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New South Wales **Mothers and Babies** **2003**

NSW DEPARTMENT OF HEALTH

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Data collection

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NSW Birth Defects Register	Susan Travis, Christine Erratt NSW Birth Defects Register Advisory Committee NSW hospitals' midwives, doctors, and cytogenetic laboratories Medical record departments, particularly at The Children's Hospital at Westmead, The Sydney Children's Hospital and The John Hunter Hospital
Neonatal Intensive Care Units (NICUS) Data Collection	Barbara Bajuk Directors and Clinical Audit Officers of the 10 neonatal intensive care units and the four level four (non-tertiary) hospitals; liaison officers in hospitals in NSW and ACT who have provided maternal and neonatal data.
Maternal death reviews	NSW Maternal and Perinatal Committee
Perinatal death reviews	Hospital morbidity and mortality review committees Perinatal Outcomes Working Party, NSW Maternal and Perinatal Committee
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2. EXECUTIVE SUMMARY

This is the seventh 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 (NICUS), and the NSW Birth Defects Register (BDR).

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 Chapter 10 of this report.

Information on causes of maternal deaths in NSW was obtained through the work of the NSW Maternal and Perinatal Committee. From 1 January 2000, confidential reviews of perinatal deaths among babies of at least 22 weeks gestation or 500 grams birthweight are also carried out by the Committee. Chapter 11 describes the results of the review for deaths occurring in 2003.

Trends in NSW

There were 86,414 births to 85,032 women in 2003. The number of teenage mothers continues to decline, falling from 4,099 (4.8 per cent of all mothers) in 1999 to 3,386 (4.0 per cent) in 2003; while the number of mothers aged 35 years and over increased from 14,668 in 1999 to 16,447 in 2003, an increase from 17.1 to 19.3 per cent of all confinements.

About one in four mothers were born overseas in 2003, most commonly in the United Kingdom (2.8 per cent), New Zealand (2.5 per cent), Vietnam (2.2 per cent), and Lebanon (2.0 per cent).

The reported number of Aboriginal and Torres Strait Islander mothers giving birth increased slightly from 2,059 in 1999 (2.4 per cent of all mothers) to 2,161 in 2003 (2.6 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 proportion of mothers planning to give birth in a birth centre fell slightly from 3.9 per cent in 1999 to 3.7 per cent in 2003, while the reported number of mothers planning a home birth decreased from 182 to 132 over the five year period.

The rate of normal vaginal birth fell from 68.6 per cent in 1999 to 62.8 per cent in 2003. Over the five years, the caesarean section rate increased from 19.7 to 26.5 per cent and the rate of instrumental delivery remained steady at 10 to 11 per cent. Caesarean section delivery continues to be more common among privately than publicly insured mothers. The changing pattern in type of delivery is evident in both groups between 1998 and 2002. Among

privately insured mothers the rate of normal vaginal birth decreased from 58.7 to 52.4 per cent and the caesarean section rate increased from 24.9 to 32.2 per cent. Among publicly insured mothers the rate of normal vaginal birth decreased from 73.8 to 70.4 per cent and the rate of caesarean section increased from 16.8 to 20.9 per cent.

Since 1999, the rate of low birthweight (less than 2,500 grams) has been steady at about six per cent. The rate was 6.2 per cent in 2003. The percentage of babies born prematurely (less than 37 weeks gestation) has remained stable at about 7 per cent.

The perinatal mortality rate varied from 8.6 to 9.6 per 1,000 births over the five year period. About two-thirds of all perinatal deaths were stillbirths and one third were neonatal deaths.

In the period 1990–2001, 137 deaths were reported among pregnant women or women who gave birth less than six weeks previously. Ninety-two of these were classified as directly or indirectly associated with the pregnant state, while 44 were incidental (not related to pregnancy) and one was of undetermined cause.

Aboriginal and Torres Strait Islander Mothers and Babies

In 2003, 70.6 per cent of Aboriginal and Torres Strait Islander mothers commenced antenatal care before 20 weeks gestation compared with 87.0 per cent of non-Aboriginal and Torres Strait Islander mothers. About one in five Aboriginal and Torres Strait Islander mothers were teenagers. Since 1999, the rates of low birthweight (less than 2,500 grams) and prematurity (less than 37 weeks gestation) in Aboriginal and Torres Strait Islander babies have been over 10 per cent. These rates are one and a half times to two times higher than the rates for NSW overall. The perinatal mortality rate among babies born to Aboriginal and Torres Strait Islander mothers was 15.1 per 1,000 in 2003, higher than the rate of 8.4 per 1,000 experienced by babies born to non-Aboriginal or Torres Strait Islander mothers.

Neonatal Intensive Care

There were 2,098 infants registered in the Neonatal Intensive Care Units' Data Collection in 2003 representing a registration rate of 23.2 per 1,000 live births. Sixty-four (3.1 per cent) infants registered in 2003 were born to Aboriginal or Torres Strait Islander mothers.

The 2,098 infants were born to 1,933 mothers. The age of mothers ranged from 15 to 46 years with a mean of 29.8 years. Antenatal complications were reported for 87.1 per cent of mothers. The proportion of women receiving antenatal corticosteroids for lung maturation was 74.1 per cent in 2003.

Thirty-six per cent of infants registered in 2003 were born following a booked tertiary centre birth and 32.7 per cent were born following maternal transfer. Thirty-one per cent were transferred to a tertiary centre following birth and 5.3 per cent were transferred from one tertiary centre to another during the first day of life.

About two-thirds (68.2 per cent) of the infants registered in 2003 were born in a tertiary centre. There is an inverse relationship between gestational age and birth in a tertiary centre.

Boys comprised 56.1 per cent of the 2003 cohort and girls 43.9 per cent. Most infants (79.9 per cent) were from a singleton pregnancy, 17.8 per cent were from a twin pregnancy, and 2.0 per cent were from a triplet pregnancy.

Seventy-three per cent of infants registered during 2003 were preterm (less than 37 weeks gestation), 40.7 per cent were very preterm (less than 32 weeks gestation) and 11.8 per cent were extremely preterm (less than 28 weeks gestation). About one in six (17.7 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 2003 (84.7 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 preterm groups, whereas meconium aspiration and perinatal asphyxia were more common in term infants.

Proven systemic infection was present in 10.5 per cent of infants, necrotising enterocolitis in 3.7 per cent, intraventricular haemorrhage in 12.9 per cent, treated patent ductus arteriosus in 14.5 per cent, and major surgery in 3.7 per cent. Severe grades (Grade 3, 4 or 5) of retinopathy of prematurity were present in 3.8 per cent of infants less than 32 weeks gestation, of whom 61.3 per cent had either cryo- or laser therapy to prevent retinal detachment. Surfactant was given to 41.4 per cent of infants; the majority (58.7 per cent) of ventilated infants with a diagnosis of Respiratory Distress Syndrome received surfactant.

Overall, 94.3 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 (65.3 per

cent) died at less than one week of age and a further 27.7 per cent died at less than 29 days of age. The six-month survival rate for infants born at 22 to 27 weeks gestation and at term (37-41 weeks) was higher for those born in a tertiary centre compared with those born in a non-tertiary centre. Among infants born at other 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. In 1997–2003, defects of the cardiovascular system were most commonly reported, followed by defects of the musculoskeletal system and defects of the genito-urinary system. This is a similar pattern to previous years.

In 2002, the reported rate of defects in stillborn and liveborn babies was slightly lower than the previous five years combined (34.0 versus 39.6 per 1,000) due to a lower overall birth defect rate among infants.

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.

Perinatal deaths

Of the 619 perinatal deaths occurring in 2003 that were of at least 22 weeks gestation or at least 500 grams birthweight, confidential reports on 595 (96.1 per cent) were reviewed. Deaths reviewed comprised 403 stillbirths and 192 neonatal deaths.

Overall, 184 (30.9 per cent) perinatal deaths reviewed for 2003 were unexplained. The next most common obstetric antecedents of death were spontaneous preterm labour ($n=94$, 15.8 per cent), fetal abnormalities ($n=95$, 16.0 per cent), and specific perinatal conditions such as twin-to-twin transfusion and umbilical cord complications ($n=51$, 8.6 per cent). Post-mortem examinations were carried out in 32.4 per cent of all perinatal deaths.

The most common cause of neonatal death was extreme prematurity ($n=86$, 44.8 per cent), followed by congenital abnormalities ($n=37$, 19.3 per cent).

3. METHODS

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 home births. It encompasses all livebirths and stillbirths of at least 20 weeks gestation or at least 400 grams birthweight.

The MDC relies on the attending midwife or doctor 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 Performance, Analysis and Reporting Branch in the Data Collections and Quality Section of the NSW Department of Health, where they are compiled into the MDC database.

Over 66 per cent of MDC notifications are received electronically from hospital obstetric information systems. These notifications are received on disk or by email and replace the submission of the record on paper. There are several source systems that generate the MDC data. The largest source is the OBSTET database, which supplies 47.7 per cent of all MDC data, followed by: the OIS database (Central Sydney Area Health Service) 6.3 per cent; the Central Coast modified CRS System (2.9 per cent); the Illawarra Shared Care System (2.5 per cent); the Sydney Adventist Hospital database (2.7 per cent); and Medistat (1.3 per cent).

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 and four of the level four neonatal nurseries 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 32 weeks;
- birthweight less than or equal to 1,500 grams;
- mechanical ventilation for four hours or more;
- continuous positive airways pressure (CPAP) for four hours or more;
- major surgery (opening of a body cavity).

In 2003 the 10 neonatal intensive care units in NSW and ACT were situated at the following perinatal centres: John Hunter Children's Hospital (Newcastle), Royal Prince Alfred Mothers and Babies Hospital, Liverpool Health Service, Nepean Hospital, Royal Hospital for Women, Royal North Shore Hospital, The Canberra Hospital (Canberra), Westmead Hospital, and at the two paediatric hospitals: Sydney Children's Hospital and The Children's

Hospital at Westmead. The four level four neonatal nurseries that joined NICUS in 2002 are situated at Blacktown Hospital, Gosford Hospital, St George Hospital and Wollongong Hospital.

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

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 and, under *NSW Public Health Act 1991*, from 1 January 1998 doctors, hospitals, and laboratories have been required to notify birth defects detected during pregnancy, at birth, or up to one year of life. The BDR is administered by the Centre for Epidemiology and Research of the NSW Department of Health.

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 Organization.

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, midwifery, 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, Centre for Epidemiology and Research. Requests for data concerning individuals for sufficiently important research purposes will be referred to the NSW Department of

Health Ethics Committee. Procedures for release of personal information are described in the Department's *Information Privacy Code of Practice*, copies of which are available through the NSW Department of Health's World Wide Web site at 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, and, from 1998, health insurance status.

The ISC covers demographic and episode related data for 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 Performance, Analysis and Reporting Branch in the Data Collections and Quality Section of the NSW Department of Health.

NSW Maternal and Perinatal Committee

The NSW Maternal and Perinatal Committee is a quality assurance committee established under the *Health Administration Act 1982*, and is privileged under the Act to carry out confidential reviews of both maternal and perinatal deaths. Members are appointed by the Minister for Health. The committee reviews each maternal 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 committee also reviews perinatal deaths of at least 22 weeks gestation or at least 500 grams birthweight. 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.

Method for estimating level of reporting of maternal Aboriginality

The Aboriginality of the mother, rather than the baby, is reported to the MDC, although mother's Aboriginality is frequently used as a proxy measure for the baby's Aboriginality. Consequently, maternal Aboriginality was used for this analysis.

The number of births reported to Torres Strait Islander mothers is quite small in NSW. Aboriginal and Torres Strait Islander mothers were therefore combined for this analysis. For ease of reference, 'Aboriginal' is used to refer to both Aboriginal or Torres Strait Islander mothers.

Records of births reported to the MDC were linked to birth registration records of the NSW Registry of Births, Deaths and Marriages for births occurring in the 3-year period 2000–2002. Records from the two files were matched using a probabilistic linkage software (Automatch). Prior to matching, residential address and mothers' name were standardised using a standardisation software (Autostan). The overall linkage rate was 94.9 per cent of MDC records and 99.0 per cent of birth registration records.

Capture–recapture methods are used to adjust estimates of counts to reflect ascertainment level or undercounting. Capture–recapture was carried out using the method described by McCarty et al.¹ Analysis was carried out using SAS version 8.02. Analyses concerning geographic location were based on health area of hospital of birth as reported to the MDC. Home births and births for which the hospital of birth was not stated were excluded from the analysis.

References

1. McCarty DJ, Tull ES, Moy CS, Kwok CK, LaPorte RE. Ascertainment corrected rates: Applications of Capture–Recapture Methods. *Int J Epidemiol* 1993; 22(3): 559–565.

Definitions

Aboriginal and Torres Strait Islander

Women who identify themselves to be of Australian Aboriginal and Torres Strait Islander heritage.

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 0–10 (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.

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 clicky hips. From 1994, the following conditions were included in the NSW Birth Defects Register: congenital hypothyroidism, cystic fibrosis, phenylketonuria, and thalassaemia major.

Birthweight

The newborn infant's first bare weight in grams.

Low birthweight: birthweight less than 2,500 grams.

Very low birthweight: birthweight less than 1,500 grams.

Extremely low birthweight: birthweight 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. In a multiple pregnancy, one confinement will result in more than one birth.

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 oxytocic agents, prostaglandins, or their derivatives (oral, intravaginal or intravenous).

ARM only: the initiation of labour by artificial rupture of membranes.

Oxytocics–prostaglandins and ARM: both medical and surgical induction as defined above (combined medical and 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:	No ultrasound or post-mortem examination.

Livebirth

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 that requires opening of a body cavity.

Mechanical ventilation

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 liveborn 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 livebirths.

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).

Perineal status

1st degree tear:	a perineal graze–laceration–tear involving: the fourchette, hymen, labia, skin, vagina, or vulva.
2nd degree tear:	a perineal laceration or tear involving the pelvic floor or perineal muscles or vaginal muscles.
3rd degree tear:	a perineal laceration–tear involving the anal sphincter or rectovaginal septum.
4th degree tear:	a third degree perineal laceration or tear which also involves the anal mucosa or rectal mucosa.

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.

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 birthweight.

Stillbirth

The complete expulsion or extraction from its mother of a product of conception of at least 20 weeks gestation or 400 grams birthweight 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.

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 (that is, 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 that 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.

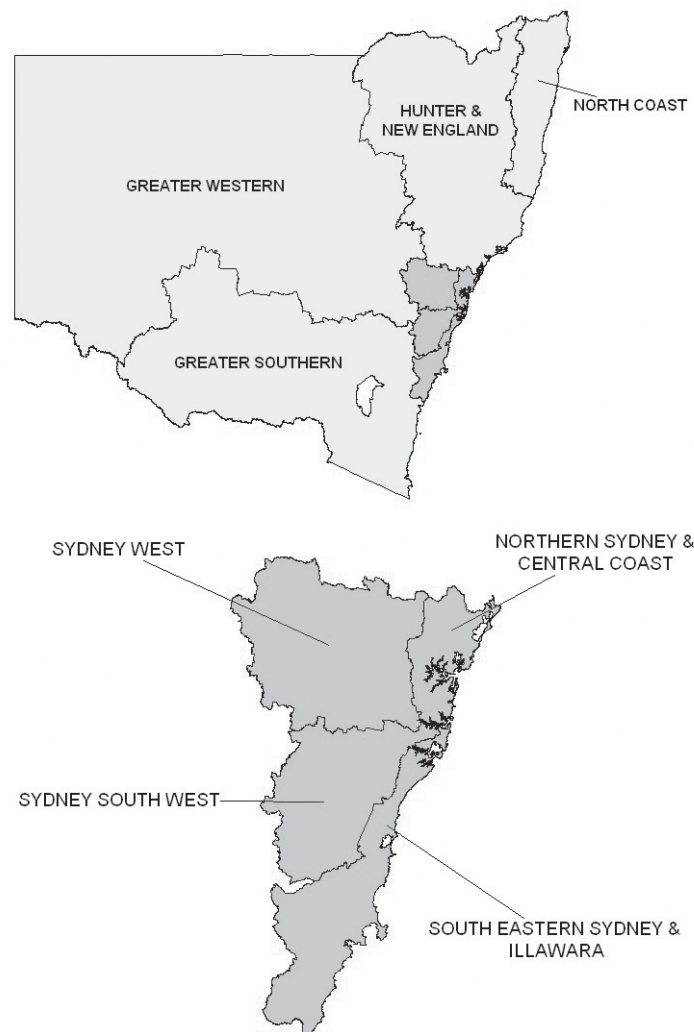
Type of delivery

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

Perinatal mortality rate

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. Birth and perinatal death registration data held by the Australian Bureau of Statistics (ABS) give the most complete ascertainment of perinatal deaths for calculation of rates.

MAP OF NSW HEALTH AREAS



4. TRENDS IN NEW SOUTH WALES

Confinements and births by plurality

There were 86,414 births to 85,032 women reported in 2003 (Table 1). Over the last five years the number of births has ranged from about 86,000 to 88,000. Between 1999 and 2003, the number of twin pregnancies remained fairly stable while the number of triplet pregnancies has declined by about one quarter.

TABLE 1

BIRTHS AND CONFINEMENTS BY PLURALITY, NSW 1999–2003

Plurality	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Confinements										
Singleton	84676	98.5	85027	98.3	82926	98.3	83190	98.3	83677	98.4
Twins	1261	1.5	1404	1.6	1428	1.7	1375	1.6	1330	1.6
Triplets	30	0.0	29	0.0	24	0.0	22	0.0	23	0.0
Quadruplets	0	0.0	0	0.0	1	0.0	0	0.0	2	0.0
Total	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0
Births										
Singleton	84676	97.0	85027	96.7	82926	96.6	83190	96.7	83677	96.8
Twins	2523	2.9	2808	3.2	2856	3.3	2749	3.2	2660	3.1
Triplets	90	0.1	87	0.1	72	0.1	66	0.1	69	0.1
Quadruplets	0	0.0	0	0.0	4	0.0	0	0.0	8	0.0
Total	87289	100.0	87922	100.0	85858	100.0	86005	100.0	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Health area of residence

In 2003, the largest number of births occurred in the Sydney South West Area, followed by Sydney West and South Eastern Sydney & Illawarra Areas (Table 2). Over the period 1999 to 2003, there has been a slight decrease in the numbers of births reported in the Hunter & New England, North Coast, and Greater Southern Areas. There has been little change in the number of births reported annually for other health areas.

TABLE 2

CONFINEMENTS BY HEALTH AREA OF RESIDENCE, NSW 1999–2003

Health Area	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Sydney South West	18844	21.9	19316	22.3	18775	22.3	19105	22.6	19485	22.9
Northern Sydney & Central Coast	12907	15.0	13204	15.3	12856	15.2	12818	15.2	13142	15.5
Sydney West	15822	18.4	15967	18.5	15763	18.7	15883	18.8	15942	18.7
Hunter & New England	10168	11.8	10105	11.7	9753	11.6	10004	11.8	9694	11.4
South Eastern Sydney & Illawarra	13841	16.1	14104	16.3	13589	16.1	13699	16.2	13898	16.3
North Coast	4954	5.8	4709	5.4	4762	5.6	4656	5.5	4587	5.4
Greater Western	4167	4.8	4135	4.8	4110	4.9	3855	4.6	3898	4.6
Greater Southern	4448	5.2	4283	5.0	4209	5.0	3969	4.7	3834	4.5
Other/Not stated	816	0.9	637	0.7	562	0.7	598	0.7	552	0.6
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

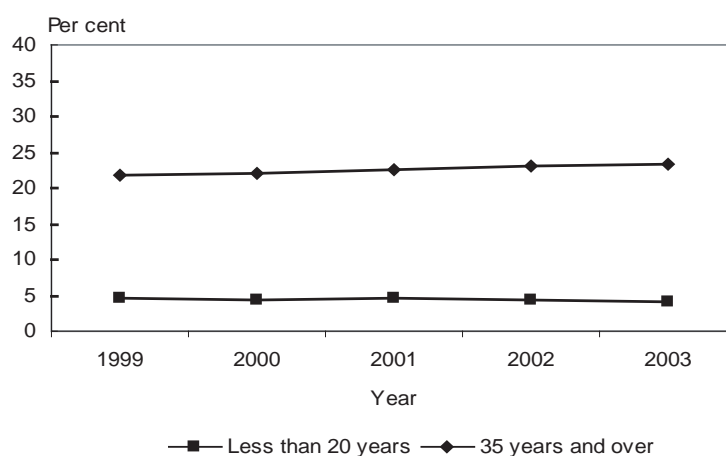
Maternal age

The number of teenage mothers decreased from 4,099 in 1999 to 3,386 in 2003, a fall from 4.8 to 4.0 per cent of all confinements; while the number of mothers 35 years of age or over increased from 14,668 in 1999 to 16,447 in 2003, an increase from 17.1 to 19.3 per cent of all confinements (Figure 1, Table 3). The mean maternal age rose from 29.6 to 30.2 years over the 5-year period.

The trend towards later childbirth is evident among both primiparous and multiparous mothers: the proportion of mothers giving birth for the first time who were aged 35 years or more increased from 10.4 to 12.3 per cent over the 5-year period, and the proportion of multiparous mothers who were aged 35 years or more increased from 21.7 to 24.5 per cent. The mean maternal age rose from 27.9 to 28.5 years for primiparous mothers and from 30.8 to 31.4 years for multiparous mothers.

FIGURE 1

CONFINEMENTS AMONG MOTHERS AGED LESS THAN 20 YEARS AND 35 YEARS AND OVER, NSW 1999–2003



Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

TABLE 3

CONFINEMENTS BY MATERNAL AGE, NSW 1999–2003

Maternal age (years)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Under 15	27	0.0	31	0.0	19	0.0	28	0.0	23	0.0
15–19	4072	4.7	3822	4.4	3778	4.5	3624	4.3	3363	4.0
20–24	13790	16.0	13316	15.4	13036	15.4	12674	15.0	12529	14.7
25–29	27678	32.2	27293	31.6	25528	30.3	24523	29.0	24138	28.4
30–34	25703	29.9	26640	30.8	26707	31.7	27810	32.9	28522	33.5
35–39	12372	14.4	12894	14.9	12640	15.0	13107	15.5	13582	16.0
40–44	2199	2.6	2342	2.7	2488	2.9	2645	3.1	2752	3.2
45+	97	0.1	98	0.1	122	0.1	120	0.1	113	0.1
Not stated	29	0.0	24	0.0	61	0.1	56	0.1	10	0.0
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Maternal country of birth

In the period 1999–2003, about 73 per cent of confinements were to mothers who were born in Australia. In 2003, mothers born in the United Kingdom, New Zealand, Vietnam, Lebanon and China together accounted for 11.3 per cent of all confinements (Table 4). Further information on maternal country of birth is shown in Chapter 7.

TABLE 4

CONFINEMENTS BY MATERNAL COUNTRY OF BIRTH, NSW 1999–2003#

Country of birth	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Australia	62555	72.8	62368	72.1	61655	73.1	61631	72.9	61430	72.2
United Kingdom	2627	3.1	2557	3.0	2331	2.8	2344	2.8	2368	2.8
New Zealand	1966	2.3	1962	2.3	2009	2.4	1998	2.4	2121	2.5
Vietnam	1804	2.1	2053	2.4	1691	2.0	1773	2.1	1863	2.2
Lebanon	1788	2.1	1766	2.0	1667	2.0	1663	2.0	1696	2.0
China	2015	2.3	2163	2.5	1791	2.1	1830	2.2	1586	1.9
Philippines	1319	1.5	1315	1.5	1243	1.5	1156	1.4	1192	1.4
India	635	0.7	643	0.7	612	0.7	747	0.9	810	1.0
Fiji	604	0.7	688	0.8	652	0.8	655	0.8	691	0.8
Iraq	414	0.5	455	0.5	577	0.7	545	0.6	648	0.8
Former Yugoslavia	662	0.8	627	0.7	607	0.7	531	0.6	571	0.7
Indonesia	460	0.5	566	0.7	494	0.6	494	0.6	489	0.6
South Africa	386	0.4	387	0.4	450	0.5	486	0.6	486	0.6
United States of America	372	0.4	377	0.4	332	0.4	346	0.4	355	0.4
Ireland	287	0.3	273	0.3	291	0.3	267	0.3	333	0.4
South Korea	370	0.4	426	0.5	358	0.4	301	0.4	328	0.4
Western Samoa	318	0.4	320	0.4	319	0.4	310	0.4	303	0.4
Hong Kong	409	0.5	357	0.4	332	0.4	307	0.4	301	0.4
Sri Lanka	295	0.3	304	0.4	291	0.3	324	0.4	299	0.4
Cambodia	303	0.4	326	0.4	285	0.3	279	0.3	295	0.3
Japan	264	0.3	252	0.3	293	0.3	283	0.3	293	0.3
Malaysia	286	0.3	319	0.4	251	0.3	262	0.3	271	0.3
Turkey	314	0.4	335	0.4	317	0.4	266	0.3	265	0.3
Pakistan	192	0.2	224	0.3	276	0.3	266	0.3	260	0.3
Thailand	207	0.2	199	0.2	221	0.3	268	0.3	253	0.3
Germany	226	0.3	204	0.2	192	0.2	188	0.2	237	0.3
Canada	185	0.2	177	0.2	203	0.2	192	0.2	225	0.3
Tonga	308	0.4	296	0.3	278	0.3	271	0.3	219	0.3
North Korea	90	0.1	140	0.2	102	0.1	151	0.2	206	0.2
Bangladesh	134	0.2	179	0.2	183	0.2	212	0.3	198	0.2
Iran	140	0.2	153	0.2	169	0.2	137	0.2	192	0.2
Chile	224	0.3	202	0.2	206	0.2	250	0.3	187	0.2
Egypt	218	0.3	196	0.2	176	0.2	160	0.2	173	0.2
Syria	145	0.2	138	0.2	150	0.2	151	0.2	154	0.2
Papua New Guinea	136	0.2	132	0.2	133	0.2	135	0.2	148	0.2
Afghanistan	120	0.1	96	0.1	147	0.2	133	0.2	143	0.2
Singapore	101	0.1	104	0.1	119	0.1	117	0.1	129	0.2
Sudan	51	0.1	57	0.1	65	0.1	69	0.1	117	0.1
Poland	123	0.1	104	0.1	92	0.1	106	0.1	116	0.1
Laos	118	0.1	136	0.2	118	0.1	128	0.2	114	0.1
Italy	221	0.3	191	0.2	139	0.2	70	0.1	106	0.1
Russian Federation	33	0.0	56	0.1	63	0.1	105	0.1	106	0.1
Argentina	87	0.1	89	0.1	89	0.1	81	0.1	106	0.1
Other/Not stated	2455	2.9	2548	2.9	2410	2.9	2599	3.1	2649	3.1
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Countries of birth for which there were 100 or more confinements in 2003.

Maternal Aboriginality

The reported number of Aboriginal or Torres Strait Islander mothers giving birth increased marginally from 2,059 in 1999 (2.4 per cent of all mothers) to 2,161 in

2003 (2.5 per cent of all mothers) (Table 5). Further information on maternal Aboriginality and reporting of Aboriginality is shown in Chapter 6.

TABLE 5

CONFINEMENTS BY MATERNAL ABORIGINALITY, NSW 1999–2003

Aboriginality	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Aboriginal or Torres Strait Islander	2059	2.4	2105	2.4	2110	2.5	2155	2.5	2161	2.5
Non-Aboriginal or Torres Strait Islander	83899	97.6	84306	97.5	82223	97.4	82383	97.4	82831	97.4
Not stated	9	0.0	49	0.1	46	0.1	49	0.1	40	0.0
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

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). The proportion of mothers giving birth for the first time has been stable at 41 to 42

per cent, while the proportion of mothers giving birth to a second to fifth baby has been stable at about 57 per cent. Less than 2 per cent of mothers have previously given birth 5 times or more.

TABLE 6

CONFINEMENTS BY NUMBER OF PREVIOUS PREGNANCIES, NSW 1999–2003

Number of previous pregnancies (>20 weeks gestation)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
0	35311	41.1	35953	41.6	35153	41.7	35035	41.4	35879	42.2
1–4	49432	57.5	49146	56.8	47850	56.7	48169	56.9	47847	56.3
5+	1206	1.4	1331	1.5	1329	1.6	1290	1.5	1258	1.5
Not stated	18	0.0	30	0.0	47	0.1	93	0.1	48	0.1
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Duration of pregnancy at first antenatal visit

Since 1999, the proportion of mothers starting antenatal care at 20-plus weeks gestation has been stable at 12–13 per cent (Table 7).

TABLE 7

CONFINEMENTS BY DURATION OF PREGNANCY AT FIRST ANTENATAL VISIT, NSW 1999–2003

Duration of pregnancy (weeks)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
0–19	74077	86.2	74803	86.5	72704	86.2	73116	86.4	73615	86.6
20-plus	10979	12.8	10748	12.4	10878	12.9	10614	12.5	10929	12.9
Not stated	911	1.1	909	1.1	797	0.9	857	1.0	488	0.6
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Smoking in pregnancy

The proportion of mothers reporting any smoking during pregnancy declined between 1999 and 2003: in 1999, 16,302 (19.0 per cent) mothers reported smoking in pregnancy, compared to 15,001 (17.4 per cent) in 2000, 14,424 (17.1 per cent) in 2001, 13,829 (16.3 per cent) in 2002 and 12,875 (15.1 per cent) in 2003.

Of mothers who smoked during pregnancy in 2003, 3.3 per cent stopped smoking before the second half of pregnancy. Over the five year period, among those who smoked in the second half of pregnancy, there was a trend towards smoking fewer cigarettes per day (Table 8).

TABLE 8

MOTHERS WHO SMOKED AT ALL DURING PREGNANCY BY NUMBER OF CIGARETTES SMOKED IN THE SECOND HALF OF PREGNANCY, NSW 1999–2003

Cigarettes smoked in the second half of pregnancy	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
None	739	4.5	622	4.1	576	4.0	556	4.0	427	3.3
1–10 per day	7303	44.8	7092	47.3	6834	47.4	6639	48.0	6451	50.1
More than ten per day	7966	48.9	7005	46.7	6725	46.6	6347	45.9	5680	44.1
Smoked, amount not stated	294	1.8	282	1.9	289	2.0	279	2.0	317	2.5
Not stated	0	0.0	0	0.0	0	0.0	8	0.1	0	0.0
TOTAL	16302	100.0	15001	100.0	14424	100.0	13829	100.0	12875	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Place of birth

In 2003, the majority of mothers planned to give birth in a hospital labour ward, and 3.7 per cent of mothers planned to give birth in a birth centre (Table 9). About two-thirds of mothers who planned to give birth in a birth centre actually did so. The number of reported planned homebirths declined from 182 in 1999 to 132 in 2003.

TABLE 9

CONFINEMENTS BY PLACE OF BIRTH, NSW 1999–2003

Place of birth	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Hospital	82103	95.5	82782	95.7	80984	96.0	81230	96.0	81441	95.8
Birth centre	2249	2.6	2205	2.6	2038	2.4	2030	2.4	2075	2.4
Planned birth centre/ hospital admission	1070	1.2	959	1.1	822	1.0	881	1.0	1029	1.2
Planned homebirth	139	0.2	108	0.1	144	0.2	99	0.1	109	0.1
Planned homebirth/ hospital admission	43	0.1	38	0.0	38	0.0	31	0.0	23	0.0
Born before arrival	363	0.4	366	0.4	353	0.4	316	0.4	355	0.4
Not stated	0	0.0	2	0.0	0	0.0	0	0.0	0	0.0
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Hypertension and diabetes

In 2003, pre-eclampsia was reported in 5.5 per cent of mothers, a slight fall from 7.2 per cent in 1999. Essential hypertension was reported in about 1 per cent of mothers, a rate that has not changed substantially over the last five years (Table 10).

In 2003, gestational diabetes was reported in 4.5 per cent of mothers, rising from 3.8 per cent reported in 1999, while rates of diabetes mellitus have remained stable at about 0.5 per cent over the five-year period.

TABLE 10

CONFINEMENTS BY PRESENCE OF HYPERTENSION OR DIABETES, NSW 1999–2003

Condition	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Diabetes mellitus	363	0.4	392	0.5	404	0.5	462	0.5	505	0.6
Gestational diabetes	3254	3.8	3386	3.9	3213	3.8	3693	4.4	3792	4.5
Essential hypertension	816	0.9	858	1.0	823	1.0	940	1.1	879	1.0
Pre-eclampsia	6194	7.2	6082	7.0	5360	6.4	4839	5.7	4645	5.5
TOTAL CONFINEMENTS	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Labour

The rate of spontaneous onset of labour fell from 65.4 per cent in 1999 to 60.4 per cent in 2003 (Table 11). Nine per cent of labours were augmented with oxytocics or prostaglandins in 2003. The rate of induction of labour was 24.5 per cent in 2003, similar to previous years. The

most common reported reason for induction of labour in 2003 was prolonged pregnancy (41 or more weeks) (34.7 per cent), followed by hypertensive disease (11.1 per cent), prelabour rupture of membranes (10.7 per cent), suspected intrauterine growth retardation (4.0 per cent), diabetes (3.9 per cent) and fetal death (0.9 per cent).

TABLE 11

CONFINEMENTS BY ONSET AND AUGMENTATION OF LABOUR, NSW 1999–2003

Onset of labour	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous	39706	46.2	40042	46.3	37492	44.4	37615	44.5	38110	44.8
Spontaneous augmented with ARM	7844	9.1	7014	8.1	6684	7.9	6422	7.6	5992	7.0
Spontaneous augmented with oxytocics–prostaglandins	8657	10.1	9050	10.5	8297	9.8	7644	9.0	7258	8.5
No labour	9147	10.6	9926	11.5	10986	13.0	11720	13.9	12820	15.1
Induced–oxytocics–prostaglandins	7626	8.9	7493	8.7	7422	8.8	7414	8.8	7265	8.5
Induced–ARM only	1305	1.5	1196	1.4	1181	1.4	1193	1.4	1331	1.6
Induced–ARM+oxytocics–prostaglandins	11527	13.4	11516	13.3	12033	14.3	12262	14.5	11965	14.1
Induced–other#	154	0.2	215	0.2	277	0.3	305	0.4	289	0.3
Not stated	1	0.0	8	0.0	7	0.0	12	0.0	2	0.0
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

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

Delivery

The rate of normal vaginal birth decreased from 68.6 per cent in 1999 to 62.8 per cent in 2003 (Table 12). The caesarean section rate increased from 19.7 to 26.5 per cent. The rate of instrumental delivery remained steady at 10 to 11 per cent, accompanied by a change in the pattern of instrumental delivery: the rate of vacuum extraction rose from 6.0 to 6.8 per cent and the rate of forceps delivery declined from 4.9 to 3.4 per cent.

Operative and instrumental deliveries are more common among privately than publicly insured mothers (Table 13). Among privately insured mothers the rate of normal vaginal birth fell from 58.7 to 52.4 per cent and the caesarean section rate increased from 24.9 to 32.2 per cent. Among publicly insured mothers the rate of normal vaginal birth fell from 73.8 to 70.4 per cent and the caesarean section rate rose from 16.8 to 20.9 per cent.

TABLE 12

CONFINEMENTS BY TYPE OF DELIVERY, NSW 1999–2003

Type of delivery	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Normal vaginal	58951	68.6	58049	67.1	55206	65.4	54271	64.2	53424	62.8
Forceps	4190	4.9	3904	4.5	3398	4.0	3034	3.6	2875	3.4
Vacuum extraction	5152	6.0	5367	6.2	5499	6.5	5855	6.9	5788	6.8
Vaginal breech	762	0.9	669	0.8	383	0.5	353	0.4	371	0.4
Elective caesarean section	9147	10.6	9926	11.5	10986	13.0	11720	13.9	12820	15.1
Emergency caesarean section#	7765	9.0	8530	9.9	8894	10.5	9335	11.0	9744	11.5
Not stated	0	0.0	15	0.0	13	0.0	19	0.0	10	0.0
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Emergency caesarean section includes caesarean sections where the onset of labour was not stated.

TABLE 13

CONFINEMENTS BY HEALTH INSURANCE STATUS AND TYPE OF DELIVERY, NSW 1998–2002

Insurance status–type of delivery	1998		1999		Year 2000		2001		2002	
	No.	%	No.	%	No.	%	No.	%	No.	%
Public										
Normal vaginal	43988	73.8	44683	72.8	43462	71.8	39541	71.3	38228	70.4
Forceps	2358	4.0	2437	4.0	2191	3.6	1673	3.0	1430	2.6
Vacuum extraction	2644	4.4	3173	5.2	3100	5.1	2868	5.2	2995	5.5
Vaginal breech	615	1.0	601	1.0	505	0.8	286	0.5	253	0.5
Elective caesarean section	5030	8.4	5242	8.5	5594	9.2	5658	10.2	5854	10.8
Emergency caesarean section#	4987	8.4	5263	8.6	5627	9.3	5438	9.8	5512	10.2
Not stated	13	0.0	0	0.0	12	0.0	3	0.0	7	0.0
TOTAL	59635	100.0	61399	100.0	60491	100.0	55467	100.0	54279	100.0
Private										
Normal vaginal	14304	58.7	13674	57.6	13652	55.5	14715	53.6	15261	52.4
Forceps	2077	8.5	1728	7.3	1669	6.8	1684	6.1	1578	5.4
Vacuum extraction	1767	7.2	1953	8.2	2199	8.9	2558	9.3	2801	9.6
Vaginal breech	158	0.6	134	0.6	135	0.5	76	0.3	82	0.3
Elective caesarean section	3695	15.2	3810	16.0	4159	16.9	5114	18.6	5689	19.5
Emergency caesarean section#	2365	9.7	2443	10.3	2762	11.2	3300	12.0	3683	12.7
Not stated	10	0.0	0	0.0	3	0.0	10	0.0	12	0.0
TOTAL##	24376	100.0	23742	100.0	24579	100.0	27457	100.0	29106	100.0
TOTAL##										
Normal vaginal	59097	69.5	58951	68.6	58049	67.1	55206	65.4	54271	64.2
Forceps	4478	5.3	4190	4.9	3904	4.5	3398	4.0	3034	3.6
Vacuum extraction	4453	5.2	5152	6.0	5367	6.2	5499	6.5	5855	6.9
Vaginal breech	805	0.9	762	0.9	669	0.8	383	0.5	353	0.4
Elective caesarean section	8800	10.3	9147	10.6	9926	11.5	10986	13.0	11720	13.9
Emergency caesarean section#	7416	8.7	7765	9.0	8530	9.9	8894	10.5	9335	11.0
Not stated	23	0.0	0	0.0	15	0.0	13	0.0	19	0.0
TOTAL	85072	100.0	85967	100.0	86460	100.0	84379	100.0	84587	100.0

Source: Linked data of the NSW Midwives Data Collection and NSW Inpatient Statistics Collection. Centre for Epidemiology and Research, NSW Department of Health.

Emergency caesarean section includes caesarean sections where the onset of labour was not stated.

Total includes confinements where type of health insurance was not stated.

Pain relief

There has been a trend towards increased use of spinal anaesthetics, from 4.9 per cent in 1999 to 12.6 per cent in 2003. The proportion of mothers having no pain relief during labour or delivery decreased from 13.3 per cent in 1999 to 10.5 per cent in 2003 (Table 14). In 2003, almost one half (46.5 per cent) of all mothers used nitrous oxide for pain relief, 27.7 per cent had an epidural anaesthetic, and 24.8 per cent received intra-muscular narcotics.

TABLE 14

CONFINEMENTS BY TYPE OF PAIN RELIEF, NSW 1999–2003

Type of pain relief [#]	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Epidural	24289	28.3	25728	29.8	24572	29.1	23543	27.8	23569	27.7
General anaesthetic	4735	5.5	4753	5.5	4866	5.8	4811	5.7	4636	5.5
IM Narcotics	22800	26.5	22654	26.2	21451	25.4	21038	24.9	21083	24.8
Nitrous Oxide	42361	49.3	42303	48.9	40964	48.5	40729	48.2	39504	46.5
Spinal	4179	4.9	5248	6.1	6677	7.9	8672	10.3	10698	12.6
Nil	11468	13.3	10518	12.2	9674	11.5	9163	10.8	8896	10.5
TOTAL CONFINEMENTS	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

More than one type of pain relief may be used.

Baby sex

There were no significant changes in the pattern of baby sex since 1999, with slightly more male babies born than females in each year. In 2003, 44,623 (51.6 per cent) of babies were male, 41,722 (48.3 per cent) were female, 19 were of indeterminate sex, and sex was not reported for 50 babies. This compares with babies born in 1999, when 44,805 (51.3 per cent) of 87,289 babies were male, 42,473 (48.7 per cent) were female, 10 were of indeterminate sex, and sex was not reported for 1 baby.

Gestational age

In 2003, 7.0 per cent of babies were born prematurely (less than 37 weeks gestation), similar to the rate of 7.1 per cent in 1999 (Table 15). Over the five-year period, about 90 per cent of babies were born at term (37-41 weeks gestation), and about 2 per cent were postmature (41-plus weeks gestation).

TABLE 15

BIRTHS BY GESTATIONAL AGE, NSW 1999–2003

Gestational age (weeks)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
<20	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0
20–27	585	0.7	623	0.7	628	0.7	594	0.7	585	0.7
28–31	625	0.7	663	0.8	667	0.8	612	0.7	639	0.7
32–36	5026	5.8	5114	5.8	4890	5.7	4865	5.7	4810	5.6
37–41	79114	90.6	79368	90.3	77566	90.3	77865	90.5	78241	90.5
42+	1932	2.2	2148	2.4	2093	2.4	2047	2.4	2128	2.5
Not stated	7	0.0	6	0.0	14	0.0	21	0.0	10	0.0
TOTAL	87289	100.0	87922	100.0	85858	100.0	86005	100.0	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Birthweight

Since 1999, the rate of low birthweight (less than 2,500 grams) has been about six per cent (Table 16). The rate was 6.2 per cent in 2003.

TABLE 16

BIRTHS BY BIRTHWEIGHT, NSW 1999–2003

Birthweight (grams)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 500	212	0.2	228	0.3	243	0.3	212	0.2	223	0.3
500-999	391	0.4	425	0.5	416	0.5	399	0.5	393	0.5
1000-1499	509	0.6	546	0.6	526	0.6	469	0.5	497	0.6
1500-1999	1076	1.2	1079	1.2	1043	1.2	1083	1.3	1049	1.2
2000-2499	3353	3.8	3383	3.8	3283	3.8	3344	3.9	3221	3.7
2500-2999	12942	14.8	12819	14.6	12783	14.9	12838	14.9	12877	14.9
3000-3499	30978	35.5	30647	34.9	30312	35.3	30504	35.5	30803	35.6
3500-3999	27173	31.1	27483	31.3	26542	30.9	26676	31.0	26982	31.2
4000-4499	9002	10.3	9454	10.8	9060	10.6	8921	10.4	8810	10.2
4500+	1629	1.9	1811	2.1	1607	1.9	1509	1.8	1507	1.7
Not stated	24	0.0	47	0.1	43	0.1	50	0.1	52	0.1
TOTAL	87289	100.0	87922	100.0	85858	100.0	86005	100.0	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Apgar score

In 2003, 2.0 per cent of babies were born with an Apgar score of less than seven at five minutes and 1.0 per cent were born with a score less than four (Table 17). These rates are similar to those of previous years.

TABLE 17

BIRTHS BY APGAR SCORE AT FIVE MINUTES, NSW 1999–2003[#]

Apgar score	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
0-4	996	1.1	1043	1.2	922	1.1	902	1.0	899	1.0
5-6	1098	1.3	956	1.1	938	1.1	893	1.0	865	1.0
7+	85028	97.4	85756	97.5	83797	97.6	84033	97.7	84473	97.8
Not stated	167	0.2	167	0.2	201	0.2	177	0.2	177	0.2
TOTAL	87289	100.0	87922	100.0	85858	100.0	86005	100.0	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Includes stillbirths and live births.

Special care and neonatal intensive care

In 2003, 15.0 per cent of babies were admitted to special care units and 2.6 per cent were admitted to neonatal intensive care units (Table 18). These rates are similar to previous years.

TABLE 18

BIRTHS BY ADMISSION TO SPECIAL CARE OR NEONATAL INTENSIVE CARE UNITS, NSW 1999–2003

Unit of admission	Year									
	1999		2000		2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Special care unit	14430	16.5	13842	15.7	12900	15.0	12740	14.8	12926	15.0
Neonatal intensive care unit	2306	2.6	2147	2.4	2190	2.6	2196	2.6	2277	2.6
TOTAL	87289	100.0	87922	100.0	85858	100.0	86005	100.0	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Perinatal outcome

In the period 1999–2003 the perinatal mortality rate varied from 8.6 to 9.6 per 1,000 (Table 19). In 2003, 70.3 per cent of all reported perinatal deaths were stillbirths and 29.7 per cent were neonatal deaths.

In 2003, of the 744 perinatal deaths in NSW, 718 (96.5 per cent) were reported among planned hospital births, 13 (1.7 per cent) among planned birth centre births, 2 occurred among planned home births, and 11 were among babies born before arrival at hospital.

TABLE 19

BIRTHS BY PERINATAL OUTCOME, NSW 1999–2003[#]

Year	Liveborn surviving		Stillborn		Perinatal Outcome Neonatal death		Not stated		Total births		Perinatal mortality rate/1,000 births
	No.	%	No.	%	No.	%	No.	%	No.	%	
	1999	86473	99.1	533	0.6	266	0.3	17	0.0	87289	
2000	87076	99.0	595	0.7	247	0.3	4	0.0	87922	100.0	9.6
2001	85063	99.1	538	0.6	251	0.3	6	0.0	85858	100.0	9.2
2002	85222	99.1	515	0.6	233	0.3	35	0.0	86005	100.0	8.7
2003	85669	99.1	523	0.6	221	0.3	1	0.0	86414	100.0	8.6

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] 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.

Maternal deaths

In the period 1990–2001, 137 deaths were reported among pregnant women or women who gave birth less than six weeks previously. Of these, 44 (32.1 per cent) died of incidental causes not related to the pregnancy or its management; 63 (46.0 per cent) deaths were found to be directly due to pregnancy or its management; 29 (21.2

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; and there was one death for which the cause was not determined (Table 20). Table 21 shows maternal deaths by cause in NSW for 2001.

TABLE 20

MATERNAL DEATHS BY YEAR, NSW 1990–2002[#]

Year	Direct		Indirect		Classification Total Direct & Indirect		Incidental		TOTAL	
	No.	Ratio/ 100,000	No.	Ratio/ 100,000	No.	Ratio/ 100,000	No.	Ratio/ 100,000	No.	Ratio/ 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	7	8.1	2	2.3	9	10.5	5	5.8	14	16.1
1998	4	4.7	4	4.7	8	9.4	3	3.5	11	12.9
1999 ^{##}	4	4.7	1	1.2	5	5.8	6	7.0	12	14.0
2000	4	4.7	5	5.9	9	10.7	1	1.2	10	11.9
2001	4	4.7	4	4.7	8	9.5	1	1.2	9	10.7
2002 ^{###}									6	7.1

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. Incidental deaths are those where the pregnancy is unlikely to have contributed significantly to the death.¹

Total for 1999 includes one death of undetermined cause

Classification incomplete for 2002.

TABLE 21

MATERNAL DEATHS BY CAUSE, NSW 2001[#]

Classification	Cause	No.
Direct	Pulmonary embolus following deep vein thrombosis	1
Direct	Suppurative basal meningitis	1
Direct	<i>Strep. Pyogenes</i> septicemia	1
Direct	Amniotic fluid embolism	1
Indirect	Intracerebral haemorrhage	1
Indirect	Myocarditis	1
Indirect	Aortic dissection	1
Indirect	Intra-cerebral haemorrhage due to rupture of vascular malformation	1
Incidental	Multiple injuries following motor vehicle accident	1
TOTAL		9

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.¹ Incidental deaths are those where the pregnancy is unlikely to have contributed significantly to the death.

Reference

1. Slaytor EK, Sullivan EA, King JF. *Maternal deaths in Australia 1997-1999*. AIHW Catalogue no. PER 24. Sydney: AIHW National Perinatal Statistics Unit, 2004.

5. 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 Chapters 6 and 7 respectively.

Confinements

The largest numbers of confinements in 2003 were among mothers resident in the Sydney South West (19,485, 22.9 per cent), followed by Sydney West (15,942, 18.7 per cent) and South Eastern Sydney & Illawarra (13,898, 16.3 per cent) Areas (Table 22).

Maternal age

The proportion of women giving birth at less than 20 years of age varied from 1.6 per cent in the Northern Sydney & Central Coast Area to 8.5 per cent in the Greater Western Area, while the proportion of mothers giving birth at 35 years of age or more ranged from 12.7 per cent in the Greater Western Area to 28.4 per cent in the Northern Sydney & Central Coast Area (Table 22).

Maternal country of birth

Seventy-nine per cent of women who gave birth in NSW in 2003 were born in English speaking countries, 10.9 per cent were born in Asian countries, and 4.6 per cent were born in the Middle East or Africa (Table 23).

The highest proportions of mothers born in non-English speaking countries were in the Sydney South West and Sydney West Areas. In Sydney South West, the majority of mothers born in non-English speaking countries were born in South East Asia and the Middle East, Europe and Africa. In Sydney West, the most common maternal countries of birth were the Middle East, Europe and Africa, and South East Asian countries.

Maternal Aboriginality

In 2003, 2.5 per cent of mothers were reported to be Aboriginal or Torres Strait Islander (Table 24). The proportion of Aboriginal or Torres Strait Islander mothers varied from 0.6 per cent in the Northern Sydney & Central Coast Area to 12.6 per cent in the Greater Western Area.

TABLE 22

CONFINEMENTS BY MATERNAL AGE AND HEALTH AREA OF RESIDENCE, NSW 2003

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.	%	No.	%	No.	%
Sydney South West	643	3.3	3059	15.7	5761	29.6	6261	32.1	3077	15.8	662	3.4	18	0.1	4	0.0	19485	100.0
Northern Sydney & Central Coast	212	1.6	999	7.6	2820	21.5	5379	40.9	3118	23.7	584	4.4	30	0.2	0	0.0	13142	100.0
Sydney West	640	4.0	2594	16.3	5035	31.6	5074	31.8	2142	13.4	441	2.8	16	0.1	0	0.0	15942	100.0
Hunter & New England	584	6.0	1865	19.2	2947	30.4	2955	30.5	1122	11.6	215	2.2	6	0.1	0	0.0	9694	100.0
South Eastern Sydney & Illawarra	355	2.6	1451	10.4	3690	26.6	5190	37.3	2650	19.1	529	3.8	29	0.2	4	0.0	13898	100.0
North Coast	322	7.0	909	19.8	1365	29.8	1302	28.4	555	12.1	130	2.8	4	0.1	0	0.0	4587	100.0
Greater Western	333	8.5	823	21.1	1169	30.0	1080	27.7	394	10.1	97	2.5	2	0.1	0	0.0	3898	100.0
Greater Southern	263	6.9	731	19.1	1178	30.7	1130	29.5	439	11.5	85	2.2	8	0.2	0	0.0	3834	100.0
Other/Not stated	34	6.2	98	17.8	173	31.3	151	27.4	85	15.4	9	1.6	0	0.0	2	0.4	552	100.0
TOTAL	3386	4.0	12529	14.7	24138	28.4	28522	33.5	13582	16.0	2752	3.2	113	0.1	10	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

TABLE 23
CONFINEMENTS BY MATERNAL COUNTRY OF BIRTH AND HEALTH AREA OF RESIDENCE, NSW 2003[#]

Health Area	Country of birth group																				TOTAL	
	English speaking		Central & South America		Melanesia, Southern Europe & Polynesia				Western Europe Northern Europe		Eastern & Russia, Central Asian & Baltic States		Middle East Europe, & Africa		South East Asia		North East Asia		Southern Asia			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		No.
Sydney South West	11921	61.3	295	1.5	693	3.6	451	2.3	118	0.6	121	0.6	1939	10.0	2540	13.1	858	4.4	497	2.6	19433	100.0
Northern Sydney & Central Coast	11097	84.5	97	0.7	120	0.9	98	0.7	204	1.6	75	0.6	220	1.7	386	2.9	625	4.8	211	1.6	13133	100.0
Sydney West	11430	71.8	114	0.7	489	3.1	178	1.1	79	0.5	104	0.7	1189	7.5	915	5.7	641	4.0	775	4.9	15914	100.0
Hunter & New England	9354	96.5	11	0.1	40	0.4	26	0.3	45	0.5	9	0.1	34	0.4	108	1.1	40	0.4	23	0.2	9690	100.0
South Eastern Sydney & Illawarra	11091	80.2	150	1.1	148	1.1	264	1.9	148	1.1	157	1.1	466	3.4	603	4.4	603	4.4	195	1.4	13825	100.0
North Coast	4415	96.3	11	0.2	12	0.3	9	0.2	30	0.7	4	0.1	15	0.3	58	1.3	15	0.3	15	0.3	4584	100.0
Greater Western	3811	97.8	5	0.1	5	0.1	7	0.2	12	0.3	11	0.3	3	0.1	19	0.5	16	0.4	7	0.2	3896	100.0
Greater Southern	3682	96.0	7	0.2	32	0.8	7	0.2	18	0.5	2	0.1	11	0.3	35	0.9	18	0.5	22	0.6	3834	100.0
Other/Not stated	519	94.2	2	0.4	6	1.1	0	0.0	6	1.1	3	0.5	2	0.4	9	1.6	3	0.5	1	0.2	551	100.0
TOTAL	67320	79.3	692	0.8	1545	1.8	1040	1.2	660	0.8	486	0.6	3879	4.6	4673	5.5	2819	3.3	1746	2.1	84860	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

Excludes 172 mothers for which country of birth was not stated. Maternal countries of birth and country of birth groups are shown in Appendix 3.

TABLE 24
CONFINEMENTS BY MATERNAL ABORIGINALITY AND HEALTH AREA OF RESIDENCE, NSW 2003

Health Area	Aboriginal Torres Strait Islander		Aboriginality Non-Aboriginal Torres Strait Islander		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%
	Sydney South West	160	0.8	19318	99.1	7	0.0	19485
Northern Sydney & Central Coast	82	0.6	13056	99.3	4	0.0	13142	100.0
Sydney West	237	1.5	15705	98.5	0	0.0	15942	100.0
Hunter & New England	514	5.3	9178	94.7	2	0.0	9694	100.0
South Eastern Sydney & Illawarra	178	1.3	13698	98.6	22	0.2	13898	100.0
North Coast	304	6.6	4281	93.3	2	0.0	4587	100.0
Greater Western	493	12.6	3404	87.3	1	0.0	3898	100.0
Greater Southern	170	4.4	3663	95.5	1	0.0	3834	100.0
Other/Not stated	23	4.2	528	95.7	1	0.2	552	100.0
TOTAL	2161	2.5	82831	97.4	40	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

Duration of pregnancy at first antenatal visit

In 2003, 86.6 per cent of mothers commenced antenatal care prior to 20 weeks gestation. This percentage varied from 79.8 per cent in the Sydney South West Area to 94.6 per cent in the Northern Sydney and Central Coast Area (Table 25).

TABLE 25

CONFINEMENTS BY DURATION OF PREGNANCY AT FIRST ANTENATAL CHECK AND HEALTH AREA OF RESIDENCE, NSW 2003

Health Area	Duration of pregnancy at first antenatal visit						TOTAL			
	No.	0-19	%	No.	20-plus	%	No.	%		
Sydney South West	15551	79.8		3848	19.7		86	0.4	19485	100.0
Northern Sydney & Central Coast	12435	94.6		682	5.2		25	0.2	13142	100.0
Sydney West	13039	81.8		2816	17.7		87	0.5	15942	100.0
Hunter & New England	8463	87.3		1137	11.7		94	1.0	9694	100.0
South Eastern Sydney & Illawarra	12498	89.9		1317	9.5		83	0.6	13898	100.0
North Coast	4102	89.4		445	9.7		40	0.9	4587	100.0
Greater Western	3536	90.7		318	8.2		44	1.1	3898	100.0
Greater Southern	3504	91.4		312	8.1		18	0.5	3834	100.0
Other/Not stated	487	88.2		54	9.8		11	2.0	552	100.0
TOTAL	73615	86.6		10929	12.9		488	0.6	85032	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

Smoking in pregnancy

In 2003, 14.6 per cent of mothers reported smoking in the second half of pregnancy (Table 26). The lowest reported rate was among mothers resident in the Northern Sydney & Central Coast Area (8.8 per cent) and the highest rate among residents of the Greater Western Area (29.3 per cent).

TABLE 26

CONFINEMENTS BY NUMBER OF CIGARETTES SMOKED IN THE SECOND HALF OF PREGNANCY, NSW 2003

Health Area	None		Cigarettes smoked in the second half of pregnancy				Not stated		TOTAL			
	No.	%	1-10 per day	%	More than ten per day	%	Smoked/amount not stated	%	No.	%		
Sydney South West	17455	89.6	1059	5.4	905	4.6	64	0.3	2	0.0	19485	100.0
Northern Sydney & Central Coast	11986	91.2	660	5.0	461	3.5	33	0.3	2	0.0	13142	100.0
Sydney West	13631	85.5	1190	7.5	1062	6.7	59	0.4	0	0.0	15942	100.0
Hunter & New England	7518	77.6	1002	10.3	1120	11.6	53	0.5	1	0.0	9694	100.0
South Eastern Sydney & Illawarra	12455	89.6	877	6.3	511	3.7	43	0.3	12	0.1	13898	100.0
North Coast	3450	75.2	582	12.7	515	11.2	40	0.9	0	0.0	4587	100.0
Greater Western	2757	70.7	541	13.9	586	15.0	14	0.4	0	0.0	3898	100.0
Greater Southern	2905	75.8	468	12.2	451	11.8	10	0.3	0	0.0	3834	100.0
Other/Not stated	410	74.3	72	13.0	69	12.5	1	0.2	0	0.0	552	100.0
TOTAL	72567	85.3	6451	7.6	5680	6.7	317	0.4	17	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

Place of birth

Ninety-six per cent of mothers chose to deliver in a hospital delivery suite in 2003, compared to 3.7 per cent who planned a birth centre birth and 0.2 per cent who planned a home birth (Table 27). Planned birth centre births were most commonly reported in the Sydney South West and South Eastern Sydney & Illawarra Areas.

Labour

In 2003, the onset of labour was spontaneous in 60.4 per cent of confinements (Table 28). Labour was induced in 24.5 per cent of confinements and no labour (elective caesarean section) was reported in 15.1 per cent. The rate of spontaneous onset of labour was highest among residents of the North Coast Area (62.8 per cent). The highest rate of induction of labour was among residents of the Hunter & New England Area (25.9 per cent).

TABLE 27

CONFINEMENTS BY PLACE OF BIRTH AND HEALTH AREA OF RESIDENCE, NSW 2003

Health Area	Hospital		Birth centre		Planned birth centre—hospital admission		Place of birth Planned home birth		Planned home birth—hospital admission		Born before arrival		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	Sydney South West	18530	95.1	624	3.2	229	1.2	16	0.1	5	0.0	81	0.4	19485
Northern Sydney & Central Coast	12913	98.3	105	0.8	54	0.4	19	0.1	5	0.0	46	0.4	13142	100.0
Sydney West	15161	95.1	337	2.1	352	2.2	15	0.1	1	0.0	76	0.5	15942	100.0
Hunter & New England	9054	93.4	544	5.6	50	0.5	1	0.0	2	0.0	43	0.4	9694	100.0
South Eastern Sydney & Illawarra	13076	94.1	454	3.3	299	2.2	30	0.2	3	0.0	36	0.3	13898	100.0
North Coast	4504	98.2	4	0.1	18	0.4	18	0.4	5	0.1	38	0.8	4587	100.0
Greater Western	3853	98.8	4	0.1	19	0.5	2	0.1	0	0.0	20	0.5	3898	100.0
Greater Southern	3805	99.2	3	0.1	6	0.2	5	0.1	1	0.0	14	0.4	3834	100.0
Other/Not stated	545	98.7	0	0.0	2	0.4	3	0.5	1	0.2	1	0.2	552	100.0
TOTAL	81441	95.8	2075	2.4	1029	1.2	109	0.1	23	0.0	355	0.4	85032	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

TABLE 28

CONFINEMENTS BY onset and augmentation of labour and HEALTH AREA OF RESIDENCE, NSW 2003

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.	%
	Sydney South West	9327	47.9	944	4.8	1904	9.8	2646	13.6	2075	10.6	254	1.3	2252	11.6	82	0.4	1	0.0	19485
Northern Sydney & Central Coast	5174	39.4	842	6.4	1302	9.9	2519	19.2	920	7.0	187	1.4	2164	16.5	34	0.3	0	0.0	13142	100.0
Sydney West	7526	47.2	988	6.2	1293	8.1	2151	13.5	976	6.1	168	1.1	2786	17.5	54	0.3	0	0.0	15942	100.0
Hunter & New England	4485	46.3	737	7.6	584	6.0	1381	14.2	836	8.6	219	2.3	1407	14.5	45	0.5	0	0.0	9694	100.0
South Eastern Sydney & Illawarra	5895	42.4	1032	7.4	1312	9.4	2256	16.2	1151	8.3	214	1.5	1980	14.2	57	0.4	1	0.0	13898	100.0
North Coast	1975	43.1	583	12.7	324	7.1	649	14.1	412	9.0	99	2.2	539	11.8	6	0.1	0	0.0	4587	100.0
Greater Western	1753	45.0	423	10.9	261	6.7	580	14.9	337	8.6	78	2.0	461	11.8	5	0.1	0	0.0	3898	100.0
Greater Southern	1728	45.1	384	10.0	235	6.1	555	14.5	513	13.4	99	2.6	314	8.2	6	0.2	0	0.0	3834	100.0
Other/Not stated	247	44.7	59	10.7	43	7.8	83	15.0	45	8.2	13	2.4	62	11.2	0	0.0	0	0.0	552	100.0
TOTAL	38110	44.8	5992	7.0	7258	8.5	12820	15.1	7265	8.5	1331	1.6	11965	14.1	289	0.3	2	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

May include artificial rupture of membranes.

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

Delivery

Sixty-three per cent of confinements were by normal vaginal birth, 10.2 per cent were instrumental and 26.5 per cent were by caesarean section (Table 29). The highest rate of normal vaginal birth was among residents of the Greater Western Area (67.6 per cent), while the highest

rates of instrumental delivery were among residents of Northern Sydney and Central Coast Area (12.1 per cent). The caesarean section rate varied from 23.9 per cent among mothers resident in the Sydney South West Area to 32.0 per cent in the Northern Sydney & Central Coast Area.

TABLE 29

CONFINEMENTS BY type of delivery AND HEALTH AREA OF RESIDENCE, NSW 2003

Health Area	Normal vaginal		Forceps		Type of delivery				Elective caesarean section		Emergency caesarean section*		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sydney South West	12794	65.7	461	2.4	1482	7.6	97	0.5	2646	13.6	2002	10.3	3	0.0	19485	100.0
Northern Sydney & Central Coast	7306	55.6	454	3.5	1129	8.6	45	0.3	2519	19.2	1689	12.9	0	0.0	13142	100.0
Sydney West	10225	64.1	763	4.8	840	5.3	83	0.5	2151	13.5	1880	11.8	0	0.0	15942	100.0
Hunter & New England	6467	66.7	184	1.9	651	6.7	56	0.6	1381	14.2	955	9.9	0	0.0	9694	100.0
South Eastern Sydney & Illawarra	8147	58.6	559	4.0	1110	8.0	35	0.3	2256	16.2	1784	12.8	7	0.1	13898	100.0
North Coast	3055	66.6	135	2.9	165	3.6	21	0.5	649	14.1	562	12.3	0	0.0	4587	100.0
Greater Western	2634	67.6	107	2.7	141	3.6	17	0.4	580	14.9	419	10.7	0	0.0	3898	100.0
Greater Southern	2417	63.0	205	5.3	233	6.1	14	0.4	555	14.5	410	10.7	0	0.0	3834	100.0
Other/Not stated	379	68.7	7	1.3	37	6.7	3	0.5	83	15.0	43	7.8	0	0.0	552	100.0
TOTAL	53424	62.8	2875	3.4	5788	6.8	371	0.4	12820	15.1	9744	11.5	10	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.
Emergency caesarean section includes caesarean sections where the onset of labour was not stated.

Birthweight

In 2003, 6.2 per cent of births were low birthweight (less than 2,500 grams). These comprised 0.7 per cent of birthweight less than 1,000 grams, 0.6 per cent in the 1,000 to 1,499 gram range, and 4.9 per cent in the 1,500 to 2,499 gram range (Table 30). Rates of low birthweight ranged from 5.3 per cent in Greater Southern Area to 7.5 per cent in the Greater Western Area.

TABLE 30

BIRTHS BY BIRTHWEIGHT AND HEALTH AREA OF RESIDENCE, NSW 2003

Health Area	Birthweight (grams)																				TOTAL			
	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.	%				
Sydney South West	53	0.3	96	0.5	132	0.7	231	1.2	731	3.7	3193	16.1	7340	37.1	5849	29.6	1812	9.2	325	1.6	13	0.1	19775	100.0
Northern Sydney & Central Coast	27	0.2	43	0.3	91	0.7	151	1.1	429	3.2	1796	13.4	4711	35.2	4386	32.8	1504	11.2	234	1.7	4	0.0	13376	100.0
Sydney West	45	0.3	77	0.5	94	0.6	195	1.2	641	4.0	2428	15.0	5832	36.0	5009	30.9	1570	9.7	299	1.8	8	0.0	16198	100.0
Hunter & New England	27	0.3	64	0.6	52	0.5	151	1.5	385	3.9	1468	14.9	3284	33.3	3142	31.9	1075	10.9	210	2.1	5	0.1	9863	100.0
South Eastern Sydney & Illawarra	37	0.3	59	0.4	69	0.5	163	1.2	500	3.5	2057	14.5	5180	36.6	4461	31.5	1400	9.9	204	1.4	14	0.1	14144	100.0
North Coast	11	0.2	21	0.5	19	0.4	63	1.4	189	4.1	665	14.3	1577	33.9	1496	32.2	517	11.1	87	1.9	4	0.1	4649	100.0
Greater Western	10	0.3	19	0.5	28	0.7	52	1.3	187	4.7	590	14.9	1376	34.7	1209	30.5	427	10.8	60	1.5	2	0.1	3960	100.0
Greater Southern	10	0.3	9	0.2	11	0.3	34	0.9	141	3.6	570	14.7	1325	34.1	1255	32.3	451	11.6	80	2.1	2	0.1	3888	100.0
Other/Not stated	3	0.5	5	0.9	1	0.2	9	1.6	18	3.2	110	19.6	178	31.7	175	31.2	54	9.6	8	1.4	0	0.0	561	100.0
TOTAL	223	0.3	393	0.5	497	0.6	1049	1.2	3221	3.7	12877	14.9	30803	35.6	26982	31.2	8810	10.2	1507	1.7	52	0.1	86414	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

Gestational age

The majority of births (90.5 per cent) were at term, and 2.5 per cent were post-term (42-plus weeks). The 7.0 per cent of preterm births comprised 0.7 per cent born at 20–27 weeks, 0.7 per cent at 28–31 weeks, and 5.6 per cent at 32–36 weeks. The highest rate of preterm birth was in the Greater Western Area (8.3 per cent), while the lowest was 5.7 per cent in the Greater Southern Area (Table 31).

TABLE 31

BIRTHS BY GESTATIONAL AGE AND HEALTH AREA OF RESIDENCE, NSW 2003

Health Area	Gestational age (weeks)												TOTAL	
	20–27		28–31		32–36		37–41		42+		Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sydney South West	131	0.7	172	0.9	1035	5.2	17875	90.4	559	2.8	3	0.0	19775	100.0
Northern Sydney & Central Coast	67	0.5	107	0.8	729	5.5	12208	91.3	264	2.0	1	0.0	13376	100.0
Sydney West	116	0.7	114	0.7	873	5.4	14667	90.5	428	2.6	0	0.0	16198	100.0
Hunter & New England	88	0.9	83	0.8	632	6.4	8723	88.4	336	3.4	1	0.0	9863	100.0
South Eastern Sydney & Illawarra	95	0.7	89	0.6	758	5.4	12872	91.0	325	2.3	5	0.0	14144	100.0
North Coast	33	0.7	22	0.5	297	6.4	4224	90.9	73	1.6	0	0.0	4649	100.0
Greater Western	30	0.8	32	0.8	267	6.7	3576	90.3	55	1.4	0	0.0	3960	100.0
Greater Southern	18	0.5	20	0.5	182	4.7	3595	92.5	73	1.9	0	0.0	3888	100.0
Other/Not stated	8	1.4	0	0.0	37	6.6	501	89.3	15	2.7	0	0.0	561	100.0
TOTAL	586	0.7	639	0.7	4810	5.6	78241	90.5	2128	2.5	10	0.0	86414	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

Perinatal outcomes

The perinatal mortality rate in 2003 was 8.6 per 1,000 births. This rate includes all births and deaths of babies of at least 400 grams birthweight or at least 20 weeks gestation (Table 32). The rate varied from 6.4 per 1,000 in the Greater Southern Area to 10.4 per 1,000 in the Hunter & New England Area.

TABLE 32

PERINATAL MORTALITY BY HEALTH AREA OF RESIDENCE, NSW 2003*

Health Area	Liveborn surviving		Stillborn		Perinatal outcome Neonatal death		Not stated		Total births		Perinatal mortality rate/1,000 births
	No.	%	No.	%	No.	%	No.	%	No.	%	
	Sydney South West	19606	99.1	117	0.6	52	0.3	0	0.0	19775	
Northern Sydney & Central Coast	13283	99.3	69	0.5	24	0.2	0	0.0	13376	100.0	7.0
Sydney West	16056	99.1	106	0.7	36	0.2	0	0.0	16198	100.0	8.8
Hunter & New England	9760	99.0	70	0.7	33	0.3	0	0.0	9863	100.0	10.4
South Eastern Sydney & Illawarra	14031	99.2	67	0.5	45	0.3	1	0.0	14144	100.0	7.9
North Coast	4604	99.0	35	0.8	10	0.2	0	0.0	4649	100.0	9.7
Greater Western	3916	98.9	32	0.8	12	0.3	0	0.0	3960	100.0	11.1
Greater Southern	3863	99.4	20	0.5	5	0.1	0	0.0	3888	100.0	6.4
Other/Not stated	550	98.0	7	1.2	4	0.7	0	0.0	561	100.0	19.6
TOTAL	85669	99.1	523	0.6	221	0.3	1	0.0	86414	100.0	8.6

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

* 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.

Livebirths in statistical local areas

TABLE 33

LIVEBIRTHS BY HEALTH AREA AND STATISTICAL LOCAL AREA OF RESIDENCE, NSW 2003

Health Area/ Statistical Local Area	No.	%	Health Area/ Statistical Local Area	No.	%
Sydney South West			Barraba	20	0.2
Ashfield	499	2.5	Bingara	17	0.2
Burwood	328	1.7	Glen Innes	71	0.7
Canterbury	2113	10.7	Gunnedah	170	1.7
Concord	364	1.9	Guyra	59	0.6
Drummoyne	469	2.4	Inverell - Pt A	67	0.7
Leichhardt	994	5.1	Inverell - Pt B	119	1.2
Marrickville	1075	5.5	Manilla	37	0.4
Sth Sydney (CSAHS)	479	2.4	Moree Plains	191	2.0
Strathfield	297	1.5	Narrabri	181	1.8
Sydney (CSAHS)	128	0.7	Nundle	8	0.1
Bankstown	2784	14.2	Parry - Pt A	52	0.5
Camden	818	4.2	Parry - Pt B	122	1.2
Campbelltown	2326	11.8	Quirindi	59	0.6
Fairfield	2811	14.3	Severn	30	0.3
Liverpool	3024	15.4	Tamworth	460	4.7
Wingecarribee	513	2.6	Tenterfield	25	0.3
Wollondilly	636	3.2	Uralla	52	0.5
TOTAL	19658	100.0	Walcha	29	0.3
Northern Sydney & Central Coast			Yallaroi	33	0.3
Hornsby	1726	13.0	TOTAL	9793	100.0
Hunter's Hill	154	1.2	South Eastern Sydney & Illawarra		
Ku-ring-gai	877	6.6	Kiama	198	1.4
Lane Cove	427	3.2	Shellharbour	817	5.8
Manly	566	4.3	Shoalhaven - Pt A	368	2.6
Mosman	369	2.8	Shoalhaven - Pt B	521	3.7
North Sydney	776	5.8	Wollongong	2386	7.0
Pittwater	764	5.7	Botany	498	3.5
Ryde	1233	9.3	Hurstville	956	6.8
Warringah	1878	14.1	Kogarah	681	4.8
Willoughby	815	6.1	Randwick	1540	10.9
Gosford	1925	14.5	Rockdale	1367	9.7
Wyong	1797	13.5	Sth Sydney (SESAHS)	428	3.0
TOTAL	13307	100.0	Sutherland Shire - East	1217	8.6
Sydney West			Sutherland Shire - West	1531	10.9
Auburn	1076	6.7	Sydney - Inner	93	0.7
Baulkham Hills	1918	11.9	Sydney (SESAHS)	66	0.5
Blacktown - North	1541	9.6	Waverley	780	5.5
Blacktown - South-East	14539.0		Woollahra	626	4.4
Blacktown - South-West	168810.5		Other	3	0.0
Holroyd	1366	8.5	TOTAL	14076	100.0
Parramatta	2160	13.4	North Coast		
Blue Mountains	930	5.8	Ballina	336	7.3
Hawkesbury	963	6.0	Byron	301	6.5
Penrith	2769	17.2	Copmanhurst	42	0.9
Greater Lithgow	228	1.4	Grafton	193	4.2
TOTAL	16092	100.0	Kyogle	89	1.9
Hunter & New England			Lismore - Pt A	382	8.3
Cessnock	608	6.2	Lismore - Pt B	151	3.3
Dungog	92	0.9	Macleay	154	3.3
Lake Macquarie	2075	21.2	Pristine Waters - Nymboida	60	1.3
Maitland	808	8.3	Pristine Waters - Ulmarra	61	1.3
Merrima	17	0.2	Richmond River - Casino	139	3.0
Murrurundi	26	0.3	Richmond River - Balance	117	2.5
Muswellbrook	253	2.6	Tweed - Pt A	403	8.7
Newcastle - Inner	49	0.5	Tweed - Pt B	283	6.1
Newcastle - Remainder	176818.1		Bellingen	107	2.3
Port Stephens	712	7.3	Coff's Harbour - Pt A	500	10.8
Scone	134	1.4	Coff's Harbour - Pt B	119	2.6
Singleton	302	3.1	Hastings - Pt A	416	9.0
Gloucester	50	0.5	Hastings - Pt B	264	5.7
Greater Taree	459	4.7	Kempsey	327	7.1
Great Lakes	329	3.4	Nambucca	170	3.7
Armidale Dumaresq - City	231	2.4	TOTAL	4614	100.0
Armidale Dumaresq - Balance	78	0.8			

TABLE 33 continued
LIVEBIRTHS BY HEALTH AREA AND STATISTICAL LOCAL AREA OF RESIDENCE, NSW 2003

Health Area/ Statistical Local Area	No.	%	Health Area/ Statistical Local Area	No.	%
Greater Western			Cootamundra	81	2.1
Bogan	55	1.4	Culcairn	23	0.6
Cobar	82	2.1	Deniliquin	86	2.2
Coolah	46	1.2	Griffith	366	9.5
Coonabarabran	68	1.7	Gundagai	60	1.6
Coonamble	83	2.1	Hay	57	1.5
Dubbo - Pt A	576	14.7	Holbrook	11	0.3
Dubbo - Pt B	68	1.7	Jerilderie	9	0.2
Gilgandra	58	1.5	Junee	73	1.9
Mudgee	218	5.5	Leeton	166	4.3
Narromine	122	3.1	Lockhart	40	1.0
Warren	49	1.2	Murray	11	0.3
Wellington	105	2.7	Murrumbidgee	35	0.9
Bathurst	404	10.3	Narrandera	92	2.4
Blayney - Pt A	57	1.5	Temora	70	1.8
Blayney - Pt B	23	0.6	Tumbarumba	28	0.7
Cabonne - Pt A	15	0.4	Tumut	140	3.6
Cabonne - Pt C	89	2.3	Greater Southern		
Cowra	147	3.7	Wagga Wagga - Pt A	732	18.9
Evans - Pt A	6	0.2	Wagga Wagga - Pt B	89	2.3
Evans - Pt B	26	0.7	Wakool	9	0.2
Forbes	121	3.1	Windouran	17	0.4
Lachlan	95	2.4	Bega Valley	274	7.1
Oberon	99	2.5	Bombala	12	0.3
Orange	592	15.1	Boorowa	7	0.2
Parkes	212	5.4	Cooma-Monaro	83	2.1
Rylstone	37	0.9	Crookwell	31	0.8
Weddin	29	0.7	Eurobodalla	316	8.2
Bourke	43	1.1	Goulburn	243	6.3
Brewarrina	35	0.9	Gunning	14	0.4
Broken Hill	236	6.0	Harden	25	0.6
Central Darling	24	0.6	Mulwaree	57	1.5
Walgett	92	2.3	Queanbeyan	170	4.4
Wentworth	5	0.1	Snowy River	48	1.2
Unincorporated Far West	9	0.2	Tallaganda	11	0.3
Other	2	0.1	Yarrowlumla - Part A	35	0.9
TOTAL	3928	100.0	Yass	14	0.4
Greater Southern			Young	112	2.9
Albury	11	0.3	Other	8	0.2
Berrigan	25	0.6	TOTAL	3868	100.0
Bland	80	2.1	Other/Not stated	554	100.0
Carrathool	55	1.4	TOTAL NSW	85890	100.0
Conargo	10	0.3			
Coolamon	32	0.8			

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

6. ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS AND BABIES

Reporting of Aboriginality

Maternal Aboriginality is under-reported on the MDC. One method of assessing the extent of under-reporting and monitoring changes over time is to compare the reporting of maternal Aboriginality to the MDC with reporting of maternal Aboriginality on birth registrations held by the NSW Registry of Births, Deaths and Marriages. Using capture–recapture methods, an estimate of the total number of babies born to Aboriginal mothers was obtained and compared with the number of babies born to Aboriginal mothers as reported to the MDC. The method used here is described in Chapter 3 (page 13).

The percentage of births to Aboriginal and Torres Strait Islander mothers reported to the MDC rose from 65.0 per cent in 2000 to 69.0 per cent in 2002. Reporting varied markedly between area health services, ranging from 50.6 per cent in the Sydney South West Area to 88.8 per cent in the Greater Western Area in 2002 (Table 34, Figure 2).

Under-reporting of Aboriginality on the MDC means that numbers of births presented in this chapter should be interpreted with caution. The total number of babies born to Aboriginal mothers in 2002 is estimated to be 3,163, about one and a half times higher than the number reported to the MDC.

TABLE 34

BIRTHS TO ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS BY SOURCE OF BIRTH REPORT, YEAR OF BIRTH AND HEALTH AREA OF HOSPITAL, NSW 2000–2002[#]

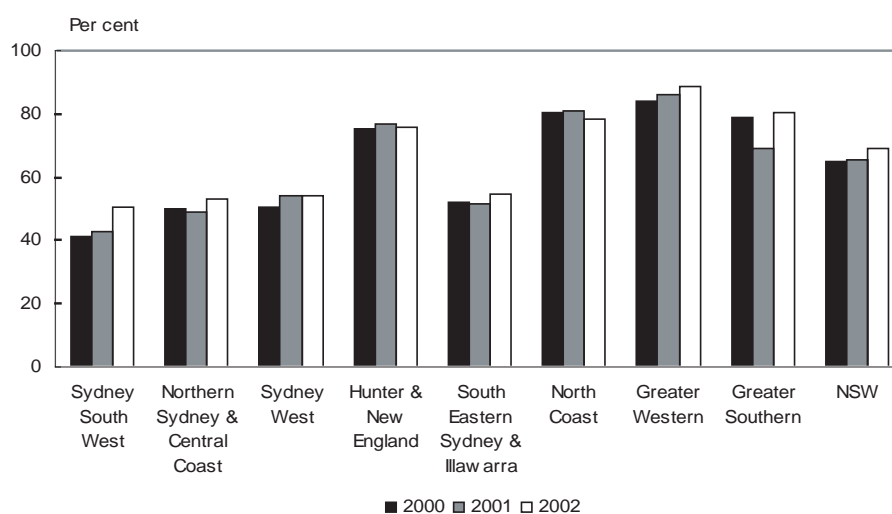
Year– Area Health Service of hospital	MDC births	RBDM births	Births reported to both MDC–RBDM	Total estimated Aboriginal births	Estimated Aboriginal births reported to MDC	95% confidence interval of estimated births reported
	No.	No.	No.	No.	%	
2000						
Sydney South West	185	309	127	449	41.2	36.6–45.7
Northern Sydney & Central Coast	84	94	47	167	50.2	42.7–57.8
Sydney West	224	294	149	442	50.7	46.1–55.4
Hunter & New England	481	424	320	637	75.5	72.2–78.8
South Eastern Sydney & Illawarra	169	202	105	325	52.1	46.6–57.5
North Coast	335	217	174	418	80.2	76.4–84.0
Greater Western	449	312	262	535	84.0	80.9–87.1
Greater Southern	195	143	113	247	79.1	74.0–84.2
NSW	2122	1995	1297	3264	65.0	63.4–66.7
2001						
Sydney South West	192	310	133	447	43.0	38.4–47.5
Northern Sydney & Central Coast	75	100	49	153	49.2	41.2–57.1
Sydney West	223	263	142	413	54.1	49.2–58.9
Hunter & New England	486	426	327	633	76.8	73.5–80.1
South Eastern Sydney & Illawarra	156	190	98	302	51.7	46.0–57.3
North Coast	336	197	159	416	80.8	77.0–84.5
Greater Western	490	303	261	569	86.2	83.3–89.0
Greater Southern	178	141	97	258	68.9	63.2–74.5
NSW	2136	1930	1266	3256	65.6	64.0–67.2
2002						
Sydney South West	166	210	106	328	50.6	45.2–56.0
Northern Sydney & Central Coast	89	104	55	168	53.1	45.5–60.6
Sydney West	224	264	143	413	54.2	49.4–59.0
Hunter & New England	534	414	313	706	75.6	72.5–78.8
South Eastern Sydney & Illawarra	179	192	105	327	54.8	49.4–60.2
North Coast	336	196	154	427	78.6	74.7–82.5
Greater Western	489	313	278	550	88.8	86.2–91.5
Greater Southern	165	118	95	205	80.6	75.2–86.0
NSW	2182	1811	1249	3163	69.0	67.4–70.6

Source: *Linked NSW Midwives Data Collection and Registry of Births, Deaths and Marriages birth registration data.*

[#] Births where the hospital of birth was not reported, or where the birth occurred other than in hospital, were excluded.

FIGURE 2

LEVEL OF REPORTING OF ABORIGINITY TO THE NSW MIDWIVES DATA COLLECTION BY YEAR OF BIRTH AND HEALTH AREA OF HOSPITAL, NSW 2000–2002*



Source: *Linked NSW Midwives Data Collection and Registry of Births, Deaths and Marriages birth registration data.*
 * Births where the hospital of birth was not reported or where the birth occurred other than in hospital were excluded.

Information on paternal Aboriginality is not collected by the MDC, but is reported to the NSW Registry of Births, Deaths and Marriages. Of the 86,245 births registered for residents of NSW in 2002, 3,337 (3.9 per cent) were reported to have an Aboriginal or Torres Strait Islander mother or father (Table 35). For 1,189 babies, the mother was reported to be non-Aboriginal or Torres Strait Islander and the father was reported to be Aboriginal or Torres Strait Islander. There are therefore a substantial number of babies with non-indigenous mothers and indigenous fathers who are not represented in the numbers reported in this chapter.

TABLE 35

BIRTH REGISTRATIONS BY MATERNAL AND PATERNAL INDIGENOUS STATUS, NSW 2002*

Mother#	Father	No.	%
Aboriginal or Torres Strait Islander	Aboriginal or Torres Strait Islander	691	0.8
Aboriginal or Torres Strait Islander	Non-Aboriginal or Torres Strait Islander	1457	1.7
Non-Aboriginal or Torres Strait Islander	Aboriginal or Torres Strait Islander	1189	1.4
Non-Aboriginal or Torres Strait Islander	Non-Aboriginal or Torres Strait Islander	82908	96.1
Total	Total	86245	100.0

Source: *Australian Bureau of Statistics birth registration data (HOIST), Centre for Epidemiology and Research, NSW Department of Health.*
 # Births registered among NSW residents. Births where indigenous status was not stated were classified as non-Aboriginal or Torres Strait Islander.

Trends in births

In 2003, 2, 039 babies were born to Aboriginal mothers, 37 babies were born to Torres Strait Islander mothers and 114 babies were born to mothers of both Aboriginal and Torres Strait Islander background (Table 36).

TABLE 36

ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS AND BABIES BY INDIGENOUS STATUS, NSW 1999–2003*

Plurality	Year									
	1999		2000		2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Confinements										
Aboriginal	1984	96.4	1990	94.5	1988	94.2	2041	94.7	2014	93.2
Torres Strait Islander	38	1.8	25	1.2	40	1.9	25	1.2	35	1.6
Both Aboriginal and TSI	37	1.8	90	4.3	82	3.9	89	4.1	112	5.2
TOTAL	2059	100.0	2105	100.0	2110	100.0	2155	100.0	2161	100.0
Births										
Aboriginal	2003	96.4	2006	94.5	2014	94.2	2069	94.8	2039	93.1
Torres Strait Islander	38	1.8	25	1.2	42	2.0	25	1.1	37	1.7
Both Aboriginal and TSI	37	1.8	91	4.3	82	3.8	89	4.1	114	5.2
TOTAL	2078	100.0	2122	100.0	2138	100.0	2183	100.0	2190	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

* Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

Plurality

Between 1999 and 2003, the reported number of babies born to Aboriginal and Torres Strait Islander mothers increased from 2,078 to 2,190 (Table 37), representing 2.4 and 2.5 per cent respectively of all babies born in NSW. Multiple pregnancies (twins, triplets etc.) were reported for about one per cent of mothers.

TABLE 37

ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS AND BABIES BY PLURALITY, NSW 1999–2003*

Plurality	Year									
	1999		2000		2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Confinements										
Singleton	2040	99.1	2089	99.2	2082	98.7	2127	98.7	2134	98.8
Twins	18	0.9	16	0.8	28	1.3	28	1.3	26	1.2
Triplets	1	0.0	0	0.0	0	0.0	0	0.0	1	0.0
TOTAL	2059	100.0	2105	100.0	2110	100.0	2155	100.0	2161	100.0
Births										
Singleton	2040	98.2	2089	98.4	2082	97.4	2127	97.4	2134	97.4
Twins	35	1.7	33	1.6	56	2.6	56	2.6	53	2.4
Triplets	3	0.1	0	0.0	0	0.0	0	0.0	3	0.1
TOTAL	2078	100.0	2122	100.0	2138	100.0	2183	100.0	2190	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

* Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

Previous pregnancies

In 2003, 31 per cent of Aboriginal and Torres Strait Islander mothers gave birth for the first time. About 61 per cent of mothers reported between 1 and 4 previous births and 8.2 per cent of mothers had given birth to five or more babies. This pattern has not changed substantially since 1999.

TABLE 38

NUMBER OF PREVIOUS PREGNANCIES AMONG ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS, NSW 1999–2003[#]

No. previous pregnancies (>20 weeks)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
0	613	29.8	645	30.6	634	30.0	664	30.8	668	30.9
1–4	1301	63.2	1285	61.0	1309	62.0	1302	60.4	1316	60.9
5+	144	7.0	174	8.3	164	7.8	183	8.5	177	8.2
Not stated	1	0.0	1	0.0	3	0.1	6	0.3	0	0.0
TOTAL	2059	100.0	2105	100.0	2110	100.0	2155	100.0	2161	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

Maternal age

The reported number of babies born to Aboriginal and Torres Strait Islander mothers has increased at all ages. About one in five Aboriginal and Torres Strait Islander mothers were teenagers in 2003.

Following statewide trends, the number of mothers giving birth at 35 years of age or more has increased over the last five years. The proportion of mothers aged 35-plus years increased from 6.0 per cent in 1999 to 7.1 per cent in 2003 (Table 39).

TABLE 39

AGE OF ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS, NSW 1999–2003[#]

Maternal age (years)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
12–19	443	21.5	459	21.8	439	20.8	481	22.3	455	21.1
20–34	1492	72.5	1491	70.8	1515	71.8	1524	70.7	1553	71.9
35+	124	6.0	155	7.4	152	7.2	146	6.8	153	7.1
Not stated	0	0.0	0	0.0	4	0.2	4	0.2	0	0.0
TOTAL	2059	100.0	2105	100.0	2110	100.0	2155	100.0	2161	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

Health area of residence

The reported number of Aboriginal and Torres Strait Islander mothers who gave birth in 2003 ranged from 82 in the Northern Sydney & Central Coast Area to 493 in the Greater Western Area (Table 40). The proportion of mothers who were teenagers varied from 16.9 per cent in the South Western Sydney Area to 22.2 per cent in the Hunter & New England Area.

TABLE 40

HEALTH AREA OF RESIDENCE OF ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS, NSW 1999–2003*

Health Area	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Sydney South West	152	7.4	168	8.0	174	8.2	165	7.7	160	7.4
Northern Sydney & Central Coast	59	2.9	81	3.8	74	3.5	85	3.9	82	3.8
Sydney West	218	10.6	203	9.6	212	10.0	204	9.5	237	11.0
Hunter & New England	421	20.4	474	22.5	478	22.7	513	23.8	514	23.8
South Eastern Sydney & Illawarra	149	7.2	173	8.2	153	7.3	173	8.0	178	8.2
North Coast	342	16.6	330	15.7	329	15.6	327	15.2	304	14.1
Greater Western	510	24.8	484	23.0	511	24.2	517	24.0	493	22.8
Greater Southern	184	8.9	176	8.4	162	7.7	158	7.3	170	7.9
Other/Not stated	24	1.2	16	0.8	17	0.8	13	0.6	23	1.1
TOTAL	2059	100.0	2105	100.0	2110	100.0	2155	100.0	2161	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

* Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers for the total are about one and a half times higher than shown. The level of under-reporting varies between area health services (Table 34).

TABLE 41

HEALTH AREA OF RESIDENCE OF ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS BY AGE, NSW 2003*

Health Area	Maternal age (years)				TOTAL	
	Less than 20		20+		No.	%
	No.	%	No.	%		
Sydney South West	27	16.9	133	83.1	160	100.0
Northern Sydney & Central Coast	17	20.7	65	79.3	82	100.0
Sydney West	52	21.9	185	78.1	237	100.0
Hunter & New England	114	22.2	400	77.8	514	100.0
South Eastern Sydney & Illawarra	32	18.0	146	82.0	178	100.0
North Coast	66	21.7	238	78.3	304	100.0
Greater Western	109	22.1	384	77.9	493	100.0
Greater Southern	34	20.0	136	80.0	170	100.0
Other/Not stated	4	17.4	19	82.6	23	100.0
TOTAL	455	21.1	1706	78.9	2161	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

* Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers for the total are about one and a half times higher than shown. The level of under-reporting varies between area health services (Table 34).

Booking status

In 2003, 90.4 per cent of Aboriginal and Torres Strait Islander mothers were booked into the hospital of birth, a rise from 86.4 per cent in 1999. In 2003, 97.6 per cent of non-Aboriginal or Torres Strait Islander mothers were booked into the hospital of birth.

Duration of pregnancy at first antenatal visit

Between 1999 and 2003, the proportion of mothers who commenced antenatal care at less than 20 weeks gestation rose from 65.5 to 70.6 per cent (Table 42). This compares with 87.0 per cent of non-Aboriginal or Torres Strait Islander mothers who commenced antenatal care at less than 20 weeks gestation in 2003.

In 2003, the proportion of Aboriginal and Torres Strait Islander mothers who commenced antenatal care at less than 20 weeks gestation varied from 58.1 per cent in the Sydney South West Area to 85.4 per cent in the Northern Sydney & Central Coast Area (Table 43).

TABLE 42

DURATION OF PREGNANCY AT FIRST ANTENATAL VISIT AMONG ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS, NSW 1999–2003[#]

Duration of pregnancy at first antenatal visit (weeks)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
0–19	1348	65.5	1422	67.6	1365	64.7	1448	67.2	1526	70.6
20–plus	599	29.1	546	25.9	615	29.1	560	26.0	547	25.3
Not stated	112	5.4	137	6.5	130	6.2	147	6.8	88	4.1
TOTAL	2059	100.0	2105	100.0	2110	100.0	2155	100.0	2161	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

TABLE 43

DURATION OF PREGNANCY AT FIRST ANTENATAL VISIT AMONG ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS BY HEALTH AREA OF RESIDENCE, NSW 2003[#]

Health Area	Duration of pregnancy at first antenatal visit (weeks)						TOTAL	
	0–19		20+		Not stated		No.	%
	No.	%	No.	%	No.	%	No.	%
Sydney South West	93	58.1	62	38.8	5	3.1	160	100.0
Northern Sydney & Central Coast	70	85.4	12	14.6	0	0.0	82	100.0
Sydney West	135	57.0	89	37.6	13	5.5	237	100.0
Hunter & New England	387	75.3	108	21.0	19	3.7	514	100.0
South Eastern Sydney & Illawarra	129	72.5	41	23.0	8	4.5	178	100.0
North Coast	212	69.7	75	24.7	17	5.6	304	100.0
Greater Western	362	73.4	110	22.3	21	4.3	493	100.0
Greater Southern	121	71.2	44	25.9	5	2.9	170	100.0
Other/Not stated	17	73.9	6	26.1	0	0.0	23	100.0
TOTAL	1526	70.6	547	25.3	88	4.1	2161	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers for the total are about one and a half times higher than shown. The level of under-reporting varies between area health services (Table 34).

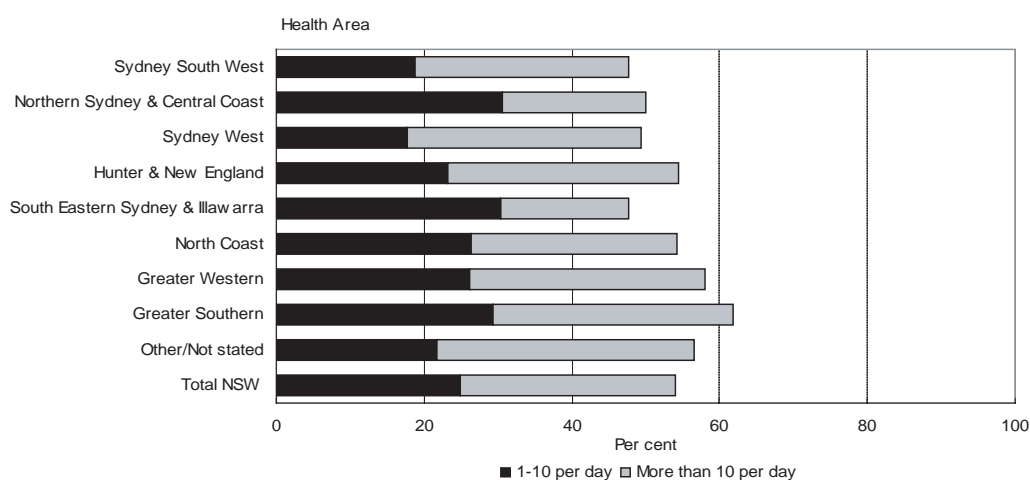
Smoking in pregnancy

In 2003, 56.8 per cent of Aboriginal and Torres Strait Islander mothers reported smoking at some time during pregnancy, compared to 58.9 per cent in 1999. This compares with 14.1 per cent of non-Aboriginal or Torres Strait Islander mothers who reported smoking at some time during pregnancy in 2003.

Smoking in the second half of pregnancy poses the greatest risk to the health of both mother and baby. In 2003, 54.1 per cent of Aboriginal and Torres Strait Islander mothers reported smoking in the second half of pregnancy. This percentage varied from 47.6 per cent in the South Western Sydney Area to 61.8 per cent in the Greater Southern Area (Figure 3).

FIGURE 3

SMOKING IN THE SECOND HALF OF PREGNANCY AMONG ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS BY AMOUNT SMOKED AND HEALTH AREA OF RESIDENCE, NSW 2003*



Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Information not shown for health areas where the number of mothers is less than five in a group. Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

Medical conditions and obstetric complications

In 2003, there were slightly lower rates of gestational diabetes and pre-eclampsia reported among Aboriginal and Torres Strait Islander mothers compared with non-Aboriginal or Torres Strait Islander mothers (Table 44).

The number of Aboriginal and Torres Strait Islander mothers with medical conditions and obstetric complications reported to the MDC is very low, even after taking into account under-reporting of maternal Aboriginality. This is particularly the case for diabetes. The low numbers may be due to under-detection and/or under-reporting.

TABLE 44

MATERNAL MEDICAL CONDITIONS AND OBSTETRIC COMPLICATIONS BY ABORIGINALITY, NSW 2003*

Condition	Aboriginality						TOTAL	
	Aboriginal and Torres Strait Islander		Non-Aboriginal or Torres Strait Islander		Not stated		No.	%
	No.	%	No.	%	No.	%		
Diabetes mellitus	29	1.3	476	0.6	0	0.0	505	0.6
Gestational diabetes	74	3.4	3717	4.5	1	2.5	3792	4.5
Essential hypertension	22	1.0	857	1.0	0	0.0	879	1.0
Pre-eclampsia	102	4.7	4542	5.5	1	2.5	4645	5.5
TOTAL CONFINEMENTS	2161	100.0	82831	100.0	40	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

Labour and delivery

The rate of induction of labour among Aboriginal and Torres Strait Islander mothers varied from about 18 to 21 per cent between 1999 and 2003. The rate of spontaneous onset of labour fell from 73.4 per cent in 1999 to 68.0 per cent in 2003 (Table 45). The rate of induction of labour among Aboriginal and Torres Strait Islander mothers was lower than the rate of 24.6 per cent reported among non-Aboriginal and Torres Strait Islander mothers in 2003.

Between 1999 and 2003, the rate of normal vaginal birth fell slightly from 77.0 to 73.3 per cent. The caesarean section rate rose from 16.0 to 21.5 per cent (Table 46). The rate of forceps delivery fell from 3.1 to 1.6 per cent, vaginal breech delivery fell from 1.2 to 0.4 per cent, and vacuum extraction rose from 2.6 to 3.1 per cent.

TABLE 45

LABOUR ONSET FOR ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS, NSW 1999–2003*

Labour onset	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous	1512	73.4	1527	72.5	1486	70.4	1507	69.9	1469	68.0
No labour##	172	8.4	206	9.8	207	9.8	223	10.3	250	11.6
Induced	375	18.2	372	17.7	417	19.8	423	19.6	442	20.5
Not stated	0	0.0	0	0.0	0	0.0	2	0.1	0	0.0
TOTAL	2059	100.0	2105	100.0	2110	100.0	2155	100.0	2161	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

No labour indicates elective caesarean section.

TABLE 46

TYPE OF DELIVERY AMONG ABORIGINAL AND TORRES STRAIT ISLANDER MOTHERS, NSW 1999–2003*

Type of delivery	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Normal vaginal	1586	77.0	1573	74.7	1562	74.0	1598	74.2	1585	73.3
Forceps	64	3.1	51	2.4	39	1.8	30	1.4	35	1.6
Vacuum extraction	54	2.6	67	3.2	66	3.1	68	3.2	67	3.1
Vaginal breech	25	1.2	31	1.5	16	0.8	14	0.6	9	0.4
Elective caesarean section	172	8.4	206	9.8	207	9.8	223	10.3	250	11.6
Emergency caesarean section##	158	7.7	177	8.4	220	10.4	222	10.3	215	9.9
TOTAL	2059	100.0	2105	100.0	2110	100.0	2155	100.0	2161	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

Emergency caesarean section includes caesarean section where the onset of labour was not stated.

Birthweight

Since 1999, the rate of low birthweight (less than 2,500 grams) in Aboriginal and Torres Strait Islander babies has been over 10 per cent and was 12.4 per cent in 2003 (Table 47). This is twice the rate for babies born to non-Aboriginal or Torres Strait Islander mothers, which was 6.1 per cent in 2003. In 2003, the largest number of low birthweight babies were born in the Hunter & New England Area (Table 48).

TABLE 47

WEIGHT OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES, NSW 1999–2003[#]

Birthweight (grams)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 1,000	20	1.0	33	1.6	27	1.3	21	1.0	31	1.4
1,000–1,499	24	1.2	20	0.9	33	1.5	28	1.3	19	0.9
1,500–2,499	217	10.4	199	9.4	228	10.7	230	10.5	221	10.1
2,500+	1816	87.4	1866	87.9	1848	86.4	1900	87.0	1917	87.5
Not stated	1	0.0	4	0.2	2	0.1	4	0.2	2	0.1
TOTAL	2078	100.0	2122	100.0	2138	100.0	2183	100.0	2190	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

TABLE 48

WEIGHT OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES BY HEALTH AREA OF RESIDENCE, NSW 2003[#]

Health Area	Less than 2,500		Birthweight (grams) 2,500+		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%
Sydney South West	18	11.2	142	88.2	1	0.6	161	100.0
Northern Sydney & Central Coast	8	9.6	75	90.4	0	0.0	83	100.0
Sydney West	28	11.7	212	88.3	0	0.0	240	100.0
Hunter & New England	68	13.0	453	86.8	1	0.2	522	100.0
South Eastern Sydney & Illawarra	22	12.2	158	87.8	0	0.0	180	100.0
North Coast	47	15.1	264	84.9	0	0.0	311	100.0
Greater Western	53	10.7	443	89.3	0	0.0	496	100.0
Greater Southern	21	12.1	153	87.9	0	0.0	174	100.0
Other/Not stated	6	26.1	17	73.9	0	0.0	23	100.0
TOTAL	271	12.4	1917	87.5	2	0.1	2190	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers for the total are about one and a half times higher than shown. The level of under-reporting varies between area health services (Table 34).

Gestational age

Since 1999, the rate of prematurity (less than 37 weeks gestation) in Aboriginal and Torres Strait Islander babies has been over 10 per cent. The rate was 12.1 per cent in 2003 (Table 49)—compared with a rate of 6.9 per cent for babies born to non-Aboriginal or Torres Strait Islander mothers. In 2003, the largest number of premature babies were born in the Hunter & New England Area (Table 50).

TABLE 49

GESTATIONAL AGE OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES, NSW 1999–2003[#]

Gestational age (weeks)	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
20–27	18	0.9	33	1.6	26	1.2	21	1.0	29	1.3
28–31	29	1.4	29	1.4	38	1.8	34	1.6	30	1.4
32–36	209	10.1	185	8.7	201	9.4	212	9.7	206	9.4
37–41	1780	85.7	1839	86.7	1824	85.3	1868	85.6	1878	85.8
42 +	42	2.0	36	1.7	48	2.2	45	2.1	47	2.1
Not stated	0	0.0	0	0.0	1	0.0	3	0.1	0	0.0
TOTAL	2078	100.0	2122	100.0	2138	100.0	2183	100.0	2190	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

TABLE 50

GESTATIONAL AGE OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES BY HEALTH AREA OF RESIDENCE, NSW 2003[#]

Health Area	Less than 37		Gestational age (weeks) 37+		TOTAL	
	No.	%	No.	%	No.	%
Sydney South West	24	14.9	137	85.1	161	100.0
Northern Sydney & Central Coast	8	9.6	75	90.4	83	100.0
Western Sydney	28	11.7	212	88.3	240	100.0
Hunter & New England	70	13.4	452	86.6	522	100.0
South Eastern Sydney & Illawarra	19	10.6	161	89.4	180	100.0
North Coast	47	15.1	264	84.9	311	100.0
Greater Western	47	9.5	449	90.5	496	100.0
Greater Southern	17	9.8	157	90.2	174	100.0
Other/Not stated	5	21.7	18	78.3	23	100.0
TOTAL	265	12.1	1925	87.9	2190	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers for the total are about one and a half times higher than shown. The level of under-reporting varies between area health services (Table 34).

Apgar score

In 2003, 3.3 per cent of Aboriginal and Torres Strait Islander babies had an Apgar score less than seven (Table 51), higher than the rate of 2.0 per cent for babies born to non-Aboriginal or Torres Strait Islander mothers.

TABLE 51

APGAR SCORE OF ABORIGINAL AND TORRES STRAIT ISLANDER BABIES, NSW 1999–2003[#]

Apgar score at 5 minutes	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
0–4	36	1.7	41	1.9	49	2.3	38	1.7	42	1.9
5–6	24	1.2	26	1.2	29	1.4	31	1.4	30	1.4
7+	2003	96.4	2045	96.4	2048	95.8	2104	96.4	2109	96.3
Not stated	15	0.7	10	0.5	12	0.6	10	0.5	9	0.4
TOTAL	2078	100.0	2122	100.0	2138	100.0	2183	100.0	2190	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

Special care and neonatal intensive care

In 2003, 20.5 per cent of Aboriginal and Torres Strait Islander babies were admitted to special care units and 3.8 per cent were admitted to neonatal intensive care units (Table 52).

This compares with babies born to non-Aboriginal or Torres Strait Islander mothers, of whom 14.8 per cent were admitted to special care units and 2.6 per cent were admitted to neonatal intensive care units in 2003.

TABLE 52

ABORIGINAL AND TORRES STRAIT ISLANDER BABIES ADMITTED TO SPECIAL CARE AND NEONATAL INTENSIVE CARE UNITS, NSW 1999–2003[#]

Unit of admission	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Special care unit	438	21.1	405	19.1	442	20.7	431	19.7	450	20.5
Neonatal intensive care unit	69	3.3	86	4.1	82	3.8	71	3.3	83	3.8
TOTAL BIRTHS	2078	100.0	2122	100.0	2138	100.0	2183	100.0	2190	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

Perinatal mortality

Since 1999, the perinatal mortality rate among Aboriginal and Torres Strait Islander babies has varied from 11.0 to 18.2 per 1,000 births (Table 53). The rate of 11.0 per

1,000 in 2002 was the lowest reported for 10 years. The rate of 15.1 per 1,000 in 2003 is higher than the rate of 8.4 per 1,000 experienced by babies born to non-Aboriginal or Torres Strait Islander mothers.

TABLE 53

PERINATAL DEATHS AMONG ABORIGINAL AND TORRES STRAIT ISLANDER BABIES, NSW 1999–2003[#]

Perinatal deaths	1999		2000		Year 2001		2002		2003	
	No.	Rate/1,000	No.	Rate/1,000	No.	Rate/1,000	No.	Rate/1,000	No.	Rate/1,000
Stillbirth	21	10.1	24	11.3	29	13.6	18	8.2	24	11.0
Neonatal death	8	3.8	13	6.1	10	4.7	6	2.7	9	4.1
TOTAL PERINATAL DEATHS	29	14.0	37	17.4	39	18.2	24	11.0	33	15.1

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

[#] 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. Due to under-reporting of Aboriginality to the MDC, it is likely that the true numbers are about one and a half times higher than shown.

7. 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 (page 19).

Trends in confinements

Between 1999 and 2003, about 20 per cent of mothers were born in non-English speaking countries (Table 54). The percentage of mothers born in Southern European declined slightly from 1.6 to 1.2 per cent, and the percentage of mothers born in Middle Eastern and African countries rose slightly from 4.2 to 4.6 per cent over the five-year period. The percentage of mothers in other groups remained stable.

TABLE 54

CONFINEMENTS AND BIRTHS BY COUNTRY OF BIRTH GROUP, NSW 1999–2003

	1999		2000		Year 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Confinements										
English speaking	68381	79.5	68105	78.8	67275	79.7	67268	79.5	67320	79.2
Central & South America	725	0.8	708	0.8	697	0.8	739	0.9	692	0.8
Melanesia, Micronesia & Polynesia	1540	1.8	1606	1.9	1544	1.8	1534	1.8	1545	1.8
Southern Europe	1337	1.6	1217	1.4	1129	1.3	1001	1.2	1040	1.2
Western & Northern Europe	690	0.8	671	0.8	631	0.7	614	0.7	660	0.8
Eastern Europe, Russia, Central Asian & Baltic States	421	0.5	428	0.5	412	0.5	458	0.5	486	0.6
Middle East & Africa	3579	4.2	3685	4.3	3688	4.4	3653	4.3	3879	4.6
South East Asia	4659	5.4	5085	5.9	4478	5.3	4557	5.4	4673	5.5
North East Asia	3225	3.8	3449	4.0	2965	3.5	2962	3.5	2819	3.3
Southern Asia	1398	1.6	1476	1.7	1535	1.8	1716	2.0	1746	2.1
Other/Not stated	12	0.0	30	0.0	25	0.0	85	0.1	172	0.2
TOTAL	85967	100.0	86460	100.0	84379	100.0	84587	100.0	85032	100.0
Births										
English speaking	69460	79.6	69300	78.8	68524	79.8	68449	79.6	68457	79.2
Central & South America	730	0.8	716	0.8	707	0.8	755	0.9	699	0.8
Melanesia, Micronesia & Polynesia	1555	1.8	1636	1.9	1567	1.8	1555	1.8	1564	1.8
Southern Europe	1361	1.6	1256	1.4	1153	1.3	1022	1.2	1064	1.2
Western & Northern Europe	710	0.8	688	0.8	643	0.7	627	0.7	668	0.8
Eastern Europe, Russia, Central Asian & Baltic States	423	0.5	439	0.5	418	0.5	468	0.5	494	0.6
Middle East & Africa	3644	4.2	3747	4.3	3758	4.4	3711	4.3	3947	4.6
South East Asia	4707	5.4	5127	5.8	4527	5.3	4595	5.3	4733	5.5
North East Asia	3266	3.7	3483	4.0	2982	3.5	3000	3.5	2846	3.3
Southern Asia	1420	1.6	1499	1.7	1554	1.8	1738	2.0	1766	2.0
Other/Not stated	13	0.0	31	0.0	25	0.0	85	0.1	176	0.2
TOTAL	87289	100.0	87922	100.0	85858	100.0	86005	100.0	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Maternal age

Births to teenage mothers were more common among mothers born in English-speaking countries than non-English speaking countries (Table 55, Figure 4), while the largest proportions of mothers aged 35 years and over were born in Western and Northern Europe (39.1 per cent) and North East Asia (32.7 per cent).

TABLE 55

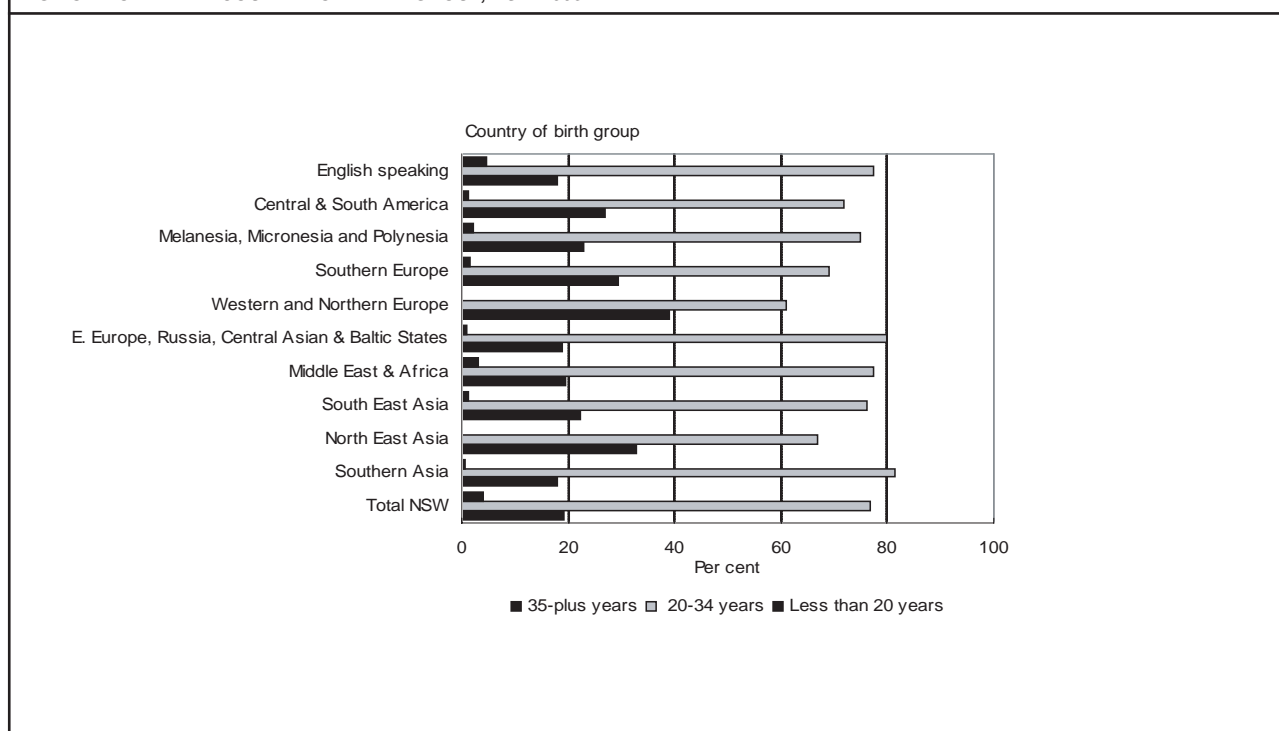
AGE OF MOTHER BY COUNTRY OF BIRTH GROUP, NSW 2003

Country of birth group	Maternal age (years)									
	12–19		20–34		35+		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking	3109	4.6	52036	77.3	12168	18.1	7	0.0	67320	100.0
Central & South America	9	1.3	497	71.8	186	26.9	0	0.0	692	100.0
Melanesia, Micronesia & Polynesia	34	2.2	1155	74.8	356	23.0	0	0.0	1545	100.0
Southern Europe	17	1.6	718	69.0	305	29.3	0	0.0	1040	100.0
Western & Northern Europe	0	0.0	402	60.9	258	39.1	0	0.0	660	100.0
Eastern Europe, Russia, Central Asian & Baltic States	4	0.8	389	80.0	92	18.9	1	0.2	486	100.0
Middle East & Africa	121	3.1	3004	77.4	754	19.4	0	0.0	3879	100.0
South East Asia	62	1.3	3563	76.2	1047	22.4	1	0.0	4673	100.0
North East Asia	12	0.4	1884	66.8	923	32.7	0	0.0	2819	100.0
Southern Asia	12	0.7	1420	81.3	314	18.0	0	0.0	1746	100.0
Other/Not stated	6	3.5	121	70.3	44	25.6	1	0.6	172	100.0
TOTAL	3386	4.0	65189	76.7	16447	19.3	10	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

FIGURE 4

AGE OF MOTHER BY COUNTRY OF BIRTH GROUP, NSW 2003



Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Health area of residence

In 2003, the proportion of mothers born in non-English speaking countries was highest in the Sydney South West Area (38.6 per cent), followed by the Sydney West Area (28.1 per cent).

Five per cent of mothers were born in South East Asian countries, 54.4 per cent of whom were resident in the

Sydney South West Area. Almost 5 per cent of mothers were born in Middle Eastern or African countries and 80.6 per cent of these mothers were resident in the Sydney South West or Sydney West Areas. A further 3.3 per cent of mothers were born in North East Asian countries and 2.1 per cent in Southern Asian countries, with the majority living in metropolitan areas (Table 56).

TABLE 56

HEALTH AREA OF RESIDENCE BY MATERNAL COUNTRY OF BIRTH GROUP, NSW 2003*

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			Other-Not stated		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		No.	%	No.
Sydney South West	11921	61.2	295	1.5	693	3.6	451	2.3	118	0.6	121	0.6	1939	10.0	2540	13.0	858	4.4	497	2.6	52	0.3	19485	100.0
Northern Sydney & Central Coast	11097	84.4	97	0.7	120	0.9	98	0.7	204	1.6	75	0.6	220	1.7	386	2.9	625	4.8	211	1.6	9	0.1	13142	100.0
Sydney West	11430	71.7	114	0.7	489	3.1	178	1.1	79	0.5	104	0.7	1189	7.5	915	5.7	641	4.0	775	4.9	28	0.2	15942	100.0
Hunter & New England	9354	96.5	11	0.1	40	0.4	26	0.3	45	0.5	9	0.1	34	0.4	108	1.1	40	0.4	23	0.2	4	0.0	9694	100.0
South Eastern Sydney & Illawarra	11091	79.8	150	1.1	148	1.1	264	1.9	148	1.1	157	1.1	466	3.4	603	4.3	603	4.3	195	1.4	73	0.5	13898	100.0
North Coast	4415	96.3	11	0.2	12	0.3	9	0.2	30	0.7	-	-	15	0.3	58	1.3	15	0.3	15	0.3	-	-	4587	100.0
Greater Western	3811	97.8	5	0.1	5	0.1	7	0.2	12	0.3	11	0.3	-	-	19	0.5	16	0.4	7	0.2	-	-	3898	100.0
Greater Southern	3682	96.0	7	0.2	32	0.8	7	0.2	18	0.5	-	-	11	0.3	35	0.9	18	0.5	22	0.6	-	-	3834	100.0
Other/Not stated	519	94.0	2	0.4	6	1.1	0	0.0	6	1.1	-	-	-	-	9	1.6	3	0.5	1	0.2	-	-	552	100.0
TOTAL	67320	79.2	692	0.8	1545	1.8	1040	1.2	660	0.8	486	0.6	3879	4.6	4673	5.5	2819	3.3	1746	2.1	172	0.2	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Data not shown for country of birth groups with less than five in a group.

Booking status

In 2003, 97.4 per cent of all mothers were booked at the hospital of birth. The lowest rate (95.6 per cent) was in mothers born in Melanesia, Micronesia and Polynesia. This compared with 97.3 per cent of mothers born in English speaking countries and over 97 per cent of mothers in other country of birth groups.

Duration of pregnancy at first antenatal visit

In 2003, 86.6 per cent of all mothers commenced antenatal care before 20 weeks gestation. There was some variation between country of birth groups, with 88.8 per cent of mothers born in English speaking countries commencing antenatal care before 20 weeks gestation, compared with 59.7 per cent of mothers born in Melanesia, Micronesia, and Polynesia, and 71.1 per cent of mothers born in the Middle East and Africa (Table 57).

TABLE 57

CONFINEMENTS BY COUNTRY OF BIRTH AND DURATION OF PREGNANCY AT FIRST ANTENATAL VISIT, NSW 2003

Country of birth group	0-19		Duration of pregnancy at first antenatal visit (weeks)				TOTAL	
	No.	%	No.	%	No.	%	No.	%
English speaking	59761	88.8	7146	10.6	413	0.6	67320	100.0
Central & South America	577	83.4	114	16.5	1	0.1	692	100.0
Melanesia, Micronesia & Polynesia	923	59.7	600	38.8	22	1.4	1545	100.0
Southern Europe	887	85.3	151	14.5	2	0.2	1040	100.0
Western & Northern Europe	583	88.3	74	11.2	3	0.5	660	100.0
Eastern Europe, Russia, Central Asian & Baltic States	397	81.7	87	17.9	2	0.4	486	100.0
Middle East & Africa	2759	71.1	1113	28.7	7	0.2	3879	100.0
South East Asia	3824	81.8	839	18.0	10	0.2	4673	100.0
North East Asia	2359	83.7	454	16.1	6	0.2	2819	100.0
Southern Asia	1423	81.5	320	18.3	3	0.2	1746	100.0
Other/Not stated	122	70.9	31	18.0	19	11.0	172	100.0
TOTAL	73615	86.6	10929	12.9	488	0.6	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Smoking in pregnancy

In 2003, 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 58). About one in five mothers born in English speaking countries smoked at some time during pregnancy, compared to one in ten or fewer mothers born in other country of birth groups.

Smoking in the second half of pregnancy poses the greatest risk to the health of both mother and baby. Three per cent of mothers who smoked during pregnancy quit before the second half of pregnancy. Of mothers who did smoke in the second half of pregnancy, mothers born in English speaking countries were more likely to smoke more than 10 cigarettes per day compared to mothers born in other country of birth groups (Table 59).

TABLE 58

CONFINEMENTS BY COUNTRY OF BIRTH GROUP AND SMOKING IN PREGNANCY, NSW 2003

Country of birth group	No		Smoking in pregnancy				TOTAL	
	No.	%	No.	%	No.	%	No.	%
English speaking	55186	82.0	12124	18.0	10	0.0	67320	100.0
Central & South America	667	96.4	25	3.6	0	0.0	692	100.0
Melanesia, Micronesia & Polynesia	1414	91.5	131	8.5	0	0.0	1545	100.0
Southern Europe	936	90.0	104	10.0	0	0.0	1040	100.0
Western & Northern Europe	607	92.0	53	8.0	0	0.0	660	100.0
Eastern Europe, Russia, Central Asian & Baltic States	451	92.8	35	7.2	0	0.0	486	100.0
Middle East & Africa	3636	93.7	243	6.3	0	0.0	3879	100.0
South East Asia	4566	97.7	107	2.3	0	0.0	4673	100.0
North East Asia	2793	99.1	25	0.9	1	0.0	2819	100.0
Southern Asia	1739	99.6	7	0.4	0	0.0	1746	100.0
Other/Not stated	145	84.3	21	12.2	6	3.5	172	100.0
TOTAL	72140	84.8	12875	15.1	17	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

TABLE 59
MOTHERS WHO SMOKED AT ALL DURING PREGNANCY BY NUMBER OF CIGARETTES SMOKED IN THE SECOND HALF OF PREGNANCY AND COUNTRY OF BIRTH GROUP, NSW 2003

Country of birth group	Cigarettes smoked in the second half of pregnancy								TOTAL	
	None		More than ten per day		1-10 per day		Amount not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking	400	3.3	5442	44.9	5986	49.4	296	2.4	12124	100.0
Central & South America	1	4.0	9	36.0	15	60.0	0	0.0	25	100.0
Melanesia, Micronesia & Polynesia	7	5.3	31	23.7	92	70.2	1	0.8	131	100.0
Southern Europe	2	1.9	29	27.9	71	68.3	2	1.9	104	100.0
Western & Northern Europe	2	3.8	21	39.6	27	50.9	3	5.7	53	100.0
Eastern Europe, Russia, Central Asian & Baltic States	2	5.7	9	25.7	23	65.7	1	2.9	35	100.0
Middle East & Africa	7	2.9	90	37.0	142	58.4	4	1.6	243	100.0
South East Asia	4	3.7	34	31.8	65	60.7	4	3.7	107	100.0
North East Asia	1	4.0	5	20.0	18	72.0	1	4.0	25	100.0
Southern Asia	0	0.0	3	42.9	4	57.1	0	0.0	7	100.0
Other/Not stated	1	4.8	7	33.3	8	38.1	5	23.8	21	100.0
TOTAL	427	3.3	5680	44.1	6451	50.1	317	2.5	12875	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Medical conditions and obstetric complications

In 2003, 1.8 per cent of mothers born in Melanesia, Micronesia, and Polynesia were reported to have diabetes mellitus, three times the rate for all mothers in NSW, though the number of mothers is small (Table 60). The rates of gestational diabetes in mothers born in Asian countries and Melanesia, Micronesia, and Polynesia were at least twice the rate for all mothers in NSW.

Overall, 1.0 per cent of mothers were reported to have essential hypertension, and 5.5 per cent were reported to have pre-eclampsia. Rates of reported pre-eclampsia were lower among mothers born in North East Asian countries than other country of birth groups.

TABLE 60
CONFINEMENTS BY MATERNAL MEDICAL CONDITIONS AND OBSTETRIC COMPLICATIONS AND COUNTRY OF BIRTH GROUP, NSW 2003

Condition	Country of birth group																							
	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.	%
Diabetes mellitus	346	0.5	6	0.9	28	1.8	7	0.7	3	0.5	3	0.6	30	0.8	39	0.8	15	0.5	27	1.5	1	0.6	505	0.6
Gestational diabetes	2186	3.2	52	7.5	138	8.9	63	6.1	24	3.6	21	4.3	261	6.7	509	10.9	310	11.0	217	12.4	11	6.4	3792	4.5
Essential hypertension	735	1.1	9	1.3	17	1.1	11	1.1	7	1.1	2	0.4	35	0.9	33	0.7	18	0.6	11	0.6	1	0.6	879	1.0
Pre-eclampsia	3914	5.8	37	5.3	103	6.7	40	3.8	31	4.7	22	4.5	138	3.6	187	4.0	75	2.7	88	5.0	10	5.8	4645	5.5
TOTAL#	67320	100.0	692	100.0	1545	100.0	1040	100.0	660	100.0	486	100.0	3879	100.0	4673	100.0	2819	100.0	1746	100.0	172	100.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Total refers to total confinements in NSW.

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 were less likely to be induced (Table 61).

Mothers born in the Middle East and Africa and Melanesia, Micronesia and Polynesia were more likely to have a normal vaginal delivery than mothers in other country of birth groups (Table 62). The highest caesarean section rates were among mothers born in Southern Asia (30.8 per cent) and Central and South America (30.1 per cent).

TABLE 61

LABOUR ONSET BY COUNTRY OF BIRTH GROUP, NSW 2003

Country of birth group	Spontaneous		No labour [#]		Onset of labour Induced		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking	39391	58.5	10432	15.5	17496	26.0	1	0.0	67320	100.0
Central & South America	413	59.7	104	15.0	175	25.3	0	0.0	692	100.0
Melanesia, Micronesia & Polynesia	1059	68.5	179	11.6	307	19.9	0	0.0	1545	100.0
Southern Europe	645	62.0	136	13.1	259	24.9	0	0.0	1040	100.0
Western & Northern Europe	417	63.2	97	14.7	146	22.1	0	0.0	660	100.0
Eastern Europe, Russia, Central Asian & Baltic States	309	63.6	76	15.6	101	20.8	0	0.0	486	100.0
Middle East & Africa	2625	67.7	491	12.7	763	19.7	0	0.0	3879	100.0
South East Asia	3403	72.8	546	11.7	724	15.5	0	0.0	4673	100.0
North East Asia	1907	67.6	437	15.5	475	16.8	0	0.0	2819	100.0
Southern Asia	1103	63.2	273	15.6	370	21.2	0	0.0	1746	100.0
Other/Not stated	88	51.2	49	28.5	34	19.8	1	0.6	172	100.0
TOTAL	51360	60.4	12820	15.1	20850	24.5	2	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

No labour indicates elective caesarean section.

TABLE 62

TYPE OF DELIVERY BY COUNTRY OF BIRTH GROUP, NSW 2003

Country of birth group	Normal vaginal		Forceps		Vacuum extraction		Vaginal breech		Type of delivery		Emergency caesarean section [#]		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking	42124	62.6	2251	3.3	4548	6.8	278	0.4	10432	15.5	7678	11.4	9	0.0	67320	100.0
Central & South America	414	59.8	24	3.5	42	6.1	4	0.6	104	15.0	104	15.0	0	0.0	692	100.0
Melanesia, Micronesia & Polynesia	1060	68.6	29	1.9	75	4.9	9	0.6	179	11.6	193	12.5	0	0.0	1545	100.0
Southern Europe	657	63.2	45	4.3	66	6.3	6	0.6	136	13.1	130	12.5	0	0.0	1040	100.0
Western & Northern Europe	417	63.2	25	3.8	44	6.7	2	0.3	97	14.7	75	11.4	0	0.0	660	100.0
Eastern Europe, Russia, Central Asian & Baltic States	293	60.3	23	4.7	35	7.2	3	0.6	76	15.6	56	11.5	0	0.0	486	100.0
Middle East & Africa	2734	70.5	100	2.6	190	4.9	21	0.5	491	12.7	343	8.8	0	0.0	3879	100.0
South East Asia	3010	64.4	153	3.3	406	8.7	24	0.5	546	11.7	533	11.4	1	0.0	4673	100.0
North East Asia	1651	58.6	120	4.3	260	9.2	6	0.2	437	15.5	345	12.2	0	0.0	2819	100.0
Southern Asia	973	55.7	103	5.9	117	6.7	15	0.9	273	15.6	265	15.2	0	0.0	1746	100.0
Other/Not stated	91	52.9	2	1.2	5	2.9	3	1.7	49	28.5	22	12.8	0	0.0	172	100.0
TOTAL	53424	62.8	2875	3.4	5788	6.8	371	0.4	12820	15.1	9744	11.5	10	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Emergency caesarean section includes caesarean sections where the onset of labour was not stated.

Birthweight

The rate of low birthweight (less than 2,500 grams) in 2003 was 6.2 per cent in NSW. The highest rates of low birthweight were in babies of mothers born in Southern Asian countries (8.9 per cent) (Table 63). Babies of mothers born in Western and Northern Europe were least likely to be low birthweight.

TABLE 63

BIRTHWEIGHT BY MATERNAL COUNTRY OF BIRTH GROUP, NSW 2003

Country of birth group	Birthweight (grams)								TOTAL	
	Less than 2,500		2,500+		Not stated		No.	%		
	No.	%	No.	%	No.	%				
English speaking	4220	6.2	64197	93.8	40	0.1	68457	100.0		
Central & South America	47	6.7	652	93.3	0	0.0	699	100.0		
Melanesia, Micronesia & Polynesia	118	7.5	1446	92.5	0	0.0	1564	100.0		
Southern Europe	68	6.4	995	93.5	1	0.1	1064	100.0		
Western & Northern Europe	29	4.3	638	95.5	1	0.1	668	100.0		
Eastern Europe, Russia, Central Asian & Baltic States	38	7.7	456	92.3	0	0.0	494	100.0		
Middle East & Africa	216	5.5	3728	94.5	3	0.1	3947	100.0		
South East Asia	311	6.6	4419	93.4	3	0.1	4733	100.0		
North East Asia	145	5.1	2701	94.9	0	0.0	2846	100.0		
Southern Asia	157	8.9	1609	91.1	0	0.0	1766	100.0		
Other/Not stated	34	19.3	138	78.4	4	2.3	176	100.0		
TOTAL	5383	6.2	80979	93.7	52	0.1	86414	100.0		

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Gestational age

The rate of prematurity (less than 37 weeks gestation) in 2003 was 7.0 per cent in NSW. The highest rates of prematurity were in babies of mothers born in Southern Europe (8.3 per cent). Babies of mothers born in North East Asia were least likely to be premature (Table 64).

TABLE 64

GESTATIONAL AGE BY MATERNAL COUNTRY OF BIRTH GROUP, NSW 2003

Country of birth group	Gestational age (weeks)								TOTAL	
	Less than 37		37+		Not stated		No.	%		
	No.	%	No.	%	No.	%				
English speaking	4902	7.2	63547	92.8	8	0.0	68457	100.0		
Central & South America	51	7.3	648	92.7	0	0.0	699	100.0		
Melanesia, Micronesia & Polynesia	119	7.6	1444	92.3	1	0.1	1564	100.0		
Southern Europe	88	8.3	976	91.7	0	0.0	1064	100.0		
Western & Northern Europe	33	4.9	635	95.1	0	0.0	668	100.0		
Eastern Europe, Russia, Central Asian & Baltic States	32	6.5	462	93.5	0	0.0	494	100.0		
Middle East & Africa	211	5.3	3736	94.7	0	0.0	3947	100.0		
South East Asia	320	6.8	4413	93.2	0	0.0	4733	100.0		
North East Asia	136	4.8	2709	95.2	1	0.0	2846	100.0		
Southern Asia	108	6.1	1658	93.9	0	0.0	1766	100.0		
Other/Not stated	35	19.9	141	80.1	0	0.0	176	100.0		
TOTAL	6035	7.0	80369	93.0	10	0.0	86414	100.0		

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

Apgar score

In 2003, 2.0 per cent of all babies (including stillborn babies) had an Apgar score of 7 or less at five minutes and 1.0 per cent had a score of less than 4 (Table 65). The rate of Apgar scores of less than 7 was highest among babies of mothers born in Melanesia, Micronesia and Polynesia (2.7 per cent).

TABLE 65

BIRTHS BY COUNTRY OF BIRTH GROUP AND APGAR SCORE AT FIVE MINUTES, NSW 2003[#]

Country of birth group	0-4		Apgar score				Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
English speaking	689	1.0	691	1.0	66934	97.8	143	0.2	68457	100.0
Central & South America	9	1.3	5	0.7	684	97.9	1	0.1	699	100.0
Melanesia, Micronesia & Polynesia	21	1.3	22	1.4	1518	97.1	3	0.2	1564	100.0
Southern Europe	13	1.2	7	0.7	1040	97.7	4	0.4	1064	100.0
Western & Northern Europe	5	0.7	9	1.3	653	97.8	1	0.1	668	100.0
Eastern Europe, Russia, Central Asian & Baltic States	7	1.4	5	1.0	482	97.6	0	0.0	494	100.0
Middle East & Africa	56	1.4	34	0.9	3847	97.5	10	0.3	3947	100.0
South East Asia	46	1.0	57	1.2	4622	97.7	8	0.2	4733	100.0
North East Asia	19	0.7	18	0.6	2808	98.7	1	0.0	2846	100.0
Southern Asia	26	1.5	16	0.9	1720	97.4	4	0.2	1766	100.0
Other/Not stated	8	4.5	1	0.6	165	93.8	2	1.1	176	100.0
TOTAL	899	1.0	865	1.0	84473	97.8	177	0.2	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.
Births include stillbirths.

Perinatal outcomes

In 2003, 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 66). The majority of perinatal deaths occurred among babies of mothers born in English speaking countries ($n=564$, 75.8 per cent). There

were a further 49 deaths among babies of mothers born in the Middle East and Africa, and 36 deaths among babies of mothers born in South East Asia—comprising 6.6 and 4.8 per cent respectively of all perinatal deaths reported to the MDC.

TABLE 66

PERINATAL OUTCOMES BY COUNTRY OF BIRTH GROUP, NSW 2003[#]

Country of birth group surviving	Liveborn		Stillborn		Perinatal outcome Neonatal death		Not stated		Total births		Perinatal mortality rate/1,000 births
	No.	%	No.	%	No.	%	No.	%	No.	%	
English speaking	67892	99.2	402	0.6	162	0.2	1	0.0	68457	100.0	8.2
Central & South America	691	98.9	6	0.9	2	0.3	0	0.0	699	100.0	11.4
Melanesia, Micronesia & Polynesia	1549	99.0	10	0.6	5	0.3	0	0.0	1564	100.0	9.6
Southern Europe	1054	99.1	7	0.7	3	0.3	0	0.0	1064	100.0	9.4
Western & Northern Europe	662	99.1	3	0.4	3	0.4	0	0.0	668	100.0	9.0
Eastern Europe, Russia, Central Asian & Baltic States	487	98.6	7	1.4	0	0.0	0	0.0	494	100.0	14.2
Middle East & Africa	3898	98.8	32	0.8	17	0.4	0	0.0	3947	100.0	12.4
South East Asia	4697	99.2	23	0.5	13	0.3	0	0.0	4733	100.0	7.6
North East Asia	2831	99.5	11	0.4	4	0.1	0	0.0	2846	100.0	5.3
Southern Asia	1740	98.5	15	0.8	11	0.6	0	0.0	1766	100.0	14.7
Other/Not stated	168	95.5	7	4.0	1	0.6	0	0.0	176	100.0	—
TOTAL	85669	99.1	523	0.6	221	0.3	1	0.0	86414	100.0	8.6

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, Department of Health.

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.

8. NEONATAL INTENSIVE CARE

The information presented in this chapter was obtained from the Neonatal Intensive Care Units (NICUS) Data Collection (see Chapter 3, Data Sources).

Registration rate

There were 2,098 infants registered in NICUS in 2003. The most common reasons for registration of an infant were assisted ventilation for four hours or more (46.9 per cent) and gestational age less than 29 weeks (17.0 per cent). Infants generally met more than one of the registration criteria.

The NICUS registration rate in 2003 was 23.2 per 1,000 livebirths, which has increased slightly each year since 1992 (17.9 per 1,000 live births). Table 67 shows the registration rate according to the mothers' health area of residence. The relatively low registration rates 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.

Sixty-four of the 2,098 infants (3.1 per cent) registered in NICUS were born to Aboriginal or Torres Strait Islander mothers. There were 2,219 livebirths to Aboriginal or Torres Strait Islander women recorded by the NSW and ACT Midwives Data Collections for 2003. The registration rate for these infants was 28.8 per 1,000 livebirths and has increased since 1992. Sixty-two of the 1,933 mothers (3.2 per cent) were Aboriginal or Torres Strait Islander, of whom 23 (37.1 per cent) were residents of the Greater Western and North Coast Health Areas (Table 69). Seventeen of the 341 mothers (5.0 per cent) of infants less than 29 weeks and/or less than 1,000 grams were Aboriginal or Torres Strait Islander.

Maternal characteristics

There were 1,933 mothers of the 2,098 infants registered in NICUS during 2003. Nearly 80 per cent of the mothers were residents of the Sydney South West, Sydney West, Hunter & New England, Northern Sydney & Central Coast, and South Eastern Sydney & Illawarra Health Areas (Table 68). 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 341 mothers of infants in this group just over three quarters (82.7 per cent) were residents of the Sydney South West, Sydney West, Hunter & New England, Northern Sydney & Central Coast, and South Eastern Sydney & Illawarra Health Areas.

The age of mothers of NICUS infants ranged from 15 to 46 years, with a mean age of 29.8 years. The mean maternal age was similar across all gestational age groups and has remained constant since 1992. In 2003, 22.0 per cent of mothers were aged 35 years or more (range 13.7 per cent in 1992 to 22.0 per cent in 2003). In 2003, 5.2 per cent of mothers were aged less than 20 years (range 5.0 per cent in 1999 to 6.8 per cent in 2000) (Table 69). The health area of residence with the highest proportion of teenage mothers was Greater Western.

There were 1,684 mothers (87.1 per cent) who had an antenatal complication. The most common antenatal complications were preterm labour (44.4 per cent), pregnancy induced hypertension (17.1 per cent), fetal distress (16.9 per cent), antepartum haemorrhage (16.0 per cent), and intrauterine growth restriction (10.5 per cent). Antenatal complications were more frequent in mothers delivering at less than 37 weeks compared with at term. Even so, 56.3 per cent of mothers giving birth at term had an antenatal complication (Table 70).

TABLE 67

NICUS REGISTRATIONS BY HEALTH AREA OF RESIDENCE, NSW & ACT 2003

Health Area	Total NICUS registrants		Total NSW & ACT live births No.	Registrants per 1,000 live births
	No.	%		
Sydney South West	496	23.6	19607	25.3
South Eastern Sydney & Illawarra	257	12.3	14081	18.3
Sydney West	393	18.7	16113	24.4
Northern Sydney & Central Coast	256	12.2	13278	19.3
Hunter & New England	299	14.3	9809	30.5
North Coast	55	2.6	4496	12.2
Greater Southern	117	5.6	4519	25.9
Greater Western	107	5.1	3963	27.0
ACT	107	5.1	3901	27.4
Interstate	8	0.4	587	13.6
Overseas	3	0.1	0	-
Not stated	0	0.0	18	-
TOTAL	2098	100.0	90372	23.2

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research. NSW Midwives Data Collection 2003. Centre for Epidemiology and Research, NSW Department of Health. ACT Maternal-Perinatal Data Collection, 2001.

Administration of corticosteroids to the mother prior to preterm birth improves the outcome for the infant. In 2003, 86.2 per cent of mothers of infants born at less than 28 weeks received corticosteroids (Figure 5, Table 71). Nearly

eighty-seven per cent of mothers of 28–31 week gestation infants received antenatal corticosteroids. The overall proportion of mothers receiving antenatal corticosteroids increased from 45 per cent in 1992 to 74.1 per cent in 2001.

TABLE 68

MOTHERS OF NICUS REGISTRANTS BY HEALTH AREA OF RESIDENCE AND ABORIGINALITY, NSW & ACT 2003

Health Area	Non-Aboriginal		Aboriginal		TOTAL	
	No.	%	No.	%	No.	%
Sydney South West	447	98.5	7	1.5	454	23.5
South Eastern Sydney & Illawarra	231	98.3	4	1.7	235	12.2
Sydney West	359	98.4	6	1.6	365	18.9
Northern Sydney & Central Coast	232	98.7	3	1.3	235	12.2
Hunter & New England	262	95.3	13	4.7	275	14.2
North Coast	45	90.0	5	10.0	50	2.6
Greater Western	80	81.6	18	18.4	98	5.1
Greater Southern	103	95.4	5	4.6	108	5.6
ACT	101	99.0	1	1.0	102	5.3
Interstate	8	5.4	0	0.0	8	0.4
Overseas	3	100.0	0	0.0	3	0.2
TOTAL	1871	96.8	62	3.2	1933	100.0

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

TABLE 69

MOTHERS OF NICUS REGISTRANTS BY HEALTH AREA OF RESIDENCE AND MATERNAL AGE, NSW & ACT 2003

Health Area	Maternal age (years)						TOTAL	
	Less than 20		20–34		35+		No.	%
	No.	%	No.	%	No.	%		
Sydney South West	25	5.5	331	72.9	98	21.6	454	23.5
South Eastern Sydney & Illawarra	12	5.1	161	68.5	62	26.4	235	12.2
Sydney West	24	6.6	258	70.7	83	22.7	365	18.9
Northern Sydney & Central Coast	4	1.7	163	69.4	68	28.9	235	12.2
Hunter & New England	15	5.5	218	79.3	42	15.3	275	14.2
North Coast	3	6.0	36	72.0	11	22.0	50	2.6
Greater Southern	5	4.6	79	73.1	24	22.2	108	5.6
Greater Western	11	11.2	74	75.5	13	13.3	98	5.1
ACT	2	2.0	79	77.5	21	20.8	102	5.4
Interstate	0	0.0	5	62.5	3	37.5	8	4.1
Overseas	0	0.0	3	100.0	0	0.0	3	0.2
TOTAL	101	5.2	1407	72.8	425	22.0	1933	100.0

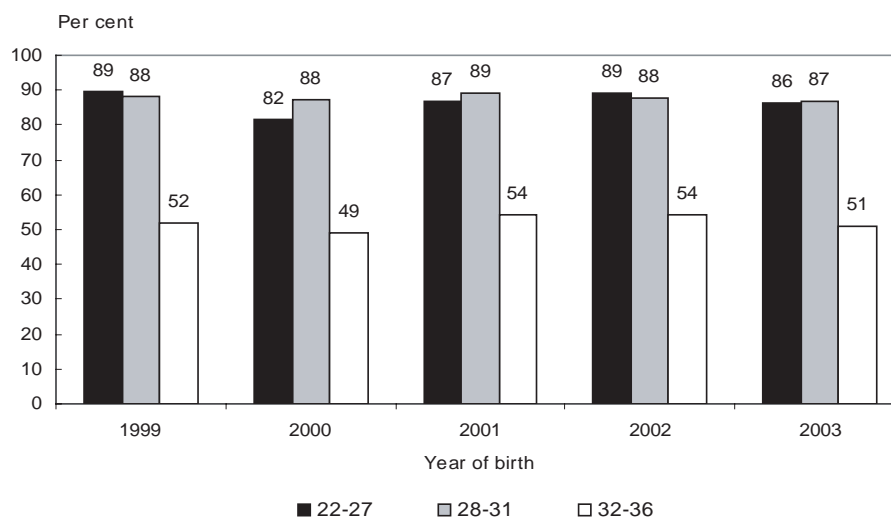
Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research.

TABLE 70

MOTHERS OF NICUS REGISTRANTS BY ANTENATAL COMPLICATIONS AND GESTATIONAL AGE, NSW & ACT 2003

Antenatal complication	Gestational age (weeks)										TOTAL	
	22–27		28–31		32–36		37–41		42+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
Preterm labour	172	78.9	324	62.7	351	55.9	12	2.2	0	0.0	859	44.4
Antepartum haemorrhage	65	29.8	118	22.8	108	17.2	18	3.2	0	0.0	309	16.0
Chorioamnionitis	53	24.3	48	9.3	20	3.2	5	0.9	0	0.0	126	6.5
Fetal distress	41	18.8	72	13.9	98	15.6	111	20.0	4	28.6	326	16.9
Pregnancy induced hypertension	27	12.4	122	23.6	146	23.2	35	6.3	0	0.0	330	17.1
Intrauterine growth restriction	24	11.0	64	12.4	83	13.2	32	5.8	0	0.0	203	10.5
Fetal diagnosis of anomaly	3	1.4	9	1.7	31	4.9	81	14.6	1	7.1	125	6.5
Gestational diabetes	3	1.4	26	5.0	47	7.5	28	5.0	0	0.0	104	5.4
Any complication	218	100.0	517	100.0	628	100.0	315	56.7	6	42.9	1684	87.1
TOTAL MOTHERS	218	100.0	517	100.0	628	100.0	556	100.0	14	100.0	1933	100.0

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

FIGURE 5**MOTHERS OF NICUS REGISTRANTS BY ANTENATAL CORTICOSTEROID ADMINISTRATION AND GESTATIONAL AGE, NSW & ACT 1999–2003**

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

TABLE 71**MOTHERS OF NICUS REGISTRANTS BY ANTENATAL CORTICOSTEROID ADMINISTRATION AND GESTATIONAL AGE, NSW & ACT 1999–2003**

Year	Corticosteroid administration	Gestational age (weeks)						TOTAL	
		22–27		28–31		32–36		No.	%
		No.	%	No.	%	No.	%	No.	%
1999	No	27	10.6	57	12.0	273	47.9	357	27.4
	Yes	228	89.4	419	88.0	297	52.1	944	72.6
	TOTAL	255	100.0	476	100.0	570	100.0	1301	100.0
2000	No	45	18.5	64	12.5	287	50.9	396	30.0
	Yes	198	81.5	449	87.5	277	49.1	924	70.0
	TOTAL	243	100.0	513	100.0	564	100.0	1320	100.0
2001	No	33	13.3	57	10.7	260	45.6	350	25.9
	Yes	215	86.7	474	89.3	310	54.4	999	74.1
	TOTAL	248	100.0	531	100.0	570	100.0	1349	100.0
2002	No	27	10.8	63	12.3	279	45.7	369	26.9
	Yes	224	89.2	449	87.7	331	54.3	1004	73.1
	TOTAL	251	100.0	512	100.0	610	100.0	1373	100.0
2003	No	30	13.8	68	13.2	307	48.9	405	29.7
	Yes	188	86.2	449	86.8	321	51.1	958	70.3
	TOTAL	218	100.0	517	100.0	628	100.0	1363	100.0

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

Transfer status, labour and delivery

Infants are admitted to a neonatal intensive care unit after:

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

Thirty-six per cent of all births were booked at a tertiary centre, ranging from 32.8 per cent for the 28–31 week gestational age group to 40.4 per cent for the 32–36 weeks gestational age group (Table 72). Maternal transfer was most common at gestations less than 32 weeks. The rate of maternal transfer was similar for infants born before 28 weeks gestation (54.0 per cent) and for those born at 28–31 weeks gestation (55.9 per cent). The overall rate of maternal transfer was 32.7 per cent.

Nearly thirty-one per cent of infants were transferred to a tertiary centre following birth. There were 5.3 per cent (111/2,098) of infants transferred from one tertiary centre to another during the first day of life for assisted ventilation and/or major surgery. Transfer following birth was most common in the 37-plus weeks gestational age group (61.5 per cent). Forty-one infants (52/1,244; 4.2 per cent) greater than 31 weeks gestation were discharged home prior to the admission that qualified them for registration in NICUS.

The inverse relationship between gestational age groups and the proportion of births in a tertiary centre is shown in Figure 6 and Table 73. The proportion of infants born in a tertiary centre increased from 60.0 per cent in 1992 to 74.8 per cent 2000. In 2003, 88.6 per cent of infants less than 32 weeks gestation were born in a tertiary centre

compared with 71.8 per cent of 32–36 week gestation infants and 48.3 per cent of term infants.

The pattern of transfer status (Table 74) and place of birth by birthweight (Table 75) is similar to that of gestational age, with the majority (88.9 per cent) of the very low birthweight infants (less than 1,500 grams) born in a tertiary centre.

Spontaneous onset of labour was more common among mothers of infants less than 28 weeks gestation (Table 76). Augmentation and induction of labour were most common in term and post-term births. Similarly spontaneous onset of labour occurred in half (50.3 per cent) of all mothers of infants less than 2,500 grams birthweight (Table 77). As expected, augmentation, or induction of labour was most common in mothers of infants with a birthweight of 2,500 grams or more (39.0 per cent).

Prolonged rupture of membranes (greater than 24 hours) was more common at lower gestations, affecting 12.1 per cent of infants less than 28 weeks gestation (Table 78).

The proportion of mothers who gave birth by elective caesarean section (caesarean section without labour) increased from 27.0 per cent in 1992 to 38.4 per cent in 2003 (Table 79). The most common type of delivery was caesarean section (45.8 per cent in 1993 to 56.0 per cent in 2003), followed by normal vaginal delivery (41.9 per cent in 1993 to 35.6 per cent in 2003) and vaginal breech delivery (7.0 per cent in 1998 to 4.2 per cent in 2003) (Table 80). 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 43.4 per cent, compared with 24.0 per cent for all livebirths in NSW in 2003.

Continued on page 61

TABLE 72

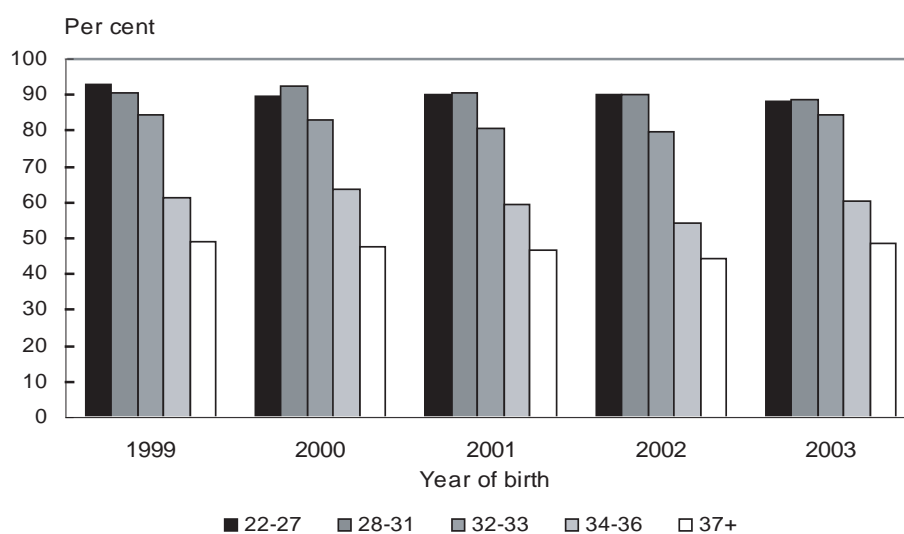
NICUS REGISTRANTS BY BOOKING STATUS, TRANSFER STATUS AND GESTATIONAL AGE, NSW & ACT 2003

Booking status and transfer status	Gestational age (weeks)										TOTAL	
	22–27		28–31		32–36		37–41		42+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Booked at tertiary hospital	85	34.3	199	32.8	272	40.4	183	32.9	5	35.7	744	35.5
Transfer before birth	134	54.0	339	55.9	190	28.2	23	4.1	0	0.0	686	32.7
Transfer after birth	29	11.7	65	10.7	199	29.6	343	61.6	8	57.1	644	30.7
Booked at non tertiary hospital	0	0.0	3	0.5	12	1.8	8	1.4	1	7.1	24	1.1
TOTAL	248	100.0	606	100.0	673	100.0	557	100.0	14	100.0	2098	100.0

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

FIGURE 6

NICUS REGISTRANTS BY TERTIARY HOSPITAL BIRTH AND GESTATIONAL AGE, NSW & ACT 1999-2003



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

TABLE 73

NICUS REGISTRANTS BY PLACE OF BIRTH (LEVEL OF OBSTETRIC HOSPITAL) AND GESTATIONAL AGE, NSW & ACT 2003

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	18	7.3	46#	7.6	33	10.3	118	33.5	247	43.3	462	22.0
Level 5	10	4.0	20#	3.3	14	4.4	22	6.3	45	7.9	111	5.3
Level 6	220	88.7	538#	88.8	271	84.4	212	60.2	276	48.3	1517	72.3
Planned home birth	0	0.0	0	0.0	0	0.0	0	0.0	3	0.5	3	0.1
Born before arrival	0	0.0	2#	0.3	3	0.9	0	0.0	0	0.0	5	0.2
TOTAL	248	100.0	606	100.0	321	100.0	352	100.0	571	100.0	2098	100.0

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

35/68 (51.5%) babies not born in a level six hospital were 30-31 weeks gestation.
355/538 (66.0%) babies born in a level six hospital were 30-31 weeks gestation.

TABLE 74

NICUS REGISTRANTS BY BOOKING STATUS, TRANSFER STATUS AND BIRTHWEIGHT, NSW & ACT 2003

Booking status and transfer status	Birthweight (grams)								TOTAL	
	Less than 1,000		1,000-1,499		1,500-2,499		2,500+			
	No.	%	No.	%	No.	%	No.	%	No.	%
Booked at tertiary hospital	88	33.6	156	34.6	238	36.3	262	35.9	744	35.5
Transfer before birth	149	56.9	241	53.4	263	40.2	33	4.5	686	32.7
Transfer after birth	25	9.5	50	11.1	147	22.4	422	57.8	644	30.7
Booked at non tertiary hosp.	0	0.0	4	0.9	7	1.1	13	1.8	24	1.1
TOTAL	262	100.0	451	100.0	655	100.0	730	100.0	2098	100.0

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

TABLE 75**NICUS REGISTRANTS BY PLACE OF BIRTH (LEVEL OF OBSTETRIC HOSPITAL) AND BIRTHWEIGHT, NSW & ACT 2003**

Place of birth	Less than 1,000		1,000–1,499		1,500–2,499		2,500+		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
Level 1–4	18	6.9	32	7.1	107	16.3	305	41.8	462	22.0
Level 5	7	2.7	20	4.4	26	4.0	58	7.9	111	5.3
Level 6	237	90.5	397	88.0	518	79.1	365	50.0	1517	72.3
Planned home birth	0	0.0	0	0.0	1	0.2	2	0.3	3	0.1
Born before arrival	0	0.0	2	0.4	3	0.5	0	0.0	5	0.2
TOTAL	262	100.0	451	100.0	655	100.0	730	100.0	2098	100.0

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

TABLE 76**MOTHERS OF NICUS REGISTRANTS BY ONSET OF LABOUR AND GESTATIONAL AGE, NSW & ACT 2003**

Onset of labour	Gestational age (weeks)											
	22–27		28–31		32–36		37–41		42+		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous	148	67.9	272	52.6	269	42.8	241	43.3	5	35.7	935	48.4
Augmented	8	3.7	11	2.1	25	4.0	46	8.3	1	7.1	91	4.7
Induced	2	0.9	10	1.9	45	7.2	118	21.2	7	50.0	182	9.4
No labour	60	27.5	224	43.3	289	46.0	151	27.2	1	7.1	725	37.5
TOTAL	218	100.0	517	100.0	628	100.0	556	100.0	14	100.0	1933	100.0

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

TABLE 77**MOTHERS OF NICUS REGISTRANTS BY ONSET OF LABOUR AND BIRTHWEIGHT, NSW & ACT 2003**

Onset of labour	Less than 1,000		1,000–1,499		1,500–2,499		2,500+		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
Spontaneous	121	54.0	176	45.8	309	51.8	329	45.1	935	48.4
Augmented	7	3.1	6	1.6	26	4.4	52	7.1	91	4.7
Induced	1	0.4	11	2.9	38	6.4	132	18.1	182	9.4
No labour	95	42.4	191	49.7	223	37.4	216	29.6	725	37.5
TOTAL	224	100.0	384	100.0	596	100.0	729	100.0	1933	100.0

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

TABLE 78**NICUS REGISTRANTS BY DURATION OF RUPTURE OF MEMBRANES AND GESTATIONAL AGE, NSW & ACT 2003**

Duration of rupture of Membranes	Gestational age (weeks)											
	22–27		28–31		32–36		37–41		42+		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 24 hours	185	74.6	503	83.0	598	88.9	527	94.6	13	92.9	1826	87.0
24 hours–7 days	30	12.1	60	9.9	50	7.4	29	5.2	1	7.1	170	8.1
8+ days	33	13.3	43	7.1	25	3.7	1	0.2	0	0.0	102	4.9
TOTAL	248	100.0	606	100.0	673	100.0	557	100.0	14	100.0	2098	100.0

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

TABLE 79**NICUS REGISTRANTS BY TYPE OF DELIVERY AND GESTATIONAL AGE, NSW & ACT 2003**

Type of delivery	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Normal vaginal	91	36.7	194	32.0	195	29.0	258	46.3	9	64.3	747	35.6
Forceps	0	0.0	9	1.5	14	2.1	17	3.1	0	0.0	40	1.9
Forceps rotation	0	0.0	0	0.0	3	0.4	2	0.4	0	0.0	5	0.2
Vacuum extraction	0	0.0	2	0.3	8	1.2	32	5.7	1	7.1	43	2.0
Vaginal breech	33	13.3	32	5.3	20	3.0	4	0.7	0	0.0	89	4.2
Elective Caesarean	69	27.8	257	42.4	318	47.3	161	28.9	1	7.1	806	38.4
Emergency Caesarean	55	22.2	112	18.5	115	17.1	83	14.9	3	21.4	368	17.5
TOTAL	248	100.0	606	100.0	673	100.0	557	100.0	14	100.0	2098	100.0

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

TABLE 80**NICUS REGISTRANTS BY TYPE OF DELIVERY AND BIRTHWEIGHT, NSW & ACT 2003**

Type of delivery	Birthweight (grams)								TOTAL	
	Less than 1,000		1,000-1,499		1,500-2,499		2,500+			
	No.	%	No.	%	No.	%	No.	%	No.	%
Normal vaginal	70	26.7	122	27.1	223	34.0	332	45.5	747	35.6
Forceps	0	0.0	2	0.4	17	2.6	21	2.9	40	1.9
Forceps rotation	0	0.0	0	0.0	3	0.5	2	0.3	5	0.2
Vacuum extraction	0	0.0	1	0.2	5	0.8	37	5.1	43	2.0
Vaginal breech	35	13.4	27	6.0	21	3.2	6	0.8	89	4.2
Elective Caesarean	110	42.0	220	48.8	249	38.0	227	31.1	806	38.4
Emergency Caesarean	47	17.9	79	17.5	137	20.9	105	14.4	368	17.5
TOTAL	262	100.0	451	100.0	655	100.0	730	100.0	2098	100.0

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

(Continued from page 58)

Infant characteristics

Nearly three quarters of the infants (72.8 per cent) were preterm (less than 37 weeks gestation), 40.7 per cent were very preterm (less than 32 weeks gestation) and 11.8 per cent were extremely preterm (less than 28 weeks gestation) (Figure 7). The proportion of infants in each gestational age group has remained relatively constant (Table 81). Almost all liveborn infants at 24-31 weeks gestation were admitted to a NICU, about two-thirds at 32 weeks gestation, and one-fifth at 33-34 weeks gestation (Table 82).

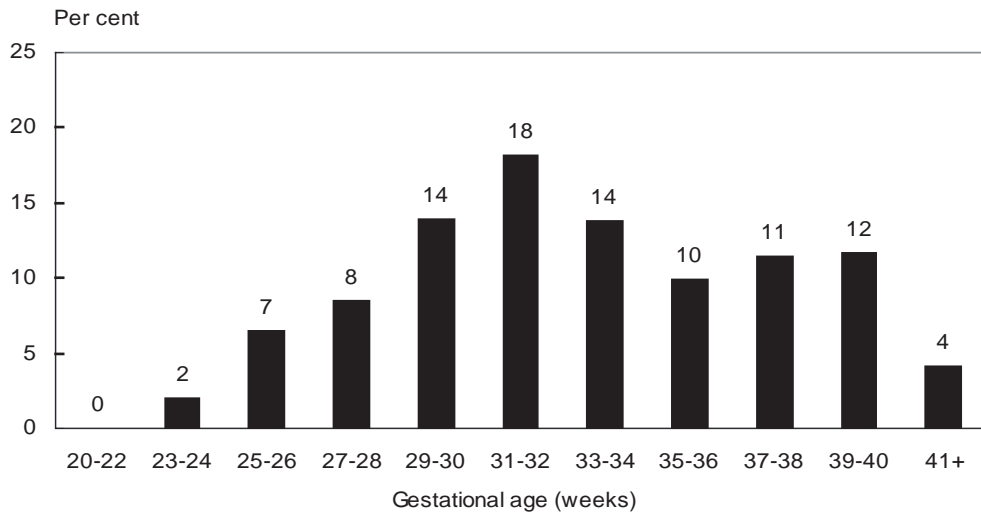
Sixty-five per cent of infants had a low birthweight (less than 2,500 grams), 34.0 per cent had a very low birthweight (less than 1,500 grams) and 12.5 per cent had an extremely

low birthweight (less than 1,000 grams). The proportion of infants in each birthweight group has remained constant (Table 83). Almost all liveborn infants 600-1500 grams birthweight were admitted to a NICU (Table 84).

Overall, 56.1 per cent of infants were male. The ratio of males to females was approximately 3:2 in most gestational age groups (Table 85).

The overall proportion of the infants who had a major congenital anomaly decreased from 22.0 per cent in 1992 to 14.8 per cent in 2003. Congenital anomalies were more common among term infants (37-plus weeks gestational age), of whom 35.0 per cent had a major congenital anomaly and 3.7 per cent had a minor congenital anomaly (Table 86).

Continued on page 65

FIGURE 7**NICUS REGISTRANTS BY GESTATIONAL AGE, NSW & ACT 2003**

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

TABLE 81**NICUS REGISTRANTS BY GESTATIONAL AGE, NSW & ACT 1999-2003**

Gestational age (weeks)	1999		2000		Year of birth 2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
22-27	290	14.6	275	13.7	275	13.7	281	14.0	248	11.8
28-31	551	27.7	606	30.2	642	32.0	604	30.0	606	28.9
32-36	623	31.3	601	30.0	611	30.4	640	31.8	673	32.1
37-41	512	25.7	512	25.5	472	23.5	478	23.8	557	26.5
42+	16	0.8	10	0.5	9	0.4	8	0.4	14	0.7
TOTAL	1992	100.0	2004	100.0	2009	100.0	2011	100.0	2098	100.0

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

TABLE 82**BIRTHS BY NICUS REGISTRATION AND GESTATIONAL AGE, NSW & ACT 2003**

Gestational age (weeks)	NSW & ACT		Registrations No.	NICUS Rate per 1,000 live births	% of cohort
	Stillbirths No.	Live births No.			
Less than 21	45	16	0	0.0	0.0
21	69	17	0	0.0	0.0
22	48	44	0	0.0	0.0
23	36	26	12	461.5	0.6
24	28	52	30	576.9	1.4
25	14	57	57	1000.0	2.7
26	27	80	80	1000.0	3.8
27	16	69	69	1000.0	3.3
28	17	115	108	939.1	5.2
29	12	121	108	892.6	5.2
30	9	184	183	994.6	8.7
31	14	221	207	936.7	9.8
32	15	304	175	575.7	8.3
33	12	454	146	321.6	7.0
34	15	759	144	189.7	6.9
35	16	1197	104	86.9	5.0
36	29	2313	104	45.0	5.0
37	31	5012	97	19.4	4.6
38	24	14134	143	10.1	6.8
39	28	20899	115	5.5	5.5
40	30	26869	129	4.8	6.2
41	18	15229	73	4.8	3.5
42	4	2026	14	6.9	0.7
43	0	169	0	0.0	0.0
Not stated	0	5	0	0.0	0.0
TOTAL	558	90372	2098	23.2	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research, 2003. NSW Midwives Data Collection 2003. Centre for Epidemiology and Research, NSW Department of Health. ACT Maternal-Perinatal Data Collection, 2001.

TABLE 83**NICUS REGISTRANTS BY BIRTHWEIGHT, NSW & ACT 1999-2003**

Birthweight (grams)	Year of birth									
	1999		2000		2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 400	3	0.2	1	0.0	2	0.1	1	0.0	1	0.0
400-499	9	0.5	6	0.3	5	0.2	7	0.3	9	0.4
500-599	25	1.3	21	1.0	30	1.5	21	1.0	23	1.1
600-699	51	2.6	56	2.8	49	2.4	53	2.6	38	1.8
700-799	62	3.1	62	3.1	49	2.4	63	3.1	53	2.5
800-899	75	3.8	53	2.6	72	3.6	58	2.9	59	2.8
900-999	58	2.9	84	4.2	63	3.1	81	4.0	79	3.8
1,000-1,249	210	10.5	212	10.6	219	10.9	181	9.0	197	9.4
1,250-1,499	247	12.4	280	14.0	274	13.6	263	13.1	254	12.1
1,500-1,749	207	10.4	203	10.1	231	11.5	228	11.3	214	10.2
1,750-1,999	151	7.6	144	7.2	159	7.9	163	8.1	184	8.8
2,000-2,499	242	12.1	253	12.6	251	12.5	273	13.6	257	12.2
2,500-2,999	211	10.6	201	10.0	215	10.7	205	10.2	243	11.6
3,000-3,499	205	10.3	200	10.0	195	9.7	195	9.7	229	10.9
3,500-3,999	153	7.7	149	7.4	132	6.6	157	7.8	172	8.2
4,000+	83	4.2	79	3.9	63	3.1	62	3.1	86	4.1
TOTAL	1992	100.0	2004	100.0	2009	100.0	2011	100.0	2098	100.0

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

TABLE 84**BIRTHS BY NICUS REGISTRATION AND BIRTHWEIGHT, NSW & ACT 2003**

Birthweight (grams)	NSW & ACT			NICUS Rate per 1,000 live births	% of cohort
	Stillbirths No.	Live births No.	Registrations No.		
Less than 400	134	54	1	18.5	0.1
400-499	57	43	9	209.3	0.4
500-599	52	54	23	425.9	1.1
600-699	24	51	38	745.1	1.8
700-799	15	57	53	929.8	2.5
800-899	7	63	59	936.5	2.8
900-999	13	83	79	951.8	3.8
1,000-1,249	19	211	197	933.6	9.4
1,250-1,499	23	288	254	881.9	12.1
1,500-1,749	18	409	214	523.2	10.2
1,750-1,999	15	680	184	270.6	8.8
2,000-2,499	45	3343	257	76.9	12.3
2,500-2,999	53	13456	243	18.1	11.6
3,000-3,499	46	32264	229	7.1	10.9
3,500-3,999	23	28437	172	6.0	8.2
4,000+	12	10869	86	7.9	4.1
Not stated	2	10	0	0.0	0.0
TOTAL	558	90372	2098	23.2	100.0

Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research, 2003. NSW Midwives Data Collection 2003. Centre for Epidemiology and Research, NSW Department of Health. ACT Maternal-Perinatal Data Collection, 2001.

TABLE 85**NICUS REGISTRANTS BY GENDER AND GESTATIONAL AGE, NSW & ACT 2003**

Sex	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
Male	125	50.4	333	55.0	380	56.5	334	60.0	5	35.7	1177	56.1
Female	123	49.6	273	45.0	293	43.5	223	40.0	9	64.3	921	43.9
TOTAL	248	100.0	606	100.0	673	100.0	557	100.0	14	100.0	2098	100.0

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

TABLE 86**NICUS REGISTRANTS BY CONGENITAL ANOMALIES AND GESTATIONAL AGE, NSW & ACT 2003**

Congenital anomaly	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
None	225	90.7	561	92.6	591	87.8	339	60.9	11	78.6	1727	82.3
Minor	5	2.0	17	2.8	17	2.5	20	3.6	1	7.1	60	2.9
Major	18	7.3	28	4.6	65	9.7	198	35.5	2	14.3	311	14.8
TOTAL	248	100.0	606	100.0	673	100.0	557	100.0	14	100.0	2098	100.0

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

(Continued from page 61)

The overall proportion of infants born following a multiple pregnancy was 20.1 per cent in 2003 (range 14.5 per cent in 1993 to 22.4 per cent in 2001). In 2003, most of the infants (79.9 per cent) were from a singleton pregnancy, 17.8 per cent were from a twin pregnancy, 2.0 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 26.6 per cent of infants less than 37 weeks gestation being from a multiple gestation pregnancy (Table 87). Multiple births represented 3.2 per cent of all NSW/ACT livebirths in 2003. The higher than expected rate of multiple births among the 2003 NICUS cohort reflects the high proportion of multiple pregnancies resulting in preterm birth.

Table 88 shows the median, 25th and 75th percentiles for one- and five-minute Apgar scores according to gestational age groups. For infants 32-42 weeks gestational age, the median one-minute Apgar score was eight. The median five-minute score was nine for infants 28-42 weeks gestational age. The proportion of infants with a one-minute Apgar score of 0-4 has decreased from 38.7 per cent in 1992 to 22.4 per cent in 2003. Similarly the proportion of infants with a five-minute Apgar score of 0-4 has decreased from 10.8 per cent in 1992 to 5.2 per cent in 2003 (Table 89).

Infants with major congenital anomalies ($n=311$) were excluded from the analysis of morbidity and mortality.

The majority of infants without a major congenital anomaly (1,513/1,787; 84.7 per cent) in the 2003 NICUS cohort received assisted ventilation (intermittent mandatory ventilation and/or continuous positive airways pressure) (Table 90).

The main indication for assisted ventilation for most infants was respiratory distress syndrome (Figure 8). The 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, pulmonary hypertension and apnoea were more common in term infants (Figure 8, Table 91).

Proven systemic infection has decreased from 21.5 per cent in 1992 to 10.5 per cent of infants in 2003. Infection was most common among infants less than 28 weeks gestation (33.9 per cent) (Table 92).

The overall proportion of ventilated infants who received surfactant was 41.4 in 2003 (range 33.8 per cent in 1992 to 51.8 per cent in 1998) (Table 93). In 2003, 52.9 per cent of the infants who received surfactant were less than 32 weeks gestational age. The majority (58.7 per cent) of ventilated infants with a diagnosis of respiratory distress syndrome received surfactant.

Overall, the incidence of treated patent ductus arteriosus (PDA) was 14.5 per cent in 2003 (range 10.7 in 1994 to 15.5 per cent in 2000). In 2003, 97.0 per cent of the infants treated for PDA were less than 32 weeks gestational age (Table 94). The majority of infants with a PDA requiring treatment received indomethacin only (12.9 per cent). Surgical treatment of PDA was predominantly performed on infants less than 28 weeks gestation (7.0 per cent). Some infants (1.1 per cent) were treated with both indomethacin and surgery.

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TABLE 87

NICUS REGISTRANTS BY PLURALITY AND GESTATIONAL AGE, NSW & ACT 2003

Plurality	Gestational age (weeks)										TOTAL	
	22-27		28-31		32-36		37-41		42+			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Singleton	183	73.8	432	71.3	506	75.2	542	97.3	14	100.0	1677	79.9
Twins	62	25.0	148	24.4	149	22.1	15	2.7	0	0.0	374	17.8
Triplets	3	1.2	26	4.3	14	2.1	0	0.0	0	0.0	43	2.0
Quads	0	0.0	0	0.0	4	0.6	0	0.0	0	0.0	4	0.2
TOTAL	248	100.0	606	100.0	673	100.0	557	100.0	14	100.0	2098	100.0

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

TABLE 88**NICUS REGISTRANTS BY APGAR SCORE AND GESTATIONAL AGE, NSW & ACT 2003**

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

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

TABLE 89**NICUS REGISTRANTS BY APGAR SCORE AT ONE AND FIVE MINUTES, NSW & ACT 1999-2003**

Apgar Score	Year of birth									
	1999		2000		2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%	No.	%
One minute										
0-4	531	26.7	509	25.4	516	25.7	473	23.5	470	22.4
5-7	689	34.6	744	37.1	744	37.0	690	34.3	746	35.6
8+	766	38.5	737	36.8	734	36.5	830	41.3	881	42.0
Not stated	6	0.3	14	0.7	15	0.7	18	0.9	1	0.0
TOTAL	1992	100.0	2004	100.0	2009	100.0	2011	100.0	2098	100.0
Five minutes										
0-4	132	6.6	154	7.7	143	7.1	139	6.9	109	5.2
5-7	437	21.9	399	19.9	425	21.2	393	19.5	377	18.0
8+	1417	71.1	1438	71.8	1428	71.1	1466	72.9	1610	76.7
Not stated	6	0.3	13	0.6	13	0.6	13	0.6	2	0.1
TOTAL	1992	100.0	2004	100.0	2009	100.0	2011	100.0	2098	100.0

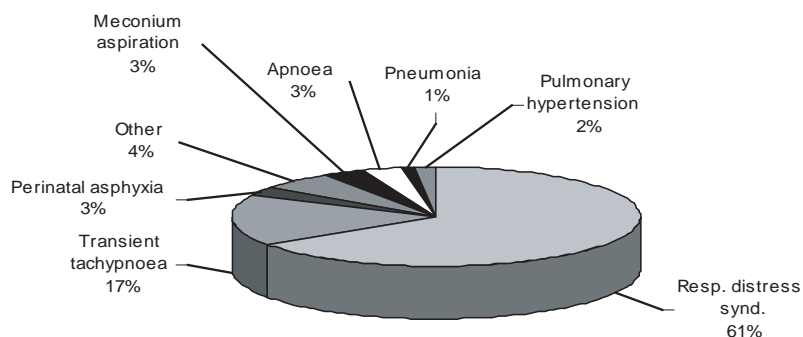
Source: NICUS Data Collection. NSW Centre for Perinatal Health Services Research

TABLE 90**NICUS REGISTRANTS BY ASSISTED VENTILATION BY GESTATIONAL AGE, NSW & ACT 1999-2003#**

Year	Assisted ventilation	Gestational age (weeks)									
		22-27		28-31		32-36		37+		TOTAL	
		No.	%	No.	%	No.	%	No.	%	No.	%
1999	No	1	0.4	119	22.8	60	11.5	9	3.0	189	11.7
	Yes	280	99.6	403	77.2	461	88.5	289	97.0	1433	88.3
	TOTAL	281	100.0	522	100.0	521	100.0	298	100.0	1622	100.0
2000	No	1	0.4	115	20.2	65	12.4	6	1.9	187	11.2
	Yes	261	99.6	454	79.8	461	87.6	304	98.1	1480	88.8
	TOTAL	262	100.0	569	100.0	526	100.0	310	100.0	1667	100.0
2001	No	2	0.8	126	20.6	61	11.6	3	1.1	192	11.4
	Yes	264	99.2	485	79.4	464	88.4	275	98.9	1488	88.6
	TOTAL	266	100.0	611	100.0	525	100.0	278	100.0	1680	100.0
2002	No	2	0.7	90	16.2	50	9.0	4	1.4	146	8.8
	Yes	266	99.3	465	83.8	504	91.0	281	98.6	1516	91.2
	TOTAL	268	100.0	555	100.0	554	100.0	285	100.0	1662	100.0
2003	No	1	0.4	103	17.8	96	15.8	74	19.9	274	15.3
	Yes	229	99.6	475	82.2	512	84.2	297	80.1	1513	84.7
	TOTAL	230	100.0	578	100.0	608	100.0	371	100.0	1787	100.0

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

Babies with major congenital anomalies excluded.

FIGURE 8**NICUS REGISTRANTS BY MAIN INDICATION FOR ASSISTED VENTILATION, NSW & ACT 2003#**

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

TABLE 91**NICUS REGISTRANTS BY MAIN INDICATION FOR ASSISTED VENTILATION AND GESTATIONAL AGE, NSW & ACT 2003#**

Indication	Gestational age (weeks)								TOTAL	
	22-27		28-31		32-36		37+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
Hyaline membrane disease	216	94.3	384	80.8	330	64.5	62	20.9	992	65.6
Transient tachypnoea of newborn	4	1.7	58	12.2	126	24.6	62	20.9	250	16.5
Meconium aspiration	0	0.0	1	0.2	2	0.4	47	15.8	50	3.3
Pneumonia	0	0.0	2	0.4	5	1.0	11	3.7	18	1.2
Pulmonary hypertension	0	0.0	1	0.2	6	1.2	19	6.4	26	1.7
Immature lung	8	3.5	13	2.7	3	0.6	0	0.0	24	1.6
Apnoea	0	0.0	10	2.1	17	3.3	17	5.7	44	2.9
Congenital anomaly	1	0.4	1	0.2	0	0.0	0	0.0	2	0.1
Other	0	0.0	3	0.6	13	2.5	29	9.8	45	3.0
Peri surgery	0	0.0	1	0.2	3	0.6	14	4.7	18	1.2
Newborn encephalopathy	0	0.0	1	0.2	7	1.4	36	12.1	44	2.9
TOTAL	229	100.0	475	100.0	512	100.0	297	100.0	1513	100.0

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

TABLE 92**NICUS REGISTRANTS BY PROVEN SYSTEMIC INFECTION AND GESTATIONAL AGE, NSW & ACT 2003[#]**

Infection	Gestational age (weeks)									
	22-27		28-31		32-36		37+		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
No	152	66.1	505	87.4	590	97.0	352	94.9	1599	89.5
Yes	78	33.9	73	12.6	18	3.0	19	5.1	188	10.5
TOTAL	230	100.0	578	100.0	608	100.0	371	100.0	1787	100.0

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

Babies with major congenital anomalies excluded.

TABLE 93**NICUS REGISTRANTS BY SURFACTANT ADMINISTRATION AND GESTATIONAL AGE, NSW & ACT 1999-2003[#]**

Year	Surfactant administration	Gestational age (weeks)									
		22-27		28-31		32-36		37+		TOTAL	
		No.	%	No.	%	No.	%	No.	%	No.	%
1999	No	57	20.4	216	53.6	280	60.7	216	74.7	769	53.7
	Yes	223	79.6	187	46.4	181	39.3	73	25.3	664	46.3
	TOTAL	280	100.0	403	100.0	461	100.0	289	100.0	1433	100.0
2000	No	59	22.6	254	55.9	282	61.2	255	83.9	850	57.4
	Yes	202	77.4	200	44.1	179	38.8	49	16.1	630	42.6
	TOTAL	261	100.0	454	100.0	461	100.0	304	100.0	1480	100.0
2001	No	56	21.2	275	56.7	325	70.0	220	80.0	876	58.9
	Yes	208	78.8	210	43.3	139	30.0	55	20.0	612	41.1
	TOTAL	264	100.0	485	100.0	464	100.0	275	100.0	1488	100.0
2002	No	66	24.8	277	59.6	366	72.6	238	84.7	947	62.5
	Yes	200	75.2	188	40.4	138	27.4	43	15.3	569	37.5
	TOTAL	266	100.0	465	100.0	504	100.0	281	100.0	1516	100.0
2003	No	42	18.3	256	53.9	350	68.4	238	80.1	886	58.6
	Yes	187	81.7	219	46.1	162	31.6	59	19.9	627	41.4
	TOTAL	229	100.0	475	100.0	512	100.0	297	100.0	1513	100.0

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

Babies with major congenital anomalies or not ventilated excluded.

TABLE 94**NICUS REGISTRANTS BY TREATED PATENT DUCTUS ARTERIOSUS (PDA) AND GESTATIONAL AGE, NSW & ACT 2003[#]**

PDA-Treatment for PDA	Gestational age (weeks)									
	22-27		28-31		32-36		37+		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
No treated PDA	120	52.2	491	84.9	602	99.0			1211	85.5
Indomethacin only	94	40.9	83	14.4	5	0.8			182	12.9
Surgery only	3	1.3	1	0.2	1	0.2			5	0.4
Indomethacin & surgery	13	5.7	3	0.5	0	0.0			16	1.1
TOTAL	230	100.0	578	100.0	608	100.0			1416	100.0

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

Babies with major congenital anomalies excluded.

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Overall, the incidence of necrotising enterocolitis (NEC) was 3.7 per cent in 2003 (range 9.8 per cent in 1992 to 2.2 per cent in 2000). The diagnosis of NEC was made radiologically or at surgery in 46.3 per cent of infants and clinically in the remainder. NEC was more common at the lower gestational age groups and 89.6 per cent of the infants with NEC were born at less than 32 weeks gestation (Table 95).

The overall incidence of major surgery was 3.7 per cent in 2003 (range 7.7 per cent in 1992 to 3.1 per cent in 2000). In 2003, 62.1 per cent of the infants who required major surgery were less than 32 weeks gestation (Table 96). The most common surgical procedures amongst these infants were for patent ductus arteriosus and necrotising enterocolitis.

In 2003, the incidence of intraventricular haemorrhage (IVH) among preterm infants (less than 37 weeks gestational age) was 12.9 per cent (range 20.5 per cent in

1993 to 12.9 per cent in 2003). In 2003, confirmed IVH was most common among infants less than 28-weeks gestation (37.8 per cent); 37.9 per cent of these infants had severe IVH (grade 3 or 4). Nine infants less than 32 weeks gestation with severe IVH required surgical drainage for post haemorrhagic hydrocephalus (9/33, 27.3 per cent). Of the surviving infants born before 32 weeks gestation, 94.7 per cent had a head ultrasound examination to detect IVH (Table 97).

The proportion of infants with severe grades (Grades 3, 4 or 5) of retinopathy of prematurity (ROP) was 3.7 per cent in 2003 (range 7.5 per cent in 1992 to 3.7 per cent in 2003). In 2003, one infant with Grade 3 ROP was 30 weeks gestation and 63.3 per cent of the infants less than 28 weeks gestation with severe ROP received either cryo- or laser therapy. Importantly, 23.4 per cent of surviving infants of 28–31 weeks gestational age did not have an eye examination recorded (Table 98).

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TABLE 95

NICUS REGISTRANTS BY NECROTISING ENTEROCOLITIS (NEC) AND GESTATIONAL AGE, NSW & ACT 2003[#]

NEC—Treatment for NEC	Gestational age (weeks)								TOTAL	
	22–27		28–31		32–36		37+			
	No.	%	No.	%	No.	%	No.	%	No.	%
No NEC	202	87.8	546	94.5	603	99.2	369	99.5	1720	96.3
Clinical diagnosis	14	6.1	16	2.8	5	0.8	1	0.3	36	2.0
X-ray diagnosis	7	3.0	12	2.1	0	0.0	1	0.3	20	1.1
Surgery for NEC	7	3.0	4	0.7	0	0.0	0	0.0	11	0.6
TOTAL	230	100.0	578	100.0	608	100.0	371	100.0	1787	100.0

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

Babies with major congenital anomalies excluded.

TABLE 96

NICUS REGISTRANTS BY MAJOR SURGERY AND GESTATIONAL AGE, NSW & ACT 2003[#]

Major Surgery	Gestational age (weeks)								TOTAL	
	22–27		28–31		32–36		37+			
	No.	%	No.	%	No.	%	No.	%	No.	%
No	201	87.4	566	97.9	602	99.0	352	94.9	1721	96.3
Yes	29	12.6	12	2.1	6	1.0	19	5.1	66	3.7
TOTAL	230	100.0	578	100.0	608	100.0	371	100.0	1787	100.0

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

Babies with major congenital anomalies excluded.

TABLE 97**NICUS REGISTRANTS BY INTRAVENTRICULAR HAEMORRHAGE (IVH) AND GESTATIONAL AGE, NSW & ACT 2003#**

Head ultrasound	Gestational age (weeks)							
	22-27		28-31		32-36		TOTAL	
	No.	%	No.	%	No.	%	No.	%
No IVH	127	55.2	457	79.1	254	41.8	838	59.2
Grade 1	43	18.7	58	10.0	14	2.3	115	8.1
Grade 2	11	4.8	6	1.0	2	0.3	19	1.3
Grade 3	8	3.5	7	1.2	3	0.5	18	1.3
Grade 4	25	10.9	4	0.7	2	0.3	31	2.2
Hydrocephalus requiring drainage	5	2.2	4	0.7	1	0.2	10	0.7
Not examined & lived	0	0.0	43	7.4	331	54.4	374	26.4
Not examined & died	16	7.0	3	0.5	2	0.3	21	1.5
TOTAL	230	100.0	578	100.0	608	100.0	1416	100.0

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

Babies with major congenital anomalies excluded.

TABLE 98**NICUS REGISTRANTS BY RETINOPATHY OF PREMATURITY (ROP) AND GESTATIONAL AGE, NSW & ACT 2003#**

Retinopathy of prematurity (ROP)	Gestational age (weeks)							
	22-27		28-31				TOTAL	
	No.	%	No.	%	No.	%	No.	%
No ROP	71	30.9	391	67.6	462		57.2	
Grade 1	30	13.0	29	5.0	59		7.3	
Grade 2	37	16.1	11	1.9	48		5.9	
Grade 3	29	12.6	1	0.2	30		3.7	
Grade 4	0	0.0	0	0.0	0		0.0	
Grade 5	1	0.4	0	0.0	1		0.1	
Treatment with cryo/laser therapy	19	8.3	0	0.0	19		2.4	
Not examined & lived	1	0.4	135	23.4	136		16.8	
Not examined & died	61	26.5	11	1.9	72		8.9	
TOTAL	230	100.0	578	100.0	808		100.0	

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

Babies with major congenital anomalies excluded.

(Continued from page 69)

Service utilisation

Indicators of service utilisation collected as part of NICUS include length of stay in tertiary and non-tertiary centres, days on assisted ventilation, and days in oxygen (Figures 9, 10 and 11 and Table 99). On an individual basis, infants born at 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 2003, the total cohort used 57,325 bed days in a tertiary centre in NSW and the ACT (range 46,090 in 1993 to 58,529 in 2000); as well as 19,070 in a non-tertiary centre (level 2 neonatal unit) in NSW and

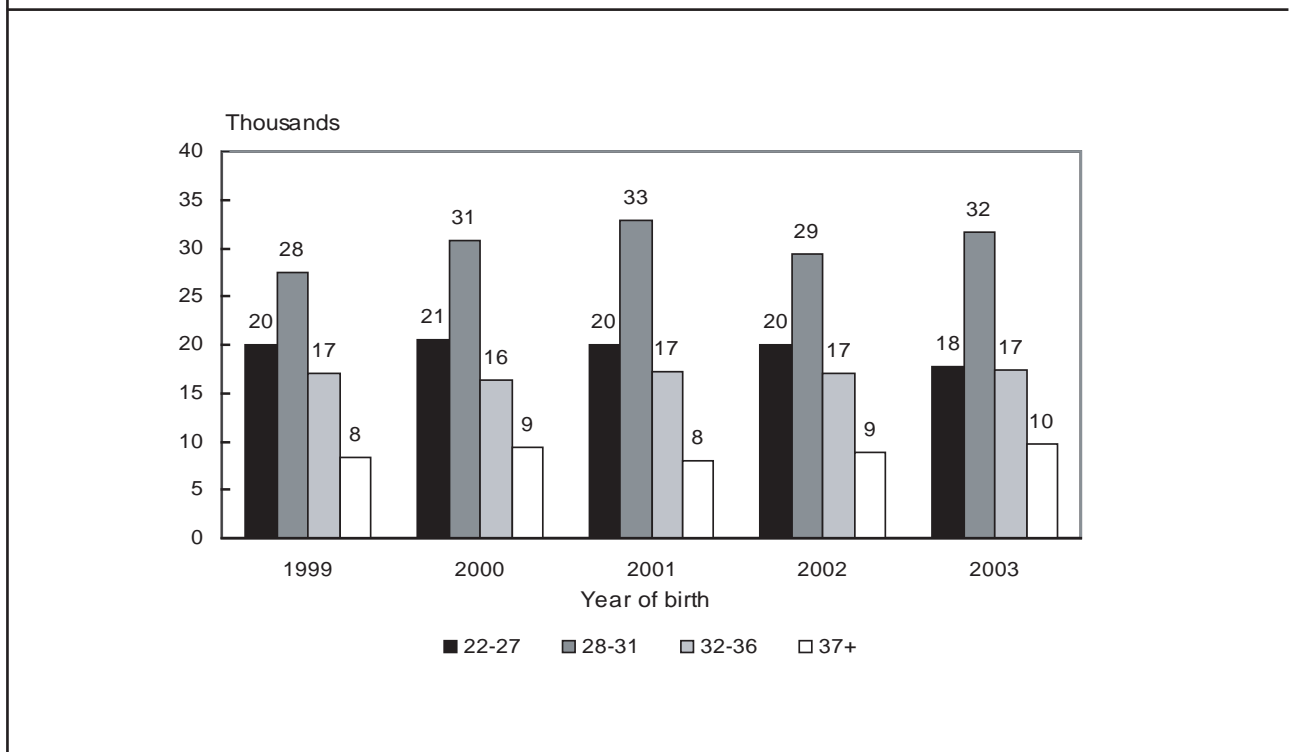
the ACT (14,288 in 1992 to 20,018 in 2001). Even when these infants leave the neonatal intensive care unit, they still require substantial resources.

In 2003, NICUS registrants used 16,266 days of assisted ventilation (range 15,282 in 1993 to 18,909 in 2000) and 26,351 days of oxygen therapy (range 22,526 in 1992 to 30,802 in 2001). In 2003, 62 (3.5 per cent) infants were discharged home on oxygen therapy (range 2.1 per cent in 1992 to 5.1 per cent in 1998). The proportion of infants less than 28 weeks gestation discharged home on oxygen therapy was 14.8 per cent (range 7.5 per cent in 1992 to 21.3 per cent in 2002) (Table 100).

Continued on page 75

FIGURE 9

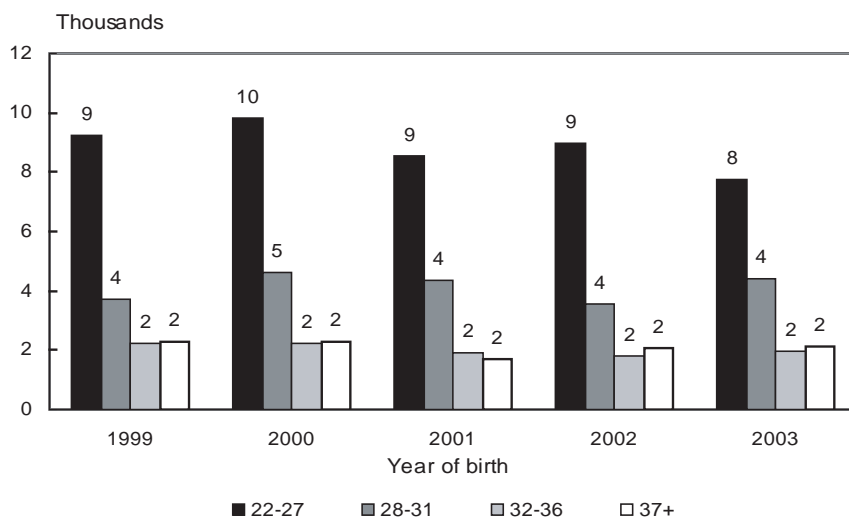
NICUS REGISTRANTS BY TOTAL NUMBER OF DAYS IN HOSPITAL AND GESTATIONAL AGE, NSW & ACT 2003



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

FIGURE 10

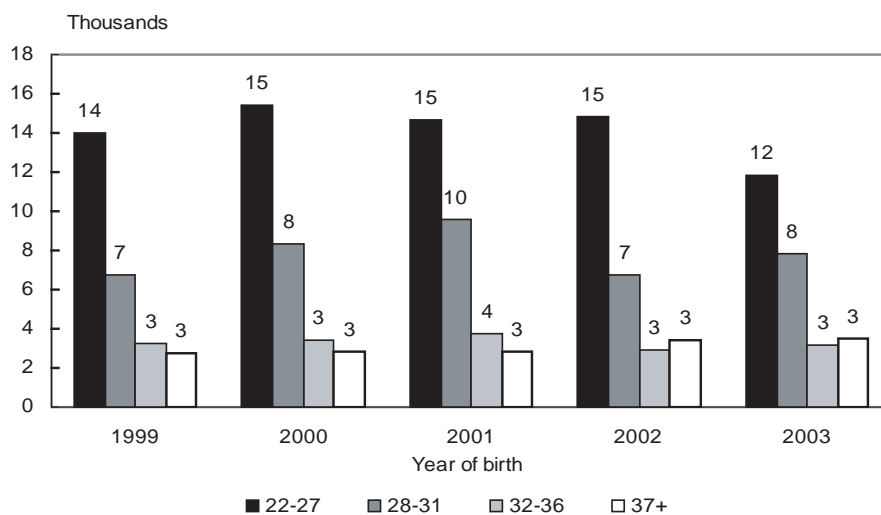
NICUS REGISTRANTS BY TOTAL NUMBER OF DAYS OF ASSISTED VENTILATION AND GESTATIONAL AGE, NSW & ACT 2003



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

FIGURE 11

NICUS REGISTRANTS BY TOTAL NUMBER OF DAYS OF OXYGEN THERAPY AND GESTATIONAL AGE, NSW & ACT 1999-2003



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

TABLE 99
NICUS REGISTRANTS BY SERVICE UTILISATION INDICATORS AND GESTATIONAL AGE, NSW & ACT 2003

Indicators	Gestational age (weeks)				TOTAL
	22-27	28-31	32-36	37+	
Non-tertiary hospital stay (days)					
Minimum	0	0	0	0	0
Maximum	77	267	129	78	267
Sum	1727	10350	5626	1367	19070
Median	0	16	4	0	1
25th percentile	0	0	0	0	0
75th percentile	8	30	15	3	15
Tertiary hospital stay (days)					
Minimum	1	0	0	0	0
Maximum	170	238	101	310	310
Sum	16055	21237	11726	8307	57325
Median	69	32	14	10	17
25th percentile	25	16	7	5	8
75th percentile	97	49	23	17	36
Total hospital stay (days)					
Minimum	1	1	0	1	0
Maximum	179	505	165	310	505
Sum	17782	31587	17351	9674	76394
Median	80	48	23	12	28
25th percentile	27	37	16	7	14
75th percentile	101	62	33	20	49
Mechanical ventilation (days)					
Minimum	0	0	0	0	0
Maximum	92	171	38	78	171
Sum	2729	1363	803	1549	6443
Median	5	0	0	1	0
25th percentile	1	0	0	0	0
75th percentile	14	2	1	3	2
Continuous Positive Airways Pressure (days)					
Minimum	0	0	0	0	0
Maximum	71	69	120	162	162
Sum	5028	3068	1168	558	9823
Median	18	2	0	0	0
25th percentile	0	0	0	0	0
75th percentile	35	6	2	0	3
Assisted ventilation (days)					
Minimum	0	0	0	0	0
Maximum	120	174	131	241	241
Sum	7757	4431	1971	2107	16266
Median	27	3	1	1	2
25th percentile	9	1	0	0	0
75th percentile	50	8	3	4	6
Oxygen (days)					
Minimum	1	0	0	0	0
Maximum	179	505	118	278	505
Sum	11862	7819	3203	3467	26351
Median	30	3	2	2	3
25th percentile	7	1	1	1	1
75th percentile	87	10	6	6	8

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

TABLE 100**NICUS REGISTRANTS BY HOME OXYGEN ADMINISTRATION AND GESTATIONAL AGE, NSW & ACT 1999–2003#**

Year	Home oxygen	Gestational age (weeks)								TOTAL	
		22–27		28–31		32–36		37+			
		No.	%	No.	%	No.	%	No.	%	No.	%
1999	No	243	86.5	509	97.5	519	99.6	295	99.0	1566	96.5
	Yes	38	13.5	13	2.5	2	0.4	3	1.0	56	3.5
	TOTAL	281	100.0	522	100.0	521	100.0	298	100.0	1622	100.0
2000	No	211	80.5	554	97.4	519	98.7	306	98.7	1590	95.4
	Yes	51	19.5	15	2.6	7	1.3	4	1.3	77	4.6
	TOTAL	262	100.0	569	100.0	526	100.0	310	100.0	1667	100.0
2001	No	216	81.2	582	95.3	524	99.8	275	98.9	1597	95.1
	Yes	50	18.8	29	4.7	1	0.2	3	1.1	83	4.9
	TOTAL	266	100.0	611	100.0	525	100.0	278	100.0	1680	100.0
2002	No	210	78.4	542	97.7	551	99.5	280	98.2	1583	95.2
	Yes	58	21.6	13	2.3	3	0.5	5	1.8	79	4.8
	TOTAL	268	100.0	555	100.0	554	100.0	285	100.0	1662	100.0
2003	No	196	85.2	554	95.8	606	99.7	369	99.5	1725	96.5
	Yes	34	14.8	24	4.2	2	0.3	2	0.5	62	3.5
	TOTAL	230	100.0	578	100.0	608	100.0	371	100.0	1787	100.0

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

Babies with major congenital anomalies excluded.

(Continued from page 71)

Survival

Infants with a major congenital anomaly have been excluded from the analysis of survival, with the exception of data reported in Table 104.

The six-month survival rate for all infants without a major congenital anomaly in the 2003 cohort was 94.3 per cent (range 87.8 per cent in 1992 to 94.3 per cent in 2003). Survival of infants born at less than 25 weeks gestation was 33.3 per cent (range 33.3 per cent in 2003 to 54.8 per cent in 1993). There was a trend for survival to improve with gestational age (Figure 12 and Table 102). Term infants (94.9 per cent) were slightly more likely to survive than preterm infants (94.2 per cent). Among infants who died, 65.3 per cent of deaths occurred during the first week of life (range 62.5 per cent in 1998 to 76.2 per cent in 2002) with a further 27.7 per cent occurring during the first month of life (Table 101).

The six-month survival rate improved with increasing birthweight, ranging from 55.0 per cent for infants in the 500–599 gram group to 89.3 per cent for the 900–999 gram group. Six-month survival continued to improve with increasing birthweight to a maximum of 99.4 per cent for infants of 1,750–1,999 grams birthweight and then decreased slightly (Table 102).

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.

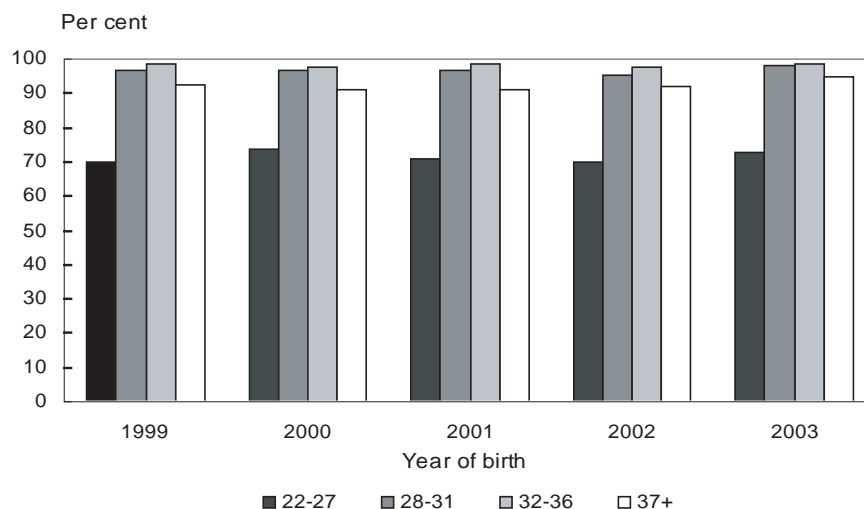
In 2003, the six-month survival rate for infants born at 22 to 27 weeks was greater for those born in a tertiary centre (73.4 per cent) compared with those born in a non-tertiary centre (69.2 per cent). Term infants born in a tertiary centre (97.6 per cent) were more likely to survive than term infants born in a non-tertiary centre (93.8 per cent). Place of birth did not substantially affect survival for infants in the other gestational age groups (Table 103).

The six-month survival rate was similar for males (94.5 per cent) and females (94.2 per cent) overall, and for all gestational age groups: less than 28 weeks (71.1 per cent versus 74.1 per cent); 28–31 weeks (98.4 per cent versus 97.7 per cent); 32–36 weeks (98.3 per cent versus 99.2 per cent); and 37–41 weeks gestation groups (95.4 per cent versus 95.1 per cent).

The six-month survival rate was 94.4 per cent ($n=1,311$) for singleton infants and 94.2 per cent ($n=375$) for multiple gestation infants. Plurality did not influence survival in infants 28–36 weeks gestational age. In 2003 the survival rate for infants in the less than 28 week gestation group was lower for infants born of a multiple (42/62; 67.7 per cent) than a singleton pregnancy (125/168; 74.4 per cent).

FIGURE 12

NICUS REGISTRANTS BY 6-MONTHS SURVIVAL AND GESTATIONAL AGE, NSW & ACT 1999–2003#



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

As expected the overall survival rate was generally lower (83.9 per cent) in the presence of a major congenital anomaly (Table 104).

Post-mortem examinations were performed on 18/101 infants (17.8 per cent) who died in the 2003 cohort (Figure 13 and Table 105). Post-mortem examinations were most

commonly not requested for infants 22–27 weeks gestation (46.0 per cent) and term infants (52.6 per cent). The highest rate of refusal was in the 22–27 (41.3 per cent) and 32–36 week group (37.5 per cent) and the highest rate of post-mortems done was in the 37–42 week group (36.8 per cent).

TABLE 101

NICUS REGISTRANTS BY DURATION OF SURVIVAL AND GESTATIONAL AGE, NSW & ACT 2003#

Gestational age (weeks)	Alive at six months		Age at death (days)						TOTAL	
	No.	%	0–7		8–28		28+		No.	%
23	3	25.0	9	75.0	0	0.0	0	0.0	12	0.7
24	10	37.0	11	40.7	5	18.5	1	3.7	27	1.5
25	39	70.9	11	20.0	4	7.3	1	1.8	55	3.1
26	57	78.1	10	13.7	6	8.2	0	0.0	73	4.1
27	58	92.1	2	3.2	3	4.8	0	0.0	63	3.5
28	99	97.1	3	2.9	0	0.0	0	0.0	102	5.7
29	98	95.1	2	1.9	3	2.9	0	0.0	103	5.8
30	172	99.4	0	0.0	1	0.6	0	0.0	173	9.7
31	198	99.0	1	0.5	1	0.5	0	0.0	200	11.2
32	163	98.8	1	0.6	0	0.0	1	0.6	165	9.2
33	139	97.9	1	0.7	0	0.0	2	1.4	142	7.9
34	133	99.3	0	0.0	0	0.0	1	0.7	134	7.5
35	92	97.9	1	1.1	1	1.1	0	0.0	94	5.3
36	73	100.0	0	0.0	0	0.0	0	0.0	73	4.1
37	71	95.9	2	2.7	1	1.4	0	0.0	74	4.1
38	87	93.5	4	4.3	1	1.1	1	1.1	93	5.2
39	72	97.3	2	2.7	0	0.0	0	0.0	74	4.1
40	66	97.1	2	2.9	0	0.0	0	0.0	68	3.8
41	46	92.0	2	4.0	2	4.0	0	0.0	50	2.8
42	10	83.3	2	16.7	0	0.0	0	0.0	12	0.7
TOTAL	1686	94.3	66	3.7	28	1.6	7	0.4	1787	100.0

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

TABLE 102

NICUS REGISTRANTS BY DURATION OF SURVIVAL AND BIRTHWEIGHT, NSW & ACT 2003#

Birthweight (grams)	Alive at six months		Age at death (days)						TOTAL	
	No.	%	0–7		8–28		28+		No.	%
Less than 400	0	0.0	0	0.0	1	100.0	0	0.0	1	0.1
400–499	3	37.5	4	50.0	1	12.5	0	0.0	8	0.4
500–599	11	55.0	5	25.0	3	15.0	1	5.0	20	1.1
600–699	22	64.7	7	20.6	5	14.7	0	0.0	34	1.9
700–799	35	72.9	11	22.9	2	4.2	0	0.0	48	2.7
800–899	46	79.3	8	13.8	3	5.2	1	1.7	58	3.2
900–999	67	89.3	6	8.0	2	2.7	0	0.0	75	4.2
1,000–1,249	177	95.7	4	2.2	4	2.2	0	0.0	185	10.4
1,250–1,499	240	98.4	2	0.8	1	0.4	1	0.4	244	13.7
1,500–1,749	203	99.0	2	1.0	0	0.0	0	0.0	205	11.5
1,750–1,999	171	99.4	1	0.6	0	0.0	0	0.0	172	9.6
2,000–2,499	212	98.6	0	0.0	1	0.5	2	0.9	215	12.0
2,500–2,999	182	95.8	4	2.1	3	1.6	1	0.5	190	10.6
3,000–3,499	147	95.5	6	3.9	1	0.6	0	0.0	154	8.6
3,500–3,999	104	94.5	5	4.5	1	0.9	0	0.0	110	6.2
4,000+	66	97.1	1	1.5	0	0.0	1	1.5	68	3.8
TOTAL	1686	94.3	66	3.7	28	1.6	7	0.4	1787	100.0

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

TABLE 103**NICUS REGISTRANTS BY DURATION OF SURVIVAL, PLACE OF BIRTH AND GESTATIONAL AGE, NSW & ACT 2003[#]**

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	18	69.2	5	19.2	3	11.5	0	0.0	26	11.4
	Tertiary	149	73.4	37	18.2	15	7.4	2	1.0	203	88.6
	Sub-total	167	72.9	42	18.3	18	7.9	2	0.9	229	100.0
28-31	Non tertiary	60	96.8	1	1.6	1	1.6	0	0.0	62	10.7
	Tertiary	506	98.3	5	1.0	4	0.8	0	0.0	515	89.3
	Sub-total	566	98.1	6	1.0	5	0.9	0	0.0	577	100.0
32-36	Non tertiary	166	98.8	1	0.6	1	0.6	0	0.0	168	27.8
	Tertiary	431	98.6	2	0.5	0	0.0	4	0.9	437	72.2
	Sub-total	597	98.7	3	0.5	1	0.2	4	0.7	605	100.0
37-41	Non tertiary	180	93.8	9	4.7	2	1.0	1	0.5	192	53.6
	Tertiary	162	97.6	2	1.2	2	1.2	0	0.0	166	46.4
	Sub-total	342	95.5	11	3.1	4	1.1	1	0.3	358	100.0
42+	Non tertiary	3	60.0	2	40.0	0	0.0	0	0.0	5	45.5
	Tertiary	6	100.0	0	0.0	0	0.0	0	0.0	6	54.5
	Sub-total	9	81.8	2	18.2	0	0.0	0	0.0	11	100.0
TOTAL		1681	94.4	64	3.6	28	1.6	7	0.4	1780	100.0

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

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

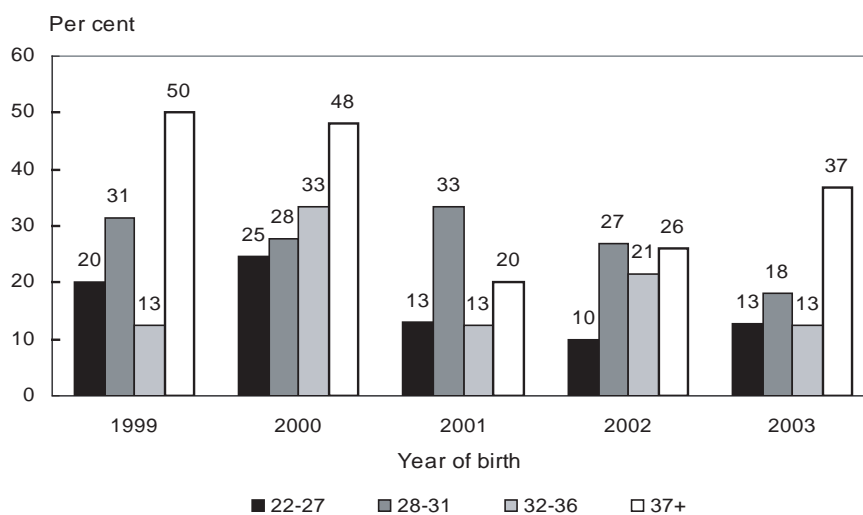
TABLE 104**NICUS REGISTRANTS BY DURATION OF SURVIVAL, MAJOR CONGENITAL ANOMALY AND GESTATIONAL AGE, NSW & ACT 2003**

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	167	72.6	43	18.7	18	7.8	2	0.9	230	92.7
	Yes	11	61.1	2	11.1	1	5.6	4	22.2	18	7.3
	Sub-total	178	71.8	45	18.1	19	7.7	6	2.4	248	100.0
28-31	No	567	98.1	6	1.0	5	0.9	0	0.0	578	95.4
	Yes	20	71.4	5	17.9	1	3.6	2	7.1	28	4.6
	Sub-total	587	96.9	11	1.8	6	1.0	2	0.3	606	100.0
32-36	No	600	98.7	3	0.5	1	0.2	4	0.7	608	90.3
	Yes	54	83.1	8	12.3	1	1.5	2	3.1	65	9.7
	Sub-total	654	97.2	11	1.6	2	0.3	6	0.9	673	100.0
37-41	No	342	95.3	12	3.3	4	1.1	1	0.3	359	64.5
	Yes	174	87.9	6	3.0	12	6.1	6	3.0	198	35.5
	Sub-total	516	92.6	18	3.2	16	2.9	7	1.3	557	100.0
42+	No	10	83.3	2	16.7	0	0.0	0	0.0	12	85.7
	Yes	2	100.0	0	0.0	0	0.0	0	0.0	2	14.3
	Sub-total	12	85.7	2	14.3	0	0.0	0	0.0	14	100.0
TOTAL		1947	92.8	87	4.1	43	2.0	21	1.0	2098	100.0

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

FIGURE 13

NICUS REGISTRANT DEATHS BY POST-MORTEM EXAMINATION AND GESTATIONAL AGE, NSW & ACT 1999–2003#



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

TABLE 105

NICUS REGISTRANTS BY POST-MORTEM EXAMINATION AND GESTATIONAL AGE, NSW & ACT 2003#

Post-mortem	Gestational age (weeks)								TOTAL	
	22–27		28–31		32–36		37+		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%
Not requested	29	46.0	6	54.5	4	50.0	10	52.6	49	48.5
Refused	26	41.3	3	27.3	3	37.5	2	10.5	34	33.7
Done	8	12.7	2	18.2	1	12.5	7	36.8	18	17.8
TOTAL	63	100.0	11	100.0	8	100.0	19	100.0	101	100.0

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

9. BIRTH DEFECTS

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, positional talipes, birthmarks, or clicky hips. Descriptions of some common birth defects are shown in Appendix 1. A list of common exclusions is shown in Appendix 2.

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 the *NSW Public Health Act 1991*. Information reported is included in the NSW Birth Defects Register (BDR). The quality of information received by the BDR has improved since 1998, particularly in relation to pregnancy outcome.

This chapter reports birth defects detected during pregnancy or in the first year of life for 1997–2002 and birth defects detected during pregnancy or at birth for 2003.

Trends in reported birth defects

Between 1997 and 2003, the reported number of infants with birth defects has remained stable at just over two per cent (Table 106). In 2003, 970 cases of birth defects detected during pregnancy or at birth were reported.

Birth defects by diagnostic category

The most common categories of birth defects for births of more than 20 weeks gestation or with a birthweight greater

TABLE 106

BIRTH DEFECT CASES, NSW 1997–2003[#]

Year	Birth defect cases	Births	Rate/1,000 births
1997	1991	87416	22.8
1998	1941	85627	22.7
1999	1828	86468	21.1
2000	1858	87279	21.3
2001	1775	85285	20.8
2002	1742	85398	20.4
2003	970	85853	11.3

Source: *NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.*

[#] For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

than 400 grams are presented in Table 107. Birth defects are classified using the British Paediatric Association (BPA) Classification of Diseases, which is primarily organised by body system.¹ 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.

In 1997–2003, defects of the cardiovascular system were most commonly reported, followed by defects of the musculoskeletal system and defects of the genito-urinary system (Table 107). This is a similar pattern to previous years. In 2002, the overall rate of defects was lower than the previous five years (34.0 versus 39.6 per 1,000), due to a lower overall birth defect rate among infants.

TABLE 107

BIRTH DEFECTS AMONG STILLBIRTHS AND LIVE BIRTHS BY DIAGNOSTIC CATEGORY, NSW 1997–2003

Diagnostic category	No. defects				Rate/1,000 births			
	1997–2001	2002	2003	1997–2003	1997–2001	2002	2003	1997–2003
Defects of nervous system								
Anencephaly	45	14	11	70	0.1	0.2	0.1	0.1
Spina Bifida	147	25	21	193	0.3	0.3	0.2	0.3
Encephalocele	30	6	5	41	0.1	0.1	0.1	0.1
Microcephaly	115	26	4	145	0.3	0.3	0.0	0.2
Congenital hydrocephalus	182	28	30	240	0.4	0.3	0.3	0.4
Other nervous system defects	425	43	32	500	1.0	0.5	0.4	0.8
TOTAL	944	142	103	1189	2.2	1.7	1.2	2.0
Defects of eye								
Anophthalmos–microphthalmos	64	3	4	71	0.1	0.0	0.0	0.1
Buphthalmos–congenital glaucoma	24	8	0	32	0.1	0.1	0.0	0.1
Congenital cataract	81	15	5	101	0.2	0.2	0.1	0.2
Other eye defects	176	34	10	220	0.4	0.4	0.1	0.4
TOTAL	345	60	19	424	0.8	0.7	0.2	0.7
Defects of ear, face and neck								
Absence–stricture auditory canal	49	16	8	73	0.1	0.2	0.1	0.1
Absent auricle	9	1	0	10	0.0	0.0	0.0	0.0
Defects of face and neck	43	10	2	55	0.1	0.1	0.0	0.1
Other ear defects	85	28	11	124	0.2	0.3	0.1	0.2
TOTAL	186	55	21	262	0.4	0.6	0.2	0.4
Defects of cardiovascular system								
Transposition of great vessels	204	45	33	282	0.5	0.5	0.4	0.5
Tetralogy of Fallot	131	38	21	190	0.3	0.4	0.2	0.3
Ventricular septal defect	935	177	75	1187	2.2	2.1	0.9	2.0
Atrial septal defect	884	155	61	1100	2.0	1.8	0.7	1.8

TABLE 101 (continued)
BIRTH DEFECTS AMONG STILLBIRTHS AND LIVE BIRTHS BY DIAGNOSTIC CATEGORY, NSW 1997–2003[#]

Diagnostic category	No. defects			1997–2003	Rate/1,000 births			
	1997–2001	2002	2003		1997–2001	2002	2003	1997–2003
Defects of cardiovascular system (cont.)								
Heart valve defects	699	93	60	852	1.6	1.1	0.7	1.4
Patent ductus arteriosus > 37 weeks	494	91	40	625	1.1	1.1	0.5	1.0
Coarctation of aorta	202	38	19	259	0.5	0.4	0.2	0.4
Other defects of aorta	111	19	10	140	0.3	0.2	0.1	0.2
Defects of pulmonary artery	150	22	15	187	0.3	0.3	0.2	0.3
Other cardiovascular defects	802	120	102	1024	1.9	1.4	1.2	1.7
TOTAL	4612	798	436	5846	10.7	9.3	5.1	9.7
Defects of respiratory system								
Defects of nose	76	15	5	96	0.2	0.2	0.1	0.2
Defects of larynx, trachea and bronchus	49	9	3	61	0.1	0.1	0.0	0.1
Defects of lung	93	17	3	113	0.2	0.2	0.0	0.2
TOTAL	218	41	11	270	0.5	0.5	0.1	0.4
Defects of gastrointestinal system								
Cleft palate only	371	68	90	529	0.9	0.8	1.0	0.9
Cleft lip only	145	33	31	209	0.3	0.4	0.4	0.3
Cleft palate and cleft lip	250	38	40	328	0.6	0.4	0.5	0.5
Oesophageal atresia only	8	1	3	12	0.0	0.0	0.0	0.0
Oesophageal atresia with TOF	93	15	8	116	0.2	0.2	0.1	0.2
Tracheo-oesophageal fistula (TOF) only	27	5	0	32	0.1	0.1	.	0.1
Atresia–stenosis of small intestine	140	33	15	188	0.3	0.4	0.2	0.3
Atresia–stenosis of anus	137	22	16	175	0.3	0.3	0.2	0.3
Other gastrointestinal defects	494	90	35	619	1.1	1.1	0.4	1.0
TOTAL	1665	305	238	2208	3.9	3.6	2.8	3.7
Defects of genitourinary system								
Defects of female genitals	52	2	8	62	0.1	0.0	0.1	0.1
Undescended testis	372	57	12	441	0.9	0.7	0.1	0.7
Hypospadias	916	133	137	1186	2.1	1.6	1.6	2.0
Epispadias	21	2	2	25	0.0	0.0	0.0	0.0
Chordee	134	29	15	178	0.3	0.3	0.2	0.3
Indeterminate sex–ambiguous genitalia	57	9	5	71	0.1	0.1	0.1	0.1
Renal agenesis–dysgenesis	218	34	20	272	0.5	0.4	0.2	0.5
Obstructive defects of renal pelvis and ureter	783	116	36	935	1.8	1.4	0.4	1.5
Other genitourinary system defects	678	108	54	840	1.6	1.3	0.6	1.4
TOTAL	3231	490	289	4010	7.5	5.7	3.4	6.6
Defects of musculoskeletal system								
Congenital dislocation of the hips	706	135	61	902	1.6	1.6	0.7	1.5
Talipes equinovarus	283	75	36	394	0.7	0.9	0.4	0.7
Polydactyly	477	102	89	668	1.1	1.2	1.0	1.1
Syndactyly	119	21	12	152	0.3	0.2	0.1	0.3
Reduction deformities of limbs	301	26	30	357	0.7	0.3	0.3	0.6
Craniosynostosis	371	59	9	439	0.9	0.7	0.1	0.7
Diaphragmatic hernia	132	22	17	171	0.3	0.3	0.2	0.3
Exomphalos	70	14	14	98	0.2	0.2	0.2	0.2
Gastroschisis	96	18	15	129	0.2	0.2	0.2	0.2
Other musculoskeletal defects	1057	123	87	1267	2.4	1.4	1.0	2.1
TOTAL	3612	595	370	4577	8.4	7.0	4.3	7.6
Defects of integumentary system								
Cystic hygroma	369	57	36	462	0.9	0.7	0.4	0.8
TOTAL	58	9	7	74	0.1	0.1	0.1	0.1
Chromosomal defects								
Trisomy 21	522	103	77	702	1.2	1.2	0.9	1.2
Trisomy 13	36	5	7	48	0.1	0.1	0.1	0.1
Trisomy 18	88	20	15	123	0.2	0.2	0.2	0.2
Turner syndrome	60	17	7	84	0.1	0.2	0.1	0.1
Other chromosomal defects	253	62	32	347	0.6	0.7	0.4	0.6
TOTAL	959	207	138	1304	2.2	2.4	1.6	2.2
Situs inversus	18	4	8	30	0.0	0.0	0.1	0.0
Congenital malformation syndromes	197	42	17	256	0.5	0.5	0.2	0.4
Congenital cytomegalovirus infection	6	0	0	6	0.0	0.0	0.0	0.0
Congenital toxoplasmosis	1	0	0	1	0.0	0.0	0.0	0.0
Non-immune hydrops foetalis	133	19	13	165	0.3	0.2	0.2	0.3
Other and unspecified birth defects	562	78	15	655	1.3	0.9	0.2	1.1
TOTAL	17116	2902	1721	21739	39.6	34.0	20.0	36.0

Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

[#] For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

Infant characteristics

In the period 1997–2003, a single defect was reported in 64.0 per cent of infants, two defects in 18.1 per cent, three defects in 8.0 per cent, and four or more defects in 9.9 per cent of cases.

The sex was male in 58.4 per cent of infants, female in 41.1 per cent, indeterminate in 0.3 per cent of infants, and was not stated for 0.2 per cent.

Birth defects were more common in preterm and post-term infants than infants born at term (Table 108). Birth defects were also more common in infants born of a multiple

pregnancy than a singleton pregnancy: in 1997–2003, 2.0 per cent of singleton babies, 2.6 per cent of twins, and 4.0 per cent of triplets were born with a birth defect.

About 11 per cent of infants born with birth defects died in the perinatal period, over half of which were stillbirths (Table 109). 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 less than 1 per cent in 2003 (see Chapter 4).

TABLE 108

BIRTH DEFECT CASES BY GESTATIONAL AGE, NSW 1997–2003[#]

Gestational age (weeks)	1997–2001		2002		Year 2003		1997–2003		
	No.	%	No.	%	No.	%	No.	%	Rate/1,000 births
20–27	547	5.8	107	6.1	105	10.8	759	6.3	184.4
28–31	279	3.0	54	3.1	28	2.9	361	3.0	82.3
32–36	1089	11.6	195	11.2	94	9.7	1378	11.4	40.5
37–41	6976	74.3	1279	73.4	726	74.8	8981	74.2	16.4
42+	214	2.3	43	2.5	17	1.8	274	2.3	19.4
Not stated	288	3.1	64	3.7	0	0.0	352	2.9	–
TOTAL	9393	100.0	1742	100.0	970	100.0	12105	100.0	20.1

Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

[#] For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

TABLE 109

BIRTH DEFECT CASES BY PREGNANCY OUTCOME, NSW 1997–2003[#]

Pregnancy outcome	1997–2001		2002		Year 2003		1997–2003	
	No.	%	No.	%	No.	%	No.	%
Stillbirth	546	5.8	105	6.0	100	10.3	751	6.2
Liveborn–neonatal death	433	4.6	62	3.6	59	6.1	554	4.6
Liveborn–postneonatal death	75	0.8	21	1.2	7	0.7	103	0.9
Liveborn surviving	8339	88.8	1554	89.2	804	82.9	10697	88.4
TOTAL	9393	100.0	1742	100.0	970	100.0	12105	100.0

Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

[#] For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported. Postneonatal deaths are likely to be under-reported.

Maternal characteristics

After 30 years of age, the incidence of birth defects increased with increasing maternal age (Table 110). While the rate of birth defects is higher in older women, the majority of births occur in younger women: in 1997–2003, 76.6 per cent of babies with birth defects were born to women aged less than 35 years.

In 1997–2003, 243 babies of Aboriginal or Torres Strait Islander mothers were reported to have birth defects. The rate of birth defects among these babies was 16.8 per 1,000 compared with 20.2 per 1,000 for non-Aboriginal mothers.

TABLE 110

BIRTH DEFECT CASES BY MATERNAL AGE, NSW 1997–2003#

Maternal age (years)	1997–2001		Year				1997–2003		
	No.	%	No.	2002 %	No.	2003 %	No.	%	Rate/1,000 births
Under 20	458	4.9	65	3.7	42	4.3	565	4.7	20.8
20–24	1453	15.5	238	13.7	154	15.9	1845	15.2	19.5
25–29	2756	29.3	456	26.2	266	27.4	3478	28.7	18.7
30–34	2549	27.1	528	30.3	305	31.4	3382	27.9	17.9
35–39	1358	14.5	260	14.9	156	16.1	1774	14.7	19.9
40–44	319	3.4	71	4.1	46	4.7	436	3.6	26.4
45+	20	0.2	5	0.3	1	0.1	26	0.2	36.7
Not stated	480	5.1	119	6.8	0	0.0	599	4.9	–
TOTAL	9393	100.0	1742	100.0	970	100.0	12105	100.0	20.1

Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

Birth defects among terminations of pregnancy, spontaneous abortions and unknown outcomes of pregnancy

In the period 1998–2002, 250 to 300 terminations of pregnancy per year were reported to the NSW Birth Defects Register (Table 111). Notifications increased dramatically following the introduction of a requirement to notify birth defects under the *NSW Public Health Act 1991* from 1 January 1998. To date, 153 terminations of pregnancy have been reported to the Register for 2003. This number is expected to increase as outcomes for mothers with defects detected during pregnancy in 2003 continue to be reported.

Of the total 1,646 terminations of pregnancy reported in 1997–2003, 1,160 (70.5 per cent) were associated with a chromosomal abnormality, the most common of which was Trisomy 21 (Down syndrome), and 233 (14.2 per cent) were associated with a neural tube defect (Tables 111 and 112).

For spontaneous abortions, cytogenetic analysis is only carried out in cases of habitual abortion; the numbers presented, therefore, underestimate the number of spontaneous abortions that occur due to birth defects. Descriptions of some diagnostic terms used here are included in Appendix 1.

TABLE 111

PREGNANCIES WITH FETUSES AFFECTED BY BIRTH DEFECTS AND RESULTING IN SPONTANEOUS ABORTION, TERMINATION OF PREGNANCY OR UNKNOWN OUTCOME, NSW 1997–2003

Pregnancy outcome	Year							
	1997 No.	1998 No.	1999 No.	2000 No.	2001 No.	2002 No.	2003 No.	1997–2003 No.
Spontaneous abortion	72	84	119	124	171	202	225	997
Termination of pregnancy less than 20 weeks gestation	125	254	310	262	257	285	153	1646
Unknown outcome	157	13	16	22	19	7	0	234
TOTAL	354	351	445	408	447	494	378	2877

Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

TABLE 112

BIRTH DEFECTS AMONG SPONTANEOUS ABORTIONS, TERMINATIONS OF PREGNANCY AND UNKNOWN OUTCOME OF PREGNANCY BY DIAGNOSTIC CATEGORY, NSW 1997–2003

Diagnostic category	1997–2001			Year 2002			2003			1997–2003		
	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	Unknown outcome	Spont. abortion	Termination of pregnancy less than 20 weeks gestation	Unknown outcome
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Defects of nervous system												
Neural tube defects	7	188	3	1	19	0	0	26	8	233	3	
Other nervous system defects	5	128	8	0	23	0	1	10	6	161	8	
TOTAL	12	316	11	1	42	0	1	36	14	394	11	
Defects of eye	0	2	0	0	0	0	0	1	0	3	0	
Defects of ear, face and neck	0	12	1	0	1	0	1	1	1	14	1	
Defects of cardiovascular system	10	175	9	0	31	1	4	29	14	235	10	
Defects of respiratory system	0	28	3	0	4	0	2	1	2	33	3	
Defects of gastrointestinal system	3	107	4	0	13	0	5	23	8	143	4	
Defects of musculoskeletal system	28	347	13	2	35	2	4	40	34	422	15	
Defects of genitourinary system	10	175	7	0	16	0	3	24	13	215	7	
Defects of the integumentary system	1	1	0	0	1	0	0	0	1	2	0	
Cystic hygroma	8	75	5	1	20	0	1	12	10	107	5	
Chromosomal defects												
Trisomy 21	44	395	86	17	118	1	18	50	79	563	87	
Trisomy 13	27	56	17	6	18	0	8	5	41	79	17	
Trisomy 18	31	153	35	11	38	1	9	18	51	209	36	
Turner syndrome	51	69	12	22	13	0	24	6	97	88	12	
Other chromosomal defects	397	159	59	145	49	3	164	13	706	221	62	
TOTAL	550	832	209	201	236	5	223	92	974	1160	214	
Situs inversus	0	4	0	0	2	0	0	0	0	6	0	
Congenital malformation syndromes	2	18	1	0	1	0	0	2	2	21	1	
Non-immune hydrops foetalis	7	44	5	1	10	0	1	3	9	57	5	
Other and unspecified birth defects	3	34	5	0	8	1	2	2	5	44	6	
TOTAL	634	2170	273	206	420	9	247	266	1087	2856	282	

Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

Trends in selected birth defects

Trends in a selection of common birth defects are shown in Table 113 and Figures 14 to 17. For 1997–2002, malformations reported up to one year of age are included; for 2003, malformations reported during pregnancy or at birth are included.

The reported number of liveborn and stillborn infants with neural tube defects was 51 in 1997 and 44 in 2002, and 35 have been reported for 2003 to date. The number of reported terminations of pregnancy was 21 in 1997, 18 in 2002, and 25 in 2003 (Figure 14).

Over the period 1997–2003, the number of cases of isolated cleft palate ranged from 71 to 75 per year, and for total cleft lip (including cases of cleft lip and cleft palate) from 74 to 89 per year. 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 terminations of pregnancy for chromosomal abnormalities, including Down syndrome, increased following the introduction of a requirement to notify birth defects under the *NSW Public Health Act 1991* from 1 January 1998 (Figures 15 and 16). The reported number of liveborn and stillborn infants with chromosomal defects was 145 in 1997 and 100 in 2003, and the number of reported terminations of pregnancy associated with chromosomal defects rose from 56 in 1997 to 236 in 2002. The number of liveborn infants with Down syndrome was 98 in 1997 and 93 in 2002, while the number of reported terminations of pregnancy associated with Down syndrome rose from 27 in 1997 to 118 in 2002.

In 1997, 22 liveborn infants and 5 stillborn infants had a diaphragmatic hernia, and there was one termination of pregnancy for this condition. In 2002, there were 19 liveborn infants and 3 stillborn infants who had a diaphragmatic hernia, and there was 1 termination of pregnancy (Figure 17).

TABLE 113

SELECTED BIRTH DEFECT CASES BY YEAR, NSW 1997–2003[#]

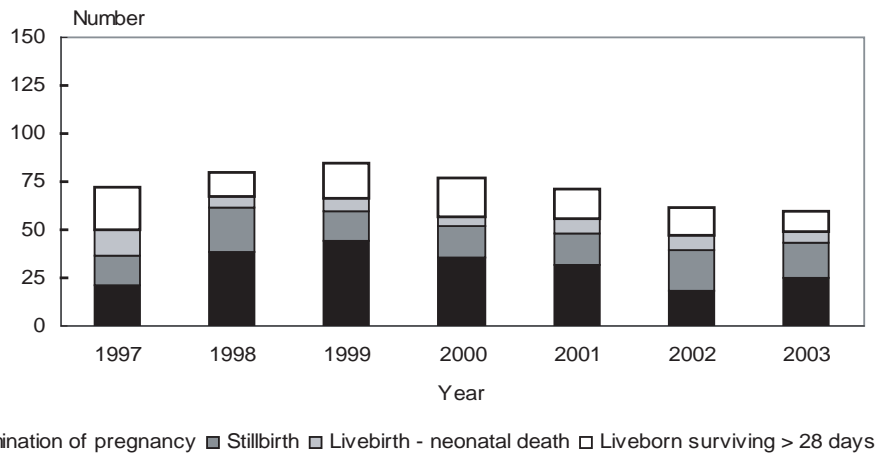
Birth defect	Year													
	1997		1998		1999		2000		2001		2002		2003	
	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000	No.	Rate/ 1,000
Neural tube defects	72	0.8	80	0.9	85	1.0	77	0.9	71	0.8	62	0.7	60	0.7
Anencephalus	22	0.3	34	0.4	24	0.3	29	0.3	25	0.3	20	0.2	18	0.2
Spina bifida	42	0.5	42	0.5	57	0.7	42	0.5	39	0.5	33	0.4	39	0.5
Encephalocele	11	0.1	10	0.1	8	0.1	13	0.1	8	0.1	10	0.1	6	0.1
Cleft palate	65	0.7	68	0.8	67	0.8	79	0.9	67	0.8	60	0.7	75	0.9
Total cleft lip	86	1.0	89	1.0	84	1.0	71	0.8	88	1.0	76	0.9	74	0.9
Hypospadias	163	1.9	191	2.2	199	2.3	191	2.2	173	2.0	133	1.6	138	1.6
Limb reduction defects	61	0.7	54	0.6	56	0.6	61	0.7	42	0.5	21	0.2	28	0.3
Chromosomal abnormalities	235	2.7	357	4.2	412	4.8	412	4.7	370	4.3	443	5.2	228	2.7
Down syndrome	139	1.6	185	2.2	199	2.3	214	2.5	180	2.1	221	2.6	125	1.5
Renal agenesis and dysgenesis	85	1.0	100	1.2	80	0.9	82	0.9	75	0.9	63	0.7	48	0.6
Exomphalos	19	0.2	25	0.3	17	0.2	28	0.3	22	0.3	22	0.3	15	0.2
Gastroschisis	22	0.3	18	0.2	18	0.2	20	0.2	23	0.3	18	0.2	18	0.2
Diaphragmatic hernia	28	0.3	24	0.3	41	0.5	22	0.3	28	0.3	23	0.3	17	0.2

Source: *NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.*

[#] Includes terminations of pregnancy, stillbirths and livebirths. From 1 January 1998 birth defects became notifiable under the *NSW Public Health Act 1991*. This resulted in increased reporting of birth defects, particularly those associated with termination of pregnancy. For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

FIGURE 14

NEURAL TUBE DEFECTS: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1997–2003#

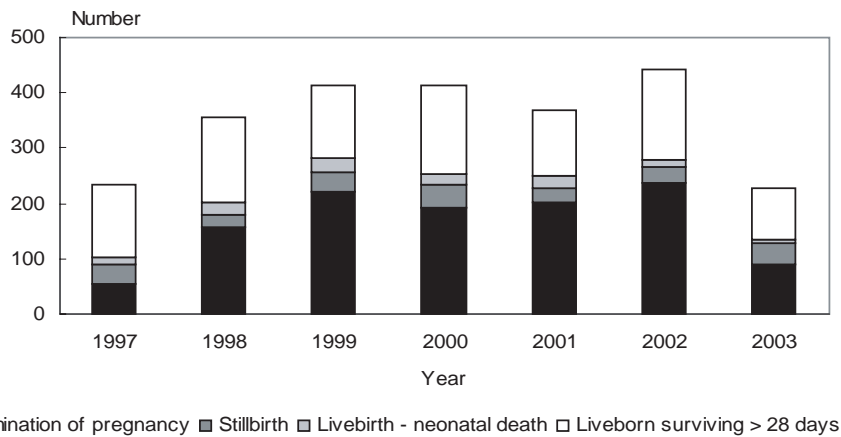


Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

FIGURE 15

CHROMOSOMAL ABNORMALITIES: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1997–2003#

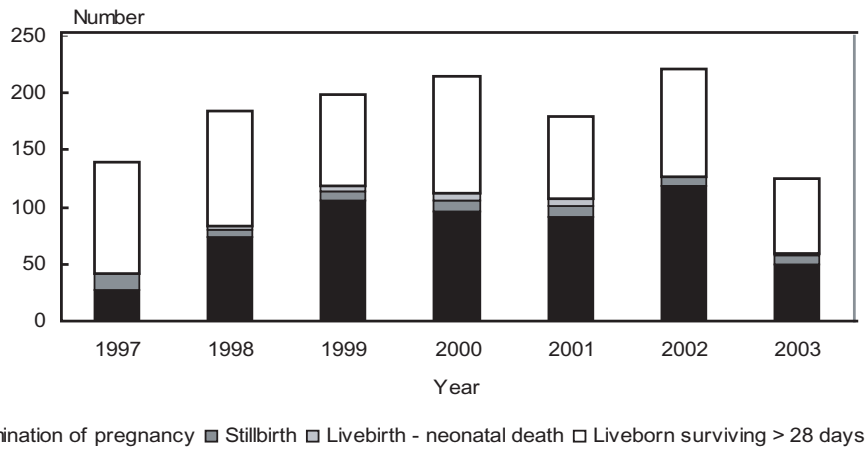


Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

FIGURE 16

DOWN SYNDROME: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1997–2003#

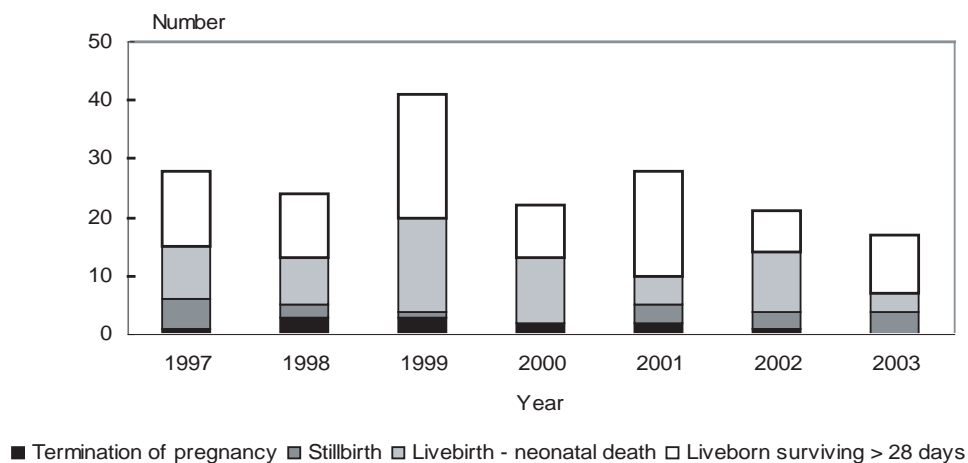


Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

FIGURE 17

DIAPHRAGMATIC HERNIA: CASES BY YEAR AND PREGNANCY OUTCOME, NSW 1997–2003#



Source: NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.

For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

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 114. 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 110). 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. 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 the *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 1997–2003, standardised rates of reported birth defects were lowest in the Greater Southern Area and highest in the Hunter & New England Area. Review of cases showed slightly increased reported rates of a range of birth defects in the Hunter & New England Area compared to NSW overall including: unstable hips (but not dislocated hips), isolated atrial septal defect and ventricular septal defect, and first degree hypospadias. The range and pattern of these defects suggests that enumeration of less severe conditions is better in the Hunter & New England Health Area compared with NSW as a whole. Neural tube defects were also more commonly reported in the Hunter & New England Health Area due to better reporting of terminations of pregnancy.

TABLE 114

BIRTH DEFECTS IN NSW HEALTH AREAS, 1997–2003#

Health Area	1997–2001			2002			2003			1997–2003			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		
Sydney South West	2185	22.7	21.7	423	21.8	19.7	242	12.2	12.2	2850	21.1	20.0	19.0	21.1
Northern Sydney & Central Coast	1546	23.6	22.2	317	24.3	18.8	148	11.1	8.5	2011	21.9	19.9	18.5	21.4
Sydney West	1922	24.0	23.0	350	21.7	20.4	210	13.0	12.2	2482	22.1	21.1	20.0	22.3
Hunter & New England	1395	27.1	26.5	261	25.7	23.8	159	16.1	15.4	1815	25.4	24.6	23.1	26.2
South Eastern Sydney & Illawarra	1665	23.9	21.6	357	25.6	22.1	186	13.2	13.0	2208	22.6	20.4	19.1	21.7
North Coast	555	22.3	22.3	86	18.2	17.8	66	14.2	13.6	707	20.7	20.4	18.5	22.6
Greater Southern	442	19.1	18.0	54	13.4	11.9	36	9.3	9.1	532	17.2	16.1	14.3	18.0
Greater Western	457	21.5	20.8	70	17.9	17.0	45	11.4	11.9	572	19.6	19.0	17.0	21.2
TOTAL NSW	10167	23.5	22.4	1918	22.5	20.1	1092	12.7	12.3	13177	21.8	20.7	20.2	21.2

Source: *NSW Birth Defects Register. Centre for Epidemiology and Research, NSW Department of Health.*

Cases exclude terminations of pregnancy, stillbirths and livebirths where the place of residence is unknown. For 1997–2002, cases reported during pregnancy and up to one year of age are included. For 2003, cases reported during pregnancy or at birth are reported.

TABLE 115 (continued)

CONFINEMENTS BY ONSET AND AUGMENTATION OF LABOUR AND HOSPITAL, NSW 2003#

Health Area and 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.	%		
South Eastern Sydney & Illawarra																				
Shoalhaven	419	58.6	25	3.5	27	3.8	113	15.8	47	6.6	12	1.7	66	9.2	6	0.8	0	0.0	715	100.0
Wollongong	654	33.8	387	20.0	241	12.4	195	10.1	126	6.5	22	1.1	310	16.0	1	0.1	0	0.0	1936	100.0
Shellharbour	97	45.1	39	18.1	20	9.3	18	8.4	17	7.9	2	0.9	22	10.2	0	0.0	0	0.0	215	100.0
Illawarra Private	238	23.8	97	9.7	97	9.7	181	18.1	83	8.3	13	1.3	292	29.2	0	0.0	0	0.0	1001	100.0
Royal Hospital for Women	1982	54.0	33	0.9	238	6.5	597	16.3	251	6.8	63	1.7	489	13.3	20	0.5	0	0.0	3673	100.0
St. George	1375	61.7	63	2.8	150	6.7	202	9.1	197	8.8	28	1.3	200	9.0	14	0.6	0	0.0	2229	100.0
Sutherland	407	52.4	19	2.4	62	8.0	109	14.0	41	5.3	9	1.2	124	16.0	5	0.6	0	0.0	776	100.0
Hurstville Community	274	23.7	91	7.9	174	15.1	272	23.5	80	6.9	9	0.8	256	22.1	0	0.0	0	0.0	1156	100.0
Kareena Private	105	15.3	38	5.5	82	12.0	222	32.4	87	12.7	9	1.3	142	20.7	0	0.0	0	0.0	685	100.0
St. George Private	509	32.2	138	8.7	188	11.9	336	21.3	188	11.9	30	1.9	189	12.0	1	0.1	0	0.0	1579	100.0
Prince of Wales Private	443	26.0	233	13.7	193	11.3	451	26.5	119	7.0	43	2.5	208	12.2	12	0.7	2	0.1	1704	100.0
Other Area hospitals	70	48.3	2	1.4	6	4.1	26	17.9	23	15.9	0	0.0	15	10.3	3	2.1	0	0.0	145	100.0
ALL HOSPITALS	6573	41.6	1165	7.4	1478	9.3	2722	17.2	1259	8.0	240	1.5	2313	14.6	62	0.4	2	0.0	15814	100.0
North Coast																				
Grafton Base	171	42.4	39	9.7	23	5.7	68	16.9	57	14.1	4	1.0	41	10.2	0	0.0	0	0.0	403	100.0
Lismore Base	546	46.0	128	10.8	87	7.3	158	13.3	104	8.8	28	2.4	135	11.4	2	0.2	0	0.0	1188	100.0
Murwillumbah	149	40.2	56	15.1	38	10.2	42	11.3	32	8.6	7	1.9	47	12.7	0	0.0	0	0.0	371	100.0
Tweed Heads	352	41.5	96	11.3	61	7.2	138	16.3	61	7.2	25	2.9	114	13.4	1	0.1	0	0.0	848	100.0
Coffs Harbour Base	292	39.8	76	10.4	48	6.5	117	16.0	60	8.2	12	1.6	127	17.3	1	0.1	0	0.0	733	100.0
Kempsey	114	41.2	56	20.2	17	6.1	26	9.4	34	12.3	2	0.7	28	10.1	0	0.0	0	0.0	277	100.0
Port Macquarie Base	255	35.7	122	17.1	63	8.8	117	16.4	79	11.1	12	1.7	66	9.2	0	0.0	0	0.0	714	100.0
Other Area hospitals	291	59.3	70	14.3	24	4.9	48	9.8	14	2.9	17	3.5	27	5.5	0	0.0	0	0.0	491	100.0
ALL HOSPITALS	2170	43.2	643	12.8	361	7.2	714	14.2	441	8.8	107	2.1	585	11.6	4	0.1	0	0.0	5025	100.0
Greater Western																				
Dubbo Base	504	40.2	158	12.6	119	9.5	122	9.7	93	7.4	36	2.9	220	17.6	1	0.1	0	0.0	1253	100.0
Mudgee	117	56.8	8	3.9	17	8.3	24	11.7	26	12.6	2	1.0	12	5.8	0	0.0	0	0.0	206	100.0
Bathurst Base	267	48.5	61	11.1	14	2.5	110	20.0	68	12.4	4	0.7	26	4.7	0	0.0	0	0.0	550	100.0
Orange Base	309	38.8	105	13.2	55	6.9	127	15.9	45	5.6	23	2.9	131	16.4	2	0.3	0	0.0	797	100.0
Broken Hill Base	173	63.1	21	7.7	8	2.9	42	15.3	19	6.9	4	1.5	7	2.6	0	0.0	0	0.0	274	100.0
Other Area hospitals	285	46.3	64	10.4	39	6.3	109	17.7	65	10.6	10	1.6	44	7.1	0	0.0	0	0.0	616	100.0
ALL HOSPITALS	1655	44.8	417	11.3	252	6.8	534	14.4	316	8.5	79	2.1	440	11.9	3	0.1	0	0.0	3696	100.0
Greater Southern																				
Griffith Base	235	52.2	42	9.3	13	2.9	72	16.0	49	10.9	17	3.8	22	4.9	0	0.0	0	0.0	450	100.0
Wagga Wagga Base	326	46.6	81	11.6	55	7.9	83	11.9	51	7.3	28	4.0	72	10.3	3	0.4	0	0.0	699	100.0
Calvary, Wagga Wagga	197	34.7	34	6.0	33	5.8	119	21.0	117	20.6	20	3.5	47	8.3	0	0.0	0	0.0	567	100.0
Goulburn Base	156	50.8	34	11.1	42	13.7	50	16.3	20	6.5	2	0.7	3	1.0	0	0.0	0	0.0	307	100.0
Queanbeyan	131	51.2	21	8.2	10	3.9	32	12.5	41	16.0	3	1.2	18	7.0	0	0.0	0	0.0	256	100.0
Other Area hospitals	716	44.3	192	11.9	81	5.0	195	12.1	249	15.4	30	1.9	149	9.2	4	0.2	0	0.0	1616	100.0
ALL HOSPITALS	1761	45.2	404	10.4	234	6.0	551	14.1	527	13.5	100	2.6	311	8.0	7	0.2	0	0.0	3895	100.0
Other/Not stated	106	97.2	2	1.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.9	0	0.0	109	100.0
TOTAL NSW	38110	44.8	5992	7.0	7258	8.5	12820	15.1	7265	8.5	1331	1.6	11965	14.1	289	0.3	2	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

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.

* Royal Prince Alfred and Canterbury Hospitals supply data electronically and report augmentation by oxytocin-prostaglandin only.

Type of delivery in selected hospitals

Table 116 gives type of delivery for individual hospitals where the number of reported confinements exceeded 200 in 2003, totals for all hospitals within each health area and the NSW total.

TABLE 116

CONFINEMENTS BY TYPE OF DELIVERY AND HOSPITAL, NSW 2003#

Health Area and Hospital	Normal vaginal		Forceps		Vacuum extraction		Type of delivery				Emergency caesarean		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sydney South West																
Canterbury	996	71.4	22	1.6	90	6.5	5	0.4	163	11.7	118	8.5	0	0.0	1394	100.0
Royal Prince Alfred	2547	63.0	82	2.0	319	7.9	14	0.3	580	14.3	500	12.4	0	0.0	4042	100.0
Camden	453	85.0	27	5.1	2	0.4	1	0.2	7	1.3	43	8.1	0	0.0	533	100.0
Fairfield	1378	76.2	24	1.3	115	6.4	10	0.6	167	9.2	115	6.4	0	0.0	1809	100.0
Liverpool	2220	71.6	21	0.7	190	6.1	24	0.8	349	11.3	296	9.5	0	0.0	3100	100.0
Campbelltown	1404	69.5	5	0.2	133	6.6	5	0.2	265	13.1	209	10.3	0	0.0	2021	100.0
Bankstown-Lidcombe	1339	73.8	35	1.9	106	5.8	16	0.9	193	10.6	126	6.9	0	0.0	1815	100.0
Sydney Southwest																
Private	627	54.0	32	2.8	176	15.1	4	0.3	206	17.7	117	10.1	0	0.0	1162	100.0
Bowral	402	61.5	31	4.7	92	14.1	2	0.3	75	11.5	52	8.0	0	0.0	654	100.0
Other Area hospitals	0	0.0	0	0.0	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0	2	100.0
ALL HOSPITALS	11366	68.8	279	1.7	1223	7.4	82	0.5	2005	12.1	1577	9.5	0	0.0	16532	100.0
Northern Sydney & Central Coast																
Hornsby	593	65.2	37	4.1	64	7.0	2	0.2	129	14.2	84	9.2	0	0.0	909	100.0
Manly	506	64.8	16	2.0	48	6.1	2	0.3	105	13.4	104	13.3	0	0.0	781	100.0
Mona Vale	363	62.3	7	1.2	73	12.5	5	0.9	71	12.2	64	11.0	0	0.0	583	100.0
Royal North Shore	895	54.9	77	4.7	94	5.8	13	0.8	294	18.0	256	15.7	0	0.0	1629	100.0
Ryde	314	70.9	22	5.0	8	1.8	2	0.5	66	14.9	31	7.0	0	0.0	443	100.0
Mater, North Sydney	856	41.4	78	3.8	272	13.2	2	0.1	568	27.5	290	14.0	0	0.0	2066	100.0
North Shore Private	990	44.3	82	3.7	237	10.6	5	0.2	593	26.5	330	14.8	0	0.0	2237	100.0
Sydney Adventist	1260	54.8	145	6.3	158	6.9	8	0.3	474	20.6	253	11.0	0	0.0	2298	100.0
Gosford	1336	62.8	17	0.8	202	9.5	8	0.4	259	12.2	306	14.4	0	0.0	2128	100.0
Wyong	327	92.1	1	0.3	14	3.9	0	0.0	5	1.4	8	2.3	0	0.0	355	100.0
North Gosford Private	417	47.4	21	2.4	110	12.5	0	0.0	246	28.0	86	9.8	0	0.0	880	100.0
ALL HOSPITALS	7857	54.9	503	3.5	1280	8.9	47	0.3	2810	19.6	1812	12.7	0	0.0	14309	100.0
Sydney West																
Auburn	934	78.8	20	1.7	35	3.0	4	0.3	104	8.8	89	7.5	0	0.0	1186	100.0
Blacktown	1689	68.5	119	4.8	98	4.0	6	0.2	256	10.4	296	12.0	0	0.0	2464	100.0
Westmead	2477	63.5	255	6.5	113	2.9	49	1.3	504	12.9	504	12.9	0	0.0	3902	100.0
The Hills Private	804	61.0	105	8.0	65	4.9	5	0.4	204	15.5	134	10.2	0	0.0	1317	100.0
Westmead Private	875	56.0	127	8.1	112	7.2	5	0.3	247	15.8	197	12.6	0	0.0	1563	100.0
Blue Mountains	216	68.6	3	1.0	26	8.3	2	0.6	41	13.0	27	8.6	0	0.0	315	100.0
Nepean	2056	63.5	78	2.4	253	7.8	18	0.6	442	13.6	393	12.1	0	0.0	3240	100.0
Hawkesbury	582	66.7	48	5.5	25	2.9	0	0.0	106	12.1	112	12.8	0	0.0	873	100.0
Nepean Private	433	49.8	41	4.7	56	6.4	2	0.2	184	21.2	153	17.6	0	0.0	869	100.0
Other Area hospitals	131	62.4	0	0.0	16	7.6	0	0.0	29	13.8	34	16.2	0	0.0	210	100.0
ALL HOSPITALS	10197	64.0	796	5.0	799	5.0	91	0.6	2117	13.3	1939	12.2	0	0.0	15939	100.0
Hunter & New England																
Maitland	983	66.0	4	0.3	107	7.2	4	0.3	230	15.4	162	10.9	0	0.0	1490	100.0
Muswellbrook	161	71.6	0	0.0	19	8.4	1	0.4	23	10.2	21	9.3	0	0.0	225	100.0
Belmont	432	70.1	10	1.6	34	5.5	0	0.0	77	12.5	63	10.2	0	0.0	616	100.0
John Hunter	2097	67.3	66	2.1	218	7.0	33	1.1	390	12.5	314	10.1	0	0.0	3118	100.0
Christo Road Private	619	53.1	61	5.2	100	8.6	0	0.0	224	19.2	161	13.8	0	0.0	1165	100.0
Manning Base	470	74.0	7	1.1	38	6.0	5	0.8	53	8.3	62	9.8	0	0.0	635	100.0
Armidale	338	77.0	3	0.7	20	4.6	3	0.7	48	10.9	27	6.2	0	0.0	439	100.0
Inverell	141	67.1	10	4.8	0	0.0	0	0.0	40	19.0	19	9.0	0	0.0	210	100.0
Tamworth Base	404	65.8	8	1.3	41	6.7	5	0.8	97	15.8	59	9.6	0	0.0	614	100.0
Other Area hospitals	845	70.4	20	1.7	67	5.6	7	0.6	185	15.4	77	6.4	0	0.0	1201	100.0
ALL HOSPITALS	6490	66.8	189	1.9	644	6.6	58	0.6	1367	14.1	965	9.9	0	0.0	9713	100.0

TABLE 116 (continued)
CONFINEMENTS BY TYPE OF DELIVERY AND HOSPITAL, NSW 2003#

Health Area and Hospital	Normal		Forceps vaginal		Vacuum extraction		Type of delivery Vaginal breech		Elective caesarean		Emergency caesarean		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
South Eastern Sydney & Illawarra																
Shoalhaven	464	64.9	29	4.1	11	1.5	1	0.1	113	15.8	97	13.6	0	0.0	715	100.0
Wollongong	1300	67.1	31	1.6	177	9.1	2	0.1	195	10.1	231	11.9	0	0.0	1936	100.0
Shellharbour	166	77.2	2	0.9	8	3.7	1	0.5	18	8.4	20	9.3	0	0.0	215	100.0
Illawarra Private Royal Hospital for Women	523	52.2	11	1.1	167	16.7	0	0.0	181	18.1	119	11.9	0	0.0	1001	100.0
St. George	2177	59.3	194	5.3	191	5.2	20	0.5	597	16.3	494	13.4	0	0.0	3673	100.0
Sutherland	1453	65.2	65	2.9	185	8.3	8	0.4	202	9.1	316	14.2	0	0.0	2229	100.0
Hurstville Community	538	69.3	21	2.7	39	5.0	2	0.3	109	14.0	67	8.6	0	0.0	776	100.0
Kareena Private	506	43.8	51	4.4	165	14.3	1	0.1	272	23.5	161	13.9	0	0.0	1156	100.0
St. George Private	264	38.5	80	11.7	37	5.4	0	0.0	222	32.4	82	12.0	0	0.0	685	100.0
Prince of Wales Private	767	48.6	111	7.0	119	7.5	4	0.3	336	21.3	242	15.3	0	0.0	1579	100.0
Other Area hospitals	787	46.2	62	3.6	176	10.3	3	0.2	451	26.5	215	12.6	10	0.6	1704	100.0
ALL HOSPITALS	100	69.0	4	2.8	5	3.4	0	0.0	26	17.9	10	6.9	0	0.0	145	100.0
ALL HOSPITALS	9045	57.2	661	4.2	1280	8.1	42	0.3	2722	17.2	2054	13.0	10	0.1	15814	100.0
North Coast																
Grafton Base	238	59.1	13	3.2	14	3.5	1	0.2	68	16.9	69	17.1	0	0.0	403	100.0
Lismore Base	784	66.0	29	2.4	28	2.4	7	0.6	158	13.3	182	15.3	0	0.0	1188	100.0
Murwillumbah	236	63.6	5	1.3	30	8.1	1	0.3	42	11.3	57	15.4	0	0.0	371	100.0
Tweed Heads	571	67.3	6	0.7	49	5.8	4	0.5	138	16.3	80	9.4	0	0.0	848	100.0
Coffs Harbour Base	494	67.4	23	3.1	24	3.3	3	0.4	117	16.0	72	9.8	0	0.0	733	100.0
Kempsey	215	77.6	3	1.1	5	1.8	0	0.0	26	9.4	28	10.1	0	0.0	277	100.0
Port Macquarie Base	429	60.1	39	5.5	24	3.4	3	0.4	117	16.4	102	14.3	0	0.0	714	100.0
Other Area hospitals	388	79.0	19	3.9	19	3.9	3	0.6	48	9.8	14	2.9	0	0.0	491	100.0
ALL HOSPITALS	3355	66.8	137	2.7	193	3.8	22	0.4	714	14.2	604	12.0	0	0.0	5025	100.0
Greater Western																
Dubbo Base	909	72.5	45	3.6	46	3.7	7	0.6	122	9.7	124	9.9	0	0.0	1253	100.0
Mudgee	150	72.8	0	0.0	7	3.4	1	0.5	24	11.7	24	11.7	0	0.0	206	100.0
Bathurst Base	328	59.6	10	1.8	22	4.0	2	0.4	110	20.0	78	14.2	0	0.0	550	100.0
Orange Base	519	65.1	35	4.4	40	5.0	2	0.3	127	15.9	74	9.3	0	0.0	797	100.0
Broken Hill Base	200	73.0	2	0.7	2	0.7	1	0.4	42	15.3	27	9.9	0	0.0	274	100.0
Other Area hospitals	418	67.9	9	1.5	19	3.1	1	0.2	109	17.7	60	9.7	0	0.0	616	100.0
ALL HOSPITALS	2524	68.3	101	2.7	136	3.7	14	0.4	534	14.4	387	10.5	0	0.0	3696	100.0
Greater Southern																
Griffith Base	279	62.0	24	5.3	19	4.2	1	0.2	72	16.0	55	12.2	0	0.0	450	100.0
Wagga Wagga Base Calvary, Wagga	467	66.8	37	5.3	34	4.9	2	0.3	83	11.9	76	10.9	0	0.0	699	100.0
Wagga	281	49.6	46	8.1	50	8.8	0	0.0	119	21.0	71	12.5	0	0.0	567	100.0
Goulburn Base	164	53.4	35	11.4	18	5.9	3	1.0	50	16.3	37	12.1	0	0.0	307	100.0
Queanbeyan	189	73.8	9	3.5	13	5.1	1	0.4	32	12.5	12	4.7	0	0.0	256	100.0
Other Area hospitals	1103	68.3	58	3.6	99	6.1	6	0.4	195	12.1	155	9.6	0	0.0	1616	100.0
ALL HOSPITALS	2483	63.7	209	5.4	233	6.0	13	0.3	551	14.1	406	10.4	0	0.0	3895	100.0
Other/Not stated	107	98.2	0	0.0	0	0.0	2	1.8	0	0.0	0	0.0	0	0.0	109	100.0
TOTAL NSW	53424	62.8	2875	3.4	5788	6.8	371	0.4	12820	15.1	9744	11.5	10	0.0	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

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

Pain relief in selected hospitals

Table 117 gives type of pain relief provided to women for individual hospitals where the number of reported confinements exceeded 200 in 2003, totals for all hospitals within each health area and the NSW total. In addition to

the types of pain relief listed a further 23,695 (27.9 per cent) women were reported to have received local anaesthetic to the perineum, and 778 (0.9 per cent) received a pudendal block.

TABLE 117

CONFINEMENTS BY TYPE OF PAIN RELIEF AND HOSPITAL, NSW 2003#

Health Area and Hospital	Epidural		General anaesthetic		Type of pain relief				Spinal		Nil		TOTAL	
	No.	%	No.	%	IM narcotics		Nitrous oxide		No.	%	No.	%	No.	%
					No.	%	No.	%						
Sydney South West														
Canterbury	215	15.4	100	7.2	465	33.4	575	41.2	118	8.5	229	16.4	1394	100.0
Royal Prince Alfred	1341	33.2	227	5.6	1704	42.2	1356	33.5	350	8.7	517	12.8	4042	100.0
Camden	3	0.6	20	3.8	185	34.7	345	64.7	34	6.4	83	15.6	533	100.0
Fairfield	78	4.3	212	11.7	542	30.0	945	52.2	56	3.1	281	15.5	1809	100.0
Liverpool	475	15.3	296	9.5	1346	43.4	1581	51.0	245	7.9	278	9.0	3100	100.0
Campbelltown	212	10.5	164	8.1	819	40.5	1217	60.2	271	13.4	179	8.9	2021	100.0
Bankstown-Lidcombe	133	7.3	130	7.2	380	20.9	1077	59.3	170	9.4	203	11.2	1815	100.0
Sydney Southwest Private	385	33.1	70	6.0	411	35.4	707	60.8	67	5.8	35	3.0	1162	100.0
Bowral	154	23.5	20	3.1	274	41.9	320	48.9	71	10.9	55	8.4	654	100.0
Other Area hospitals	1	50.0	0	0.0	1	50.0	1	50.0	0	0.0	0	0.0	2	100.0
ALL HOSPITALS	2997	18.1	1239	7.5	6127	37.1	8124	49.1	1382	8.4	1860	11.3	16532	100.0
Northern Sydney & Central Coast														
Hornsby	349	38.4	48	5.3	197	21.7	476	52.4	52	5.7	67	7.4	909	100.0
Manly	173	22.2	17	2.2	207	26.5	374	47.9	159	20.4	75	9.6	781	100.0
Mona Vale	181	31.0	18	3.1	293	50.3	252	43.2	83	14.2	47	8.1	583	100.0
Royal North Shore	486	29.8	74	4.5	365	22.4	808	49.6	391	24.0	73	4.5	1629	100.0
Ryde	69	15.6	23	5.2	119	26.9	217	49.0	70	15.8	50	11.3	443	100.0
Mater, North Sydney	1250	60.5	34	1.6	230	11.1	694	33.6	191	9.2	48	2.3	2066	100.0
North Shore Private	1230	55.0	61	2.7	185	8.3	684	30.6	521	23.3	61	2.7	2237	100.0
Sydney Adventist	1327	57.7	76	3.3	285	12.4	822	35.8	153	6.7	76	3.3	2298	100.0
Gosford	478	22.5	123	5.8	729	34.3	969	45.5	362	17.0	90	4.2	2128	100.0
Wyong	0	0.0	14	3.9	93	26.2	142	40.0	2	0.6	35	9.9	355	100.0
North Gosford Private	233	26.5	22	2.5	169	19.2	355	40.3	243	27.6	56	6.4	880	100.0
ALL HOSPITALS	5776	40.4	510	3.6	2872	20.1	5793	40.5	2227	15.6	678	4.7	14309	100.0
Sydney West														
Auburn	79	6.7	104	8.8	288	24.3	546	46.0	70	5.9	253	21.3	1186	100.0
Blacktown	536	21.8	173	7.0	487	19.8	1225	49.7	255	10.3	319	12.9	2464	100.0
Westmead	1325	34.0	262	6.7	715	18.3	1766	45.3	465	11.9	347	8.9	3902	100.0
The Hills Private	685	52.0	42	3.2	215	16.3	506	38.4	48	3.6	62	4.7	1317	100.0
Westmead Private	601	38.5	62	4.0	308	19.7	802	51.3	224	14.3	116	7.4	1563	100.0
Blue Mountains	60	19.0	11	3.5	66	21.0	114	36.2	46	14.6	54	17.1	315	100.0
Nepean	796	24.6	298	9.2	1052	32.5	1796	55.4	405	12.5	274	8.5	3240	100.0
Hawkesbury	62	7.1	41	4.7	211	24.2	489	56.0	171	19.6	112	12.8	873	100.0
Nepean Private	241	27.7	43	4.9	220	25.3	454	52.2	203	23.4	72	8.3	869	100.0
Other Area hospitals	61	29.0	5	2.4	39	18.6	95	45.2	20	9.5	36	17.1	210	100.0
ALL HOSPITALS	4446	27.9	1041	6.5	3601	22.6	7793	48.9	1907	12.0	1645	10.3	15939	100.0
Hunter & New England														
Maitland	122	8.2	80	5.4	473	31.7	814	54.6	297	19.9	184	12.3	1490	100.0
Muswellbrook	3	1.3	0	0.0	60	26.7	103	45.8	43	19.1	60	26.7	225	100.0
Belmont	36	5.8	43	7.0	253	41.1	339	55.0	102	16.6	72	11.7	616	100.0
John Hunter	602	19.3	195	6.3	792	25.4	1431	45.9	455	14.6	421	13.5	3118	100.0
Christo Road Private	367	31.5	51	4.4	197	16.9	446	38.3	266	22.8	93	8.0	1165	100.0
Manning Base	68	10.7	46	7.2	266	41.9	352	55.4	64	10.1	84	13.2	635	100.0
Armidale	15	3.4	27	6.2	110	25.1	236	53.8	46	10.5	44	10.0	439	100.0
Inverell	1	0.5	3	1.4	41	19.5	99	47.1	56	26.7	42	20.0	210	100.0
Tamworth Base	130	21.2	74	12.1	155	25.2	333	54.2	56	9.1	43	7.0	614	100.0
Other Area hospitals	116	9.7	85	7.1	273	22.7	630	52.5	150	12.5	206	17.2	1201	100.0
ALL HOSPITALS	1460	15.0	604	6.2	2620	27.0	4783	49.2	1535	15.8	1249	12.9	9713	100.0

TABLE 117 (continued)
CONFINEMENTS BY TYPE OF PAIN RELIEF AND HOSPITAL, NSW 2003[#]

Health Area and Hospital	Epidural		General anaesthetic		Type of pain relief				Spinal		Nil		TOTAL	
	No.	%	No.	%	IM narcotics		Nitrous oxide		No.	%	No.	%	No.	%
					No.	%	No.	%						
South Eastern Sydney & Illawarra														
Shoalhaven	87	12.2	30	4.2	174	24.3	291	40.7	168	23.5	95	13.3	715	100.0
Wollongong	299	15.4	116	6.0	504	26.0	1279	66.1	252	13.0	164	8.5	1936	100.0
Shellharbour	20	9.3	7	3.3	56	26.0	147	68.4	21	9.8	26	12.1	215	100.0
Illawarra Private	297	29.7	69	6.9	143	14.3	540	53.9	146	14.6	28	2.8	1001	100.0
Royal Hospital for Women	1834	49.9	54	1.5	669	18.2	1187	32.3	637	17.3	377	10.3	3673	100.0
St. George	525	23.6	94	4.2	495	22.2	1066	47.8	289	13.0	346	15.5	2229	100.0
Sutherland	239	30.8	33	4.3	87	11.2	404	52.1	115	14.8	59	7.6	776	100.0
Hurstville Community	749	64.8	28	2.4	122	10.6	340	29.4	79	6.8	54	4.7	1156	100.0
Kareena Private	442	64.5	19	2.8	43	6.3	191	27.9	89	13.0	19	2.8	685	100.0
St. George Private	919	58.2	70	4.4	160	10.1	721	45.7	88	5.6	59	3.7	1579	100.0
Prince of Wales Private	1292	75.8	6	0.4	91	5.3	469	27.5	79	4.6	48	2.8	1704	100.0
Other Area hospitals	15	10.3	6	4.1	52	35.9	64	44.1	35	24.1	16	11.0	145	100.0
ALL HOSPITALS	6718	42.5	532	3.4	2596	16.4	6699	42.4	1998	12.6	1291	8.2	15814	100.0
North Coast														
Grafton Base	107	26.6	59	14.6	82	20.3	179	44.4	39	9.7	67	16.6	403	100.0
Lismore Base	345	29.0	44	3.7	293	24.7	470	39.6	171	14.4	172	14.5	1188	100.0
Murwillumbah	37	10.0	32	8.6	130	35.0	192	51.8	55	14.8	47	12.7	371	100.0
Tweed Heads	102	12.0	45	5.3	284	33.5	423	49.9	150	17.7	118	13.9	848	100.0
Coffs Harbour Base	88	12.0	51	7.0	158	21.6	363	49.5	112	15.3	137	18.7	733	100.0
Kempsey	50	18.1	12	4.3	108	39.0	146	52.7	18	6.5	58	20.9	277	100.0
Port Macquarie Base	151	21.1	52	7.3	189	26.5	350	49.0	116	16.2	96	13.4	714	100.0
Other Area hospitals	44	9.0	2	0.4	78	15.9	202	41.1	37	7.5	170	34.6	491	100.0
ALL HOSPITALS	924	18.4	297	5.9	1322	26.3	2325	46.3	698	13.9	865	17.2	5025	100.0
Greater Western														
Dubbo Base	245	19.6	77	6.1	424	33.8	722	57.6	104	8.3	175	14.0	1253	100.0
Mudgee	10	4.9	14	6.8	55	26.7	124	60.2	34	16.5	32	15.5	206	100.0
Bathurst Base	174	31.6	34	6.2	49	8.9	258	46.9	10	1.8	76	13.8	550	100.0
Orange Base	181	22.7	45	5.6	172	21.6	448	56.2	63	7.9	116	14.6	797	100.0
Broken Hill Base	8	2.9	12	4.4	64	23.4	158	57.7	56	20.4	47	17.2	274	100.0
Other Area hospitals	68	11.0	38	6.2	114	18.5	298	48.4	101	16.4	137	22.2	616	100.0
ALL HOSPITALS	686	18.6	220	6.0	878	23.8	2008	54.3	368	10.0	583	15.8	3696	100.0
Greater Southern														
Griffith Base	37	8.2	15	3.3	172	38.2	224	49.8	98	21.8	67	14.9	450	100.0
Wagga Wagga Base	120	17.2	29	4.1	204	29.2	388	55.5	94	13.4	104	14.9	699	100.0
Calvary, Wagga Wagga	130	22.9	13	2.3	142	25.0	232	40.9	140	24.7	59	10.4	567	100.0
Goulburn Base	78	25.4	31	10.1	51	16.6	178	58.0	13	4.2	22	7.2	307	100.0
Queanbeyan	41	16.0	19	7.4	39	15.2	111	43.4	9	3.5	72	28.1	256	100.0
Other Area hospitals	156	9.7	86	5.3	459	28.4	846	52.4	229	14.2	304	18.8	1616	100.0
ALL HOSPITALS	562	14.4	193	5.0	1067	27.4	1979	50.8	583	15.0	628	16.1	3895	100.0
Other/Not stated	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	97	89.0	109	100.0
TOTAL NSW	23569	27.7	4636	5.5	21083	24.8	39504	46.5	10698	12.6	8896	10.5	85032	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

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

TABLE 118 (continued)

CONFINEMENTS WITH VAGINAL DELIVERIES BY PERINEAL STATUS AND HOSPITAL, NSW 2003*

Health Area and Hospital	Perineal status																	
	Intact		1st degree tear-graze		2nd degree tear		3rd or 4th degree tear		Episiotomy		Combined tear and episiotomy		Other		Not stated		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
South Eastern Sydney & Illawarra																		
Shoalhaven	141	27.9	192	38.0	75	14.9	14	2.8	37	7.3	0	0.0	46	9.1	0	0.0	505	100.0
Wollongong	349	23.1	572	37.9	357	23.6	13	0.9	218	14.4	1	0.1	0	0.0	0	0.0	15101	100.0
Shellharbour	61	34.5	62	35.0	40	22.6	1	0.6	13	7.3	0	0.0	0	0.0	0	0.0	177	100.0
Illawarra Private	153	21.8	91	13.0	216	30.8	3	0.4	207	29.5	17	2.4	14	2.0	0	0.0	701	100.0
Royal Hospital for Women	477	18.5	890	34.5	604	23.4	41	1.6	405	15.7	11	0.4	154	6.0	0	0.0	2582	100.0
St. George	418	24.4	609	35.6	436	25.5	54	3.2	106	6.2	2	0.1	86	5.0	0	0.0	1711	100.0
Sutherland	159	26.5	177	29.5	155	25.8	7	1.2	51	8.5	0	0.0	51	8.5	0	0.0	600	100.0
Hurstville Community	122	16.9	182	25.2	149	20.6	6	0.8	245	33.9	12	1.7	7	1.0	0	0.0	723	100.0
Kareena Private	91	23.9	93	24.4	98	25.7	1	0.3	81	21.3	6	1.6	11	2.9	0	0.0	381	100.0
St. George Private	241	24.1	236	23.6	315	31.5	16	1.6	131	13.1	24	2.4	38	3.8	0	0.0	1001	100.0
Prince of Wales Private	155	15.1	243	23.6	252	24.5	6	0.6	285	27.7	24	2.3	56	5.4	7	0.7	1028	100.0
Other Area hospitals	45	41.3	26	23.9	24	22.0	3	2.8	11	10.1	0	0.0	0	0.0	0	0.0	109	100.0
ALL HOSPITALS	2412	21.9	3373	30.6	2721	24.7	165	1.5	1790	16.2	97	0.9	463	4.2	7	0.1	11028	100.0
North Coast																		
Grafton Base	126	47.4	47	17.7	44	16.5	4	1.5	31	11.7	7	2.6	7	2.6	0	0.0	266	100.0
Lismore Base	305	36.0	204	24.1	184	21.7	26	3.1	76	9.0	11	1.3	42	5.0	0	0.0	848	100.0
Murwillumbah	95	34.9	52	19.1	53	19.5	0	0.0	58	21.3	2	0.7	12	4.4	0	0.0	272	100.0
Tweed Heads	245	38.9	194	30.8	115	18.3	6	1.0	45	7.1	8	1.3	17	2.7	0	0.0	630	100.0
Coffs Harbour Base	228	41.9	146	26.8	85	15.6	3	0.6	48	8.8	6	1.1	28	5.1	0	0.0	544	100.0
Kempsey	125	56.1	39	17.5	56	25.1	0	0.0	3	1.3	0	0.0	0	0.0	0	0.0	223	100.0
Port Macquarie Base	195	39.4	73	14.7	119	24.0	5	1.0	61	12.3	19	3.8	23	4.6	0	0.0	495	100.0
Other Area hospitals	152	35.4	146	34.0	66	15.4	3	0.7	52	12.1	5	1.2	5	1.2	0	0.0	429	100.0
ALL HOSPITALS	1471	39.7	901	24.3	722	19.5	47	1.3	374	10.1	58	1.6	134	3.6	0	0.0	3707	100.0
Greater Western																		
Dubbo Base	327	32.5	335	33.3	161	16.0	12	1.2	144	14.3	12	1.2	16	1.6	0	0.0	1007	100.0
Mudgee	60	38.0	49	31.0	30	19.0	1	0.6	15	9.5	3	1.9	0	0.0	0	0.0	158	100.0
Bathurst Base	143	39.5	90	24.9	83	22.9	4	1.1	35	9.7	6	1.7	1	0.3	0	0.0	362	100.0
Orange Base	231	38.8	103	17.3	138	23.2	21	3.5	54	9.1	12	2.0	37	6.2	0	0.0	596	100.0
Broken Hill Base	112	54.6	63	30.7	25	12.2	2	1.0	3	1.5	0	0.0	0	0.0	0	0.0	205	100.0
Other Area hospitals	202	45.2	107	23.9	98	21.9	4	0.9	24	5.4	3	0.7	8	1.8	1	0.2	447	100.0
ALL HOSPITALS	1075	38.7	747	26.9	535	19.3	44	1.6	275	9.9	36	1.3	62	2.2	1	0.0	2775	100.0
Greater Southern																		
Griffith Base	115	35.6	138	42.7	38	11.8	2	0.6	24	7.4	4	1.2	2	0.6	0	0.0	323	100.0
Wagga Wagga Base	223	41.3	126	23.3	105	19.4	8	1.5	61	11.3	9	1.7	8	1.5	0	0.0	540	100.0
Calvary, Wagga Wagga	89	23.6	74	19.6	121	32.1	6	1.6	68	18.0	17	4.5	2	0.5	0	0.0	377	100.0
Goulburn Base	59	26.8	23	10.5	45	20.5	1	0.5	76	34.5	7	3.2	9	4.1	0	0.0	220	100.0
Queanbeyan	89	42.0	61	28.8	44	20.8	1	0.5	7	3.3	3	1.4	7	3.3	0	0.0	212	100.0
Other Area hospitals	542	42.8	308	24.3	227	17.9	8	0.6	150	11.8	19	1.5	12	0.9	0	0.0	1266	100.0
ALL HOSPITALS	1117	38.0	730	24.8	580	19.7	26	0.9	386	13.1	59	2.0	40	1.4	0	0.0	2938	100.0
Other/Not stated	60	55.0	24	22.0	19	17.4	2	1.8	0	0.0	0	0.0	4	3.7	0	0.0	109	100.0
TOTAL NSW	16840	27.0	17838	28.6	14263	22.8	1053	1.7	9082	14.5	537	0.9	2837	4.5	8	0.0	62458	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.
Hospitals with more than 200 deliveries are identified individually. All hospitals include all public and private hospitals.

Birthweight in selected hospitals

Table 119 shows the birthweight of babies for individual hospitals where the number of reported confinements exceeded 200 in 2003, totals for all hospitals within each health area and the NSW total.

TABLE 119

BIRTHS BY BIRTHWEIGHT AND HOSPITAL, NSW 2003*

Health Area and Hospital	Birthweight (grams)										Total	
	Less than 1,000		1,000–1,499		1,500–2,499		2,500+		Not stated		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sydney South West												
Canterbury	5	0.4	1	0.1	50	3.6	1350	96.0	0	0.0	1406	100.0
Royal Prince Alfred	60	1.4	57	1.4	253	6.1	3771	91.0	2	0.0	4143	100.0
Camden	0	0.0	0	0.0	2	0.4	530	99.4	1	0.2	533	100.0
Fairfield	4	0.2	3	0.2	77	4.2	1743	95.4	1	0.1	1828	100.0
Liverpool	56	1.8	73	2.3	268	8.5	2770	87.5	0	0.0	3167	100.0
Campbelltown	9	0.4	3	0.1	106	5.2	1924	94.2	0	0.0	2042	100.0
Bankstown–Lidcombe	10	0.5	0	0.0	66	3.6	1758	95.8	1	0.1	1835	100.0
Sydney Southwest Private	0	0.0	0	0.0	44	3.7	1133	96.3	0	0.0	1177	100.0
Bowral	2	0.3	0	0.0	18	2.7	643	97.0	0	0.0	663	100.0
Other Area hospitals	1	50.0	0	0.0	0	0.0	1	50.0	0	0.0	2	100.0
ALL HOSPITALS	147	0.9	137	0.8	884	5.3	15623	93.0	5	0.0	16796	100.0
Northern Sydney & Central Coast												
Hornsby	3	0.3	1	0.1	25	2.7	890	96.8	0	0.0	919	100.0
Manly	2	0.3	1	0.1	20	2.5	767	97.1	0	0.0	790	100.0
Mona Vale	1	0.2	1	0.2	21	3.6	568	96.1	0	0.0	591	100.0
Royal North Shore	32	1.9	64	3.8	163	9.6	1432	84.6	2	0.1	1693	100.0
Ryde	4	0.9	1	0.2	9	2.0	430	96.8	0	0.0	444	100.0
Mater, North Sydney	4	0.2	3	0.1	65	3.1	2031	96.6	0	0.0	2103	100.0
North Shore Private	12	0.5	3	0.1	72	3.2	2189	96.2	0	0.0	2276	100.0
Sydney Adventist	10	0.4	1	0.0	73	3.1	2249	96.4	0	0.0	2333	100.0
Gosford	6	0.3	4	0.2	109	5.1	2033	94.5	0	0.0	2152	100.0
North Gosford Private	0	0.0	0	0.0	36	4.0	860	96.0	0	0.0	896	100.0
Wyong	0	0.0	0	0.0	3	0.8	352	99.2	0	0.0	355	100.0
ALL HOSPITALS	74	0.5	79	0.5	596	4.1	13801	94.8	2	0.0	14552	100.0
Sydney West												
Auburn	3	0.3	2	0.2	41	3.4	1153	96.2	0	0.0	1199	100.0
Blacktown	14	0.6	12	0.5	138	5.5	2331	93.4	0	0.0	2495	100.0
Westmead	75	1.9	75	1.9	287	7.2	3562	89.0	3	0.1	4002	100.0
The Hills Private	2	0.1	1	0.1	44	3.3	1290	96.5	0	0.0	1337	100.0
Westmead Private	5	0.3	3	0.2	59	3.7	1518	95.7	1	0.1	1586	100.0
Blue Mountains	5	1.6	1	0.3	11	3.4	305	94.7	0	0.0	322	100.0
Nepean	46	1.4	38	1.1	260	7.8	2973	89.5	3	0.1	3320	100.0
Hawkesbury	3	0.3	0	0.0	22	2.5	853	97.0	1	0.1	879	100.0
Nepean Private	3	0.3	0	0.0	22	2.5	856	97.2	0	0.0	881	100.0
Other Area hospitals	0	0.0	0	0.0	6	2.9	204	97.1	0	0.0	210	100.0
ALL HOSPITALS	156	1.0	132	0.8	890	5.5	15045	92.7	8	0.0	16231	100.0
Hunter & New England												
Maitland	2	0.1	1	0.1	77	5.1	1434	94.7	0	0.0	1514	100.0
Muswellbrook	0	0.0	0	0.0	3	1.3	223	98.7	0	0.0	226	100.0
Belmont	1	0.2	0	0.0	20	3.2	601	96.6	0	0.0	622	100.0
John Hunter	68	2.1	52	1.6	251	7.9	2820	88.3	1	0.0	3192	100.0
Christo Road Private	1	0.1	1	0.1	48	4.1	1134	95.8	0	0.0	1184	100.0
Manning Base	5	0.8	2	0.3	37	5.8	596	92.7	3	0.5	643	100.0
Armidale	3	0.7	0	0.0	32	7.1	415	92.0	1	0.2	451	100.0
Inverell	0	0.0	1	0.5	6	2.8	204	96.7	0	0.0	211	100.0
Tamworth Base	4	0.6	1	0.2	58	9.3	564	90.0	0	0.0	627	100.0
Other Area hospitals	3	0.2	1	0.1	24	2.0	1180	97.7	0	0.0	1208	100.0
ALL HOSPITALS	87	0.9	59	0.6	556	5.6	9171	92.8	5	0.1	9878	100.0

TABLE 119 (continued)
BIRTHS BY BIRTHWEIGHT AND HOSPITAL, NSW 2003[#]

Health Area and Hospital	Birthweight (grams)											
	Less than 1,000		1,000–1,499		1,500–2,499		2,500+		Not stated		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
South Eastern Sydney & Illawarra												
Shoalhaven	5	0.7	0	0.0	37	5.1	679	94.2	0	0.0	721	100.0
Wollongong	11	0.6	10	0.5	114	5.8	1836	93.2	0	0.0	1971	100.0
Shellharbour	0	0.0	0	0.0	4	1.9	211	98.1	0	0.0	215	100.0
Illawarra Private	1	0.1	0	0.0	16	1.6	989	98.3	0	0.0	1006	100.0
Royal Hospital for Women	58	1.5	41	1.1	237	6.3	3419	90.9	5	0.1	3760	100.0
St. George	10	0.4	1	0.0	109	4.8	2135	94.6	1	0.0	2256	100.0
Sutherland	2	0.3	1	0.1	27	3.4	756	95.9	2	0.3	788	100.0
Hurstville Community	3	0.3	1	0.1	44	3.7	1133	95.9	0	0.0	1181	100.0
Kareena Private	1	0.1	2	0.3	29	4.2	664	95.3	1	0.1	697	100.0
St. George Private	3	0.2	2	0.1	70	4.4	1532	95.3	0	0.0	1607	100.0
Prince of Wales Private	0	0.0	0	0.0	42	2.4	1668	96.7	15	0.9	1725	100.0
Other Area hospitals	0	0.0	0	0.0	1	0.7	144	99.3	0	0.0	145	100.0
ALL HOSPITALS	94	0.6	58	0.4	730	4.5	15166	94.4	24	0.1	16072	100.0
North Coast												
Grafton Base	3	0.7	0	0.0	21	5.2	381	94.1	0	0.0	405	100.0
Lismore Base	7	0.6	6	0.5	70	5.8	1122	93.0	2	0.2	1207	100.0
Murwillumbah	1	0.3	1	0.3	16	4.2	360	95.2	0	0.0	378	100.0
Tweed Heads	9	1.0	1	0.1	49	5.7	799	93.1	0	0.0	858	100.0
Coffs Harbour Base	6	0.8	3	0.4	42	5.6	694	93.0	1	0.1	746	100.0
Kempsey	0	0.0	1	0.4	12	4.3	264	95.3	0	0.0	277	100.0
Port Macquarie Base	3	0.4	1	0.1	33	4.6	686	94.9	0	0.0	723	100.0
Other Area hospitals	1	0.2	0	0.0	13	2.6	478	97.0	1	0.2	493	100.0
ALL HOSPITALS	30	0.6	13	0.3	256	5.0	4784	94.0	4	0.1	5087	100.0
Greater Western												
Dubbo Base	4	0.3	6	0.5	68	5.3	1194	93.7	2	0.2	1274	100.0
Mudgee	0	0.0	0	0.0	6	2.9	200	97.1	0	0.0	206	100.0
Bathurst Base	2	0.4	1	0.2	26	4.7	530	94.8	0	0.0	559	100.0
Orange Base	5	0.6	2	0.2	55	6.8	752	92.4	0	0.0	814	100.0
Broken Hill Base	1	0.4	0	0.0	14	5.1	262	94.6	0	0.0	277	100.0
Other Area hospitals	1	0.2	1	0.2	23	3.7	591	95.9	0	0.0	616	100.0
ALL HOSPITALS	13	0.3	10	0.3	192	5.1	3529	94.2	2	0.1	3746	100.0
Greater Southern												
Griffith Base	2	0.4	2	0.4	21	4.6	431	94.5	0	0.0	456	100.0
Wagga Wagga Base	5	0.7	2	0.3	51	7.1	659	91.9	0	0.0	717	100.0
Calvary, Wagga Wagga	0	0.0	1	0.2	28	4.8	550	95.0	0	0.0	579	100.0
Goulburn Base	4	1.3	2	0.6	8	2.6	296	95.5	0	0.0	310	100.0
Queanbeyan	1	0.4	0	0.0	4	1.6	251	98.0	0	0.0	256	100.0
Other Area hospitals	3	0.2	2	0.1	52	3.2	1566	96.4	2	0.1	1625	100.0
ALL HOSPITALS	15	0.4	9	0.2	164	4.2	3753	95.2	2	0.1	3943	100.0
Other/Not stated	0	0.0	0	0.0	2	1.8	107	98.2	0	0.0	109	100.0
TOTAL NSW	616	0.7	497	0.6	4270	4.9	80979	93.7	52	0.1	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

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

Gestational age in selected hospitals

Table 120 shows the gestational age of babies for individual hospitals where the number of reported confinements exceeded 200 in 2003, totals for all hospitals within each health area and the NSW total.

TABLE 120

BIRTHS BY GESTATIONAL AGE AND HOSPITAL, NSW 2003*

Health Area and Hospital	Gestational age (weeks)										TOTAL	
	Less than 31		32-33		34-36		37+		Not stated		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%		
Sydney South West												
Canterbury	5	0.4	0	0.0	52	3.7	1349	95.9	0	0.0	1406	100.0
Royal Prince Alfred	145	3.5	75	1.8	241	5.8	3682	88.9	0	0.0	4143	100.0
Camden	0	0.0	0	0.0	7	1.3	526	98.7	0	0.0	533	100.0
Fairfield	6	0.3	2	0.1	66	3.6	1754	96.0	0	0.0	1828	100.0
Liverpool	139	4.4	86	2.7	190	6.0	2752	86.9	0	0.0	3167	100.0
Campbelltown	13	0.6	5	0.2	86	4.2	1938	94.9	0	0.0	2042	100.0
Bankstown-Lidcombe	10	0.5	3	0.2	68	3.7	1754	95.6	0	0.0	1835	100.0
Bowral	2	0.3	1	0.2	14	2.1	646	97.4	0	0.0	663	100.0
Sydney Southwest Private	1	0.1	1	0.1	66	5.6	1109	94.2	0	0.0	1177	100.0
Other Area hospitals	1	50.0	0	0.0	0	0.0	1	50.0	0	0.0	2	100.0
ALL HOSPITALS	322	1.9	173	1.0	790	4.7	15511	92.3	0	0.0	16796	100.0
Northern Sydney & Central Coast												
Hornsby	3	0.3	0	0.0	33	3.6	883	96.1	0	0.0	919	100.0
Manly	3	0.4	0	0.0	23	2.9	764	96.7	0	0.0	790	100.0
Mona Vale	1	0.2	1	0.2	25	4.2	564	95.4	0	0.0	591	100.0
Royal North Shore	109	6.4	64	3.8	83	4.9	1437	84.9	0	0.0	1693	100.0
Ryde	5	1.1	1	0.2	7	1.6	431	97.1	0	0.0	444	100.0
Mater, North Sydney	7	0.3	5	0.2	102	4.9	1989	94.6	0	0.0	2103	100.0
North Shore Private	15	0.7	15	0.7	85	3.7	2161	94.9	0	0.0	2276	100.0
Sydney Adventist	11	0.5	6	0.3	87	3.7	2229	95.5	0	0.0	2333	100.0
Gosford	12	0.6	15	0.7	168	7.8	1957	90.9	0	0.0	2152	100.0
North Gosford Private	1	0.1	3	0.3	45	5.0	847	94.5	0	0.0	896	100.0
Wyong	0	0.0	1	0.3	5	1.4	349	98.3	0	0.0	355	100.0
ALL HOSPITALS	167	1.1	111	0.8	663	4.6	13611	93.5	0	0.0	14552	100.0
Sydney West												
Auburn	6	0.5	3	0.3	29	2.4	1161	96.8	0	0.0	1199	100.0
Blacktown	24	1.0	13	0.5	110	4.4	2348	94.1	0	0.0	2495	100.0
Westmead	154	3.8	71	1.8	212	5.3	3565	89.1	0	0.0	4002	100.0
The Hills Private	4	0.3	1	0.1	56	4.2	1276	95.4	0	0.0	1337	100.0
Westmead Private	9	0.6	3	0.2	72	4.5	1502	94.7	0	0.0	1586	100.0
Blue Mountains	5	1.6	3	0.9	6	1.9	308	95.7	0	0.0	322	100.0
Nepean	86	2.6	71	2.1	184	5.5	2979	89.7	0	0.0	3320	100.0
Hawkesbury	5	0.6	0	0.0	36	4.1	838	95.3	0	0.0	879	100.0
Nepean Private	3	0.3	1	0.1	28	3.2	849	96.4	0	0.0	881	100.0
Other Area hospitals	0	0.0	0	0.0	7	3.3	203	96.7	0	0.0	210	100.0
ALL HOSPITALS	296	1.8	166	1.0	740	4.6	15029	92.6	0	0.0	16231	100.0
Hunter & New England												
Maitland	4	0.3	11	0.7	85	5.6	1414	93.4	0	0.0	1514	100.0
Muswellbrook	0	0.0	0	0.0	4	1.8	221	97.8	1	0.4	226	100.0
Belmont	1	0.2	0	0.0	31	5.0	590	94.9	0	0.0	622	100.0
John Hunter	131	4.1	74	2.3	203	6.4	2784	87.2	0	0.0	3192	100.0
Christo Road Private	1	0.1	4	0.3	73	6.2	1106	93.4	0	0.0	1184	100.0
Manning Base	13	2.0	3	0.5	31	4.8	596	92.7	0	0.0	643	100.0
Armidale	4	0.9	0	0.0	27	6.0	420	93.1	0	0.0	451	100.0
Inverell	1	0.5	0	0.0	6	2.8	204	96.7	0	0.0	211	100.0
Tamworth Base	6	1.0	5	0.8	64	10.2	552	88.0	0	0.0	627	100.0
Other Area hospitals	6	0.5	4	0.3	28	2.3	1170	96.9	0	0.0	1208	100.0
ALL HOSPITALS	167	1.7	101	1.0	552	5.6	9057	91.7	1	0.0	9878	100.0

TABLE 120 (continued)
BIRTHS BY GESTATIONAL AGE AND HOSPITAL, NSW 2003*

Health Area and Hospital	Gestational age (weeks)										TOTAL	
	Less than 31		32-33		34-36		37+		Not stated		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
South Eastern Sydney & Illawarra												
Shoalhaven	5	0.7	3	0.4	31	4.3	682	94.6	0	0.0	721	100.0
Wollongong	19	1.0	25	1.3	142	7.2	1784	90.5	1	0.1	1971	100.0
Shellharbour	0	0.0	1	0.5	3	1.4	211	98.1	0	0.0	215	100.0
Illawarra Private	1	0.1	0	0.0	17	1.7	988	98.2	0	0.0	1006	100.0
Royal Hospital for Women	111	3.0	54	1.4	176	4.7	3419	90.9	0	0.0	3760	100.0
St. George	13	0.6	12	0.5	107	4.7	2124	94.1	0	0.0	2256	100.0
Sutherland	6	0.8	5	0.6	31	3.9	746	94.7	0	0.0	788	100.0
Hurstville Community	4	0.3	1	0.1	49	4.1	1127	95.4	0	0.0	1181	100.0
Kareena Private	1	0.1	10	1.4	38	5.5	648	93.0	0	0.0	697	100.0
St. George Private	5	0.3	4	0.2	62	3.9	1536	95.6	0	0.0	1607	100.0
Prince of Wales Private	2	0.1	1	0.1	51	3.0	1663	96.4	8	0.5	1725	100.0
Other Area hospitals	0	0.0	0	0.0	1	0.7	144	99.3	0	0.0	145	100.0
ALL HOSPITALS	167	1.0	116	0.7	708	4.4	15072	93.8	9	0.1	16072	100.0
North Coast												
Grafton Base	3	0.7	0	0.0	21	5.2	381	94.1	0	0.0	405	100.0
Lismore Base	13	1.1	9	0.7	73	6.0	1112	92.1	0	0.0	1207	100.0
Murwillumbah	1	0.3	3	0.8	16	4.2	358	94.7	0	0.0	378	100.0
Tweed Heads	10	1.2	3	0.3	57	6.6	788	91.8	0	0.0	858	100.0
Coffs Harbour Base	10	1.3	4	0.5	44	5.9	688	92.2	0	0.0	746	100.0
Kempsey	2	0.7	0	0.0	11	4.0	264	95.3	0	0.0	277	100.0
Port Macquarie Base	4	0.6	6	0.8	47	6.5	666	92.1	0	0.0	723	100.0
Other Area hospitals	1	0.2	0	0.0	12	2.4	480	97.4	0	0.0	493	100.0
ALL HOSPITALS	44	0.9	25	0.5	281	5.5	4737	93.1	0	0.0	5087	100.0
Greater Western												
Dubbo Base	11	0.9	9	0.7	73	5.7	1181	92.7	0	0.0	1274	100.0
Mudgee	0	0.0	0	0.0	5	2.4	201	97.6	0	0.0	206	100.0
Bathurst Base	4	0.7	5	0.9	21	3.8	529	94.6	0	0.0	559	100.0
Orange Base	10	1.2	2	0.2	63	7.7	739	90.8	0	0.0	814	100.0
Broken Hill Base	1	0.4	0	0.0	20	7.2	256	92.4	0	0.0	277	100.0
Other Area hospitals	4	0.6	3	0.5	9	1.5	600	97.4	0	0.0	616	100.0
ALL HOSPITALS	30	0.8	19	0.5	191	5.1	3506	93.6	0	0.0	3746	100.0
Greater Southern												
Griffith Base	5	1.1	1	0.2	16	3.5	434	95.2	0	0.0	456	100.0
Wagga Wagga Base	8	1.1	11	1.5	44	6.1	654	91.2	0	0.0	717	100.0
Calvary, Wagga Wagga	4	0.7	4	0.7	33	5.7	538	92.9	0	0.0	579	100.0
Goulburn Base	6	1.9	1	0.3	11	3.5	292	94.2	0	0.0	310	100.0
Queanbeyan	1	0.4	0	0.0	2	0.8	253	98.8	0	0.0	256	100.0
Other Area hospitals	8	0.5	2	0.1	49	3.0	1566	96.4	0	0.0	1625	100.0
ALL HOSPITALS	32	0.8	19	0.5	155	3.9	3737	94.8	0	0.0	3943	100.0
Other/Not stated	0	0.0	0	0.0	0	0.0	109	100.0	0	0.0	109	100.0
TOTAL NSW	1225	1.4	730	0.8	4080	4.7	80369	93.0	10	0.0	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

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

Admission to special care and neonatal intensive care units in selected hospitals

Table 121 shows admissions of liveborn babies to special care and neonatal intensive care units for individual hospitals where the number of reported confinements exceeded 200 in 2003, totals for all hospitals within each

health area and the NSW total. The number of babies admitted to neonatal intensive care units reported here is higher than the numbers reported in Chapter 8, as some babies admitted to a neonatal intensive care unit do not meet the registration criteria for inclusion in the Neonatal Intensive Care Units Data Collection.

TABLE 121

BIRTHS BY ADMISSION TO SPECIAL CARE OR NEONATAL INTENSIVE CARE UNIT AND HOSPITAL, NSW 2003[#]

Health Area and Hospital	No		Admission to special care unit				TOTAL		Admission to neonatal intensive care unit		TOTAL					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%				
Sydney South West																
Canterbury	1194	85.5	202	14.5	0	0.0	1396	100.0	1396	100.0	0	0.0	0	0.0	1396	100.0
Royal Prince Alfred	3770	91.7	343	8.3	0	0.0	4113	100.0	3881	94.4	232	5.6	0	0.0	4113	100.0
Camden	514	96.8	17	3.2	0	0.0	531	100.0	528	99.4	3	0.6	0	0.0	531	100.0
Fairfield	1400	76.9	421	23.1	0	0.0	1821	100.0	1814	99.6	7	0.4	0	0.0	1821	100.0
Liverpool	2762	87.9	380	12.1	0	0.0	3142	100.0	2993	95.3	149	4.7	0	0.0	3142	100.0
Campbelltown	1715	84.5	315	15.5	0	0.0	2030	100.0	2019	99.5	11	0.5	0	0.0	2030	100.0
Bankstown-Lidcombe	1513	82.9	312	17.1	0	0.0	1825	100.0	1811	99.2	14	0.8	0	0.0	1825	100.0
Sydney Southwest																
Private	915	77.8	261	22.2	0	0.0	1176	100.0	1168	99.3	8	0.7	0	0.0	1176	100.0
Bowral	571	86.5	89	13.5	0	0.0	660	100.0	657	99.5	3	0.5	0	0.0	660	100.0
Other Area hospitals	0	0.0	1	100.0	0	0.0	1	100.0	1	100.0	0	0.0	0	0.0	1	100.0
ALL HOSPITALS	14354	86.0	2341	14.0	0	0.0	16695	100.0	16268	97.4	427	2.6	0	0.0	16695	100.0
Northern Sydney & Central Coast																
Hornsby	496	54.1	421	45.9	0	0.0	917	100.0	912	99.5	5	0.5	0	0.0	917	100.0
Manly	639	81.2	148	18.8	0	0.0	787	100.0	787	100.0	0	0.0	0	0.0	787	100.0
Mona Vale	461	78.3	128	21.7	0	0.0	589	100.0	589	100.0	0	0.0	0	0.0	589	100.0
Royal North Shore	1550	92.2	131	7.8	0	0.0	1681	100.0	1431	85.1	250	14.9	0	0.0	1681	100.0
Ryde	363	82.5	77	17.5	0	0.0	440	100.0	440	100.0	0	0.0	0	0.0	440	100.0
Mater, North Sydney	1848	88.0	252	12.0	0	0.0	2100	100.0	2078	99.0	22	1.0	0	0.0	2100	100.0
North Shore Private	2103	93.1	155	6.9	0	0.0	2258	100.0	2252	99.7	6	0.3	0	0.0	2258	100.0
Sydney Adventist	1978	85.3	342	14.7	0	0.0	2320	100.0	2313	99.7	7	0.3	0	0.0	2320	100.0
Gosford	1897	88.5	247	11.5	0	0.0	2144	100.0	2123	99.0	21	1.0	0	0.0	2144	100.0
Wyong	346	97.5	9	2.5	0	0.0	355	100.0	354	99.7	1	0.3	0	0.0	355	100.0
North Gosford Private	770	86.0	125	14.0	0	0.0	895	100.0	889	99.3	6	0.7	0	0.0	895	100.0
ALL HOSPITALS	12451	86.0	2035	14.0	0	0.0	14486	100.0	14168	97.8	318	2.2	0	0.0	14486	100.0
Sydney West																
Auburn	852	71.7	337	28.3	0	0.0	1189	100.0	1188	99.9	1	0.1	0	0.0	1189	100.0
Blacktown	2065	83.3	415	16.7	0	0.0	2480	100.0	2476	99.8	4	0.2	0	0.0	2480	100.0
Westmead	3495	88.3	465	11.7	0	0.0	3960	100.0	3513	88.7	447	11.3	0	0.0	3960	100.0
The Hills Private	1065	79.8	269	20.2	0	0.0	1334	100.0	1326	99.4	8	0.6	0	0.0	1334	100.0
Westmead Private	1243	78.7	337	21.3	0	0.0	1580	100.0	1577	99.8	3	0.2	0	0.0	1580	100.0
Blue Mountains	284	88.8	36	11.3	0	0.0	320	100.0	318	99.4	2	0.6	0	0.0	320	100.0
Nepean	2820	85.6	473	14.4	0	0.0	3293	100.0	2903	88.2	390	11.8	0	0.0	3293	100.0
Hawkesbury	749	85.7	125	14.3	0	0.0	874	100.0	874	100.0	0	0.0	0	0.0	874	100.0
Nepean Private	733	83.8	142	16.2	0	0.0	875	100.0	872	99.7	3	0.3	0	0.0	875	100.0
Other Area hospitals	200	95.2	10	4.8	0	0.0	210	100.0	209	99.5	1	0.5	0	0.0	210	100.0
ALL HOSPITALS	13506	83.8	2609	16.2	0	0.0	16115	100.0	15256	94.7	859	5.3	0	0.0	16115	100.0
Hunter & New England																
Maitland	1250	82.9	258	17.1	0	0.0	1508	100.0	1504	99.7	4	0.3	0	0.0	1508	100.0
Muswellbrook	221	97.8	5	2.2	0	0.0	226	100.0	225	99.6	1	0.4	0	0.0	226	100.0
Belmont	543	87.4	78	12.6	0	0.0	621	100.0	620	99.8	1	0.2	0	0.0	621	100.0
John Hunter	2688	85.4	458	14.6	0	0.0	3146	100.0	2941	93.5	205	6.5	0	0.0	3146	100.0
Christo Road Private	986	83.5	195	16.5	0	0.0	1181	100.0	1180	99.9	1	0.1	0	0.0	1181	100.0
Manning Base	555	87.3	81	12.7	0	0.0	636	100.0	632	99.4	4	0.6	0	0.0	636	100.0
Armidale	369	82.6	78	17.4	0	0.0	447	100.0	447	100.0	0	0.0	0	0.0	447	100.0
Inverell	204	96.7	7	3.3	0	0.0	211	100.0	209	99.1	2	0.9	0	0.0	211	100.0
Tamworth Base	379	60.9	243	39.1	0	0.0	622	100.0	615	98.9	7	1.1	0	0.0	622	100.0
Other Area hospitals	1140	94.7	64	5.3	0	0.0	1204	100.0	1196	99.3	8	0.7	0	0.0	1204	100.0
ALL HOSPITALS	8335	85.0	1467	15.0	0	0.0	9802	100.0	9569	97.6	233	2.4	0	0.0	9802	100.0

TABLE 121 (continued)

BIRTHS BY ADMISSION TO SPECIAL CARE OR NEONATAL INTENSIVE CARE UNIT AND HOSPITAL, NSW 2003[#]

Health Area and Hospital	No		Admission to special care unit				TOTAL		Admission to neonatal intensive care unit		TOTAL					
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%				
South Eastern Sydney & Illawarra																
Shoalhaven	610	85.4	104	14.6	0	0.0	714	100.0	713	99.9	1	0.1	0	0.0	714	100.0
Wollongong	1574	80.2	389	19.8	0	0.0	1963	100.0	1936	98.6	27	1.4	0	0.0	1963	100.0
Shellharbour	201	93.9	13	6.1	0	0.0	214	100.0	213	99.5	1	0.5	0	0.0	214	100.0
Illawarra Private	904	90.0	100	10.0	0	0.0	1004	100.0	999	99.5	5	0.5	0	0.0	1004	100.0
Royal Hospital for Women	3263	87.5	465	12.5	0	0.0	3728	100.0	3523	94.5	205	5.5	0	0.0	3728	100.0
St. George	1922	85.7	320	14.3	0	0.0	2242	100.0	2235	99.7	7	0.3	0	0.0	2242	100.0
Sutherland	654	83.3	131	16.7	0	0.0	785	100.0	782	99.6	3	0.4	0	0.0	785	100.0
Hurstville Community	952	80.7	227	19.3	0	0.0	1179	100.0	1172	99.4	7	0.6	0	0.0	1179	100.0
Kareena Private	532	76.4	164	23.6	0	0.0	696	100.0	687	98.7	9	1.3	0	0.0	696	100.0
St. George Private	1305	81.5	296	18.5	0	0.0	1601	100.0	1597	99.8	4	0.2	0	0.0	1601	100.0
Prince of Wales Private	1395	81.0	256	14.9	72	4.2	1723	100.0	1710	99.2	8	0.5	5	0.3	1723	100.0
Other Area hospitals	143	98.6	2	1.4	0	0.0	145	100.0	145	100.0	0	0.0	0	0.0	145	100.0
ALL HOSPITALS	13455	84.1	2467	15.4	72	0.5	15994	100.0	15712	98.2	277	1.7	5	0.0	15994	100.0
North Coast																
Grafton Base	336	83.4	67	16.6	0	0.0	403	100.0	394	97.8	9	2.2	0	0.0	403	100.0
Lismore Base	904	75.8	289	24.2	0	0.0	1193	100.0	1182	99.1	11	0.9	0	0.0	1193	100.0
Murwillumbah	333	88.3	44	11.7	0	0.0	377	100.0	373	98.9	4	1.1	0	0.0	377	100.0
Tweed Heads	667	78.6	182	21.4	0	0.0	849	100.0	844	99.4	5	0.6	0	0.0	849	100.0
Coffs Harbour Base	627	84.7	113	15.3	0	0.0	740	100.0	726	98.1	14	1.9	0	0.0	740	100.0
Kempsey	261	94.9	14	5.1	0	0.0	275	100.0	275	100.0	0	0.0	0	0.0	275	100.0
Port Macquarie Base	571	79.6	146	20.4	0	0.0	717	100.0	707	98.6	10	1.4	0	0.0	717	100.0
Other Area hospitals	468	95.1	24	4.9	0	0.0	492	100.0	491	99.8	1	0.2	0	0.0	492	100.0
ALL HOSPITALS	4167	82.6	879	17.4	0	0.0	5046	100.0	4992	98.9	54	1.1	0	0.0	5046	100.0
Greater Western																
Dubbo Base	1038	82.6	219	17.4	0	0.0	1257	100.0	1238	98.5	19	1.5	0	0.0	1257	100.0
Mudgee	197	95.6	9	4.4	0	0.0	206	100.0	205	99.5	1	0.5	0	0.0	206	100.0
Bathurst Base	476	85.3	82	14.7	0	0.0	558	100.0	544	97.5	14	2.5	0	0.0	558	100.0
Orange Base	665	82.1	145	17.9	0	0.0	810	100.0	795	98.1	15	1.9	0	0.0	810	100.0
Broken Hill Base	249	90.5	26	9.5	0	0.0	275	100.0	271	98.5	4	1.5	0	0.0	275	100.0
Other Area hospitals	571	92.8	44	7.2	0	0.0	615	100.0	610	99.2	5	0.8	0	0.0	615	100.0
ALL HOSPITALS	3196	85.9	525	14.1	0	0.0	3721	100.0	3663	98.4	58	1.6	0	0.0	3721	100.0
Greater Southern																
Wagga Wagga Base	579	81.2	134	18.8	0	0.0	713	100.0	712	99.9	1	0.1	0	0.0	713	100.0
Griffith Base	259	57.2	194	42.8	0	0.0	453	100.0	450	99.3	3	0.7	0	0.0	453	100.0
Calvary, Wagga Wagga	508	87.7	71	12.3	0	0.0	579	100.0	574	99.1	5	0.9	0	0.0	579	100.0
Goulburn Base	256	84.5	47	15.5	0	0.0	303	100.0	295	97.4	8	2.6	0	0.0	303	100.0
Queanbeyan	243	94.9	13	5.1	0	0.0	256	100.0	250	97.7	6	2.3	0	0.0	256	100.0
Other Area hospitals	1476	91.2	142	8.8	0	0.0	1618	100.0	1592	98.4	26	1.6	0	0.0	1618	100.0
ALL HOSPITALS	3321	84.7	601	15.3	0	0.0	3922	100.0	3873	98.8	49	1.2	0	0.0	3922	100.0
Other/Not stated	108	99.1	1	0.9	0	0.0	109	100.0	107	98.2	2	1.8	0	0.0	109	100.0
TOTAL NSW	72893	84.9	12925	15.0	72	0.1	85890	100.0	83608	97.3	2277	2.7	5	0.0	85890	100.0

Source: NSW Midwives Data Collection (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

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

Baby discharge status in selected hospitals

Table 122 shows the discharge status of babies born in hospitals where the number of reported confinements exceeded 200 in 2003, totals for all hospitals within each health area and the NSW total.

TABLE 122

BIRTHS BY BABY DISCHARGE STATUS AND HOSPITAL, NSW 2003*

Health Area and Hospital	Baby discharge status										TOTAL	
	Discharged		Stillborn		Neonatal death		Transferred		Not stated			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sydney South West												
Canterbury	1380	98.2	10	0.7	2	0.1	14	1.0	0	0.0	1406	100.0
Royal Prince Alfred	3962	95.6	30	0.7	20	0.5	131	3.2	0	0.0	4143	100.0
Camden	521	97.7	2	0.4	0	0.0	10	1.9	0	0.0	533	100.0
Fairfield	1799	98.4	7	0.4	4	0.2	18	1.0	0	0.0	1828	100.0
Liverpool	2945	93.0	25	0.8	19	0.6	178	5.6	0	0.0	3167	100.0
Campbelltown	1994	97.6	12	0.6	3	0.1	33	1.6	0	0.0	2042	100.0
Bankstown-Lidcombe	1804	98.3	10	0.5	6	0.3	15	0.8	0	0.0	1835	100.0
Sydney Southwest Private	1159	98.5	1	0.1	0	0.0	17	1.4	0	0.0	1177	100.0
Bowral	470	70.9	3	0.5	0	0.0	190	28.7	0	0.0	663	100.0
Other Area hospitals	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0	2	100.0
ALL HOSPITALS	16035	95.5	101	0.6	54	0.3	606	3.6	0	0.0	16796	100.0
Northern Sydney & Central Coast												
Hornsby	907	98.7	2	0.2	2	0.2	8	0.9	0	0.0	919	100.0
Manly	776	98.2	3	0.4	1	0.1	10	1.3	0	0.0	790	100.0
Mona Vale	583	98.6	2	0.3	0	0.0	6	1.0	0	0.0	591	100.0
Royal North Shore	1522	89.9	12	0.7	10	0.6	149	8.8	0	0.0	1693	100.0
Ryde	434	97.7	4	0.9	1	0.2	5	1.1	0	0.0	444	100.0
Mater, North Sydney	2072	98.5	3	0.1	3	0.1	25	1.2	0	0.0	2103	100.0
North Shore Private	2247	98.7	18	0.8	5	0.2	6	0.3	0	0.0	2276	100.0
Sydney Adventist	2311	99.1	13	0.6	1	0.0	8	0.3	0	0.0	2333	100.0
Gosford	1866	86.7	8	0.4	0	0.0	278	12.9	0	0.0	2152	100.0
North Gosford Private	888	99.1	1	0.1	0	0.0	7	0.8	0	0.0	896	100.0
Wyong	344	96.9	0	0.0	0	0.0	11	3.1	0	0.0	355	100.0
ALL HOSPITALS	13950	95.9	66	0.5	23	0.2	513	3.5	0	0.0	14552	100.0
Sydney West												
Auburn	1177	98.2	10	0.8	0	0.0	12	1.0	0	0.0	1199	100.0
Blacktown	2449	98.2	15	0.6	5	0.2	26	1.0	0	0.0	2495	100.0
Westmead	3703	92.5	42	1.0	21	0.5	236	5.9	0	0.0	4002	100.0
The Hills Private	1322	98.9	3	0.2	0	0.0	12	0.9	0	0.0	1337	100.0
Westmead Private	1572	99.1	6	0.4	2	0.1	6	0.4	0	0.0	1586	100.0
Blue Mountains	307	95.3	2	0.6	1	0.3	12	3.7	0	0.0	322	100.0
Nepean	3141	94.6	27	0.8	10	0.3	142	4.3	0	0.0	3320	100.0
Hawkesbury	858	97.6	5	0.6	1	0.1	15	1.7	0	0.0	879	100.0
Nepean Private	873	99.1	6	0.7	0	0.0	2	0.2	0	0.0	881	100.0
Other Area hospitals	207	98.6	0	0.0	0	0.0	3	1.4	0	0.0	210	100.0
ALL HOSPITALS	15609	96.2	116	0.7	40	0.2	466	2.9	0	0.0	16231	100.0
Hunter & New England												
Maitland	1213	80.1	6	0.4	0	0.0	295	19.5	0	0.0	1514	100.0
Muswellbrook	222	98.2	0	0.0	0	0.0	4	1.8	0	0.0	226	100.0
Belmont	592	95.2	1	0.2	0	0.0	29	4.7	0	0.0	622	100.0
John Hunter	2597	81.4	46	1.4	32	1.0	517	16.2	0	0.0	3192	100.0
Christo Road Private	1108	93.6	3	0.3	1	0.1	72	6.1	0	0.0	1184	100.0
Manning Base	609	94.7	7	1.1	2	0.3	25	3.9	0	0.0	643	100.0
Armidale	423	93.8	4	0.9	1	0.2	23	5.1	0	0.0	451	100.0
Inverell	203	96.2	0	0.0	0	0.0	8	3.8	0	0.0	211	100.0
Tamworth Base	541	86.3	5	0.8	0	0.0	81	12.9	0	0.0	627	100.0
Other Area hospitals	1150	95.2	4	0.3	2	0.2	52	4.3	0	0.0	1208	100.0
ALL HOSPITALS	8658	87.6	76	0.8	38	0.4	1106	11.2	0	0.0	9878	100.0

TABLE 122 (continued)
BIRTHS BY BABY DISCHARGE STATUS AND HOSPITAL, NSW 2003*

Health Area and Hospital	Discharged		Stillborn		Baby discharge status				Not stated		TOTAL	
	No.	%	No.	%	Neonatal death		Transferred		No.	%	No.	%
					No.	%	No.	%				
South Eastern Sydney & Illawarra												
Shoalhaven	614	85.2	7	1.0	4	0.6	96	13.3	0	0.0	721	100.0
Wollongong	1543	78.3	8	0.4	7	0.4	413	21.0	0	0.0	1971	100.0
Shellharbour	202	94.0	1	0.5	0	0.0	12	5.6	0	0.0	215	100.0
Illawarra Private	987	98.1	2	0.2	0	0.0	17	1.7	0	0.0	1006	100.0
Royal Hospital for Women	3621	96.3	32	0.9	31	0.8	76	2.0	0	0.0	3760	100.0
St. George	2226	98.7	14	0.6	3	0.1	13	0.6	0	0.0	2256	100.0
Sutherland	778	98.7	3	0.4	1	0.1	6	0.8	0	0.0	788	100.0
Hurstville Community	1170	99.1	2	0.2	1	0.1	8	0.7	0	0.0	1181	100.0
Kareena Private	681	97.7	1	0.1	0	0.0	15	2.2	0	0.0	697	100.0
St. George Private	1589	98.9	6	0.4	0	0.0	12	0.7	0	0.0	1607	100.0
Prince of Wales Private	1714	99.4	1	0.1	0	0.0	9	0.5	1	0.1	1725	100.0
Other Area hospitals	143	98.6	0	0.0	0	0.0	2	1.4	0	0.0	145	100.0
ALL HOSPITALS	15268	95.0	77	0.5	47	0.3	679	4.2	1	0.0	16072	100.0
North Coast												
Grafton Base	389	96.0	2	0.5	1	0.2	13	3.2	0	0.0	405	100.0
Lismore Base	1001	82.9	14	1.2	1	0.1	191	15.8	0	0.0	1207	100.0
Murwillumbah	369	97.6	1	0.3	1	0.3	7	1.9	0	0.0	378	100.0
Tweed Heads	831	96.9	9	1.0	2	0.2	16	1.9	0	0.0	858	100.0
Coffs Harbour Base	680	91.2	6	0.8	0	0.0	60	8.0	0	0.0	746	100.0
Kempsey	267	96.4	2	0.7	0	0.0	8	2.9	0	0.0	277	100.0
Port Macquarie Base	689	95.3	6	0.8	1	0.1	27	3.7	0	0.0	723	100.0
Other Area hospitals	470	95.3	1	0.2	2	0.4	20	4.1	0	0.0	493	100.0
ALL HOSPITALS	4696	92.3	41	0.8	8	0.2	342	6.7	0	0.0	5087	100.0
Greater Western												
Dubbo Base	821	64.4	17	1.3	0	0.0	436	34.2	0	0.0	1274	100.0
Mudgee	199	96.6	0	0.0	1	0.5	6	2.9	0	0.0	206	100.0
Bathurst Base	421	75.3	1	0.2	1	0.2	136	24.3	0	0.0	559	100.0
Orange Base	670	82.3	4	0.5	2	0.2	138	17.0	0	0.0	814	100.0
Broken Hill Base	266	96.0	2	0.7	1	0.4	8	2.9	0	0.0	277	100.0
Other Area hospitals	569	92.4	1	0.2	1	0.2	45	7.3	0	0.0	616	100.0
ALL HOSPITALS	2946	78.6	25	0.7	6	0.2	769	20.5	0	0.0	3746	100.0
Greater Southern												
Griffith Base	442	96.9	3	0.7	1	0.2	10	2.2	0	0.0	456	100.0
Wagga Wagga Base	644	89.8	4	0.6	2	0.3	67	9.3	0	0.0	717	100.0
Calvary, Wagga Wagga	569	98.3	0	0.0	0	0.0	10	1.7	0	0.0	579	100.0
Goulburn Base	288	92.9	7	2.3	0	0.0	15	4.8	0	0.0	310	100.0
Queanbeyan	243	94.9	0	0.0	1	0.4	12	4.7	0	0.0	256	100.0
Other Area hospitals	1552	95.5	7	0.4	0	0.0	66	4.1	0	0.0	1625	100.0
ALL HOSPITALS	3738	94.8	21	0.5	4	0.1	180	4.6	0	0.0	3943	100.0
Other/Not stated	106	97.2	0	0.0	0	0.0	3	2.8	0	0.0	109	100.0
TOTAL NSW	81006	93.7	523	0.6	220	0.3	4664	5.4	1	0.0	86414	100.0

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

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

Postnatal length of stay in selected hospitals

Table 123 shows the mother's postnatal length of stay in the hospital of birth for hospitals where the number of reported confinements exceeded 200 in 2002, totals for all hospitals within each health area and the NSW total.

TABLE 123

AVERAGE MATERNAL POSTNATAL LENGTH OF STAY IN HOSPITAL OF BIRTH, NSW 1998–2002#

Health Area and Hospital	Average postnatal length of stay (days)					Health Area and Hospital	Average postnatal length of stay (days)				
	1998	1999	2000	2001	2002		1998	1999	2000	2001	2002
Sydney South West						South Eastern Sydney & Illawarra					
Canterbury	2.8	2.9	2.8	2.7	2.9	Shoalhaven	2.5	2.7	2.6	2.5	2.3
Royal Prince Alfred	3.9	4.0	3.6	3.7	3.8	Wollongong	2.6	2.8	2.2	2.6	2.6
Fairfield	2.9	2.8	2.6	2.6	2.5	Shellharbour	3.0	2.8	2.7	2.8	2.8
Liverpool	2.9	3.0	2.8	2.7	2.6	Illawarra Private	5.6	5.6	5.6	5.4	5.5
Campbelltown	2.6	2.6	2.5	2.5	2.6	Royal Hospital for Women	3.8	3.6	3.5	3.6	3.6
Bankstown–Lidcombe	2.8	2.9	2.8	2.8	2.7	St. George	3.6	3.5	3.3	2.9	2.7
Sydney Southwest Private	–	4.5	4.9	4.6	4.3	Sutherland	3.8	3.6	3.2	3.0	3.1
Bowral	3.0	3.0	2.7	2.6	2.4	Hurstville Community	6.4	5.5	4.5	4.4	4.5
ALL HOSPITALS	3.3	3.2	3.0	3.0	3.0	Kareena Private	5.9	5.9	5.7	5.2	5.0
Northern Sydney & Central Coast						North Coast					
Hornsby	3.8	3.7	3.6	3.5	3.1	Grafton Base	3.9	3.9	3.8	3.5	3.6
Manly	3.7	3.8	3.8	3.6	3.5	Lismore Base	3.4	3.1	3.2	3.1	3.2
Mona Vale	3.8	3.7	3.8	3.5	3.5	Murwillumbah	3.7	3.7	3.7	3.6	3.6
Royal North Shore	4.1	4.3	3.9	3.7	3.6	Coffs Harbour Base	4.0	3.9	4.0	3.8	3.8
Ryde	3.3	3.4	3.3	3.1	3.4	Kempsey	3.9	3.8	3.6	3.2	3.0
Mater, North Sydney	5.2	5.4	5.2	4.8	4.5	Tweed Heads	3.1	3.4	3.0	3.0	3.1
North Shore Private	4.8	4.8	4.7	4.6	4.5	Port Macquarie Base	3.8	4.1	3.8	3.7	3.8
Sydney Adventist	5.3	5.5	5.2	4.7	4.6	Other Area hospitals	4.1	3.9	3.7	3.7	3.5
Gosford	2.4	2.5	2.4	2.3	2.5	ALL HOSPITALS	3.7	3.6	3.6	3.4	3.4
Wyong	2.5	2.4	2.3	2.2	2.1	Greater Western					
North Gosford Private	5.9	5.6	5.3	4.9	4.9	Dubbo Base	3.0	2.9	2.7	2.5	2.4
ALL HOSPITALS	4.1	4.2	4.1	3.9	3.9	Mudgee	3.5	3.2	3.2	2.9	3.2
Sydney West						Greater Southern					
Auburn	2.8	2.8	2.8	2.8	2.8	Griffith Base	3.4	3.1	3.1	3.1	3.1
Blacktown	3.1	3.0	3.0	3.0	2.9	Wagga Wagga Base	3.3	3.8	3.1	2.9	3.0
Westmead	3.3	3.4	3.3	3.2	3.2	Calvary, Wagga Wagga	5.5	5.2	4.7	5.0	4.6
The Hills Private	5.6	5.5	5.2	5.0	4.8	Goulburn Base	3.3	3.5	3.5	3.4	3.4
Westmead Private	–	–	4.8	4.9	4.7	Queanbeyan	3.4	3.4	3.2	3.1	3.2
Blue Mountains	3.7	3.5	3.5	3.7	3.6	Other Area hospitals	4.0	3.9	3.6	3.7	3.6
Nepean	3.2	3.3	3.3	3.2	3.0	ALL HOSPITALS	3.9	3.8	3.5	3.6	3.6
Hawkesbury	3.5	3.4	3.3	3.2	3.4	TOTAL NSW	3.7	3.7	3.5	3.5	3.5
Nepean Private	–	–	4.3	4.8	4.7	Hunter & New England					
Other Area hospitals	5.1	4.9	4.3	4.0	3.1	Maitland	3.2	3.4	2.9	2.6	2.5
ALL HOSPITALS	3.6	3.5	3.4	3.5	3.4	Muswellbrook	3.5	3.5	3.4	3.3	3.2
Hunter & New England						Belmont					
Maitland	3.2	3.4	2.9	2.6	2.5	Belmont	3.5	3.6	3.1	3.3	3.1
Muswellbrook	3.5	3.5	3.4	3.3	3.2	John Hunter	3.9	3.6	3.3	3.3	3.2
Belmont	3.5	3.6	3.1	3.3	3.1	Christo Road Private	5.5	5.3	4.9	4.9	4.7
John Hunter	3.9	3.6	3.3	3.3	3.2	Manning Base	3.9	4.1	3.6	3.2	3.0
Christo Road Private	5.5	5.3	4.9	4.9	4.7	Armidale	4.4	4.4	3.9	3.8	3.7
Manning Base	3.9	4.1	3.6	3.2	3.0	Inverell	3.4	3.4	3.2	3.0	3.1
Armidale	4.4	4.4	3.9	3.8	3.7	Moree	4.0	3.7	3.6	3.3	3.5
Inverell	3.4	3.4	3.2	3.0	3.1	Tamworth Base	3.6	3.8	3.6	3.5	3.3
Moree	4.0	3.7	3.6	3.3	3.5	Other Area hospitals	4.2	3.9	3.8	4.0	3.8
Tamworth Base	3.6	3.8	3.6	3.5	3.3	ALL HOSPITALS	3.9	3.8	3.5	3.5	3.3
Other Area hospitals	4.2	3.9	3.8	4.0	3.8						
ALL HOSPITALS	3.9	3.8	3.5	3.5	3.3						

Source: *Linked data of the NSW Midwives Data Collection and NSW Inpatient Statistics Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.*

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

Indicators of obstetric care

The Australian Council on Healthcare Standards and the Royal Australian and New Zealand College of Obstetricians and Gynaecologists have endorsed seven clinical indicators for use in Hospitals.

Table 124 shows aggregate information for these indicators for all NSW hospitals and comparative information for all participating hospitals in Australia.

TABLE 124

CLINICAL INDICATORS FOR OBSTETRICS, NSW AND AUSTRALIA, 2003

Indicator description	NSW	Australia		
	%	20th Centile	80th Centile	
Indicator 1: Induction of labour other than for defined indications.#				
1.1 The number of patients undergoing induction of labour other than for defined indications# (excluding augmentation of labour) as a percentage of the total number of patients undergoing induction of labour for any reason (excluding augmentation of labour).	33.5	34.3	22.4	47.7
1.2 The number of patients undergoing induction of labour other than for defined indications# (excluding augmentation of labour) as a percentage of the total number of patients delivering (excluding augmentation of labour).	8.2	8.7	4.4	14.6
Indicator 2: The rate of vaginal delivery following primary caesarean section.				
2.1 The number of patients delivering vaginally following previous primary caesarean section as a percentage of the total number of patients delivering who have had a previous primary caesarean section with no intervening pregnancies greater than 20 weeks gestation.	14.8	16.0	11.0	21.3
Indicator 3: Primary caesarean section for failure to progress.				
3.1 The number of patients 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 the total number of patients undergoing primary non-elective caesarean section.	9.6	10.0	7.1	16.8
3.2 The number of patients 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 the total number of patients undergoing primary non-elective caesarean section.	32.9	30.7	26.8	36.3
Indicator 4: Primary caesarean section for fetal distress.				
4.1 The number of patients undergoing primary caesarean section for fetal distress as a percentage of the total number of patients delivering.	3.5	3.9	2.7	4.3
4.2 The number of patients undergoing primary caesarean section for fetal distress as a percentage of the total number of patients delivering by primary caesarean section.	18.9	21.7	16.1	26.9
Indicator 5: Incidence of intact lower genital tract in primiparous patients delivering vaginally.				
5.1 The number of primiparous patients not requiring surgical repair of the lower genital tract as a percentage of the total number of primiparous patients delivering vaginally.	29.6	28.8	18.1	40.0
Indicator 6: Apgar scores.				
6.1 The number of babies born with an Apgar score of four or below at five minutes post delivery as a percentage of the total number of babies born.	1.0	0.6	0.3	0.7
6.2 The number of babies born with an Apgar score of six or below at ten minutes post delivery as a percentage of the total number of babies born.##	–	0.3	0.2	0.5
Indicator 7: Term infants transferred or admitted to a neonatal intensive care unit for reasons other than congenital abnormalities.###				
7.1 The number of term babies transferred/admitted to a neonatal intensive care unit for reasons other than congenital abnormality as a percentage of all term live babies born.	0.8	1.1	0.2	1.2

Source: NSW Midwives Data Collection (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

The Australian Council on Healthcare Standards. *Determining the Potential to Improve Quality of Care. 5th Edition, ACHS Clinical Indicator Results for Australia and New Zealand 1998–2003.* Sydney: The Australian Council on Healthcare Standards, 2004.

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 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.

11. PERINATAL DEATHS

REVIEW OF PERINATAL DEATHS 2003

Introduction

This chapter presents the results of perinatal death reviews carried out by the NSW Maternal and Perinatal Committee, which is a quality assurance committee established under the Health Administration Act 1982. The Committee is privileged under the Act to carry out confidential reviews of maternal and perinatal deaths.

NSW Department of Health Circular No. 2002/6 describes hospital procedures for review and reporting of perinatal deaths. The circular is available on the Department's web site at: www.health.nsw.gov.au/fcsd/rmc/cib/circulars/2002/cir2002-6.pdf. The Maternal and Perinatal Committee carries out reviews of perinatal deaths occurring among fetuses or infants of at least 22 weeks gestation or at least 500 grams birthweight. The criteria used by the NSW Midwives Data Collection (MDC) for reporting of births is at least 400 grams birthweight or at least 20 weeks gestation. The Maternal and Perinatal Committee reviews deaths that have a slightly higher threshold to focus attention on deaths that are more likely to be preventable.

Perinatal deaths were reviewed by the Committee's Perinatal Outcomes Working Party. Both stillbirths and neonatal deaths were classified according to an obstetric cause-specific classification, the Perinatal Society of Australia and New Zealand Perinatal Death Classification (PSANZ-PDC). Neonatal deaths were also classified by neonatal cause according to the Perinatal Society of Australia and New Zealand Neonatal Death Classification (PSANZ-NDC).

Of the 619 perinatal deaths of at least 22 weeks gestation or at least 500 grams birthweight reported to the NSW Midwives Data Collection in 2003, confidential reports on 595 (96.1 per cent) were reviewed and classified. Of the 429 stillbirths reported to the MDC, reviews were carried out on 403 (93.9 per cent). The MDC was notified of 190 neonatal deaths. However, reviews were carried out on 192 neonatal deaths, reflecting under-enumeration of neonatal deaths on the MDC. Comparative information is also presented for 2001 and 2002.

Trends in obstetric antecedents of perinatal death

Between 2001 and 2003, the pattern of antecedent causes of death remained fairly stable (Figure 18, Table 125). About 30 per cent of perinatal deaths were unexplained. The next most common obstetric antecedents were fetal abnormalities followed by spontaneous preterm birth, specific perinatal conditions (such as twin-to-twin transfusion) and antepartum haemorrhage.

Obstetric antecedents of perinatal death 2003

1. Congenital abnormality

Congenital abnormalities were the underlying cause for 95 deaths (Table 126). Chromosomal abnormalities were most common ($n=27$, 28.4 per cent). Of these, 6 were trisomy 21, 10 were trisomy 18, 5 were trisomy 13, 1 was Turner syndrome, and 5 were other abnormalities.

Twenty-two deaths were associated with abnormalities of the central nervous system (23.2 per cent), of which 10 were congenital hydrocephalus and 6 were neural tube defects. Sixteen deaths occurred among babies who had multiple abnormalities not associated with a chromosomal abnormality.

Fifteen deaths were associated with abnormalities of the cardiovascular system, of which 7 were cases of hypoplastic left heart syndrome. Three deaths were associated with congenital diaphragmatic hernia.

2. Perinatal infection

Thirty deaths were found to be due to infection, of which 16 were stillbirths and 14 were neonatal deaths. In 25 deaths there was an associated chorioamnionitis.

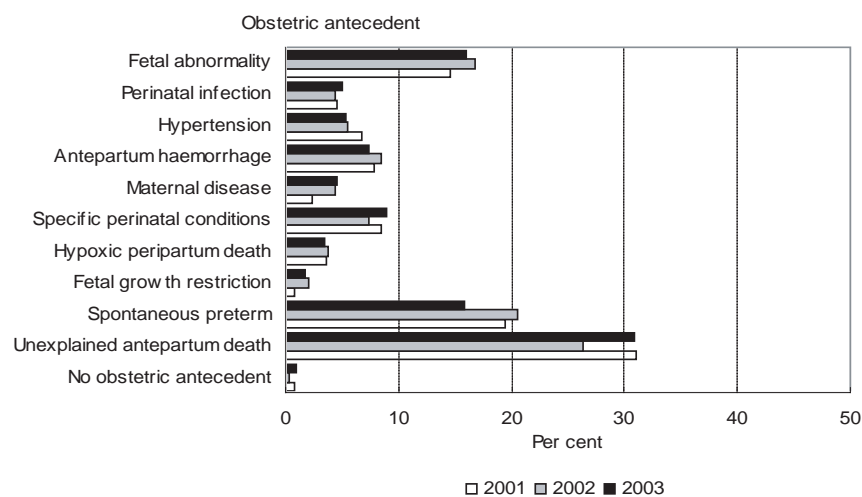
The most common infective organism identified was group B streptococcus, which was considered responsible for 4 neonatal deaths and 4 stillbirths. Three neonatal deaths were caused by *E. Coli* infection. There was one neonatal death from a congenital *Strep. Pneumoniae* infection and another from *Staph. Epidermidis* infection. One neonatal death followed cytomegalovirus infection. The causative organism was not specified for 16 deaths.

3. Hypertension

Thirty-two (5.4 per cent) deaths were considered to be due to maternal hypertension. There were 23 stillbirths and 9 neonatal deaths. The majority ($n=19$, 59.4 per cent) occurred in mothers with pre-eclampsia, two of whom had HELLP syndrome. Two deaths were among babies of twin pregnancies. Five deaths in this group were associated with placental abruption, and one was associated with maternal diabetes.

4. Antepartum haemorrhage

Forty-four deaths were due to antepartum haemorrhage, of which 28 were due to placental abruption, 4 were due to placenta praevia, and 3 due to vasa praevia. There were 31 stillbirths, of whom 10 died during labour, and 9 were neonatal deaths. Two cases of placental abruption were associated with a twin pregnancy. Three cases were associated with maternal hypertension.

FIGURE 18**PERINATAL DEATHS BY OBSTETRIC ANTECEDENT AND YEAR, NSW 2001–2003**

Source: NSW Maternal and Perinatal Committee, NSW Department of Health.

TABLE 125**PERINATAL DEATHS BY OBSTETRIC ANTECEDENT AND YEAR, NSW 2001–2003**

Obstetric antecedent	2001		Year 2002		2003	
	No.	%	No.	%	No.	%
1. Fetal abnormality	90	14.6	103	16.8	95	16.0
2. Perinatal infection	28	4.5	27	4.4	30	5.0
3. Hypertension	41	6.7	34	5.5	32	5.4
4. Antepartum haemorrhage	48	7.8	52	8.5	44	7.4
5. Maternal disease	14	2.3	27	4.4	28	4.7
6. Specific perinatal conditions	52	8.4	45	7.3	51	8.6
7. Hypoxic peripartum death	22	3.6	23	3.8	21	3.5
8. Fetal growth restriction	5	0.8	13	2.1	10	1.7
9. Spontaneous preterm	120	19.5	126	20.6	94	15.8
10. Unexplained antepartum death	191	31.0	161	26.3	184	30.9
11. No obstetric antecedent	5	0.8	2	0.3	6	1.0
TOTAL	616	100.0	613	100.0	595	100.0

Source: NSW Maternal and Perinatal Committee, NSW Department of Health.

TABLE 126

PERINATAL DEATHS BY OBSTETRIC ANTECEDENT AND PERINATAL OUTCOME, NSW 2003

Obstetric antecedent	Stillbirth		Perinatal outcome Neonatal death		TOTAL	
	No.	%	No.	%	No.	%
1. Fetal abnormality						
Central nervous system	13	3.2	9	4.7	22	3.7
Cardiovascular system	4	1.0	11	5.7	15	2.5
Urinary tract	1	0.2	2	1.0	3	0.5
Gastrointestinal system	0	0.0	3	1.6	3	0.5
Chromosomal	20	5.0	7	3.6	27	4.5
Metabolic	0	0.0	1	0.5	1	0.2
Multiple	9	2.2	7	3.6	16	2.7
Other	3	0.7	5	2.6	8	1.3
Total	50	12.4	45	23.4	95	16.0
2. Perinatal infection						
Group B Streptococcus	4	1.0	4	2.1	8	1.3
E Coli	0	0.0	3	1.6	3	0.5
Other bacterial	0	0.0	2	1.0	2	0.3
Unspecified bacterial	3	0.7	2	1.0	5	0.8
Cytomegalovirus	0	0.0	1	0.5	1	0.2
Unspecified viral	2	0.5	0	0.0	2	0.3
Unspecified organism	7	1.7	2	1.0	9	1.5
Total	16	4.0	14	7.3	30	5.0
3. Hypertension						
Chronic: Essential	3	0.7	1	0.5	4	0.7
Chronic: Secondary eg renal	1	0.2	0	0.0	1	0.2
Chronic: Unspecified	1	0.2	0	0.0	1	0.2
Gestational	6	1.5	0	0.0	6	1.0
Pre-eclampsia	9	2.2	8	4.2	17	2.9
Pre-eclampsia superimposed on pre-existing	2	0.5	0	0.0	2	0.3
Unspecified	1	0.2	0	0.0	1	0.2
Total	23	5.7	9	4.7	32	5.4
4. Antepartum haemorrhage						
Placental abruption	23	5.7	5	2.6	28	4.7
Placenta praevia	2	0.5	2	1.0	4	0.7
Vasa praevia	2	0.5	1	0.5	3	0.5
Undetermined origin	4	1.0	5	2.6	9	1.5
Total	31	7.7	13	6.8	44	7.4
5. Maternal disease						
Termination of pregnancy other than for fetal abnormality	4	1.0	1	0.5	5	0.8
Diabetes/gestational diabetes	9	2.2	1	0.5	10	1.7
Maternal injury: Accidental	5	1.2	1	0.5	6	1.0
Other	2	0.5	5	2.6	7	1.2
Total	20	5.0	8	4.2	28	4.7
6. Specific perinatal conditions						
Twin-to-twin transfusion	16	4.0	11	5.7	27	4.5
Fetomaternal haemorrhage	2	0.5	0	0.0	2	0.3
Antepartum cord complications	6	1.5	1	0.5	7	1.2
Uterine abnormality	2	0.5	4	2.1	6	1.0
Birth trauma	0	0.0	1	0.5	1	0.2
Haemolytic disease	1	0.2	0	0.0	1	0.2
Idiopathic hydrops	1	0.2	1	0.5	2	0.3
Other	2	0.5	3	1.6	5	0.8
Total	30	7.4	21	10.9	51	8.6
7. Hypoxic peripartum death						
Uterine rupture	2	0.5	0	0.0	2	0.3
Cord prolapse	3	0.7	1	0.5	4	0.7
Shoulder dystocia	1	0.2	0	0.0	1	0.2
Other intrapartum complication	2	0.5	4	2.1	6	1.0
No intrapartum complication	3	0.7	3	1.6	6	1.0
Unspecified	1	0.2	1	0.5	2	0.3
Total	12	3.0	9	4.7	21	3.5
8. Fetal growth restriction						
With evidence of uteroplacental insufficiency	4	1.0	2	1.0	6	1.0
With chronic villitis	1	0.2	0	0.0	1	0.2
Without the above placental pathology	1	0.2	1	0.5	2	0.3
No placental examination	1	0.2	0	0.0	1	0.2
Total	7	1.7	3	1.6	10	1.7

TABLE 126 (continued)
PERINATAL DEATHS BY OBSTETRIC ANTECEDENT AND PERINATAL OUTCOME, NSW 2003

Obstetric antecedent	Stillbirth		Perinatal outcome Neonatal death		TOTAL	
	No.	%	No.	%	No.	%
9. Spontaneous preterm						
Intact membranes or membrane rupture less than 24 hours:						
with chorioamnionitis	11	2.7	25	13.0	36	6.1
without chorioamnionitis	4	1.0	12	6.3	16	2.7
no placental examination	0	0.0	2	1.0	2	0.3
Membrane rupture 24 hours or more:						
with chorioamnionitis	9	2.2	17	8.9	26	4.4
without chorioamnionitis	1	0.2	1	0.5	2	0.3
no placental examination	3	0.7	4	2.1	7	1.2
Membrane rupture unknown duration:						
with chorioamnionitis	1	0.2	1	0.5	2	0.3
without chorioamnionitis	1	0.2	1	0.5	2	0.3
unspecified placental examination	0	0.0	1	0.5	1	0.2
Total	30	7.4	64	33.3	94	15.8
10. Unexplained antepartum death						
With evidence of uteroplacental insufficiency	43	10.7	0	0.0	43	7.2
With chronic villitis	2	0.5	0	0.0	2	0.3
Without the above placental pathology	108	26.8	0	0.0	108	18.2
No placental examination	28	6.9	0	0.0	28	4.7
Unspecified placental examination	3	0.7	0	0.0	3	0.5
Total	184	45.7	0	0.0	184	30.9
11. No obstetric antecedent						
Other	0	0.0	2	1.0	2	0.3
Unknown/unexplained	0	0.0	4	2.1	4	0.7
Total	0	0.0	6	3.1	6	1.0
TOTAL	403	100.0	192	100.0	595	100.0

Source: NSW Maternal and Perinatal Committee, NSW Department of Health.

5. Maternal disease

Twenty-eight deaths were attributed to other maternal conditions including: diabetes (10), motor vehicle accident injury (4), other maternal injury (2), termination of pregnancy (5), antiphospholipid syndrome (1), renal failure (1), thrombocytopaenia (1), and maternal pelvic thrombophlebitis (1).

6. Specific perinatal conditions

Of the 51 deaths in this group, twin-twin transfusion accounted for 27 deaths, followed by antepartum cord complications (7) and uterine abnormalities (6). Other causes were: prolonged premature rupture of membranes (4), fetomaternal haemorrhage (2), idiopathic hydrops (2), birth trauma (1), haemolytic disease (1), and chorangioma of the placenta (1).

7. Hypoxic peripartum death

There were 21 deaths associated with peripartum hypoxia. Two deaths followed uterine rupture—1 prior to the onset of labour and 1 during labour. Four deaths followed cord prolapse and 1 death followed shoulder dystocia.

Four deaths occurred before the onset of labour, 7 during labour and 1 at an unspecified time prior to birth. The remaining 9 deaths occurred in the neonatal period.

8. Fetal growth restriction

In 10 cases, the main obstetric cause of death was considered to be fetal growth restriction (FGR). Of these, 7 were stillbirths and 3 were neonatal deaths. FGR is defined as less than the tenth percentile of birthweight for gestational age with no major congenital abnormalities. If a maternal or fetal cause of FGR was known then the cause of death was classified to the underlying cause of the FGR. Stillbirths with evidence of maceration were not classified as FGR unless there was evidence of growth restriction on serial ultrasound during pregnancy.

9. Spontaneous preterm

There were 94 perinatal deaths associated with spontaneous preterm birth, which comprises normally formed babies born before 37 weeks gestation. Of these, 30 (31.9 per cent) were stillbirths and 64 (68.1 per cent) were neonatal deaths. Twenty-nine deaths (30.9 per cent) were at 21–22 weeks gestation, 48 (51.1 per cent) were at 23–25 weeks gestation, and 17 (18.1 per cent) occurred between 26 and 36 weeks gestation. Chorioamnionitis was reported in 64 deaths (68.1 per cent). Thirty-five deaths (37.2 per cent) were associated with membrane rupture of 24 hours or more.

10. Unexplained antepartum death

Of the 184 unexplained stillbirths 110 (59.8 per cent) were low birthweight babies and 110 were premature. A variety of associated maternal conditions were reported in this group including: multiple pregnancy (12 deaths), maternal hypertension (8), diabetes (3), epilepsy (2), asthma (1), systemic lupus erythematosus (1) and taking methadone (1). Placental histopathology results were provided for 156 unexplained antepartum deaths (84.8 per cent) and evidence of uteroplacental insufficiency was found in 43.

11. No obstetric antecedent

Six neonatal deaths were considered not to have an obstetric antecedent. One baby had fetal akinesia syndrome and 1 had primary persistent pulmonary hypertension. No cause of death could be identified for 4 babies—post-mortem and placental histopathology examination had been carried out in 2 cases.

Obstetric cause of perinatal death by hospital service level 2003

Obstetric service levels are described in the Explanatory Notes of the Methods section (page 16). The majority of perinatal deaths occurred in level 6 hospitals (47.0 per cent, Table 127). The proportion of unexplained intrauterine deaths was substantially lower in level 6 hospitals than other hospitals, possibly due to better access to perinatal post-mortem services. The proportion of deaths associated with congenital abnormalities was highest in level 6 hospitals, reflecting patterns of referral for diagnosis and treatment.

Time of death 2003

Of the 595 perinatal deaths in 2003, 277 (46.6 per cent) occurred before the onset of labour, 46 (7.7 per cent) occurred during labour, 80 (13.4 per cent) occurred at an unknown time before birth, and 192 (32.3 per cent) were neonatal deaths.

Trends in neonatal causes of death

Between 2001 and 2003 extreme prematurity was the most common cause of neonatal death, accounting for over 40 per cent of all neonatal deaths in 2003 (Table 128). Congenital abnormalities were the next most common cause of neonatal death for the 3 years. There were slightly more deaths attributed to neurological conditions in 2002 and 2003 compared with 2001, particularly hypoxic ischaemic encephalopathy.

Neonatal causes of death 2003

Of the 192 neonatal deaths reviewed for 2003, 153 (79.7 per cent) were less than 37 weeks gestation (Table 129). The most common neonatal cause of death was extreme prematurity ($n=86$, 44.8 per cent). Thirty-seven infants died from a congenital abnormality. There were 13 deaths due to hypoxic ischaemic encephalopathy and 10 deaths due to intracranial haemorrhage.

Perinatal deaths associated with maternal drug dependency/abuse 2003

No perinatal deaths were directly attributed to maternal drug dependency or drug abuse. One death occurred in a mother who had a history of drug abuse, but drug use was not considered to be the main cause of death. Two further perinatal deaths were reported among babies of mothers who were participating in a methadone program.

Post-mortem examination 2003

Postmortem examination is valuable in ascertaining or confirming the cause of death, identifying additional factors which may have contributed to the death, and counselling parents about the cause of death. Postmortem examinations were carried out for 193 (32.4 per cent) deaths: 161 stillborn infants (40.0 per cent) and 32 neonatal deaths (16.7 per cent). Placental histopathology was carried out in 484 perinatal deaths (81.3 per cent).

TABLE 127

PERINATAL DEATHS BY OBSTETRIC ANTECEDENT AND HOSPITAL SERVICE LEVEL, NSW 2003

Obstetric antecedent	Level 2		Level 3		Hospital service level				Level 6		Private		TOTAL	
	No.	%	No.	%	Level 4 No.	Level 4 %	Level 5 No.	Level 5 %	No.	%	No.	%	No.	%
1. Fetal abnormality	0	0.0	3	7.7	19	16.4	12	16.2	43	15.9	6	8.7	83	14.4
2. Perinatal infection	0	0.0	2	5.1	2	1.7	3	4.1	22	8.1	1	1.4	30	5.2
3. Hypertension	0	0.0	2	5.1	4	3.4	3	4.1	19	7.0	2	2.9	30	5.2
4. Antepartum haemorrhage	0	0.0	6	15.4	9	7.8	8	10.8	17	6.3	4	5.8	44	7.7
5. Maternal disease#	0	0.0	2	5.1	6	5.2	3	4.1	12	4.4	4	5.8	28	4.9
6. Specific perinatal conditions	0	0.0	2	5.1	8	6.9	5	6.8	29	10.7	7	10.1	51	8.9
8. Hypoxic peripartum death	1	16.7	6	15.4	4	3.4	0	0.0	6	2.2	2	2.9	19	3.3
9. Fetal growth restriction	0	0.0	1	2.6	2	1.7	0	0.0	7	2.6	0	0.0	10	1.7
10. Spontaneous preterm	2	33.3	5	12.8	14	12.1	5	6.8	54	20.0	11	15.9	91	15.8
11. Unexplained antepartum death	3	50.0	10	25.6	46	39.7	34	45.9	59	21.9	32	46.4	184	32.0
12. No obstetric antecedent	0	0.0	0	0.0	2	1.7	1	1.4	2	0.7	0	0.0	5	0.9
TOTAL	6	100.0	39	100.0	116	100.0	74	100.0	270	100.0	69	100.0	575	100.0

Source: NSW Maternal and Perinatal Committee, NSW Department of Health.

Maternal disease includes one perinatal death that occurred in a level 1 hospital.

TABLE 128

NEONATAL DEATHS BY CAUSE AND YEAR, NSW 2001–2003

Neonatal cause	2001		Year 2002		2003	
	No.	%	No.	%	No.	%
1. Congenital abnormality						
Central nervous system	6	3.2	6	3.0	9	4.7
Cardiovascular system	8	4.2	2	1.0	11	5.7
Urinary tract	5	2.6	2	1.0	3	1.6
Gastrointestinal tract	2	1.1	2	1.0	2	1.0
Chromosomal	3	1.6	8	4.0	3	1.6
Metabolic	0	0.0	1	0.5	0	0.0
Multiple	5	2.6	5	2.5	2	1.0
Unspecified	0	0.0	1	0.5	0	0.0
Other	14	7.4	12	5.9	7	3.6
Total	43	22.8	39	19.3	37	19.3
2. Extreme prematurity						
Not resuscitated	34	18.0	39	19.3	45	23.4
Unsuccessful resuscitation	34	18.0	31	15.3	22	11.5
Resuscitation unspecified or unknown	16	8.5	10	5.0	19	9.9
Total	84	44.4	80	39.6	86	44.8
3. Cardio-respiratory disorders						
Hyaline membrane disease / Respiratory distress syndrome	8	4.2	5	2.5	6	3.1
Meconium aspiration syndrome	1	0.5	1	0.5	1	0.5
Primary persistent pulmonary hypertension	2	1.1	2	1.0	1	0.5
Pulmonary hypoplasia	6	3.2	8	4.0	5	2.6
Chronic neonatal lung disease	0	0.0	0	0.0	2	1.0
Other	6	3.2	8	4.0	6	3.1
Total	23	12.2	24	11.9	21	10.9
4. Infection						
Congenital bacterial	2	1.1	7	3.5	3	1.6
Acquired bacterial	4	2.1	8	4.0	6	3.1
Fungal	0	0.0	1	0.5	1	0.5
Unspecified organism	2	1.1	0	0.0	0	0.0
Other	0	0.0	1	0.5	1	0.5
Total	8	4.2	17	8.4	11	5.7
5. Neurological						
Hypoxic ischaemic encephalopathy / perinatal asphyxia	8	4.2	16	7.9	13	6.8
Intracranial haemorrhage	10	5.3	11	5.4	10	5.2
Other	0	0.0	0	0.0	1	0.5
Total	18	9.5	27	13.4	24	12.5
6. Gastrointestinal						
Necrotising enterocolitis	2	1.1	5	2.5	5	2.6
Other	1	0.5	1	0.5	1	0.5
Total	3	1.6	6	3.0	6	3.1
7. Other						
SIDS	0	0.0	0	0.0	1	0.5
Trauma	0	0.0	1	0.5	0	0.0
Other	7	3.7	3	1.5	5	2.6
Undetermined / not stated	3	1.6	5	2.5	1	0.5
Total	10	5.3	9	4.5	7	3.6
TOTAL	189	100.0	202	100.0	192	100.0

Source: NSW Maternal and Perinatal Committee, NSW Department of Health.

TABLE 129

NEONATAL DEATHS BY CAUSE AND GESTATIONAL AGE, NSW 2003

Neonatal cause	Gestational age (weeks)					
	Less than 37		37+		TOTAL	
	No.	%	No.	%	No.	%
1. Congenital abnormality						
Central nervous system	5	3.3	4	10.3	9	4.7
Cardiovascular system	6	3.9	5	12.8	11	5.7
Urinary tract	2	1.3	1	2.6	3	1.6
Gastrointestinal tract	2	1.3	0	0.0	2	1.0
Chromosomal	2	1.3	1	2.6	3	1.6
Multiple	2	1.3	0	0.0	2	1.0
Other	4	2.6	3	7.7	7	3.6
Total	23	15.0	14	35.9	37	19.3
2. Extreme prematurity						
Not resuscitated	45	29.4	0	0.0	45	23.4
Unsuccessful resuscitation	22	14.4	0	0.0	22	11.5
Resuscitation unspecified or unknown	19	12.4	0	0.0	19	9.9
Total	86	56.2	0	0.0	86	44.8
3. Cardio-respiratory disorders						
Other	4	2.6	2	5.1	6	3.1
Hyaline membrane disease– Respiratory distress syndrome	6	3.9	0	0.0	6	3.1
Meconium aspiration syndrome	0	0.0	1	2.6	1	0.5
Primary persistent pulmonary hypertension	0	0.0	1	2.6	1	0.5
Pulmonary hypoplasia	4	2.6	1	2.6	5	2.6
Chronic neonatal lung disease	2	1.3	0	0.0	2	1.0
Total	16	10.5	5	12.8	21	10.9
4. Infection						
Other	1	0.7	0	0.0	1	0.5
Congenital bacterial	2	1.3	1	2.6	3	1.6
Acquired bacterial	5	3.3	1	2.6	6	3.1
Fungal	1	0.7	0	0.0	1	0.5
Total	9	5.9	2	5.1	11	5.7
5. Neurological						
Other	1	0.7	0	0.0	1	0.5
Hypoxic ischaemic encephalopathy– perinatal asphyxia	1	0.7	12	30.8	13	6.8
Intracranial haemorrhage	10	6.5	0	0.0	10	5.2
Total	12	7.8	12	30.8	24	12.5
6. Gastrointestinal						
Other	0	0.0	1	2.6	1	0.5
Necrotising enterocolitis	5	3.3	0	0.0	5	2.6
Total	5	3.3	1	2.6	6	3.1
7. Other						
SIDS	0	0.0	1	2.6	1	0.5
Other	2	1.3	3	7.7	5	2.6
Undetermined/Unknown	0	0.0	1	2.6	1	0.5
Total	2	1.3	5	12.8	7	3.6
TOTAL	153	100.0	39	100.0	192	100.0

Source: NSW Maternal and Perinatal Committee, NSW Department of Health.

SURVEY ON THE MANAGEMENT OF STILLBIRTHS IN NSW HOSPITALS

Introduction

Stillbirths account for approximately two-thirds of all perinatal deaths in NSW. In response, the NSW Department of Health and the NSW Maternal and Perinatal Committee recommended that a review be carried out to inform best practice on the management of stillbirths.

A Stillbirth Reference Group was convened in early 2003, comprising members from: the NSW Maternal and Perinatal Committee; Department of Health staff representing the Centre for Mental Health, the Nursing and Midwifery Office, and Statewide Services Development Branch; SIDS and Kids NSW; the NSW Pregnancy and Newborn Services Network and the NSW Genetic Services Advisory Committee. The Reference Group recommended that a statewide survey of Area Health Services be carried out to examine current practices in the management of stillbirths, and to determine the extent of the alignment of these practices with Department of Health guidelines.¹

Method

In 2003 a self-administered questionnaire was distributed to all public hospitals in NSW which reported a birth in 2002. Questions were included on the following:

- hospital policies and procedures for the management of stillbirths;
- clinical investigations routinely performed on mothers following a stillbirth;
- clinical investigations offered to parents following a stillbirth;
- expected timeframe for parents to obtain post-mortem results; and
- access to counselling services for parents of a stillborn infant.

Information from returned questionnaires were entered into an electronic spreadsheet and descriptive statistics were produced.

Results

Of the 107 public hospitals in NSW that reported at least one birth, 75 responded to the survey; an overall response rate of 70 per cent. At least one hospital in each of the then 17 Area Health Services completed the survey.

Policies and procedures that accorded with NSW Department of Health guidelines for the investigation of stillbirths¹ were in place in 63 of the 75 respondent hospitals. Policies were being updated or reviewed in a further 4 hospitals.

Thirty-one percent of hospitals reported that all nine maternal investigations listed in Table 130 were routinely requested. The most frequently ordered maternal investigations were: full blood count, blood group and antibody screen. Seventy-seven percent of hospitals routinely sent the placenta for histopathology following a stillbirth.

Post-mortem investigations were routinely offered to parents following a stillbirth in 85 per cent of hospitals. Almost half of the respondents identified the same hospital as performing the placental histopathology and the post-mortem examination of the stillborn infant. Clinical investigations routinely performed on a stillborn infant are listed in Table 131, with fetal karyotype and a total body X-ray routinely carried out by 75 per cent and 56 per cent of hospitals respectively, for stillborn infants with congenital abnormalities.

All hospitals reported that post-mortem examinations were performed at no charge to parents. The reported timeframe within which parents could expect to obtain the final post-mortem examination result ranged from six weeks to six months.

Almost all hospitals reported that families had the opportunity to see and hold their stillborn baby and to take photographs. Ninety-five per cent of hospitals reported that parents were able to access counselling and bereavement services following a stillbirth.

TABLE 130

HOSPITALS ROUTINELY PERFORMING MATERNAL INVESTIGATIONS		
Maternal investigations	Hospitals*	
	No.	%
Full blood count	63	84.0
Blood group and antibody screen	63	84.0
Infection screen for TORCH organisms and syphilis	59	78.7
Gestational diabetes	58	77.3
Kleihauer count	56	74.7
Assessment of anti-nuclear and anti-phospholipid antibodies	52	69.3
Haemoglobin electrophoresis	47	62.7
Maternal vaginal swab	40	53.3
Swab from the chorionic surface of the placenta	36	48.0

* Total hospitals n=75.

TABLE 131

HOSPITALS ROUTINELY PERFORMING FETAL CLINICAL INVESTIGATIONS		
Maternal investigations	Hospitals*	
	No.	%
Description of clinical appearance	61	81.3
Fetal karyotype	56	74.7
Total body X-ray (fetogram)	42	56.0
Anatomical photographs	35	46.7
Fetal blood cultures	25	33.3

* Total hospitals n=75.

Discussion

A post-mortem examination and maternal investigations can provide valuable information to health professionals on the cause of death of a stillborn baby. These investigations may assist parents by providing information that will enable informed decision making for the planning of future pregnancies.

This statewide survey of NSW hospitals provided an overview of current practices on the management of stillbirths. A key finding of the survey was that, despite 85 per cent of hospitals routinely offering to parents a post-mortem investigation of a stillborn infant, the perinatal post-mortem rate remains below 40 per cent.

One way to improve post-mortem rates is by ensuring that health professionals are well-informed, and clearly and sensitively discuss the post-mortem process with parents. In early 2004, the NSW Health Department issued Circular 2004/1 entitled *Use and retention of human tissue including organ donation, post-mortem examination and coronial matters*. This policy was developed in response to legislative changes and recommendations from major reports and enquiries, including the Walker Inquiry¹ and the National Code of Ethical Autopsy Practice.² The National Code of Ethical Autopsy Practice advises that institutions have a responsibility to ensure that a specially trained staff member engages with the bereaved family and provides clear and factual information.³ The NSW Department of Health policy describes this role as the Post-Mortem Coordinator. It is expected that the appointment of a Post-Mortem Coordinator in hospitals that provide non-coronial post-mortems will ensure parents receive information, support and assistance with the post-mortem process.

To further improve the management of stillbirths, there is a need to ensure that health professionals are aware of the

need for routine clinical investigations. The survey found that all nine maternal clinical investigations were reported to be routinely performed in approximately one third of hospitals. However, these results also reflect that the series of maternal investigations outlined in Table 1 may not be clinically appropriate for all cases of stillbirths or may be undertaken at a later time. There is scope to improve the uptake of maternal investigations where it is clinically indicated, particularly when the offer of a post-mortem examination of the stillborn baby has been declined. Without such investigations, it is more difficult to advise parents about the cause of death or identify risks which may affect the outcome of future pregnancies.⁴

Overall, respondents acknowledged the need to provide holistic care in the management of a stillbirth, and also to ensure open, honest and sensitive discussion of the post-mortem process.

References

1. NSW Department of Health. Circular 97/107 *Guidelines for investigation of a stillbirth*.
2. Walker B. *Inquiry into matters arising from the post-mortem and anatomical examination practices of the Institute of Forensic Medicine*. Sydney: NSW Department of Health, 2001.
3. Australian Health Ministers' Advisory Council Subcommittee on Autopsy Practice. *The National Code of Ethical Autopsy Practice*. Adelaide: South Australian Department of Human Services, 2002.
4. Maternal and Child Health Research Consortium. *Confidential Enquiry into Stillbirths and Deaths in Infancy 8th Annual Report*. London: Maternal and Child Health Research Consortium, 2001.

13. APPENDICES

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.

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, p.17).

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

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

APPENDIX 4

NSW MIDWIVES DATA COLLECTION FORM

NSW MIDWIVES DATA COLLECTION			
Mother Unit Record No. <input type="text"/>	Hospital <input type="text"/>	Code <input type="text"/>	
First Name <input type="text"/>	Family Name <input type="text"/>		
Address <input type="text"/>		Postcode <input type="text"/>	
Mother's birth date <input type="text"/>	LABOUR AND DELIVERY		
Country of birth Australia <input type="checkbox"/> 36 Other <input type="checkbox"/>	If labour induced, main indication: Diabetes <input type="checkbox"/> 1 Hypertensive disease <input type="checkbox"/> 2 Fetal distress <input type="checkbox"/> 3 Fetal death <input type="checkbox"/> 4 Chorioamnionitis <input type="checkbox"/> 5 Blood group isoimmunisation <input type="checkbox"/> 6 Prelabour rupture of membranes <input type="checkbox"/> 7 Prolonged pregnancy (41+ weeks) <input type="checkbox"/> 8 Suspected intrauterine growth restriction <input type="checkbox"/> 9 Other <input type="checkbox"/> 10		
Indigenous status: Aboriginal <input type="checkbox"/> 1 Torres Strait Islander <input type="checkbox"/> 2 Aboriginal and Torres Strait Islander <input type="checkbox"/> 3 None of the above <input type="checkbox"/> 4	BABY Place of birth: Hospital theatre/delivery suite <input type="checkbox"/> 1 Birth centre <input type="checkbox"/> 2 Planned birth centre/delivery suite birth <input type="checkbox"/> 3 Planned homebirth <input type="checkbox"/> 4 Planned homebirth/hospital admission <input type="checkbox"/> 5 Born before arrival <input type="checkbox"/> 6		
PREVIOUS PREGNANCIES			
Previous pregnancy greater than 20 weeks? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 0 If no, go to next section. If yes: Specify the number of previous pregnancies > 20 weeks <input type="text"/> Was the last birth by caesarean Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 0 Total number of previous caesarean sections? <input type="text"/>	Pain relief/ anaesthetics (tick 1 or more) None <input type="checkbox"/> Pudendal <input type="checkbox"/> Nitrous oxide <input type="checkbox"/> Spinal <input type="checkbox"/> IM narcotics <input type="checkbox"/> General anaesthetic <input type="checkbox"/> Local to perineum <input type="checkbox"/> Epidural/caudal <input type="checkbox"/> Other <input type="checkbox"/>		
THIS PREGNANCY			
Date of LMP <input type="text"/>	Presentation at birth: Vertex <input type="checkbox"/> 1 Face <input type="checkbox"/> 3 Breech <input type="checkbox"/> 2 Brow <input type="checkbox"/> 4 Other <input type="checkbox"/> 5		
Prenatal diagnosis (< 20 weeks gestation) CVS <input type="checkbox"/> Amniocentesis <input type="checkbox"/>	Type of delivery: Normal vaginal <input type="checkbox"/> 1 Vacuum extr. <input type="checkbox"/> 3 Forceps <input type="checkbox"/> 2 Vaginal breech <input type="checkbox"/> 4 Caesarean section <input type="checkbox"/> 5		
Antenatal care: Duration of pregnancy at first visit (weeks) <input type="text"/> Not booked <input type="checkbox"/>	If caesarean section, main indication: Failure to progress - Cx dilatation unknown <input type="checkbox"/> 1 - Cx 3cm dilated or less <input type="checkbox"/> 2 - Cx dilated more than 3 cm <input type="checkbox"/> 3 Fetal distress <input type="checkbox"/> 4 Other <input type="checkbox"/> 5		
Medical conditions: Diabetes mellitus <input type="checkbox"/> Gestational diabetes <input type="checkbox"/> Chronic hypertension <input type="checkbox"/> Pre-eclampsia <input type="checkbox"/>	Perineal status: Intact <input type="checkbox"/> 1 4th deg. tear <input type="checkbox"/> 5 1st deg. tear/graze <input type="checkbox"/> 2 Episiotomy <input type="checkbox"/> 6 2nd deg. tear <input type="checkbox"/> 3 Both tear and episiotomy <input type="checkbox"/> 7 3rd deg. tear <input type="checkbox"/> 4 Other <input type="checkbox"/> 8		
Smoking: Did the mother smoke at all during pregnancy? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 0 If yes, how many cigarettes each day on average in the second half of pregnancy? None <input type="checkbox"/> 1 > 10 per day <input type="checkbox"/> 2 ≤ 10 per day <input type="checkbox"/> 3 Unknown <input type="checkbox"/> 4	Surgical repair of the vagina or perineum? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 0		
POSTNATAL CARE - BABY			
Birth defect? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 0 If yes, specify: _____			
Admitted to NICU? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 0 Admitted to SCN? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 0 If yes, observation only? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 0 If admitted to SCN/NICU: Was a birth defect the main reason for admission? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 0			
DISCHARGE STATUS - MOTHER AND BABY			
LABOUR AND DELIVERY		Mother's date of discharge or transfer <input type="text"/>	
Onset of labour: Spontaneous <input type="checkbox"/> 1 Induced <input type="checkbox"/> 2 No labour <input type="checkbox"/> 3 If labour augmented/ induced (tick 1 or more): Oxytocins <input type="checkbox"/> ARM <input type="checkbox"/> Prostaglandins <input type="checkbox"/> Other <input type="checkbox"/>	Mother: Discharged <input type="checkbox"/> 1 Transferred <input type="checkbox"/> 2 Died <input type="checkbox"/> 3	Baby: Discharged <input type="checkbox"/> 1 Transferred <input type="checkbox"/> 2 Stillbirth <input type="checkbox"/> 3 Neonatal death <input type="checkbox"/> 4 Transferred and died <input type="checkbox"/> 5	Hospital transferred to: <input type="text"/> If baby died, date of death <input type="text"/> Signature of midwife at discharge <input type="text"/>