

Comparing risks of CP in births to Australian Indigenous and non-Indigenous mothers

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Cerebral Palsy (CP)

- Group of disorders of movement and posture, permanent but not unchanging, due to a non-progressive abnormality in the developing brain
- Pre/perinatal CP: CP acquired before or around the time of birth
- Postneonatal (PNN) CP: CP attributed to an event with brain damaging potential occurring after the 28th day of life and before the age of 2 years

Aim:

- To compare proportions of neonatal survivors subsequently described as having CP, the distributions of associated impairments and causes of postneonatal CP between Indigenous and non-Indigenous populations in Australia.

Method:

- Data obtained from birth records and CP registers
- Qld, WA, NT
- Birth years 1996-2005
- Stratified by Indigenous status and timing of cause of CP
- RRs associated with Indigenous status estimated
- Distributions of associated impairments and causes of postneonatal CP in births to Indigenous and non Indigenous women were compared

Method:

Motor impairment & associated impairments:

- Gross Motor Function Classification System level
- Visual impairment
- Hearing impairment
- Speech impairment
- Intellectual impairment
- Epilepsy

Method

- Ethics approval from Menzies School of Health Research and from WA Aboriginal Health Ethics Committee
- QLD CP Register has approval from their Ethics Committee for minimum data set collections

Frequency per 1000 NNS by Indigenous status and time of CP acquisition

N= 1, 469

	Indigenous	Non-Indigenous
Pre/perinatal CP	2.44	1.72
Postneonatal CP	0.41	0.083

Relative risks (95% CI) of CP associated with Indigenous status by jurisdiction of birth and time of CP acquisition

	All CP	Pre/perinatal CP	Postneonatal CP
All	1.6 (1.5, 1.7)	1.4 (1.2, 1.7)	4.9 (3.0, 7.9)
NT	2.8 (1.7, 4.7)	2.5 (1.5, 4.2)	10.3 (1.2, 86)
QLD	1.6 (1.2, 2.0)	1.5 (1.1, 1.9)	5.1 (2.0, 12.6)
WA	1.5 (1.1, 1.9)	1.3 (1.0, 1.7)	4.3 (2.2, 8.3)

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Population frequency of causes of PNN CP by Indigenous status and relative risks associated with Indigenous status

	Indigenous		Non-Indigenous		Relative risk
Cause	N	/100,000 NNS	N	/100 000 NNS	RR
Infection	10	17.7	13	1.8	9.9
Head injury	8	14.2	9	1.2	11.4
CVA	3	5.3	25	3.5	1.5
Other	2	3.5	13	1.8	2

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Number and population frequency per 100,000 NNS of PNN CP in WA by cause and birth cohort

Indigenous births

	1980-1992	1996-2005
Cause:	N: /100,000NNS	N: /100,000NNS
Infection	17: 104	7: 45
Head injury	4: 24	3: 19
CVA	2: 12	0: 0
Other	3: 18	1: 6

Number and population frequency per 100,000 NNS of PNN CP in WA by cause and birth cohort

Non-Indigenous births

	1980-1992	1996-2005
Cause:	N: /100,000NNS	N: /100,000NNS
Infection	12: 4.1	6: 2.5
Head injury	24: 8.3	6: 2.5
CVA	17: 5.9	21: 8.8
Other	11: 3.8	6: 2.5

Distribution of GMFCS by Indigenous status and time of CP acquisition

	Pre/perinatal CP		Postneonatal CP	
GMFCS	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
	%	%	%	%
I-II	54	57	52	53
III	9	17	4	9
IV-V	37	26	44	38

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IV-V	37	26	44	38

Distribution of characteristics of impairments by Indigenous status and time of CP acquisition

	Pre/perinatal CP		Postneonatal CP	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
Characteristic	%	%	%	%
ID (IQ<70)	61	46	71	51
Epilepsy at 5y	44	30	38	39
Blind	11	5	18	6
Deaf	4	2	9	5
Non-verbal	30	23	40	27

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Discussion:

- WA study of birth years 1956-1975:
 - PNN Predominant cause= infection followed by head injury
- Non-Indigenous PNN CP predominant cause has shifted from infection to CVA. Predominant cause in Indigenous children is still infection followed by head injury

Discussion

- PNN CP most responsive to prevention strategies
- Vaccines have decreased PNN CP due to infection, but Indigenous population still vulnerable. Possibly at greater risk of non-vaccine preventable viruses (e.g. Murray Valley encephalitis)
- Frequency of CVA increased as a cause of PNN CP (particularly in non-Indigenous children)- could be due to increased survival following developments in surgical correction of congenital heart defects

Conclusion:

- Indigenous infants have a higher risk of CP, especially of postneonatal CP
- Infection is predominant cause of PNN CP in Indigenous infants
- CVA is predominant cause of PNN CP in non-Indigenous infants
- Indigenous children with CP are more likely to be non-ambulant and have more associated impairments
- All children with PNN CP are more likely than those with pre/perinatal CP to be non-ambulant and have more associated impairments