figure 4).

**FIGURE 4**

**SMOKING IN THE SECOND HALF OF PREGNANCY AMONG ABORIGINAL/TORRES STRAIT ISLANDER MOTHERS BY HEALTH AREA OF RESIDENCE, NSW 1998**



Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Information not shown for Health Areas where the number of mothers is less than 5 in a group.

### 3.8 MEDICAL CONDITIONS AND OBSTETRIC COMPLICATIONS

In 1998, there were slightly higher rates of diabetes reported among Aboriginal/Torres Strait Islander mothers than non-Aboriginal/Torres Strait Islander mothers (Table 35).

Condition	Aboriginality							
	Aboriginal/ Torres Strait Islander		Non-Aboriginal/ Torres Strait Islander		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%
Diabetes mellitus	15	0.7	307	0.4	1	0.4	323	0.4
Gestational diabetes	66	3.2	3049	3.7	3	1.2	3118	3.7
Essential hypertension	25	1.2	752	0.9	2	0.8	779	0.9
Pregnancy- induced hypertension	109	5.3	5280	6.4	4	1.7	5393	6.3
TOTAL CONFINEMENTS	2043	100.0	82787	100.0	242	100.0	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

### 3.9 LABOUR AND DELIVERY

The rate of induction of labour among Aboriginal/Torres Strait Islander mothers increased from 15.7 to 19.6 per cent between 1994 and 1998, while the rate of spontaneous onset of labour decreased from 77.3 to 71.8 per cent (Table 36). These trends follow the statewide trends (Section 1.10). However, the rate of induction of labour among Aboriginal/Torres Strait Islander mothers continued to be lower than the statewide rate, which was 24.2 per cent in 1998.

The rate of normal vaginal birth has remained stable at about 77 per cent since 1994 (Table 37). The caesarean section rate increased from 15.7 per cent in 1994 to 17.3 per cent in 1998, with most of this increase due to an increased rate of elective caesarean section. The rate of instrumental delivery (forceps or vacuum extraction) decreased from 5.3 to 4.8 per cent. Over the five year period, the number of vacuum extraction deliveries increased and the number of forceps deliveries decreased. These trends were similar to that of NSW overall (Section 1.10).

Labour onset	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous	1183	77.3	1345	77.3	1315	76.8	1377	74.8	1467	71.8
No labour#	104	6.8	128	7.4	112	6.5	153	8.3	176	8.6
Induced	241	15.7	265	15.2	284	16.6	311	16.9	400	19.6
Not stated	3	0.2	1	0.1	1	0.1	1	0.1	0	0.0
TOTAL	1531	100.0	1739	100.0	1712	100.0	1842	100.0	2043	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# No labour indicates elective caesarean section.

Type of delivery	1994		Year 1995		1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Normal vaginal	1181	77.1	1347	77.5	1327	77.5	1423	77.3	1563	76.5
Forceps	51	3.3	57	3.3	51	3.0	47	2.6	56	2.7
Vacuum extraction	30	2.0	25	1.4	31	1.8	45	2.4	43	2.1
Vaginal breech	23	1.5	25	1.4	28	1.6	15	0.8	27	1.3
Elective caesarean section	104	6.8	128	7.4	112	6.5	153	8.3	176	8.6
Emergency caesarean section	137	8.9	155	8.9	162	9.5	159	8.6	177	8.7
Not stated	5	0.3	2	0.1	1	0.1	0	0.0	1	0.0
TOTAL	1531	100.0	1739	100.0	1712	100.0	1842	100.0	2043	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.



### 3.10 BIRTH WEIGHT

Since 1994, the rate of low birth weight (less than 2,500 grams) in Aboriginal/Torres Strait Islander babies has been over 10 per cent and was 10.8 per cent in 1998 (Table 38). This is about one and a half times higher than the rate for NSW overall, which was 6.1 per cent in 1998. In 1998, the highest rates of low birth weight were 16.5 per cent in Far West Area and 12.4 per cent in Macquarie Area (Table 39).

**TABLE 38**

**WEIGHT OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES, NSW 1994-98**

Birth weight (grams)	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 1,000	22	1.5	16	1.0	20	1.1	25	1.5	30	1.6
1,000 - 1,499	22	1.4	19	1.1	15	0.9	18	1.0	19	0.9
1,500 - 2,499	142	9.2	157	8.9	143	8.3	175	9.4	174	8.4
2,500+	1361	88.2	1562	88.8	1538	89.2	1631	88.0	1850	89.5
Not stated	2	0.1	1	0.1	3	0.2	0	0.0	1	0.0
TOTAL	1543	100.0	1759	100.0	1724	100.0	1854	100.0	2068	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 39**

**WEIGHT OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES BY HEALTH AREA OF RESIDENCE, NSW 1998#**

Health Area	Birth weight (grams)							
	Less than 2,500		2,500+		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%
Central Sydney	14	19.4	58	80.6	0	0.0	72	100.0
Northern Sydney	-	-	-	-	-	-	10	100.0
Western Sydney	15	8.7	158	91.3	0	0.0	173	100.0
Wentworth	7	9.0	71	91.0	0	0.0	78	100.0
South Western Sydney	11	9.9	100	90.1	0	0.0	111	100.0
Central Coast	5	11.6	38	88.4	0	0.0	43	100.0
Hunter	11	10.6	93	89.4	0	0.0	104	100.0
Illawarra	14	11.7	106	88.3	0	0.0	120	100.0
South Eastern Sydney	3	6.3	45	93.8	0	0.0	48	100.0
Northern Rivers	19	11.5	146	88.5	0	0.0	165	100.0
Mid North Coast	20	11.9	148	88.1	0	0.0	168	100.0
New England	17	6.3	251	93.3	1	0.4	269	100.0
Macquarie	27	12.4	190	87.6	0	0.0	217	100.0
Mid Western	12	10.6	101	89.4	0	0.0	113	100.0
Far West	28	16.5	142	83.5	0	0.0	170	100.0
Greater Murray	7	5.7	115	94.3	0	0.0	122	100.0
Southern	5	7.8	59	92.2	0	0.0	64	100.0
Other/Not stated	2	9.5	19	90.5	0	0.0	21	100.0
TOTAL	217	10.5	1850	89.5	1	0.0	2068	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Information not shown for Health Areas where the number of mothers is less than 5 in a group.

### 3.11 GESTATIONAL AGE

Since 1994, the rate of prematurity (less than 37 weeks gestation) in Aboriginal/Torres Strait Islander babies has been over 10 per cent and was 10.6 per cent in 1998 (Table 40). This is about one and a half times higher than the rate of 6.9 per cent for NSW overall in 1998. In 1998, the highest rates of prematurity were in the Central Sydney and Far West Areas (15.7 and 15.3 per cent respectively, Table 41).

**TABLE 40**

**GESTATIONAL AGE OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES, NSW 1994-98**

Gestational age (weeks)	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
20-27	17	1.1	22	1.3	25	1.5	29	1.6	26	1.3
28-31	22	1.4	19	1.1	17	1.0	18	1.0	26	1.3
32-36	141	9.1	147	8.4	139	8.1	182	9.8	167	8.1
37-41	1308	84.8	1530	87.0	1508	87.5	1584	85.4	1822	88.1
42 +	53	3.4	40	2.3	33	1.9	40	2.2	27	1.3
Not stated	2	0.1	1	0.1	2	0.1	1	0.1	0	0.0
TOTAL	1543	100.0	1759	100.0	1724	100.0	1854	100.0	2068	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 41**

**GESTATIONAL AGE OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES BY HEALTH AREA OF RESIDENCE, NSW 1998**

Health Area	Less than 37		Gestational age 37+		TOTAL	
	No.	%	No.	%	No.	%
Central Sydney	11	15.7	59	84.3	70	100.0
Northern Sydney	1	10.0	9	90.0	10	100.0
Western Sydney	17	9.8	156	90.2	173	100.0
Wentworth	10	12.8	68	87.2	78	100.0
South Western Sydney	13	11.7	98	88.3	111	100.0
Central Coast	5	11.6	38	88.4	43	100.0
Hunter	12	11.5	92	88.5	104	100.0
Illawarra	15	12.5	105	87.5	120	100.0
South Eastern Sydney	2	4.2	46	95.8	48	100.0
Northern Rivers	22	13.3	143	86.7	165	100.0
Mid North Coast	18	10.7	150	89.3	168	100.0
New England	17	6.3	252	93.7	269	100.0
Macquarie	30	13.8	187	86.2	217	100.0
Mid Western	9	8.0	104	92.0	113	100.0
Far West	26	15.3	144	84.7	170	100.0
Greater Murray	7	5.7	115	94.3	122	100.0
Southern	2	3.1	62	96.9	64	100.0
Other/Not stated	2	9.5	19	90.5	21	100.0
TOTAL	219	10.6	1849	89.4	2068	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

### 3.12 APGAR SCORE

In 1998, 3.2 per cent of Aboriginal/Torres Strait Islander babies were born with an Apgar score less than 7 (Table 42). This rate has not changed substantially since 1994 and is slightly higher than the rate of 1.2 per cent for NSW overall (Section 1.14).

<b>TABLE 42</b>										
<b>APGAR SCORE OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES, NSW 1994-98</b>										
Apgar score at 5 minutes	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
0-4	28	1.8	51	2.9	33	1.9	42	2.3	38	1.8
5-7	34	2.2	27	1.5	34	2.0	34	1.8	28	1.4
7+	1442	93.5	1675	95.2	1652	95.8	1770	95.5	1989	96.2
Not stated	39	2.5	6	0.3	5	0.3	8	0.4	13	0.6
TOTAL	1543	100.0	1759	100.0	1724	100.0	1854	100.0	2068	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

### 3.13 PERINATAL MORTALITY

Since 1994, the perinatal mortality rate among Aboriginal/Torres Strait Islander babies varied from 14.3 to 20.0 per 1,000 births. The rate of 15.5 per 1,000 in 1998 is about one and a half times the rate of 9.4 per 1,000 for NSW overall (Table 43).

<b>TABLE 43</b>										
<b>PERINATAL DEATHS AMONG ABORIGINAL AND TORRES STRAIT ISLANDER BABIES, NSW 1994-98#</b>										
Perinatal deaths	1994		1995		Year 1996		1997		1998	
	No.	Rate/1,000	No.	Rate/1,000	No.	Rate/1,000	No.	Rate/1,000	No.	Rate/1,000
Stillbirth	14	9.1	21	11.9	20	11.6	2	12.9	21	10.2
Neonatal death	8	5.2	13	7.4	10	5.8	13	7.0	11	5.3
TOTAL PERINATAL DEATHS	22	14.3	34	19.3	30	17.4	37	20.0	32	15.5

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Perinatal deaths include deaths reported to the MDC only. As the MDC form is completed at discharge or transfer of the baby, deaths occurring after this time may not be reported to the MDC.

## PART 4: MATERNAL COUNTRY OF BIRTH

In this section maternal countries of birth are combined into English-speaking and other regional groups. The country groups and individual countries are listed in Appendix 3. Recent trends in confinements for individual maternal countries of birth are shown in Table 4.

### 4.1 TRENDS IN CONFINEMENTS

Between 1994 and 1998, about 20 per cent of mothers were born in non-English speaking countries (Table 44). The proportion of mothers from Asian countries increased slightly from 9.2 to 10.1 per cent, while the proportion of mothers from southern European countries decreased slightly from 2.0 to 1.6 per cent.

**TABLE 44**

**CONFINEMENTS AND BIRTHS BY COUNTRY OF BIRTH GROUP, NSW 1994-98**

Plurality	1994		1995		Year 1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Confinements</b>										
English speaking	69698	80.4	69311	80.3	67889	79.6	68827	79.2	67971	79.9
Central & South America	685	0.8	669	0.8	756	0.9	687	0.8	683	0.8
Melanesia, Micronesia & Polynesia	1182	1.4	1356	1.6	1410	1.7	1561	1.8	1590	1.9
Southern Europe	1771	2.0	1632	1.9	1530	1.8	1516	1.7	1380	1.6
Western & Northern Europe	682	0.8	612	0.7	614	0.7	627	0.7	646	0.8
Eastern Europe, Russia, Central Asian & Baltic States	359	0.4	403	0.5	364	0.4	393	0.5	362	0.4
Middle East & Africa	3786	4.4	3690	4.3	3676	4.3	3793	4.4	3670	4.3
South East Asia	4155	4.8	4462	5.2	4587	5.4	4599	5.3	4157	4.9
North East Asia	2816	3.2	2961	3.4	3226	3.8	3325	3.8	3097	3.6
Southern Asia	982	1.1	1102	1.3	1170	1.4	1407	1.6	1349	1.6
Other/Not stated	622	0.7	65	0.1	80	0.1	185	0.2	167	0.2
<b>TOTAL</b>	<b>86738</b>	<b>100.0</b>	<b>86263</b>	<b>100.0</b>	<b>85302</b>	<b>100.0</b>	<b>86920</b>	<b>100.0</b>	<b>85072</b>	<b>100.0</b>
<b>Births</b>										
English speaking	70730	80.4	70255	80.4	68816	79.6	69843	79.2	69008	80.0
Central & South America	694	0.8	675	0.8	761	0.9	693	0.8	689	0.8
Melanesia, Micronesia & Polynesia	1203	1.4	1370	1.6	1431	1.7	1585	1.8	1610	1.9
Southern Europe	1796	2.0	1662	1.9	1559	1.8	1532	1.7	1412	1.6
Western & Northern Europe	688	0.8	623	0.7	625	0.7	633	0.7	652	0.8
Eastern Europe, Russia, Central Asian & Baltic States	363	0.4	411	0.5	366	0.4	398	0.5	365	0.4
Middle East & Africa	3861	4.4	3726	4.3	3722	4.3	3854	4.4	3731	4.3
South East Asia	4181	4.8	4507	5.2	4624	5.4	4636	5.3	4181	4.8
North East Asia	2844	3.2	2976	3.4	3260	3.8	3355	3.8	3118	3.6
Southern Asia	995	1.1	1119	1.3	1182	1.4	1416	1.6	1360	1.6
Other/Not stated	629	0.7	67	0.1	83	0.1	188	0.2	179	0.2
<b>TOTAL</b>	<b>87984</b>	<b>100.0</b>	<b>87391</b>	<b>100.0</b>	<b>86429</b>	<b>100.0</b>	<b>88133</b>	<b>100.0</b>	<b>86305</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 4.2 MATERNAL AGE

Births to teenage mothers were more common among mothers born in English-speaking countries than non-English speaking countries (Table 45, Figure 5), while the largest proportions of mothers aged 35 years and over were born in North East Asia (30.5 per cent) and Western and Northern Europe (27.4 per cent).

**TABLE 45**

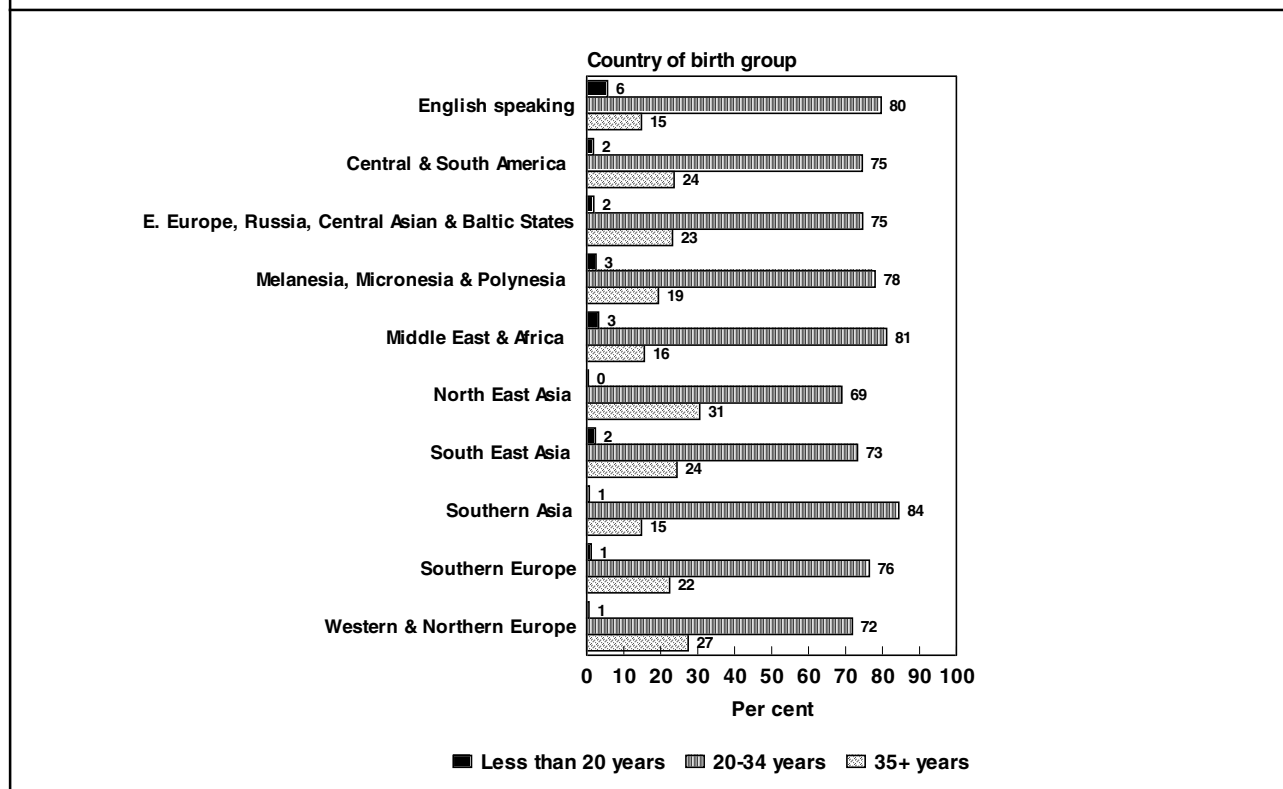
**AGE OF MOTHER BY COUNTRY OF BIRTH GROUP, NSW 1998**

Country of birth group	12-19		20-34		35+		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking	3795	5.6	54076	79.6	10033	14.8	67	0.1	67971	100.0
Central & South America	12	1.8	509	74.5	161	23.6	1	0.1	683	100.0
Melanesia, Micronesia & Polynesia	39	2.5	1240	78.0	309	19.4	2	0.1	1590	100.0
Southern Europe	16	1.2	1054	76.4	309	22.4	1	0.1	1380	100.0
Western & Northern Europe	4	0.6	464	71.8	177	27.4	1	0.2	646	100.0
Eastern Europe, Russia, Central Asian & Baltic States	7	1.9	270	74.6	84	23.2	1	0.3	362	100.0
Middle East & Africa	118	3.2	2978	81.1	573	15.6	1	0.0	3670	100.0
South East Asia	96	2.3	3043	73.2	1015	24.4	3	0.1	4157	100.0
North East Asia	12	0.4	2138	69.0	946	30.5	1	0.0	3097	100.0
Southern Asia	10	0.7	1139	84.4	199	14.8	1	0.1	1349	100.0
Other/Not stated	9	5.4	123	73.7	33	19.8	2	1.2	167	100.0
TOTAL	4118	4.8	67034	78.8	13839	16.3	81	0.1	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**FIGURE 5**

**AGE OF MOTHER BY COUNTRY OF BIRTH GROUP, NSW 1998**



Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

### 4.3 HEALTH AREA OF RESIDENCE

In 1998, the proportion of mothers born in non-English speaking countries was highest in the Central Sydney Area (45.4 per cent), followed by the South Western Sydney and Western Sydney Areas (36.4 and 35.3 per cent respectively). Five per cent of mothers were born in South East Asian countries, 37.2 per cent of whom were resident in the South Western Sydney Area. Four per cent of mothers were born in Middle Eastern or African countries

and 59.5 per cent of these mothers were resident in the South Western or Western Sydney Areas. A further 3.6 per cent of mothers were born in North East Asian countries, the majority living in the Central Sydney, Northern Sydney or Western Sydney Areas (Table 46).

**TABLE 46**

**HEALTH AREA OF RESIDENCE BY MATERNAL COUNTRY OF BIRTH GROUP, NSW 1998#**

Health Area	English speaking		Central & South America		Melanesia & Micronesia & Polynesia		Southern Europe		Western & Northern Europe		Eastern Europe, Russia, Central Asian & Baltic States		Middle East & Africa		South East Asia		North East Asia		Southern Asia		Other/ Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Central Sydney	3582	54.5	77	1.2	276	4.2	241	3.7	69	1.0	34	0.5	656	10.0	643	9.8	766	11.7	220	3.3	10	0.2	6574	100.0
Northern Sydney	6930	78.5	72	0.8	122	1.4	117	1.3	163	1.8	46	0.5	196	2.2	341	3.9	639	7.2	177	2.0	21	0.2	8824	100.0
Western Sydney	6808	64.6	112	1.1	444	4.2	193	1.8	58	0.6	63	0.6	1029	9.8	711	6.7	633	6.0	471	4.5	19	0.2	10541	100.0
Wentworth	4401	91.2	26	0.5	41	0.8	52	1.1	36	0.7	11	0.2	53	1.1	112	2.3	27	0.6	63	1.3	3	0.1	4825	100.0
South Western Sydney	7598	63.1	238	2.0	429	3.6	377	3.1	54	0.4	69	0.6	1155	9.6	1548	12.8	349	2.9	169	1.4	64	0.5	12050	100.0
Central Coast	3575	95.7	13	0.3	12	0.3	10	0.3	23	0.6	7	0.2	15	0.4	44	1.2	24	0.6	10	0.3	3	0.1	3736	100.0
Hunter	6672	97.0	6	0.1	27	0.4	18	0.3	23	0.3	7	0.1	13	0.2	74	1.1	23	0.3	9	0.1	3	0.0	6875	100.0
Illawarra	4000	92.0	26	0.6	21	0.5	104	2.4	26	0.6	14	0.3	51	1.2	64	1.5	19	0.4	14	0.3	11	0.3	4350	100.0
South Eastern Sydney	6799	74.4	97	1.1	141	1.5	235	2.6	117	1.3	98	1.1	442	4.8	470	5.1	568	6.2	154	1.7	14	0.2	9135	100.0
Northern Rivers	2831	96.3	-	-	10	0.3	8	0.3	23	0.8	-	-	9	0.3	32	1.1	12	0.4	8	0.3	2	0.1	2941	100.0
Mid North Coast	2864	97.0	6	0.2	7	0.2	-	-	10	0.3	-	-	7	0.2	33	1.1	-	-	16	0.5	2	0.1	2954	100.0
New England	2323	97.6	-	-	10	0.4	-	-	6	0.3	-	-	6	0.3	15	0.6	7	0.3	9	0.4	1	0.0	2381	100.0
Macquarie	1563	98.4	-	-	-	0.2	-	-	-	-	-	-	5	0.3	7	0.4	5	0.3	-	-	1	0.1	1589	100.0
Mid Western	2287	97.8	-	-	7	0.3	-	-	8	0.3	-	-	7	0.3	15	0.6	-	-	5	0.2	3	0.1	2339	100.0
Far West	542	97.5	-	-	-	0.2	-	-	5	0.9	-	-	-	-	-	-	-	-	-	-	0	0.0	556	100.0
Greater Murray	2839	96.4	-	-	24	0.8	6	0.2	10	0.3	-	-	12	0.4	22	0.7	8	0.3	22	0.7	0	0.0	2946	100.0
Southern	1722	96.6	-	-	6	0.3	8	0.4	8	0.4	-	-	9	0.5	13	0.7	7	0.4	-	-	9	0.5	1782	100.0
Other/Not stated	635	94.2	2	0.3	9	1.3	4	0.6	-	-	1	0.1	-	-	-	-	3	0.4	1	0.1	1	0.1	674	100.0
<b>TOTAL</b>	<b>67971</b>	<b>79.9</b>	<b>683</b>	<b>0.8</b>	<b>1590</b>	<b>1.9</b>	<b>1380</b>	<b>1.6</b>	<b>646</b>	<b>0.8</b>	<b>362</b>	<b>0.4</b>	<b>3670</b>	<b>4.3</b>	<b>4157</b>	<b>4.9</b>	<b>3097</b>	<b>3.6</b>	<b>1349</b>	<b>1.6</b>	<b>167</b>	<b>0.2</b>	<b>85072</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.  
# Data not shown for country of birth groups with less than five in a group.

#### 4.4 BOOKING STATUS

In 1998, 98.0 per cent of all mothers were booked at the hospital of birth. The lowest rate (94.5 per cent) was in mothers born in Melanesia, Micronesia and Polynesia. This compared with 98.0 per cent of mothers born in English speaking countries and over 98 per cent of mothers in other country of birth groups.

#### 4.5 DURATION OF PREGNANCY AT FIRST ANTENATAL VISIT

In 1998, 84.9 per cent of all mothers commenced antenatal care before 20 weeks gestation. There was some variation between country of birth groups, with 86.9 per cent of mothers born in English speaking countries commencing antenatal care before 20 weeks gestation, compared with 55.8 per cent of mothers born in Melanesia, Micronesia and Polynesia and 68.4 per cent of mothers born in the Middle East and Africa (Table 47).

**TABLE 47**

**CONFINEMENTS BY COUNTRY OF BIRTH GROUP AND DURATION OF PREGNANCY AT FIRST ANTENATAL VISIT, NSW 1998**

Country of birth group	Duration of pregnancy at first antenatal visit (weeks)							
	0-19		20+		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%
English speaking	59083	86.9	7718	11.4	1170	1.7	67971	100.0
Central & South America	582	85.2	95	13.9	6	0.9	683	100.0
Melanesia, Micronesia & Polynesia	888	55.8	639	40.2	63	4.0	1590	100.0
Southern Europe	1206	87.4	155	11.2	19	1.4	1380	100.0
Western & Northern Europe	567	87.8	71	11.0	8	1.2	646	100.0
Eastern Europe, Russia, Central Asian & Baltic States	289	79.8	69	19.1	4	1.1	362	100.0
Middle East & Africa	2512	68.4	1113	30.3	45	1.2	3670	100.0
South East Asia	3430	82.5	686	16.5	41	1.0	4157	100.0
North East Asia	2477	80.0	603	19.5	17	0.5	3097	100.0
Southern Asia	1103	81.8	230	17.0	16	1.2	1349	100.0
Other/Not stated	120	71.9	31	18.6	16	9.6	167	100.0
<b>TOTAL</b>	<b>72257</b>	<b>84.9</b>	<b>11410</b>	<b>13.4</b>	<b>1405</b>	<b>1.7</b>	<b>85072</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

#### 4.6 SMOKING IN PREGNANCY

In 1998, smoking at any time during pregnancy was far more common among mothers born in English speaking countries than mothers born in non-English speaking countries (Table 48). About one in four mothers born in English speaking countries smoked at some time during pregnancy, compared with one in eight or fewer mothers born in non-English speaking countries.

Smoking in the second half of pregnancy poses the greatest risk to the health of both mother and baby and was also more common in mothers born in English speaking countries than in mothers born in non-English speaking countries (Table 49).

**TABLE 48**

**CONFINEMENTS BY COUNTRY OF BIRTH GROUP AND SMOKING IN PREGNANCY, NSW 1998**

Country of birth group	Smoking in pregnancy							
	No		Yes		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%
English speaking	52097	76.6	15799	23.2	75	0.1	67971	100.0
Central & South America	637	93.3	46	6.7	0	0.0	683	100.0
Melanesia, Micronesia & Polynesia	1431	90.0	157	9.9	2	0.1	1590	100.0
Southern Europe	1217	88.2	163	11.8	0	0.0	1380	100.0
Western & Northern Europe	564	87.3	82	12.7	0	0.0	646	100.0
Eastern Europe, Russia, Central Asian & Baltic States	329	90.9	33	9.1	0	0.0	362	100.0
Middle East & Africa	3301	89.9	365	9.9	4	0.1	3670	100.0
South East Asia	4030	96.9	125	3.0	2	0.0	4157	100.0
North East Asia	3053	98.6	43	1.4	1	0.0	3097	100.0
Southern Asia	1335	99.0	14	1.0	0	0.0	1349	100.0
Other/Not stated	133	79.6	32	19.2	2	1.2	167	100.0
<b>TOTAL</b>	<b>68127</b>	<b>80.1</b>	<b>16859</b>	<b>19.8</b>	<b>86</b>	<b>0.1</b>	<b>85072</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 49**
**MOTHERS WHO SMOKED AT ALL DURING PREGNANCY BY NUMBER OF CIGARETTES SMOKED IN THE SECOND HALF OF PREGNANCY AND COUNTRY OF BIRTH GROUP, NSW 1998**

Country of birth group	None		More than ten per day		1 - 10 per day		Smoked, Amount not stated		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking	622	3.9	7796	49.3	7049	44.6	327	2.1	5	0.0	15799	100.0
Central & South America	8	17.4	12	26.1	24	52.2	2	4.3	0	0.0	46	100.0
Melanesia, Micronesia & Polynesia	5	3.2	51	32.5	97	61.8	4	2.5	0	0.0	157	100.0
Southern Europe	8	4.9	59	36.2	91	55.8	5	3.1	0	0.0	163	100.0
Western & Northern Europe	9	11.0	29	35.4	42	51.2	2	2.4	0	0.0	82	100.0
Eastern Europe, Russia, Central States	0	0.0	10	30.3	23	69.7	0	0.0	0	0.0	33	100.0
Middle East & Africa	15	4.1	156	42.7	182	49.9	11	3.0	1	0.3	365	100.0
South East Asia	9	7.2	32	25.6	81	64.8	3	2.4	0	0.0	125	100.0
North East Asia	11	25.6	3	7.0	28	65.1	1	2.3	0	0.0	43	100.0
Southern Asia	1	7.1	5	35.7	6	42.9	2	14.3	0	0.0	14	100.0
Other/Not stated	2	6.3	18	56.3	11	34.4	1	3.1	0	0.0	32	100.0
TOTAL	690	4.1	8171	48.5	7634	45.3	358	2.1	6	0.0	16859	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

#### 4.7 MEDICAL CONDITIONS AND OBSTETRIC COMPLICATIONS

In 1998, 0.8 per cent of mothers born in Melanesia, Micronesia and Polynesia were reported to have diabetes mellitus, twice the rate for all mothers in NSW. The rates of gestational diabetes in mothers born in Asian countries and Melanesia, Micronesia and Polynesia were over 8 per cent, also more than twice the rate for all mothers in NSW (Table 50).

**TABLE 50**
**MATERNAL MEDICAL CONDITIONS AND OBSTETRIC COMPLICATIONS BY COUNTRY OF BIRTH GROUP, NSW 1998**

Condition	Country of birth group																						TOTAL	
	English speaking		Central & South America		Melanesia & Polynesia		Southern Europe		Western & Northern Europe		Eastern Europe, Russia, Central Asian & Baltic States		Middle East & Africa		South East Asia		North East Asia		Southern Asia		Other/ Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Diabetes mellitus	245	0.4	2	0.3	13	0.8	7	0.5	1	0.2	1	0.3	18	0.5	9	0.2	17	0.5	8	0.6	2	1.2	323	0.4
Gestational diabetes	1760	2.6	39	5.7	132	8.3	92	6.7	19	2.9	12	3.3	231	6.3	372	8.9	318	10.3	135	10.0	8	4.8	3118	3.7
Essential hypertension	662	1.0	5	0.7	15	0.9	14	1.0	7	1.1	5	1.4	20	0.5	28	0.7	16	0.5	4	0.3	3	1.8	779	0.9
Pregnancy-induced hypertension	4554	6.7	42	6.1	119	7.5	79	5.7	42	6.5	23	6.4	148	4.0	178	4.3	120	3.9	75	5.6	13	7.8	5393	6.3
TOTAL CONFINEMENTS	67971	100.0	683	100.0	1590	100.0	1380	100.0	646	100.0	362	100.0	3670	100.0	4157	100.0	3097	100.0	1349	100.0	167	100.0	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.



## 4.8 LABOUR AND DELIVERY

Mothers born in non-English speaking countries were more likely to have a spontaneous onset of labour than mothers born in English speaking countries and less likely to be induced (Table 51).

Mothers born in Melanesia, Micronesia and Polynesia and the Middle East and Africa were most likely to have a normal vaginal delivery than mothers in other country of birth groups (Table 52). The highest caesarean section rate was among mothers born in Central and South America (23.9 per cent).

**TABLE 51**

**LABOUR ONSET BY COUNTRY OF BIRTH GROUP, NSW 1998**

Country of birth group	Spontaneous		No labour#		Onset of labour Induced		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking	43214	63.6	7220	10.6	17522	25.8	15	0.0	67971	100.0
Central & South America	451	66.0	81	11.9	151	22.1	0	0.0	683	100.0
Melanesia, Micronesia & Polynesia	1161	73.0	130	8.2	298	18.7	1	0.1	1590	100.0
Southern Europe	910	65.9	151	10.9	319	23.1	0	0.0	1380	100.0
Western & Northern Europe	458	70.9	54	8.4	134	20.7	0	0.0	646	100.0
Eastern Europe, Russia, Central										
Asian & Baltic States	261	72.1	29	8.0	72	19.9	0	0.0	362	100.0
Middle East & Africa	2712	73.9	302	8.2	652	17.8	4	0.1	3670	100.0
South East Asia	3220	77.5	364	8.8	572	13.8	1	0.0	4157	100.0
North East Asia	2269	73.3	304	9.8	524	16.9	0	0.0	3097	100.0
Southern Asia	929	68.9	134	9.9	286	21.2	0	0.0	1349	100.0
Other/Not stated	104	62.3	31	18.6	32	19.2	0	0.0	167	100.0
TOTAL	55689	65.5	8800	10.3	20562	24.2	21	0.0	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# No labour indicates elective caesarean section

**TABLE 52**

**TYPE OF DELIVERY BY COUNTRY OF BIRTH GROUP, NSW 1998**

Country of birth group	Normal vaginal		Forceps		Vacuum extraction		Type of delivery Vaginal breech		Elective caesarean		Emergency caesarean section#		Not stated section#		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	English speaking	47176	69.4	3580	5.3	3462	5.1	616	0.9	7220	10.6	5898	8.7	19	0.0	67971
Central & South America	437	64.0	39	5.7	39	5.7	5	0.7	81	11.9	82	12.0	0	0.0	683	100.0
Melanesia, Micronesia & Polynesia	1189	74.8	57	3.6	51	3.2	24	1.5	130	8.2	139	8.7	0	0.0	1590	100.0
Southern Europe	955	69.2	71	5.1	61	4.4	12	0.9	151	10.9	130	9.4	0	0.0	1380	100.0
Western & Northern Europe	449	69.5	41	6.3	38	5.9	8	1.2	54	8.4	56	8.7	0	0.0	646	100.0
Eastern Europe, Russia, Central																
Asian & Baltic States	269	74.3	17	4.7	25	6.9	1	0.3	29	8.0	21	5.8	0	0.0	362	100.0
Middle East & Africa	2826	77.0	137	3.7	139	3.8	42	1.1	302	8.2	220	6.0	4	0.1	3670	100.0
South East Asia	2838	68.3	226	5.4	269	6.5	51	1.2	364	8.8	409	9.8	0	0.0	4157	100.0
North East Asia	1993	64.4	203	6.6	274	8.8	26	0.8	304	9.8	297	9.6	0	0.0	3097	100.0
Southern Asia	864	64.0	100	7.4	89	6.6	16	1.2	134	9.9	146	10.8	0	0.0	1349	100.0
Other/Not stated	101	60.5	7	4.2	6	3.6	4	2.4	31	18.6	18	10.8	0	0.0	167	100.0
TOTAL	59097	69.5	4478	5.3	4453	5.2	805	0.9	8800	10.3	7416	8.7	23	0.0	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Data for emergency caesarean section include four cases where caesarean section was reported but onset of labour was not reported.

## 4.9 BIRTH WEIGHT

The rate of low birth weight (less than 2,500 grams) in 1998 was 6.1 per cent in NSW. The highest rates of low birth weight were in babies of mothers born in Southern Asian countries (9.0 per cent) (Table 53). Babies of mothers born in Central and South America and North East Asia were least likely to be low birth weight.

**TABLE 53**

**BIRTH WEIGHT BY MATERNAL COUNTRY OF BIRTH GROUP, NSW 1998**

Country of birth group	Birth weight (grams)						TOTAL	
	Less than 2,500		2,500+		Not stated		No.	%
	No.	%	No.	%	No.	%		
English speaking	4162	6.0	64794	93.9	52	0.1	69008	100.0
Central & South America	26	3.8	663	96.2	0	0.0	689	100.0
Melanesia, Micronesia & Polynesia	112	7.0	1498	93.0	0	0.0	1610	100.0
Southern Europe	84	5.9	1328	94.1	0	0.0	1412	100.0
Western & Northern Europe	37	5.7	615	94.3	0	0.0	652	100.0
Eastern Europe, Russia, Central Asian & Baltic States	20	5.5	345	94.5	0	0.0	365	100.0
Middle East & Africa	211	5.7	3513	94.2	7	0.2	3731	100.0
South East Asia	233	5.6	3946	94.4	2	0.0	4181	100.0
North East Asia	156	5.0	2961	95.0	1	0.0	3118	100.0
Southern Asia	123	9.0	1236	90.9	1	0.1	1360	100.0
Other/Not stated	69	38.5	107	59.8	3	1.7	179	100.0
<b>TOTAL</b>	<b>5233</b>	<b>6.1</b>	<b>81006</b>	<b>93.9</b>	<b>66</b>	<b>0.1</b>	<b>86305</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 4.10 GESTATIONAL AGE

The rate of prematurity (less than 37 weeks gestation) in 1998 was 6.9 per cent in NSW. The highest rates of prematurity were in babies of mothers born Melanesia, Micronesia and Polynesia (7.8 per cent) and Southern Europe (7.7 per cent). Babies of mothers born in Central and South America or Western and Northern Europe were least likely to be premature (Table 54).

**TABLE 54**

**GESTATIONAL AGE BY MATERNAL COUNTRY OF BIRTH GROUP, NSW 1998**

Country of birth group	Gestational age (weeks)						TOTAL	
	Less than 37		37+		Not stated		No.	%
	No.	%	No.	%	No.	%		
English speaking	4786	6.9	64207	93.0	15	0.0	69008	100.0
Central & South America	29	4.2	660	95.8	0	0.0	689	100.0
Melanesia, Micronesia & Polynesia	125	7.8	1484	92.2	1	0.1	1610	100.0
Southern Europe	109	7.7	1303	92.3	0	0.0	1412	100.0
Western & Northern Europe	31	4.8	621	95.2	0	0.0	652	100.0
Eastern Europe, Russia, Central Asian & Baltic States	27	7.4	338	92.6	0	0.0	365	100.0
Middle East & Africa	217	5.8	3514	94.2	0	0.0	3731	100.0
South East Asia	274	6.6	3907	93.4	0	0.0	4181	100.0
North East Asia	195	6.3	2923	93.7	0	0.0	3118	100.0
Southern Asia	88	6.5	1271	93.5	1	0.1	1360	100.0
Other/Not stated	72	40.2	106	59.2	1	0.6	179	100.0
<b>TOTAL</b>	<b>5953</b>	<b>6.9</b>	<b>80334</b>	<b>93.1</b>	<b>18</b>	<b>0.0</b>	<b>86305</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

## 4.11 APGAR SCORE

In 1998, 2.3 per cent of all babies (including stillborn babies) had an Apgar score of 7 or less at five minutes and 1.2 per cent had a score of less than 4 (Table 55). Low Apgar scores were most common among babies of mothers born in Melanesia, Micronesia and Polynesia (3.1 per cent).

**TABLE 55**

**BIRTHS BY COUNTRY OF BIRTH GROUP AND APGAR SCORE AT FIVE MINUTES, NSW 1998#**

Country of birth group	0-4		5-6		Apgar score 7+		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking	805	1.2	791	1.1	67250	97.5	162	0.2	69008	100.0
Central & South America	3	0.4	4	0.6	681	98.8	1	0.1	689	100.0
Melanesia, Micronesia & Polynesia	23	1.4	27	1.7	1551	96.3	9	0.6	1610	100.0
Southern Europe	17	1.2	18	1.3	1373	97.2	4	0.3	1412	100.0
Western & Northern Europe	7	1.1	9	1.4	636	97.5	0	0.0	652	100.0
Eastern Europe, Russia, Central Asian & Baltic States	3	0.8	4	1.1	358	98.1	0	0.0	365	100.0
Middle East & Africa	48	1.3	42	1.1	3635	97.4	6	0.2	3731	100.0
South East Asia	45	1.1	47	1.1	4081	97.6	8	0.2	4181	100.0
North East Asia	28	0.9	29	0.9	3057	98.0	4	0.1	3118	100.0
Southern Asia	16	1.2	15	1.1	1327	97.6	2	0.1	1360	100.0
Other/Not stated	6	3.4	4	2.2	165	92.2	4	2.2	179	100.0
<b>TOTAL</b>	<b>1001</b>	<b>1.2</b>	<b>990</b>	<b>1.1</b>	<b>84114</b>	<b>97.5</b>	<b>200</b>	<b>0.2</b>	<b>86305</b>	<b>100.0</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.  
# Births include stillbirths.

## 4.12 PERINATAL OUTCOMES

In 1998, 99 per cent of babies born in NSW and reported to the MDC were born alive and survived until discharge from the hospital of birth (Table 56). Babies of mothers born in Melanesia, Micronesia and Polynesia were far more likely than other country of birth groups to be stillborn or die in the neonatal period, though the total number of perinatal deaths in this group is small.

**TABLE 56**

**PERINATAL OUTCOMES BY COUNTRY OF BIRTH GROUP, NSW 1998#**

Country of birth group##	Liveborn surviving		Stillborn		Perinatal outcome Neonatal death		Not stated		Total births		Perinatal mortality rate/1,000 births
	No.	%	No.	%	No.	%	No.	%	No.	%	
English speaking	68260	98.9	490	0.7	176	0.3	82	0.1	69008	100.0	9.7
Central & South America	687	99.7	1	0.1	1	0.1	0	0.0	689	100.0	2.9
Melanesia, Micronesia & Polynesia	1585	98.4	17	1.1	3	0.2	5	0.3	1610	100.0	12.4
Southern Europe	1399	99.1	9	0.6	4	0.3	0	0.0	1412	100.0	9.2
Western & Northern Europe	643	98.6	5	0.8	3	0.5	1	0.2	652	100.0	12.3
Eastern Europe, Russia, Central Asian & Baltic States	362	99.2	2	0.5	1	0.3	0	0.0	365	100.0	8.2
Middle East & Africa	3689	98.9	26	0.7	11	0.3	5	0.1	3731	100.0	9.9
South East Asia	4147	99.2	18	0.4	8	0.2	8	0.2	4181	100.0	6.2
North East Asia	3096	99.3	16	0.5	2	0.1	4	0.1	3118	100.0	5.8
Southern Asia	1343	98.8	9	0.7	4	0.3	4	0.3	1360	100.0	9.6
Other/Not stated	165	92.2	2	1.1	3	1.7	9	5.0	179	100.0	-
<b>TOTAL</b>	<b>85376</b>	<b>98.9</b>	<b>595</b>	<b>0.7</b>	<b>216</b>	<b>0.3</b>	<b>118</b>	<b>0.1</b>	<b>86305</b>	<b>100.0</b>	<b>9.4</b>

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Perinatal deaths include deaths reported to the MDC only. As the MDC form is completed at discharge or transfer of the baby, deaths occurring after this time may not be reported to the MDC.

## Perinatal mortality rate not calculated for country of birth groups with less than 5 perinatal deaths.

## PART 5: NEONATAL INTENSIVE CARE

Information on infants admitted to a neonatal intensive care unit was obtained from the Neonatal Intensive Care Units (NICUS) Data Collection, which is described in Part 1 under Data Sources.

### 5.1 REGISTRATION RATE

There were 1,899 infants registered in NICUS in 1998. The most common reasons for registration of an infant were assisted ventilation for four hours or more (67.4 per cent) and gestational age less than 29 weeks (20.6 per cent). Infants generally met more than one of the registration criteria.

The NICUS registration rate in 1998 was 21.0 per 1,000 live births, which has increased slightly each year since 1992 (17.9 per 1,000 live births). The ACT joined NICUS in 1995. Table 57 shows the registration rate according to the mothers' Health Area of residence. The relatively low registration rate from the Health Areas adjoining the New South Wales border reflect the fact that some infants are preferentially referred interstate. The registration rate in Health Areas with low numbers of births should be interpreted with caution. The proportion of mothers in each Health Area has remained constant since 1992.

Sixty-two of the 1,899 infants (3.3 per cent) registered in NICUS were born to Aboriginal and Torres Strait Islander mothers. There were 2,096 live births to Aboriginal and Torres Strait Islander women recorded by the NSW and ACT Midwives Data Collections for 1998. The registration rate for these infants was 23.2 per 1,000 live births and has increased since 1992. Sixty of the 1,768 mothers (3.4 per cent) were Aboriginal and Torres Strait Islander, of whom 18 (30.0 per cent) were residents of the Far West, New England, and Macquarie Health Areas. Sixteen of the 372 mothers (4.3 per cent) of infants less than 29 weeks and/or less than 1,000 grams were Aboriginal and Torres Strait Islander.

**TABLE 57**

**NICUS REGISTRATIONS BY HEALTH AREA OF RESIDENCE, NSW & ACT 1998**

Health Area	Total NICUS registrants		Total NSW & ACT live births No.	Registrants per 1,000 live births
	No.	%		
Central Sydney	135	7.1	6650	20.3
North Sydney	192	10.1	8963	21.4
South East Sydney	175	9.2	9275	18.9
South West Sydney	288	15.2	10682	27.0
Wentworth	104	5.5	4492	23.2
Western Sydney	228	12.0	12222	18.7
Central Coast	93	4.9	3785	24.6
Hunter	197	10.4	6995	28.2
Illawarra	70	3.7	4376	16.0
Far West	13	0.7	553	23.5
Greater Murray	53	2.8	2981	17.8
Macquarie	29	1.5	1612	18.0
Mid North Coast	60	3.2	2897	20.7
Mid Western	59	3.1	2371	24.9
New England	39	2.1	2400	16.3
Northern Rivers	9	0.5	2935	3.1
Southern	61	3.2	2375	25.7
ACT	86	4.5	4176	20.6
Interstate	2	0.1	564	3.5
Overseas	7	0.5	27	259.2
Not stated	0	0.0	7	0.0
<b>TOTAL</b>	<b>1899</b>	<b>100.0</b>	<b>90335</b>	<b>21.0</b>

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research. NSW Midwives Data Collection 1998. Epidemiology and Surveillance Branch, NSW Health Department 1998. ACT Maternal/Perinatal Data Collection, 1997.

## 5.2 MATERNAL CHARACTERISTICS

There were 1,768 mothers of the 1,899 infants registered in NICUS during 1998. Nearly eighty per cent of the mothers were residents of the Sydney, Central Coast, Hunter and Illawarra Health Areas. The distribution of the mothers Health Area of residence for infants less than 29 weeks and/or less than 1,000 grams was similar to those for the whole group. Of the 372 mothers of infants in this group just over half (55.9 per cent) were residents of either the South Western Sydney, Western Sydney, Hunter, South Eastern Sydney, and Northern Sydney Health Areas.

The age of mothers of NICUS infants ranged from 12 to 45 years with a mean age of 29 years. The mean maternal age was similar across all gestational age groups and has remained constant since 1992. The proportion of mothers aged 35 years or more has increased from 13.7 per cent in 1992 to 20.1 per cent in 1998. There were 6.6 per cent of the mothers aged less than 20 years (Table 58). The Health Areas of residence with the highest proportion of teenage mothers were Far West, Hunter, Mid North Coast and New England.

There were 1,524 mothers (86.1 per cent) who had an antenatal complication. The most common antenatal complications were threatened preterm labour (835/1, 768; 47.2 per cent), fetal distress (389/1, 768; 22.0 per cent), hypertensive disease of pregnancy (310/1, 768; 17.5 per cent) and antepartum haemorrhage (284/1, 768; 16.1 per cent). Antenatal complications were more frequent in the less than 32 week (100 per cent), and 32-36 week (98.1 per cent) gestational age groups compared with term. Even so, 51.5 per cent (246/478) of mothers giving birth at 37-41 weeks gestation had an antenatal complication.

In 1998, 85.2 per cent of mothers of infants born at less than 28 weeks received corticosteroids (Figure 6 and Table 59). Over three quarters (86.4 per cent) of mothers of 28-31 week gestation infants received antenatal corticosteroids. The overall proportion of mothers receiving antenatal corticosteroids has increased from 45 per cent in 1992 to 70.2 per cent in 1998.

**TABLE 58**

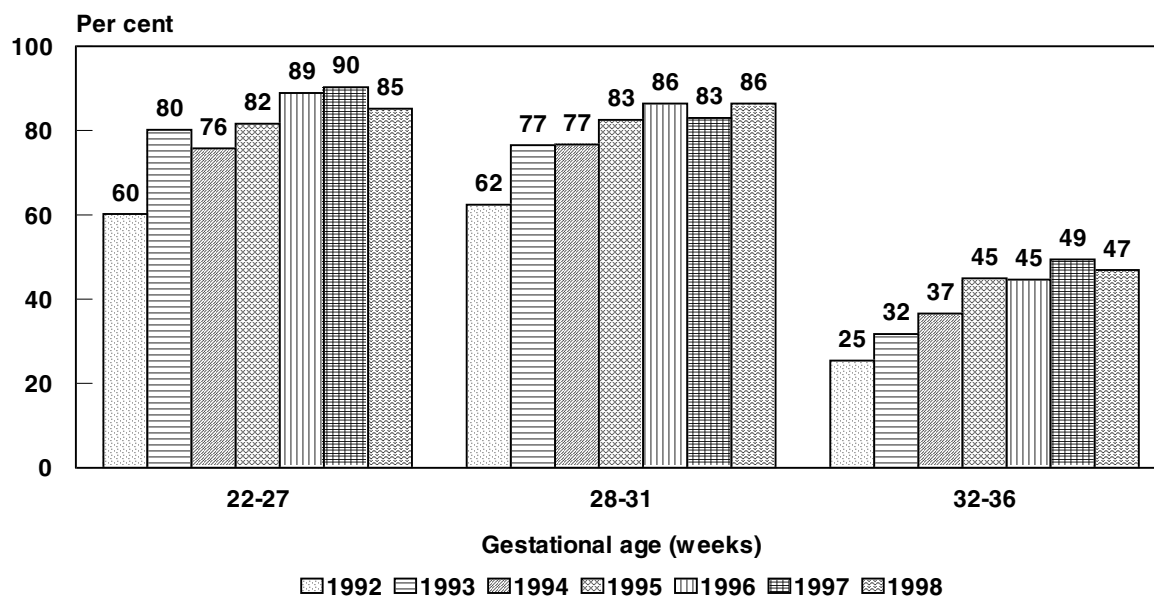
**CONFINEMENTS BY HEALTH AREA OF RESIDENCE AND MATERNAL AGE, NSW & ACT 1998**

Health Area	Maternal age (years)								TOTAL	
	Less than 20		20-34		35+		No.	%		
	No.	%	No.	%	No.	%				
Central Sydney	5	3.9	83	64.3	41	31.8	129	100.0		
North Sydney	3	1.7	119	68.4	52	29.9	174	100.0		
South East Sydney	6	3.8	109	68.6	44	27.7	159	100.0		
South West Sydney	24	9.0	203	76.0	40	15.0	267	100.0		
Wentworth	1	1.1	79	84.0	14	14.9	94	100.0		
Western Sydney	18	8.2	163	74.1	39	17.7	220	100.0		
Central Coast	8	9.8	59	72.0	15	18.3	82	100.0		
Hunter	19	10.3	142	77.2	23	12.5	184	100.0		
Illawarra	1	1.5	47	71.2	18	27.3	66	100.0		
Far West	2	16.7	9	75.0	1	8.3	12	100.0		
Greater Murray	5	9.6	41	78.8	6	11.5	52	100.0		
Macquarie	2	7.1	24	85.7	2	7.1	28	100.0		
Mid North Coast	7	12.1	41	70.7	10	17.2	58	100.0		
Mid Western	2	3.5	43	75.4	12	21.1	57	100.0		
New England	5	13.9	28	77.8	3	8.3	36	100.0		
Northern Rivers	0	0.0	5	62.5	3	37.5	8	100.0		
Southern	5	8.8	44	77.2	8	14.0	57	100.0		
ACT	3	3.9	54	70.1	20	26.0	77	100.0		
Interstate	0	0.0	0	0.0	2	100.0	2	100.0		
Overseas	0	0.0	4	66.7	2	33.3	6	100.0		
TOTAL	116	6.6	1297	73.4	355	20.1	1768	100.0		

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**FIGURE 6**

**CONFINEMENTS BY ANTENATAL CORTICOSTEROID ADMINISTRATION AND GESTATIONAL AGE, NSW & ACT 1992-98 #**



Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Liverpool Health Service joined NICUS October, 1994. Canberra Hospital joined NICUS in January, 1995. From January 1994, all infants less than 32 weeks gestation and/or less than or equal to 1500 grams birth weight and admitted to a NICU were included in NICUS.

**TABLE 59**

**CONFINEMENTS BY ANTENATAL CORTICOSTEROID ADMINISTRATION AND GESTATIONAL AGE, NSW & ACT 1992-98#**

Year	Corticosteroid administration	Gestational age (weeks)						TOTAL	
		22-27		28-31		32-36		No.	%
1992	No	No.	%	No.	%	No.	%	No.	%
	Yes	82	39.8	129	37.6	346	74.6	557	55.0
	TOTAL	124	60.2	214	62.4	118	25.4	456	45.0
1993	No	206	100.0	343	100.0	464	100.0	1013	100.0
	Yes	36	19.8	88	23.5	306	68.3	430	42.8
	TOTAL	146	80.2	286	76.5	142	31.7	574	57.2
1994	No	182	100.0	374	100.0	448	100.0	1004	100.0
	Yes	46	24.2	105	23.3	291	63.4	442	40.2
	TOTAL	144	75.8	346	76.7	168	36.6	658	59.8
1995	No	190	100.0	451	100.0	459	100.0	1100	100.0
	Yes	37	18.4	80	17.5	264	55.1	381	33.5
	TOTAL	164	81.6	376	82.5	215	44.9	755	66.5
1996	No	201	100.0	456	100.0	479	100.0	1136	100.0
	Yes	23	11.1	64	13.8	291	55.4	378	31.6
	TOTAL	185	88.9	400	86.2	234	44.6	819	68.4
1997	No	208	100.0	464	100.0	525	100.0	1197	100.0
	Yes	20	9.7	79	17.0	258	50.6	357	30.3
	TOTAL	186	90.3	385	83.0	252	49.4	823	69.7
1998	No	206	100.0	464	100.0	510	100.0	1180	100.0
	Yes	37	14.8	70	13.6	275	53.1	382	29.8
	TOTAL	213	85.2	444	86.4	243	46.9	900	70.2
1998	No	250	100.0	514	100.0	518	100.0	1282	100.0
	Yes	37	14.8	70	13.6	275	53.1	382	29.8
	TOTAL	213	85.2	444	86.4	243	46.9	900	70.2

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Liverpool Health Service joined NICUS in October 1994. Canberra Hospital joined NICUS in January 1995. From January 1994, all infants less than 32 weeks gestation and/or less than or equal to 1500 grams birth weight and admitted to a NICU were included in NICUS.

### 5.3 TRANSFER STATUS, LABOUR AND DELIVERY

Infants are admitted to a neonatal intensive care until after:

- ◆ delivery which has been booked to occur in a tertiary centre or;
- ◆ delivery in a tertiary centre following maternal transfer or,
- ◆ delivery in a non-tertiary centre followed by infant transfer to a tertiary centre.

Thirty-three per cent of all births were booked at a tertiary centre, ranging from 35.5 per cent for the 28-31 week gestational age group to 29.2 per cent for the 37 plus week gestational age group (Table 60). Maternal transfer was most common at gestations less than 32 weeks. The rate of maternal transfer was highest for infants born before 28 weeks gestation (60.6 per cent) and for those born at 28-31 weeks gestation (55.3 per cent). The overall rate of maternal transfer was 34.6 per cent.

Thirty-three per cent of infants were transferred to a tertiary centre following their birth. There were 11.1 per cent of infants transferred from one tertiary centre to another within 4 hours of commencing assisted ventilation or for major surgery. Transfer following birth was more common in the higher gestational age groups.

The inverse relationship between gestational age groups and the proportion of births in a tertiary centre is shown in Figure 7 and Table 61. The overall proportion of infants born in a tertiary centre increased from 61.3 per cent in 1992 to 72.5 per cent in 1998. In 1998, 91.4 per cent of infants less than 32 weeks gestation were born in a tertiary centre compared with 65.9 per cent of 32-36 week gestation infants and 45.2 per cent of term infants.

The pattern of transfer status (Table 62) and place of birth (Table 63) by birth weight is similar to that of gestational age, with the majority (90.1 per cent) of the very low birth weight infants (less than 1,500 grams) born in a tertiary centre.

Spontaneous onset of labour was more common amongst mothers of infants less than 28 weeks gestation (Table 64). Augmentation and induction of labour was most common in term and post-term births.

The overall proportion of mothers who gave birth after no labour (elective Caesarean section) has increased from 27.5 per cent in 1992 to 30.8 per cent in 1998. Spontaneous onset of labour occurred in just over half of all the infants in the birth weight groups less than 2,500 grams (Table 65).

As would be expected, augmentation or induction of labour were most common in mothers of infants with a birth weight of 2,500 grams or more.

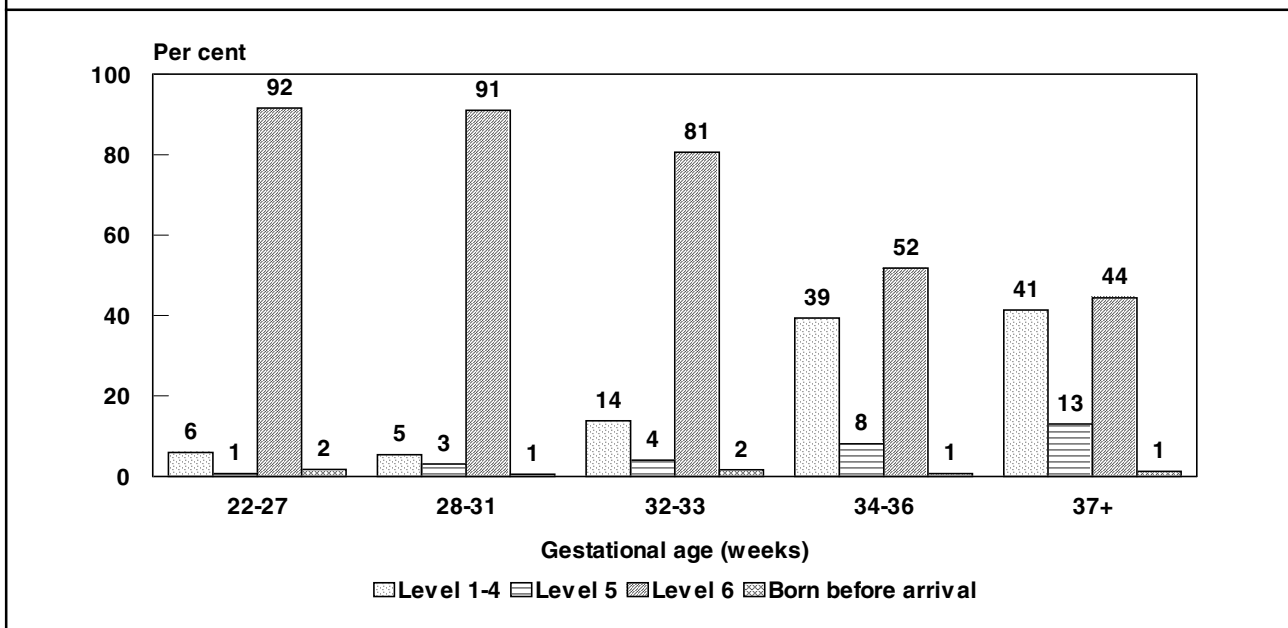
Prolonged rupture of membranes (greater than 24 hours) was more common at lower gestations, affecting about one in three infants born at less than 28 weeks gestation (Table 66).

The most common type of delivery was caesarean section (53.1 per cent in 1992 to 47.3 per cent in 1998), followed by normal vaginal delivery (33.8 per cent in 1992 to 40.4 per cent in 1998) and vaginal breech delivery (6.0 per cent in 1992 to 7.0 per cent in 1998) (Tables 67 and 68). The high rate of caesarean section and breech delivery in the NICUS cohort is related to the high proportion of preterm births.

The rate of caesarean section in term and post-term births was 35.0 per cent, almost double the rate for all births in NSW and the ACT in 1998.

**FIGURE 7**

**PLACE OF BIRTH BY GESTATIONAL AGE, NSW & ACT 1998**



Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 60****BIRTHS BY BOOKING STATUS, TRANSFER STATUS AND GESTATIONAL AGE, NSW & ACT 1998**

Booking status and transfer status	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
Booked at tertiary hosp	88	30.7	209	35.5	179	33.3	140	29.3	2	25.0	618	32.5
Transfer before birth	174	60.6	326	55.3	146	27.2	12	2.5	0	0	658	34.6
Transfer after birth	25	8.7	54	9.2	212	39.5	326	68.2	6	75.0	623	32.8
<b>TOTAL</b>	<b>287</b>	<b>100.0</b>	<b>589</b>	<b>100.0</b>	<b>537</b>	<b>100.0</b>	<b>478</b>	<b>100.0</b>	<b>8</b>	<b>100.0</b>	<b>1899</b>	<b>100.0</b>

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 61****BIRTHS BY PLACE OF BIRTH (LEVEL OF OBSTETRIC HOSPITAL) AND GESTATIONAL AGE, NSW & ACT 1998#**

Place of birth	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-33		34-36		37+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
Level 1-4	17	5.9	32#	5.4	35	13.8	112	39.4	201	41.4	397	20.9
Level 5	2	0.7	18#	3.1	10	4.0	23	8.1	63	13.0	116	6.1
Level 6	263	91.6	536	91.0	204	80.6	147	51.8	216	44.4	1366	71.9
Born before arrival	5	1.7	3#	0.5	4	1.6	2	0.7	6	1.2	20	1.1
<b>TOTAL</b>	<b>287</b>	<b>100.0</b>	<b>589</b>	<b>100.0</b>	<b>253</b>	<b>100.0</b>	<b>284</b>	<b>100.0</b>	<b>486</b>	<b>100.0</b>	<b>1885</b>	<b>100.0</b>

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# 30/50 (60.0%) infants not born at a level 6 hospital were 30-31 weeks gestation.

**TABLE 62****BIRTHS BY BOOKING STATUS, TRANSFER STATUS AND BIRTH WEIGHT, NSW & ACT 1998**

Booking status and transfer status	Birth weight (grams)								TOTAL	
	Less than 1,000		1,000-1,499		1,500-2,499		2,500+		No.	%
	No.	%	No.	%	No.	%	No.	%		
Booked at tertiary hosp	94	33.1	143	32.1	197	34.6	184	30.6	618	32.5
Transfer before birth	169	59.5	246	55.3	226	39.7	17	2.8	658	34.6
Transfer after birth	21	7.4	56	12.6	146	25.7	400	66.6	623	32.8
<b>TOTAL</b>	<b>284</b>	<b>100.0</b>	<b>445</b>	<b>100.0</b>	<b>569</b>	<b>100.0</b>	<b>601</b>	<b>100.0</b>	<b>1899</b>	<b>100.0</b>

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 63****BIRTHS BY PLACE OF BIRTH (LEVEL OF OBSTETRIC HOSPITAL) AND BIRTH WEIGHT, NSW & ACT 1998**

Place of birth	Birth weight (grams)								TOTAL	
	Less than 1,000		1,000-1,499		1,500-2,499		2,500+		No.	%
	No.	%	No.	%	No.	%	No.	%		
Level 1-4	13	4.6	33	7.4	100	17.6	251	41.8	397	20.9
Level 5	3	1.1	15	3.4	25	4.4	73	12.1	116	6.1
Level 6	264	93.0	390	87.6	442	77.7	270	44.9	1366	71.9
Born before arrival	4	1.4	6	1.6	2	0.4	7	1.2	20	1.1
<b>TOTAL</b>	<b>284</b>	<b>100.0</b>	<b>445</b>	<b>100.0</b>	<b>569</b>	<b>100.0</b>	<b>601</b>	<b>100.0</b>	<b>1885</b>	<b>100.0</b>

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.



**TABLE 64****CONFINEMENTS BY ONSET OF LABOUR AND GESTATIONAL AGE, NSW & ACT 1998**

Onset of labour	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
Spontaneous	174	69.6	291	56.6	255	49.2	236	49.4	3	37.5	959	54.2
Augmented	10	4.0	21	4.1	23	4.4	50	10.5	1	12.5	105	5.9
Induced	6	2.4	9	1.8	43	8.3	97	20.3	4	50.0	159	9.0
No labour	60	24.0	193	37.5	197	38.0	95	19.9	0	0.0	545	30.8
TOTAL	250	100.0	514	100.0	518	100.0	478	100.0	8	100.0	1768	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 65****CONFINEMENTS BY ONSET OF LABOUR AND BIRTH WEIGHT, NSW & ACT 1998**

Onset of labour	Birth weight (grams)								TOTAL	
	Less than 1,000		1,000-1,499		1,500-2,499		2,500+		No.	%
	No.	%	No.	%	No.	%	No.	%		
Spontaneous	137	55.0	205	53.8	314	58.5	303	50.4	959	54.2
Augmented	9	3.6	14	3.7	21	3.9	61	10.1	105	5.9
Induced	4	1.6	11	2.9	32	6.0	112	18.6	159	9.0
No labour	99	39.8	151	39.6	170	31.7	125	20.8	545	30.8
TOTAL	249	100.0	381	100.0	537	100.0	601	100.0	1768	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 66****BIRTHS BY DURATION OF RUPTURE OF MEMBRANES AND GESTATIONAL AGE, NSW & ACT 1998**

Duration of rupture of membranes	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
Less than 24 hours	199	69.3	441	74.9	460	85.7	459	96.0	8	100.0	1567	82.5
24 hours-7 days	40	13.9	88	14.9	49	9.1	17	3.6	0	0	194	10.2
8+ days	48	16.7	60	10.2	28	5.2	2	0.4	0	0	138	7.3
TOTAL	287	100.0	589	100.0	537	100.0	478	100.0	8	100.0	1899	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 67****BIRTHS BY TYPE OF DELIVERY AND GESTATIONAL AGE, NSW & ACT 1998**

Type of delivery	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
Normal vaginal	116	40.4	214	36.3	182	33.9	251	52.5	4	50.0	767	40.4
Forceps	3	1.0	13	2.2	16	3.0	28	5.9	2	25.0	62	3.3
Forceps rotation	0	0	2	0.3	0	0	3	0.6	0	0	5	0.3
Vacuum extraction	1	0.3	3	0.5	12	2.2	17	3.6	1	12.5	34	1.8
Vaginal breech	53	18.5	40	6.8	30	5.6	10	2.1	0	0	133	7.0
Elective Caesarean	65	22.6	216	36.7	205	38.2	99	20.7	0	0	585	30.8
Emergency Caesarean	49	17.1	101	17.1	92	17.1	70	14.6	1	12.5	313	16.5
TOTAL	287	100.0	589	100.0	537	100.0	478	100.0	8	100.0	1899	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 68****BIRTHS BY TYPE OF DELIVERY AND BIRTH WEIGHT, NSW & ACT 1998**

Type of delivery	Birth weight (grams)									
	Less than 1,000		1,000-1,499		1,500-2,499		2,500+		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
Normal vaginal	92	32.4	140	31.5	233	40.9	302	50.2	767	40.4
Forceps	4	1.4	8	1.8	15	2.6	35	5.8	62	3.3
Forceps rotation	0	0	2	0.4	0	0	3	0.5	5	0.3
Vacuum extraction	1	0.4	4	0.9	4	0.7	25	4.2	34	1.8
Vaginal breech	44	15.5	42	9.4	36	6.3	11	1.8	133	7.0
Elective Caesarean	109	38.4	165	37.1	182	32.0	129	21.5	585	30.8
Emergency Caesarean	34	12.0	84	18.9	99	17.4	96	16.0	313	16.5
TOTAL	284	100.0	445	100.0	569	100.0	601	100.0	1899	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

## 5.4 INFANT CHARACTERISTICS

Nearly three quarters of the infants (74.4 per cent) were preterm (less than 37 weeks gestation), 46.1 per cent were very preterm (less than 32 weeks gestation) and 15.1 per cent were extremely preterm (less than 28 weeks gestation) (Table 69 and Figure 8). Almost all live born infants less than 31 weeks gestation were admitted to a NICU, about half at 31-32 weeks gestation, and one-fifth at 33-34 weeks gestation (Table 70).

Sixty-eight per cent of infants had a low birth weight (less than 2,500 gms), 38.4 per cent has a very low birth weight (less than 1,500 gms) and 15.0 per cent had an extremely low birth weight (less than 1,000 gms) (Table 71).

Overall, 58.5 per cent of infants were male. The higher proportion of males in the 32-36 week and the 37 plus week age groups was statistically significant (Table 72).

The overall proportion of the infants who had a major congenital anomaly decreased from 20.9 per cent in 1992 to 16.9 per cent in 1998. Congenital anomalies were more common amongst term infants (37 plus weeks gestational age), of whom 44.2 per cent had a major congenital anomaly and 3.0 per cent had a minor congenital anomaly (Table 73).

The overall proportion of infants born following a multiple pregnancy has remained constant since 1992. In 1998 most of the infants (82.5 per cent) were from a singleton pregnancy, 16.0 per cent were from a twin pregnancy, 1.3 per cent were from a triplet pregnancy and 0.2 per cent were from a quadruplet pregnancy. Infants born as a result of a multiple gestation were more likely to be preterm, with 26.0 per cent of infants less than 32 weeks gestation being from a multiple gestation pregnancy (Table 74). Multiple births represented 2.8 per cent of all NSW and ACT births in 1998. The higher than expected rate of multiple births amongst the 1998 NICUS cohort reflects the high proportion of multiple pregnancies resulting in preterm birth.

Table 75 shows the median, 25th and 75th percentiles for one and five minute Apgar scores according to gestational age groups. For infants greater than 27 weeks gestational age the median one minute Apgar score was seven and the median five minute score was nine. The proportion of infants with a one minute Apgar score of 0-4 has decreased from 38.7 per cent in 1992 to 28.1 per cent in 1998, similarly the proportion of infants with a five minute Apgar score of 0-4 has decreased from 10.8 per cent in 1992 to 7.5 per cent in 1998 (Table 76).

*continued on p.62*

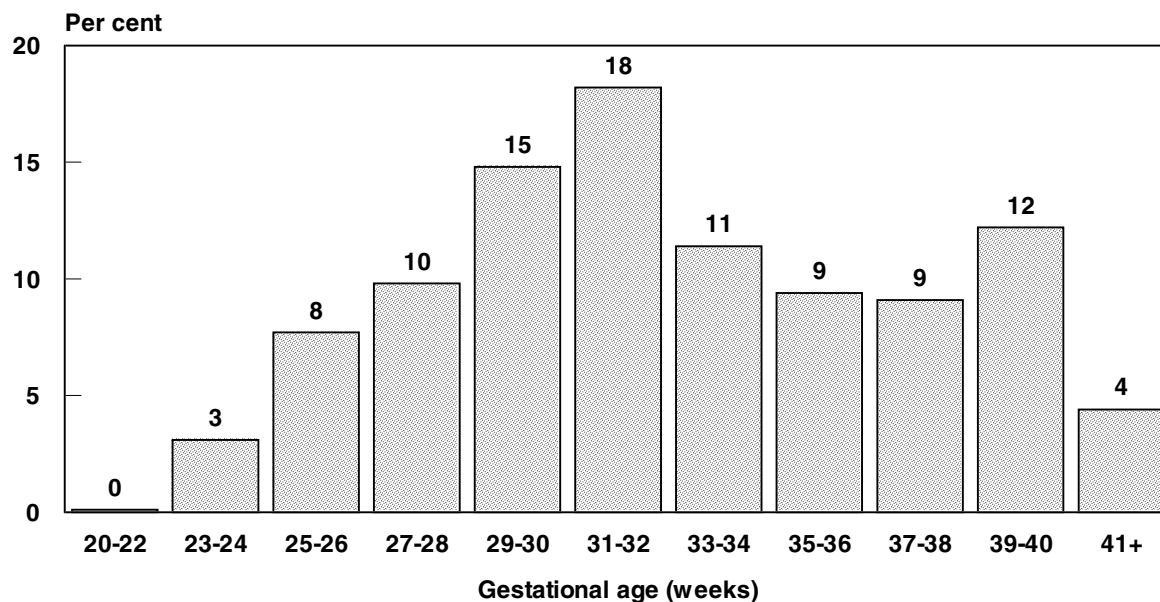
**TABLE 69****BIRTHS BY GESTATIONAL AGE, NSW & ACT 1992-98#**

Gestational age (weeks)	Year													
	1992		1993		1994		1995		1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
22-27	237	14.9	199	12.9	214	13.1	230	13.3	237	13.3	232	13.2	287	15.1
28-31	395	24.8	419	27.2	511	31.3	513	29.6	528	29.6	535	30.6	589	31.0
32-36	478	30.1	463	30.0	476	29.1	506	29.2	552	30.9	535	30.6	537	28.3
37-41	441	27.7	431	28.0	418	25.6	461	26.6	461	25.8	427	24.4	478	25.2
42+	39	2.5	29	1.9	16	1.0	24	1.4	8	0.4	22	1.3	8	0.4
TOTAL	1590	100.0	1541	100.0	1635	100.0	1734	100.0	1786	100.0	1751	100.0	1899	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Liverpool Health Service joined NICUS in October 1994. Canberra Hospital joined NICUS in January 1995.

From January 1994, all infants less than 32 weeks gestation and/or less than or equal to 1500 grams birth weight and admitted to a NICU were included in NICUS.

**FIGURE 8****BIRTHS BY GESTATIONAL AGE, NSW & ACT 1998**

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 70****BIRTHS BY NICUS REGISTRATION AND GESTATIONAL AGE, NSW & ACT 1998#**

Gestational age (weeks)	NSW & ACT		Registrations No.	NICUS Rate per 1,000 live births	% of cohort
	Stillbirths No.	Live births No.			
Less than 21	61	12	0	0.0	0.0
21	56	18	0	0.0	0.0
22	48	14	1	71.4	0.1
23	43	21	16	761.9	0.8
24	30	49	43	877.6	2.3
25	25	60	58	966.7	3.1
26	23	89*	88	988.8	4.6
27	15	82*	81	987.8	4.3
28	13	106*	105	990.6	5.5
29	10	133*	132	992.5	7.0
30	19	160	148	925.0	7.8
31	11	205*	204	995.1	10.7
32	18	298	142	476.5	7.5
33	24	417	111	266.2	5.8
34	20	725	106	146.2	5.6
35	29	1113	74	66.5	3.9
36	24	2337	104	44.5	5.5
37	32	4962	86	17.3	4.5
38	35	13650	87	6.4	4.6
39	35	19038	96	5.0	5.1
40	44	31304	134	4.3	7.1
41	17	13517	75	5.5	3.9
42	4	1907	7	3.7	0.4
43	1	85	1	11.8	0.1
44	0	2	0	0.0	0.0
Not stated	0	16	0	0.0	0.0
TOTAL	637	90303	1899	21.0	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research, 1998. NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department, 1998. ACT Maternal/Perinatal Data Collection, 1997.

# Excludes 117 babies reported to the MDC in 1998 for whom the birth outcome was not known.

**TABLE 71****BIRTHS BY NICUS REGISTRATION RATE AND BIRTH WEIGHT, NSW & ACT 1998#**

Birth weight (grams)	NSW & ACT		Registrations No.	NICUS Rate per 1,000 live births	% of cohort
	Stillbirths No.	Live births# No.			
Less than 400	105	60	0	0.0	
400-499	78	24	6	260.0	0.3
500-599	57	34	23	676.5	1.2
600-699	31	49	43	877.6	2.3
700-799	28	72	62	861.1	3.3
800-899	8	59*	65	984.8	3.4
900-999	10	73*	85	988.4	4.5
1,000-1,249	19	211	207	981.0	10.9
1,250-1,499	22	260	238	915.4	12.5
1,500-1,749	39	408	205	502.5	10.8
1,750-1,999	20	598	143	239.1	7.5
2,000-2,499	52	3262	221	67.7	11.6
2,500-2,999	66	13374	198	14.8	10.4
3,000-3,499	55	32584	214	6.6	11.3
3,500-3,999	28	28314	128	4.5	6.7
4,000+	18	10951	61	5.6	3.2
Missing	1				
TOTAL	637	90335	1899	21.0	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research, 1998. NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department, 1998. ACT Maternal/Perinatal Data Collection, 1997.

# Excludes 118 babies reported to the MDC in 1998 for whom the birth outcome was not known.

**TABLE 72****BIRTHS BY GENDER AND GESTATIONAL AGE, NSW & ACT 1998**

Sex	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male	155	54.0	343	58.2	318	59.2	288	60.3	6	75.0	1110	58.5
Female	132	46.0	246	41.8	218	40.6	190	39.7	2	25.0	788	41.5
Ambiguous	0	0	0	0	1	0.2	0	0	0	0	1	0.1
TOTAL	287	100.0	589	100.0	537	100.0	478	100.0	8	100.0	1899	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 73****BIRTHS BY CONGENITAL ANOMALIES AND GESTATIONAL AGE, NSW & ACT 1998**

Congenital anomaly	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
None	270	94.1	549	93.2	446	83.1	253	52.9	3	37.5	1521	80.1
Minor	10	3.5	15	2.5	18	3.4	15	3.1	0	0	58	3.1
Major	7	2.4	25	4.2	73	13.6	210	43.9	5	62.5	320	16.9
TOTAL	287	100.0	589	100.0	537	100.0	478	100.0	8	100.0	1899	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 74****BIRTHS BY PLURALITY AND GESTATIONAL AGE, NSW & ACT 1998**

Plurality	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Singleton	212	73.9	436	74.0	442	82.3	469	98.1	8	100.0	1567	82.5
Twins	66	23.0	144	24.4	84	15.6	9	1.9	0	0	303	16.0
Triplets	5	1.7	9	1.5	11	2.0	0	0	0	0	25	1.3
Quads	4	1.4	0	0	0	0	0	0	0	0	4	0.2
TOTAL	287	100.0	589	100.0	537	100.0	478	100.0	8	100.0	1899	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 75****BIRTHS BY APGAR SCORE AND GESTATIONAL AGE, NSW & ACT 1998**

Apgar Score	Gestational age (weeks)							
	22-27 Median (25%,75%)		28-31 Median (25%,75%)		32-36 Median (25%,75%)		37+ Median (25%,75%)	
One-minute Apgar	5	(3,6)	7	(4,8)	7	(5,8)	7	(4,9)
Five-minute Apgar	8	(6,9)	9	(7,9)	9	(8,9)	9	(7,9)

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 76****BIRTHS BY APGAR SCORE AT ONE MINUTE, NSW & ACT 1992-98#**

Apgar Score	1992		1993		1994		Year 1995		1996		1997		1998	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
One minute														
0-4	615	38.7	576	37.4	546	33.4	604	34.8	533	29.8	453	25.9	533	28.1
5-7	572	36.0	546	35.4	624	38.2	566	32.6	654	36.6	644	36.8	692	36.4
7+	393	24.7	412	26.7	459	28.1	550	31.7	586	32.8	644	36.8	658	34.6
Not stated	10	0.6	7	0.5	6	0.4	14	0.8	13	0.7	10	0.6	16	0.8
TOTAL	1590	100.0	1541	100.0	1635	100.0	1734	100.0	1786	100.0	1751	100.0	1899	100.0
Five minutes														
0-4	172	10.8	135	8.8	118	7.2	140	8.1	150	8.4	121	6.9	142	7.5
5-7	510	32.1	505	32.8	474	29.0	502	29.0	453	25.4	414	23.6	412	21.7
7+	897	56.4	895	58.1	1,036	63.4	1,077	62.1	1,170	65.5	1,207	68.9	1,329	70.0
Not stated	11	0.7	6	0.4	7	0.4	15	0.9	13	0.7	9	0.5	16	0.8
TOTAL	1590	100.0	1541	100.0	1635	100.0	1734	100.0	1786	100.0	1751	100.0	1899	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Liverpool Health Service joined NICUS October 1994. Canberra Hospital joined NICUS in January, 1995.

From January 1994, all infants less than 32 weeks gestation and/or less than or equal to 1500 grams birth weight and admitted to a NICU were included in NICUS.

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Infants with major congenital anomalies (n=320) have been **excluded** from the analysis of morbidity and mortality.

The majority of infants (n=1,707; 89.9 per cent) in the 1998 NICUS cohort received assisted ventilation (intermittent mandatory ventilation and/or continuous positive airways pressure). The proportion of registered infants who required assisted ventilation decreased by 10.0 per cent in 1994 because all infants less than 32 weeks gestational age and/or less than 1,500 grams admitted to a neonatal intensive care unit were included in NICUS (Table 77).

The main indication for ventilation for most infants was Respiratory Distress Syndrome (Figure 9). Main indication for assisted ventilation varied with gestational age. Respiratory distress syndrome, immature lung and transient tachypnoea were more common in the preterm groups, whereas perinatal asphyxia, meconium aspiration and pulmonary hypertension were more common in term infants (Table 78).

Proven systemic infection has decreased from 22.9 per cent in 1992 to 17.4 per cent of infants in 1998. Infection was most common among infants less than 28 weeks gestation (44.6 per cent) (Table 79).

The overall proportion of ventilated infants who received surfactant has increased from 33.8 per cent in 1992 to 51.8 per cent in 1998 (Table 80). In 1998, the majority (74.3 per cent) of ventilated infants with a diagnosis of Respiratory Distress Syndrome received surfactant. Nearly two thirds (67.9 per cent) of the infants who received surfactant were less than 32 weeks gestational age.

Overall, the incidence of treated patent ductus arteriosus (PDA) has decreased from 18.7 per cent in 1993 to 14.7 per cent in 1998. In 1998, 96.9 per cent of the infants treated for PDA were less than 32 weeks gestational age (Table 81). The majority of infants with a PDA requiring treatment received indomethacin (12.8 per cent). Surgical treatment of PDA was predominantly performed on infants less than 28 weeks gestation (0.7 per cent). Some infants (1.7 per cent) were treated with both indomethacin and surgery.

Overall, the incidence of necrotising enterocolitis (NEC) has decreased from 9.7 per cent in 1992 to 4.6 per cent in 1998 (Table 82). The diagnosis of NEC was made radiologically or at surgery in 50.7 per cent of infants and clinically in the remainder. NEC was more common at the lower gestational age groups and 86.3 per cent of the infants with NEC were born at less than 32 weeks gestation.

The overall incidence of major surgery has decreased from 7.6 per cent in 1992 to 4.2 per cent in 1998. In 1998, 65.2 per cent of the infants who required major surgery were less than 32 weeks gestation. The most common surgical procedures amongst these infants were for patent ductus arteriosus and necrotising enterocolitis (Table 83).

continued on p.65

**TABLE 77**

**ASSISTED VENTILATION AND GESTATIONAL AGE, NSW & ACT 1992-98#**

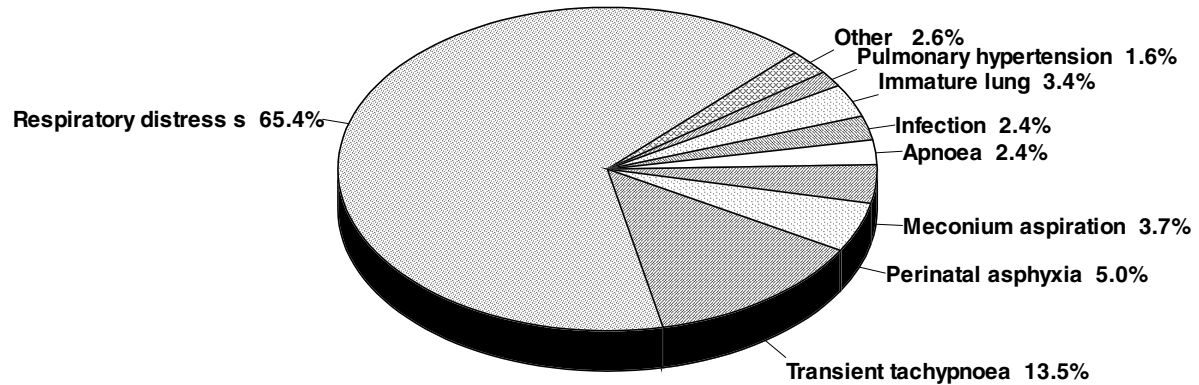
Year/ assisted ventilation	Gestational age (weeks)										
	22-27		28-31		32-36		37+		TOTAL		
	No.	%	No.	%	No.	%	No.	%	No.	%	
1992	No	3	1.3	4	1.1	2	0.5	1	0.4	10	0.8
	Yes	225	98.7	369	98.9	398	99.5	255	99.6	1247	99.2
	TOTAL	228	100.0	373	100.0	400	100.0	256	100.0	1257	100.0
1993	No	0	0.0	10	2.6	1	0.3	8	3.1	19	1.5
	Yes	191	100.0	380	97.4	396	99.7	253	96.9	1220	98.5
	TOTAL	191	100.0	390	100.0	397	100.0	261	100.0	1239	100.0
1994	No	3	1.5	112	23.0	56	13.6	6	2.5	177	13.2
	Yes	203	98.5	374	77.0	355	86.4	231	97.5	1163	86.8
	TOTAL	206	100.0	486	100.0	411	100.0	237	100.0	1340	100.0
1995	No	0	0.0	104	21.3	51	11.8	7	2.6	162	11.5
	Yes	220	100.0	385	78.7	381	88.2	266	97.4	1252	88.5
	TOTAL	220	100.0	489	100.0	432	100.0	273	100.0	1414	100.0
1996	No	1	0.4	117	23.4	48	10.2	6	2.2	172	11.7
	Yes	227	99.6	384	76.6	424	89.8	267	97.8	1302	88.3
	TOTAL	228	100.0	501	100.0	472	100.0	273	100.0	1474	100.0
1997	No	0	0.0	101	19.6	57	12.4	9	3.5	167	11.4
	Yes	227	100.0	413	80.4	404	87.6	248	96.5	1292	88.6
	TOTAL	227	100.0	514	100.0	461	100.0	257	100.0	1459	100.0
1998	No	2	0.7	99	17.6	48	10.3	7	2.6	156	9.9
	Yes	278	99.3	465	82.4	416	89.7	264	97.4	1423	90.1
	TOTAL	280	100.0	564	100.0	464	100.0	271	100.0	1579	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Liverpool Health Service joined NICUS in October 1994. Canberra Hospital joined NICUS in January 1995. From January 1994, all infants less than 32 weeks gestation and/or less than or equal to 1500 grams birth weight and admitted to a NICU were included in NICUS. Babies with major congenital abnormalities excluded.

**FIGURE 9**

**BIRTHS BY MAIN INDICATION FOR ASSISTED VENTILATION, NSW & ACT 1998#**



Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.  
# Babies with major congenital anomalies or not ventilated excluded.

**TABLE 78**

**MAIN INDICATION FOR ASSISTED VENTILATION OF BABIES BY GESTATIONAL AGE, NSW & ACT 1998#**

Indication	Gestational age (weeks)								TOTAL	
	22-27		28-31		32-36		37+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
Respiratory distress syndrome	253	91.0	355	76.3	270	64.9	53	20.1	931	65.4
Transient tachypnoea of newborn	1	0.4	60	12.9	84	20.2	47	17.8	192	13.5
Meconium aspiration	0	0.0	0	0.0	2	0.5	51	19.3	53	3.7
Infection	2	0.7	2	0.4	13	3.1	17	6.4	34	2.4
Perinatal asphyxia	2	0.7	6	1.3	17	4.1	46	17.4	71	5.0
Immature lung	19	6.8	26	5.6	3	0.7	0	0.0	48	3.4
Apnoea	1	0.4	12	2.6	8	1.9	13	4.9	34	2.4
Pulmonary hypertension	0	0.0	2	0.4	6	1.4	15	5.7	23	1.6
Congenital anomaly	0	0.0	1	0.2	4	1.0	1	0.4	6	0.4
Cardiac disorder	0	0.0	0	0.0	1	0.2	2	0.8	3	0.2
Peri surgery	0	0.0	0	0.0	3	0.7	8	3.0	11	0.8
Other	0	0.0	1	0.2	5	1.2	11	4.2	17	1.2
TOTAL	278	100.0	465	100.0	416	100.0	264	100.0	1423	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.  
# Babies with major congenital anomalies or not ventilated excluded.

**TABLE 79**

**PROVEN SYSTEMIC INFECTION BY GESTATIONAL AGE, NSW & ACT 1998#**

Infection	Gestational age (weeks)								TOTAL	
	22-27		28-31		32-36		37+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
No	155	55.4	471	83.5	429	92.5	250	92.3	1305	82.6
Yes	125	44.6	93	16.5	35	7.5	21	7.7	274	17.4
TOTAL	280	100.0	564	100.0	464	100.0	271	100.0	1579	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.  
# Babies with major congenital anomalies excluded.

**TABLE 80****SURFACTANT ADMINISTRATION BY GESTATIONAL AGE, NSW & ACT 1992-98#**

Year	Surfactant administration	Gestational age (weeks)								TOTAL	
		22-27		28-31		32-36		37+			
		No.	%	No.	%	No.	%	No.	%	No.	%
1992	No	95	42.2	225	61.0	281	70.6	225	88.2	826	66.2
	Yes	130	57.8	144	39.0	117	29.4	30	11.8	421	33.8
	TOTAL	225	100.0	369	100.0	398	100.0	255	100.0	1247	100.0
1993	No	93	48.7	216	56.8	233	58.8	215	85.0	757	62.0
	Yes	98	51.3	164	43.2	163	41.2	38	15.0	463	38.0
	TOTAL	191	100.0	380	100.0	396	100.0	253	100.0	1220	100.0
1994	No	71	35.0	180	48.1	197	55.5	177	76.6	625	53.7
	Yes	132	65.0	194	51.9	158	44.5	54	23.4	538	46.3
	TOTAL	203	100.0	374	100.0	355	100.0	231	100.0	1163	100.0
1995	No	58	26.4	176	45.7	204	53.5	210	78.9	648	51.8
	Yes	162	73.6	209	54.3	177	46.5	56	21.1	604	48.2
	TOTAL	220	100.0	385	100.0	381	100.0	266	100.0	1252	100.0
1996	No	46	20.3	149	38.8	226	53.3	208	77.9	629	48.3
	Yes	181	79.7	235	61.2	198	46.7	59	22.1	673	51.7
	TOTAL	227	100.0	384	100.0	424	100.0	267	100.0	1302	100.0
1997	No	60	26.4	175	42.4	217	53.7	187	75.4	639	49.5
	Yes	167	73.6	238	57.6	187	46.3	61	24.6	653	50.5
	TOTAL	227	100.0	413	100.0	404	100.0	248	100.0	1292	100.0
1998	No	53	19.1	212	45.6	213	51.2	208	78.8	686	48.2
	Yes	225	80.9	253	54.4	203	48.8	56	21.2	737	51.8
	TOTAL	278	100.0	465	100.0	416	100.0	264	100.0	1423	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Liverpool Health Service joined NICUS October, 1994. Canberra Hospital joined NICUS in January, 1995. From January 1994, all infants less than 32 weeks gestation and/or less than or equal to 1500 grams birth weight and admitted to a NICU were included in NICUS. Babies with major congenital malformations and babies not ventilated excluded.

**TABLE 81****TREATED PATENT DUCTUS ARTERIOSUS (PDA) BY GESTATIONAL AGE, NSW & ACT 1998#**

PDA/Treatment for PDA	Gestational age (weeks)								TOTAL	
	22-27		28-31		32-36		37+			
	No.	%	No.	%	No.	%	No.	%	No.	%
No treated PDA	159	56.8	499	88.5	458	98.7	1116	85.3		
Indomethacin only	99	35.4	64	11.3	5	1.1	168	12.8		
Surgery only	2	0.7	0	0	0	0	2	0.2		
Indomethacin & surgery	20	7.1	1	0.2	1	0.2	22	1.7		
TOTAL	280	100.0	564	100.0	464	100.0	1308	100.0		

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Babies with major congenital anomalies excluded.

**TABLE 82****NECROTISING ENTEROCOLITIS (NEC) BY GESTATIONAL AGE, NSW & ACT 1998#**

NEC/Treatment for NEC	Gestational age (weeks)								TOTAL	
	22-27		28-31		32-36		37+			
	No.	%	No.	%	No.	%	No.	%	No.	%
No NEC	253	90.4	528	93.6	455	98.1	270	99.6	1506	95.4
Clinical diagnosis	11	3.9	18	3.2	7	1.5	0	0	36	2.3
X-ray diagnosis	9	3.2	16	2.8	1	0.2	0	0	26	1.6
Surgery for NEC	7	2.5	2	0.4	1	0.2	1	0.4	11	0.7
TOTAL	280	100.0	564	100.0	464	100.0	271	100.0	1579	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Babies with major congenital anomalies excluded.



continued from p.62

The overall incidence of intraventricular haemorrhage (IVH) among preterm infants (less than 37 weeks gestational age) decreased from 17.0 per cent in 1992 to 16.6 per cent in 1998. In 1998, IVH was most common amongst the infants in the less than 28 week gestation group (35.3 per cent) and 37.4 per cent of these infants had severe IVH (grade 3 or 4). The incidence of severe IVH has remained constant since 1992. Of the surviving infants born before 32 weeks gestation, 94.0 per cent had a head ultrasound examination to detect IVH (Table 84).

The overall proportion of infants with severe grades (Grade 3 or Grade 4) of retinopathy of prematurity (ROP) has decreased from 7.5 per cent in 1992 to 5.0 per cent in 1998. In 1998, all infants with severe grades of ROP were less than 32 weeks gestation and 57.8 per cent of the infants less than 28 weeks gestation received either cryotherapy or laser therapy. Importantly, 19.3 per cent of surviving infants 28-31 weeks gestational age did not have an eye examination recorded (Table 85).

**TABLE 83**

**MAJOR SURGERY BY GESTATIONAL AGE, NSW & ACT 1998#**

Major Surgery	Gestational age (weeks)								TOTAL	
	22-27		28-31		32-36		37+		No.	%
	No.	%	No.	%	No.	%	No.	%		
No	246	87.9	555	98.4	458	98.7	254	93.7	1513	95.8
Yes	34	12.1	9	1.6	6	1.3	17	6.3	66	4.2
TOTAL	280	100.0	564	100.0	464	100.0	271	100.0	1579	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.  
# Babies with major congenital anomalies excluded.

**TABLE 84**

**INTRAVENTRICULAR HAEMORRHAGE BY GESTATIONAL AGE, NSW & ACT 1998#**

Head ultrasound	Gestational age (weeks)								TOTAL	
	22-27		28-31		32-36		No.	%	No.	%
	No.	%	No.	%	No.	%				
No IVH	166	59.3	433	76.8	250	53.9	849	64.9		
Grade 1	35	12.5	62	11.0	20	4.3	117	8.9		
Grade 2	27	9.6	16	2.8	3	0.6	46	3.5		
Grade 3	11	3.9	10	1.8	3	0.6	24	1.8		
Grade 4	26	9.3	4	0.7	1	0.2	31	2.4		
Not examined & lived	0	0	34	6.0	182	39.2	216	16.5		
Not examined & died	15	5.4	5	0.9	5	1.1	25	1.9		
TOTAL	280	100.0	564	100.0	464	100.0	1308	100.0		

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.  
# Babies with major congenital anomalies excluded.

**TABLE 85**

**RETINOPATHY OF PREMATURITY BY GESTATIONAL AGE, NSW & ACT 1998#**

Retinopathy of prematurity (ROP)	Gestational age (weeks)						TOTAL	
	22-27		28-31		No.	%	No.	%
	No.	%	No.	%				
No ROP	92	32.9	401	71.1	493	58.4		
Grade 1	18	6.4	18	3.2	36	4.3		
Grade 2	59	21.1	16	2.8	75	8.9		
Grade 3	35	12.5	4	0.7	39	4.6		
Grade 4	2	0.7	1	0.2	3	0.4		
Treated with cryotherapy/laser	21	7.5	1	0.2	22	2.6		
Not examined & lived	2	0.7	109	19.3	111	13.2		
Not examined & died	72	25.7	15	2.7	87	10.3		
TOTAL	280	100.0	564	100.0	844	100.0		

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.  
# Babies with major congenital anomalies excluded.

## 5.5 SERVICE UTILISATION

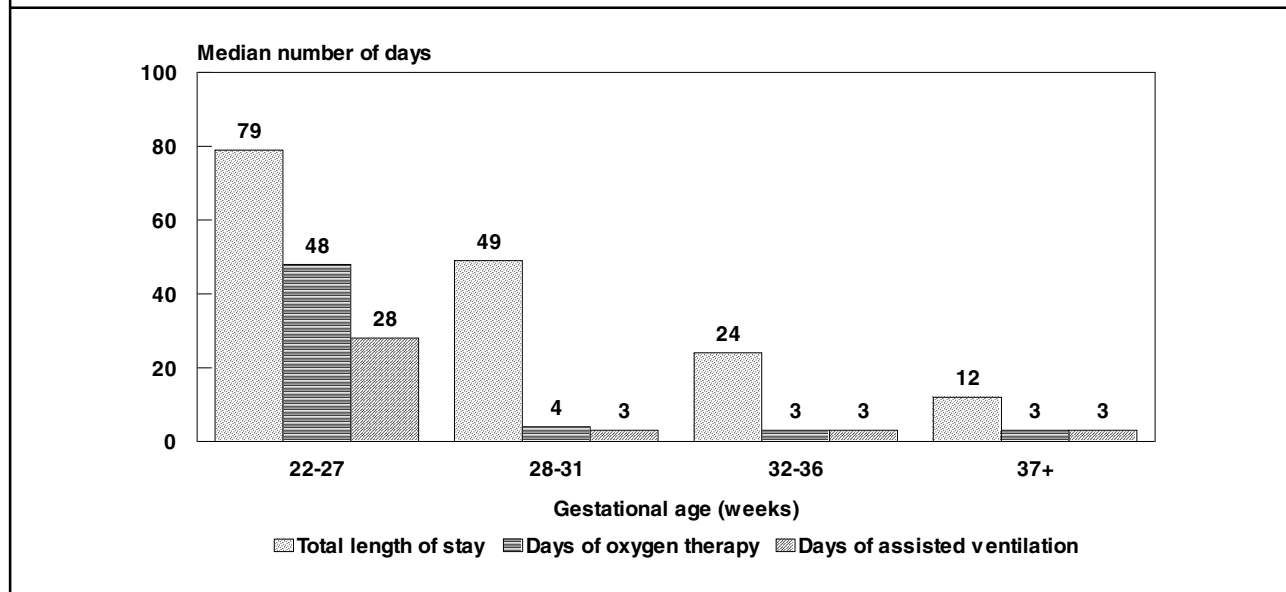
Indicators of service utilisation collected as part of NICUS include length of stay in tertiary and non-tertiary centres, the days on assisted ventilation and days in oxygen (Figures 10 and 11 and Table 86). On an individual basis, infants born at the less than 28 weeks gestation consumed most resources. However, as a group those born at 28-31 weeks gestation consumed more bed days than any other group due to their higher numbers. In 1998, the total cohort used 56,576 bed days in a tertiary centre in NSW (1992-98) and the ACT (1995-98) (range 46,091 in 1993 to 56,576 in 1998); as well as 17,815 in a non-tertiary centre (level

2 neonatal unit) in NSW and the ACT (14,287 in 1992 to 17,815 in 1998). Even when these infants leave the neonatal intensive care unit, they still require substantial resources.

In 1998, NICUS registrants used 18,059 days of assisted ventilation (range 15,282 in 1993 to 18,059 in 1998) and 30,323 days of oxygen therapy (range 22,526 in 1992 to 30,323 in 1998). The overall proportion of infants going home on supplemental oxygen has increased from 2.1 per cent in 1992 to 5.2 per cent in 1998. The proportion of infants less than 28 weeks gestation has increased significantly from a high of 16.5 per cent in 1995 to 20.4 per cent in 1998 (Table 87).

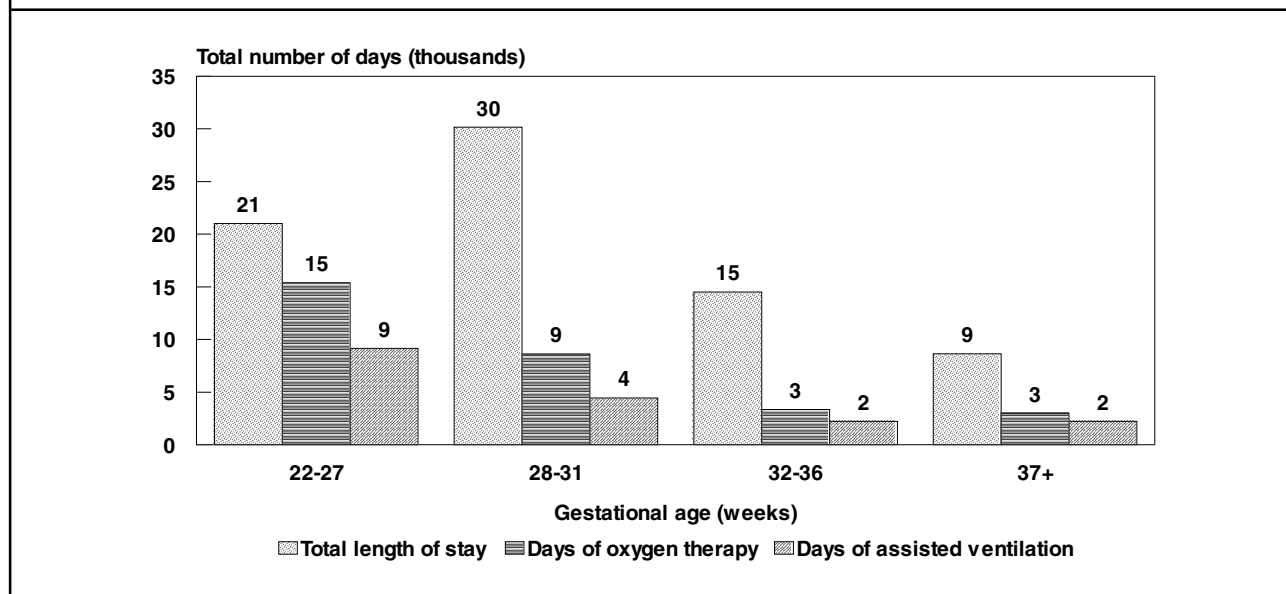
**FIGURE 10**

**MEDIAN NUMBER OF DAYS IN HOSPITAL, OXYGEN THERAPY AND ASSISTED VENTILATION BY GESTATIONAL AGE, NSW & ACT 1998**



**FIGURE 11**

**TOTAL NUMBER OF DAYS IN HOSPITAL, OXYGEN THERAPY AND ASSISTED VENTILATION BY GESTATIONAL AGE, NSW & ACT 1998**



Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 86****SERVICE UTILISATION INDICATORS GESTATIONAL AGE, NSW & ACT 1998**

Indicators	Gestational age (weeks)				TOTAL
	22-27	28-31	32-36	37+	
<b>Non tertiary hospital stay (days)</b>					
Minimum	0	0	0	0	0
Maximum	312	67	54	70	312
Sum	2845	9097	4549	1324	17815
Median	0	13	5	0	1
25th percentile	0	0	0	0	0
75th percentile	15	29	15	2	16
<b>Tertiary hospital stay (days)</b>					
Minimum	1	1	1	1	1
Maximum	226	249	316	525	25
Sum	18182	21058	9991	7345	56576
Median	67	30	12	10	18
25th percentile	30	17	7	6	8
75th percentile	91	50	24	17	40
<b>Total hospital stay (days)</b>					
Minimum	1	1	1	1	1
Maximum	419	249	316	533	533
Sum	21027	30155	14522	8633	74337
Median	79	49	24	12	31
25th percentile	35	38	15	7	14
75th percentile	99	63	33	21	56
<b>Mechanical ventilation (days)</b>					
Minimum	0	0	0	0	0
Maximum	93	90	33	67	93
Sum	5023	2152	1441	1776	10392
Median	12	2	2	3	2
25th percentile	3	0	0	1	0
75th percentile	27	4	4	5	5
<b>Continuous positive airway pressure (days)</b>					
Minimum	0	0	0	0	0
Maximum	86	82	50	75	86
Sum	4133	2298	780	456	7667
Median	10	1	0	0	0
25th percentile	0	0	0	0	0
75th percentile	25	4	2	1	3
<b>Assisted ventilation (days)</b>					
Minimum	0	0	0	0	0
Maximum	116	105	65	81	116
Sum	9156	4450	2221	2232	18059
Median	28	3	3	3	4
25th percentile	9	1	2	2	2
75th percentile	50	8	5	5	8
<b>Oxygen therapy (days)</b>					
Minimum	0	0	0	0	0
Maximum	419	219	316	200	419
Sum	15376	8609	3351	2987	30323
Median	48	4	3	3	4
25th percentile	11	1	1	1	1
75th percentile	84	18	6	7	14

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**TABLE 87****HOME OXYGEN ADMINISTRATION AND GESTATIONAL AGE, NSW & ACT 1992-98#**

Year	Home oxygen	Gestational age (weeks)								TOTAL	
		22-27		28-31		32-36		37+			
		No.	%	No.	%	No.	%	No.	%	No.	%
1992	No	211	92.5	368	98.7	397	99.3	255	99.6	1231	97.9
	Yes	17	7.5	5	1.3	3	0.8	1	0.4	26	2.1
	TOTAL	228	100.0	373	100.0	400	100.0	256	100.0	1257	100.0
1993	No	165	86.4	369	94.6	397	100.0	261	100.0	1192	96.2
	Yes	26	13.6	21	5.4	0	0	0	0	47	3.8
	TOTAL	191	100.0	390	100.0	397	100.0	261	100.0	1239	100.0
1994	No	178	86.4	469	96.5	409	99.5	233	98.3	1289	96.2
	Yes	28	13.6	17	3.5	2	0.5	4	1.7	51	3.8
	TOTAL	206	100.0	486	100.0	411	100.0	237	100.0	1340	100.0
1995	No	185	84.1	469	95.9	430	99.5	272	99.6	1356	95.9
	Yes	35	15.9	20	4.1	2	0.5	1	0.4	58	4.1
	TOTAL	220	100.0	489	100.0	432	100.0	273	100.0	1414	100.0
1996	No	191	83.8	482	96.2	469	99.4	267	97.8	1409	95.6
	Yes	37	16.2	19	3.8	3	0.6	6	2.2	65	4.4
	TOTAL	228	100.0	501	100.0	472	100.0	273	100.0	1474	100.0
1997	No	205	90.3	495	96.3	458	99.6	254	98.8	1412	96.8
	Yes	22	9.7	19	3.7	2	0.4	3	1.2	46	3.2
	TOTAL	227	100.0	514	100.0	460	100.0	257	100.0	1458	100.0
1998	No	223	79.6	549	97.3	460	99.1	265	97.8	1497	94.8
	Yes	57	20.4	15	2.7	4	0.9	6	2.2	82	5.2
	TOTAL	280	100.0	564	100.0	464	100.0	271	100.0	1579	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Liverpool Health Service joined NICUS October, 1994. Canberra Hospital joined NICUS in January, 1995. From January 1994, all infants less than 32 weeks gestation and/or less than or equal to 1500 grams birth weight and admitted to a NICU were included in NICUS. Babies with major congenital anomalies excluded.

**TABLE 88****DURATION OF SURVIVAL OF BABIES BY GESTATIONAL AGE, NSW & ACT 1998#**

Gestational age (weeks)	Alive at six months		Age at death (days)						TOTAL	
	No.	%	0-7		8-28		28+			
			No.	%	No.	%	No.	%	No.	%
22	0	0.0	1	100.0	0	0.0	0	0.0	1	0.1
23	3	18.8	9	56.3	2	12.5	2	12.5	16	1.0
24	17	40.5	17	40.5	5	11.9	3	7.1	42	2.7
25	42	75.0	7	12.5	5	8.9	2	3.6	56	3.5
26	68	79.1	9	10.5	3	3.5	6	7.0	86	5.4
27	74	93.7	4	5.1	1	1.3	0	0.0	79	5.0
28	93	92.1	5	5.0	1	1.0	2	2.0	101	6.4
29	121	96.0	2	1.6	3	2.4	0	0.0	126	8.0
30	137	96.5	3	2.1	1	0.7	1	0.7	142	9.0
31	193	99.0	1	0.5	0	0.0	1	0.5	195	12.3
32	132	97.8	2	1.5	1	0.7	0	0.0	135	8.5
33	97	98.0	2	2.0	0	0.0	0	0.0	99	6.3
34	95	100.0	0	0.0	0	0.0	0	0.0	95	6.0
35	57	96.6	1	1.7	1	1.7	0	0.0	59	3.7
36	73	96.1	3	3.9	0	0.0	0	0.0	76	4.8
37	52	96.3	1	1.9	1	1.9	0	0.0	54	3.4
38	44	100.0	0	0.0	0	0.0	0	0.0	44	2.8
39	44	93.6	3	6.4	0	0.0	0	0.0	47	3.0
40	64	94.1	3	4.4	0	0.0	1	1.5	68	4.3
41	52	94.5	1	1.8	1	1.8	1	1.8	55	3.5
42	2	66.7	1	33.3	0	0.0	0	0.0	3	0.2
TOTAL	1460	92.5	75	4.7	25	1.6	19	1.2	1579	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Babies with major congenital anomalies excluded.

## 5.6 SURVIVAL

Infants with a major congenital anomaly have been **excluded** from the analysis of survival with the exception of data reported in Table 91.

The six-month survival rate for all infants without a major congenital anomaly in the 1998 cohort was 92.5 per cent (range 87.8 per cent in 1992 to 92.5 per cent in 1998). Survival of infants born at less than 25 weeks gestation was 33.9 per cent (range 33.9 per cent in 1998 to 54.8 per cent in 1993). There was a trend for survival to improve with gestational age up to 34 weeks gestation after which it decreased slightly. term infants (95.2 per cent) were more likely to survive than preterm infants (91.9 per cent). Amongst infants who died, 63.0 per cent of deaths occurred during the first week of life (range 63.0 per cent in 1998 to 75.5 in 1994) with a further 21.0 per cent occurring during the first month of life (Table 88).

The six-month survival rate improved with increasing birth weight, ranging from 31.8 per cent for infants in the 500-599 grams group to 93.8 per cent for the 900-999 gram group. Six-month survival continued to improve with increasing birth weight to a maximum of 98.7 per cent for infants of 1,250-1,499 grams birth weight and then decreased slightly (Table 89).

The majority of infants registered in NICUS were born at a tertiary centre. Although the gestational age is the most important risk factor for mortality, disease severity is also important. At each gestational age group those with severe disease are more likely to be transferred to a neonatal intensive care unit.

In 1998, the six-month survival rate for infants born at 22 to 27 weeks was greater for those born in a tertiary centre (75.4 per cent) compared with those born in a non tertiary centre (45.8 per cent). This trend was also evident for those born between 1992-97. Place of birth did not affect survival for infants in the other gestational age groups (Table 90).

The six-month survival rate for all male infants (92.5 per cent) was similar to that for all female infants (92.4 per cent). The six-month survival rate was similar for males and females for all gestational age groups (less than 28 weeks [72.7 per cent vs 73.1 per cent], 28-31 weeks (95.4 per cent vs 97.9 per cent), 32-36 weeks (97.5 per cent vs 98.4 per cent) and 37-41 weeks gestation groups (96.3 per cent vs 94.2 per cent).

The six-month survival rate was 92.2 per cent (n=1,259) for singleton infants and 93.4 per cent (n=320) for multiple gestation infants. Plurality did not influence survival in the 28-31 weeks, 32-36 weeks and 37 plus gestational age groups. There were only seven infants born of a multiple pregnancy in the 37-41 weeks group and none in the 42 plus weeks group. In 1998 the survival rate for infants in the less than 28 week gestation group was lower for infants born of a singleton (144/205; 70.2 per cent) than a multiple pregnancy (60/75; 80.0 per cent).

As expected survival was generally lower (81.9 per cent) in the presence of a major congenital anomaly (Table 91).

Post-mortem examinations were performed on 41 of the 119 infants (34.5 per cent) who died in the 1998 cohort (Figure 12 and Table 92). Post-mortem examinations were most commonly not requested for infants 22-27 weeks gestation (36/76; 47.4 per cent) and 37 plus weeks gestation (6/13; 46.2 per cent). The highest rate of refusal was in 28-36 weeks gestation group (12/30; 40.0 per cent) and the highest rate of post-mortems was in the 28-31 week gestation group (11/20; 55.0 per cent).

**TABLE 89**

**DURATION OF SURVIVAL BY BIRTH WEIGHT, NSW & ACT 1998#**

Birth weight (grams)	Alive at six months		Age at death (days)				TOTAL			
	No.	%	No. 0-7	%	No. 8-28	%	No. 28+	%	No.	%
400-499	2	33.3	2	33.3	1	16.7	1	16.7	6	0.4
500-599	7	31.8	12	54.5	1	4.5	2	9.1	22	1.4
600-699	29	69.0	7	16.7	3	7.1	3	7.1	42	2.7
700-799	35	58.3	15	25.0	6	10.0	4	6.7	60	3.8
800-899	47	74.6	11	17.5	3	4.8	2	3.2	63	4.0
900-999	76	93.8	2	2.5	1	1.2	2	2.5	81	5.1
1,000-1,249	191	96.5	2	1.0	4	2.0	1	0.5	198	12.5
1,250-1,499	222	98.7	1	0.4	1	0.4	1	0.4	225	14.2
1,500-1,749	188	96.4	4	2.1	2	1.0	1	0.5	195	12.3
1,750-1,999	130	96.3	5	3.7	0	0	0	0	135	8.5
2,000-2,499	177	97.8	3	1.7	1	0.6	0	0	181	11.5
2,500-2,999	112	95.7	4	3.4	0	0	1	0.9	117	7.4
3,000-3,499	129	97.0	3	2.3	1	0.8	0	0	133	8.4
3,500-3,999	72	93.5	4	5.2	1	1.3	0	0	77	4.9
4,000+	43	97.7	0	0	0	0	1	2.3	44	2.8
TOTAL	1460	92.5	75	4.7	25	1.6	19	1.2	1579	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.  
# Babies with major congenital anomalies excluded.

**TABLE 90****DURATION OF SURVIVAL BY PLACE OF BIRTH AND GESTATIONAL AGE, NSW & ACT 1998#**

Gestational age (weeks)	Place of birth	Alive at six months		0-7		Age at death (days) 8-28		28+		TOTAL	
		No.	%	No.	%	No.	%	No.	%	No.	%
22-27	Non tertiary	11	45.8	11	45.8	2	8.3	0	0.0	24	8.6
	Tertiary	193	75.4	36	14.1	14	5.5	13	5.1	256	91.4
	Sub-total	204	72.9	47	16.8	16	5.7	13	4.6	280	100.0
28-31	Non tertiary	50	98.0	0	0.0	0	0.0	1	2.0	51	9.0
	Tertiary	494	96.3	11	2.1	5	1.0	3	0.6	513	91.0
	Sub-total	544	96.5	11	2.0	5	0.9	4	0.7	564	100.0
32-36	Non tertiary	163	98.2	2	1.2	1	0.6	0	0.0	166	35.8
	Tertiary	291	97.7	6	2.0	1	0.3	0	0.0	298	64.2
	Sub-total	454	97.8	8	1.7	2	0.4	0	0.0	464	100.0
37-41	Non tertiary	144	94.1	7	4.6	0	0.0	2	1.3	153	57.1
	Tertiary	112	97.4	1	0.9	2	1.7	0	0.0	115	42.9
	Sub-total	256	95.5	8	3.0	2	0.7	2	0.7	268	100.0
42+	Non tertiary	1	50.0	1	50.0	0	0.0	0	0.0	2	66.7
	Tertiary	1	100.0	0	0.0	0	0.0	0	0.0	1	33.3
	Sub-total	2	66.7	1	33.3	0	0.0	0	0.0	3	100.0
TOTAL		1460	92.5	75	4.7	25	1.6	19	1.2	1579	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

# Babies with major congenital anomalies excluded. Babies born before arrival excluded.

**TABLE 91****DURATION OF SURVIVAL BY MAJOR CONGENITAL ANOMALY AND GESTATIONAL AGE, NSW & ACT 1998**

Gestational age (weeks)	Major congenital anomaly	Alive at six months		0-7		Age at death (days) 8-28		28+		TOTAL	
		No.	%	No.	%	No.	%	No.	%	No.	%
22-27	No	204	72.9	47	16.8	16	5.7	13	4.6	280	97.6
	Yes	3	42.9	3	42.9	0	0.0	1	14.3	7	2.4
	Sub-total	207	72.1	50	17.4	16	5.6	14	4.9	287	100.0
28-31	No	544	96.5	11	2.0	5	0.9	4	0.7	564	95.8
	Yes	15	60.0	3	12.0	4	16.0	3	12.0	25	4.2
	Sub-total	559	94.9	14	2.4	9	1.5	7	1.2	589	100.0
32-36	No	454	97.8	8	1.7	2	0.4	0	0.0	464	86.4
	Yes	61	83.6	6	8.2	3	4.1	3	4.1	73	13.6
	Sub-total	515	95.9	14	2.6	5	0.9	3	0.6	537	100.0
37-41	No	256	95.5	8	3.0	2	0.7	2	0.7	268	56.1
	Yes	179	85.2	20	9.5	7	3.3	4	1.9	210	43.9
	Sub-total	435	91.0	28	5.9	9	1.9	6	1.3	478	100.0
42+	No	2	66.7	1	33.3	0	0.0	0	0.0	3	37.5
	Yes	4	80.0	0	0.0	1	20.0	0	0.0	5	62.5
	Sub-total	6	75.0	1	12.5	1	12.5	0	0.0	8	100.0
TOTAL		1722	90.7	107	5.6	40	2.1	30	1.6	1899	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

**FIGURE 12**

**DEATHS BY POST-MORTEM EXAMINATION AND GESTATIONAL AGE, NSW & ACT 1992-98#**



Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.  
# Infants with major congenital anomalies excluded.

**TABLE 92**

**POST-MORTEM EXAMINATION BY GESTATIONAL AGE, NSW & ACT 1998#**

Post-mortem	22-27		28-31		32-36		37+		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
Not requested	36	47.4	1	5.0	1	10.0	6	46.2	44	37.0
Refused	21	27.6	8	40.0	4	40.0	1	7.7	34	28.6
Done	19	25.0	11	55.0	5	50.0	6	46.2	41	34.5
TOTAL	76	100.0	20	100.0	10	100.0	13	100.0	119	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.  
# Babies with major congenital anomalies excluded.

## PART 6: BIRTH DEFECTS

### 6.1 BIRTH DEFECTS AMONG STILLBORN AND LIVEBORN INFANTS

A birth defect is any structural defect detected during pregnancy or at birth, excluding birth injuries and minor anomalies such as skin tags, talipes, birthmarks or clefty hips. A list of common exclusions is shown in Appendix 1.

From 1 January 1998 doctors, hospitals and laboratories are required to notify birth defects detected during pregnancy, at birth or up to one year of life under NSW Public Health Act 1991. Information reported is included in the NSW Birth Defects Register (BDR). Information on the BDR is included in the Data Sources section of the report.

Descriptions of some common birth defects which are included in this chapter are shown in Appendix 2. This section reports on birth defects detected during pregnancy or in the first year of life for 1992-97 and birth defects detected during pregnancy or at birth for 1998.

#### 6.1.1 TRENDS IN REPORTED BIRTH DEFECTS

Between 1992 and 1997, the reported number of infants with birth defects has remained stable at just over 2 per cent (Table 93). In 1998, 1,060 cases of birth defects detected during pregnancy or at birth were reported.

#### 6.1.2 BIRTH DEFECTS BY DIAGNOSTIC CATEGORY

The most common categories of birth defects for births of more than 20 weeks gestation or with a birth weight greater than 400 grams are presented in Table 94. Birth defects are classified

**TABLE 93**  
BIRTH DEFECT CASES, NSW 1992-98#

Year	Birth defect cases	Births	Rate/1,000births
1992	2142	88200	24.3
1993	2142	87143	24.6
1994	1989	87262	22.8
1995	1947	86648	22.5
1996	1880	85706	21.9
1997	1995	87416	22.8
1998	1060	85627	12.4

Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

using the British Paediatric Association (BPA) Classification of Diseases<sup>2</sup>, which is primarily organised by body system. For infants with more than one defect, each defect is counted separately. The number of birth defects reported therefore exceeds the number of affected infants.

Over the period 1992-98, defects of the cardiovascular system were most commonly reported, followed by defects of the musculoskeletal system and defects of the genitourinary system. This is a similar pattern to previous years. In 1998, the rate of defects of the genitourinary system was slightly lower than the previous five years (7.3 versus 8.5 per 1,000), related mainly to a decreased rate of defects of the genitals among male infants. The reported number of babies born with neural tube defects fell from 80 in 1992 to 51 in 1997, and 34 have been reported for 1998 to date.

**TABLE 94**

BIRTH DEFECTS AMONG STILLBIRTHS AND LIVE BIRTHS BY DIAGNOSTIC CATEGORY<sup>1</sup>, NSW 1992-98

Diagnostic category	No. defects			Rate/1,000 births				
	1992-96	1997	1998	1992-98	1992-96	1997	1998	1992-98
<b>Defects of nervous system</b>								
Anencephaly	64	10	9	83	0.1	0.1	0.1	0.1
Spina Bifida	198	32	25	255	0.5	0.4	0.3	0.4
Encephalocele	45	9	2	56	0.1	0.1	0.0	0.1
Microcephaly	160	26	13	199	0.4	0.3	0.2	0.3
Congenital hydrocephalus	212	36	26	274	0.5	0.4	0.3	0.5
Other nervous system defects	356	101	47	504	0.8	1.2	0.5	0.8
Total	1035	214	122	1371	2.4	2.4	1.4	2.3
<b>Defects of eye</b>								
Anophthalmos/ microphthalmos	76	12	6	94	0.2	0.1	0.1	0.2
Buphthalmos/ congenital glaucoma	38	2	1	41	0.1	0.0	0.0	0.1
Congenital cataract	83	13	9	105	0.2	0.1	0.1	0.2
Other eye defects	189	34	19	242	0.4	0.4	0.2	0.4
Total	386	61	35	482	0.9	0.7	0.4	0.8
<b>Defects of ear, face and neck</b>								
Absence/ stricture auditory canal	40	9	10	59	0.1	0.1	0.1	0.1
Absent auricle	7	1	1	9	0.0	0.0	0.0	0.0
Defects of face and neck	41	10	5	56	0.1	0.1	0.1	0.1
Other ear defects	111	24	13	148	0.3	0.3	0.2	0.2
Total	199	44	29	272	0.5	0.5	0.3	0.4
<b>Defects of cardiovascular system</b>								
Transposition of great vessels	225	38	28	291	0.5	0.4	0.3	0.5
Tetralogy of Fallot	148	21	21	190	0.3	0.2	0.2	0.3
Ventricular septal defect	1074	212	105	1391	2.5	2.4	1.2	2.3
Atrial septal defect	1104	206	62	1372	2.5	2.4	0.7	2.3

1. British Paediatric Association Classification of Diseases (a perinatal supplement compatible with the ninth revision of the WHO International Classification of Diseases). British Paediatric Association, London, 1979.



TABLE 94 (CONT)

## BIRTH DEFECTS AMONG STILLBIRTHS AND LIVE BIRTHS BY DIAGNOSTIC CATEGORY, NSW 1992-98#

Diagnostic category	No. defects				Rate/1,000 births			
	1992-96	1997	1998	1992-98	1992-96	1997	1998	1992-98
<b>Defects of cardiovascular system (cont)</b>								
Heart valve defects	886	151	63	1100	2.0	1.7	0.7	1.8
Patent ductus arteriosus > 37 weeks	697	115	46	858	1.6	1.3	0.5	1.4
Coarctation of aorta	189	42	8	239	0.4	0.5	0.1	0.4
Other defects of aorta	100	19	18	137	0.2	0.2	0.2	0.2
Defects of pulmonary artery	154	28	9	191	0.4	0.3	0.1	0.3
Other cardiovascular defects	954	147	95	1196	2.2	1.7	1.1	2.0
Total	5531	979	455	6965	12.7	11.2	5.3	11.5
<b>Defects of respiratory system</b>								
Defects of nose	76	14	8	98	0.2	0.2	0.1	0.2
Defects of larynx, trachea and bronchus	58	8	6	72	0.1	0.1	0.1	0.1
Defects of lung	99	17	13	129	0.2	0.2	0.2	0.2
Other respiratory defects	4	0	0	4	0.0	0.0	0.0	0.0
Total	237	39	27	303	0.5	0.4	0.3	0.5
<b>Defects of gastrointestinal system</b>								
Cleft palate only	425	74	64	563	1.0	0.8	0.7	0.9
Cleft lip only	170	33	31	234	0.4	0.4	0.4	0.4
Cleft palate and cleft lip	267	53	40	360	0.6	0.6	0.5	0.6
Oesophageal atresia only	16	1	2	19	0.0	0.0	0.0	0.0
Tracheo-oesophageal fistula (TOF) only	32	4	5	41	0.1	0.0	0.1	0.1
Oesophageal atresia with TOF	91	21	14	126	0.2	0.2	0.2	0.2
Atresia/stenosis of small intestine	138	31	13	182	0.3	0.4	0.2	0.3
Atresia/stenosis of anus	164	26	18	208	0.4	0.3	0.2	0.3
Other gastrointestinal defects	522	96	46	664	1.2	1.1	0.5	1.1
Total	1825	339	233	2397	4.2	3.9	2.7	3.9
<b>Defects of genitourinary system</b>								
Defects of female genitals	86	8	11	105	0.2	0.1	0.1	0.2
Undescended testis	518	82	22	622	1.2	0.9	0.3	1.0
Hypospadias	1071	166	144	1381	2.5	1.9	1.7	2.3
Epispadias	23	5	5	33	0.1	0.1	0.1	0.1
Chordee	267	30	10	307	0.6	0.3	0.1	0.5
Indeterminate sex/ ambiguous genitalia	68	13	6	87	0.2	0.1	0.1	0.1
Renal agenesis/ dysgenesis	146	36	33	215	0.3	0.4	0.4	0.4
Obstructive defects of renal pelvis and ureter	770	152	52	974	1.8	1.7	0.6	1.6
Other genitourinary system defects	743	150	75	968	1.7	1.7	0.9	1.6
Total	3692	642	358	4692	8.5	7.3	4.2	7.7
<b>Defects of musculoskeletal system</b>								
Congenital dislocation of the hips	905	179	90	1174	2.1	2.0	1.1	1.9
Talipes equinovarus	318	65	14	397	0.7	0.7	0.2	0.7
Polydactyly	473	100	87	660	1.1	1.1	1.0	1.1
Syndactyly	173	26	40	239	0.4	0.3	0.5	0.4
Reduction deformities of limbs	363	71	49	483	0.8	0.8	0.6	0.8
Craniosynostosis	506	104	5	615	1.2	1.2	0.1	1.0
Diaphragmatic hernia	121	27	14	162	0.3	0.3	0.2	0.3
Exomphalos	75	12	11	98	0.2	0.1	0.1	0.2
Gastroschisis	75	20	16	111	0.2	0.2	0.2	0.2
Other musculoskeletal defects	1235	261	130	1626	2.8	3.0	1.5	2.7
Total	4244	865	456	5565	9.8	9.9	5.3	9.2
<b>Defects of integumentary system</b>								
Cystic hygroma	49	14	7	70	0.1	0.2	0.1	0.1
<b>Chromosomal defects</b>								
Trisomy 21	547	111	78	736	1.3	1.3	0.9	1.2
Trisomy 13	20	6	6	32	0.0	0.1	0.1	0.1
Trisomy 18	95	16	19	130	0.2	0.2	0.2	0.2
Turner syndrome	40	9	5	54	0.1	0.1	0.1	0.1
Other chromosomal defects	216	34	27	277	0.5	0.4	0.3	0.5
Total	918	176	135	1229	2.1	2.0	1.6	2.0
<b>Situs inversus</b>								
Congenital malformation syndromes	190	43	29	262	0.4	0.5	0.3	0.4
Congenital rubella syndrome	6	0	0	6	0.0	0.0	0.0	0.0
Congenital cytomegalovirus infection	13	2	2	17	0.0	0.0	0.0	0.0
Congenital toxoplasmosis	3	0	0	3	0.0	0.0	0.0	0.0
Non-immune hydrops foetalis	87	25	18	130	0.2	0.3	0.2	0.2
Other and unspecified birth defects	468	88	29	585	1.1	1.0	0.3	1.0
TOTAL	19244	3619	1988	24851	44.2	41.4	23.2	40.9

Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

### 6.1.3 INFANT CHARACTERISTICS

In the period 1992-98, a single defect was reported in 63.3 per cent of infants, 2 defects in 17.2 per cent, 3 defects in 7.7 per cent, and 4 or more defects in 11.8 per cent of cases.

The sex was reported as male in 59.6 per cent of infants, female in 39.7 per cent, indeterminate in 0.3 per cent of infants, and was not stated for 0.3 per cent.

Birth defects were more common in preterm and post-term infants than infants born at term (Table 95). Birth defects were also more common in infants born of a multiple pregnancy than a

singleton pregnancy: in 1992-98, 2.1 per cent of singleton, 3.0 per cent of twins and 2.7 per cent of triplets were born with a birth defect.

Almost 10 per cent of infants born with birth defects died in the perinatal period, with stillbirths contributing half the perinatal deaths (Table 96). These figures comprise all birth defect cases, including those where the cause of death may not be directly related to the birth defect(s). By comparison, the perinatal mortality rate among all births reported to the NSW Midwives Data Collection was 9.4 per 1,000 in 1998 (Section 1.15).

**TABLE 95**

**BIRTH DEFECT CASES BY GESTATIONAL AGE, NSW 1992-98#**

Gestational age (weeks)	1992-96		1997		Year 1998		1992-98		Rate/1,000 births
	No.	%	No.	%	No.	%	No.	%	
20 - 27	366	3.6	101	5.1	94	8.9	561	4.3	152.1
28 - 31	308	3.0	56	2.8	26	2.5	390	3.0	92.6
32 - 36	1176	11.6	203	10.2	107	10.1	1486	11.3	46.1
37 - 41	7628	75.5	1515	75.9	817	77.1	9960	75.7	18.1
42 +	300	3.0	52	2.6	16	1.5	368	2.8	21.3
Not stated	322	3.2	68	3.4	0	0.0	390	3.0	-
<b>TOTAL</b>	<b>10100</b>	<b>100.0</b>	<b>1995</b>	<b>100.0</b>	<b>1060</b>	<b>100.0</b>	<b>13155</b>	<b>100.0</b>	<b>21.6</b>

Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

**TABLE 96**

**BIRTH DEFECT CASES BY PREGNANCY OUTCOME, NSW 1992-98#**

Pregnancy outcome	1992-96		1997		Year 1998		1992-98	
	No.	%	No.	%	No.	%	No.	%
Stillbirth	449	4.4	109	5.5	100	9.4	658	5.0
Live born / neonatal death	441	4.4	96	4.8	63	5.9	600	4.6
Live born / postneonatal death	77	0.8	12	0.6	5	0.5	94	0.7
Live born surviving	9133	90.4	1778	89.1	892	84.2	11803	89.7
<b>TOTAL</b>	<b>10100</b>	<b>100.0</b>	<b>1995</b>	<b>100.0</b>	<b>1060</b>	<b>100.0</b>	<b>13155</b>	<b>100.0</b>

Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported. Postneonatal mortality was recorded from 1993.

## 6.1.4 MATERNAL CHARACTERISTICS

After 20 years of age, the incidence of birth defects increased with increasing maternal age (Table 97). While the rate of birth defects is higher in older women, the majority of births occur in younger women: in 1992-98, 79.3 per cent of babies with birth defects were born to women aged less than 35 years.

Over 1992-98, 221 babies of Aboriginal or Torres Strait Islander mothers were reported to have birth defects. The rate of birth defects among these babies was 18.8 per 1,000 compared with 21.7 per cent for non-Aboriginal mothers.

**TABLE 97**

**BIRTH DEFECT CASES BY MATERNAL AGE, NSW 1992-98#**

Maternal age (years)	1992-96		1997		1998		1992-98		Rate/1,000 births
	No.	%	No.	%	No.	%	No.	%	
Under 20	516	5.1	110	5.5	56	5.3	682	5.2	22.3
20 - 24	1748	17.3	332	16.6	185	17.5	2265	17.2	19.9
25 - 29	2944	29.1	569	28.5	319	30.1	3832	29.1	19.3
30 - 34	2819	27.9	543	27.2	298	28.1	3660	27.8	20.4
35 - 39	1206	11.9	284	14.2	154	14.5	1644	12.5	22.6
40 - 44	240	2.4	54	2.7	45	4.2	339	2.6	28.8
45+	22	0.2	4	0.2	2	0.2	28	0.2	62.8
Not stated	605	6.0	99	5.0	1	0.1	705	5.4	-
TOTAL	10100	100.0	1995	100.0	1060	100.0	13155	100.0	21.6

Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

## 6.2 BIRTH DEFECTS AMONG TERMINATIONS OF PREGNANCY, SPONTANEOUS ABORTIONS AND UNKNOWN OUTCOMES OF PREGNANCY

In the period 1992-98, about 140 terminations of pregnancy per year were reported to the NSW Birth Defects Register (Table 98). Of the total 965 terminations of pregnancy reported over the seven year period, 470 (48.7 per cent) were associated with a chromosomal abnormality, the most common of which was Down syndrome, and 263 (27.2 per cent) were associated with a neural tube defect (Table 99). In 1992-98, 57.9 per cent of terminations were carried out in women aged less than 25 years (Table 100).

For spontaneous abortions, cytogenetic analysis is only carried out in cases of habitual abortion and the numbers presented therefore underestimate the number of spontaneous abortions which occur due to birth defects. Descriptions of some diagnostic terms used here are included in the Appendix 2.

**TABLE 98**

**PREGNANCIES WITH FETUSES AFFECTED BY BIRTH DEFECTS AND RESULTING IN SPONTANEOUS ABORTION, TERMINATION OF PREGNANCY OR UNKNOWN OUTCOME, NSW 1992-98**

Pregnancy outcome	Year			
	1992-96 No.	1997 No.	1998 No.	1992-98 No.
Spontaneous abortion	227	72	78	377
Termination of pregnancy less than 20 weeks gestation	689	125	151	965
Unknown outcome	593	159	0	752
TOTAL	1509	356	229	2094

Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 99**

**BIRTH DEFECTS AMONG SPONTANEOUS ABORTIONS, TERMINATIONS OF PREGNANCY AND UNKNOWN OUTCOME OF PREGNANCY BY DIAGNOSTIC CATEGORY, NSW 1992-98**

Diagnostic category	1992-96			Year 1997			1998			1992-98		
	Spont. abortion	Termination of pregnancy less than 20 weeks gestation	Unknown outcome	Spont. abortion	Termination of pregnancy less than 20 weeks gestation	Unknown outcome	Spont. abortion	Termination of pregnancy less than 20 weeks gestation	Spont. abortion	Termination of pregnancy less than 20 weeks gestation	Unknown outcome	
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	
<b>Defects of nervous system</b>												
Neural tube defects	13	200	7	0	24	0	3	39	16	263	7	
Other nervous system defects	7	66	11	1	9	2	0	31	8	106	13	
Total	20	266	18	1	33	2	3	70	24	369	20	
<b>Defects of eye</b>	1	3	1	0	0	0	0	0	1	3	1	
<b>Defects of ear, face and neck</b>	0	4	1	0	2	0	0	1	0	7	1	
<b>Defects of cardiovascular system</b>	1	60	41	1	34	3	3	21	5	115	44	
<b>Defects of respiratory system</b>	0	10	3	0	7	0	0	6	0	23	3	
<b>Defects of gastrointestinal System</b>	3	47	13	0	10	0	1	13	4	70	13	
<b>Defects of genitourinary system</b>	6	87	20	2	38	1	2	22	10	147	21	
<b>Defects of musculoskeletal system</b>	14	203	28	0	65	6	8	62	22	330	34	
<b>Defects of integumentary System</b>	0	2	1	0	0	0	1	0	1	2	1	
<b>Cystic hygroma</b>	7	74	34	2	11	5	0	10	9	95	39	
<b>Chromosomal defects</b>												
Trisomy 21	21	149	222	8	27	72	6	24	35	200	294	
Trisomy 13	9	24	28	3	1	7	2	3	14	28	35	
Trisomy 18	13	61	71	4	10	28	3	13	20	84	99	
Turner syndrome	27	32	40	8	5	10	7	5	42	42	50	
Other chromosomal defects	141	115	157	48	13	38	53	17	242	145	195	
Total	211	381	518	71	56	155	71	62	353	499	673	
<b>Situs inversus</b>	0	0	0	0	1	0	0	1	0	2	0	
<b>Congenital malformation syndromes</b>	0	13	1	0	8	1	0	2	0	23	2	
<b>Non-immune hydrops foetalis</b>	23	7	1	9	3	2	6	3	38	10		
<b>Other and unspecified birth defects</b>	0	20	20	0	6	3	1	9	1	35	23	
<b>TOTAL</b>	263	1193	706	78	280	179	92	285	433	1758	885	

Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

**TABLE 100**

**TRENDS IN REPORTED TERMINATIONS OF PREGNANCY ASSOCIATED WITH BIRTH DEFECTS BY MATERNAL AGE, 1992-98**

Year	Maternal age (years)																	
	15 - 19		20 - 24		25 - 29		30 - 34		35 - 39		40 - 44		45 +		Not stated		TOTAL	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1992	6	4.0	11	7.3	36	24.0	24	16.0	43	28.7	24	16.0	3	2.0	3	2.0	150	100.0
1993	4	2.9	15	10.7	29	20.7	28	20.0	37	26.4	16	11.4	1	0.7	10	7.1	140	100.0
1994	5	3.6	26	18.8	20	14.5	23	16.7	29	21.0	17	12.3	2	1.4	16	11.6	138	100.0
1995	6	3.9	19	12.3	31	20.0	38	24.5	33	21.3	23	14.8	2	1.3	3	1.9	155	100.0
1996	3	2.8	16	15.1	22	20.8	24	22.6	24	22.6	11	10.4	-	-	6	5.7	106	100.0
1997	3	2.4	13	10.4	33	26.4	32	25.6	25	18.4	13	10.4	1	0.8	5	4.0	125	100.0
1998	2	1.3	16	10.6	43	28.5	31	20.5	30	20.0	19	12.6	1	0.7	9	6.0	151	100.0
1992-98	29	3.0	116	12.0	214	22.2	200	20.7	221	22.9	123	12.7	10	1.0	52	5.4	965	100.0

Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

### 6.3 TRENDS IN SELECTED BIRTH DEFECTS

Trends in a selection of common birth defects are shown in Figures 13 to 20. For 1992-97, malformations reported up to one year of age are included and for 1998 malformations reported during pregnancy or at birth are included.

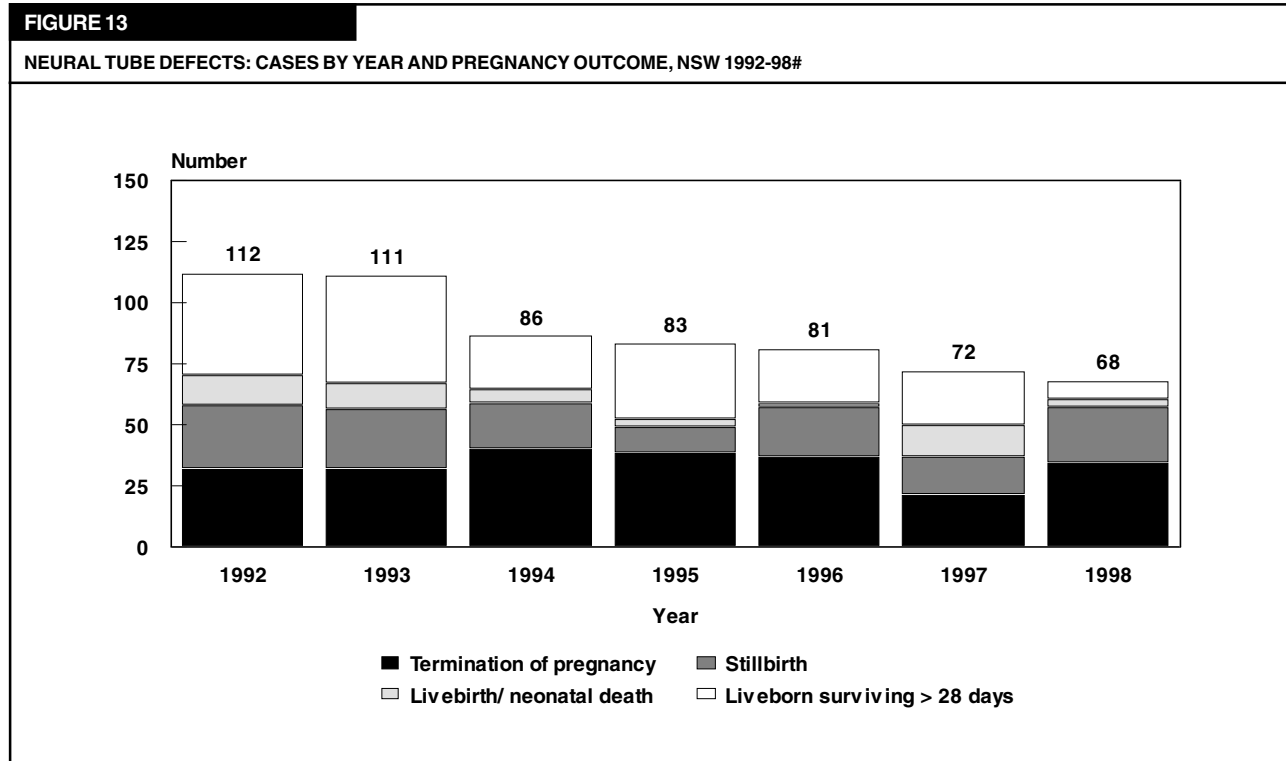
The reported number of infants born with neural tube defects fell from 80 in 1992 to 51 in 1997, and 34 have been reported for 1998 to date. The number of reported terminations of pregnancy was 32 in 1992 and 34 in 1998.

Over the period 1992-98, the number of cases of isolated cleft palate ranged from 56 in 1998 to 91 in 1995 and for total cleft lip (including cases of cleft lip and cleft palate) (Figures 14 and 15) from 75 in 1998 to 101 in 1995. Termination of pregnancy was usually associated with other defects such as neural tube defects, chromosomal abnormalities or multiple abnormalities in addition to the cleft lip and/or cleft palate.

The number of reported cases of hypospadias varied from 144 in 1998 to 238 in 1992 (Figure 16), and cases of limb reduction defects varied from 44 in 1996 to 63 in 1993 (Figure 17).

Between 1992 and 1998, the total number of cases of chromosomal abnormalities varied from 197 to 269, and the number of infants born with chromosomal abnormalities varied from 135 to 185 (Figure 18). There was no trend observed in the number of infants born or the number of terminations of pregnancy for chromosomal abnormalities over the period. Similarly, there was no trend observed in the number of Down syndrome cases, which comprise about half of all cases with chromosomal abnormalities (Figure 19). In 1998, reporting is restricted to abnormalities detected during pregnancy or at birth and this accounts for the relatively fewer cases of chromosomal abnormalities reported.

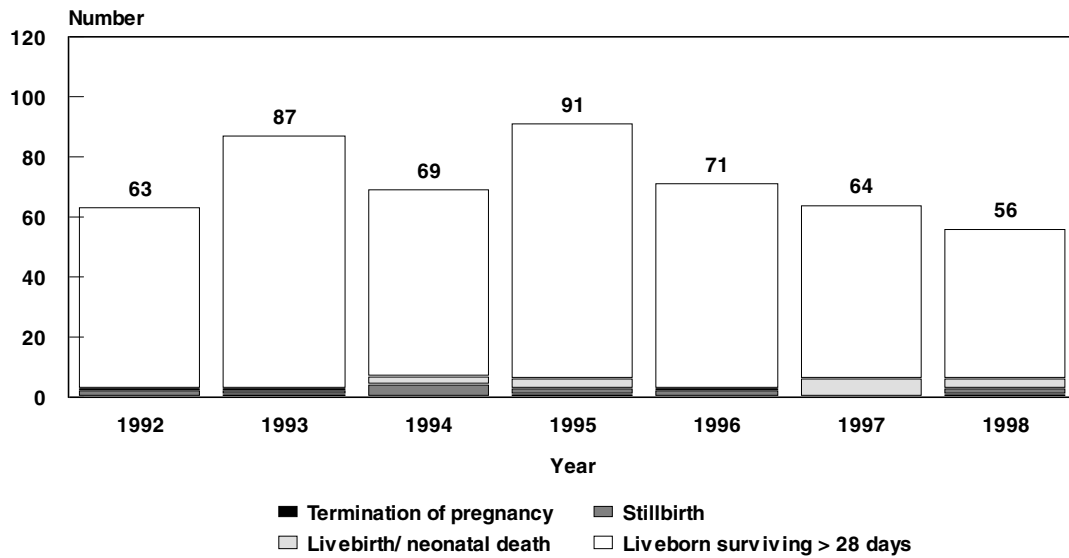
The number of cases reported with renal agenesis and dysgenesis increased slightly in 1996 to 81 and then fell in 1998. (Figure 20).



Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.  
 # For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

**FIGURE 14**

**CLEFT PALATE: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1992-98#**

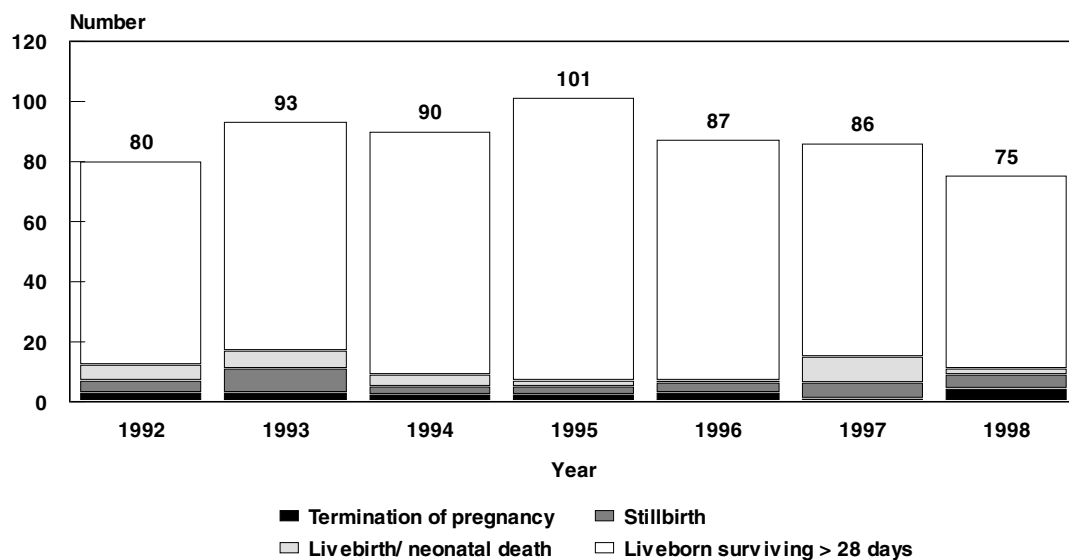


Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# Includes cases of isolated cleft palate only. For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

**FIGURE 15**

**TOTAL CLEFT LIP: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1992-98#**

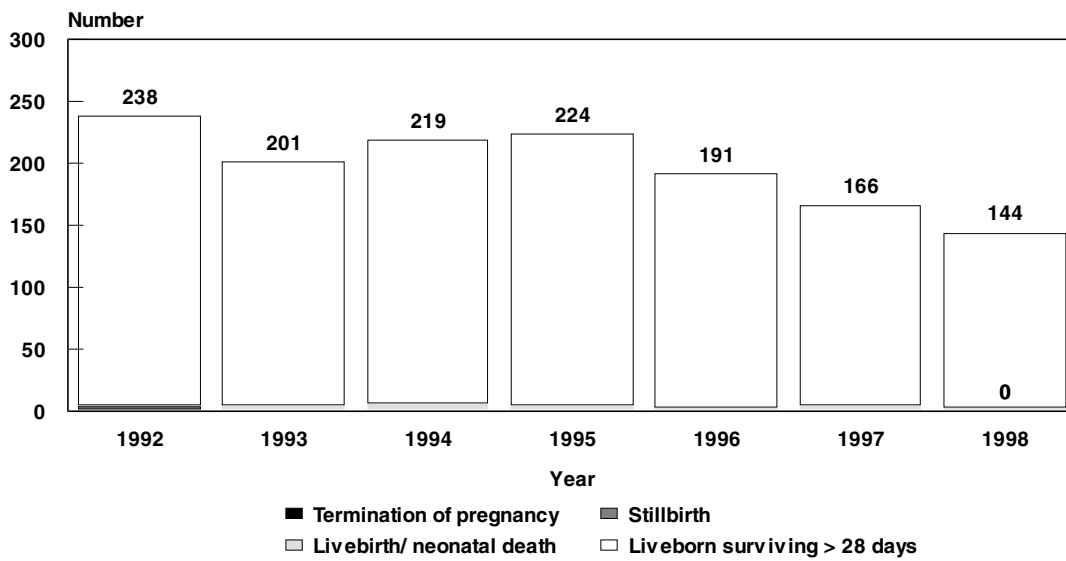


Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# Includes cases of isolated cleft lip and combined cleft lip/cleft palate. For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

**FIGURE 16**

**HYPOSPADIAS: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1992-98#**

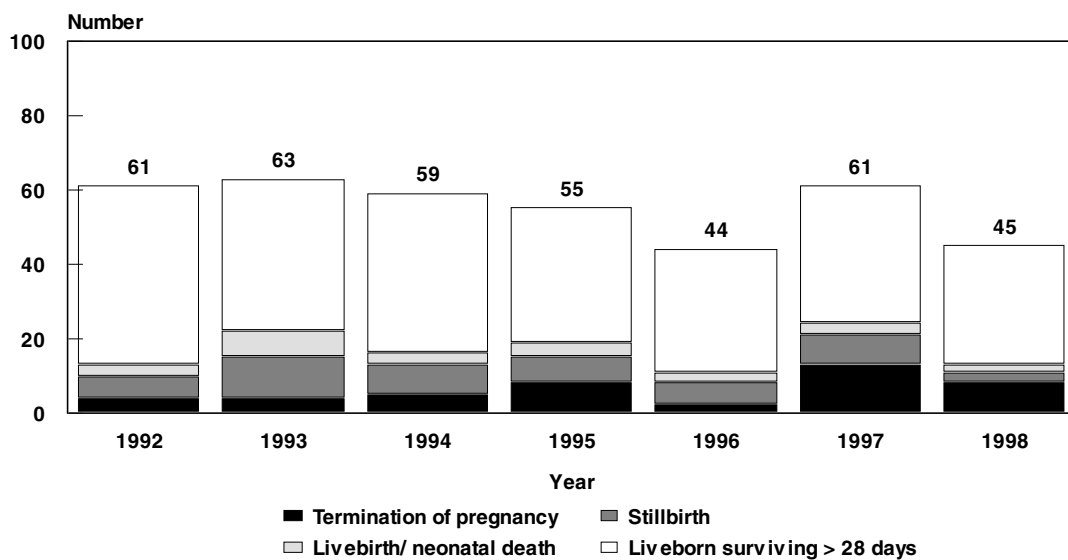


Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

**FIGURE 17**

**LIMB REDUCTION DEFECTS: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1992-98#**

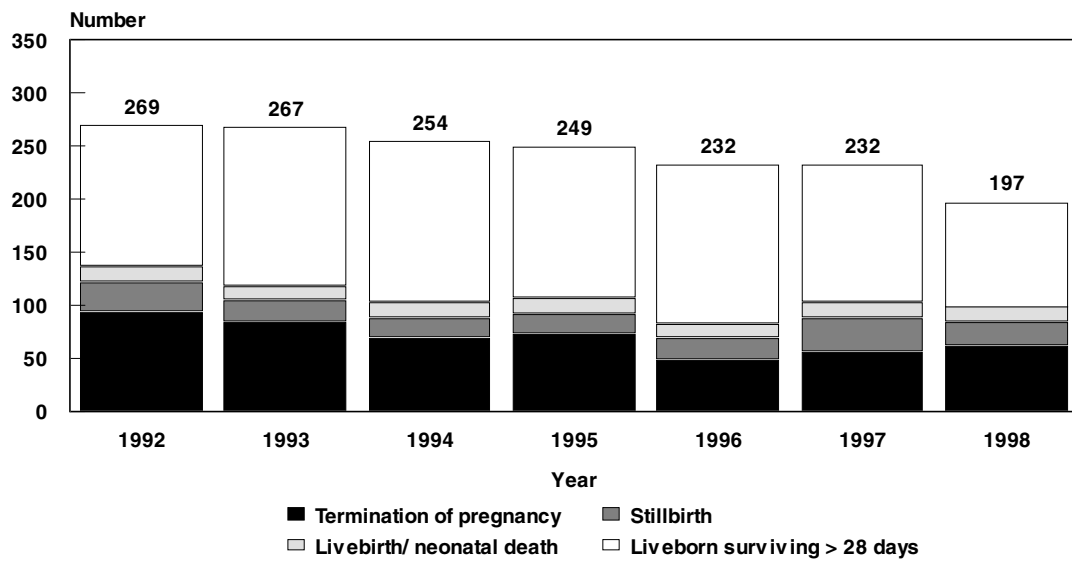


Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

**FIGURE 18**

**CHROMOSOMAL ABNORMALITIES: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1992-98#**

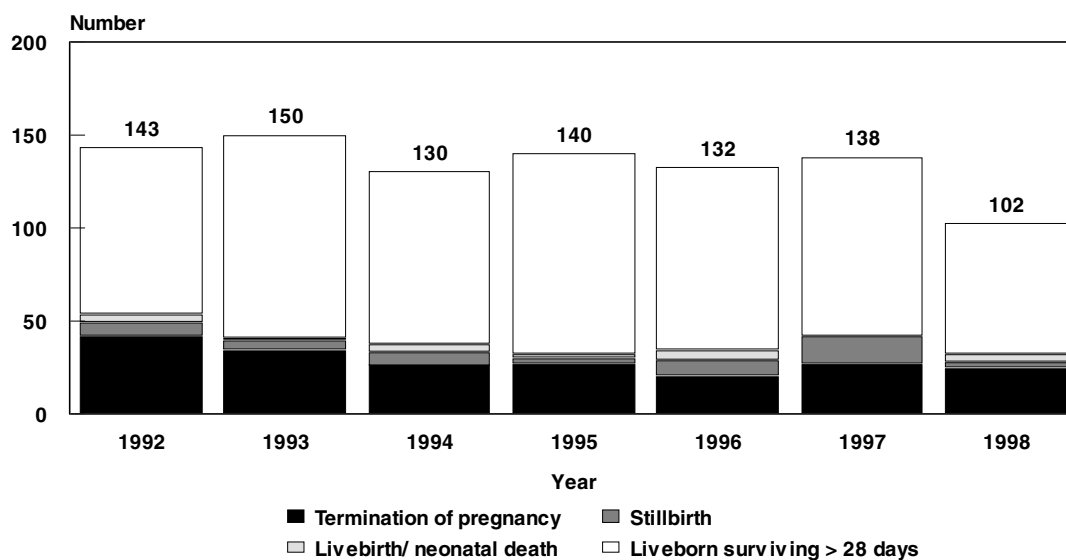


Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

**FIGURE 19**

**DOWN SYNDROME: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1992-98#**



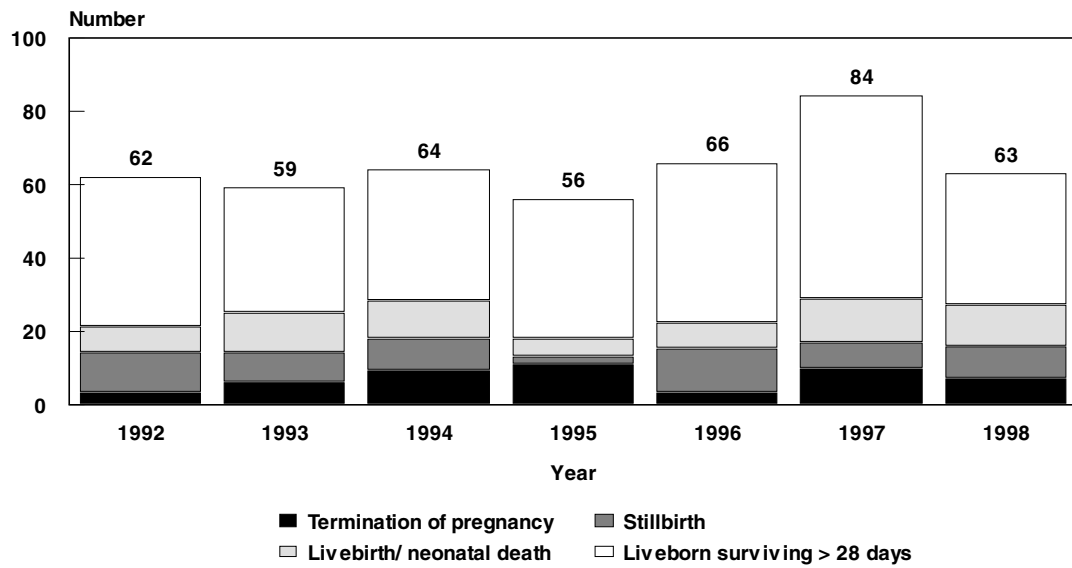
Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.



**FIGURE 20**

**RENAL AGENESIS AND DYSGENESIS: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1992-98#**



Source: NSW Birth Defects Register, Epidemiology and Surveillance Branch, NSW Health Department.

# Includes cystic renal disease and excludes obstructive defects of the renal pelvis, abnormally shaped kidney, double/triple kidney, ectopic kidney and enlarged kidney without dysplasia. For 1992-97, cases reported during pregnancy and up to one year of age are included. For 1998, cases reported during pregnancy or at birth are reported.

## 6.4 BIRTH DEFECTS BY NSW HEALTH AREAS

Crude rates of reported birth defects for NSW Health Areas and rates standardised for maternal age are shown in Table 101. For 1992-97, birth defects detected up to one year of age are reported and for 1998 birth defects detected during pregnancy or at birth are reported. The denominator population includes livebirths and stillbirths among NSW residents as reported to the MDC. The rate of birth defects increases with increasing maternal age (Table 97). In order to allow direct comparison of geographic areas, rates have been standardised to the maternal age distribution of births in NSW in 1991.

Information shown in these tables reflects the reporting practices of the various Areas, and numbers may not be complete, particularly for earlier years. From 1 January 1998 doctors, hospitals and laboratories are required to notify birth defects detected during pregnancy, at birth or up to one year of life under NSW Public Health Act 1991. Thus higher rates of reported birth defects may be expected from 1998 onwards compared to previous years. In interpreting birth defect rates among NSW

Areas it should also be noted that infants with birth defects who are born to mothers resident in areas close to interstate borders may be transferred interstate for care and therefore may not be reported to the BDR.

Over the period 1992-98 standardised rates of reported birth defects were lowest in the Wentworth Area and highest in the Macquarie Area.

Birth defect rates may vary markedly from year to year for some areas where the numbers of reported birth defects are small. For these areas, small variations in numbers of birth defect cases may result in a marked variation in the birth defect rate. The wide confidence intervals for some areas reflect this variability.

**TABLE 101**

**BIRTH DEFECTS IN NSW HEALTH AREAS, 1992-98#**

Health Area	1992-96			1997			Year 1998			1992-98			99% confidence intervals
	No.	Crude rate per 1,000 births	Standardised rate per 1,000 births	No.	Crude rate per 1,000 births	Standardised rate per 1,000 births	No.	Crude rate per 1,000 births	Standardised rate per 1,000 births	No.	Crude rate per 1,000 births	Standardised rate per 1,000 births	
Central Sydney	841	24.4	23.4	148	22.0	20.4	90	13.5	13.2	1079	22.6	21.6	19.8-23.5
Northern Sydney	1097	25.0	23.6	218	23.9	22.8	136	15.2	14.3	1451	23.4	22.2	20.4-24.2
Western Sydney	1324	25.8	25.1	231	21.6	20.7	138	12.9	13.0	1693	23.3	22.7	21.2-24.2
Wentworth	473	18.9	18.5	136	27.7	27.6	76	15.5	15.5	685	19.7	19.4	17.5-21.4
South Western Sydney	1413	22.8	22.1	267	21.1	20.6	147	12.0	12.3	1827	21.0	20.4	19.2-21.7
Central Coast	491	25.8	25.8	106	27.5	27.8	58	15.3	14.8	655	24.6	24.6	22.2-27.3
Hunter	1010	28.3	27.5	219	30.7	30.7	77	11.0	11.3	1306	26.2	25.6	23.8-27.5
Illawarra	527	22.9	22.6	84	18.7	18.5	54	12.2	12.4	665	20.8	20.6	18.6-22.8
South Eastern Sydney	1146	25.8	24.4	244	26.3	23.6	154	16.6	16.4	1544	24.5	23.2	21.5-24.9
Northern Rivers	269	17.6	17.9	72	24.0	24.5	62	20.8	21.4	403	19.0	19.3	16.9-21.9
Mid North Coast	366	23.3	23.2	71	22.8	23.9	44	14.7	14.3	481	22.1	22.0	19.4-24.7
New England	291	22.2	22.6	56	22.5	23.1	44	18.2	18.1	391	21.7	22.0	19.2-25.1
Macquarie	239	27.9	28.1	43	26.6	26.9	20	12.4	12.4	302	25.6	25.7	21.9-29.9
Mid Western	280	22.9	22.5	40	16.2	15.9	27	11.4	11.2	347	20.3	19.9	17.2-22.9
Far West	58	18.7	18.6	22	36.4	38.5	10	17.7	16.4	90	21.1	21.1	15.3-28.1
Greater Murray	396	21.6	21.8	75	22.0	20.7	33	11.1	11.3	504	20.4	20.4	18.1-22.9
Southern	265	25.8	24.7	33	18.4	17.9	24	13.3	13.5	322	23.2	22.2	19.1-25.8
TOTAL NSW	10486	24.1	23.3	2065	23.6	23.0	1194	13.9	14.0	13745	22.6	22.0	21.5-22.5

Source: NSW Birth Defects Register. Epidemiology and Surveillance Branch, NSW Health Department.

# Cases include terminations of pregnancy, stillbirths and livebirths where the place of residence is known. For 1992-97, birth defects detected up to one year of age are reported and for 1998 birth defects detected at birth are reported.

# PART 7: NSW HOSPITALS

## 7.1 ONSET AND AUGMENTATION OF LABOUR IN SELECTED HOSPITALS

Table 102 gives onset or augmentation of labour for individual hospitals where the number of reported deliveries exceeded 200 in 1998, totals for all hospitals within each Health Area and the NSW total.

**TABLE 102**

**CONFINEMENTS BY ONSET AND AUGMENTATION OF LABOUR AND HOSPITAL, NSW 1998#**

Health Area/ Hospital	Onset and augmentation of labour																		TOTAL	
	Spontaneous		Spontaneous augmented with ARM		Spontaneous augmented oxytocics/prostagl.		No labour		Induced-oxytocics/prostagl.		Induced-ARM only		Induced-ARM+ oxytocics/prostagl.		Induced-other##		Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
<b>Central Sydney</b>																				
Canterbury	301	70.8	34	8.0	27	6.4	16	3.8	23	5.4	0	0.0	17	4.0	2	0.5	5	1.2	425	100.0
King George V*	2495	56.2	0	0.0	614	13.8	428	9.6	868	19.5	31	0.7	0	0.0	4	0.1	0	0.0	4440	100.0
NSW Private	106	40.2	14	5.3	32	12.1	43	16.3	25	9.5	6	2.3	35	13.3	3	1.1	0	0.0	264	100.0
ALL HOSPITALS	2902	56.6	48	0.9	673	13.1	487	9.5	916	17.9	37	0.7	52	1.0	9	0.2	5	0.1	5129	100.0
<b>Northern Sydney</b>																				
Hornsby	348	33.7	147	14.2	132	12.8	105	10.2	94	9.1	14	1.4	193	18.7	0	0.0	0	0.0	1033	100.0
Manly	335	38.8	96	11.1	117	13.6	82	9.5	92	10.7	31	3.6	110	12.7	0	0.0	0	0.0	863	100.0
Mona Vale	319	41.3	81	10.5	73	9.4	62	8.0	77	10.0	10	1.3	151	19.5	0	0.0	0	0.0	773	100.0
Royal North Shore**	813	39.6	48	2.3	356	17.3	348	17.0	168	8.2	24	1.2	292	14.2	4	0.2	0	0.0	2053	100.0
Ryde	388	49.5	44	5.6	59	7.5	65	8.3	93	11.9	24	3.1	108	13.8	3	0.4	0	0.0	784	100.0
Mater, North Sydney	560	32.0	175	10.0	220	12.6	344	19.6	169	9.7	65	3.7	207	11.8	9	0.5	2	0.1	1751	100.0
North Shore Private	167	33.1	32	6.3	66	13.1	103	20.4	43	8.5	15	3.0	76	15.1	2	0.4	0	0.0	504	100.0
Sydney Adventist	575	23.8	318	13.2	401	16.6	376	15.6	184	7.6	32	1.3	526	21.8	0	0.0	0	0.0	2412	100.0
ALL HOSPITALS	3505	34.5	941	9.2	1424	14.0	1485	14.6	920	9.0	215	2.1	1663	16.3	18	0.2	2	0.0	10173	100.0
<b>Western Sydney</b>																				
Auburn	774	52.1	181	12.2	153	10.3	106	7.1	61	4.1	13	0.9	196	13.2	1	0.1	0	0.0	1485	100.0
Blacktown	1084	43.3	366	14.6	229	9.1	194	7.7	155	6.2	11	0.4	461	18.4	4	0.2	0	0.0	2504	100.0
Westmead	2511	59.1	117	2.8	475	11.2	362	8.5	150	3.5	25	0.6	598	14.1	13	0.3	0	0.0	4251	100.0
The Hills Private	486	35.4	154	11.2	160	11.7	174	12.7	86	6.3	9	0.7	302	22.0	0	0.0	0	0.0	1371	100.0
ALL HOSPITALS	4855	50.5	818	8.5	1017	10.6	836	8.7	452	4.7	58	0.6	1557	16.2	18	0.2	0	0.0	9611	100.0
<b>Wentworth</b>																				
Blue Mountains	282	62.1	24	5.3	39	8.6	36	7.9	41	9.0	15	3.3	17	3.7	0	0.0	0	0.0	454	100.0
Nepean	1497	49.4	297	9.8	198	6.5	265	8.7	203	6.7	33	1.1	537	17.7	2	0.1	0	0.0	3032	100.0
Jamison Private	307	37.5	114	13.9	50	6.1	89	10.9	118	14.4	18	2.2	119	14.5	3	0.4	0	0.0	818	100.0
Hawkesbury	470	47.9	122	12.4	84	8.6	90	9.2	69	7.0	17	1.7	130	13.2	0	0.0	0	0.0	982	100.0
ALL HOSPITALS	2556	48.4	557	10.5	371	7.0	480	9.1	431	8.2	83	1.6	803	15.2	5	0.1	0	0.0	5286	100.0
<b>South Western Sydney</b>																				
Camden	347	44.5	131	16.8	42	5.4	50	6.4	69	8.8	11	1.4	129	16.5	1	0.1	0	0.0	780	100.0
Fairfield	998	53.0	174	9.2	179	9.5	146	7.7	115	6.1	18	1.0	252	13.4	2	0.1	0	0.0	1884	100.0
Liverpool	1566	47.8	296	9.0	327	10.0	233	7.1	298	9.1	37	1.1	489	14.9	30	0.9	0	0.0	3276	100.0
Campbelltown	690	33.8	389	19.0	169	8.3	164	8.0	147	7.2	26	1.3	459	22.5	0	0.0	0	0.0	2044	100.0
Bankstown/Lidcombe	1182	53.7	178	8.1	249	11.3	136	6.2	199	9.0	6	0.3	248	11.3	2	0.1	0	0.0	2200	100.0
Bankstown Private	239	31.7	77	10.2	82	10.9	96	12.7	100	13.3	16	2.1	143	19.0	0	0.0	0	0.0	753	100.0
Bowral	295	51.1	52	9.0	40	6.9	51	8.8	46	8.0	24	4.2	68	11.8	1	0.2	0	0.0	577	100.0
ALL HOSPITALS	5317	46.2	1297	11.3	1088	9.4	876	7.6	974	8.5	138	1.2	1788	15.5	36	0.3	0	0.0	11514	100.0
<b>Central Coast</b>																				
Gosford	1047	44.0	197	8.3	227	9.5	231	9.7	296	12.4	74	3.1	302	12.7	4	0.2	0	0.0	2378	100.0
Wyong	317	83.2	40	10.5	21	5.5	0	0.0	2	0.5	1	0.3	0	0.0	0	0.0	0	0.0	381	100.0
North Gosford Private	210	30.8	77	11.3	76	11.2	124	18.2	58	8.5	29	4.3	105	15.4	2	0.3	0	0.0	681	100.0
ALL HOSPITALS	1574	45.8	314	9.1	324	9.4	355	10.3	356	10.3	104	3.0	407	11.8	6	0.2	0	0.0	3440	100.0
<b>Hunter</b>																				
Maitland	626	51.8	87	7.2	120	9.9	124	10.3	91	7.5	16	1.3	144	11.9	1	0.1	0	0.0	1209	100.0
Muswellbrook	135	56.0	21	8.7	14	5.8	15	6.2	25	10.4	8	3.3	23	9.5	0	0.0	0	0.0	241	100.0
Belmont	220	35.8	61	9.9	55	8.9	56	9.1	43	7.0	19	3.1	160	26.0	1	0.2	0	0.0	615	100.0
Singleton	141	61.8	14	6.1	9	3.9	15	6.6	42	18.4	0	0.0	7	3.1	0	0.0	0	0.0	228	100.0
John Hunter	2349	66.6	1	0.0	0	0.0	322	9.1	301	8.5	172	4.9	380	10.8	0	0.0	0	0.0	3525	100.0
Christo Road Private	498	57.3	0	0.0	1	0.1	115	13.2	82	9.4	26	3.0	146	16.8	1	0.1	0	0.0	869	100.0
Other Area hospitals	185	45.8	51	12.6	17	4.2	81	20.0	24	5.9	12	3.0	30	7.4	4	1.0	0	0.0	404	100.0
ALL HOSPITALS	4154	58.6	235	3.3	216	3.0	728	10.3	608	8.6	253	3.6	890	12.6	7	0.1	0	0.0	7091	100.0
<b>Illawarra</b>																				
Shoalhaven	417	51.4	95	11.7	52	6.4	73	9.0	116	14.3	2	0.2	55	6.8	1	0.1	1	0.1	812	100.0
Shellharbour	325	52.4	68	11.0	46	7.4	44	7.1	57	9.2	12	1.9	68	11.0	0	0.0	0	0.0	620	100.0
Wollongong	852	40.8	263	12.6	194	9.3	153	7.3	177	8.5	55	2.6	381	18.2	6	0.3	8	0.4	2089	100.0
Illawarra Private	120	28.2	61	14.4	34	8.0	73	17.2	30	7.1	9	2.1	98	23.1	0	0.0	0	0.0	425	100.0
Other Area hospitals	70	44.0	24	15.1	6	3.8	29	18.2	21	13.2	1	0.6	8	5.0	0	0.0	0	0.0	159	100.0
ALL HOSPITALS	1784	43.5	511	12.4	332	8.1	372	9.1	401	9.8	79	1.9	610	14.9	7	0.2	9	0.2	4105	100.0

TABLE 102 (CONT)

## CONFINEMENTS BY ONSET AND AUGMENTATION OF LABOUR AND HOSPITAL, NSW 1998#

Health Area/ Hospital	Onset and augmentation of labour																TOTAL			
	Spontaneous		Spontaneous augmented with ARM		Spontaneous augmented oxytocics/prostagl.		No labour		Induced-oxytocics/prostagl.		Induced-ARM only		Induced-ARM+ oxytocics/prostagl.		Induced-other##			Not stated		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		No.	%	
<b>South Eastern Sydney</b>																				
Royal Hospital for Women	1355	37.5	448	12.4	657	18.2	385	10.7	266	7.4	27	0.7	465	12.9	8	0.2	1	0.0	3612	100.0
St. George	1132	47.5	276	11.6	277	11.6	205	8.6	281	11.8	23	1.0	187	7.9	1	0.0	0	0.0	2382	100.0
Sutherland	442	45.0	89	9.1	143	14.5	95	9.7	62	6.3	10	1.0	142	14.4	0	0.0	0	0.0	983	100.0
Hurstville Community	283	29.8	63	6.6	196	20.7	131	13.8	70	7.4	6	0.6	200	21.1	0	0.0	0	0.0	949	100.0
Kareena Private	177	27.1	52	8.0	86	13.1	109	16.7	41	6.3	11	1.7	178	27.2	0	0.0	0	0.0	654	100.0
St. George Private	333	36.0	86	9.3	114	12.3	147	15.9	149	16.1	24	2.6	72	7.8	0	0.0	0	0.0	925	100.0
Prince of Wales Private	450	33.4	138	10.2	150	11.1	256	19.0	160	11.9	29	2.2	164	12.2	1	0.1	0	0.0	1348	100.0
Other Area hospitals	59	34.3	21	12.2	15	8.7	30	17.4	19	11.0	5	2.9	23	13.4	0	0.0	0	0.0	172	100.0
ALL HOSPITALS	4231	38.4	1173	10.6	1638	14.9	1358	12.3	1048	9.5	135	1.2	1431	13.0	10	0.1	1	0.0	11025	100.0
<b>Northern Rivers</b>																				
Grafton Base	191	38.4	54	10.9	25	5.0	69	13.9	88	17.7	11	2.2	59	11.9	0	0.0	0	0.0	497	100.0
Lismore Base	667	50.0	153	11.5	112	8.4	103	7.7	126	9.5	24	1.8	148	11.1	0	0.0	0	0.0	1333	100.0
Murwillumbah	233	48.0	33	6.8	58	12.0	39	8.0	76	15.7	5	1.0	41	8.5	0	0.0	0	0.0	485	100.0
Tweed Heads	291	45.1	98	15.2	80	12.4	53	8.2	29	4.5	4	0.6	90	14.0	0	0.0	0	0.0	645	100.0
Other Area hospitals	260	68.8	39	10.3	13	3.4	30	7.9	11	2.9	12	3.2	12	3.2	1	0.3	0	0.0	378	100.0
ALL HOSPITALS	1642	49.2	377	11.3	288	8.6	294	8.8	330	9.9	56	1.7	350	10.5	1	0.0	0	0.0	3338	100.0
<b>Mid North Coast</b>																				
Coffs Harbour Base	327	45.6	58	8.1	34	4.7	127	17.7	60	8.4	8	1.1	102	14.2	1	0.1	0	0.0	717	100.0
Kempsey	104	39.7	36	13.7	47	17.9	24	9.2	20	7.6	2	0.8	29	11.1	0	0.0	0	0.0	262	100.0
Port Macquarie Base	300	44.9	98	14.7	62	9.3	70	10.5	73	10.9	7	1.0	56	8.4	2	0.3	0	0.0	668	100.0
Manning River Base	398	52.2	87	11.4	60	7.9	70	9.2	55	7.2	14	1.8	78	10.2	1	0.1	0	0.0	763	100.0
Other Area hospitals	151	41.8	48	13.3	23	6.4	59	16.3	31	8.6	4	1.1	45	12.5	0	0.0	0	0.0	361	100.0
ALL HOSPITALS	1280	46.2	327	11.8	226	8.2	350	12.6	239	8.6	35	1.3	310	11.2	4	0.1	0	0.0	2771	100.0
<b>New England</b>																				
Armidale	151	31.5	78	16.3	68	14.2	28	5.8	65	13.5	13	2.7	77	16.0	0	0.0	0	0.0	480	100.0
Inverell	117	46.6	46	18.3	15	6.0	26	10.4	22	8.8	5	2.0	20	8.0	0	0.0	0	0.0	251	100.0
Moree	141	55.3	22	8.6	16	6.3	15	5.9	14	5.5	3	1.2	44	17.3	0	0.0	0	0.0	255	100.0
Tamworth Base	214	31.1	139	20.2	58	8.4	94	13.7	63	9.2	31	4.5	88	12.8	0	0.0	0	0.0	687	100.0
Other Area hospitals	322	42.8	83	11.0	41	5.5	89	11.8	117	15.6	23	3.1	74	9.8	3	0.4	0	0.0	752	100.0
ALL HOSPITALS	945	39.0	368	15.2	198	8.2	252	10.4	281	11.6	75	3.1	303	12.5	3	0.1	0	0.0	2425	100.0
<b>Macquarie</b>																				
Dubbo Base	534	44.7	161	13.5	99	8.3	105	8.8	89	7.5	30	2.5	174	14.6	2	0.2	0	0.0	1194	100.0
Mudgee	148	58.3	35	13.8	12	4.7	24	9.4	16	6.3	4	1.6	15	5.9	0	0.0	0	0.0	254	100.0
Other Area hospitals	115	65.7	27	15.4	7	4.0	16	9.1	3	1.7	1	0.6	6	3.4	0	0.0	0	0.0	175	100.0
ALL HOSPITALS	797	49.1	223	13.7	118	7.3	145	8.9	108	6.7	35	2.2	195	12.0	2	0.1	0	0.0	1623	100.0
<b>Mid Western</b>																				
Bathurst Base	258	51.9	67	13.5	26	5.2	58	11.7	52	10.5	4	0.8	31	6.2	1	0.2	0	0.0	497	100.0
Lithgow	116	52.0	27	12.1	21	9.4	25	11.2	30	13.5	1	0.4	3	1.3	0	0.0	0	0.0	223	100.0
Orange Base	276	33.5	135	16.4	98	11.9	84	10.2	50	6.1	18	2.2	161	19.5	2	0.2	0	0.0	824	100.0
Parkes	145	62.8	13	5.6	7	3.0	23	10.0	30	13.0	1	0.4	11	4.8	1	0.4	0	0.0	231	100.0
Other Area hospitals	193	43.3	60	13.5	32	7.2	62	13.9	45	10.1	12	2.7	41	9.2	1	0.2	0	0.0	446	100.0
ALL HOSPITALS	988	44.5	302	13.6	184	8.3	252	11.3	207	9.3	36	1.6	247	11.1	5	0.2	0	0.0	2221	100.0
<b>Far West</b>																				
Broken Hill Base	149	50.7	37	12.6	10	3.4	27	9.2	12	4.1	20	6.8	39	13.3	0	0.0	0	0.0	294	100.0
Other Area hospitals	56	71.8	9	11.5	3	3.8	2	2.6	5	6.4	1	1.3	1	1.3	1	1.3	0	0.0	78	100.0
ALL HOSPITALS	205	55.1	46	12.4	13	3.5	29	7.8	17	4.6	21	5.6	40	10.8	1	0.3	0	0.0	372	100.0
<b>Greater Murray</b>																				
Mercy Care Centre, Albury***	129	47.4	35	12.9	11	4.0	28	10.3	15	5.5	15	5.5	39	14.3	0	0.0	0	0.0	272	100.0
Griffith Base	211	43.4	51	10.5	28	5.8	54	11.1	77	15.8	22	4.5	43	8.8	0	0.0	0	0.0	486	100.0
Wagga Wagga Base	449	53.2	49	5.8	49	5.8	98	11.6	109	12.9	8	0.9	80	9.5	2	0.2	0	0.0	844	100.0
Calvary, Wagga Wagga	201	42.9	15	3.2	18	3.8	58	12.4	94	20.1	22	4.7	59	12.6	1	0.2	0	0.0	468	100.0
Other Area hospitals	501	51.3	106	10.8	50	5.1	90	9.2	128	13.1	23	2.4	78	8.0	1	0.1	0	0.0	977	100.0
ALL HOSPITALS	1491	48.9	256	8.4	156	5.1	328	10.8	423	13.9	90	3.0	299	9.8	4	0.1	0	0.0	3047	100.0
<b>Southern</b>																				
Bega	99	48.1	19	9.2	8	3.9	23	11.2	35	17.0	0	0.0	16	7.8	2	1.0	4	1.9	206	100.0
Goulburn Base	187	53.1	44	12.5	46	13.1	47	13.4	19	5.4	0	0.0	9	2.6	0	0.0	0	0.0	352	100.0
Queanbeyan	191	55.0	32	9.2	27	7.8	37	10.7	40	11.5	1	0.3	19	5.5	0	0.0	0	0.0	347	100.0
Other Area hospitals	434	51.1	107	12.6	64	7.5	66	7.8	87	10.2	11	1.3	80	9.4	0	0.0	0	0.0	849	100.0
ALL HOSPITALS	911	51.9	202	11.5	145	8.3	173	9.9	181	10.3	12	0.7	124	7.1	2	0.1	4	0.2	1754	100.0
TOTAL NSW	39281	46.2	7997	9.4	8411	9.9	8800	10.3	7893	9.3	1462	1.7	11069	13.0	138	0.2	21	0.0	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Hospitals with more than 200 deliveries are identified individually. All hospitals include all public and private hospitals.

## This category includes other forms of induction such as Foley's catheter.

\* King George V Hospital supplies data electronically and reports augmentation by oxytocin/prostaglandin only.

\*\* Royal North Shore Hospital commenced reporting augmentation by ARM in October 1998.

\*\*\* Mercy Care Centre, Albury ceased deliveries in June 1998.

## 7.2 TYPE OF DELIVERY IN SELECTED HOSPITALS

Table 103 gives type of delivery for individual hospitals where the number of reported confinements exceeded 200 in 1998, totals for all hospitals within each Health Area and the NSW total.

**TABLE 103**

**CONFINEMENTS BY TYPE OF DELIVERY AND HOSPITAL, NSW 1998#**

Health Area/ Hospital	Normal vaginal		Forceps		Vacuum extraction		Type of delivery				Emergency caesarean		Not stated		TOTAL		
	No.	%	No.	%	No.	%	Vaginal breech	Elective caesarean	No.	%	No.	%	No.	%	No.	%	
<b>Central Sydney</b>																	
Canterbury	343	80.7	13	3.1	19	4.5	3	0.7	16	3.8	27	6.4	4	0.9	425	100.0	
King George V	3001	67.6	225	5.1	264	5.9	49	1.1	428	9.6	473	10.7	0	0.0	4440	100.0	
NSW Private	150	56.8	22	8.3	18	6.8	0	0.0	43	16.3	31	11.7	0	0.0	264	100.0	
ALL HOSPITALS	3494	68.1	260	5.1	301	5.9	52	1.0	487	9.5	531	10.4	4	0.1	5129	100.0	
<b>Northern Sydney</b>																	
Hornsby	747	72.3	48	4.6	57	5.5	4	0.4	105	10.2	72	7.0	0	0.0	1033	100.0	
Manly	617	71.5	22	2.5	39	4.5	11	1.3	82	9.5	92	10.7	0	0.0	863	100.0	
Mona Vale	512	66.2	52	6.7	74	9.6	12	1.6	62	8.0	61	7.9	0	0.0	773	100.0	
Royal North Shore	1125	54.8	113	5.5	158	7.7	12	0.6	348	17.0	297	14.5	0	0.0	2053	100.0	
Ryde	618	78.8	19	2.4	36	4.6	5	0.6	65	8.3	41	5.2	0	0.0	784	100.0	
Mater, North Sydney	868	49.6	81	4.6	287	16.4	6	0.3	344	19.6	158	9.0	7	0.4	1751	100.0	
North Shore Private	237	47.0	37	7.3	72	14.3	0	0.0	103	20.4	55	10.9	0	0.0	504	100.0	
Sydney Adventist	1435	59.5	256	10.6	149	6.2	9	0.4	376	15.6	187	7.8	0	0.0	2412	100.0	
ALL HOSPITALS	6159	60.5	628	6.2	872	8.6	59	0.6	1485	14.6	963	9.5	7	0.1	10173	100.0	
<b>Western Sydney</b>																	
Auburn	1189	80.1	46	3.1	40	2.7	22	1.5	106	7.1	81	5.5	1	0.1	1485	100.0	
Blacktown	1857	74.2	123	4.9	108	4.3	20	0.8	194	7.7	201	8.0	1	0.0	2504	100.0	
Westmead	2921	68.7	367	8.6	125	2.9	91	2.1	362	8.5	385	9.1	0	0.0	4251	100.0	
The Hills Private	856	62.4	172	12.5	31	2.3	14	1.0	174	12.7	124	9.0	0	0.0	1371	100.0	
ALL HOSPITALS	6823	71.0	708	7.4	304	3.2	147	1.5	836	8.7	791	8.2	2	0.0	9611	100.0	
<b>Wentworth</b>																	
Blue Mountains	344	75.8	5	1.1	29	6.4	3	0.7	36	7.9	37	8.1	0	0.0	454	100.0	
Nepean	2296	75.7	86	2.8	88	2.9	41	1.4	265	8.7	256	8.4	0	0.0	3032	100.0	
Jamison Private	560	68.5	67	8.2	2	0.2	4	0.5	89	10.9	96	11.7	0	0.0	818	100.0	
Hawkesbury	694	70.7	70	7.1	48	4.9	1	0.1	90	9.2	79	8.0	0	0.0	982	100.0	
ALL HOSPITALS	3894	73.7	228	4.3	167	3.2	49	0.9	480	9.1	468	8.9	0	0.0	5286	100.0	
<b>South Western Sydney</b>																	
Camden	625	80.1	40	5.1	26	3.3	2	0.3	50	6.4	37	4.7	0	0.0	780	100.0	
Fairfield	1482	78.7	49	2.6	91	4.8	25	1.3	146	7.7	91	4.8	0	0.0	1884	100.0	
Liverpool	2468	75.3	63	1.9	192	5.9	74	2.3	233	7.1	246	7.5	0	0.0	3276	100.0	
Campbelltown	1625	79.5	27	1.3	82	4.0	29	1.4	164	8.0	117	5.7	0	0.0	2044	100.0	
Bankstown/Lidcombe	1788	81.3	41	1.9	81	3.7	31	1.4	136	6.2	123	5.6	0	0.0	2200	100.0	
Bankstown Private	466	61.9	55	7.3	74	9.8	4	0.5	96	12.7	58	7.7	0	0.0	753	100.0	
Bowral	400	69.3	55	9.5	32	5.5	8	1.4	51	8.8	31	5.4	0	0.0	577	100.0	
ALL HOSPITALS	8854	76.9	330	2.9	578	5.0	173	1.5	876	7.6	703	6.1	0	0.0	11514	100.0	
<b>Central Coast</b>																	
Gosford	1582	66.5	23	1.0	223	9.4	22	0.9	231	9.7	297	12.5	0	0.0	2378	100.0	
Wyong	365	95.8	6	1.6	6	1.6	1	0.3	0	0.0	3	0.8	0	0.0	381	100.0	
North Gosford Private	369	54.2	35	5.1	73	10.7	4	0.6	124	18.2	75	11.0	1	0.1	681	100.0	
ALL HOSPITALS	2316	67.3	64	1.9	302	8.8	27	0.8	355	10.3	375	10.9	1	0.0	3440	100.0	
<b>Hunter</b>																	
Maitland	907	75.0	29	2.4	41	3.4	10	0.8	124	10.3	98	8.1	0	0.0	1209	100.0	
Muswellbrook	200	83.0	0	0.0	11	4.6	2	0.8	15	6.2	13	5.4	0	0.0	241	100.0	
Belmont	461	75.0	36	5.9	8	1.3	1	0.2	56	9.1	53	8.6	0	0.0	615	100.0	
Singleton	183	80.3	1	0.4	20	8.8	0	0.0	15	6.6	9	3.9	0	0.0	228	100.0	
John Hunter	2570	72.9	111	3.1	177	5.0	49	1.4	322	9.1	296	8.4	0	0.0	3525	100.0	
Christo Road Private	520	59.8	82	9.4	42	4.8	5	0.6	115	13.2	105	12.1	0	0.0	869	100.0	
Other Area hospitals	264	65.3	18	4.5	11	2.7	3	0.7	81	20.0	27	6.7	0	0.0	404	100.0	
ALL HOSPITALS	5105	72.0	277	3.9	310	4.4	70	1.0	728	10.3	601	8.5	0	0.0	7091	100.0	
<b>Illawarra</b>																	
Shoalhaven	638	78.6	35	4.3	0	0.0	2	0.2	73	9.0	64	7.9	0	0.0	812	100.0	
Shellharbour	510	82.3	8	1.3	24	3.9	4	0.6	44	7.1	30	4.8	0	0.0	620	100.0	
Wollongong	1559	74.6	56	2.7	134	6.4	29	1.4	153	7.3	155	7.4	3	0.1	2089	100.0	
Illawarra Private	248	58.4	14	3.3	61	14.4	2	0.5	73	17.2	27	6.4	0	0.0	425	100.0	
Other Area hospitals	106	66.7	6	3.8	9	5.7	1	0.6	29	18.2	8	5.0	0	0.0	159	100.0	
ALL HOSPITALS	3061	74.6	119	2.9	228	5.6	38	0.9	372	9.1	284	6.9	3	0.1	4105	100.0	

TABLE 103 (CONT)

## CONFINEMENTS BY TYPE OF DELIVERY AND HOSPITAL, NSW 1998#

Health Area/ Hospital	Normal vaginal		Forceps		Vacuum extraction		Type of delivery				Emergency caesarean		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>South Eastern Sydney</b>																
Royal Hospital for Women	2176	60.2	299	8.3	334	9.2	30	0.8	385	10.7	388	10.7	0	0.0	3612	100.0
St. George	1631	68.5	135	5.7	162	6.8	19	0.8	205	8.6	229	9.6	1	0.0	2382	100.0
Sutherland	685	69.7	69	7.0	25	2.5	5	0.5	95	9.7	104	10.6	0	0.0	983	100.0
Hurstville Community	541	57.0	146	15.4	15	1.6	4	0.4	131	13.8	112	11.8	0	0.0	949	100.0
Kareena Private	325	49.7	117	17.9	29	4.4	6	0.9	109	16.7	68	10.4	0	0.0	654	100.0
St. George Private	467	50.5	135	14.6	50	5.4	2	0.2	147	15.9	124	13.4	0	0.0	925	100.0
Prince of Wales Private	698	51.8	82	6.1	173	12.8	4	0.3	256	19.0	135	10.0	0	0.0	1348	100.0
Other Area hospitals	90	52.3	13	7.6	15	8.7	0	0.0	30	17.4	24	14.0	0	0.0	172	100.0
ALL HOSPITALS	6613	60.0	996	9.0	803	7.3	70	0.6	1358	12.3	1184	10.7	1	0.0	11025	100.0
<b>Northern Rivers</b>																
Grafton Base	313	63.0	42	8.5	17	3.4	2	0.4	69	13.9	54	10.9	0	0.0	497	100.0
Lismore Base	959	71.9	49	3.7	43	3.2	15	1.1	103	7.7	164	12.3	0	0.0	1333	100.0
Murwillumbah	354	73.0	11	2.3	17	3.5	10	2.1	39	8.0	54	11.1	0	0.0	485	100.0
Tweed Heads	500	77.5	30	4.7	10	1.6	4	0.6	53	8.2	48	7.4	0	0.0	645	100.0
Other Area hospitals	344	91.0	2	0.5	2	0.5	0	0.0	30	7.9	0	0.0	0	0.0	378	100.0
ALL HOSPITALS	2470	74.0	134	4.0	89	2.7	31	0.9	294	8.8	320	9.6	0	0.0	3338	100.0
<b>Mid North Coast</b>																
Coffs Harbour Base	463	64.6	52	7.3	0	0.0	7	1.0	127	17.7	68	9.5	0	0.0	717	100.0
Kempsey	210	80.2	4	1.5	4	1.5	2	0.8	24	9.2	18	6.9	0	0.0	262	100.0
Port Macquarie Base	476	71.3	40	6.0	10	1.5	5	0.7	70	10.5	67	10.0	0	0.0	668	100.0
Manning River Base	579	75.9	29	3.8	15	2.0	9	1.2	70	9.2	61	8.0	0	0.0	763	100.0
Other Area hospitals	261	72.3	15	4.2	5	1.4	0	0.0	59	16.3	21	5.8	0	0.0	361	100.0
ALL HOSPITALS	1989	71.8	140	5.1	34	1.2	23	0.8	350	12.6	235	8.5	0	0.0	2771	100.0
<b>New England</b>																
Armidale	394	82.1	9	1.9	24	5.0	1	0.2	28	5.8	24	5.0	0	0.0	480	100.0
Inverell	192	76.5	20	8.0	0	0.0	4	1.6	26	10.4	9	3.6	0	0.0	251	100.0
Moree	192	75.3	12	4.7	12	4.7	1	0.4	15	5.9	23	9.0	0	0.0	255	100.0
Tamworth Base	445	64.8	45	6.6	47	6.8	2	0.3	94	13.7	54	7.9	0	0.0	687	100.0
Other Area hospitals	549	73.0	19	2.5	27	3.6	6	0.8	89	11.8	61	8.1	1	0.1	752	100.0
ALL HOSPITALS	1772	73.1	105	4.3	110	4.5	14	0.6	252	10.4	171	7.1	1	0.0	2425	100.0
<b>Macquarie</b>																
Dubbo Base	856	71.7	76	6.4	42	3.5	8	0.7	105	8.8	107	9.0	0	0.0	1194	100.0
Mudgee	192	75.6	1	0.4	14	5.5	1	0.4	24	9.4	22	8.7	0	0.0	254	100.0
Other Area hospitals	143	81.7	8	4.6	6	3.4	0	0.0	16	9.1	2	1.1	0	0.0	175	100.0
ALL HOSPITALS	1191	73.4	85	5.2	62	3.8	9	0.6	145	8.9	131	8.1	0	0.0	1623	100.0
<b>Mid Western</b>																
Bathurst Base	347	69.8	22	4.4	4	0.8	1	0.2	58	11.7	65	13.1	0	0.0	497	100.0
Lithgow	170	76.2	4	1.8	1	0.4	0	0.0	25	11.2	23	10.3	0	0.0	223	100.0
Orange Base	556	67.5	53	6.4	37	4.5	7	0.8	84	10.2	87	10.6	0	0.0	824	100.0
Parkes	165	71.4	8	3.5	5	2.2	1	0.4	23	10.0	29	12.6	0	0.0	231	100.0
Other Area hospitals	310	69.5	14	3.1	17	3.8	3	0.7	62	13.9	40	9.0	0	0.0	446	100.0
ALL HOSPITALS	1548	69.7	101	4.5	64	2.9	12	0.5	252	11.3	244	11.0	0	0.0	2221	100.0
<b>Far West</b>																
Broken Hill Base	225	76.5	19	6.5	1	0.3	2	0.7	27	9.2	20	6.8	0	0.0	294	100.0
Other Area hospitals	73	93.6	1	1.3	0	0.0	0	0.0	2	2.6	1	1.3	1	1.3	78	100.0
ALL HOSPITALS	298	80.1	20	5.4	1	0.3	2	0.5	29	7.8	21	5.6	1	0.3	372	100.0
<b>Greater Murray</b>																
Mercy Care Centre, Albury*	204	75.0	12	4.4	1	0.4	4	1.5	28	10.3	23	8.5	0	0.0	272	100.0
Griffith Base	319	65.6	19	3.9	28	5.8	6	1.2	54	11.1	59	12.1	1	0.2	486	100.0
Wagga Wagga Base Calvary, Wagga	580	68.7	64	7.6	31	3.7	4	0.5	98	11.6	67	7.9	0	0.0	844	100.0
Wagga	252	53.8	62	13.2	56	12.0	3	0.6	58	12.4	37	7.9	0	0.0	468	100.0
Other Area hospitals	736	75.3	42	4.3	40	4.1	3	0.3	90	9.2	66	6.8	0	0.0	977	100.0
ALL HOSPITALS	2091	68.6	199	6.5	156	5.1	20	0.7	328	10.8	252	8.3	1	0.0	3047	100.0
<b>Southern</b>																
Bega	149	72.3	6	2.9	8	3.9	0	0.0	23	11.2	19	9.2	1	0.5	206	100.0
Goulburn Base	246	69.9	28	8.0	5	1.4	1	0.3	47	13.4	25	7.1	0	0.0	352	100.0
Queanbeyan	247	71.2	8	2.3	20	5.8	3	0.9	37	10.7	32	9.2	0	0.0	347	100.0
Other Area hospitals	632	74.4	42	4.9	39	4.6	3	0.4	66	7.8	66	7.8	1	0.1	849	100.0
ALL HOSPITALS	1274	72.6	84	4.8	72	4.1	7	0.4	173	9.9	142	8.1	2	0.1	1754	100.0
TOTAL NSW	59097	69.5	4478	5.3	4453	5.2	805	0.9	8800	10.3	7416	8.7	23	0.0	85072	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department

# Hospitals with more than 200 deliveries are identified individually. All hospitals include all public and private hospitals.

\* Mercy Care Centre, Albury ceased deliveries in June 1998.

## 7.3 PERINEAL STATUS IN SELECTED HOSPITALS

Table 104 show the perineal status in vaginal deliveries for individual hospitals where the number of reported confinements exceeded 200 in 1998, totals for all hospitals within each Health Area and the NSW total.

**TABLE 104**

**CONFINEMENTS WITH VAGINAL DELIVERIES BY PERINEAL STATUS AND HOSPITAL, NSW 1998#**

Health Area/ Hospital	PERINEAL STATUS																TOTAL	
	Intact		1st degree tear/graze		2nd degree tear		3rd or 4th degree tear		Episiotomy		Combined tear and episiotomy		Other		Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
<b>Central Sydney</b>																		
Canterbury	110	29.1	117	31.0	94	24.9	5	1.3	37	9.8	6	1.6	8	2.1	1	0.3	378	100.0
King George V	663	18.7	1262	35.7	1084	30.6	66	1.9	411	11.6	8	0.2	45	1.3	0	0.0	3539	100.0
NSW Private	41	21.6	51	26.8	34	17.9	0	0.0	57	30.0	3	1.6	4	2.1	0	0.0	190	100.0
ALL HOSPITALS	814	19.8	1430	34.8	1212	29.5	71	1.7	505	12.3	17	0.4	57	1.4	1	0.0	4107	100.0
<b>Northern Sydney</b>																		
Royal North Shore	234	16.6	222	15.8	361	25.6	20	1.4	443	31.5	33	2.3	95	6.7	0	0.0	1408	100.0
Mona Vale	203	31.2	187	28.8	121	18.6	1	0.2	105	16.2	12	1.8	21	3.2	0	0.0	650	100.0
North Shore Private	42	12.1	54	15.6	93	26.9	6	1.7	131	37.9	11	3.2	9	2.6	0	0.0	346	100.0
Hornsby	215	25.1	163	19.0	250	29.2	12	1.4	142	16.6	40	4.7	34	4.0	0	0.0	856	100.0
Sydney Adventist	294	15.9	389	21.0	407	22.0	9	0.5	633	34.2	60	3.2	56	3.0	1	0.1	1849	100.0
Mater, North Sydney	182	14.7	231	18.6	313	25.2	7	0.6	415	33.4	48	3.9	43	3.5	3	0.2	1242	100.0
Ryde	155	22.9	188	27.7	211	31.1	6	0.9	86	12.7	12	1.8	20	2.9	0	0.0	678	100.0
Manly	187	27.1	209	30.3	150	21.8	7	1.0	71	10.3	9	1.3	56	8.1	0	0.0	689	100.0
ALL HOSPITALS	1512	19.6	1643	21.3	1906	24.7	68	0.9	2026	26.3	225	2.9	334	4.3	4	0.1	7718	100.0
<b>Western Sydney</b>																		
Westmead	1115	31.8	463	13.2	855	24.4	40	1.1	844	24.1	9	0.3	178	5.1	0	0.0	3504	100.0
Blacktown	608	28.8	454	21.5	426	20.2	14	0.7	478	22.7	59	2.8	69	3.3	0	0.0	2108	100.0
Auburn	490	37.8	335	25.8	275	21.2	6	0.5	161	12.4	11	0.8	19	1.5	0	0.0	1297	100.0
The Hills Private	326	30.4	230	21.4	174	16.2	4	0.4	293	27.3	29	2.7	16	1.5	1	0.1	1073	100.0
ALL HOSPITALS	2539	31.8	1482	18.6	1730	21.7	64	0.8	1776	22.3	108	1.4	282	3.5	1	0.0	7982	100.0
<b>Wentworth</b>																		
Nepean	1007	40.1	529	21.1	583	23.2	34	1.4	228	9.1	26	1.0	104	4.1	0	0.0	2511	100.0
Blue Mountains	128	33.6	76	19.9	105	27.6	6	1.6	48	12.6	3	0.8	15	3.9	0	0.0	381	100.0
Hawkesbury	335	41.2	187	23.0	134	16.5	7	0.9	119	14.6	16	2.0	15	1.8	0	0.0	813	100.0
Jamison Private	147	23.2	87	13.7	186	29.4	2	0.3	177	28.0	15	2.4	19	3.0	0	0.0	633	100.0
ALL HOSPITALS	1617	37.3	879	20.3	1008	23.2	49	1.1	572	13.2	60	1.4	153	3.5	0	0.0	4338	100.0
<b>South Western Sydney</b>																		
Liverpool	1123	40.2	363	13.0	428	15.3	52	1.9	711	25.4	4	0.1	116	4.1	0	0.0	2797	100.0
Bankstown/Lidcombe	534	27.5	566	29.2	364	18.8	11	0.6	352	18.1	75	3.9	39	2.0	0	0.0	1941	100.0
Campbelltown	566	32.1	339	19.2	393	22.3	6	0.3	371	21.0	37	2.1	51	2.9	0	0.0	1763	100.0
Fairfield	482	29.3	367	22.3	325	19.7	12	0.7	399	24.2	23	1.4	39	2.4	0	0.0	1647	100.0
Camden	262	37.8	148	21.4	94	13.6	5	0.7	155	22.4	16	2.3	13	1.9	0	0.0	693	100.0
Bankstown Private	108	18.0	109	18.2	112	18.7	1	0.2	237	39.6	19	3.2	13	2.2	0	0.0	599	100.0
Bowral	166	33.5	115	23.2	128	25.9	1	0.2	65	13.1	12	2.4	8	1.6	0	0.0	495	100.0
ALL HOSPITALS	3241	32.6	2007	20.2	1844	18.6	88	0.9	2290	23.0	186	1.9	279	2.8	0	0.0	9935	100.0
<b>Central Coast</b>																		
Gosford	614	33.2	519	28.1	549	29.7	23	1.2	104	5.6	12	0.6	29	1.6	0	0.0	1850	100.0
North Gosford Private	99	20.6	76	15.8	197	41.0	3	0.6	75	15.6	13	2.7	18	3.7	0	0.0	481	100.0
Wyong	171	45.2	97	25.7	77	20.4	7	1.9	17	4.5	3	0.8	6	1.6	0	0.0	378	100.0
ALL HOSPITALS	884	32.6	692	25.5	823	30.4	33	1.2	196	7.2	28	1.0	53	2.0	0	0.0	2709	100.0
<b>Hunter</b>																		
John Hunter	1054	36.3	873	30.0	610	21.0	31	1.1	226	7.8	50	1.7	63	2.2	0	0.0	2907	100.0
Christo Road Private	174	26.8	134	20.6	167	25.7	2	0.3	127	19.6	27	4.2	18	2.8	0	0.0	649	100.0
Maitland	336	34.0	285	28.9	178	18.0	12	1.2	110	11.1	19	1.9	47	4.8	0	0.0	987	100.0
Singleton	92	45.1	50	24.5	35	17.2	1	0.5	24	11.8	1	0.5	1	0.5	0	0.0	204	100.0
Belmont	208	41.1	127	25.1	84	16.6	5	1.0	71	14.0	10	2.0	1	0.2	0	0.0	506	100.0
Muswellbrook	118	55.4	38	17.8	39	18.3	1	0.5	10	4.7	3	1.4	4	1.9	0	0.0	213	100.0
Other Area hospitals	114	38.5	89	30.1	43	14.5	2	0.7	41	13.9	5	1.7	2	0.7	0	0.0	296	100.0
ALL HOSPITALS	2096	36.4	1596	27.7	1156	20.1	54	0.9	609	10.6	115	2.0	136	2.4	0	0.0	5762	100.0
<b>Illawarra</b>																		
Shoalhaven	302	44.7	196	29.0	109	16.1	2	0.3	44	6.5	6	0.9	16	2.4	0	0.0	675	100.0
Wollongong	661	37.2	424	23.8	303	17.0	17	1.0	294	16.5	28	1.6	40	2.2	11	0.6	1778	100.0
Shellharbour	245	44.9	157	28.8	86	15.8	4	0.7	45	8.2	3	0.5	6	1.1	0	0.0	546	100.0
Illawarra Private	66	20.3	45	13.8	82	25.2	2	0.6	119	36.6	7	2.2	4	1.2	0	0.0	325	100.0
Other Area hospitals	40	32.8	33	27.0	30	24.6	0	0.0	16	13.1	3	2.5	0	0.0	0	0.0	122	100.0
ALL HOSPITALS	1314	38.1	855	24.8	610	17.7	25	0.7	518	15.0	47	1.4	66	1.9	11	0.3	3446	100.0

**TABLE 104 (CONT)**

**CONFINEMENTS WITH VAGINAL DELIVERIES BY PERINEAL STATUS AND HOSPITAL, NSW 1998#**

Health Area/ Hospital	PERINEAL STATUS																TOTAL	
	Intact		1st degree tear/graze		2nd degree tear		3rd or 4th degree tear		Episiotomy		Combined tear and episiotomy		Other		Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
<b>South Eastern Sydney</b>																		
Royal Hospital for Women	697	24.6	669	23.6	766	27.0	42	1.5	649	22.9	15	0.5	0	0.0	1	0.0	2839	100.0
Sutherland	233	29.7	151	19.3	186	23.7	14	1.8	125	15.9	15	1.9	60	7.7	0	0.0	784	100.0
St. George	587	30.1	396	20.3	558	28.7	23	1.2	259	13.3	48	2.5	76	3.9	0	0.0	1947	100.0
St. George Private	132	20.2	149	22.8	201	30.7	11	1.7	139	21.3	14	2.1	7	1.1	1	0.2	654	100.0
Hurstville Community	131	18.6	149	21.1	148	21.0	1	0.1	248	35.1	14	2.0	15	2.1	0	0.0	706	100.0
Kareena Private	92	19.3	103	21.6	75	15.7	3	0.6	186	39.0	16	3.4	2	0.4	0	0.0	477	100.0
Prince of Wales Private	166	17.3	262	27.4	226	23.6	1	0.1	252	26.3	21	2.2	29	3.0	0	0.0	957	100.0
Other Area hospitals	20	16.9	14	11.9	35	29.7	0	0.0	46	39.0	1	0.8	1	0.8	1	0.8	118	100.0
ALL HOSPITALS	2058	24.3	1893	22.3	2195	25.9	95	1.1	1904	22.4	144	1.7	190	2.2	3	0.0	8482	100.0
<b>Northern Rivers</b>																		
Grafton Base	93	24.9	96	25.7	71	19.0	1	0.3	73	19.5	10	2.7	30	8.0	0	0.0	374	100.0
Lismore Base	393	36.9	259	24.3	180	16.9	7	0.7	158	14.8	25	2.3	44	4.1	0	0.0	1066	100.0
Tweed Heads	238	43.8	122	22.4	91	16.7	7	1.3	45	8.3	12	2.2	29	5.3	0	0.0	544	100.0
Murwillumbah	119	30.4	74	18.9	78	19.9	4	1.0	99	25.3	7	1.8	11	2.8	0	0.0	392	100.0
Other Area hospitals	142	40.8	98	28.2	71	20.4	1	0.3	21	6.0	3	0.9	9	2.6	3	0.9	348	100.0
ALL HOSPITALS	985	36.2	649	23.8	491	18.0	20	0.7	396	14.5	57	2.1	123	4.5	3	0.1	2724	100.0
<b>Mid North Coast</b>																		
Manning River Base	272	43.0	179	28.3	101	16.0	6	0.9	42	6.6	8	1.3	24	3.8	0	0.0	632	100.0
Coffs Harbour Base	221	42.3	141	27.0	63	12.1	2	0.4	76	14.6	7	1.3	12	2.3	0	0.0	522	100.0
Port Macquarie Base	212	39.9	112	21.1	87	16.4	4	0.8	80	15.1	21	4.0	15	2.8	0	0.0	531	100.0
Kempsey	107	48.6	54	24.5	30	13.6	1	0.5	25	11.4	1	0.5	2	0.9	0	0.0	220	100.0
Other Area hospitals	110	39.1	66	23.5	56	19.9	2	0.7	40	14.2	2	0.7	5	1.8	0	0.0	281	100.0
ALL HOSPITALS	922	42.2	552	25.3	337	15.4	15	0.7	263	12.0	39	1.8	58	2.7	0	0.0	2186	100.0
<b>New England</b>																		
Tamworth Base	185	34.3	129	23.9	95	17.6	1	0.2	86	16.0	11	2.0	32	5.9	0	0.0	539	100.0
Armidale	113	26.4	113	26.4	92	21.5	3	0.7	89	20.8	16	3.7	2	0.5	0	0.0	428	100.0
Inverell	80	37.0	60	27.8	21	9.7	1	0.5	51	23.6	2	0.9	1	0.5	0	0.0	216	100.0
Moree	105	48.4	48	22.1	30	13.8	1	0.5	24	11.1	6	2.8	3	1.4	0	0.0	217	100.0
Other Area hospitals	230	38.3	158	26.3	83	13.8	4	0.7	103	17.1	12	2.0	11	1.8	0	0.0	601	100.0
ALL HOSPITALS	713	35.6	508	25.4	321	16.0	10	0.5	353	17.6	47	2.3	49	2.4	0	0.0	2001	100.0
<b>Macquarie</b>																		
Dubbo Base	308	31.4	324	33.0	124	12.6	2	0.2	188	19.1	18	1.8	18	1.8	0	0.0	982	100.0
Mudgee	78	37.5	54	26.0	34	16.3	3	1.4	36	17.3	0	0.0	3	1.4	0	0.0	208	100.0
Other Area hospitals	69	43.9	45	28.7	18	11.5	1	0.6	20	12.7	3	1.9	0	0.0	1	0.6	157	100.0
ALL HOSPITALS	455	33.8	423	31.4	176	13.1	6	0.4	244	18.1	21	1.6	21	1.6	1	0.1	1347	100.0
<b>Mid Western</b>																		
Orange Base	235	36.0	140	21.4	131	20.1	12	1.8	100	15.3	21	3.2	14	2.1	0	0.0	653	100.0
Lithgow	56	32.0	39	22.3	42	24.0	1	0.6	30	17.1	4	2.3	3	1.7	0	0.0	175	100.0
Bathurst Base	141	37.7	125	33.4	60	16.0	5	1.3	33	8.8	6	1.6	4	1.1	0	0.0	374	100.0
Parkes	56	31.3	55	30.7	46	25.7	1	0.6	12	6.7	8	4.5	1	0.6	0	0.0	179	100.0
Other Area hospitals	161	46.8	68	19.8	55	16.0	3	0.9	47	13.7	8	2.3	2	0.6	0	0.0	344	100.0
ALL HOSPITALS	649	37.6	427	24.8	334	19.4	22	1.3	222	12.9	47	2.7	24	1.4	0	0.0	1725	100.0
<b>Far West</b>																		
Broken Hill Base	135	54.7	83	33.6	18	7.3	2	0.8	8	3.2	1	0.4	0	0.0	0	0.0	247	100.0
Other Area hospitals	38	51.4	23	31.1	9	12.2	0	0.0	3	4.1	0	0.0	0	0.0	1	1.4	74	100.0
ALL HOSPITALS	173	53.9	106	33.0	27	8.4	2	0.6	11	3.4	1	0.3	0	0.0	1	0.3	321	100.0
<b>Greater Murray</b>																		
Wagga Wagga Base	257	37.8	203	29.9	104	15.3	8	1.2	75	11.0	16	2.4	16	2.4	0	0.0	679	100.0
Mercy Care Centre, Albury*	91	41.2	63	28.5	39	17.6	1	0.5	23	10.4	2	0.9	2	0.9	0	0.0	221	100.0
Calvary, Wagga Wagga	115	30.8	67	18.0	89	23.9	1	0.3	78	20.9	18	4.8	5	1.3	0	0.0	373	100.0
Griffith Base	177	47.6	120	32.3	35	9.4	3	0.8	32	8.6	5	1.3	0	0.0	0	0.0	372	100.0
Other Area hospitals	331	40.3	187	22.8	116	14.1	7	0.9	150	18.3	20	2.4	6	0.7	4	0.5	821	100.0
ALL HOSPITALS	971	39.4	640	26.0	383	15.5	20	0.8	358	14.5	61	2.5	29	1.2	4	0.2	2466	100.0
<b>Southern</b>																		
Queanbeyan	124	44.6	83	29.9	54	19.4	2	0.7	7	2.5	8	2.9	0	0.0	0	0.0	278	100.0
Goulburn Base	83	29.6	42	15.0	55	19.6	1	0.4	76	27.1	13	4.6	10	3.6	0	0.0	280	100.0
Bega	72	44.2	38	23.3	25	15.3	0	0.0	18	11.0	3	1.8	3	1.8	4	2.5	163	100.0
Other Area hospitals	252	35.2	167	23.3	125	17.5	7	1.0	123	17.2	15	2.1	10	1.4	17	2.4	716	100.0
ALL HOSPITALS	531	37.0	330	23.0	259	18.0	10	0.7	224	15.6	39	2.7	23	1.6	21	1.5	1437	100.0
TOTAL NSW	21546	31.3	16158	23.5	14828	21.5	654	1.0	12467	18.1	1243	1.8	1878	2.7	59	0.1	68833	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department

# Hospitals with more than 200 deliveries are identified individually. All hospitals include all public and private hospitals. There were 47 cases of 4th degree tears reported in 1998.

\* Mercy Care Centre, Albury ceased deliveries in June 1998.



## 7.4 BIRTH WEIGHT IN SELECTED HOSPITALS

Table 105 shows the birth weight among live born babies for individual hospitals where the number of reported confinements exceeded 200 in 1998, totals for all hospitals within each Health Area and the NSW total.

**TABLE 105**

**CONFINEMENTS BY BABY BIRTH WEIGHT AND HOSPITAL, NSW 1998#**

Health Area/ Hospital	Birth weight (grams)											
	Less than 1,000		1,000 - 1,499		1,500 - 2,499		2,500+		Not stated		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Central Sydney</b>												
Canterbury	2	0.5	0	0.0	12	2.8	410	94.9	8	1.9	432	100.0
King George V	80	1.8	69	1.5	298	6.6	4088	90.1	0	0.0	4535	100.0
NSW Private	1	0.4	0	0.0	4	1.5	259	98.1	0	0.0	264	100.0
ALL HOSPITALS	83	1.6	69	1.3	314	6.0	4757	90.9	8	0.2	5231	100.0
<b>Northern Sydney</b>												
Hornsby	3	0.3	1	0.1	32	3.1	1011	96.6	0	0.0	1047	100.0
Manly	4	0.5	1	0.1	24	2.8	839	96.7	0	0.0	868	100.0
Mona Vale	5	0.6	1	0.1	30	3.8	744	95.3	1	0.1	781	100.0
Royal North Shore	33	1.6	40	1.9	169	8.0	1868	88.5	0	0.0	2110	100.0
Ryde	2	0.3	0	0.0	28	3.5	761	96.2	0	0.0	791	100.0
Mater, North Sydney	4	0.2	4	0.2	53	3.0	1715	96.4	3	0.2	1779	100.0
North Shore Private	1	0.2	0	0.0	29	5.7	483	94.2	0	0.0	513	100.0
Sydney Adventist	2	0.1	1	0.0	81	3.3	2356	96.6	0	0.0	2440	100.0
ALL HOSPITALS	54	0.5	48	0.5	446	4.3	9777	94.7	4	0.0	10329	100.0
<b>Western Sydney</b>												
Auburn	5	0.3	1	0.1	78	5.2	1418	94.3	2	0.1	1504	100.0
Blacktown	4	0.2	5	0.2	98	3.9	2412	95.6	4	0.2	2523	100.0
Westmead	58	1.3	69	1.6	264	6.1	3935	90.9	1	0.0	4327	100.0
The Hills Private	5	0.4	1	0.1	45	3.2	1342	96.3	0	0.0	1393	100.0
ALL HOSPITALS	72	0.7	76	0.8	485	5.0	9107	93.4	7	0.1	9747	100.0
<b>Wentworth</b>												
Blue Mountains	0	0.0	0	0.0	13	2.9	443	97.1	0	0.0	456	100.0
Nepean	46	1.5	38	1.2	218	7.0	2790	90.2	2	0.1	3094	100.0
Jamison Private	1	0.1	0	0.0	21	2.5	806	97.3	0	0.0	828	100.0
Hawkesbury	3	0.3	0	0.0	31	3.1	958	96.6	0	0.0	992	100.0
ALL HOSPITALS	50	0.9	38	0.7	283	5.3	4997	93.1	2	0.0	5370	100.0
<b>South Western Sydney</b>												
Camden	0	0.0	0	0.0	17	2.2	762	97.7	1	0.1	780	100.0
Fairfield	4	0.2	1	0.1	76	4.0	1815	95.7	1	0.1	1897	100.0
Liverpool	70	2.1	69	2.1	289	8.6	2920	87.1	4	0.1	3352	100.0
Campbelltown	9	0.4	5	0.2	86	4.2	1967	95.1	2	0.1	2069	100.0
Bankstown/Lidcombe	5	0.2	5	0.2	94	4.2	2111	95.3	1	0.0	2216	100.0
Bankstown Private	0	0.0	0	0.0	30	3.9	731	96.1	0	0.0	761	100.0
Bowral	0	0.0	2	0.3	11	1.9	568	97.8	0	0.0	581	100.0
ALL HOSPITALS	88	0.8	82	0.7	603	5.2	10874	93.3	9	0.1	11656	100.0
<b>Central Coast</b>												
Gosford	18	0.8	6	0.3	118	4.9	2258	94.1	0	0.0	2400	100.0
Wyang	0	0.0	0	0.0	5	1.3	376	98.7	0	0.0	381	100.0
North Gosford Private	4	0.6	0	0.0	16	2.3	671	97.1	0	0.0	691	100.0
ALL HOSPITALS	22	0.6	6	0.2	139	4.0	3305	95.2	0	0.0	3472	100.0
<b>Hunter</b>												
Maitland	5	0.4	3	0.2	43	3.5	1175	95.8	0	0.0	1226	100.0
Muswellbrook	0	0.0	0	0.0	6	2.5	236	97.5	0	0.0	242	100.0
Belmont	0	0.0	2	0.3	27	4.3	593	95.3	0	0.0	622	100.0
Singleton	0	0.0	1	0.4	7	3.1	220	96.5	0	0.0	228	100.0
John Hunter	70	1.9	54	1.5	289	8.0	3180	88.5	1	0.0	3594	100.0
Christo Road Private	5	0.6	1	0.1	44	5.0	837	94.4	0	0.0	887	100.0
Other Area hospitals	0	0.0	0	0.0	7	1.7	400	98.3	0	0.0	407	100.0
ALL HOSPITALS	80	1.1	61	0.8	423	5.9	6641	92.2	1	0.0	7206	100.0
<b>Illawarra</b>												
Shoalhaven	5	0.6	1	0.1	38	4.6	780	94.7	0	0.0	824	100.0
Shellharbour	0	0.0	1	0.2	6	1.0	612	98.7	1	0.2	620	100.0
Wollongong	5	0.2	7	0.3	150	7.0	1968	92.0	8	0.4	2138	100.0
Illawarra Private	0	0.0	0	0.0	4	0.9	424	99.1	0	0.0	428	100.0
Other Area hospitals	0	0.0	0	0.0	3	1.9	157	98.1	0	0.0	160	100.0

**TABLE 105 (CONT)**
**CONFINEMENTS BY BABY BIRTH WEIGHT AND HOSPITAL, NSW 1998#**

Health Area/ Hospital	Birth weight (grams)										Total	
	Less than 1,000		1,000 - 1,499		1,500 - 2,499		2,500+		Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%		
<b>South Eastern Sydney</b>												
Royal Hospital for Women	54	1.5	48	1.3	214	5.8	3366	91.2	7	0.2	3689	100.0
St. George	14	0.6	6	0.2	114	4.7	2281	94.5	0	0.0	2415	100.0
Sutherland	7	0.7	1	0.1	39	4.0	940	95.2	0	0.0	987	100.0
Hurstville Community	2	0.2	3	0.3	45	4.6	922	94.9	0	0.0	972	100.0
Kareena Private	1	0.2	3	0.5	16	2.4	644	97.0	0	0.0	664	100.0
St. George Private	1	0.1	1	0.1	49	5.1	902	94.6	0	0.0	953	100.0
Prince of Wales Private	2	0.1	1	0.1	37	2.7	1323	97.0	1	0.1	1364	100.0
Other Area hospitals	0	0.0	1	0.6	6	3.5	165	95.9	0	0.0	172	100.0
ALL HOSPITALS	81	0.7	64	0.6	520	4.6	10543	94.0	8	0.1	11216	100.0
<b>Northern Rivers</b>												
Grafton Base	0	0.0	3	0.6	25	5.0	476	94.4	0	0.0	504	100.0
Lismore Base	5	0.4	3	0.2	74	5.5	1274	94.0	0	0.0	1356	100.0
Murwillumbah	0	0.0	0	0.0	10	2.1	477	97.9	0	0.0	487	100.0
Tweed Heads	2	0.3	0	0.0	20	3.1	625	96.6	0	0.0	647	100.0
Other Area hospitals	0	0.0	1	0.3	6	1.6	371	97.9	1	0.3	379	100.0
ALL HOSPITALS	7	0.2	7	0.2	135	4.0	3223	95.6	1	0.0	3373	100.0
<b>Mid North Coast</b>												
Coffs Harbour Base	2	0.3	1	0.1	52	7.1	673	91.8	5	0.7	733	100.0
Kempsey	1	0.4	1	0.4	7	2.7	253	96.6	0	0.0	262	100.0
Port Macquarie Base	4	0.6	0	0.0	31	4.6	640	94.8	0	0.0	675	100.0
Manning River Base	3	0.4	2	0.3	32	4.1	735	95.1	1	0.1	773	100.0
Other Area hospitals	0	0.0	1	0.3	8	2.2	355	97.5	0	0.0	364	100.0
ALL HOSPITALS	10	0.4	5	0.2	130	4.6	2656	94.6	6	0.2	2807	100.0
<b>New England</b>												
Armidale	0	0.0	0	0.0	23	4.7	465	95.3	0	0.0	488	100.0
Inverell	0	0.0	1	0.4	9	3.6	242	96.0	0	0.0	252	100.0
Moree	2	0.8	0	0.0	8	3.1	248	95.8	1	0.4	259	100.0
Tamworth Base	2	0.3	2	0.3	44	6.3	650	93.1	0	0.0	698	100.0
Other Area hospitals	0	0.0	0	0.0	15	2.0	738	97.9	1	0.1	754	100.0
ALL HOSPITALS	4	0.2	3	0.1	99	4.0	2343	95.6	2	0.1	2451	100.0
<b>Macquarie</b>												
Dubbo Base	3	0.2	0	0.0	77	6.4	1130	93.3	1	0.1	1211	100.0
Mudgee	0	0.0	0	0.0	6	2.4	249	97.6	0	0.0	255	100.0
Other Area hospitals	0	0.0	0	0.0	2	1.1	173	98.9	0	0.0	175	100.0
ALL HOSPITALS	3	0.2	0	0.0	85	5.2	1552	94.6	1	0.1	1641	100.0
<b>Mid Western</b>												
Bathurst Base	4	0.8	1	0.2	18	3.6	480	95.4	0	0.0	503	100.0
Lithgow	0	0.0	0	0.0	9	4.0	214	95.5	1	0.4	224	100.0
Orange Base	6	0.7	5	0.6	46	5.4	789	93.2	1	0.1	847	100.0
Parkes	1	0.4	1	0.4	1	0.4	228	98.7	0	0.0	231	100.0
Other Area hospitals	1	0.2	0	0.0	11	2.4	437	97.3	0	0.0	449	100.0
ALL HOSPITALS	12	0.5	7	0.3	85	3.8	2148	95.3	2	0.1	2254	100.0
<b>Far West</b>												
Broken Hill Base	2	0.7	0	0.0	20	6.7	277	92.6	0	0.0	299	100.0
Other Area hospitals	4	5.1	0	0.0	5	6.4	69	88.5	0	0.0	78	100.0
ALL HOSPITALS	6	1.6	0	0.0	25	6.6	346	91.8	0	0.0	377	100.0
<b>Greater Murray</b>												
Mercy Care Centre, Albury*	0	0.0	0	0.0	11	4.0	263	96.0	0	0.0	274	100.0
Griffith Base	0	0.0	2	0.4	13	2.6	478	97.0	0	0.0	493	100.0
Wagga Wagga Base	2	0.2	1	0.1	65	7.6	789	92.1	0	0.0	857	100.0
Calvary, Wagga Wagga	0	0.0	0	0.0	14	2.9	466	96.9	1	0.2	481	100.0
Other Area hospitals	1	0.1	0	0.0	18	1.8	960	98.1	0	0.0	979	100.0
ALL HOSPITALS	3	0.1	3	0.1	121	3.9	2956	95.8	1	0.0	3084	100.0
<b>Southern</b>												
Bega	0	0.0	0	0.0	7	3.4	196	94.7	4	1.9	207	100.0
Goulburn Base	1	0.3	1	0.3	13	3.6	342	95.5	1	0.3	358	100.0
Queanbeyan	0	0.0	0	0.0	12	3.4	336	96.6	0	0.0	348	100.0
Other Area hospitals	2	0.2	2	0.2	33	3.8	821	95.7	0	0.0	858	100.0
ALL HOSPITALS	3	0.2	3	0.2	65	3.7	1695	95.7	5	0.3	1771	100.0
TOTAL NSW	588	0.7	481	0.6	4164	4.8	81006	93.9	66	0.1	86305	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department

# Hospitals with more than 200 total deliveries are identified individually. All hospitals include all public and private hospitals.

\* Mercy Care Centre, Albury ceased deliveries in June 1998.

## 7.5 GESTATIONAL AGE IN SELECTED HOSPITALS

Table 106 shows the gestational age among live born babies for individual hospitals where the number of reported confinements exceeded 200 in 1998, totals for all hospitals within each Health Area and the NSW total.

**TABLE 106**

**CONFINEMENTS BY GESTATIONAL AGE AND HOSPITAL, NSW #1998**

Health Area/ Hospital	Gestational age (weeks)								Not stated		TOTAL	
	20-31		32-33		34-36		37+		No.	%	No.	%
<b>Central Sydney</b>												
Canterbury	2	0.5	0	0.0	19	4.4	409	94.7	2	0.5	432	100.0
King George V	180	4.0	78	1.7	232	5.1	4045	89.2	0	0.0	4535	100.0
NSW Private	1	0.4	0	0.0	5	1.9	258	97.7	0	0.0	264	100.0
ALL HOSPITALS	183	3.5	78	1.5	256	4.9	4712	90.1	2	0.0	5231	100.0
<b>Northern Sydney</b>												
Hornsby	4	0.4	0	0.0	41	3.9	1002	95.7	0	0.0	1047	100.0
Manly	5	0.6	3	0.3	25	2.9	835	96.2	0	0.0	868	100.0
Royal North Shore	94	4.5	68	3.2	105	5.0	1843	87.3	0	0.0	2110	100.0
Ryde	2	0.3	0	0.0	24	3.0	765	96.7	0	0.0	791	100.0
Mater, North Sydney	6	0.3	5	0.3	79	4.4	1688	94.9	1	0.1	1779	100.0
Mona Vale	5	0.6	4	0.5	40	5.1	732	93.7	0	0.0	781	100.0
Sydney Adventist	4	0.2	9	0.4	81	3.3	2346	96.1	0	0.0	2440	100.0
North Shore Private	2	0.4	0	0.0	28	5.5	483	94.2	0	0.0	513	100.0
ALL HOSPITALS	122	1.2	89	0.9	423	4.1	9694	93.9	1	0.0	10329	100.0
<b>Western Sydney</b>												
Blacktown	8	0.3	6	0.2	113	4.5	2395	94.9	1	0.0	2523	100.0
Westmead	146	3.4	58	1.3	190	4.4	3933	90.9	0	0.0	4327	100.0
The Hills Private	5	0.4	3	0.2	71	5.1	1314	94.3	0	0.0	1393	100.0
Auburn	8	0.5	4	0.3	54	3.6	1438	95.6	0	0.0	1504	100.0
ALL HOSPITALS	167	1.7	71	0.7	428	4.4	9080	93.2	1	0.0	9747	100.0
<b>Wentworth</b>												
Nepean	90	2.9	47	1.5	198	6.4	2759	89.2	0	0.0	3094	100.0
Jamison Private	2	0.2	0	0.0	29	3.5	797	96.3	0	0.0	828	100.0
Hawkesbury	4	0.4	0	0.0	44	4.4	944	95.2	0	0.0	992	100.0
Blue Mountains	0	0.0	1	0.2	15	3.3	440	96.5	0	0.0	456	100.0
ALL HOSPITALS	96	1.8	48	0.9	286	5.3	4940	92.0	0	0.0	5370	100.0
<b>South Western Sydney</b>												
Camden	1	0.1	0	0.0	19	2.4	760	97.4	0	0.0	780	100.0
Fairfield	5	0.3	3	0.2	73	3.8	1816	95.7	0	0.0	1897	100.0
Liverpool	141	4.2	93	2.8	207	6.2	2909	86.8	2	0.1	3352	100.0
Campbelltown	15	0.7	14	0.7	108	5.2	1932	93.4	0	0.0	2069	100.0
Bankstown/Lidcombe	10	0.5	12	0.5	100	4.5	2094	94.5	0	0.0	2216	100.0
Bowral	0	0.0	3	0.5	16	2.8	562	96.7	0	0.0	581	100.0
Bankstown Private	0	0.0	1	0.1	35	4.6	725	95.3	0	0.0	761	100.0
ALL HOSPITALS	172	1.5	126	1.1	558	4.8	10798	92.6	2	0.0	11656	100.0
<b>Central Coast</b>												
Gosford	25	1.0	13	0.5	123	5.1	2239	93.3	0	0.0	2400	100.0
North Gosford Private	4	0.6	0	0.0	33	4.8	654	94.6	0	0.0	691	100.0
Wyong	0	0.0	1	0.3	3	0.8	377	99.0	0	0.0	381	100.0
ALL HOSPITALS	29	0.8	14	0.4	159	4.6	3270	94.2	0	0.0	3472	100.0
<b>Hunter</b>												
Maitland	12	1.0	3	0.2	50	4.1	1160	94.6	1	0.1	1226	100.0
John Hunter	158	4.4	82	2.3	232	6.5	3122	86.9	0	0.0	3594	100.0
Christo Road Private	6	0.7	12	1.4	63	7.1	806	90.9	0	0.0	887	100.0
Belmont	1	0.2	0	0.0	43	6.9	578	92.9	0	0.0	622	100.0
Singleton	1	0.4	0	0.0	7	3.1	220	96.5	0	0.0	228	100.0
Muswellbrook	0	0.0	0	0.0	7	2.9	235	97.1	0	0.0	242	100.0
Other Area hospitals	0	0.0	0	0.0	11	2.7	395	97.1	1	0.2	407	100.0
ALL HOSPITALS	178	2.5	97	1.3	413	5.7	6516	90.4	2	0.0	7206	100.0
<b>Illawarra</b>												
Shoalhaven	7	0.8	2	0.2	37	4.5	775	94.1	3	0.4	824	100.0
Wollongong	10	0.5	18	0.8	155	7.2	1955	91.4	0	0.0	2138	100.0
Illawarra Private	0	0.0	1	0.2	4	0.9	423	98.8	0	0.0	428	100.0
Shellharbour	0	0.0	0	0.0	1	0.2	619	99.8	0	0.0	620	100.0
Other Area hospitals	0	0.0	0	0.0	0	0.0	160	100.0	0	0.0	160	100.0
ALL HOSPITALS	17	0.4	21	0.5	197	4.7	3932	94.3	3	0.1	4170	100.0

**TABLE 106 (CONT)**
**CONFINEMENTS BY GESTATIONAL AGE AND HOSPITAL, NSW #1998**

Health Area/ Hospital	Gestational age (weeks)										TOTAL	
	20-31		32-33		34-36		37+		Not stated		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>South Eastern Sydney</b>												
Royal Hospital for Women	108	2.9	54	1.5	182	4.9	3344	90.6	1	0.0	3689	100.0
St. George	21	0.9	23	1.0	137	5.7	2234	92.5	0	0.0	2415	100.0
Sutherland	9	0.9	5	0.5	50	5.1	923	93.5	0	0.0	987	100.0
St. George Private	1	0.1	4	0.4	67	7.0	881	92.4	0	0.0	953	100.0
Prince of Wales Private	2	0.1	4	0.3	45	3.3	1313	96.3	0	0.0	1364	100.0
Hurstville Community	4	0.4	8	0.8	58	6.0	902	92.8	0	0.0	972	100.0
Kareena Private	3	0.5	0	0.0	29	4.4	632	95.2	0	0.0	664	100.0
Other Area hospitals	0	0.0	1	0.6	5	2.9	166	96.5	0	0.0	172	100.0
ALL HOSPITALS	148	1.3	99	0.9	573	5.1	10395	92.7	1	0.0	11216	100.0
<b>Northern Rivers</b>												
Lismore Base	6	0.4	9	0.7	72	5.3	1269	93.6	0	0.0	1356	100.0
Tweed Heads	2	0.3	1	0.2	22	3.4	622	96.1	0	0.0	647	100.0
Grafton Base	1	0.2	4	0.8	30	6.0	469	93.1	0	0.0	504	100.0
Murwillumbah	1	0.2	0	0.0	12	2.5	474	97.3	0	0.0	487	100.0
Other Area hospitals	0	0.0	0	0.0	12	3.2	367	96.8	0	0.0	379	100.0
ALL HOSPITALS	10	0.3	14	0.4	148	4.4	3201	94.9	0	0.0	3373	100.0
<b>Mid North Coast</b>												
Manning River Base	5	0.6	2	0.3	31	4.0	734	95.0	1	0.1	773	100.0
Coffs Harbour Base	5	0.7	4	0.5	47	6.4	677	92.4	0	0.0	733	100.0
Kempsey	1	0.4	2	0.8	8	3.1	251	95.8	0	0.0	262	100.0
Port Macquarie Base	5	0.7	4	0.6	35	5.2	631	93.5	0	0.0	675	100.0
Other Area hospitals	1	0.3	0	0.0	13	3.6	349	95.9	1	0.3	364	100.0
ALL HOSPITALS	17	0.6	12	0.4	134	4.8	2642	94.1	2	0.1	2807	100.0
<b>New England</b>												
Tamworth Base	4	0.6	5	0.7	43	6.2	646	92.6	0	0.0	698	100.0
Moree	3	1.2	1	0.4	5	1.9	250	96.5	0	0.0	259	100.0
Inverell	1	0.4	1	0.4	11	4.4	239	94.8	0	0.0	252	100.0
Armidale	0	0.0	3	0.6	11	2.3	474	97.1	0	0.0	488	100.0
Other Area hospitals	0	0.0	0	0.0	5	0.7	748	99.2	1	0.1	754	100.0
ALL HOSPITALS	8	0.3	10	0.4	75	3.1	2357	96.2	1	0.0	2451	100.0
<b>Macquarie</b>												
Dubbo Base	7	0.6	5	0.4	74	6.1	1125	92.9	0	0.0	1211	100.0
Mudgee	0	0.0	0	0.0	7	2.7	248	97.3	0	0.0	255	100.0
Other Area hospitals	0	0.0	0	0.0	1	0.6	174	99.4	0	0.0	175	100.0
ALL HOSPITALS	7	0.4	5	0.3	82	5.0	1547	94.3	0	0.0	1641	100.0
<b>Mid Western</b>												
Lithgow	1	0.4	0	0.0	9	4.0	214	95.5	0	0.0	224	100.0
Bathurst Base	5	1.0	1	0.2	19	3.8	478	95.0	0	0.0	503	100.0
Orange Base	9	1.1	9	1.1	59	7.0	770	90.9	0	0.0	847	100.0
Parkes	2	0.9	0	0.0	1	0.4	228	98.7	0	0.0	231	100.0
Other Area hospitals	1	0.2	0	0.0	6	1.3	442	98.4	0	0.0	449	100.0
ALL HOSPITALS	18	0.8	10	0.4	94	4.2	2132	94.6	0	0.0	2254	100.0
<b>Far West</b>												
Broken Hill Base	2	0.7	3	1.0	13	4.3	281	94.0	0	0.0	299	100.0
Other Area hospitals	5	6.4	0	0.0	6	7.7	67	85.9	0	0.0	78	100.0
ALL HOSPITALS	7	1.9	3	0.8	19	5.0	348	92.3	0	0.0	377	100.0
<b>Greater Murray</b>												
Wagga Wagga Base	3	0.4	5	0.6	65	7.6	783	91.4	1	0.1	857	100.0
Calvary, Wagga Wagga	1	0.2	5	1.0	22	4.6	453	94.2	0	0.0	481	100.0
Griffith Base	2	0.4	4	0.8	21	4.3	466	94.5	0	0.0	493	100.0
Mercy Care Centre, Albury*	0	0.0	1	0.4	13	4.7	260	94.9	0	0.0	274	100.0
Other Area hospitals	2	0.2	0	0.0	18	1.8	959	98.0	0	0.0	979	100.0
ALL HOSPITALS	8	0.3	15	0.5	139	4.5	2921	94.7	1	0.0	3084	100.0
<b>Southern</b>												
Goulburn Base	2	0.6	0	0.0	12	3.4	344	96.1	0	0.0	358	100.0
Queanbeyan	1	0.3	0	0.0	8	2.3	339	97.4	0	0.0	348	100.0
Bega	1	0.5	1	0.5	5	2.4	198	95.7	2	1.0	207	100.0
Other Area hospitals	4	0.5	5	0.6	28	3.3	821	95.7	0	0.0	858	100.0
ALL HOSPITALS	8	0.5	6	0.3	53	3.0	1702	96.1	2	0.1	1771	100.0
TOTAL NSW	1195	1.4	718	0.8	4040	4.7	80334	93.1	18	0.0	86305	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department

# Hospitals with more than 200 deliveries are identified individually. All hospitals include all public and private hospitals.

\* Mercy Care Centre, Albury ceased deliveries in June 1998.

## 7.6 BABY DISCHARGE STATUS IN SELECTED HOSPITALS

Table 107 shows the discharge status of babies born in hospitals where the number of reported confinements exceeded 200 in 1998, totals for all hospitals within each Health Area and the NSW total.

**TABLE 107**

**CONFINEMENTS BY BABY DISCHARGE STATUS AND HOSPITAL, NSW 1998#**

Health Area/ Hospital	Baby discharge status										TOTAL	
	Discharged		Stillborn		Neonatal death		Transferred		Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Central Sydney</b>												
Canterbury	418	96.8	2	0.5	1	0.2	6	1.4	5	1.2	432	100.0
King George V	4230	93.3	54	1.2	20	0.4	231	5.1	0	0.0	4535	100.0
NSW Private	256	97.0	1	0.4	0	0.0	7	2.7	0	0.0	264	100.0
ALL HOSPITALS	4904	93.7	57	1.1	21	0.4	244	4.7	5	0.1	5231	100.0
<b>Northern Sydney</b>												
Hornsby	1035	98.9	3	0.3	0	0.0	9	0.9	0	0.0	1047	100.0
Manly	800	92.2	3	0.3	1	0.1	64	7.4	0	0.0	868	100.0
Mona Vale	758	97.1	3	0.4	2	0.3	18	2.3	0	0.0	781	100.0
Royal North Shore	1721	81.6	18	0.9	9	0.4	362	17.2	0	0.0	2110	100.0
Ryde	778	98.4	2	0.3	1	0.1	10	1.3	0	0.0	791	100.0
Mater, North Sydney	1693	95.2	7	0.4	2	0.1	77	4.3	0	0.0	1779	100.0
North Shore Private	483	94.2	3	0.6	0	0.0	27	5.3	0	0.0	513	100.0
Sydney Adventist	2404	98.5	13	0.5	2	0.1	21	0.9	0	0.0	2440	100.0
ALL HOSPITALS	9672	93.6	52	0.5	17	0.2	588	5.7	0	0.0	10329	100.0
<b>Western Sydney</b>												
Auburn	1473	97.9	12	0.8	3	0.2	16	1.1	0	0.0	1504	100.0
Blacktown	2483	98.4	7	0.3	5	0.2	26	1.0	2	0.1	2523	100.0
Westmead	4120	95.2	31	0.7	24	0.6	152	3.5	0	0.0	4327	100.0
The Hills Private	1367	98.1	7	0.5	0	0.0	19	1.4	0	0.0	1393	100.0
ALL HOSPITALS	9443	96.9	57	0.6	32	0.3	213	2.2	2	0.0	9747	100.0
<b>Wentworth</b>												
Blue Mountains	437	95.8	5	1.1	0	0.0	14	3.1	0	0.0	456	100.0
Nepean	2960	95.7	33	1.1	12	0.4	89	2.9	0	0.0	3094	100.0
Jamison Private	819	98.9	3	0.4	0	0.0	6	0.7	0	0.0	828	100.0
Hawkesbury	965	97.3	2	0.2	2	0.2	23	2.3	0	0.0	992	100.0
ALL HOSPITALS	5181	96.5	43	0.8	14	0.3	132	2.5	0	0.0	5370	100.0
<b>South Western Sydney</b>												
Camden	756	96.9	3	0.4	0	0.0	21	2.7	0	0.0	780	100.0
Fairfield	1868	98.5	4	0.2	2	0.1	23	1.2	0	0.0	1897	100.0
Liverpool	3084	92.0	33	1.0	17	0.5	125	3.7	93	2.8	3352	100.0
Campbelltown	1860	89.9	14	0.7	3	0.1	192	9.3	0	0.0	2069	100.0
Bankstown/Lidcombe	2183	98.5	8	0.4	5	0.2	20	0.9	0	0.0	2216	100.0
Bankstown Private	752	98.8	0	0.0	0	0.0	9	1.2	0	0.0	761	100.0
Bowral	502	86.4	2	0.3	1	0.2	76	13.1	0	0.0	581	100.0
ALL HOSPITALS	11005	94.4	64	0.5	28	0.2	466	4.0	93	0.8	11656	100.0
<b>Central Coast</b>												
Gosford	2264	94.3	22	0.9	6	0.3	108	4.5	0	0.0	2400	100.0
Wyong	376	98.7	0	0.0	0	0.0	5	1.3	0	0.0	381	100.0
North Gosford Private	681	98.6	3	0.4	2	0.3	5	0.7	0	0.0	691	100.0
ALL HOSPITALS	3321	95.7	25	0.7	8	0.2	118	3.4	0	0.0	3472	100.0
<b>Hunter</b>												
Maitland	1111	90.6	11	0.9	0	0.0	104	8.5	0	0.0	1226	100.0
Muswellbrook	233	96.3	0	0.0	0	0.0	9	3.7	0	0.0	242	100.0
Belmont	585	94.1	2	0.3	0	0.0	35	5.6	0	0.0	622	100.0
Singleton	224	98.2	0	0.0	0	0.0	4	1.8	0	0.0	228	100.0
John Hunter	3125	87.0	40	1.1	33	0.9	396	11.0	0	0.0	3594	100.0
Christo Road Private	861	97.1	5	0.6	0	0.0	21	2.4	0	0.0	887	100.0
Other Area hospitals	403	99.0	0	0.0	0	0.0	4	1.0	0	0.0	407	100.0
ALL HOSPITALS	6542	90.8	58	0.8	33	0.5	573	8.0	0	0.0	7206	100.0
<b>Illawarra</b>												
Shoalhaven	691	83.9	8	1.0	3	0.4	122	14.8	0	0.0	824	100.0
Shellharbour	594	95.8	4	0.6	0	0.0	22	3.5	0	0.0	620	100.0
Wollongong	1816	84.9	17	0.8	1	0.0	299	14.0	5	0.2	2138	100.0
Illawarra Private	420	98.1	0	0.0	0	0.0	8	1.9	0	0.0	428	100.0
Other Area hospitals	159	99.4	0	0.0	0	0.0	1	0.6	0	0.0	160	100.0
ALL HOSPITALS	3680	88.2	29	0.7	4	0.1	452	10.8	5	0.1	4170	100.0

TABLE 107 (CONT)

## CONFINEMENTS BY BABY DISCHARGE STATUS AND HOSPITAL, NSW 1998#

Health Area/ Hospital	Discharged		Stillborn		Baby discharge status Neonatal death		Transferred		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>South Eastern Sydney</b>												
Royal Hospital for Women	3442	93.3	48	1.3	16	0.4	179	4.9	4	0.1	3689	100.0
St. George	2355	97.5	21	0.9	5	0.2	33	1.4	1	0.0	2415	100.0
Sutherland	957	97.0	11	1.1	1	0.1	18	1.8	0	0.0	987	100.0
Hurstville Community	956	98.4	5	0.5	0	0.0	11	1.1	0	0.0	972	100.0
Kareena Private	655	98.6	1	0.2	0	0.0	8	1.2	0	0.0	664	100.0
St. George Private	935	98.1	3	0.3	0	0.0	15	1.6	0	0.0	953	100.0
Prince of Wales Private	1346	98.7	6	0.4	3	0.2	9	0.7	0	0.0	1364	100.0
Other Area hospitals	167	97.1	1	0.6	0	0.0	4	2.3	0	0.0	172	100.0
ALL HOSPITALS	10813	96.4	96	0.9	25	0.2	277	2.5	5	0.0	11216	100.0
<b>Northern Rivers</b>												
Grafton Base	467	92.7	6	1.2	0	0.0	31	6.2	0	0.0	504	100.0
Lismore Base	1036	76.4	12	0.9	2	0.1	306	22.6	0	0.0	1356	100.0
Murwillumbah	462	94.9	0	0.0	1	0.2	24	4.9	0	0.0	487	100.0
Tweed Heads	640	98.9	3	0.5	0	0.0	4	0.6	0	0.0	647	100.0
Other Area hospitals	355	93.7	0	0.0	0	0.0	23	6.1	1	0.3	379	100.0
ALL HOSPITALS	2960	87.8	21	0.6	3	0.1	388	11.5	1	0.0	3373	100.0
<b>Mid North Coast</b>												
Coffs Harbour Base	666	90.9	9	1.2	1	0.1	57	7.8	0	0.0	733	100.0
Kempsey	249	95.0	4	1.5	0	0.0	9	3.4	0	0.0	262	100.0
Port Macquarie Base	583	86.4	10	1.5	1	0.1	81	12.0	0	0.0	675	100.0
Manning River Base	735	95.1	5	0.6	1	0.1	32	4.1	0	0.0	773	100.0
Other Area hospitals	340	93.4	0	0.0	0	0.0	24	6.6	0	0.0	364	100.0
ALL HOSPITALS	2573	91.7	28	1.0	3	0.1	203	7.2	0	0.0	2807	100.0
<b>New England</b>												
Armidale	437	89.5	3	0.6	1	0.2	47	9.6	0	0.0	488	100.0
Inverell	237	94.0	1	0.4	0	0.0	14	5.6	0	0.0	252	100.0
Moree	243	93.8	2	0.8	1	0.4	13	5.0	0	0.0	259	100.0
Tamworth Base	614	88.0	2	0.3	1	0.1	81	11.6	0	0.0	698	100.0
Other Area hospitals	717	95.1	1	0.1	1	0.1	34	4.5	1	0.1	754	100.0
ALL HOSPITALS	2248	91.7	9	0.4	4	0.2	189	7.7	1	0.0	2451	100.0
<b>Macquarie</b>												
Dubbo Base	854	70.5	8	0.7	2	0.2	347	28.7	0	0.0	1211	100.0
Mudgee	245	96.1	0	0.0	0	0.0	10	3.9	0	0.0	255	100.0
Other Area hospitals	158	90.3	0	0.0	0	0.0	17	9.7	0	0.0	175	100.0
ALL HOSPITALS	1257	76.6	8	0.5	2	0.1	374	22.8	0	0.0	1641	100.0
<b>Mid Western</b>												
Bathurst Base	401	79.7	7	1.4	0	0.0	95	18.9	0	0.0	503	100.0
Lithgow	219	97.8	2	0.9	0	0.0	3	1.3	0	0.0	224	100.0
Orange Base	623	73.6	7	0.8	1	0.1	216	25.5	0	0.0	847	100.0
Parkes	214	92.6	1	0.4	0	0.0	16	6.9	0	0.0	231	100.0
Other Area hospitals	425	94.7	3	0.7	0	0.0	21	4.7	0	0.0	449	100.0
ALL HOSPITALS	1882	83.5	20	0.9	1	0.0	351	15.6	0	0.0	2254	100.0
<b>Far West</b>												
Broken Hill Base	291	97.3	3	1.0	0	0.0	5	1.7	0	0.0	299	100.0
Other Area hospitals	66	84.6	1	1.3	2	2.6	9	11.5	0	0.0	78	100.0
ALL HOSPITALS	357	94.7	4	1.1	2	0.5	14	3.7	0	0.0	377	100.0
<b>Greater Murray</b>												
Mercy Care Centre, Albury	264	96.4	1	0.4	0	0.0	9	3.3	0	0.0	274	100.0
Griffith Base	451	91.5	2	0.4	0	0.0	40	8.1	0	0.0	493	100.0
Wagga Wagga Base	747	87.2	6	0.7	1	0.1	103	12.0	0	0.0	857	100.0
Calvary, Wagga Wagga	468	97.3	3	0.6	0	0.0	10	2.1	0	0.0	481	100.0
Other Area hospitals	930	95.0	2	0.2	0	0.0	47	4.8	0	0.0	979	100.0
ALL HOSPITALS	2860	92.7	14	0.5	1	0.0	209	6.8	0	0.0	3084	100.0
<b>Southern</b>												
Bega	196	94.7	1	0.5	0	0.0	10	4.8	0	0.0	207	100.0
Goulburn Base	325	90.8	2	0.6	1	0.3	30	8.4	0	0.0	358	100.0
Queanbeyan	338	97.1	0	0.0	0	0.0	10	2.9	0	0.0	348	100.0
Other Area hospitals	818	95.3	7	0.8	0	0.0	33	3.8	0	0.0	858	100.0
ALL HOSPITALS	1677	94.7	10	0.6	1	0.1	83	4.7	0	0.0	1771	100.0
TOTAL NSW	80517	93.3	595	0.7	200	0.2	4875	5.6	118	0.1	86305	100.0

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department

# Hospitals with more than 200 deliveries are identified individually. All hospitals include all public and private hospitals.

\* Mercy Care Centre, Albury ceased deliveries in June 1998.

## 7.7 POSTNATAL LENGTH OF STAY IN SELECTED HOSPITALS

Table 108 shows the mother's postnatal length of stay in the hospital of birth for individual hospitals where the number of reported confinements exceeded 200 in 1997, totals for all hospitals within each Health Area and the NSW total.

**TABLE 108**

**AVERAGE MATERNAL POSTNATAL LENGTH OF STAY IN HOSPITAL OF BIRTH, NSW 1994-97#**

Health Area/ Hospital	Average postnatal length of stay (days)				Health Area/ Hospital	Average postnatal length of stay (days)			
	1994	1995	1996	1997		1994	1995	1996	1997
<b>Central Sydney</b>					<b>South Eastern Sydney</b>				
King George V	4.2	4.1	3.7	3.9	St. Margaret's Private	6.6	6.0	5.8	5.8
NSW Private	6.1	5.8	5.4	5.4	Royal Hospital for Women	4.4	4.6	4.2	4.1
ALL HOSPITALS	4.2	4.1	3.8	4.0	St. George	4.6	4.1	3.8	3.9
<b>Northern Sydney</b>					Sutherland	5.2	4.5	4.1	3.8
Hornsby	4.8	4.4	4.1	3.7	Hurstville Community	6.4	6.2	6.5	6.6
Manly	4.5	4.3	3.9	3.8	Kareena Private	6.4	6.3	6.4	6.3
Mona Vale	4.6	4.3	4.2	3.9	St. George Private	-	8.0	6.2	6.2
Royal North Shore	4.5	4.3	4.3	3.9	Other Area hospitals	-	-	0.0	6.3
Ryde	4.2	4.0	4.3	3.6	ALL HOSPITALS	5.2	5.0	4.8	4.8
Mater, North Sydney	5.7	5.6	5.3	5.3	<b>Mid North Coast</b>				
Sydney Adventist	6.0	6.2	5.9	5.6	Coffs Harbour Base	4.6	4.5	4.4	3.9
ALL HOSPITALS	5.1	4.9	4.8	4.5	Kempsey	4.4	4.7	4.6	4.1
<b>Western Sydney</b>					Port Macquarie Base	3.9	3.9	3.9	3.7
Auburn	3.5	3.6	3.4	3.0	Manning River Base	4.6	4.3	4.3	4.5
Blacktown	3.4	3.3	3.3	3.1	Other Area hospitals	4.1	4.7	4.4	4.5
Westmead	4.2	3.9	3.5	3.5	ALL HOSPITALS	4.4	4.4	4.3	4.1
The Hills Private	5.7	5.8	5.8	5.8	<b>New England</b>				
ALL HOSPITALS	4.1	3.9	3.7	3.6	Armidale	5.5	5.1	5.1	4.7
<b>Wentworth</b>					Gunnedah	4.2	3.7	3.7	3.5
Blue Mountains	4.4	3.5	3.6	3.6	Inverell	4.1	3.7	3.6	3.8
Nepean	3.5	3.5	3.4	3.5	Moree	4.3	4.1	3.8	3.6
Jamison Private	5.2	5.3	5.3	5.5	Tamworth Base	3.3	3.7	3.5	3.6
Hawkesbury	-	-	3.8	3.8	Other Area hospitals	4.4	4.8	4.9	4.5
ALL HOSPITALS	3.9	3.7	3.7	3.9	ALL HOSPITALS	4.2	4.3	4.2	4.0
<b>South Western Sydney</b>					<b>Macquarie</b>				
Camden	4.0	3.7	3.4	3.8	Dubbo Base	4.7	3.3	3.2	3.0
Fairfield	3.2	3.1	3.0	2.9	Mudgee	3.8	3.6	3.6	3.3
Liverpool	3.3	3.1	3.1	3.1	Other Area hospitals	3.8	3.4	3.2	3.3
Campbelltown	3.2	3.0	2.8	2.7	ALL HOSPITALS	4.3	3.3	3.3	3.1
Bankstown/Lidcombe	3.2	3.0	3.0	2.8	<b>Mid Western</b>				
Bankstown Private	5.2	5.3	5.0	5.4	Bathurst Base	4.1	4.2	3.7	3.2
Bowral	3.5	3.7	3.2	3.0	Cowra	5.3	4.9	4.6	4.6
ALL HOSPITALS	3.4	3.2	3.2	3.1	Lithgow	4.6	4.1	5.3	4.5
<b>Central Coast</b>					Orange Base	3.5	3.4	3.1	3.4
Gosford	3.8	3.7	3.5	3.1	Parke	4.6	4.5	4.2	3.9
North Gosford Private	6.4	6.1	6.2	5.9	Other Area hospitals	4.2	4.1	4.7	3.8
Other Area hospitals	-	-	-	3.2	ALL HOSPITALS	4.1	4.0	3.9	3.7
ALL HOSPITALS	4.3	4.2	4.1	3.7	<b>Far West</b>				
<b>Hunter</b>					Broken Hill Base	5.3	4.3	4.1	3.8
Maitland	3.7	3.5	3.2	3.1	Other Area hospitals	3.3	3.2	3.8	2.9
Muswellbrook	4.1	3.9	3.9	3.8	ALL HOSPITALS	4.7	4.0	4.1	3.6
Belmont	3.8	3.6	3.3	3.5	<b>Greater Murray</b>				
John Hunter	3.8	3.9	3.7	4.0	Mercy Care Centre, Albury*	4.6	4.6	4.3	4.1
Christo Road Private	5.4	5.7	5.7	5.8	Griffith Base	4.1	4.1	3.6	3.4
Other Area hospitals	4.2	4.6	4.4	4.3	Wagga Wagga Base	4.4	4.0	3.7	3.4
ALL HOSPITALS	3.9	4.0	3.9	4.1	Calvary, Wagga Wagga	6.0	5.9	6.3	6.5
<b>Illawarra</b>					Other Area hospitals	4.8	4.6	4.5	4.2
Shoalhaven	3.1	2.9	2.7	2.3	ALL HOSPITALS	4.7	4.5	4.4	4.2
Shellharbour	3.6	3.5	3.8	3.3	<b>Southern</b>				
Wollongong	2.6	2.5	2.4	2.4	Bega	5.4	4.4	4.2	4.2
Other Area hospitals	4.0	4.7	4.7	4.3	Goulburn Base	4.4	4.1	3.6	3.8
ALL HOSPITALS	3.0	2.9	2.7	2.5	Queanbeyan	3.9	3.4	3.2	3.2
<b>Northern Rivers</b>					Other Area hospitals	4.3	4.2	4.1	3.8
Grafton Base	4.4	4.4	4.8	4.5	ALL HOSPITALS	4.4	4.0	3.8	3.7
Lismore Base	3.5	3.8	3.3	3.2	<b>TOTAL NSW</b>				
Murwillumbah	4.6	4.2	4.0	4.0		4.2	4.1	4.0	3.9
Tweed Heads	3.7	3.1	3.4	3.0					
Other Area hospitals	4.0	3.6	3.6	3.9					
ALL HOSPITALS	3.9	3.8	3.6	3.5					

Source: NSW Midwives Data Collection. Epidemiology and Surveillance Branch, NSW Health Department.

# Hospitals with more than 200 deliveries are identified individually. All hospitals include all public and private hospitals.

\*\*\* Mercy Care Centre, Albury ceased deliveries in June 1998.

## 7.8 INDICATORS OF OBSTETRIC CARE

The Australian Council on Healthcare Standards and the Royal Australian College of Obstetricians and Gynaecologists have endorsed seven clinical indicators for use in Australian Hospitals. Table 108 shows aggregate information for these indicators for all NSW hospitals and comparative information for all participating hospitals in Australia.

**TABLE 108**

**CLINICAL INDICATORS FOR OBSTETRICS, NSW HOSPITALS AND PARTICIPATING AUSTRALIAN HOSPITALS 1998**

Indicator description	NSW (%)	Australia (%)
<b>Indicator 1:</b> Induction of labour for other than defined indications #.		
1.1 Mothers undergoing induction of labour for other than defined indications as a percentage of all mothers undergoing induction of labour for any reason.	28.9	36.0
1.2 Mothers undergoing induction of labour for other than defined indications as a percentage of all mothers giving birth.	7.0	9.0
<b>Indicator 2:</b> The rate of vaginal delivery after primary caesarean section.		
2.1 Mothers delivering vaginally at the birth immediately following primary caesarean section as a percentage of all mothers delivering at the birth immediately following primary caesarean section.	21.3	24.0
<b>Indicator 3:</b> Primary caesarean section for failure to progress.		
3.1 Mothers undergoing primary caesarean section for failure to progress after a period of labour with cervical dilation of 3 cm or less as a percentage of all mothers undergoing primary non-elective caesarean section.	10.1	9.3
3.2 Mothers undergoing primary caesarean section for failure to progress after a period of labour with cervical dilation of more than 3 cm as a percentage of all mothers undergoing primary non-elective caesarean section.	28.9	28.8
<b>Indicator 4:</b> Primary caesarean section for fetal distress.		
4.1 Mothers undergoing primary caesarean section for fetal distress as a percentage of total mothers delivering.	2.9	3.1
4.2 Mothers undergoing primary caesarean section for fetal distress as a percentage of mothers delivering by primary caesarean section.	21.9	19.8
<b>Indicator 5:</b> Incidence of intact lower genital tract in vaginal deliveries.		
5.1 Primiparous mothers not requiring surgical repair of the lower genital tract as a percentage of all primiparous mothers.	31.1	28.8
<b>Indicator 6:</b> Apgar score.		
6.1 Infants born with an Apgar score of four or less at five minutes post delivery as a percentage of all infants born ##.	0.8	0.8
6.2 Infants born with an Apgar score of six or less at ten minutes post delivery as a percentage of all infants born ###.	-	0.7
<b>Indicator 7:</b> Term infants transferred or admitted to a neonatal intensive care unit for reasons other than congenital abnormality ####.		
7.1 Term infants admitted to a neonatal intensive care unit for reasons other than congenital abnormality as a percentage of all term infants born.	0.8	0.9

Source: NSW Midwives Data Collection, Epidemiology and Surveillance Branch, NSW Health Department. Australian Council on Healthcare Standards (unpublished data).

# Defined indications include: diabetes, hypertensive disease, fetal distress, fetal death, chorioamnionitis, blood group isoimmunisation, prelabour rupture of membranes, prolonged pregnancy (41 or more weeks), and suspected intrauterine growth retardation.

## NSW denominator includes livebirths only.

### NSW data not collected.

#### NSW data are provided by hospital of birth and may be under-enumerated. Infants transferred to another hospital and then admitted to NICU for reasons other than congenital abnormality may not be reported by the hospital of birth.



# PART 8: VALIDATION STUDY NSW MIDWIVES DATA COLLECTION 1998

## 8.1 INTRODUCTION

A revised MDC form was implemented from 1 January 1998. The new form includes data elements necessary for most of the Australian Council on Healthcare Standards/Royal Australian and New Zealand College of Obstetricians and Gynaecologists (ACHS/RANZCOG) clinical indicators for obstetrics. The revision also included changes required for the data elements to comply with national coding standards described in the National Health Data Dictionary.

As the revisions to the content of the form were substantial, an audit in the form of a validation study was carried to assess the reliability of the data reported against hospital medical records.

## 8.2 METHODS

A two per cent random sample of MDC records were selected from hospitals with more than 50 births reported for 1998 as at 14 May 1999. On that date 85,554 births had been reported to the MDC for 1998. Of these, 190 were home births, 173 births were at St Margaret's Hospital which had since closed, and 617 births were at hospitals which had reported less than 50 births in 1998. These records were excluded, leaving 84,574 records from which the sample could be drawn. A random number was assigned to each record, records were sorted in ascending random number order and the first 1,703 records (2.0 per cent) were selected as the sample. Both public and private hospitals were included in the sample.

Permission was sought from the chief executive officer of each selected hospital to access medical records in order to carry out the study. The following information was obtained from the sample data, and used by hospital staff to locate the relevant medical records: hospital code, mother's medical record number, mother's name, mother's date of birth, baby medical record number and baby date of birth. If the medical record could not be located using this information, it could not be reviewed.

The medical record was reviewed by the Coordinator of the NSW Midwives Data Collection, Ms Margy Pym, or the Manager of the NSW Birth Defects Register, Ms Sue Travis and new MDC forms were completed. Copies of the original form held in the medical record were not reviewed or referred to in the process of data collection.

Completed forms were keyed by an external contractor. The data were then checked and corrections were made as would be the case with normal cleaning of the routinely collected MDC data.

Data analysis was carried out using SAS version 6.12. The following analyses were carried out:

### 1. Frequency of missing data

The frequency of missing data was determined for 44 data items for which 'not stated' is a coding option.

### 2. Tests for reproducibility

Reproducibility, or inter-rater reliability, was determined by the calculation of the percentage agreement and kappa coefficients for all data items. For data items which apply only to a subset of births (eg 'Was the last birth by caesarean section?'), the relevant subset of records was selected from the MDC dataset (eg 'yes' response to 'Previous pregnancy greater than 20 weeks?') and percentage agreement and kappa coefficients were calculated.

### 3. Tests for accuracy

Sensitivity and specificity were calculated for dichotomous data items using the validation data as the 'gold standard'.

## 8.3 DEFINITIONS

The *kappa coefficient* is a measure of the reproducibility of information which corrects for the chance agreement which would be expected to occur if the two classifications were totally unrelated. It is defined as follows:

$$\frac{\text{Observed agreement} - \text{expected agreement}}{1 - \text{expected agreement}}$$

Values of kappa range from -1 to 1, with a value of 0 indicating no agreement and 1 indicating perfect agreement beyond chance. Values greater than 0.75 may be taken to represent excellent agreement beyond chance, values between 0.4 and 0.75 may be taken to represent fair to good agreement beyond chance and values below 0.40 may be taken to represent poor agreement beyond chance.

## 8.4 RESULTS

All hospitals selected in the sample agreed to participate in the validation study. Of the 1,703 births selected, medical records were reviewed and validation data obtained on 1,680, giving a response rate of 99.1 per cent. These 1,688 records represent 1.9 per cent of the 86,305 births finally reported to the MDC for 1998.

Missing data was rare for most data items (Table 110). Data was most commonly not reported for the date of the last menstrual period (4.4 per cent) and the duration of pregnancy at the first antenatal check (1.0 per cent).

The percentage agreement and kappa coefficients are shown in Table 111. Overall, 39 of the 58 data items examined (67.2 per cent) were in perfect agreement in more than 95 per cent of cases, and 47 (81.0 per cent) were in perfect agreement in more than 90 per cent of cases. Baby's date of death was the only data item with perfect agreement in all cases, while the poorest agreement was for 'Admitted to Special Care Nursery (SCN) for observation only' (69.9 per cent agreement) and 'Number of cigarettes smoked

in the second half of pregnancy' (71.6 per cent agreement).

Forty of the 57 data items (70.0 per cent) for which kappa coefficients were calculated had a kappa value of 0.75 or more, indicating excellent agreement beyond chance. Fifteen data items (26.3) had a kappa value of 0.4 to 0.74, indicating fair to good agreement beyond chance. Two data items had kappa values of 0.0 - 'Induction/augmentation by other methods' and 'Pain relief/anaesthetics: other'. These were the only two data items with kappa values less than 0.4.

The sensitivity and specificity of dichotomous variables are shown in Table 112. The data items relate to prenatal diagnosis, maternal medical conditions, induction and augmentation, and pain relief. Generally the specificity of these data items is high, indicating that if a mother does not have the condition or attribute, then it is unlikely that the condition will be incorrectly reported. However sensitivity levels were generally lower, particularly for maternal medical conditions and prenatal diagnosis procedures. This indicates that some mothers with these conditions or who have had prenatal diagnosis procedures are not currently being reported.

## 8.5 CONCLUSION

The validation study showed low rates of missing data and generally high levels of agreement between MDC data reported to the NSW Health Department and information obtained directly from the medical record.

Most data items on the new MDC form were highly reliable. Only two data items showed poor reliability - 'Induction/augmentation by other methods' and 'Pain relief/anaesthetics: other', and both were completely unreliable in correctly identifying mothers with these attributes.

While this study has demonstrated that the new MDC form is providing good quality information for most data items, improvements in reporting could be made in the areas of maternal medical conditions and prenatal diagnosis procedures.

**TABLE 110**  
**MISSING VALUES, SAMPLE OF NSW MIDWIVES DATA COLLECTION RECORDS, 1998 (a)**

Item	Missing Values	
	No.	%
<b>Mother's information</b>		
Medical record number	0	0.0
Given name	0	0.0
Surname	0	0.0
Street address	2	0.1
Suburb/locality	2	0.1
Postcode	0	0.0
Country of birth	1	0.1
Date of birth	0	0.0
Indigenous status	2	0.1
Place of birth	0	0.0
Last menstrual period	74	4.4
Previous pregnancies	0	0.0
Number of previous pregnancies (b)	2	0.1
Previous caesarean section (b)	0	0.0
Total previous caesarean sections (b)	3	0.3
Duration of pregnancy at first antenatal check	17	1.0
Smoking in pregnancy	2	0.1
Number of cigarettes smoked (c)	3	0.9
Onset of labour	1	0.1
Reason of induction of labour (d)	0	0.0
Presentation	3	0.2
Type of delivery	0	0.0
Main indication for caesarean section (e)	1	0.3
Perineal status	0	0.0
Surgical repair of vagina or perineum	0	0.0
Discharge status	0	0.0
<b>Infant's information</b>		
Medical record number	4	0.2
Sex	0	0.0
Date of birth	0	0.0
Plurality	0	0.0
Birth order	0	0.0
Weight	0	0.0
Gestational age	0	0.0
Apgar (1 minute)	5	0.3
Apgar (5 minute)	6	0.4
Resuscitation of baby	0	0.0
Presence of a birth defect	0	0.0
Admitted to NICU	0	0.0
Admitted to SCN	0	0.0
Admitted to SCN for observation only (f)	2	0.9
Birth defect main reason for admission to SCN/NICU (g)	0	0.0
Discharge status	2	0.1
Date of discharge	2	0.1
Hospital of transfer	0	0.0
Date of death	0	0.0

*Note:*

- (a) 44 data items where there is provision to indicate a missing value, N=1680 unless otherwise stated.
- (b) Multiparas, N=965
- (c) Mothers reporting smoking during pregnancy, N=335
- (d) Induced labour, N=446
- (e) Caesarean section births, N=314
- (f) Admitted to SCN, N=226
- (g) Admitted to SCN or NICU, N=249

TABLE 111

## PER CENT AGREEMENT AND KAPPA STATISTIC, NSW MIDWIVES DATA COLLECTION VALIDATION STUDY, 1998 (a)

Item	Agreement Proportion	%	Kappa
<b>Mother's information</b>			
Country of birth	1620/1680	96.4	0.54
Date of birth	1622/1680	96.5	(a)
Indigenous status	1652/1680	98.3	0.54
Place of birth	1659/1680	98.8	0.86
Last menstrual period	1413/1680	84.1	(a)
Previous pregnancies	1668/1680	99.3	0.98
Number of previous pregnancies (b)	913/965	94.6	0.91
Previous caesarean section (b)	953/965	98.8	0.95
Total previous caesarean sections (b)	936/965	97.0	0.90
Duration of pregnancy at first antenatal check	1320/1680	78.6	0.78
Booking status	1653/1680	98.4	0.57
Prenatal diagnosis: chorionic villus sampling	1669/1680	99.3	0.72
Prenatal diagnosis: amniocentesis	1657/1680	98.6	0.80
Diabetes mellitus	1675/1680	99.7	0.70
Gestational diabetes	1665/1680	99.1	0.87
Chronic hypertension	1673/1680	99.6	0.59
Pre-eclampsia	1619/1680	96.4	0.75
Smoking in pregnancy	1595/1680	94.9	0.85
Number of cigarettes smoked (c)	240/335	71.6	0.49
Onset of labour	1640/1680	97.7	0.95
Induction/augmentation with oxytocics	1571/1680	93.5	0.84
Induction/augmentation with prostaglandins	1649/1680	98.2	0.92
Induction/augmentation with ARM	1479/1680	88.0	0.73
Induction/augmentation by other means	1673/1680	99.6	0.00
Reason of induction of labour (d)	386/446	86.5	0.82
Pain relief/anaesthetics: nil	1626/1680	96.8	0.85
Pain relief/anaesthetics: nitrous oxide	1547/1680	92.1	0.84
Pain relief/anaesthetics: IM narcotics	1578/1680	93.9	0.85
Pain relief/anaesthetics: local to perineum	1464/1680	87.1	0.67
Pain relief/anaesthetics: epidural/caudal	1644/1680	97.9	0.95
Pain relief/anaesthetics: pudendal	1674/1680	99.6	0.86
Pain relief/anaesthetics: spinal	1653/1680	98.4	0.80
Pain relief/anaesthetics: general anaesthetic	1655/1680	98.5	0.86
Pain relief/anaesthetics: other	1638/1680	97.5	0.00
Presentation	1655/1680	98.5	0.87
Type of delivery	1662/1680	98.9	0.98
Main indication for caesarean section (e)	267/314	85.0	0.73
Perineal status	1485/1680	88.4	0.84
Surgical repair of vagina or perineum	1651/1680	98.3	0.96
Discharge status	1649/1680	98.2	0.82
<b>Infant's information</b>			
Sex	1660/1680	98.8	0.98
Date of birth	1654/1680	98.5	(a)
Plurality	1671/1680	99.5	0.89
Birth order (f)	36/41	87.8	0.74
Weight	1622/1680	96.5	(a)
Gestational age	1424/1680	84.8	0.81
Apgar (1 minute)	1642/1680	97.7	0.96
Apgar (5 minute)	1641/1680	97.7	0.95
Resuscitation of baby	1394/1680	83.0	0.76
Presence of a birth defect	1603/1680	95.4	0.41
Admitted to NICU	1637/1680	97.4	0.66
Admitted to SCN	1552/1680	92.4	0.73
Admitted to SCN for observation only (g)	158/226	69.9	0.44
Birth defect main reason for admission to SCN/NICU (h)	238/249	96.0	0.79
Discharge status	1652/1680	98.3	0.88
Date of discharge	1551/1680	92.3	(a)
Hospital of transfer	1647/1680	98.0	(a)
Date of death	1680/1680	100.0	1.00

## Note:

- (a) Kappa not calculated for data items with large numbers of categories  
 (b) Multiparas, N=965;  
 (c) Mothers reporting smoking during pregnancy, N=335  
 (d) Induced labour, N=446; (e) Caesarean section births, N=314  
 (f) Multiple births, N=41; (g) Admitted to SCN, N=226  
 (h) Admitted to SCN or NICU, N=249

TABLE 112

## SENSITIVITY AND SPECIFICITY OF DICHOTOMOUS DATA ITEMS, NSW MIDWIVES DATA COLLECTIONS VALIDATION STUDY, 1998

Data Item	Number of cases reported to MDC	Sensitivity	Specificity
<b>Mother's information</b>			
Amniocentesis	57	78.3	99.4
Chorionic villus sampling	21	77.8	99.6
Not booked into hospital of birth	25	47.5	99.6
Diabetes mellitus	8	66.7	99.9
Gestational diabetes	59	86.7	99.6
Chronic hypertension	9	62.5	99.8
Pre-eclampsia	111	66.7	99.3
Induction/augmentation with oxytocics	434	82.1	98.5
Induction/augmentation with prostaglandins	212	89.9	99.5
Induction/augmentation with ARM	477	71.9	97.7
Induction/augmentation by other means	4	0.0	99.8
Pain relief/anaesthetics: nil	232	96.4	96.8
Pain relief/anaesthetics: nitrous oxide	845	89.2	95.5
Pain relief/anaesthetics: IM narcotics	457	84.5	98.1
Pain relief/anaesthetics: local to perineum	341	62.1	98.3
Pain relief/anaesthetics: epidural/caudal	477	96.6	98.3
Pain relief/anaesthetics: pudendal	23	87.0	99.8
Pain relief/anaesthetics: spinal	64	74.0	99.6
Pain relief/anaesthetics: general anaesthetic	82	77.7	99.9
Pain relief/anaesthetics: other	20	0.0	98.8

## APPENDIX 1

### DESCRIPTION OF SELECTED BIRTH DEFECTS

The following include descriptions of some of the birth defects included in this report:

<i>Anencephaly</i>	Absence of the cranial vault, with the brain tissue completely missing or markedly reduced.
<i>Spina bifida</i>	Defective closure of the bony encasement of the spinal cord, through which the spinal cord may protrude.
<i>Encephalocele</i>	Protrusion of brain through a congenital opening in the skull
<i>Hydrocephalus</i>	Dilatation of the cerebral ventricles accompanied by an accumulation of cerebral fluid within the skull.
<i>Buphthalmos</i>	Enlargement and distension of the fibrous coats of the eye.
<i>Hypospadias</i>	The opening of the urethra lies on the underside of the penis or on the perineum.
<i>Epispadias</i>	Absence of the upper wall of the urethra. The opening of the urethra lies on the dorsum of the penis in males, and anterior to or onto the clitoris in females.
<i>Chordee</i>	Downward bowing of the penis.
<i>Talipes equinovarus</i>	A deformity of the foot in which the heel is elevated and turned outward.
<i>Polydactyly</i>	Presence of additional fingers or toes on hands or feet.
<i>Syndactyly</i>	Attachment of adjacent fingers or toes on hands or feet.
<i>Craniosynostosis</i>	Premature closure of the sutures of the skull.
<i>Exomphalos</i>	Herniation of the abdominal contents into the umbilical cord.
<i>Gastroschisis</i>	A defect in the abdominal wall not involving the umbilicus and through which the abdominal contents herniate.
<i>Cystic hygroma</i>	A sac, cyst or bursa distended with fluid.

## APPENDIX 2

### BIRTH DEFECT EXCLUSION LIST

The following is a general list of minor defects and non-structural disorders which are excluded from the NSW Birth Defects Register. For further details, please contact the NSW Birth Defects Register (see Further Information, p16).

Abnormal palmar creases	Minor toe/foot anomalies
Accessory nipples	Muscular dystrophies & myopathies
Balanced chromosomal translocation (unless occurring with structural defects)	Oesophageal reflux
Birthmarks (single, < 4 cms. diameter)	Patent ductus arteriosus (less than 37 weeks gestation)
Bronchopulmonary dysplasia	Phenylketonuria (PKU)*
Cerebral palsy	Pilonidal sinus
Clicky hips	Sacral dimples
Congenital hypothyroidism*	Single umbilical artery (unless occurring with structural defects)
Congenital infections (unless occurring with structural defects)	Skin tag
Congenital neoplasms/tumours (exception : cystic hygroma)	Strabismus
Cystic fibrosis*	Talipes (exception: those requiring surgery)
Developmental disability	Thalassaemia major*
Deviated nasal septum	Tongue tie
Fetal alcohol syndrome*	Undescended testes (exception: those requiring surgery)
Galactosaemia	Webbing of 2nd & 3rd toes
Glucose-6-phosphate dehydrogenase (G6PD) deficiency	Wide sutures
Haemophilia	
Heart murmurs (functional)	
Hernia (epigastric, hiatus, inguinal, umbilical)	
Hydrocele (testis)	
Hydrops fetalis due to isoimmunisation	
Hypoplastic lung (less than 37 weeks gestation)	
Imperforate hymen	
Inborn errors of metabolism	
Intrauterine growth retardation	
Low birthweight	
Meconium ileus	
Minor ear anomalies	
Minor finger/hand anomalies	

\* Congenital hypothyroidism, cystic fibrosis, phenylketonuria, fetal alcohol syndrome and Thalassaemia major were notifiable from 1994.

**APPENDIX 3****MATERNAL COUNTRIES OF BIRTH AND COUNTRY OF BIRTH GROUPS****English speaking**

Australia  
Christmas Island  
Cocos (Keeling) Islands  
Norfolk Island  
New Zealand  
United Kingdom  
Channel Islands  
Isle of Man  
Ireland  
Bermuda  
Canada  
United States of America  
South Africa

**Central and South America**

Argentina  
Bolivia  
Brazil  
Chile  
Colombia  
Ecuador  
Falkland Islands  
French Guiana  
Guyana  
Paraguay  
Peru  
Surinam  
Uruguay  
Venezuela  
Belize  
Costa Rica  
El Salvador  
Guatemala  
Honduras  
Mexico  
Nicaragua  
Panama  
Antigua and Barbuda  
Bahamas  
Barbados  
Cayman Islands  
Cuba  
Grenada  
Guadeloupe  
Jamaica  
Netherlands Antilles  
Puerto Rico  
St Kitts-Nevis  
St Lucia  
St Vincent and the Grenadines  
Trinidad and Tobago  
Turks and Caicos Islands

**Eastern Europe, Russia, Central Asian and Baltic States**

Bulgaria  
Czechoslovakia  
Hungary  
Poland  
Romania  
Armenia  
Azerbaijan  
Belarus (formerly Byelorussia)  
Estonia  
Georgia  
Kazakhstan  
Kyrgyzstan (formerly Kirghizia)  
Latvia  
Lithuania  
Moldova (formerly Moldavia)  
Russian Federation  
Ukraine  
Uzbekistan

**Melanesia, Micronesia and Polynesia**

New Caledonia  
Papua New Guinea  
Solomon Islands  
Vanuatu  
Guam  
Kiribati  
Nauru  
Cook Islands  
Fiji  
French Polynesia (including Tahiti)  
Niue  
American Samoa  
Western Samoa  
Tokelau  
Tonga  
Tuvalu  
Wallis and Fortuna

**Middle East and Africa**

Bahrain  
Gaza Strip  
Iran  
Iraq  
Israel  
Jordan  
Kuwait  
Lebanon  
Qatar

Saudi Arabia  
Syria  
Turkey  
United Arab Emirates  
West Bank  
Yemen  
Algeria  
Egypt  
Libya  
Mauritania  
Morocco  
Sudan  
Tunisia  
Cameroon  
Central African Republic  
Congo  
Cote d'Ivoire  
Gambia  
Ghana  
Guinea-Bissau  
Liberia  
Mali  
Nigeria  
Senegal  
Sierra Leone  
Zaire  
Angola  
Botswana  
Djibouti  
Ethiopia  
Kenya  
Malawi  
Mauritius  
Mozambique  
Namibia  
Reunion  
Rwanda  
Seychelles  
Somalia  
Swaziland  
Tanzania  
Uganda  
Zambia  
Zimbabwe

**North East Asia**

China (excluding Taiwan)  
Hong Kong  
Japan  
North Korea  
South Korea  
Macau  
Mongolia  
Taiwan

**South East Asia**

Brunei  
Cambodia

Indonesia  
Laos  
Malaysia  
Burma (Myanmar)  
Philippines  
Singapore  
Thailand  
Vietnam

**Southern Asia**

Afghanistan  
Bangladesh  
Bhutan  
India  
Maldives  
Nepal  
Pakistan  
Sri Lanka

**Southern Europe**

Albania  
Andorra  
Cyprus  
Gibraltar  
Greece  
Italy  
Malta  
Portugal  
Spain  
Former Yugoslavia (not otherwise defined)  
Croatia  
Slovenia

**Western and Northern Europe**

Austria  
Belgium  
France  
Germany (United)  
Luxembourg  
Netherlands  
Switzerland  
Denmark  
Faeroe Islands  
Finland  
Iceland  
Norway  
Sweden