Annual Report 2007 – 2008

Child Death & Serious Injury Review Committee

Government of South Australia

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Our Commitment to the Environment

This Annual Report was produced as an electronic version in order to keep the carbon emissions from its production to an absolute minimum.

Letter of Transmission

Hon Jennifer Rankine MP
Minister for Families and Communities

Dear Minister

I submit to you for presentation to Parliament the 2007–2008 Annual Report of the South Australian Child Death and Serious Injury Review Committee which has been prepared pursuant to Part 7C of the *Children's Protection Act 1993*.

This report highlights the Committee's activities in fulfilling its statutory obligations.

In compliance with the *Public Sector Management Act 1995* and the *Public Finance and Audit Act 1987* a further report concerning the management of human resources and financial issues of the Committee has been submitted as part of the Annual Report of the Department for Families and Communities 2007–2008.

Yours faithfully

Dymphna Eszenyi
Chair
Child Death and Serious Injury Review Committee

31 October 2008

Chair's Foreword

This third annual report presents the Committee's ongoing collection of information and reviews concerning the circumstances in which children die in South Australia. We maintain a detailed record of these deaths, with information drawn from most agencies that provide services to children, young people and their families, with the aim of contributing to the prevention of further deaths and serious injuries. The Committee's review of this information raises issues, such as:

- regardless of the manner or cause of death, death rates are higher among children who live in circumstances of disadvantage;
- young infants in non-standard sleeping environments are at risk of dying. The South Australian Coroner, reporting on 25 June 2008 concerning the deaths of five infants, endorsed the recommendations about safe sleeping made by the Committee in its last two annual reports (CDSIRC, 2006; CDSIRC, 2007); and
- over half of all child deaths in South Australia are caused by illness or disease, with the majority being of infants dying in the first 28 days of life.

In-depth reviews conducted by the Committee this year have highlighted several areas where improvements in systems and service delivery should be made, as well as identifying the benefits for children when consistent and high quality services are provided to them.

We remain acutely aware of the constraints imposed by s52S(4) of the *Children's Protection Act 1993* which prevent the Committee undertaking reviews at a time when to do so might compromise criminal or coronial investigations. The Committee aims to present its recommendations promptly to assist agencies to develop high quality and responsive services for children and their families. Delays in coronial and criminal justice systems can impair our ability to make timely recommendations arising out of such cases.

The number of child deaths each year in South Australia is small. We are pursuing links with counterpart organisations in Australia and New Zealand in an effort to develop aggregated data which may be useful in demonstrating strategies for preventing or reducing the incidence of death or serious injury.

This year we have started work in relation to serious injury. Our initial task was to identify those services that work toward preventing injury. We have now begun a specific project to review the nature and extent of serious injury happening to those children who are under the Guardianship of the Minister. That review is ongoing and no recommendations have yet been made.

Chair's Foreword

Finally I thank the people and agencies who have continued to help and support the Committee's work. I join with the Committee members and Secretariat in extending sympathy to the families and friends of the children whose deaths we have considered during the year.

Dymphna Eszenyi
Chair
Child Death and Serious Injury Review Committee

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Glossary

AARD	Aboriginal Affairs and Reconciliation Division, Department of the Premier and Cabinet South Australia
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
Act	*Children's Protection Act 1993*
AEC	Adverse Events Committee – Families SA
AIHW	Australian Institute of Health and Welfare
APY Lands	Anangu Pitjantjatjara Yankunytjatjara Lands
ARIA+	ARIA stands for Accessibility/Remoteness Index of Australia. See Section 5.1.8
CAMHS	Child and Adolescent Mental Health Service
CDSIRC 2006	Child Death and Serious Injury Review Committee Annual Report 2005 – 2006
CDSIRC 2007	Child Death and Serious Injury Review Committee Annual Report 2006 – 2007
CESDI	Confidential Enquiry into Sudden Deaths in Infants (Fleming et al. 2000)
COAG	The Council of Australian Governments
Coroner	State Coroner
CYWHS	Children, Youth and Women's Health Service
DFC	Department for Families and Communities
ICD–10	International Classification of Disease (Version 10)
IMR	Infant Mortality Rate
IRSD	Index of Relative Socio-economic Disadvantage
NCCH	National Centre for Classification in Health, Brisbane
NSW CDRT	New South Wales Child Death Review Team
Registrar	Registrar, Births Deaths and Marriages
SEIFA	Socio-Economic Indexes for Areas, Index of Relative Disadvantage (IRSD). See Section 5.1.9
SIDS	Sudden Infant Death Syndrome
SUDI	Sudden Unexpected Death in Infancy
TKP	Tjunjuniku Kuranyukutu Palyantjaku
WHO	World Health Organization

Acknowledgements

The Committee wishes to thank the following individuals and organisations for making themselves available to support the Committee's work:

Val Edyvean, Registrar, Births Deaths and Marriages, and staff;

Mark Johns, State Coroner and staff, especially **Jeanette Collins** and **Jess Hempel,** Administrative Officers;

Meg Clarke, Senior Project Officer, Epidemiology Branch, SA Health;

Sue Walker, Associate Director and **Garry Waller,** Senior Classification Officer, National Centre for Classification in Health, Brisbane;

Tracey Kemp and staff of Information Technology and Communication Services, DFC;

Julia Cranney, Principal Consultant, Council for the Care of Children, South Australia.

Committee Members

Chair

Ms Dymphna Eszenyi

Members

Mr Brian Butler

Professor Roger Byard

Ms Linda Doré

Ms Dianne Gursansky

Dr Diana Hetzel

Ms Samantha Laubsch

Mr Christopher Shakes

Dr Nigel Stewart

Ms Alison Tucker

Detective Superintendent John Venditto (from 02–02–2007)

Ms Fiona Ward

Dr Richenda Webb (until 06–06–2008)

Ms Helen Wighton

Detective Superintendent Peter Woite (until 17–10–2006)

Secretariat

Executive Officer

Dr Sharyn Watts

Senior Project Officer

Ms Ellen Rosenfeld

Administrative Officer

Ms Mary Surman

Executive Summary

This is the third annual report of the Child Death and Serious Injury Review Committee to be tabled in Parliament.

Purpose and Establishment

The role of the Child Death and Serious Injury Review Committee is to contribute to the prevention of death or serious injury to South Australia's children.

The Committee reviews the circumstances and causes of deaths and serious injuries to children and makes recommendations to Government for changes to legislation, policies and procedures that may help prevent similar deaths or serious injuries.

The Child Death and Serious Injury Review Committee was established by the *Children's Protection Act 1993* (the *Act*) in February 2006.

Activities

The Committee continues to monitor and analyse information concerning the circumstances and causes of the deaths of all children in South Australia. This Annual Report contains information concerning the deaths of children in South Australia from 1 January 2007 – 31 December 2007.

The Committee monitor the implementation of its previous recommendations and reports on progress in each Annual Report.

Child Deaths 2007

One hundred and twenty three children died in South Australia in 2007. Eighty-two children were male.

Death Rate

The death rate for children in South Australia for 2007 was 33.5 deaths per 100 000 children. This excludes the deaths of six children who were not usually resident in South Australia. In the three years that the Committee has been collecting information concerning the deaths of children, the death rate has remained relatively stable.

Age at Death

Forty-three percent of deaths were of infants less than 28 days old; another 22% of children died before they were one year old. Thirteen percent of the deaths were of young people aged 15 – 17 years.

Causes of Death

The majority of deaths (65%) were due to illness or disease. Most of these deaths were of infants less than one year old (76%) and were attributed to conditions that occurred during pregnancy, labour or at birth, or from congenital and chromosomal abnormalities.

Twenty-five percent of deaths in 2007 were from 'external causes.' Deaths from these causes include deaths in transport incidents, from accidental asphyxiation, falls, poisoning and drowning and from suicide or fatal assault.

Transport

Thirteen percent of children died in transport incidents. Transport deaths were the most common cause of preventable death for children in South Australia. In each reporting year, 2005, 2006 and 2007, transport deaths have accounted for a similar percentage of preventable child deaths.

Young People and Risk-Taking

There were no deaths attributed to suicide in 2007; but 11% of deaths were of young people aged 15 – 17 years and the majority of these young people were male. Deaths were attributed to causes such as motor vehicle crashes, drowning and accidental poisoning. In several of these deaths, elements of risk-taking such as excessive speed whilst driving, alcohol or drug use and trespassing were involved.

Infants and Safe Sleeping Environments

There were no deaths attributed to Sudden Infant Death Syndrome (SIDS) in 2007, although eight infants died from undetermined causes. In several of these deaths, there were common risk factors such as sharing the parents' bed, pillows and bolsters in the bed, and inappropriate room temperature.

Aboriginal Children

The Committee has continued to express concern regarding the health and wellbeing of Aboriginal children. A number of reports have highlighted the poorer outcomes for Indigenous children – both nationally and within the State, and particularly within child welfare systems.

Twelve Aboriginal children died in 2007. Nine of these children died before the age of one year, mainly from conditions occurring during pregnancy,

labour or birth, or from conditions associated with prematurity. Seven of the ten children who were resident in South Australia at the time of their death lived in areas of greatest disadvantage in the State and ten children, their siblings or families had contact with the child welfare system in the three years preceding their death.

Socioeconomic Disadvantage

The association between illness, injury and mortality and socioeconomic status has been widely demonstrated. In 2007, child deaths in areas of greatest disadvantage were double those in areas of least disadvantage.

All eight of the infants who died from undetermined causes lived in areas of greatest disadvantage, again highlighting the Committee's previous recommendations concerning the association between unsafe sleeping environments and socioeconomic disadvantage.

Contact with Families SA

The Committee views contact with the child welfare system as a marker of socioeconomic disadvantage and vulnerability.

Twenty-three percent of children, their siblings or family, had had contact with the child welfare system in the three years preceding their death. Eighteen of these children died before the age of one year, the majority of these deaths being from illness or disease.

Half of these children lived in the most disadvantaged areas of the State.

The families of five of the eight infants who died suddenly and unexpectedly from undetermined causes in 2007 had contact with Families SA prior to their death. Three other children died in transport incidents.

In-depth Review of Deaths

The Committee submitted four in-depth reviews into the deaths of children to the Minister for Families and Communities in this reporting period.

Recommendations arising from the overview of child deaths in South Australia, 2007

The Committee has made no new recommendations arising from the overview of the circumstances and causes of all child deaths in South Australia during 2007. The circumstances and causes of some deaths in this year however, gave rise to the following issues which will form part of the Committee's consideration of 2008 deaths:

- **Deaths of Aboriginal infants –** In 2007 six very young Aboriginal infants died. The Committee will review the circumstances of these deaths with a view to providing the Minister with recommendations for systemic change.
- **The role of risk-taking in the deaths of young people –** The Committee identified risk-taking as a key element in the deaths of several young people in 2007. The Committee will continue to monitor the ways in which risk-taking contributes to the deaths of young people in 2008.
- **The sudden and unexpected deaths of infants from undetermined causes –** Eight infants under one year of age died suddenly and unexpectedly during 2007 from undetermined causes. The circumstances of these deaths reinforce the Committee's recommendations in previous years concerning the need to ensure that all parents understand the importance of safe sleeping environments for infants, and if necessary are given help to provide such an environment for their infant. The Committee will continue to advocate for the prevention of deaths in similar circumstances.
- **The issue of neglect –** The Committee has ongoing concerns about the number of cases it has reviewed where the circumstances of the death indicated substantial neglect, even though neglect may not have been the primary cause of death. In a meeting with the Minister for Families and Communities scheduled for July 2008, the Committee will propose a number of ways in which systems can be put into place to protect these children.

Recommendations arising from the in-depth review of deaths

There were several recommendations arising from each of the in-depth reviews undertaken by the Committee in this reporting period. These recommendations concerned:

- the health and wellbeing of Aboriginal children, particularly those living in remote areas of the State and particularly with reference to their access to education, health and mental health services and child welfare services;
- the importance of stable care arrangements and comprehensive case plans for children under the Guardianship of the Minister;
- the need for early intervention in the lives of children experiencing multiple disadvantage, and in particular investment in policies and programs that will meet the needs of these children before they become parents themselves;
- changes in legislation that will permit the exchange of information between national bodies such as Centrelink and state welfare systems to ensure the care and protection of children; and
- changes to proposed legislation concerning portable cots, in particular inflatable children's cots and bed.

Monitoring of Recommendations

The Committee monitored responses to its recommendations from in-depth reviews and from the annual review of all child deaths in this and previous reporting periods.

The Committee was pleased to note that with regard to its previous recommendations concerning safe sleeping and infants that:

- in June 2008 the Coroner endorsed the recommendations made by the Committee in its previous Annual Reports (CDSIRC, 2006; CDSIRC, 2007) concerning safe sleeping and infants and recommended that the Minister of Health and the Minister for Families and Communities provide funding for the implementation of these recommendations;
- Families SA has developed a Safe Sleeping Policy; and
- the Department of Health will allocate funding for a safe sleeping campaign.

The Committee also received responses to its recommendations about child protection practices, children's safety and Aboriginal children. These responses often gave detailed descriptions of policies and procedures which, without information about implementation and evaluation, were of limited value to the Committee. The Committee cannot monitor the implementation of its recommendations without such information and will take steps to encourage more helpful agency responses in the future.

Serious Injury

In 2007 the Committee commenced the Serious Injury Guardianship Project. This project is intended to review the nature and extent of serious injuries to children whilst they are under the Guardianship of the Minister. It is anticipated that the project will yield recommendations for changes to systems and practices that will reduce the risk of serious injury to one of the most vulnerable groups of children in the community.

Structure of the Annual Report

This report has five sections.

SECTION 1: ACTIVITIES, PROGRESS AND PLANS 2007-2008

This section outlines the history of the Committee and provides a synopsis of the legislation that established the Committee's powers and functions. It provides an overview of the Committee's activities in the financial year 2007–2008 and its contribution to South Australia's Strategic Plan. An outline of the Committee's plans for the coming year are also presented in this section.

SECTION 2: CHILD DEATHS SA 2007

The Committee reports here on the deaths of children in South Australia during the 2007 calendar year.

SECTION 3: IN-DEPTH REVIEWS 2007-2008

This section describes the review process, the status of cases the Committee has identified for review, and provides a synopsis of the recommendations arising out of the reviews it has undertaken. Monitoring of responses to the Committee's recommendations is also presented in this section.

SECTION 4: SERIOUS INJURY

The commencement of the Committee's work in the area of serious injuries to children is outlined in this section.

SECTION 5: REFERENCES

This section provides details concerning methodological issues, discussion of definitional issues referred to in Section 2, and a bibliography.

Section 1

Activities, Progress and Plans 2007 – 2008

Section 1: Activities, Progress and Plans

1.1 PURPOSE

The role of the Child Death and Serious Injury Review Committee is to contribute to the prevention of death and serious injury to children in South Australia.

The Committee reviews the circumstances and causes of death or serious injury to children and makes recommendations to Government that may help prevent similar deaths or serious injuries. Recommendations suggest changes in legislation, policies, procedures or practices.

1.2 ESTABLISHMENT

The Child Death and Serious Injury Review Committee was established by the *Children's Protection Act 1993* (the *Act*) in February 2006. It is an initiative arising out of recommendations made in *Our best investment: a State plan to protect the interests of children (Layton, 2003)*. An interim committee operated under directions issued by Cabinet from April 2005 until February 2006.

The work of the Committee is funded by the *Keeping Them Safe* initiative with further contributions from the Department for Families and Communities, the Department of Health and the Department of Education and Children's Services. From its inception a small secretariat located within the Department for Families and Communities has assisted the Committee. Administrative, financial and human resource management is overseen by this department.

1.3 LEGISLATION

The *Children's Protection (Keeping them Safe) Amendment Act 2005* authorises the Committee to:

- maintain a database of the circumstances and causes of child death or serious injury that occurs in South Australia;
- review child deaths and serious injury with the aim of identifying legislative or administrative means of preventing such deaths or injuries in the future;
- request any person to produce a document that is relevant to a review;
- enter into arrangements with other Government agencies for the release of information relevant to a review;
- recommend legislative or administrative change based on its reviews;
- monitor the implementation of its recommendations; and
- maintain links with similar bodies interstate and overseas.

The Committee is not required to individually review all cases of child death or serious injury and may not undertake a review if this would compromise ongoing criminal investigation or coronial inquiry. However, it should review cases:

- where there are indications of abuse or neglect; or
- where the child or a member of the child's family has been the subject of a child protection notification in the past three years; or
- where the child was under the guardianship of the Minister or was in the care of a Government agency; or
- that have been referred to it by the Coroner.

The information acquired by the Committee cannot be disclosed to any person and is not required to be disclosed under the *Freedom of Information Act 1991*.

The Committee must report to the Minister for Families and Communities as required and annually. The Minister must table the Committee's annual report in Parliament.

1.4 COMMITTEE ACTIVITIES 2007– 2008

From 1 July 2007 to 30 June 2008 the Committee met on ten occasions. Sub committees and screening teams met as required.

During this period the Committee:

- continued to identify and screen all child deaths occurring in South Australia (see Section 2);
- considered the eligibility of all screened cases for in–depth review, chose eligible cases for review, and commenced or completed in–depth reviews of certain cases (see Section 3);
- presented its *Annual Report 2006–2007* to the Minister for Parliament;
- continued to develop its work concerning serious injury (see Section 4);
- corresponded on an *ad hoc* basis with relevant agencies where the Committee identified immediate opportunities to contribute to the prevention of further deaths or serious injuries.

For example, the Committee wrote to the Surf Life Saving Club SA Inc. regarding life saving activities, drownings and alcohol consumption on public beaches and to Kidsafe SA Inc. regarding potential environmental hazards and toddler safety;

- met with a number of agencies or organisations in a position to contribute to the work of improving the health and wellbeing of children in South Australia; and
- liaised with other State and Territory Child Death Review teams and committees by attending the third annual national meeting of the Australian and New Zealand Child Death Review Teams, held in Brisbane in December 2007 and the inaugural national meeting of Child Death Review Teams responsible for the in–depth review of child deaths, held in Melbourne in June 2008.

1.5 PLANS

The Committee will continue to:

- support South Australia's Strategic Plan to contribute to, and monitor improvements in, the health and wellbeing of South Australia's children;
- monitor and analyse trends and patterns in the deaths of children;
- review in–depth certain cases of child death;
- monitor the implementation of the recommendations arising from these activities; and
- expand its work in the area of serious injury.

Section 2

Child Deaths South Australia 2007

Section 2: Child Deaths South Australia 2007

2.1 WHY REPORT ON CHILD DEATHS?

Opportunities for prevention can be identified through the systematic collection and analysis of morbidity and mortality data and through the analysis of the circumstances surrounding particular child deaths and serious injuries. Improvements to child focused systems and services, and changes to legislation, policies or practices can assist in the prevention of further deaths and injuries, and contribute to reducing human and financial costs to the community.

The majority of children die from illness or disease, including conditions relating to premature birth, infections, genetic and other disorders and cancer. The risk of dying from certain illnesses or diseases may be reduced through the use of current technologies and resources, but cannot be completely eliminated (Tang et al. 2007). Deaths from illness and disease are considered in Section 2.4. Deaths from 'external' causes such as transport deaths and accidents and the sudden and unexpected deaths of infants, offer further opportunities for prevention. The circumstances and causes of these deaths are detailed in Sections 2.5 and 2.6.

Caution must be exercised when interpreting changes in proportions, rates or percentages that are based on the relatively small numbers presented in this report.

2.2 OVERVIEW OF CHILD DEATHS 2007

This section of the report describes the circumstances and causes of the deaths of children (aged 0 –17 years) in South Australia from 1 January 2007 to 31 December 2007 that have been reported to the Office of Births, Deaths and Marriages.

One hundred and twenty three children died in South Australia in 2007. Eighty-two children were male and 41 were female. Figure 1 indicates the number of children who died in each age group.

The greatest number of child deaths were of infants less than 28 days old. Two-thirds of the children who died were male and in almost all age groups a greater number of male children died than female children. The greatest difference in numbers was in the deaths of children aged 15–17 years where 13 males died compared to three females.

Figure 1: Deaths of children by sex and age, South Australia 2007.

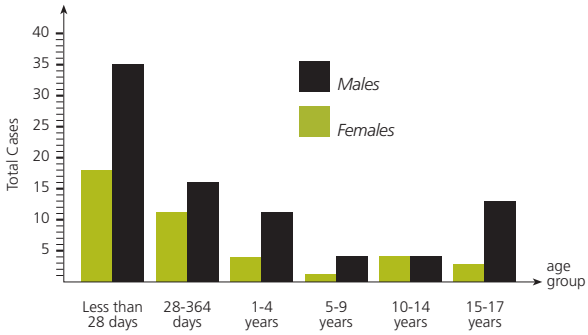


Table 1 shows the numbers of female and male children dying by age group[1] in 2007 and Table 2 outlines the causes of child deaths by age group in 2007.

Table 1 shows that the greatest number of male children died from illness or disease (55 deaths), with 33 infant males dying in the first 28 days of life. Five infant males died from an undetermined cause. Twenty-one deaths of male children were attributed to external causes with just over half of this number accounted for by the deaths of males aged 15 –17 years.

Similarly the greatest number of female children died from illness or disease (25 deaths) with the majority (17) dying in the first 28 days of life. Three infant females died from undetermined causes. Ten females died from external causes, six in the younger age groups and six aged 10 –17 years.

Table 2 shows that the majority of deaths were due to illness or disease (80 deaths). The most common causes of death were those related to the prematurity of infants (40 deaths) and deaths related to congenital and chromosomal conditions (20 deaths). Thirty-one children died from external causes which included transport deaths, accidents and drowning. Table 2 indicates that transport deaths were the third most common cause of death for children in South Australia, once deaths from illness or disease wereaccounted for. Eight deaths were attributed to undetermined causes. The causes of four deaths are not yet known.

[1] In this section and subsequent sections of the report, the Committee's classification of deaths is used. See Section 5.1.2 for more information about these classifications. The ICD-10 coding of deaths is provided in Section 5.2 for both the current (2007) and previous (2005, 2006) reporting periods.

Table 1 Deaths of children by cause, sex and age, South Australia 2007

Cause of Death (per Committee Classification)	< 28 days	28 days to 1 year	1-4 years	5-9 years	10-14 years	15-17 years	Sub Total	Total
Illness or Disease								
Female	17	4	2	1	1		25	80
Male	33	7	8	2	3	2	55	
SIDS & Undetermined Causes								
Female		3					3	8
Male	1	4					5	
External Causes								
Female		2	2		3	3	10	31
Male	1	4	3	1	1	11	21	
Other								
Cause not yet known	1	3					4	4
TOTAL	**53**	**27**	**15**	**4**	**8**	**16**		**123**
PERCENTAGE	**43.1**	**22.0**	**12.2**	**3.2**	**6.5**	**13.0**		**100**

** Source: Child Death and Serious Injury Review Committee database.*

2.2.1' Cause Not Yet Known'

The Committee awaits information about seven of the 52 deaths that had been reported to the Coroner in 2007. In three of these cases the circumstantial information available enabled the Committee to determine that the deaths were transport-related. Four sudden unexpected deaths in infancy await further information before the death can be classified by the Committee.

2.2.2 Deaths of Children Usually Living Outside South Australia

In 2007, six children (4.8%) who died in South Australia usually lived outside of the State. Two children were normally resident in the Northern Territory and two were normally resident in New South Wales. Other children were normally resident in Victoria or Tasmania. All deaths were from illness or disease, with four infants dying in the first 28 days of life; two deaths were of children less than four years old.

2.2.3 Death Rate[2]

The death rate for 2007, which excludes the deaths of children not normally resident in South Australia (six deaths) was 33.5 deaths per 100 000 children. In 2005 the rate was 34.5 deaths per 100 000 children and in 2006, the death rate was 32 deaths per 100 000 children (CDSIRC, 2006; CDSIRC, 2007). The death rate appears to have remained relatively stable over this three year time period.

Infant Mortality Rate

Infant deaths, which are usually attributed to events occurring during pregnancy and birth such as prematurity, congenital anomalies and intra-partum conditions are often used as an indicator of the health of a population because there is a demonstrated association between infant mortality and a population's standard of living.

Eighty infants aged less than one year died in 2007, this includes the deaths of five infants not normally resident in South Australia and the deaths of all infants in 2007 recorded by the Office of Births, Deaths and Marriages, regardless of weight or length of gestation. The majority of these infants died from illness or disease (62 deaths). Eight infants died from undetermined causes, six from external causes, and the cause of four deaths is not yet known. Nine of these infants were Aboriginal; with six infants dying in the first 28 days of life from causes related to prematurity.

[2]Death rates for males and females adjusted for age have not been calculated as fluctuations in the small numbers make these rates unreliable.

The 2007 infant mortality rate (IMR) based on these figures, was 4.1 deaths per 1000 live births. The IMR in 2005 was 4.6 deaths per 1000 live births and in 2006 was 3.4 deaths per 1000 live births (CDSIRC, 2006: CDSIRC, 2007).

Information concerning infant mortality in South Australia is recorded in a number of different statistical collections, including the Australian Bureau of Statistics (ABS – *Australian Bureau of Statistics Deaths 2006*); the South Australian Maternal, Perinatal and Infant Mortality Committee (MPIMC – *Maternal Perinatal and Infant Mortality in South Australia, 2007*) and this Committee (*Child Death and Serious Injury Review Committee, 2007*). Each collection has slightly different ways of registering and recording the deaths of infants, consequently the infant mortality rates will differ. In general, however, each collection recorded a higher than average IMR in 2005 and a much lower rate in 2006 (ABS IMR (2006) = 3.2; MPIMC IMR (2006) = 3.5; CDSIRC IMR (2006) = 3.4). The ABS noted that the infant mortality rate in South Australia

Table 2: Deaths of children by cause of death and age, South Australia 2007*

Cause of Death (per Committee Classification)	< 28 days	28 days to 1 year	1-4 years	5-9 years	10-14 years	15-17 years	Total	%
Illness or Disease								
Certain conditions originating in the perinatal period	35	5					40	32.5
Congenital malformations, deformations and chromosomal abnormalities	14	4	2				20	16.3
Cancer			2	2	2	1	7	5.7
Diseases of the nervous system	1	1	3		1		6	4.9
Endocrine, nutritional and metabolic diseases			2	1			3	2.4
Diseases of the circulatory system		1	1				2	1.6
Certain infections and parasitic diseases						1	1	0.8
Diseases of the digestive system					1		1	0.8
Illness or Disease - Total	**50**	**11**	**10**	**3**	**4**	**2**	**80**	**65.0**
SIDS & Undetermined Causes								
Undetermined	1	7					8	6.5
SIDS								
SIDS & Undetermined Causes - Total	**1**	**7**					**8**	**6.5**
External Causes[3]								
Transport		2	1		3	10	16	13.0
Accidents		2	3		1	2	8	6.5
Drowning		1	1	1		1	4	3.2
Health-system related	1	1					2	1.6
Fatal assault						1	1	0.8
External Causes - Total	**1**	**6**	**5**	**1**	**4**	**14**	**31**	**25.2**
Other								
Cause Not Yet Known	1	3					4	3.2
TOTAL (deaths per age group)	**534**	**27**	**15**	**4**	**8**	**16**	**123**	
PERCENTAGE (deaths per age group)	**43.1**	**22.0**	**12.2**	**3.2**	**6.5**	**13.0**		**100**

** Source: Child Death and Serious Injury Review Committee database.*

[3]Section 5.1.2 provides a definition for each external cause of death.

[4]The Committee reports on the number of deaths each year that have been registered with the Office of Births, Deaths and Marriages. This figure includes infants where the length of gestation was <20 weeks and/or birth weight was<400grams, but whose deaths were registered with the Office.

in 2006 was the lowest nationally but cautioned that States and Territories who record small numbers of infant deaths experience fluctuations in infant mortality rates from year to year (ABS, 2006).

2.2.4 Age and Causes of Death

In this section causes of death in each age group are discussed in greater detail. Summary information concerning age and causes of death are presented in Table 2.

The overall pattern of deaths by age and cause of death is similar to that reported in previous years. The greatest number of children died in the first 28 days of life from illness or disease (53 deaths). A smaller number of deaths occurred across each subsequent age group, with a slight increase in the number of deaths of young people aged 10 –14 and 15 –17 years; 18 of the 24 deaths in these age groups were attributed to external causes, particularly transport deaths.

This pattern in the numbers and causes of death reflects the growth and development of children. The high numbers of infant deaths reflects their vulnerability in terms of their individual health, and their dependence on adult care. This vulnerability continues through the early years of childhood but is accompanied by increasing independence, requiring higher levels of adult supervision and greater attention to the safety of the child's environment. Fewer deaths occur in the 'middle years' of childhood when children are spending more time in managed environments such as school. The increasing independence of young people as they move rapidly from childhood to adulthood is reflected in the greater number of deaths of young people aged 15 –17 years from external causes.

The sections below summarise the causes of death in each age group. Tables 13 to 18 in Section 5.3 provide greater detail concerning the causes of death and age groupings.

Children Aged Less Than 28 Days

Fifty-three very young infants died in 2007 with 22 deaths occurring within the first day of life. Thirty-five infants were male and six were Aboriginal infants.

Thirty-five infants died from various conditions originating in the perinatal period. Ten deaths were attributed to extreme prematurity or very low birth weight and seven deaths involved complications of pregnancy and birth.

Fourteen infants died from various congenital or chromosomal abnormalities.

Children Aged 28 Days to 1 Year

Twenty-seven children died in this age group. Sixteen were male and three were Aboriginal. The average age at death was 4.7 months. The cause of death for five of the 11 children dying from illness or disease related to complications that occurred during pregnancy, labour or delivery. Four children died from various congenital or chromosomal conditions. Seven children died suddenly and unexpectedly and their deaths were attributed to undetermined causes. There were no deaths attributed to SIDS in 2007. Deaths from undetermined causes are discussed in more detail in Section 2.6. Of the six children dying from external causes, five died from unintentional injuries including two transport deaths.

Children Aged 1– 4 Years

Fifteen children between the ages of one and four died in 2007. Eleven were male. The average age at death was two years with nine children aged one year old or less. Two thirds of these children died from illness or disease; three from nervous system disorders such as epilepsy or cerebral palsy; and at least two from cancers or chromosomal abnormalities. Five children died from unintentional injuries including drowning and transport deaths.

Children Aged 5 – 9 Years

Four children died in this age group; two were male. Three children died from illness or disease.

Children Aged 10 – 14 Years

Eight children aged 10 –14 years died in 2007. There were equal numbers of males and females. The average age of these children at death was 12.5 years. Equal numbers of deaths were attributed to either illness or disease or external causes with three children dying in transport incidents.

Children Aged 15 – 17 Years

Sixteen young people aged 15 –17 years died in 2007. The majority (13 deaths) were male. The average age of these young people at death was 16.5 years. Two young males died from illness or disease. Fourteen young people died from external causes. Eleven of the young people who died from external causes were male.

A significant number of these deaths, which included transport deaths (ten deaths), drowning, a fall and

accidental poisoning, could be considered to involve risk taking behaviour. The episodes of risk-taking in these cases included activities such as the use of drugs and/or alcohol or other substances, driving behaviours and trespassing. Several of the incidents that resulted in the deaths of these young people occurred while in the company of their peers, in the absence of adult supervision and outside the young person's home.

Healthy risk-taking behaviour contributes positively to the transition from childhood to adulthood (Carr-Gregg et al. 2003) and is arguably a normative component of adolescence and need not be predictive of serious injury or death. Some factors may 'protect' a young person from such outcomes (e.g. connectedness to family, school and community), whereas other factors may place them at greater risk (e.g. excessive alcohol consumption). The presence or absence of these factors may also contribute to the prevention of serious injury or death.

The Committee will continue to monitor the role of risk-taking in the deaths of young people and in the future may undertake a review which considers the contribution of risk and protective factors to such deaths.

Transport deaths are considered in more detail in Section 2.5.1 of the report where issues such as driver inexperience, inattention, speed, risk-taking and drug or alcohol use are considered. The circumstances of the deaths of two young men in other accidents also included elements of risk-taking and drug and alcohol use. These deaths are considered in more detail in Section 2.5.2.

2.3. 'AT RISK' GROUPS OF CHILDREN

Children who are geographically isolated, Aboriginal, or live in poverty, are more likely to be at risk of poorer health and wellbeing. Deaths amongst these groups of children are considered in more detail in the following sections.

Table 3: Deaths of children and geographic remoteness (ARIA+), South Australia 2007*

Cause of Death	Major City	Regional	Remote	Total
Illness or Disease				
Certain conditions originating in the perinatal period	29	5	3	37
Congenital malformations, deformations and chromosomal abnormalities	10	4	3	17
Cancer	4	2	1	7
Other Illness or Disease	9	4		13
Illness or Disease - Total	**52**	**15**	**7**	**74**
Undetermined Causes				
Undetermined	6	2		8
Undetermined Causes - Total	**6**	**2**		**8**
External Causes				
Transport	8	7	1	16
Accidents	5	2	1	8
Drowning	4			4
Other causes	2		1	3
External Causes - Total	**19**	**7**	**3**	**31**
Other				
Cause Not Yet Known	3	1		4
TOTAL	**80**	**27**	**10**	**117**
RATE PER 100 000	**33**	**31**	**73**	

**Source: Child Death and Serious Injury Review Committee database*

2.3.1 Children Living in Remote Areas – ARIA+

The Accessibility and Remoteness Index of Australia or ARIA+[5] is a distance-based measure which defines five categories of remoteness based on road distance to major service centres. Categories are determined by reference to postcode (AIHW, 2004). The categories are:

- major city – where there are assumed to be minimal restrictions on the accessibility to the widest range of goods, services and opportunities for social interaction. In South Australia, Adelaide is an example of a major city area;
- inner regional – e.g. areas such as the Adelaide hills;
- outer regional – e.g. areas such as Mount Gambier;
- remote – e.g. areas such as Port Lincoln; and
- very remote - children living in a very remote area would be assumed to have very little access to goods and services or opportunities for social interaction. Areas of northern South Australia are examples of very remote areas.

Table 3 gives details of the total number of deaths in each ARIA+ category, each major cause of death, and the death rate, which has been calculated with reference to the number of children living in these areas. Only children who are resident in South Australia at the time of their death are included in these figures (117 deaths).

Table 4: Deaths of children and by area of socioeconomic disadvantage (SEIFA IRSD), South Australia 2007*

Cause of Death	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Illness or Disease						
Certain conditions originating in the perinatal period	5	6	7	6	13	37
Congenital malformations, deformations and chromosomal abnormalities	4	2	3	5	3	17
Cancer	1		1	4	1	7
Other Diseases	2	1	3	4	3	13
Illness or Disease - Total	**12**	**9**	**14**	**19**	**20**	**74**
Undetermined Causes						
Undetermined		1		2	5	8
Undetermined Causes - Total		**1**		**2**	**5**	**8**
External Causes						
Transport	4	3	3	1	5	16
Accidents			1	3	4	8
Drowning		3	1			4
Other causes	1		1	1		3
External Causes - Total	**5**	**6**	**6**	**5**	**9**	**31**
Other						
Cause Not Yet Known	1	1			2	4
TOTAL	**18**	**17**	**19**	**27**	**36**	**117**

** Source: Child Death and Serious Injury Review Committee database*

[5] See Section 5.1.8 for more details.

Death rates in major city and regional areas were similar, with 31 – 33 deaths per 100 000 children occurring in these areas. The death rate for children in remote and very remote areas however, was double the rate in either regional or city areas and was much higher than previous years (35 deaths per 100 000 in 2006). Small numbers may impact on the fluctuations in the yearly rates in these areas.

ARIA+ – Deaths by Cause

The number of children dying from either illness or disease, or external causes in major cities, regional areas and remote areas, occurred in approximately similar proportions across these three areas.

2.3.2 Children Living in Areas of Socioeconomic Disadvantage – SEIFA

The SEIFA (Socio-Economic Indexes for Areas) Index of Relative Socio-economic Disadvantage (IRSD) draws on a variety of personal and household characteristics (available from the 2006 Census) to rank household and socioeconomic status. In this report, SEIFA scores are divided into five quintiles, each representing approximately one fifth of the population, with the least disadvantaged populations represented by quintile 1, and the most disadvantaged represented by quintile 5.

The association between health and disease with factors such as socioeconomic status has been widely demonstrated in various populations. Health inequalities and risks have been linked to markers of disadvantage such as access to education and income. It has been demonstrated that children from poorer families are at greater risk of death than those living in more affluent households.

Table 4 presents the total number of deaths by major cause in the five IRSD quintiles.

The number of deaths per quintile showed a gradient related to increasing socioeconomic disadvantage. Twice the number of children lived in areas of greatest disadvantage (36 deaths) compared to the number who lived in areas of least disadvantage (18 deaths). This relationship was also observed in the deaths of children in South Australia in 2005 and 2006 (CDSIRC, 2006; CDSIRC, 2007).

This socioeconomic gradient was also demonstrated in the deaths of children from illness or disease, but not for deaths from external causes, where the number of deaths in each quintile were approximately the same. Note that all eight of the infants who died from undetermined causes lived in areas of greatest disadvantage.

2.3.3 Aboriginal Children

Twelve of the 123 children who died in 2007 were Aboriginal; 9.7% of the total number of children who died in that year. Seven children were male and two were normally resident in the Northern Territory. Approximately the same percentage of deaths was recorded for Aboriginal children in 2006 (CDSIRC, 2007).[6]

Aboriginal Children – Age and Causes of Death

Table 5 shows the age group and causes of death for these 12 children.

Nine Aboriginal children under one year of age died in 2007. Eight children died from illness or disease, with seven very young infants dying from causes related to extreme prematurity and conditions occurring during pregnancy, labour or birth. Six of these infants were less than 28 days old. The perinatal conditions associated with these six infant deaths are among those described by the Australian Institute of Health and Welfare (AIHW) as leading causes of death for Aboriginal and Torres Strait Islander infants (AIHW, 2008).

Although mortality rates for Indigenous infants have continued to improve across all States and Territories, they still remain significantly higher than the mortality rates for non-Indigenous infants. Rates for Indigenous infants have been variously quoted as two to three times higher than the rates for non-Indigenous infants.

Table 5: Deaths of Aboriginal children by cause of death and age, South Australia 2007*

Cause of Death	<28 days	28 days 1 year	1-4 years	10-17 years	Total
Illness or Disease	6	1	1		**8**
Undetermined Causes		2			**2**
External Causes				2	**2**
TOTAL	**6**	**3**	**1**	**2**	**12**

** Source: Child Death and Serious Injury Review Committee database*

[6]The under-estimation of Indigenous deaths that generally arises from incomplete recording of Indigenous status has been noted in previous reports.

Further to these deaths, two children under one year of age died suddenly and unexpectedly from undetermined causes. The deaths of two older children were attributed to unintentional, external causes.

In this and previous years (CDSIRC, 2006; CDSIRC, 2007), at least half of the deaths of Aboriginal children have been of infants less than one year of age, primarily from illness or disease. The Committee intends to undertake a review of the deaths of very young Aboriginal infants; systemic issues arising from this review can then be addressed in recommendations to the Minister for Families and Communities.

Aboriginal Children – Remoteness and Disadvantage

Seven of the ten Aboriginal children who were resident in South Australia at the time of their death came from areas of greatest socioeconomic disadvantage; numbers were relatively evenly distributed however, between areas where services are highly accessible and those were they were least accessible. Four children came from areas of greatest socioeconomic disadvantage and very remote locations where services are relatively inaccessible. Two children came from areas of greatest disadvantage but were located in major city areas where services are highly accessible.

Three of the ten children dying from illness or disease were resident in remote or very remote areas of the State and the two children who died from external causes were residing in very remote areas of the State.

Aboriginal Children – Contact with Families SA

Ten of the Aboriginal children who died in 2007, their siblings or parents, had contact with the child welfare system in the three years prior to their death. The over representation of Indigenous children in child welfare systems both within the State and nationally, is well documented, and reflects the socioeconomic disadvantage and vulnerability of these children and their families, and the legacy of past injustice and colonisation. For the very young infants who died in 2007, the history of contact related to siblings or young parents, and covered a range of issues including financial support and concerns for the safety or wellbeing of these siblings or young parents.

Aboriginal Children – State and National Initiatives

In this and previous reports, the Committee has commented on the significant impact that socioeconomic disadvantage has on the health and wellbeing of Indigenous children and the higher deaths rates for Indigenous people generally. There have been a number of recent National and State initiatives designed to address the inequity between the health of Indigenous and non-Indigenous Australians of all ages, such as the National Indigenous Health Equality Summit in March 2008 '*Close the Gap*.' The Committee hopes that the actions arising from a Summit such as this one, and from Aboriginal community-controlled initiatives will help to reduce these inequities.

2.3.4 Children Who had Contact with Families SA

In South Australia, one of the key roles of Families SA is to protect children from abuse and neglect. A range of services may be offered to families following contact with Families SA including support for high need families with a very young infant, in home support and programs and services that strengthen parenting capacity. Families SA also provide assistance for families who are facing financial difficulties and need assistance to pay for utilities or to buy food, medication or clothing for children. Support may be offered to young people who are considered to be 'at risk' when notified for problems such as possible suicidal behaviour, truancy, difficulties with family relationship and homelessness, or for juvenile justice issues.

Although there may be positive outcomes for children and their families as a result of contact with Families SA, the need for services itself may be considered as a marker of socioeconomic disadvantage (Glover et al. 2006), which in turn is linked to higher rates of injury, illness and mortality. In addition, the experience of abuse or neglect, poor parenting and exposure to conflict or criminal activity can have substantial short and long term consequences for children.

In 2007, 29 children, their siblings or members of their family had some form of contact with Families SA in the three years preceding their death. Despite the reported increase in the number of notifications and substantiations of child protection cases both in South Australia and nationally (AIHW, 2007), this proportion (23%) of children or their families having contact with the welfare system prior to their death is approximately the same as the proportion in 2006 (CDSIRC, 2007). Seventeen of these children were male and ten were Aboriginal. The over-representation of Aboriginal

children and families who have contact with the child protection systems is well-documented. Hirte et al. (2008) in a longitudinal analysis of South Australian child protection data reported that Indigenous children were more likely to be the subject of a child protection notification, investigation and substantiation and were more likely to be the subject of more serious notifications of abuse.

Families SA – Remoteness and Disadvantage

Half (13) of the 27 children or their families who were resident in South Australia and had contact with Families SA in the three years prior to their death came from the most disadvantaged areas of the State.

Fourteen children and their families were usually resident in metropolitan areas; seven resided in metropolitan areas of greatest disadvantage. Six resided in regional areas and seven were resident in remote or very remote areas of the State.

Families SA – Usual Residence

Two children were normally resident in the Northern Territory, but had contact with the child welfare system in South Australia. Both children were Aboriginal.

Families SA – Age and Cause of Death

Table 6 identifies the causes of death by age for this group of children. Eighteen children died in the first year of life, primarily from illness or disease. Five children died from undetermined causes and an equal number died from external causes, three of which were transport deaths.

Table 6: Deaths of children and contact with Families SA, by cause of death and age, South Australia 2007*

Cause of Death	<1 year	1-4 years	5-9 years	10-14 years	15-17	Total
Illness or Disease	12	4	1	1		**18**
Undetermined Causes	5					**5**
External Causes		2		1	2	**5**
Causes not yet known	1					**1**
TOTAL	**18**	**6**	**1**	**2**	**2**	**29**

** Source: Child Death and Serious Injury Review Committee database*

Families SA – Illness or Disease

Nine very young infants died from conditions occurring in the perinatal period, which included conditions such as extreme prematurity and infants affected by conditions occurring in utero. Four children of varying ages died from malignant forms of cancer and three young children died from congenital or chromosomal abnormalities.

Families SA – Undetermined Causes

Five infants under one year of age died suddenly and unexpectedly from undetermined causes. The circumstances of these deaths once again reinforce the Committee's recommendations in previous years concerning the need to ensure that all parents understand the importance of safe sleeping environments for infants, and if necessary are assisted to provide such an environment for their infant.

Families SA – External Causes

Five children died from other causes including transport incidents and other unintentional injury deaths.

Families SA – Nature of Contact

Nineteen children who died had at least one child protection notification in the past three years; the majority had multiple notifications to Families SA. For very young infants, these notifications were for older siblings; with increasing age notifications were more likely to involve the child or the child and their siblings. Some very young parents had themselves been the subject of notifications in the previous three years.

Eighteen cases involved requests for financial assistance. In five cases, these requests were the only contact with Families SA. For children who died from illness or disease, these requests were sometimes specifically related to assistance with the care of that child.

The issues most frequently arising in the course of notifications were issues involving the alleged neglect of the child or their siblings, alleged domestic violence between the parents/partners of the child and concerns about the impact of parental alcohol or drug use on their ability to care for children. Issues such as frequent changes in accommodation and the mental health of parents were also raised. Other issues that reflected concerns about parenting included the younger age of parents (less than 25 years old), parents' own history of abuse or neglect and/or of guardianship. For children who died from illness or disease, some notifications related to concerns about the parents' care or behaviour whilst

the child was in hospital. These issues rarely occurred in isolation and most notifications identified at least two or three issues of concern.

These issues reflect well established factors that are known to contribute to environments that have an adverse impact on the health and wellbeing of children.

Families SA – Aboriginal Children

The over-representation of Aboriginal children in the child protection system has been referred to earlier in the report. Ten Aboriginal children, their siblings or family members, had contact with Families SA in the three years before their death. Seven of these children died from illness or disease, two from undetermined causes and two from external causes. Half of these children were very young infants and the causes of their deaths are considered in Section 2.3.3.

There have been two major reports into child protection issues, particularly sexual abuse in Indigenous communities in the last two years which address the broader factors that have a bearing on abuse and neglect of children. *Ampe Akelyernemane Meke Mekarle*, the *Little Children are Sacred* Report, was released by the Northern Territory (NT) Board of Inquiry in April 2007. This report addressed many of the issues associated with abuse and neglect with which the Committee has dealt: poverty, inadequate housing, ill health, lack of basic amenities and services, and drug and alcohol problems. The Report stressed the critical nature of education in health, and of worker support and inter-agency collaboration in services.

In South Australia the *Children on Anangu Pitjantjatjara Yankunytjatjara (APY) Lands Commission of Inquiry into Sexual Abuse*, (the "Mullighan" Inquiry) was released in April 2008. The 46 recommendations addressed service issues, such as placing social workers in close contact with schools, that Child and Adolescent Mental Health Services (CAMHS) and Families SA review the protocols that govern their working relationship, that the staff of the Children's Protection Services at the Women's and Children's Hospital be increased and that children be able to access drug rehabilitation programs. Other recommendations focussed on housing and education provision.

The Committee is in a position to review over time the impact of these initiatives on reducing the number of deaths of Aboriginal children.

2.4 DEATHS DUE TO ILLNESS OR DISEASE

In 2007, the deaths of 80 children were attributed to illness or disease. These deaths comprised nearly two thirds (65%) of the total number of deaths in this year. In contrast 56% of deaths in 2006 were attributed to these causes (CDSIRC, 2007).

Illness or disease includes deaths from infections, cancer, nervous system diseases such as epilepsy; and from circulatory system diseases such as heart disease. This category also includes deaths arising from conditions associated with pregnancy and birth, and congenital conditions or chromosomal abnormalities.

Conditions occurring in the perinatal period were the main cause of death, with 40 infants less than one year old dying from these causes. The majority of deaths from illness and disease occurred in infants less than one year old (66 deaths); with 50 deaths occurring in the first 28 days of life.

Over two-thirds of the children who died from illness or disease were male (55 deaths). Table 7 gives further details concerning the causes of deaths from illness or disease and the numbers of males and females dying from each cause. Age groups have been collapsed across causes where numbers were extremely small.

2.4.1 Illness or Disease – Usual Residence

Six children who were not normally resident in South Australia died from illness or disease. All had been transferred to major South Australian hospitals for further medical care prior to their death.

2.4.2 Illness or Disease – Aboriginal Children

Eight Aboriginal children died from illness or disease. This number represents two thirds of the deaths of Aboriginal children in 2007. The poorer health of Aboriginal children compared to non-Aboriginal children is widely documented and remains an area of ongoing concern to the Committee (see Section 2.3.3 for further details).

*Table 7: Deaths of children due to illness or disease by sex and age, South Australia 2007**

Cause of Death	<1 Year			1-4 Years			5-17 Years			Total
	F	M	Sub Total	F	M	Sub Total	F	M	Sub Total	
Certain conditions originating in the perinatal period	12	28	40							40
Congenital malformations, deformations and chromosomal abnormalities	8	10	18		2	2				20
Cancer				1	1	2	1	4	5	7
Diseases of the nervous system		2	2		3	3	1		1	6
Endocrine, nutritional and metabolic diseases				1	1	2		1	1	3
Diseases of the circulatory system	1		1		1	1				2
Certain infections and parasitic diseases								1	1	1
Diseases of the digestive system								1	1	1
TOTAL - FEMALES & MALES (deaths per age group)	**21**	**40**		**2**	**8**		**2**	**7**		
TOTAL (deaths per age group)			**61**			**10**			**9**	**80**

** Source: Child Death and Serious Injury Review Committee database.*

2.4.3 Illness or Disease – Age

Children Aged Less Than 1 Year

Sixty-one children died in this age group; 50 deaths occurred in the first 28 days of life. Forty infants were male. The main causes of death were associated with conditions occurring in the perinatal period (40 deaths) or from congenital or chromosomal abnormalities (18 deaths). Only three deaths in this age group were associated with other causes including nervous and circulatory system diseases.

Children Aged 1 – 4 Years

Ten children aged 1– 4 years died from illness or disease. Eight were male. Three children died from causes associated with nervous system diseases such as cerebral palsy and epilepsy and five died from other causes including congenital or chromosomal abnormalities.

Children Aged 5 – 17 Years

Of the nine children aged 5 –17 years, seven were male. Five children in this age range died from various forms of cancer, including malignant cancers of the brain, spinal cord or of connective tissue.

2.4.4 Illness or Disease – Cause of Death

Conditions Occurring in the Perinatal Period

Table 7 indicates that 40 deaths were attributed to conditions occurring in the perinatal period. All deaths from these conditions occurred in infants less than one year of age. The most common causes of death in 2007 were disorders related to the length of gestation and growth of the foetus which may result in low birth weight, short periods of gestation and extreme prematurity (12 deaths). Eight infants died from respiratory and cardiovascular disorders specific to the perinatal period and seven deaths were related to maternal conditions or complications during pregnancy or at birth (seven deaths). Six infants died from conditions associated with intracranial haemorrhage and three infants died from infections specific to the perinatal period.

Twenty-eight of these infants were male and 35 infants died within the first 28 days of life. Twenty-three infants died within the first day of life.

Congenital Malformations, Deformations and Chromosomal Abnormalities

Twenty children died from these conditions. The most common causes of these deaths included congenital malformations of various body systems (12 deaths) such as malformations of the nervous system (four deaths) and the circulatory system (three deaths). Four infants died from conditions associated with chromosomal abnormalities.

Fourteen infants died within the first 28 days of life and all deaths occurred in the first four years of life. Twelve infants were male.

Cancer

Seven children died from malignant cancers. Five children ranged in age from 5 –17 years and two were aged 1 – 4 years. Five children were male.

Diseases of the Nervous System

Six children died from diseases of the nervous system. Five children were less than four years of age and five were male. Two children died from conditions associated with cerebral palsy of infants. Other conditions included epilepsy and degenerative diseases of the nervous system.

Infections

Three children died from infections. Two children died from central nervous system infections such as meningitis. One child died from a respiratory infection.

2.5. DEATHS FROM EXTERNAL CAUSES

In 2007 the deaths of 31 children were attributed to external causes, accounting for 25% of the total number of deaths in this year. In four cases the cause of death is not yet known. These cases may be attributed to either external causes, illness or disease. In 2006, 34.6% of children died from external causes (CDSIRC, 2007).

As in previous years (CDSIRC, 2006, CDSIRC, 2007), the highest proportion of children died in transport incidents and this was the leading cause of death for both sexes (see Table 8). In 2007, eight children died in accidents of various kinds (including one infant who died from accidental asphyxia) and four children drowned. Very small numbers of children (two or less) died from fatal assault or from health system related adverse events. In 2007, no child or young person died as a result of suicide, in fire-related incidents or from fatal neglect.

Nearly three quarters of the children dying from external causes were male (71%); with half of these males dying in transport incidents. A greater number of males also died in unintentional injury related accidents of various kinds and small numbers of children of both sexes drowned.

The following sections provide further details concerning transport, accident and drowning deaths.

2.5.1 Transport

Transport deaths include deaths arising from incidents involving a device used, or designed to be used for, moving people or goods from one place to another. These incidents may involve pedestrians and include railway or water transport. Incidents may occur on public highways or places other than a public highway.

Sixteen children died in 15 transport incidents in 2007. Eleven of these children were male. These deaths accounted for 13% of the total number of deaths of children from all causes in 2007, and for 52% of the deaths from external causes. In 2006, 9.2% of the total number of deaths of children from all causes were transport deaths and these deaths accounted for 26.8% of deaths from external causes (CDSIRC, 2007). In all three reporting years; 2005, 2006 and 2007, transport deaths have been the leading external cause of death for children in South Australia and have accounted for a significant number of deaths overall.

Transport – Circumstances

Fourteen of the 15 incidents involved land-based transport (this includes motor vehicles, buses and trains); 11 involved motor vehicles. One child died as a passenger when a boat collided with a stationary

Table 8: Deaths of children from external causes by sex, South Australia 2007*

Classification	Number of deaths Females	Males	Total	%
EXTERNAL CAUSES				
Transport	5	11	16	51.6
Accidents	2	6	8	25.8
Drowning	2	2	4	13.0
Health-system related		2	2	6.5
Fatal assault	1		1	3.2
TOTAL	**13**	**22**	**31**	**100**
Cause Not Yet Known	3	1	4	

** Source: Child Death and Serious Injury Review Committee database.*

Table 9: Transport deaths by circumstance and age, South Australia 2007*

	0-4 Years	10-17 Years	Total
Pedestrian		3	3
Passenger	3	6	9
Driver		4	4
TOTAL	**3**	**13**	**16**

** Source: Child Death and Serious Injury Review Committee database.*

object. Table 9 shows the numbers of incidents across two broad age groups and indicates if the child was a pedestrian, passenger or driver.

Nine of the sixteen children who died were passengers, four were drivers and three were pedestrians. Children at greatest risk of transport deaths are aged 15 –17 years; 10 of the 16 deaths were children in this age range.

Of the fourteen land-based transport incidents, only four occurred in metropolitan areas; 10 incidents occurred in rural (eight) or remote (two) areas of the State. Incidents were evenly distributed between daytime (8.00 –17.00) and evening/late evening, early morning (17.00 –8.00) times. Ten of the 14 incidents occurred from Friday through to Sunday.

Transport – Children Aged 0 – 4 Years

The three deaths of children four years and younger, which included the water transport death, occurred when the child was a passenger and in the company of their parents. Key concerns arising from the circumstances of these deaths were the issues of the location of the child and the non-use of appropriate restraints.

Transport – Children Aged 10 – 17 Years

Thirteen young people aged 10 –17 years died in transport incidents.

Drivers

In the four incidents involving a young person as motor vehicle driver, three involved collision with a stationary object where the young person was the sole occupant of the vehicle. Information available suggested that excessive speed and inexperience (e.g. probationary license recently acquired) were key factors in the circumstances leading up to or at the time of the incident. It was noted in the Committee's previous report (CDSIRC, 2007) that single vehicle incidents have been shown to occur more frequently amongst young, inexperienced drivers (Gonzales et al. 2005). In Australia in 2005, amongst children and young people in three age groups (12 –14 years, 15–17 years and 18–24 years), drivers injured in a motor vehicle collision with a fixed or stationary object and also passengers injured in a motor vehicle collision with a fixed or stationary object were the most common causes of transport deaths (AIHW, 2008). Smart et al. (2005) reported that young males in particular engage in some level of unsafe driving behaviour; with speeding and driving whilst fatigued being most commonly reported by young people.

Passengers

In five of the six incidents involving young people as motor vehicle passengers, loss of driver control led to collision with another vehicle, or a stationary object, or to the vehicle rolling over. In four of these six incidents, the driver was also a young person, in two incidents an unlicensed driver. Williams (2003) has reported that the crash risk for 16 year old drivers increases exponentially with one, two or three or more passengers.

In two incidents where young people were passengers, it was reported that a seat belt was not worn. The Committee awaits further information concerning all other incidents, to determine whether the young person, either as a passenger or driver, was wearing a seat belt.

Pedestrians

The circumstances in which children died as pedestrians were varied but the Committee considered the issue of the safety of pedestrians alighting from public transport as particularly relevant.

Alcohol and Drug Use

The presence of either alcohol and/or cannabis was detected in only three of the 13 deaths involving young people aged 10 –17 years. Two young people were motor vehicle passengers and one was a pedestrian.

Transport – Comments

In 2007, transport deaths remained the leading external cause of death for children in South Australia and the third most common cause of death from all causes. The proportion of transport deaths compared to all causes was slightly higher than in previous years (2005: 11%; 2006: 9.2%; 2007: 13%).

Young people aged 15 –17 years remain at greatest risk of death in transport incidents. In 2006, six of the ten transport deaths (60%) were of young people aged between 15 –17 years, with three young people as drivers. In 2007, the same percentage of transport deaths was of children in this age group (10 of the 16 deaths) with four young people as drivers. Young people are consistently over-represented in transport

deaths, especially those involving motor vehicles, and transport deaths continue to be the leading cause of death for children in this age group, compared with deaths from causes such as suicide, illness or disease. Speed and inexperience continue to be the major contributors to the high level of involvement of young people in motor vehicle incidents.

The circumstance of these deaths raised the following prevention issues:

- ***Alighting from public transport*** – information provided by the Motor Accident Commission suggested that a number of initiatives were relevant to issues of young people's safety whilst alighting from public transport, including school based education programs, pedestrian campaigns and speed limit reductions. The Committee is seeking to clarify the extent to which these campaigns focus on secondary school students and extend into country areas of South Australia.
- ***Enhancing the safety of young people*** – initiatives reported on previously (CDSIRC, 2007) included the establishment by the Minister for Transport of a Youth Road Safety Task Force (March 2007) and the three-year evaluation of the graduated licensing scheme. The Youth Road Safety Task Force is currently working though a number of road safety issues as they relate to young road users, and the Department for Transport Energy and Infrastructure is currently undertaking the evaluation of the graduated licensing scheme.
- ***Child restraints*** – proposed changes to national legislation concerning the use of age-appropriate child restraints by children up to seven years of age are still progressing through State parliament.

2.5.2 Accidents[7]

Eight children died from unintentional injuries sustained in accidents in 2007, accounting for 6.5% of the total number of deaths. Six of the children who died were male. In 2006 five children died from unintentional injuries, accounting for 4% of the total deaths (CDSIRC, 2007).

Although only one death was attributed to accidental asphyxia in 2007, the circumstances surrounding three deaths from 'undetermined' causes were suggestive of such a cause, but the weight of evidence was insufficient to attribute the death to this cause. Four deaths were attributed to this cause in 2006. The decision to attribute a death to accidental asphyxia has usually been made following careful examination of the infant's medical history, the circumstances of the death, the autopsy results, and through the exclusion of other possibilities (Byard & Krous, 1999). These three deaths are considered in Section 2.6.4.

Accidents – Children Aged 0 – 4 Years

Five children died in this age group. The cause of death for four of these children was either hanging or asphyxia. The fifth died from head injuries sustained when an object fell on the child. All deaths occurred in the child's home. Although the temporary absence of supervision by a parent or carer played some part in these deaths, childhood injuries are known to be the result of many different causes including the design of a product, the age, behaviour and temperament of the child, and the environment in which the incident occurred. For example, products such as looped blind or curtain cords pose a risk to children under three years who can become entangled in these cords, especially if their cot is placed near a curtained window.

In relation to one of these deaths, Jensen et al. (2008) has recently documented the hazards that shopping trolleys can pose for young children when play is unsupervised. Combrinck and Byard (2008) have outlined the circumstances concerning another of these deaths. The 'trough' effect caused by the unsupported canvas base of the cot in combination with bolsters used to position the infant and soft bedding resulted in accidental asphyxiation.

Although parents generally perceive homes to be relatively safe places for young children (Pollack-Nelson & Drago, 2002), the greatest risk of injury is their home environment (Rivara, 1995). In four incidents it would appear that parents considered the child was safe whilst 'playing' in or around the home and the incident leading to their death was not observed by siblings or playmates.

Accidents - Children Aged 10 – 17 years

Three young people died in this age range. The causes of death for these young people included head injury and accidental poisoning. All three of these deaths

[7]This section reports on accidental deaths excluding those attributed to transport incidents, fires and drowning.

occurred outside of the young person's home and in the company of peers. The circumstances in two cases suggested that the key elements of increasing independence, combined with the absence of adult supervision and risk-taking behaviour were factors in these deaths. One young person, whilst in the company of friends, fell from the roof of a building upon which they were climbing. Another young person, also in the company of peers, deliberately ingested a toxic substance. No adults were present when the incidents leading to these deaths occurred, and peers were responsible for contacting emergency services.

Accidents – Comments

The circumstances of these deaths raise the following prevention issues:

- ***Blind Cord Safety*** – in South Australia there are no legislative requirements with regard to the manufacture or installation of blind cords that would ensure they pose the least risk to infants and children. Regulations, including those for blind cords, are currently being reviewed by each State and Territory with the aim of introducing them nationally in a uniform format. These regulations, which are predicted to be in place by 2011, will address issues such as installation standards for looped cords and the use of fixed tensioning devices.
- ***Environmental hazards*** – the Committee corresponded with Kidsafe SA Inc regarding the circumstances of the deaths of several young children where the child's developmental age, parental supervision and environmental hazards were common features in the circumstances of these deaths. Kidsafe SA Inc indicated its intention to undertake a dedicated public campaign highlighting these issues.

2.5.3 Drowning

There were four drowning deaths in 2007; two children were male and two were female. Drownings accounted for 3.2% of the total number of deaths for 2007. A similar number of deaths occurred in 2006 (CDSIRC, 2007).

Drowning – Circumstances

These deaths occurred in a variety of circumstances. Of the deaths of two infants aged less than one year, one died in a domestic swimming pool and the other died when a stroller rolled into a river. In the course of a short stay with his family on a moored houseboat, a young child under six years drowned when he fell from the houseboat into a river. This child was not wearing a life-jacket at the time. A young person drowned when, in the company of a friend, he waded into the sea. The condition of the water at the time was described as rough and there was a suggestion that there was a significant current in the vicinity of the incident.

Drowning – Comments

The circumstances of these deaths raise the following prevention issues:

- ***Supervision and vigilance*** – there is a need for the careful supervision of children in and around any body of water. Parents and carers should exercise extreme vigilance and ensure that the person responsible for supervision is identified.
- ***Domestic swimming pools*** – drowning incidents in domestic swimming pools are a leading cause of death and of persisting morbidity in Australian children eight years and under. Swimming pool isolation fencing and self locking/latching gates have been shown to prevent domestic drownings. Once installed both the fences and gates need to be safety audited at regular intervals.
- ***Prams and strollers*** – there have been recent alterations to the Australian Standard for Prams and Strollers requiring one or more braking devices and a wrist strap, which may assist in preventing deaths in similar circumstances.
- ***Life jackets*** – small children in or around boats need appropriately sized life jackets and careful supervision to ensure their water safety.
- ***Swimming, boating and alcohol or drug use*** – the Committee concurs with other agencies that health promoting efforts should be sustained to advise the community that risk-taking behaviour such as using drugs and alcohol in conjunction with swimming or boating can be a potentially fatal combination.

2.6 SUDDEN UNEXPECTED DEATHS IN INFANCY

Sudden unexpected death in infancy (SUDI) has been described as an 'umbrella' term that is used for all sudden unexpected deaths of infants under one year of age.

2.6.1 The Definition of 'Sudden Unexpected Death in Infancy'

The SUDI definition used to classify deaths in this report is:

Infants from birth to 365 completed days of life whose deaths:

1. were unexpected and unexplained at autopsy;
2. occurred in the course of an acute illness that was not recognised by carers and/or by health professionals as potentially life-threatening;
3. arose from a pre-existing condition that had not been previously recognised by health professionals; or
4. resulted from any form of accident, trauma or poisoning.[8]

The Definition of Sudden Infant Death Syndrome (SIDS)

It is recognised that SIDS does not represent a single disease entity but is a complex amalgam of predisposing factors, external stressors and underlying vulnerabilities (Byard & Krous, 2003). In a recent article however, Byard and Marshall flagged ongoing inconsistencies in SIDS definitions used by researchers. To highlight these inconsistencies they demonstrated that over half of a series of 50 papers about SIDS, in the peer-reviewed literature in 2005 had 'either not specified the definition of SIDS that was being used, or had used a non-standard definition.' (Byard & Marshall, 2007, p.454).

The criteria used to determine a death attributed to SIDS in this report continues to be the 'San Diego' definition proposed by Krous et al. (2004). This definition can be found in Section 5.1.2, Table 11.

Using the definition of SUDI, and the San Diego definition of SIDS, sudden unexpected deaths of infants fall into one of two categories:

- explained deaths of infants which incorporate criteria 2. to 4. of the above definition; and
- unexplained deaths of infants – accounted for by criteria 1. of the CESDI definition and incorporating the San Diego definition of SIDS.

2.6.2 SUDI Deaths in South Australia, 2007

Eighteen infants under one year of age died suddenly and unexpectedly in 2007. Table 10 gives an indication of the causes of death for these infants. Ten infants were male and two were Aboriginal.

Six infants died from explained causes, including illness or disease and transport deaths. Eight infants died from unexplained causes. The post mortem and/or the coronial finding attributed each of these deaths to an undetermined cause. There were no deaths attributed to SIDS in 2007. Using the San Diego definition of SIDS, the eight undetermined deaths fall in the category of 'unclassified sudden infant death' (USID).[9]

At the time of writing the cause of death for four infants who died suddenly and unexpectedly was still

Table 10: Death of children attributed to SUDI, South Australia 2007*

SUDI Classification	Number of deaths		
	<28 Days	<1 Year	Total
EXPLAINED			
Illness or Disease		2	2
Transport		2	2
Other Explained Causes (accidental asphyxia, accident, drowning or fatal assault)		2	2
Explained Death -TOTAL		**6**	**6**
UNEXPLAINED			
Undetermined	1	7	
Unexplained Deaths - TOTAL	**1**	**7**	**8**
TOTAL	**2**	**16**	**18**
Cause Not Yet Known -	1	3	4

**Source: Child Death and Serious Injury Review Committee database*

[8]This definition of SUDI is a modified version of the definition proposed by Fleming et al. (2000). See Section 5.1.2 for further details concerning this definition

[9]The differentiation between USID and SIDS Category II can be problematic, even with access to both anatomical and circumstantial information concerning a death (Byard 2008, personal communication).

not known. These deaths may be attributed to explained or unexplained causes.

In comparison, 20 children died suddenly and unexpectedly in 2006, with 11 of these deaths attributed to explained causes, three to SIDS and six to undetermined causes (CDSIRC, 2007). The small proportion of deaths attributed to 'cause unknown' in 2007 makes any comparison across these two years inadvisable.

With regard to the absence of death attributed to SIDS, d'Espaignet et al. (2008) analysed trends in the reporting of sudden infant deaths across Australia from 1980 to 2002. They demonstrated a decline in the SIDS mortality rate. Based on further analysis they attributed this decline to the 'Reduce the Risks' campaign conducted in Australia in 1991. With regard to diagnostic transfer, they noted a significant increase in the categorisation of deaths as 'unascertainable' following this campaign. In South Australia, Byard (2001) noted an increase in the diagnoses of accidental asphyxia and 'undetermined' causes of death in the same time period. In both instances however, these increases were too small to account for the substantial decline in the rates of infants dying from SIDS. The analysis undertaken by d'Espaignet and colleagues did not support the hypothesis of a 'postponement' of death from infancy to early childhood years. Again, although these phenomena are of interest, the sample size in relation to the past three years of South Australian data is not large enough to confirm or disprove these trends.

2.6.3 SUDI *Explained* Causes

Six infants, ranging in age from eight to 50 weeks, died suddenly and unexpectedly from 'explained' causes. There were equal numbers of males and females. In relation to the CESDI criteria for SUDI, one child died in the course of an acute illness that was not recognised by parents as potentially life-threatening; another child's death arose from a pre-existing condition that had not been previously recognised by health professionals, two were transport deaths and two died in other accidental circumstances.

These deaths are also included in relevant sections of the report: deaths from illness or disease (two), transport deaths (two) and accidents (two).

Despite the various causes of death included in the explained category of deaths, the CESDI study (Fleming et al. 2000) identified a number of risk factors associated with explained deaths compared with a group of surviving infants matched for age. These factors included young age at death (<1 month); death during winter months; lower birth weight and shorter gestation; illness of the infant in the 24 hours before death; younger age of mothers; socioeconomic disadvantage (such as poorer parental education or low income); and maternal smoking. A much larger sample would be required to recognise the emergence of these factors than that provided by the numbers of infants in South Australia dying in any one year. Descriptive information concerning these deaths is given below.

SUDI Explained Causes – Significant Factors

Illness – the two infants dying from illness or disease were both reported to have been unwell prior to death, but with symptoms that were not of sufficient concern to prompt parents or carers to seek medical attention.

Time of year – deaths occurred through the months of March to October.

Parental age - Mothers' ages ranged from 19 - 36 years.

2.6.4 SUDI *Unexplained* Causes

Eight infants died from unexplained causes in 2007, accounting for 6.5% of the total deaths in this year. All of these deaths were attributed to an undetermined cause. In 2006 nine infants died from unexplained causes, accounting for a similar percentage (6.7%) of the total number of deaths in that year (CDSIRC, 2007).

Infants dying from undetermined causes ranged in age from three to 26 weeks. Three of the seven infants were female; two of the seven were Aboriginal. The mothers of these infants were aged 18 –33 years.

SUDI Unexplained – Undetermined Causes

The circumstances in which these eight infants died were varied. Post mortem information was usually sufficient to exclude SIDS: however the weight of evidence was not sufficient to attribute the death to any other cause. Three deaths were suggestive of accidental asphyxia or overlaying associated with sharing the parental bed. Another three deaths appeared to be circumstantially related to the temperature of the room and the infant's clothing, bedding or both.

The diagnostic issues involved in determining the cause of death in infants have been referred to in previous reports (e.g. Byard & Jensen, 2007), in particular the problems associated with determining whether an infant has died from accidental or inflicted asphyxia or SIDS. A full investigation which integrates aspects of the infant's history, circumstantial evidence gathered from witness statements and police investigations and autopsy findings may still not be sufficient to fully resolve questions concerning the mechanism of death, resulting in a finding of 'undetermined' or 'unascertained' causes.

Undetermined cause – previous Illness

Six of the eight infants had no complications at birth or in the post-natal period. Minor concerns such as reflux, colic, teething problems and oral thrush were reported. Two infants were born prematurely and one had ongoing health problems associated with congenital abnormalities. Two infants were reported to be 'underweight' at the time of their death.

Undetermined cause – month, time and duration of last sleep

Deaths occurred from March through to October. Several infants were found in the early morning having been placed to sleep after feeding several hours earlier. Time elapsed between being placed to sleep or checked by parents and being found, ranged between one and six hours. In two cases the time elapsed between being placed to sleep after feeding and being found was greater than ten hours.

Undetermined cause - sleep position, bedding and sleeping environment

The majority of infants had been placed to sleep on their back. Only two infants had been placed to sleep in an infant cot. Three were co-sleeping with parents in the parental bed; other infants had been last placed to sleep in a stroller or bean bag. Over-heating or under-heating of the room was a factor in three deaths, with infants heavily dressed or covered, or without sufficient clothing and covering.

Undetermined Causes – Comments

The circumstances of these deaths raise the following prevention issues, mainly concerning sleeping environments:

- co-sleeping with adults, who may have consumed alcohol or drugs or were unduly fatigued;
- a soft mattress or water-bed and/or pillows or bolsters in either the infant's or the parents' bed;
- over or under-heating of the room, in addition to over or under-dressing and bed coverings used, raising the possibility of hypo or hyperthermia;
- feeding of infants in the parental bed and parental fatigue; and
- the length of time elapsing between being placed to sleep and being checked by the parent or carer.

The circumstances of each case of undetermined death highlighted the vulnerability of infants to many different aspects of their sleeping environment and the critical role of parents in understanding and practising safe sleeping arrangements for their infant. In its previous reports (CDSIRC, 2006; CDSIRC, 2007) the Committee made recommendations concerning these issues. These recommendations remain relevant to the deaths described here.

2.6.5 The Findings of the State Coroner, June 2008

In June 2008 the State Coroner released findings in relation to the deaths of five infants who died suddenly and unexpectedly after they had been placed to sleep 'in circumstances that carried an intrinsic risk of asphyxiation'. The Coroner endorsed the recommendations made by the Committee in its previous two annual reports and recommended that the Ministers for Health and for Families and Communities provide the funding for the implementation of these recommendations. The Coroner made further recommendations concerning the development and promulgation of a consistent set of guidelines for parents, carers and health professionals that would reduce the risk of sudden unexpected death in infants. The Committee will monitor the implementation of these recommendations in subsequent Annual Reports.

Section 3

In-depth Review of Child Deaths 2007-2008

Section 3: In-depth Review of Child Deaths

3.1 COMMITTEE'S POWERS AND FUNCTIONS

Part 7C of the Act gives the Committee authority to undertake the in-depth review of cases of child death and serious injury. Compared to similar committees in other States and Territories, the powers and functions of the Committee are unique for a number of reasons:

- The Committee has the dual functions of keeping a database of the circumstances and causes of child deaths and of conducting in-depth reviews. In other Australian jurisdictions these functions have been split between other organisations and review committees.
- The Committee's focus is not only the deaths of children 'known' to the child protection system, but also includes any child who may have died from actual or suspected abuse or neglect; children in detention; children under the care and protection of the Minister; or cases referred by the Coroner.
- The Committee considers deaths where the circumstances suggest that systemic changes could be made to prevent similar deaths or serious injuries. e.g. deaths associated with product safety such as inflatable beds, strollers or water tanks.
- The Committee also has a legislative responsibility for the review of serious injury. No other child death review committee in Australia undertakes this function.

3.2 IN–DEPTH REVIEW PROCESS

The Committee has developed processes for the screening and review of child deaths. These processes are evaluated and reviewed each year.

3.2.1 Eligibility

Diagram 1 (Section 5.1) outlines the decision pathway for determining which cases screened by the Committee will be considered for in-depth review. Information concerning the death of a child is considered by one of the Committee's four screening teams. In general, a screening team will determine whether the cases that it has screened should be presented to the full committee to be considered for in depth review.

Under the Act there are two criteria for considering whether a case is reviewable. These criteria are outlined in Section 1.2 'Legislation'.

In accordance with Section 52S (4) of the Act, prior to undertaking a review the Committee must ensure that its review processes do not compromise criminal or coronial investigations. Criminal investigations are considered to be concluded once any person involved in the death or serious injury of the child has been sentenced, or once South Australian Police have determined they have no further interest in the matter. Investigations conducted by the Coroner are considered to have concluded when the Coroner has made a finding into the cause of death or a coronial inquiry has been completed.

3.2.2 Reporting Requirements

The Committee submits a report to the Minister at the conclusion of each in-depth review. This report provides details of the case that has been reviewed including a synopsis of all relevant documents and records and the Committee's comments on the information contained in these documents. The report contains the Committee's recommendations regarding systemic issues that may contribute to the prevention of similar deaths or serious injuries.

3.3 IN–DEPTH REVIEW ACTIVITIES

Since its establishment by legislation in February 2006, the Committee has continued to identify cases for in-depth review. All deaths have been screened by one of the Committee's four screening teams (see Figure 1). In some instances the screening team has requested further information prior to making a decision regarding in-depth review. In other cases, in-depth review cannot proceed until criminal or coronial investigations have been finalised.

3.3.1 Cases Pending Further Information

The majority of these cases are deaths attributed to illness or disease. The medical screening team maintains a high level of scrutiny regarding the circumstances of the deaths of children from these causes, especially where children have received health system services, have had complex conditions requiring a high level of care, or where there has been an interface between medical, welfare and other systems. The medical screening team will attribute the death of a child to an 'adverse health-system related event' if they consider that the circumstances indicate that health system issues may have played some part in the circumstances of the death, based on the records available at the time of screening.

The majority of these cases may not proceed to in depth review, but the issues arising in the course of the medical screening team's review of a case include:

- supervision of inexperienced staff;
- functioning of medical equipment and technologies;
- provision of adequate standards of medical care;
- provision of support to parents for the care of children with complex medical conditions;
- adequate discharge planning; and
- adequate and appropriate communication between health staff, with staff from other agencies and/or with children and their families or carers.

Some transport deaths are also included in this group where the transport screening team has flagged cases which have the potential for in-depth review but are awaiting information such as the Major Crash Report.

3.3.2 Cases Pending Completion of Investigations

Sixteen cases are currently awaiting the conclusion of criminal investigations including prosecution or sentencing, or coronial investigations. These include cases of fatal assault or neglect, and deaths attributed to undetermined causes or accidental asphyxia.

Cases of Neglect

The Committee was concerned about the number of cases it reviewed where children died from disease, illness or external causes and the surrounding circumstances indicated substantial neglect in their households. The Committee was aware of many families for whom there were a multitude of highly complex factors that contributed to the neglect of children. The Committee considered there were a number of ways in which systems could be put into place to protect these children and provide them with a better quality of life. These include:

- earlier identification of families who are significantly disadvantaged and vulnerable;
- a comprehensive assessment of the needs of the child and the family, and of evidence-based risk to the child's development and wellbeing;
- a commitment to engage the family and to provide a full range of needed services, for an extended period of time if indicated;
- agency commitment to excellent case management; and
- consideration of the interface between State and Australian Government services.

The Committee will discuss these issues with the Minister for Families and Communities at its July 2008 meeting. The Committee expects to make recommendations to the Minister, based on the review of these cases, once coronial and or criminal investigations have been completed.

Time Elapsing Before Review

The length of time elapsing between identification of a case for review and availability of all documents is of continuing concern to the Committee. Because cases marked for review must await completion of criminal and or coronial investigations, significant periods of time may elapse before the Committee can undertake its reviews. These delays may exceed two years from the date of death in cases where criminal prosecutions are not finalised.

Where reviews cannot be undertaken for several years the Committee's capacity to make timely recommendations for systemic change that might prevent similar deaths is compromised. The Committee will be developing further protocols to deal with this problem.

3.3.3 Cases Under Review

Eleven cases are currently under review by the Committee. The majority are part of a 'group' review of cases of suicide that have occurred in South Australia since 2005. These reviews will be submitted to the Minister in 2008-2009.

3.3.4 Completed Reviews

Four reviews have been submitted to the Minister in this reporting period. The Committee is waiting on responses to its recommendations about three of these reviews.

3.4 RECOMMENDATIONS ARISING OUT OF IN–DEPTH REVIEWS

In June 2008 the inaugural national meeting of Child Death Review teams responsible for the in-depth review of child deaths was held. The teams identified common features arising in their reviews including:

- safe sleeping;
- chronic neglect;

- parental capacity issues associated with alcohol and drug use, mental health and domestic violence;
- families subject to multiple disadvantages – especially those with young infants;
- vulnerable adolescents;
- Indigenous children;
- children with complex needs, including disability; and
- notification of unborn children.

Practice issues included:

- interagency communication and information sharing;
- risk assessment; and
- accurate record keeping.

Several of these issues were reflected in the recommendations that arose from the in depth review of cases in this reporting period. Other issues were similar to those arising from reviews undertaken in previous years.

3.4.1 Recommendations Concerning Aboriginal Children

With regard to the death of an Aboriginal child the Committee noted the increasing alienation of this child from their community and the potential role that hearing loss may have had in this process. It also noted a lack of availability or access to services in remote and very remote areas that might have better supported such children, and their families and communities. In relation to this death the Committee recommended that:

- Aboriginal children are entitled to the same level of education, health and welfare services as children living in other areas of the State;
- there should be a comprehensive plan to address the health of all children on the Anangu Pitjantjatjara Yankunytjatjara Lands (APY lands), with particular consideration given to the ways in which a reduction in the prevalence of chronic ear infections could be achieved; and
- children on the APY Lands have access to appropriate and regular mental health services.

3.4.2 Recommendations Concerning Children Under the Guardianship of the Minister

In relation to the death of a child under the Guardianship of the Minister, the Committee noted the benefits of a single, stable care arrangement with a committed carer. It also noted that processes such as a comprehensive case plan, were in place and these ensured that the needs of this child were met.

The Committee recommended that every child under the Guardianship of the Minister be given the opportunity to benefit from long term placement and a comprehensive, up-to-date case plan.

3.4.3 Recommendations Concerning Parenting and Multiple Disadvantage

With regard to the death of a young child where the parent responsible for the child's care was ill-equipped by reason of their background, education and experience to recognise how ill the child was, or to know how to respond appropriately to the child's needs, the Committee recommended that:

- all opportunities for parental education about the symptoms of illness in young children be identified and reviewed;
- where parental neglect has been a significant factor contributing to a child's death, Families SA ensure the accurate assessment of risk to other children in the deceased child's family who are subject to the same parenting arrangements;
- ongoing and sustained investment across government in policies and programs to meet the needs of multiply disadvantaged children before they become parents themselves, and that input be sought about such policies and programs from the Council for the Care of Children, South Australia;
- changes to legislation to permit the appropriate exchange of information between national bodies such as Centrelink with state welfare systems to ensure the protection and care of children; and
- Families SA ensure that its policies and practice reflect an understanding of the association between significant socioeconomic disadvantage and certain forms of child abuse and neglect.

3.4.4 Recommendations Concerning Product Safety

The death of an infant in an inflatable bed raised the general issue of the regulation of portable cots and beds. To address these concerns for infants' safety the Committee recommended that the Minister contact the Australian Competition and Consumer Commission (ACCC) and request changes to proposed

legislation concerning portable cots, and ensure it was aware of the inherent dangers to infants in the use of non-standard sleeping environments such as inflatable beds and cots.

3.5 MONITORING OF RECOMMENDATIONS

The Committee's process for monitoring the progress of its recommendations is:

- to forward recommendations to the Minister;
- for the Minister to seek responses from relevant portfolios and service providers; and
- for the Minister's department to collate responses and send them to the Committee.

The Committee received information from the Minister for Families and Communities in response to recommendations arising from reviews it had undertaken in both this and the previous reporting periods.

The Committee noted that the policies and procedures outlined in some responses were often comprehensive in nature, and if in place, should have prevented the circumstances associated with particular deaths from occurring. Little information however, was provided to indicate the ways in which these policies had been implemented and how their effectiveness had been evaluated. On at least one occasion, the Committee wrote to the Minister requesting more information about the implementation of policies and procedures by Families SA. The Committee will continue to look for evidence regarding the implementation and evaluations of effectiveness in the responses it receives.

A summary of recommendations and responses arising from the Committee's reviews is detailed in the following sections.

3.5.1 Recommendations Regarding Child Protection Practices

The Role of a 'Lead Agency'

The Committee recommended that a lead agency be designated to assume responsibility for planning, management and monitoring of all service delivery to a child and their family where multiple and complex needs exist (September 2007). Families SA indicated (June 2008) that they have existing and future strategies in place to address this issue. They provided details of these strategies which included case conferencing and family care meetings.

Domestic Violence

The Committee recommended integration of policies and procedures that acknowledge the impact of domestic violence on risks to the wellbeing of children (September 2007).

Families SA endorsed a domestic violence policy in December 2007 accompanied by procedures and guidelines to help staff implement this policy, including staff training and active participation in family safety meetings as part of the Family Safety Framework (June 2008).

Families SA Adverse Events Committee

The Committee expressed concern about the process and outcomes of Families SA Adverse Events Committee (AEC) reviews in terms of their timeliness and their ability to generate strategies to improve or strengthen service delivery and practice responses (August 2006, January 2007). The Committee continues to await information regarding the policies, practices and guidelines concerning the AEC.

Adequate and Appropriate Resources

The Committee identified gaps in service provision outside office hours for infants living in high risk environments and especially in regional and remote areas (September 2007). Families SA indicated (June 2008) that they had a 24 hour crisis care service which provided support to children and families throughout the State. The Committee noted that this service is based in metropolitan Adelaide.

Development of Expertise in Child Protection

The Committee recommended identification, accreditation and support for some medical practitioners to develop skills in child protection (September 2007). The Department of Health indicated that they are developing programs to address these issues and would keep the Committee informed of progress (June 2008).

3.5.2 Recommendations Regarding Safe Sleeping Environments for Infants

In previous Annual Reports, the Committee made several recommendations about safe sleeping environments for infants.

In response, the Minister for Health outlined initiatives being pursued by the Department of Health including a requirement that child and family health nurses discuss safe sleeping during the first home visit for all

new births in South Australia (April 2008). This discussion would cover safe sleeping information and include the assessment of the sleeping environment. The Committee understands that funds will be allocated over the next two years to enhance efforts to improve parent and carer education about safe sleeping, and to ensure supports are put in place to improve safe sleeping arrangements for infants.

Families SA has developed a draft safe sleeping policy which would require its workers to promote safe sleeping practices with parents during face to-face contact with caregivers of infants under 12 months of age, and through assessments of home environments for infants under 12 months of age (April 2008).

In October 2007 the Committee made a recommendation about infant safety and inflatable cots. In response, the Minister for Families and Communities indicated he had written to the ACCC expressing concern about infant safety and inflatable cots. He requested that proposed regulation of children's portable cots under the Trade Practices Act 1974 require that no component of a portable cot be inflatable (December 2008). The Minister advised the Committee that the ACCC supported the changes he had recommended. He also advised that he wrote to the Ministers for Health and the Minister for Consumer and Business Affairs who indicated that the Office for Consumer and Business Affairs will investigate possible safety issues.

In June 2008 the State Coroner released his inquiry into the deaths of five young infants. His recommendations supported the Committee's safe sleeping recommendations in its 2005 2006 and 2006 2007 Annual Reports, along with several other recommendations for a consistent set of guidelines for parents, carers and health professionals that may reduce the risk of sudden unexpected death in infants. He suggested that the Ministers for Health and Families and Communities fund the implementation of these recommendations.

3.5.3 Recommendations Regarding Aboriginal Children

The Committee made several recommendations regarding the health, education and wellbeing of Aboriginal children living in remote and very remote areas of the State (September 2007).

In August 2008 the Department for Education and Children's Services provided an overview of education and student wellbeing services for children on the APY Lands. These services included an initiative with the Department for Families and Communities, Families SA for senior social workers to be placed in some schools on the APY Lands.

The Aboriginal Affairs and Reconciliation Division (AARD) of the Department of the Premier and Cabinet (DPC) indicated that the Committee's recommendations reflected the objectives of the work of AARD on the APY Lands. The AARD provided the Committee with progress reports on the objectives outlined in the APY Lands Strategic Plan.

AARD also indicated that the Tjunjuniku Kuranyukutu Palyantjaku (TKP) forum which comprises representatives from Anangu organisations and State and Australian Government agencies has developed an action plan that sets the objectives for both governments' programs. AARD and South Australian government agencies support and monitor programs contributing to this plan.

3.6 ONGOING ISSUES

The Committee will continue to monitor the implementation of its recommendations. It will encourage the implementation of its recommendations by consulting with key stakeholders before making recommendations to the Minister and by asking for evidence of appropriately targeted policies that are effective in practice and properly funded.

Section 4

Serious Injury 2007-2008

Section 4: Serious Injury 2007-2008

4.1 SERIOUS INJURY

To date, although it has authority to review both child deaths and serious injury to children, the Committee has focussed on child deaths, establishing a data base, interagency protocols and review methodology.

The Committee began its work on serious injury in 2007. Acknowledging that there are many more cases of serious injury than death, the Committee sought advice from the Crown Solicitor about the parameters of its work on serious injury under the Act. The Crown Solicitor advised that:

- there was no requirement that the Committee deals with all cases of serious injury to children; and
- it was permissible for the Committee to review groups, sets or classes of cases of serious injury to children as an alternative to reviewing individual cases.

A number of relevant South Australian agencies were consulted about the most pressing areas of preventable serious injury in children and young people from birth to 17 years of age. They were requested to factor in the extent to which these areas of serious injury were currently resourced. The agencies consulted included the Child Protection Units of Flinders Medical Centre and the Women's and Children's Hospital, KidSafe SA Inc., the Research Centre for Injury Studies, the Injury Surveillance and Prevention Unit of the South Australian Department of Health and the South Australian Ambulance Service.

The Committee established a serious injury sub-committee to guide the Committee's serious injury work and provide advice on matters such as methods and guidelines for its reviews.

4.1.1 Serious Injury Guardianship Project

In 2007 the Committee decided to review a sample of cases of serious injury to children under the guardianship of the Minister for Families and Communities.

Purpose and Objectives

The Serious Injury Guardianship Project is intended to review the nature and extent of serious injuries to children whilst they are under guardianship. These children are already at risk of poorer outcomes for their health and welfare because of the circumstances that led to their being received into guardianship. This project also affords an opportunity to assess the responsiveness of whole of government systems to children who experience serious injury when they are under the guardianship of the Minister.

The objectives of the Serious Injury Guardianship Project are as follows:

- to identify systemic contributors to serious injury to children who are under the guardianship of the Minister;
- to identify how the system deals with serious injury to such children with the aim of recommending ways to prevent similar serious injury in the future; and
- to consider the functioning of assessment processes for children coming into guardianship.

Definition of Serious Injury

The Committee is using the following definition of serious injury for this project:

- ***injury*** – means physical or mental hurt or harm to a child and may include a disease or illness if neglect or some other physical or mental hurt or harm contributed to the disease or illness.
- ***serious injury*** – means an injury, so defined, that
  a. endangers the child's life; or
  b. results in significant impairment of the child's physical or mental function; or
  c. causes significant physical pain (*or would be expected to cause such pain in a child with the capacity to feel it*); or
  d. results in significant physical disfigurement of the child.
- for the purposes of these definitions,

  mental – includes intellectual, cognitive, psychological and emotional;

  impairment or ***pain*** – may be temporary or long-term, continuous or intermittent.

Project to Date

The serious injury sub-committee began the project with a feasibility analysis of a random sample of records of children under guardianship, from which it selected a sample of cases for individual review. The sub-committee will report on this project to the Committee by the end of 2008.

Section 5

References 2007-2008

Section 5: References 2007-2008

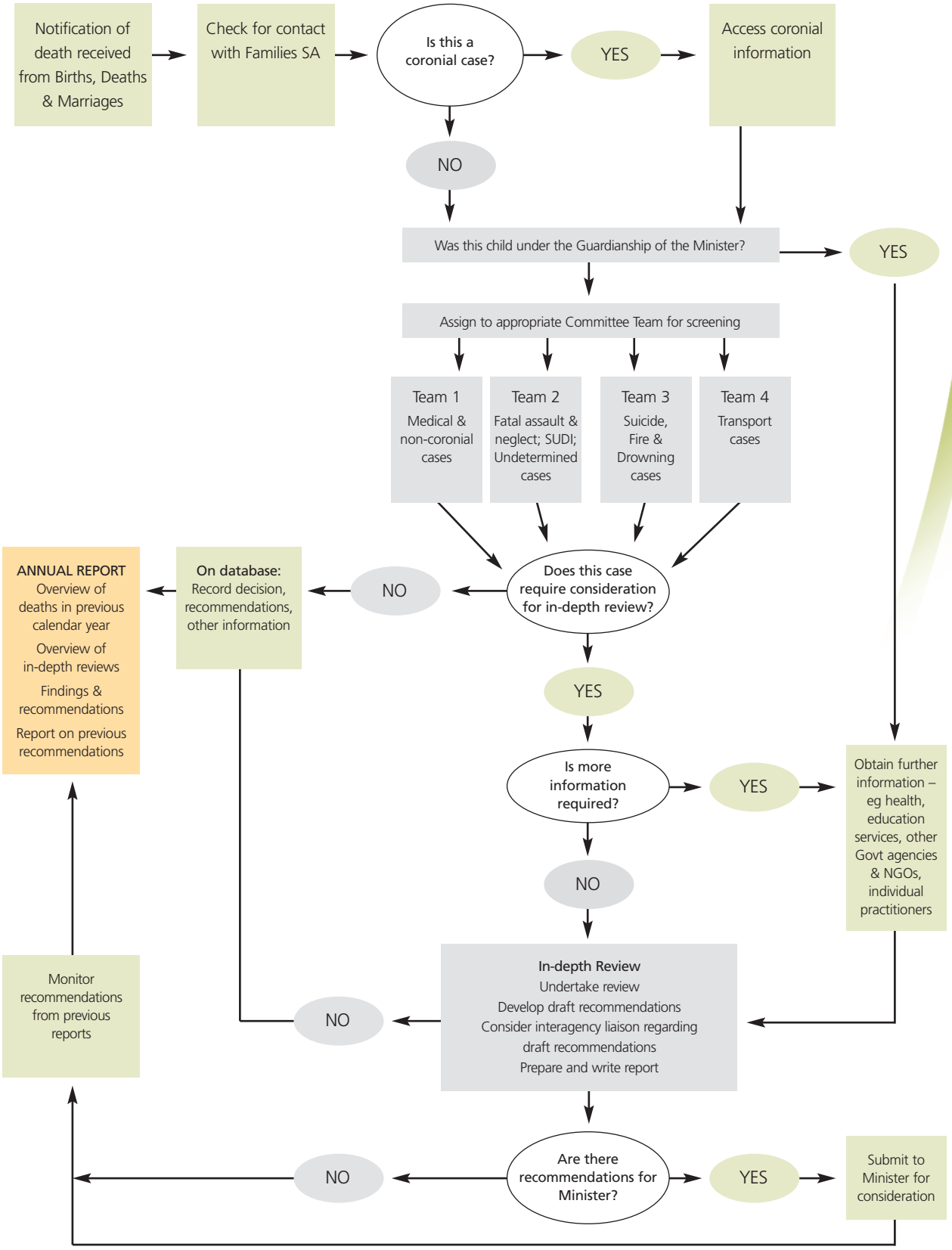
5.1 METHODOLOGICAL ISSUES

This section provides details concerning the Committee's processes for obtaining, analysing and storing information; for screening deaths, and for classifying causes of death.

5.1.1 Access to Information and the Process for Screening and Review of Deaths

Diagram 1 (over page) indicates the key sources of information available to the Committee concerning the deaths of children in South Australia and illustrates the processes the Committee uses to screen and review this information.

Diagram 1: Committee's Screening and Reviewing Process



The Registrar, Births, Deaths and Marriages (the Registrar)

The Committee currently holds a protocol with the Registrar for the release of information concerning the deaths of children and young people in South Australia. This information is provided to the Committee on a monthly basis.

The State Coroner (the Coroner)

Under an arrangement with the Coroner, information is released to the Committee for each reportable death[10] of a child under 18 years of age.

Release of Information from Government Agencies

The Committee has protocols regarding release of information with the Department for Families and Communities, which includes Families SA, the Department of Health, the Department for Education and Children's Services and South Australian Police.

5.1.2 The Committee's Classification of Cause of Death

In Section 2 the Committee's classification of the cause of death has been used. In many cases, the Committee has multiple sources of information available concerning children (including health, welfare and education records) and is not limited to the causes of death recorded in post-mortem reports or death certificates. Accordingly, the Committee's classification for a particular death may vary from the ICD 10 classification (See Section 5.1.3 for an explanation of ICD 10 coding for Cause of Death). For example, deaths the Committee has attributed to suicide may have been coded using ICD 10 coding as intentional self-harm (X60 X84), an event of undetermined intent (Y10 Y34) or be included amongst deaths attributed to other accidental threats to breathing (W75 W84). The impact of this group of deaths is therefore lost with this system of coding.

At the time of classifying a death, the Committee will consider all available information. However in some cases, further information may become available that may give rise to a change in the classification assigned to a particular death or group of deaths. Any changes will be noted as an addendum in the subsequent Annual Report. In addition, the Committee will continue to review its definitional guidelines in the light of available information.

The guidelines the Committee uses to classify deaths to external causes are described below. These guidelines are usually also stated at the beginning of the relevant section of the report.

Transport Deaths

Transport deaths include deaths arising from incidents involving a device used for, or designed to be used for moving people or goods from one place to another. These incidents may involve pedestrians and include railway or water transport. Incidents may occur on public highways or places other than a public highway.

Accidents

Accidents exclude deaths attributed to transport incidents, fires or drowning. Also referred to as deaths from unintentional injuries, accidents most commonly include suffocation, strangulation and choking, falls and poisoning.

Suicide

In any report concerning suicide, the issue of definition is crucial. Most studies concerning suicide rates usually conclude that because of definitional issues, the rates of suicide in any community are under-reported. The focus of these definitional issues is often whether it can be clearly established under the law that the person intended to kill themselves. The Committee classifies a death as suicide where the intent of the child was clearly established. It also attributes a death to suicide if careful examination of coronial, police, health and education records indicated a probable intention to die.

Fatal Assault

The Committee characterises a fatal assault as 'the death of a child from acts of violence perpetrated upon him or her by another person' (Lawrence, 2004; p 842).

Fatal Neglect

The Committee defines fatal neglect as a death resulting from an act of omission by the child's carer(s) including:

- failure to provide for the child's basic needs;

[10]Reference:

Deaths that are reportable to the Coroner are those indicated in Part 1 of the *Coroner's Act 2003*

- abandonment;
- inadequate supervision; and
- refusal or delay in provision of medical care.

This definition can account for both chronic neglect and single incidents of neglect, or a combination of both (NSW Child Death Review Team 2003; p 15). The Committee is mindful of the evidence which indicates that the changing nature of child development will strongly influence the ways in which neglect can have an impact on a child (Lawrence & Irvine, 2004).

Health System-related Adverse Event

These deaths have been classified as such by the Committee based on written records which may not necessarily be complete. The Committee places a death in this category based on consideration of preventable aspects in the circumstances of the death and a focus on future prevention strategies rather than an investigation of the cause of death.

Sudden Unexpected Death of Infants (SUDI) and Sudden Infant Death Syndrome (SIDS)

Sudden unexpected death in infancy (SUDI) has been described as an 'umbrella' term that is used for all sudden unexpected deaths of infants under one year of age.

The Definition of 'Sudden Unexpected Death in Infancy'

In December 2007 the Australian and New Zealand national meeting of child death review teams and committees agreed to work towards a common reporting framework that was based on the definition of SUDI proposed by Fleming et al. (2000) definition of SUDI. This agreed framework removed one criteria: 'deaths occurring in the course of a sudden acute illness of less than 24 hours' duration in a previously healthy infant, or a death that occurred after this if intensive care had been instituted within 24 hours of the onset of the illness;' and extended the age range to infants dying in the first seven days of life. Based on this agreement, the SUDI definition used to classify deaths in this report is:

Infants from birth to 365 completed days of life whose deaths:

1. were unexpected and unexplained at autopsy;
2. occurred in the course of an acute illness that was not recognised by carers and/or by health professionals as potentially life-threatening;
3. arose from a pre-existing condition that had not been previously recognised by health professionals;
4. resulted from any form of accident, trauma or poisoning.

The Definition of Sudden Infant Death Syndrome (SIDS)

The criteria used to determine a death attributed to SIDS in this report continues to be the San Diego definition proposed by Krous et al. (2004): (see Table 11).

Using the modified CESDI definition of SUDI, and the San Diego definition of SIDS, sudden unexpected deaths of infants fall into one of two categories:

- explained deaths of infants which incorporate criteria 2. to 4. of the above definition, and
- unexplained deaths of infants – accounted for by criteria 1. of the CESDI definition and incorporating the San Diego definition of SIDS.

Table 11: Definition of sudden infant death syndrome

General Definition of SIDS

SIDS is defined as the sudden unexpected deaths of an infant <1 year of age, with onset of the fatal episode apparently occurring during sleep, that remains unexplained after a thorough investigation, including performance of a complete autopsy and review of the circumstances of death and the clinical history.

Category IA SIDS: Classic features of SIDS present and completely documented

Category IA included deaths that meet the requirements of the general definition and also all of the following requirements.

Clinical

- > 21 days and < 9 months of age;
- Normal clinical history including term pregnancy (gestational age > 37 weeks);
- Normal growth and development;
- No similar deaths among siblings, close genetic relatives (uncles, aunts or first degree cousins), or other infants in the custody of the same caregiver.

Circumstances of Death

- Investigations of the various scenes where incidents leading to death might have occurred and determination that they do not provide an explanation for the death;
- Found in a safe sleeping environment, with no evidence of accidental death.

Autopsy

- Absence of potentially fatal pathologic findings. Minor respiratory system inflammatory infiltrates are acceptable; intrathoracic petechial haemorrhage is a supportive but not obligatory or diagnostic finding;
- No evidence of unexplained trauma, abuse neglect or unintentional injury;
- No evidence of substantial thymic stress effect (thymic weight < 15g and/ or moderate/severe cortical lymphocyte depletion). Occasional 'starry sky' macrophages or minor cortical depletion is acceptable;
- Negative results of toxicologic, microbiologic, radiologic, vitreous chemistry and metabolic screening studies.

Category IB SIDS: Classic features of SIDS present but incompletely documented

Category IB includes infant deaths that met the requirements of the general definition and also meet all of the criteria for category IA except that investigation of the various scenes where incidents leading to death might have occurred was not performed and/ or >1 of the following analyses were not performed: toxicologic, microbiologic, radiologic, vitreous chemistry or metabolic screening studies.

Category II SIDS

Category II includes infants that meet category I except for > 1 of the following.

Clinical

- Age range outside that of category IA or IB (i.e. 0-21 days or 270 days (9 months) through to first birthday);
- Similar deaths among siblings, close relatives or infants in the custody of the same caregiver that are not considered suspect for infanticide or recognised genetic disorders;
- Neonatal or perinatal conditions (e.g. those resulting from pre-term birth) that have resolved by the time of death.

Circumstances of Death

- Mechanical asphyxia or suffocation caused by overlaying not determined with certainty.

Autopsy

- Abnormal growth or development not thought to have contributed to death;
- Marked inflammatory changes or abnormalities not sufficient to be unequivocal causes of death.

Unclassified sudden infant death

Includes deaths that do not meet the criteria for category I or II SIDS, but for which alternative diagnoses of natural or unnatural conditions are equivocal, including cases where autopsies were not performed.

Post resuscitation cases

Infants found in extremis who are resuscitated and later die ('temporarily interrupted SIDS') may be included in the aforementioned categories, depending on the fulfilment of relevant criteria.

Source: Krous, Beckwith, Byard et al. 2004

5.1.3 ICD –10 Coding for Cause of Death

Deaths have also been coded using the World Health Organization's International Classification of Diseases (Version 10: ICD –10). Using this coding system, the underlying cause of death is considered the primary cause of death for classification. The primary cause of death is defined as '(a) the disease or injury which initiated the train of morbid events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury'. The WHO has agreed that the most effective public health objective is to prevent the precipitating cause from operating and with this in mind have determined this coding convention.[11]

ICD –10 coding of deaths has been undertaken by the National Centre for Classification in Health – Brisbane (NCCH–Brisbane) under a contractual arrangement and with the agreement of the Minister for Families and Communities, the Registrar, and the Coroner.

ICD –10 coding of causes of death for 2005, 2006 and 2007 are reported in Section 5.2.

5.1.4 Aboriginal and Torres Strait Islander Status

The information received from the Registrar has an Aboriginal or Torres Strait Islander indicator for each case. The Committee has determined that, in the absence of any other form of reliable indicator of Indigenous status, this indicator will be used.

5.1.5 Usual Place of Residence

The information received from the Registrar indicates the 'last place of residence' for each case. This information is taken to indicate the child's usual place of residence for review and reporting purposes. The Committee acknowledges that this information may have been variously interpreted by the person giving the information and may not reflect a consistent definition of a person's usual residence.

The Committee will indicate the number of cases where the information from the Registrar shows that the child's last place of residence was outside South Australia. Where relevant, this information will be noted.

5.1.6 Reporting Period

Section 52W of the Act outlines the reporting responsibilities of the Committee. It requires the Committee to report periodically to the Minister, and also to provide an annual report on the performance of its statutory functions during the preceding financial year.

5.1.7 Deaths Included in the Report

The Committee considered the two common ways of reporting on deaths – either through the date of registration of the death with the Registrar or the date of the child's death. It was decided that for ease of understanding, the date of death would be used as the marker for its inclusion in the data set for that year.

5.1.8 ARIA+ Index of Remoteness and Accessibility

ARIA stands for Accessibility/Remoteness Index of Australia. The ARIA methodology was developed by the Australian Government Department of Health and Aged Care in 1977. Minor changes have been made to this original methodology, resulting in the ARIA+ index of remoteness. This Index is a distance based measure of remoteness. It defines five categories of remoteness based on road distance to service centres: Major City, Inner and Outer Regional, Remote and Very Remote. The Very Remote category indicates very little accessibility of goods, services and opportunities for social interaction. ARIA+ Index is an indicator of the degree of geographic remoteness of an area and is a more accurate indicator of disadvantage than subjective labels such as 'rural' or 'country'.

5.1.9 SEIFA Index of Socioeconomic Disadvantage

The SEIFA (Socio-Economic Indexes for Areas) Index of Relative Socio-economic Disadvantage (IRSD) draws on a variety of personal and household characteristics (available from the 2006 Census) to rank household and socioeconomic status. The IRSD is calculated to show the relativity of areas to the Australian average for the particular set of variables which comprise it. This average is set at 1000. Scores below 1000 indicate areas with relatively disadvantaged populations under this measure, and scores above 1000 indicate areas with relatively advantaged populations. In this report SEIFA scores are divided into five quintiles, with the least disadvantaged populations represented in quintile 1 and the most disadvantaged in quintile 5.

[11] Reference:

Extracted from ICD-10 Second Edition, 2005, 4. Rules and guidelines for mortality and morbidity coding.

5.1.10 Storage and Analysis of Information

Information concerning the circumstances and causes of child deaths in South Australia are stored in a custom built Windows application, utilising the Microsoft NET 2.0 Framework and SQL Server 2005 database, designed for use in a Microsoft Windows environment.

5.1.11 Death Rates

Crude death rates have been calculated using ABS population projections (ABS, 2007). Rates are not calculated when there are less than four deaths. Given the small numbers of deaths of children in South Australia, this is often the case.

Children who died in South Australia but whose usual residence was outside of the State are excluded from the calculation of crude death rates.

The Infant Mortality Rate is calculated according to the deaths of children less than one year old per 1000 live births in the same year. The South Australian Maternal, Perinatal and Infant Mortality Committee provided data concerning live births in the previous year.

5.2 DEATHS OF CHILDREN BY ICD–10 CHAPTER DESCRIPTION

Table 12 details the ICD –10 causes of death for 2005, 2006 and 2007.

Over a three year period, based on ICD–10 coding of deaths, the highest percentage of children (approximately two thirds) died from illness or disease. One quarter of children's deaths over this period were attributed to external causes, with a small percentage of infant deaths attributed to undetermined causes. In a very small percentage of cases, the cause of death remained unknown or un-coded at the time of writing.

Overall, deaths from conditions originating in the perinatal period accounted for nearly 30% of the total deaths within this three year period and nearly 20% of deaths were attributed to chromosomal or congenital abnormalities. Transport deaths were the third most common cause of death with just over 10% of deaths attributed to this cause.

With regard to deaths from illness and disease, cancers were the third most common cause of death, with much smaller percentages of deaths attributed to disease of various body systems.

Deaths attributed to SIDS or undetermined causes accounted for nearly 6% of the deaths in this period.

With regard to deaths from external causes, transport deaths remained the leading external cause of death. Much smaller numbers of children died from various other external causes.

5.3 CAUSES OF DEATH BY AGE

This section provides greater detail concerning the causes of child deaths by age grouping.

Table 12: Deaths of children by ICD –10 chapter description of cause of death, South Australia 2005, 2006, 2007*

ICD – 10 CODE	ICD-10 CHAPTER DESCRIPTION	Number of deaths per year 2005	2006	2007	TOTAL NO.	TOTAL %
Illness or Disease *(Natural Causes)*						
A00-B99	*Certain infections and parasitic diseases*	3	1	1	5	1.3
C00-D48	*Neoplasms*	8	10	7	25	6.6
E00-E90	*Endocrine, nutritional and metabolic diseases*	5	1	3	9	2.4
G00-G99	*Diseases of the nervous system*	5	11	6	22	5.8
H00-H59	*Diseases of the eye and adnexa*		1		1	0.3
I00-I99	*Diseases of the circulatory system*	2	2	2	6	1.6
J00-J99	*Diseases of the respiratory system*	3	2		5	1.3
K00-K93	*Diseases of the digestive system*	1	1	1	3	0.8
M00-M99	*Diseases of the musculoskeletal system and connective tissue*	2			2	0.5
P00-P96	*Certain conditions originating in the perinatal period*	44	22	41	107	28.4
Q00-Q99	*Congenital malformations, deformations and chromosomal abnormalities*	20	25	20	65	17.0
Total number of deaths from Illness or Disease		**93**	**76**	**81**	**250**	**66.2**
SIDS and undetermined causes						
R00-R99	*Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified*	6	9	7	22	5.8
External Causes						
V01-V99	*Transport-related*	17b	11	14	42	11.1
W00-W19	*Falls*		1	1	2	0.5
W20-W49	*Exposure to inanimate mechanical forces*	1	1	3	5	1.3
W65-W74	*Accidental drowning and submersion*	2	4	3	9	2.4
W75-W84	*Other accidental threats to breathing*	6	7	3	16	4.2
X00-X09	*Exposure to smoke fire and flames*	2			2	0.5
X40-X49	*Accidental poisoning by exposure to noxious substance*		1	1	2	0.5
X60-X84	*Intentional self harm*	1	2		3	0.8
X85-Y09	*Assault*	3	6		9	2.4
Y10-Y34	*Event of undetermined intent*	4c	1	1	6	1.6
Y70-Y82	*Medical devices associated with adverse incidents*			1	1	0.3
Total number of deaths from External Causes		**36**	**34**	**27**	**97**	**25.7**
Other						
	Cause not yet known			8	8	2.1
TOTAL OF ALL DEATHS		**135**	**119**	**123**	**377**	**99.8**

**Source: Child Death and Serious Injury Review Committee database*

*Table 13: Deaths of children less than 28 days old by cause of death, South Australia 2007**

CHILDREN < 28 DAYS	FEMALE	MALE	TOTAL
ILLNESS OR DISEASE			
Certain conditions originating in the perinatal period	10	25	35
The following were the most common conditions:			
Affects of forms of placental separation & haemorrhage (5)			
Extremely low birth weight (5)			
Extreme prematurity (5)			
Congenital malformations, deformations and chromosomal abnormalities	7	7	14
The following were the most common conditions:			
Hypoplastic left heart syndrome (2)			
Congenital diaphragmatic hernia (2)			
Edward's syndrome (2)			
Diseases of the nervous system		1	1
Illness or Disease - Total	**17**	**33**	**50**
OTHER CAUSES			
Undetermined		1	1
Health-system related		1	1
Cause not yet known	1		1
Other Causes – Total	**1**	**2**	**3**
CHILDREN < 28 DAYS - TOTAL	**18**	**35**	**53**

**Source: Child Death and Serious Injury Review Committee database.*

*Table 14: Deaths of children aged 28 days - 1 year by cause of death, South Australia 2007**

CHILDREN 28 DAYS – 1 YEAR	FEMALE	MALE	TOTAL
ILLNESS OR DISEASE			
Certain conditions originating in the perinatal period	2	3	5
Congenital malformations, deformations and chromosomal abnormalities	1	3	4
Diseases of the nervous system			1
Diseases of the circulatory system	1		1
Illness or Disease – Total	***4***	***7***	***11***
SIDS & UNDETERMINED			
SIDS			
Undermined	3	4	7
SIDS & Undetermined Causes – Total	**3**	**4**	**7**
EXTERNAL			
Accidents		2	2
Transport	1	1	2
Drowning	1		1
Health-system related		1	1
External Causes – Total	**2**	**4**	**6**
OTHER			
Cause Not Yet Known	2	1	3
Cause Not Yet Known – Total	**2**	**1**	**3**
CHILDREN 28 DAYS – 1 YEAR – TOTAL	**11**	**16**	**27**

**Source: Child Death and Serious Injury Review Committee database.*

*Table 15: Deaths of children aged 1 – 4 Years by cause of death, South Australia 2007**

CHILDREN 1 – 4 YEARS	F	M	Total
ILLNESS OR DISEASE			
Diseases of the nervous system		3	3
Neoplasms	1	1	2
Congenital malformations, deformations and chromosomal abnormalities		2	2
Endocrine, nutritional and metabolic diseases	1	1	2
Diseases of the circulatory system		1	1
Illness or Disease – Total	**2**	**8**	**10**
EXTERNAL			
Accidents	1	2	3
Transport		1	1
Drowning	1		1
External Causes – Total	**2**	**3**	**5**
CHILDREN 1 – 4 YEARS – TOTAL	**4**	**11**	**15**

** Source: Child Death and Serious Injury Review Committee database*

*Table 16: Deaths of children aged 5 – 9 Years by cause of death, South Australia 2007**

CHILDREN 5 – 9 YEARS	F	M	Total
ILLNESS OR DISEASE			
Cancer	1	1	2
Endocrine, nutritional & metabolic diseases		1	1
Diseases of the circulatory system			
Congenital malformations, deformations and chromosomal abnormalities			
Illness or Disease – Total	**1**	**2**	**3**
EXTERNAL			
Drowning		1	1
External Causes – Total		**1**	**1**
CHILDREN 5 – 9 YEARS – TOTAL	**1**	**3**	**4**

** Source: Child Death and Serious Injury Review Committee database*

*Table 17: Deaths of children aged 10 – 14 Years by cause of death, South Australia 2007**

CHILDREN 10 – 14 YEARS	F	M	Total
ILLNESS OR DISEASE			
Cancer		2	2
Diseases of the nervous system	1		1
Diseases of the digestive system		1	1
Illness or Disease – Total	**1**	**3**	**4**
EXTERNAL			
Transport	1	2	3
Accidents		1	1
External Causes – Total	**1**	**3**	**4**
CHILDREN 10 – 14 YEARS – TOTAL	**2**	**6**	**8**

** Source: Child Death and Serious Injury Review Committee database*

*Table 18: Deaths of children aged 15 – 17 Years by cause of death, South Australia 2007**

CHILDREN 5 – 9 YEARS	F	M	Total
ILLNESS OR DISEASE			
Cancer		1	1
Infections and parasitic diseases		1	1
Illness or Disease – Total		**2**	**2**
EXTERNAL			
Transport	2	8	10
Accidents		2	2
Drowning		1	1
Fatal Assault	1		1
External Causes – Total	**3**	**11**	**14**
CHILDREN 15 – 17 YEARS – TOTAL	**3**	**13**	**16**

** Source: Child Death and Serious Injury Review Committee database*

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