ANNUAL REPORT
for the Year 2009

Incorporating Births in Victoria and the 48th survey of perinatal deaths in Victoria

Executive summary and recommendations
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EXECUTIVE SUMMARY AND RECOMMENDATIONS

BACKGROUND

The Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) was established in 1962 under the *Health Act 1958* and now functions under the *Public Health and Wellbeing Act 2008* (the Act). CCOPMM is the advisory body to the Minister for Health on maternal, perinatal and paediatric mortality and morbidity.

CCOPMM has statutory responsibility for the administration of the Victorian Perinatal Data Collection (VPDC) which collects information on all births in Victoria and the Victorian Birth Defects Register (VBDR). The data collections are governed by CCOPMM and administered by the Clinical Councils Unit in the Quality, Safety and Patient Experience Branch of the Department of Health.

Data is also collected on Victorian deaths and includes all perinatal deaths (stillbirths and neonates) from 20 weeks’ gestation (or 400 g birthweight if gestation is not known); all infant and child deaths up to, but not including the 18th birthday; and all maternal deaths.

When a death certificate is received from the Registry of Births, Deaths and Marriages, a case file is created. Information is then sought from many sources including: hospital case records, individual doctors and midwives, pathology departments, coronial services and the Newborn Emergency Transport Service.

Specialist subcommittees of CCOPMM then review complex or contentious mortality cases. The committees make recommendations and consider potential contributing factors, so that where relevant, recommendations for practice improvement can be disseminated to clinicians and health services.
CHAIRMAN’S REPORT

This year’s annual report begins the process of bringing together all the reports produced by CCOPMM into one report. Due to unanticipated delays in the implementation of electronic transfer of birth data, it has not been possible to include the Birth defects report in the 2009 annual report but this will occur in the 2010 edition.

A key function of CCOPMM is to classify all perinatal, child, adolescent and maternal deaths and ascertain factors that may have contributed to these deaths. The council then makes recommendations for improved clinical practice. These recommendations merit careful consideration by all health professionals involved in the care of pregnant women, neonates, children and adolescents.

In particular we draw attention to recommendations on:

- the continuing need to educate both consumers and health professionals on the implications of the perception of reduced fetal movements
- the risks associated with obesity
- the need to seek treatment for mental health conditions
- the need for regular urinalysis at each antenatal presentation to detect proteinuria in women at risk of pre-eclampsia
- the legal requirement to report all maternal deaths to the Coroner
- the need to encourage all pregnant women to be immunised against influenza and in particular the H1N1 strain
- the greater risk of injury in children in rural settings, especially children who assist with work on farms or rural properties
- deaths associated with alcohol use by adolescents, where alcohol was provided by an adult, and new laws covering the provision of alcohol to minors in private homes
- the risks associated with co-sleeping with infants, especially when using alcohol or drugs, and the SIDS and Kids safe-sleeping messages
- recognising parental concern and perception of a child’s health status, especially in the context of a chronic illness.

Health services are reminded of their legal obligation to provide details of all maternal, perinatal, child and adolescent deaths to CCOPMM within 28 days. This is to ensure that there is timely collection of the necessary data to enable adequate review of these deaths. This data is of course protected and cannot be accessed by any external party.

I would also like to express my gratitude to the members of CCOPMM and the subcommittees for their generous support, both for their wise counsel and their attendance at the various meetings over the past year.

The quality of the work and output of CCOPMM is dependent on the dedicated staff of the Clinical Councils’ Unit and on behalf of CCOPMM I offer our sincere appreciation, especially for the additional work they have done to revise the format of this report and to prepare its contents.

I commend this report to you.

Professor Jeremy JN Oats, MBBS, DM, FRCOG, FRANZCOG
Chairman
PURPOSE

This executive summary communicates the key points and recommendations arising from CCOPMM’s review of births and deaths in Victoria in 2009. The executive summary has been produced as a standalone document and as a component of the full web report. The full web report contains further detailed information and is available online at <www.health.vic.gov.au/ccopmm/>.

Definitions and methods used in the full web-report are provided in Chapter 3. The methods section should be consulted when interpreting any findings. The flowchart (ES Figure 1) outlines the scope of the data collections and the cases included or excluded from statistical reporting.

CCOPMM is committed to ensuring that the annual report is a useful tool for obstetricians, paediatricians, midwives and researchers in monitoring the care and outcomes for mothers and their babies, along with infants, children and adolescents. To this end we welcome your feedback via a short survey which can be found at the back of the full web-report or online at <www.health.vic.gov.au/ccopmm/>.
BIRTHS AND DEATHS FLOW CHART 2009

ES Figure 1: Births and deaths flow chart, Victoria, 2009

A. All births captured in VPDC = 73,281

B. All livebirths regardless of gestation who show any signs of life = 72,492

C. Livebirths ≥ 20 weeks’ gestation, or if gestation unknown, ≥ 400 g BW = 72,474

D. Livebirths ≥ 20 weeks’ gestation, or if gestation unknown, ≥ 400 g BW not from TOP for maternal psychosocial indication = 72,474

E. Livebirths ≥ 20 weeks’ gestation, or if gestation unknown, ≥ 400 g BW not from TOP for maternal psychosocial indication or birth defect = 72,432

F. Livebirths ≥ 20 weeks’ gestation, or if gestation unknown, ≥ 400 g BW not from TOP or induction with no intention of active neonatal resuscitation surviving ≥ 28 days = 72,248

G. Livebirths ≥ 20 weeks’ gestation, or if gestation unknown, ≥ 400 g BW not from TOP or induction with no intention of active neonatal resuscitation surviving 364 days = 72,194

H. All stillbirths delivered ≥ 20 weeks’ gestation, or if gestation unknown, ≥ 400 g BW regardless of when death occurred = 789

I. Stillbirths occurring ≥ 20 weeks’ gestation, or if gestation unknown, ≥ 400 g BW not from TOP for maternal psychosocial indication = 214

J. Stillbirths occurring ≥ 20 weeks’ gestation, or if gestation unknown, ≥ 400 g BW not from TOP for maternal psychosocial indication or birth defect = 399

K. Stillbirths occurring ≥ 20 weeks’ gestation, or if gestation unknown, ≥ 400 g BW not from TOP or induction with no intention of active neonatal resuscitation surviving 364 days = 226

L. Those born < 20 weeks’ or, if gestation unknown < 400 g BW = 18

M. TOP for maternal psychosocial indication resulting in NND = 0

N. TOP for birth defect resulting in NND = 42

O. NND (not from TOP or induction with no intention of active neonatal resuscitation) = 184

S. Total neonatal deaths; 0 to 27 days (M + N + O) = 226

Perinatal deaths (I + S) = 993

Adjusted perinatal deaths (J + N + O) = 779

T. Post neonatal infant deaths (28 to 364 d) = 54

Formulas:

Crude birth rate = E/ERFP × 1000

PMR = (I + S) / (I + O) × 1000 = 13.5

Adjusted PMR = (J + N + O) / (J + D) × 1000 = 10.7

IMR = (S – N) + (T + 2008 numbers) / E × 1000

Notes:

BW birthweight, SB stillbirth, NND neonatal death, ERFP estimated resident female population, PMR perinatal mortality rate, TOP termination of pregnancy, IMR infant mortality rate.
KEY FINDINGS AND RECOMMENDATIONS

Births in Victoria 2009

Key points

There were 72,831 births in 2009, a 0.9% increase on 2008. This is in contrast to a 2.3% increase in the number of women of child-bearing age (estimated female resident population (EFRP) aged 15–44 years) in Victoria in 2009 compared with 2008. The number of live births per 1,000 EFRP aged 15–44 years has fluctuated since 1985 and in 2009 it was 62.3, 0.9 per 1,000 EFRP fewer than in 2008 (Table 1 and 2).

ES Table 1: Total births in Victoria, 2009

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Births (C + I)</td>
<td>73,241</td>
</tr>
<tr>
<td>Total Stillbirths (I)</td>
<td>767</td>
</tr>
<tr>
<td>Total live births (C)</td>
<td>72,474</td>
</tr>
<tr>
<td>Terminations of pregnancy – TOPa (M + Q + N + R)</td>
<td>410</td>
</tr>
<tr>
<td>Adjustedb total births (E + K)</td>
<td>72,831</td>
</tr>
<tr>
<td>Adjustedb live births (E)</td>
<td>72,432</td>
</tr>
<tr>
<td>Adjustedb confinements</td>
<td>71,586</td>
</tr>
<tr>
<td>Cases excluded from CCOPMM reports (L + P)c</td>
<td>40</td>
</tr>
</tbody>
</table>

a Terminations at 20 or more weeks’ gestation for congenital anomalies or maternal psychosocial indications.
b Adjusted figures exclude terminations of pregnancy for congenital anomalies or for maternal psychosocial indications.
c Cases excluded from the report were known to have died before 20 weeks’ gestation.

Note: Letters in parentheses refer to ES Figure 1.

ES Table 2: Crude birth rate, Victoria 2009

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live births</td>
<td>66,374</td>
<td>62,148</td>
<td>72,432</td>
</tr>
<tr>
<td>Estimated female resident population aged 15–44 years</td>
<td>1,044,969</td>
<td>1,053,114</td>
<td>1,162,474</td>
</tr>
<tr>
<td>Crude birth rate per 1,000 EFRPa</td>
<td>63.5</td>
<td>59.0</td>
<td>62.3</td>
</tr>
</tbody>
</table>


Women younger than 20 years of age continue to make up only a small proportion of all women giving birth. They accounted for 4.4% of all confinements in 1985, decreasing to 2.5% in 2009. On the other hand, those aged 35 years or older have increased steadily from 7.8% of all women giving birth in 1985 to 26.3% in 2009. For the first time in recent years, there was no increase in 2009 in the proportion of births to older women.

Among women giving birth in Victoria in 2009 who were themselves born in a non–English speaking country, India is the most common maternal country of birth, followed by Vietnam. Other countries that were in the top 10 non–English speaking countries of birth in both 2000 and 2009 are China, Lebanon, the Philippines, Malaysia and Sri Lanka. The relatively large number of women giving birth in 1990 who were born in Italy, Turkey and Greece had fallen substantially by 2009, with a concomitant increase in the number born in India, China, Sudan and the Middle East.
Just over two-thirds of women who gave birth in 2009 were admitted for the birth as public patients. The remainder were treated as private patients, most commonly in private hospitals, with fewer than 3.0% treated as private patients in public hospitals. Planned home births accounted for 0.4% of confinements, all of which were attended by midwives in private practice.

Over one-third (38.7%) of all women stayed in hospital two days or less in 2009 compared with 4% in 1985. Women stayed in hospital longer if they gave birth by caesarean section, and if they were admitted as a private patient.

57.0% of women giving birth had done so before. Of these 27.7% had had one or more prior caesarean section.

There was a very small reduction in the number of women who had labour induced (23.6%) or augmented (19.5%) in 2009, but an increase in the proportion who had a pre-labour caesarean section (18.4%).

Nearly one-third of all women gave birth by caesarean section (31.3%) – a small increase on recent years. This included 27.7% of women admitted as public patients and 38.9% of those admitted as private patients. Women admitted as private patients were also more likely to have an instrumental vaginal birth (17.7% compared with 12.0%), see ES Figure 2. The most common indication for caesarean section overall was the occurrence of a prior section (35.9%), followed by failure to progress (20.9%), and non-reassuring fetal status (13.4%).

ES Figure 2: Onset of labour and method of birth (%), confinements, Victoria 2009

Around half (49.6%) of all women who experienced labour in 2009 used no analgesia, or nitrous oxide and oxygen only, while 30.4% used regional analgesia.

Four-fifths of women who had an operative birth did so under regional anaesthesia (epidural/spinal) (80.1%).

Women admitted as private patients were more likely to experience an episiotomy or a sutured laceration than those admitted as public patients. Third- and fourth-degree lacerations were relatively rare, but were reported more frequently for women admitted as public patients. A similarly small number of episiotomies extended to third- or fourth-degree lacerations in both sectors. Women having second or subsequent babies were more likely than those having first babies to have an intact perineum in both the public and private sector.
A number of items were collected for the first time in 2009 including BMI, smoking, accurate socio-economic measures, breastfeeding, fetal monitoring in labour, estimated blood loss and use of prophylactic oxytocics in the third stage of labour.

- A small proportion (2.5%) of women were underweight (BMI < 18.5), 17,303 women (24.2%) were overweight (BMI 25 to less than 30) and 12,799 (17.9%) were obese (BMI ≥ 30.0).
- The proportion of mothers reporting any smoking during the first 20 weeks of pregnancy was 11.4% (n = 8,186). Of those mothers, 17.7% stopped smoking when they learnt they were pregnant. Of the mothers who smoked at all during the first 20 weeks of pregnancy, 19.0% reported no smoking after 20 weeks, 35.6% reported some level of smoking after 20 weeks, but unfortunately this information was not adequately reported for a great number of women. A small number of women (n = 47) who did not smoke in the first 20 weeks of pregnancy reported some level of smoking after 20 weeks of pregnancy. Younger women who smoked at the start of pregnancy were more likely to continue to smoke than older women.
- Socio-economic status was assessed for all women who gave birth in Victoria in 2009 according to their Index of Relative Socio-Economic Disadvantage (IRSD) score. The IRSD score was assigned based on the census collection district corresponding to the mother’s usual residence. The IRSD scores were ranked and quintiles of deprivation derived for the birth population. Rural women and younger women were more likely than others to be in the lowest socio-economic quintile.
- The vast majority of women attempted to breastfeed or express breastmilk at least once (96.0%). Of the mothers who attempted to breastfeed a term baby or express breastmilk (n = 68,359), 20.2% also gave the baby infant formula in hospital, whether by bottle, cup, gavage or other means. Giving formula in hospital is known to be associated with early weaning.
- Many women had two or more forms of fetal monitoring in labour reported. Cardiotocographs (CTGs) were carried out on admission for 17.8% of women. Nearly half of all women who experienced labour had continuous external CTG monitoring from some point in their labour (45.5%), and 41.3% had intermittent auscultation for at least part of their labour. Fetal blood sampling was surprisingly rare.
- A similar proportion of primiparae and multiparae had blood loss of 1,500 mL or more (1.4% and 1.3% respectively). More than 40% of these women required transfusion of blood products.
- The use of prophylactic oxytocics in the third stage of labour was almost universal, with only 2.0% of women not given them.
**Infant factors**

The proportion of babies born before 37 weeks’ gestation has increased very slightly since 2000, but is considerably higher than in 1985 (7.9% versus 6.0%).

There has been little change in the proportion of babies born at 42 or more weeks’ gestation in recent years, but it was substantially lower in 2009 than in 1985 (1.3% versus 3.8%).

There was little change in the proportion of babies with low birthweight (LBW), and very low birthweight (VLBW) over the period 2000 to 2009 (6.6% and 6.5% LBW; and 1.4% and 1.3% VLBW respectively). There was no change in the proportion weighing 4,500 g or more (1.9% in both 2000 and 2009).

Apgar scores reflect the baby’s condition at birth, with a score of 10 being the optimal outcome. Few babies (1.7% in 2009) had scores lower than 7 at five minutes. More than 90% had scores of 9 or 10.

Around three-quarters of all babies required no resuscitation at birth. A further 10.5% required oxygen and/or suction. One in 200 needed intubation with or without external cardiac massage. Those who received intermittent or continuous positive pressure ventilation were more likely to have oxygen than air.

Twins made up 3.3% of all births in 2009 compared with 2.5% in 1990. Triplets continue to be very rare, and only three sets of quadruplets have been born since 2000. Twin pregnancies were more likely with increasing maternal age, with 1.1% of parturients aged 15 to 19 years having twins, increasing to 2.4% of women aged 35 to 39 years and 4.4% of those aged 45 years or older.

**Indigenous births**

The number of women giving birth who identified as Aboriginal or Torres Strait Islander has steadily increased over the period 1985 to 2009 from 0.5% to 1.2%. Indigenous women were considerably more likely than other women to be aged younger than 20 years when they gave birth in 2009, and conversely, were less likely to be aged 35 years or older.

Babies born to Indigenous mothers were around twice as likely as others to have low birthweight (< 2,500 g) (15.2% and 6.5% respectively) or very low birthweight (< 1,500 g). They were also more likely to be born preterm compared with babies born to non-Indigenous mothers (14.5% versus 7.7%).

The addition of the babies’ Indigenous status to the perinatal report in 2009 has enabled identification of Indigenous babies whose mothers are non-Indigenous. There were 396 additional Indigenous births when these babies are included. The disparity between Indigenous and non-Indigenous babies with regard to preterm birth and low birthweight is reduced when these babies born to non-Indigenous women are included in the Indigenous group.
Maternal deaths 2009

Key points

In Victoria in 2009, there were nine maternal deaths in total (one direct death, four indirect deaths, three incidental deaths and one late indirect maternal death). This compares with seven maternal deaths in 2008 (two direct deaths, one indirect death and four incidental deaths).

The maternal mortality ratio (MMR) for 2009 was 6.95 per 100,000 confinements. The MMR excludes all incidental maternal deaths from causes unrelated to pregnancy. There were three incidental maternal deaths and one late (indirect) maternal death not included in the maternal mortality ratio.

The cause of the single direct maternal death was intracerebral haemorrhage in the setting of eclampsia. The causes of the four indirect maternal deaths were undetermined (one), suicide (one), H1N1 pneumonia (one), and brainstem haemorrhage (one). The three incidental maternal deaths were caused by bushfire (one), motor-vehicle accident (bus crash) (one) and brainstem infarction (one) and the one late indirect maternal death related to suicide.

Two late incidental deaths from the effects of fire in women three and nine months postpartum were reviewed but were not included in this report.

ES Table 3: Maternal mortality in Victoria 2005–2009

<table>
<thead>
<tr>
<th>Classification and cause of maternal death</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct maternal death</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Indirect maternal death</td>
<td>4</td>
<td>6</td>
<td>11</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>7</td>
<td>12</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Maternal mortality ratio</td>
<td>10.7</td>
<td>10.2</td>
<td>14.0</td>
<td>4.2</td>
<td>6.95</td>
</tr>
</tbody>
</table>

Clinical recommendations from Maternal Subcommittee

Previous major heart surgery should be considered a risk factor in pregnancy, even if there has been no known cardiac symptomatology in a previous pregnancy. These women should have a specialist consultation during each pregnancy.1

It is strongly recommended that all pregnant women be offered immunisation against H1N1. Tamiflu treatment should be commenced as early as possible in pregnant women suspected of having H1N1 influenza.2,3,4


Support should be provided for strategies to increase awareness in the community of the importance of seeking treatment for mental health disorders especially associated with pregnancy.5

Pregnant women should be strongly encouraged to wear a fitted lap–sash seatbelt when travelling in any motor vehicle including buses.6

Clinicians should note that the current evidence-based guideline on routine urinalysis for proteinuria7 is for low-risk women following exclusion of undiagnosed renal disease and asymptomatic bacteruria at their first antenatal visit.

Women at increased risk of developing pre-eclampsia should be tested for proteinuria at each antenatal visit.8,9

The risk of pre-eclampsia is increased in women with the following characteristics:9,10

- obesity, BMI > 35
- vascular and connective tissue disorders
- maternal age younger than 18 years or 35 years or older
- nulliparity
- family history of preeclampsia
- new partner.

Following identification of fetal growth restriction, close observation is indicated for the development of pre-eclampsia.

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9 Ibid.
**Perinatal deaths 2009**

**Key points**

Of the 73,241 births, 767 were stillborn and of the 72,474 live births, 226 infants died within 28 days of life (neonatal deaths). One out of approximately every 74 babies with a gestation of ≥ 20 weeks or birthweight ≥ 400 g was either stillborn or died in the first month of life.

The perinatal mortality rate in 2009 was 13.6 per 1,000 births, compared with 12.4 for 2008 and 12.6 for 2007. After excluding terminations of pregnancy for maternal psychosocial indications the adjusted perinatal mortality rate in 2009 was 10.7 per 1,000 births, compared with 9.9 for 2008 and 10.4 for 2007. Adjusted perinatal death numbers and mortality rates exclude terminations of pregnancy for maternal psychosocial indications to allow for better interpretation of the perinatal mortality rate as a public health indicator and for comparison with other jurisdictions.

The stillbirth rate was 10.5 per 1,000 births (9.4 in 2008 and 9.3 in 2007). Terminations of pregnancy for maternal psychosocial indications comprised 28% of stillbirths. When adjusted for these terminations, the stillbirth rate was 7.6 per 1,000 births. The other leading causes of stillbirth were terminations for congenital malformations (20% of stillbirths) and unexplained stillbirth (15% of stillbirths).

The neonatal death rate was 3.1 per 1,000 live births (3.0 in 2008 and 3.4 in 2007). The leading causes of neonatal death were congenital abnormalities (38%) and spontaneous preterm birth (34%). Forty-two of the 86 neonatal deaths attributed to congenital abnormalities were as a result of terminations of pregnancy.

**ES Table 4: Unadjusted perinatal mortality in Victoria, 2009**

<table>
<thead>
<tr>
<th>Specified birthweight and gestation</th>
<th>Total births</th>
<th>Live births</th>
<th>Stillbirths</th>
<th>Neonatal deaths</th>
<th>Perinatal deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>per 1,000 births</td>
<td>Number</td>
<td>per 1,000 births</td>
</tr>
<tr>
<td>20 weeks or ≥ 400 g</td>
<td>73,241</td>
<td>72,474</td>
<td>767</td>
<td>10.5</td>
<td>226</td>
</tr>
<tr>
<td></td>
<td>553</td>
<td></td>
<td>7.6*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 500 g or 22 weeks</td>
<td>72,706</td>
<td>72,360</td>
<td>346</td>
<td>4.8</td>
<td>143</td>
</tr>
<tr>
<td>≥ 1,000 g or 28 weeks</td>
<td>72,308</td>
<td>72,105</td>
<td>203</td>
<td>2.8</td>
<td>76</td>
</tr>
</tbody>
</table>

Note: This table refers to all births of at least 20 weeks’ gestation, or if gestation is unknown of birthweight of at least 400 g. Stillbirth and perinatal death rates were calculated using total births (live births and stillbirths) as the denominator; neonatal death rates were calculated using live births as the denominator.

* Adjusted for terminations of pregnancy for maternal psychosocial indications.

The adjusted perinatal mortality rate for multiple births was 39.8 per 1,000 multiple births compared with 9.7 per 1,000 singleton births, which represents a fourfold increased risk in multiple births. The neonatal mortality rate of 17.0 per 1,000 multiple births was 6.5 times higher compared with singleton live births (2.6 per 1,000 births).

The risk of perinatal mortality in the Indigenous population has decreased since the years 2001 to 2003. In the three years from 2007 to 2009 the risk of perinatal mortality was two times higher (RR 2.0, CI 1.5–2.7) for Aboriginal people (babies born to women who identified as Aboriginal or Torres Strait Islander) relative to the non-Aboriginal population (adjusted perinatal mortality rate of 21.2 per 1,000 births for Aboriginal people compared with 10.4 per 1,000 births to non-Aboriginal women). During 2007 to 2009 the neonatal mortality rate of 5.8 per 1,000 live births was 1.9 times higher than for non-Aboriginal births.
Perinatal deaths were classified according to the PSANZ PDC, which identifies maternal or fetal antecedents to death. A summary of each major PDC category is presented below:

**Congenital abnormality**

In 2009, there were 266 perinatal deaths due to congenital abnormalities in infants who were ≥ 20 weeks' gestation, which is 26.8% of all perinatal deaths. Chromosomal abnormalities accounted for 57 deaths, multiple abnormalities for 47 deaths, central nervous system abnormalities for 58 deaths and cardiovascular abnormalities for 35 deaths.

**Perinatal infection**

Twenty deaths (2.0%) were due to infection, of which 15 were stillbirths and five were neonatal deaths. The most common specified infective organism was group B streptococcus infection (n = 5) followed by *Escherichia coli* (n = 2) and listeria (n = 1), rubella (n = 1) and cytomegalovirus (n = 1) infections.

**Hypertension**

Twenty-four deaths (2.4%) were considered to be due to maternal hypertension. There were 21 stillbirths and three neonatal deaths. The majority (n = 21) occurred in mothers with pre-eclampsia. There were two deaths attributed to chronic hypertension, and one to pre-eclampsia with evidence of thrombophilia.

**Antepartum haemorrhage**

Sixty-three deaths were due to antepartum haemorrhage, of which 53 were due to placental abruption, three were due to placenta praevia and two due to vasa praevia.

**Maternal conditions**

Eighteen deaths were attributed to other maternal conditions including: diabetes (n = 8), maternal injury (n = 2), maternal sepsis (n = 2) and antiphospholipid syndrome (n = 1).

**Specific perinatal conditions**

Twin-to-twin transfusion syndrome accounted for the majority of deaths in this group (n = 20), followed by antepartum cord complications (n = 16), uterine anomaly (n = 13), idiopathic hydrops (n = 6), and fetomaternal haemorrhage (n = 3).

**Hypoxic peripartum death**

There were 20 deaths associated with peripartum hypoxia. One death followed cord prolapse, one followed uterine rupture and one other was associated with an unspecified intrapartum complication. Seventeen deaths were not associated with intrapartum complications, 16 of these had evidence of non-reassuring fetal status.

**Fetal growth restriction**

In 59 cases the main cause of death was considered to be fetal growth restriction (FGR). Of these, 56 were stillbirths and three were neonatal deaths.

**Spontaneous preterm birth**

There were 123 (12.4%) perinatal deaths associated with spontaneous preterm birth, which comprises normally formed and appropriately grown babies born before 37 weeks’ gestation. Of these, 46 were stillbirths and 77 were neonatal deaths. Of all deaths in this category, 70 (57%) were at less than 23 weeks’ gestation, 47 (38%) were at 23–25 weeks’ gestation, and six (5%) occurred between 26 and 36 weeks’ gestation. Forty-three deaths (35%) were associated with membrane rupture of 24 hours or more.
Unexplained antepartum death

Of the 115 unexplained stillbirths, 81 (70.4%) were born before 37 weeks’ gestation. Postmortem examination was carried out in 53 cases (46.1%). No placental histopathology results were available for 57 (49.6%) of unexplained antepartum deaths.

No obstetric antecedent

No obstetric cause of death was identified for five neonatal deaths. Specified causes included sudden infant death syndrome and postnatal acquired infection.

Clinical recommendations from Perinatal Committees

Antenatal assessment

Healthcare providers must be familiar with the best practice guidelines for managing reported decreased fetal movements.11,12

All women should be given information about fetal activity during their pregnancy and advised to report to their healthcare provider concerns about a reduction in movements, particularly near the expected due date, day or night.11,12

Clinicians should practice increased vigilance when a woman presents at term with decreased fetal movements, even when the CTG is reassuring. If ultrasound assessment is indicated, it should be performed within 24 hours if possible.11,12

Clinicians should be familiar with the statewide guidelines for the management and transfer of women with raised body-mass index in regional hospitals.13

Current evidence emphasises the importance of having an agreed expected due date (EDD) early in pregnancy to clarify management plans that are gestation dependant.8

Clinicians are reminded of the importance of measuring fundal height at antenatal visits.

Current evidence suggests that symphseal-fundal (S-F) measurement is considered more reliable and consistent than abdominal palpation in situations where the clinician is less experienced or when multiple midwives and doctors are involved.14

All providers of obstetric ultrasound should be familiar with the best practice guidelines regarding the use of ultrasound in the management of obstetric conditions.15 In particular, the estimated fetal weight should be reported by centile in ultrasound reports.

An antenatal telephone record should be used by all clinicians when a pregnant woman calls for advice. The structured questionnaire acts as a guide for clinicians to ask questions over the phone and gives advice prompts. An example is available from the Maternity and Newborn Clinical Network website.\textsuperscript{16}

\textbf{High-risk pregnancies}

Surveillance of monochorionic diamniotic (MCDA) twins should follow the RANZCOG guideline for the management of MCDA twins. This guideline recommends delivery of monochorionic twins by 37 weeks.\textsuperscript{17,18}

Consultation with specialist services should be sought for all women with blood-group isoimmunisation.\textsuperscript{19,20}

Consideration should be given to the suitability of the place of birth for babies likely to require early neonatal intervention and the need for consultation in high-risk pregnancies and appropriate referral.\textsuperscript{20}

\textbf{Intrapartum management}

CTG monitoring should be continued as close as practicable to delivery when caesarean section is being performed for non-reassuring fetal status.\textsuperscript{21}

Midwives providing intrapartum care should be trained and credentialed for application of fetal scalp electrodes.

Staff should be aware of the importance of CTG monitoring after administration of Prostin\textsuperscript{®} to induce labour.\textsuperscript{22}

Maternity and paediatric service practitioners should adhere to the RANZCOG guidelines on the detection and management of subgaleal haemorrhage.\textsuperscript{23}

Early initiation of hypothermia therapy should be considered in the management of the sick neonate with hypoxic ischemic encephalopathy (HIE).

Consideration should be given to including Terbutaline in the birth pack carried for home births, when administration is required in uterine hypertonus and/or non-reassuring fetal status during transfer to hospital.

\textsuperscript{17} RANZCOG 2011, Guidelines for the management of monochorionic twin pregnancy (C-Obs 42), Melbourne, <www.ranzcog.edu.au/womens-health/statements-a-guidelines/college-statements>.
\textsuperscript{20} RANZCOG 2009, Suitability criteria for models of care and indications for referral within and between models of care (C-Obs 30), Melbourne, <www.ranzcog.edu.au>.
\textsuperscript{23} RANZCOG 2009, Prevention detection and management of subgaleal haemorrhage in the newborn, (C-Obs 28), Melbourne, <www.ranzcog.edu.au>.
Resuscitation of the newborn

Healthcare providers should be familiar with the Neonatal resuscitation guideline outlined in the Australian Resuscitation Council guidelines,24 in particular:

- Sodium bicarbonate is contraindicated in first-line resuscitation.
- Intubation of infants who are 23–25 weeks’ gestation should be undertaken by the most senior clinician available.
- ET CO₂ detectors should be used in all intubations.
- Training in neonatal resuscitation should include management of the difficult airway.
- All clinicians (doctors and nurses) involved in neonatal resuscitation should undertake annual training to maintain competence.

For at-risk infants, specialist services such as NETS should be consulted early.25

Investigation of perinatal deaths

All health services providing maternity care should follow the Perinatal Society of Australia and New Zealand (PSANZ) Clinical practice guidelines for perinatal mortality audit (2009).26

All parents of a baby who is stillborn or dies in the neonatal period should be offered the opportunity to have a post-mortem examination even if this is limited to measurements, formal documentation and photographs (PSANZ guidelines, version 2.2, section 4, pp. 74–89).27

Examination of the placenta by a pathologist is an essential component of the investigation of perinatal deaths whether or not the baby has a post-mortem. Placental histopathology examination should be performed by the pathology service doing the autopsy.28

The placenta must not be placed in formalin.

A Kleihauer test or flow cytometry to detect feto-maternal haemorrhage should be performed as soon as possible after the detection of fetal death in utero.29

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27 Ibid.
28 Ibid.
29 Ibid.
Deaths of postneonatal infants, children and adolescents 2009

Key points

There were 229 deaths of children aged 28 days to 17 years in 2009, 64 post-neonatal infant deaths and 165 deaths aged 1–17 years.

The leading causes of death across the age group 28 days to 17 years in 2009 were:

- birth defects and genetic conditions (45 deaths)
- malignancy (33 deaths)
- fire-related deaths (29 deaths; 24 of whom died as a result of the 7 February 2009 bushfires)
- motor-vehicle accidents and conditions determined at birth (both 23 deaths)
- suicide (18 deaths).

There were 64 postneonatal infant deaths: 24 (38%) as a consequence of birth defects and genetic conditions, 17 (27%) from other conditions determined at birth (for example prematurity, birth asphyxia) and 13 (20%) from sudden infant death syndrome (SIDS).

Thirteen postneonatal infants died from SIDS. (In addition, three neonates died from SIDS in 2009).

The number of deaths from SIDS has fallen from 128 in 1985.

The infant mortality rate was 3.3 per 1,000 live births (3.7 in 2008).

Fifty children aged 1–4 years died. The death rate for children aged 1–4 years was 18.2 per 100,000 population. The leading causes of death for this age group were malignancy (22%) and birth defects or genetic conditions (16%).

Thirty children aged 5–9 years died. The death rate for children aged 5–9 years was 9.2 per 100,000 population. The leading causes of death for this age group were malignancy (30%) and deaths from fire (23%).

Thirty-five children aged 10–14 years died. The death rate for children aged 10–14 years was 10.4 per 100,000 population. The leading cause of death for this age group birth was deaths from fire (23%) and birth defects or genetic conditions, malignancy and motor-vehicle accidents (each 14%).

Fifty adolescents aged 15–17 years died. This is the fifth year that CCOPMM has reported on deaths in this age group. The death rate for children aged 15–17 years was 23.7 per 100,000 population. The leading causes of death for this age group were suicide (28%) and motor-vehicle accidents (22%).
Clinical and systems recommendations from Child and Adolescent Committee

The following recommendations have arisen from the Child and Adolescent Committee’s 2009 review of deaths in Victoria.

**Injury**

**Intellectual and developmental disorders and unintentional injury**

Children and adolescents with intellectual and developmental disabilities, including autism spectrum disorders, have increased rates of unintentional injury and death (standardised mortality ratios) compared with other members of the population. This is particularly the case for children with associated severe medical problems such as epilepsy.

Wandering behaviours, impulsive behaviours, a love of water, trains or other vehicles and a lack of awareness of potential dangers are common in children with autism spectrum disorders, leading to high rates of unintentional injuries, including death from drowning and train accidents. Families and other caregivers should be aware of the morbidity and mortality from such injuries in children and adolescents with autism.

International initiatives such as the Autism Wandering and Elopement Initiative, the AWAARE Collaboration (Autism Wandering Awareness Alerts Response and Education) aim to raise awareness and educate the community in order to prevent wandering incidents and deaths in the autism community.

[http://www.awaare.org/about.htm](http://www.awaare.org/about.htm)

**Children on farms or rural properties and risk-taking behaviour**

Access to and inappropriate or unsupervised use of motorised vehicles (for example quad bikes, motorbikes and tractors) on farms or rural properties by children and adolescents has led to several deaths and numerous serious injuries in Victoria, with at least 32 children with farm-vehicle injuries admitted to The Royal Children’s Hospital Intensive Care Unit in the six years between 2000 and 2005.

Parents should not allow the unlicensed or inappropriate use of these vehicles by children or adolescents, who do not have the strength, coordination or maturity to use such vehicles safely.

**Children assisting the work on farms or rural properties**

The safety of children assisting with work on family farms after hours or on weekends is often ignored, with serious consequences of deaths and injuries. Children are not permitted to be in other workplaces where there are any physical dangers without appropriate precautions and attention to workplace safety regulations. The same rules should apply to children assisting on farms.

**Driveway accident prevention**

Driveway injuries of young children occur every week on average in Australia, and in Victoria there were at least 77 emergency department presentations for driveway run-over or back-over in children.

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aged 0–14 years in the six years between 2005 and 2010. A driver unaware of children behind the vehicle, young children's failure to perceive the hazard, vehicle design (especially elevated vehicles such as four-wheel drive or sports utility vehicles) and the slower speed of vehicles in driveways often result in severe injuries as the child is rolled over at relatively low speed rather than struck.

The combination of proximity sensors in addition to video cameras in all cars might reduce the number of reversing accidents in driveways or other similar situations (either alone is insufficient), however there is insufficient information currently to support this recommendation. Children have been shown consistently not to respond with avoidance behaviour to reversing alarms on vehicles.

Child restraints

To protect children in a motor-vehicle accident:

• the restraint must be the right size for the child
• the restraint must be properly adjusted and fastened
• the restraint must be correctly fitted to the vehicle.

Children travelling in vehicles should be restrained in the appropriate child restraint for their size at all times, including in taxis (where parents must provide the restraint).

Current Victorian road rules require a child aged seven years to under 16 years of age to travel in either an approved booster seat or an adult seatbelt. The committee is concerned about the number of children killed in motor-vehicle accidents where the correct child restraint was not used, or where children were using an adult lap-sash seatbelt alone, despite being well under 145 cm in height. Children vary considerably in height and weight. An adult lap–sash seatbelt is designed for children and adolescents with a minimum height of 145 cm. The 50th centile age for reaching that height is between 11–12 years for both females and males. A child should continue using a booster seat until they have outgrown it, and with the recent introduction of booster seats with shoulder height markers for children aged approximately four years to six-eight years, children can now continue to travel in a restraint that is suitable for their size for slightly longer.

For children who have outgrown the currently available booster seats (approximately eight years of age) but are not yet 145 cm tall, there is a potential gap in available child restraints which may lead to children moving to an adult lap-sash seat belt before reaching the minimum suitable height for it. In the future, booster seats suitable for children up to the age of approximately 10 years will be available, but they are not currently available in Victoria.

Child safety harnesses are not recommended for situations where a lap-sash seat belt is available, or where a lap-only belt can be replaced with a lap-sash seatbelt. If a lap-only seat belt cannot be replaced with a lap-sash seatbelt, a child safety harness should be used in combination with a booster seat (with anti-submarining features).  

37 Victorian Injury Surveillance Unit. Monash University Accident Research Centre 2011, Driveway run-over or back-over among children aged 0–14 years: January 2005 to December 2010 (six years), Monash University, Melbourne.
38 Ibid.
Parents and health professionals need to be better informed of the current rules on child restraint requirements and health professionals should promote awareness among both parents and children of the safety benefits associated with appropriate restraint use, and the recommended minimum height for an adult seat belt.

**Flotation devices towed by jet skis**

Flotation devices towed by jet skis or other motorised boats are dangerous where there is a risk of underwater hazards or collision. Adults in charge of such motorised craft are responsible for ensuring the safety of children on floatation devices in the vicinity.

**Adolescent health issues**

**Adolescent suicide**

There were 18 confirmed deaths from completed suicide in adolescents aged 13–17 years in Victoria in 2009. This should prompt a high level of awareness by health professionals, schools and the community. Depression and self-harm are common in children and adolescents and should be part of routine clinical assessment of all young people. Threats of suicide indicate the need for specialist mental health assessment. Adolescents may attempt suicide in an impulsive way, with little apparent planning. Risk factors for suicide include substance use, bullying, family stress and close contact with someone who has committed suicide.


The Royal Australasian College of Physicians has a position statement *Routine adolescent psychosocial health assessment*, available at <http://www.racp.edu.au/page/paediatrics-and-child-health-division/online-resources/paediatric-policy/>, which is aimed at all primary, secondary and tertiary care physicians and paediatricians who consult with adolescent patients and suggests that assessment of a young person’s emotional health and wellbeing, together with substance use, should be part of routine preventive healthcare (as described in the position statement).

**Provision of alcohol and/or drugs to adolescents**

A number of deaths of young people reviewed by the committee were associated with, or as a direct result of, binge drinking and illicit drug use, or the ingestion of opioid, antipsychotic or benzodiazepine medication prescribed to others or illegally obtained. In some cases the alcohol or drugs were supplied by parents or other adults.

Practitioners should be well informed about the new legislative changes regarding the provision of alcohol to minors in a private residence, and reinforce these to parents.

The practice of adults supplying alcohol to minors is referred to as secondary supply. Under the *Liquor Control Reform Act 1998*, a person must not supply liquor to a minor and a minor must not receive, possess or consume liquor.

New laws introduced by the Victorian Government (2011) make it an offence under the *Liquor Control Reform Act 1998* for adults to supply alcohol to a minor (a person under the age of 18 years) in a private home unless a parent, guardian or spouse over the age of 18 provides it, or the supplier has obtained the consent of the child’s parent, guardian or spouse over the age of 18. Previously the Act did not apply to private residences.

An adult who supplies alcohol to a minor without a parent’s consent could be subject to the same penalty faced by licensees who supply alcohol to minors in licensed venues – a maximum of over $7,000.
These laws have been introduced in light of the latest scientific evidence of the negative impacts of alcohol consumption on adolescent development, including the National Health and Medical Research Council national guidelines released in 2009, *Australian guidelines to reduce health risks from drinking alcohol*. The guidelines state that:

- children under 15 years of age are at the greatest risk of harm from drinking
- not drinking in this age group (under 15 years) is especially important
- for young people aged 15 to 17 years, the safest option is to delay drinking for as long as possible.

**Sudden unexpected death in infancy**

The committee continues to see SIDS and asphyxiation or sleep-accident deaths in infants associated with co-sleeping, particularly among parents who are intoxicated or drug affected.

CCOPMM supports the recommendations of SIDS and Kids that aim to reduce the risks of SIDS and fatal sleep accidents.

1. Put baby on the back to sleep from birth
2. Sleep baby with head and face uncovered
3. Avoid exposing babies to cigarette smoke before birth and after
4. Sleep baby in a safe cot and in a safe environment
5. Sleep baby in its own cot or bassinette in the same room as the parents for the first 6–12 months
6. Breastfeed baby if you can

The Coroner has conducted a formal inquest into infant co-sleeping deaths in Victoria and recommendations are available on the Coroner website at <http://www.coronerscourt.vic.gov.au/home/>.

**Illness in young children**

*Serious bacterial infection in young infants*

The signs of serious bacterial infection in young infants are sometimes difficult to detect, so a high index of suspicion and a low threshold for referral and giving antibiotics is indicated. The signs of serious bacterial infection include high or persistent fever, hypothermia, poor feeding, lethargy, tachycardia, tachypnoea and vomiting.

*Recurrent bronchiolitis*

Acute viral bronchiolitis is common, and more than one episode may occur during infancy. However, other less common but serious illnesses can be mistaken for recurrent bronchiolitis, and this has resulted in deaths or delayed treatment of some children. These other illnesses include cardiac disease. The suspicion of other pathologies should be particularly high if the child is not gaining weight well, or if there are atypical features.

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**Parental concern and perception**

*Three strikes and you’re in*

If parents present with their children on more than two occasions during an acute illness there should be serious consideration of hospital admission, even if the child does not look very unwell at the time. Repeated presentations may indicate that the parents are not coping with the care of their unwell child, or that the condition is fluctuating. Parents will not always be able to explain the reasons for their concerns. If parental concerns are not addressed on three contacts with the health services, it is unlikely that they will present again, even in the event of a serious deterioration. The committee has reviewed deaths where children have presented on three occasions to more than one practitioner, so it is important to ask parents if they have seen other health professionals during the current illness. Any child who presents a third time should be seen by a senior doctor experienced in childhood illnesses.

*Inpatient clinical deterioration alerted by parental concern not acted on*

Parental concerns about their children’s health status should be considered at all times, including while inpatients. Parents know their children best. When parents report concerns about a child’s wellbeing or changes in status (in particular in the context of severe chronic disease or developmental disability) their concerns should be addressed without delay.

**Recognition, management and transfer of the severely unwell child**

A single telephone line (03) 9345 7007 is now operating for the management and transfer of sick neonates and children, which emphasises the need for involvement of a senior clinician.

The line provides information and access to:

- The Royal Children’s Hospital and Monash Medical Centre emergency departments
- Paediatric Emergency Transport Service (PETS) or 1300 137 650 direct
- Newborn Emergency Transport Service (NETS) or 1300 137 650 direct
- Perinatal Emergency Referral Service (PERS) or 1300 137 650 direct.

**Recognising serious illness in babies**

In November 2011 the Victorian child health record (blue book), was replaced with the *My health and development record* for all newborn babies. The *My health and development record* is an A5 format, bright green, personalised, ring-bound book.

As the *My health and development record* contains no information on the recognition of serious illness, parents should be encouraged to use the Raising Children Network, which is a national, online, evidence-based parenting resource providing information from newborn to adolescence.

Information for parents on recognising serious illness in their babies and young children can be found at <http://www.raisingchildren.net.au/>.
**Signs of severe illness in infants**

Symptoms and signs suggesting that infants less than six months old may need admission to hospital can be remembered as ABC – Uncommon:46

*Activity*
- sleepy – does not wake fully and cry strongly
- low activity – moves arms and legs less than normal
- low intake – < 50% of normal feeds in last 24 hours

*Breathing*
- retraction – moderate or severe chest retraction

*Circulation*
- pallor – sudden onset of persistent generalised pallor

*Uncommon*
- bilious vomiting, grunting, apnoea, fitting.

**Signs of severe sepsis in children**

The features of severe sepsis are non-specific and may include:
- fever or hypothermia
- pallor
- poor peripheral perfusion (check colour, temperature and capillary refill of hands and feet
- tachycardia
- tachypnoea
- impaired consciousness
- hypotension (this may only appear in the terminal stages of sepsis or may only be evident as postural hypotension).

Practitioners should be alert for these features, be aware of the age-specific norms of heart rate, respiratory rate and blood pressure, and pay attention to trends in repeated observations (for example a rising heart rate).

**Guide to paediatric resuscitation and clinical practice guidelines**

A simple guide to paediatric resuscitation can be downloaded from [www.rch.org.au/clinicalguide/cpg.cfm?doc_id=5162].

It is also presented in a small format suitable to attach to an ID badge or keep in a wallet (follow the link to ‘ID badge size resuscitation card’).

Children with signs of shock who require 40 mL/Kg fluid replacement and still have hypotension, poor peripheral perfusion or acidosis should be discussed with a senior emergency or intensive care consultant. In many such children an inotrope or vasoconstrictor is required. Call PETS (03) 9345 7007 or 1300 137 650.

Guidelines for the management of many acute illnesses in babies and children can be found at The Royal Children’s Hospital clinical practice guideline website: [www.rch.org.au/clinicalguide/].

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Common problems in the management of ill children

Acute upper airway obstruction:
- intubation too late
- inappropriate size or length of endotracheal tube
- inadequate humidification and suction of tube
- failure to recognise endotracheal tube obstruction.

Asthma and bronchiolitis:
- insufficiently aggressive medical treatment for asthma
- failure to provide 100% oxygen
- ventilation too late.

Brain injuries (drowning, trauma, convulsions)
- too much fluid (IV, nasogastric or oral) in children with meningitis
- use of intravenous fluids other than 0.9% saline
- failure to control seizures
- hypoventilation from seizures or anticonvulsants
- poor airway management
- failure to continue ventilation after resuscitation
- administration of oxygen via Laerdal-type bag to a spontaneously breathing patient
- hypotension from hypovolaemia or failure to use inotropic drugs
- failure to diagnose abdominal injuries after trauma
- failure to decompress the stomach by orogastric tube
- inappropriate lumbar puncture in very ill children with coma
- failure to recognise severity of brain injury in young infants.

Septic and hypovolaemic shock:
- lack of adequate vascular access
- inadequate volume administration (use 0.9% saline or 4% albumen)
- failure to use inotropic drugs (noradrenaline, adrenaline or dopamine)
- failure to monitor blood pressure adequately
- uncorrected acidosis or anaemia
- uncorrected hypoxia or hypoventilation
- intubation and ventilation too late
- failure to resuscitate with volume and inotropes before intubation
- giving thiopentone or other myocardial depressant drugs for intubation.
Transfer of sick children between hospitals

The Newborn Emergency Transport Service (NETS) and the Perinatal Emergency Referral Service (PERS) joined the Paediatric Emergency Transport Service (PETS) at The Royal Children’s Hospital in December 2011. The three services will become an integrated service over 2012–2013.

PETS referrals can now be made using the same telephone number as NETS and PERS: 1300 137 650.

This provides a single point of access for the three services, and enables PETS to have access to the 24-hour resources available through the NETS, PETS and PERS Coordination centre.

Referrals for assistance with management or possible transfer should be made as early as possible, as clinical deterioration can occur quickly. For optimal management, sick children should receive a level of care appropriate to the severity of their illness.

The referring doctor should be encouraged to maintain contact with or re-contact the tertiary centre if further consultation is warranted and/or the medical condition of the child deteriorates.
RECOMMENDED WEBSITES

Consultative Council on Obstetric and Paediatric Mortality and Morbidity

Information on CCOPMM, the Victorian Perinatal Data Collection (VPDC) and Victorian Birth Defects Register (VBDR) is available at <www.health.vic.gov.au/ccopmm/>.

Perinatal Mortality

The Clinical practice guideline for perinatal mortality audit (incorporating psychological and social aspects of perinatal bereavement) was developed by the Perinatal Society of Australia and New Zealand Perinatal Mortality Special Interest Group (PNM-SIG), and can be assessed at <www.psanz.com.au>.

The main objective of the guideline is to assist clinicians in the investigation and audit of perinatal deaths, including communication with parents, to enable a systematic approach to perinatal mortality audit.

The Australian and New Zealand Stillbirth Alliance (ANZSA) is focused on preventing stillbirth in Australia and New Zealand <www.stillbirthalliance.org.au>.

Antenatal care


The three tertiary centres in Melbourne have developed the Three Centres guidelines for antenatal care, available at <www.3centres.com.au>.

Neonatal resuscitation

The Australian Resuscitation Council guidelines (December 2010) can be found at <www.resus.org.au>.

NeoResus is a specialised training program designed to standardise the way newborn resuscitation is taught in Victoria. Face-to-face, multidisciplinary training programs are supported by online, evidence-based learning modules, which are completed by all program participants in two skills-based, teamwork-focused training programs: First Response and Advanced. The website can be found at <www.neoresus.org.au>.

Examination of the newborn

The Paediatrics and Child Health Division of The Royal Australasian College of Physicians guidelines for examination of the newborn are available at <www.racp.edu.au/page/paed-policy>.

Neonatal handbook

Healthcare professionals can access guidelines in the Neonatal handbook which details the initial assessment and management of many conditions encountered in the newborn period. The Neonatal handbook is available at <www.netsvic.org.au/nets/handbook>.
Emergency transport services

Newborn Emergency Transport Service
For comprehensive information on NETS and bookings for educational sessions telephone (03) 9344 2567 or visit the website: <www.netsvic.org.au>.

Paediatric Emergency Transport Service
Advice about what to do before PETS arrives is available at the PETS website <www.rchpets.org>.

Management of childhood illness

Royal Australian and New Zealand College of Obstetricians and Gynaecologists
Specific RANZCOG guidelines relating to CCOPMM recommendations include:
- Influenza vaccination for pregnant women (C-Obs 45)
- Suitability criteria for models of care and indications for referral within and between models of care (C-Obs 30)
- Guidelines for the management of monochorionic twin pregnancy (C-Obs 42)
- Guidelines for the use of RhD immunoglobulin (Anti-D) in obstetrics in Australia (C-Obs 6)
- Suitability criteria for models of care and indications for referral within and between models of care (C-Obs 30).

For information on all RANZCOG guidelines visit <www.ranzcog.edu.au>.

Maternity and Newborn Clinical Network
Specific MNCN guidelines relating to CCOPMM recommendations include:
- Maternity and Newborn Clinical Network obesity guideline, August 2011
- Clinical practice guideline on induction of labour with Prostaglandin E2 (PGE2) vaginal gel (Prostin®)
- Maternity and Newborn Clinical Network antenatal telephone record, August 2011


Other


