



Ninth Annual Report of the Perinatal and Maternal Mortality Review Committee

Reporting mortality 2013

Supplementary tables and appendices (Online)

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Appendix A: Additional tables

Table A1: New Zealand perinatal mortality rates (per 1000 births) using the international definition 2007-2013

	2007		2008		2009		2010		2011		2012		2013	
	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate
Total births	65,050		65,303		63,153		64,574		62,078		61,892		59,552	
Fetal deaths (terminations of pregnancy and stillbirths)*	211	3.2	207	3.2	230	3.6	199	3.1	190	3.1	166	2.8	155	2.6
Terminations of pregnancy	6	0.1	14	0.2	9	0.1	17	0.3	24	0.4	13	0.2	12	0.2
Stillbirths	205	3.2	193	3.0	221	3.5	182	2.8	166	2.7	153	2.6	143	2.4
Early neonatal deaths < 7 days	57		67		59		68		64		54		45	
Late neonatal deaths 7–27 days	28		35		30		31		18		24		24	
Neonatal deaths < 28 days#	85	1.3	102	1.6	89	1.4	99	1.5	82	1.3	78	1.3	69	1.2
Perinatal mortalities+	268	4.1	274	4.2	289	4.6	267	4.1	254	4.1	220	3.7	200	3.4
Perinatal related mortalities^	296	4.6	309	4.7	319	5.1	298	4.6	272	4.4	244	4.1	224	3.8
Perinatal mortalities excluding lethal and terminated fetal abnormalities*	223	3.4	220	3.4	237	3.8	204	3.2	179	2.9	169	2.8	159	2.7
Perinatal related mortalities excluding lethal and terminated fetal abnormalities*	237	3.6	240	3.7	253	4.0	221	3.4	188	3.0	179	3.0	171	2.9

* Fetal death rate per 1000 babies born (includes terminations and stillbirths).

Neonatal death rate per 1000 liveborn babies.

+ Fetal deaths and early neonatal deaths per 1000 babies born.

^ Fetal deaths and early and late neonatal deaths per 1000 babies born.

• Lethal and terminated fetal abnormalities are all perinatal related deaths with PSANZ-PDC of congenital abnormality and neonatal deaths with PSANZ-NDC of congenital abnormality.

Table A2: Perinatal death classification (PSANZ-PDC) specific perinatal related death rates (per 1000 births) 2007-2013

Perinatal death classification (PSANZ-PDC)	2007		2008		2009		2010		2011		2012		2013		Total		Chi-squared test for trend (p)
	N=65,602		N=65,872		N=63,665		N=65,124		N=62,604		N=62,425		N=60,039		n	%	
	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate			
Congenital abnormality	196	2.99	184	2.79	181	2.84	211	3.24	202	3.23	201	3.22	158	2.63	1,175	28.4	0.84
Perinatal infection	29	0.44	28	0.43	25	0.39	28	0.43	21	0.34	19	0.30	20	0.33	150	3.6	0.13
Hypertension	19	0.29	22	0.33	28	0.44	26	0.40	21	0.34	18	0.29	13	0.22	134	3.2	0.30
Antepartum haemorrhage	61	0.93	66	1.00	77	1.21	78	1.20	78	1.25	60	0.96	74	1.23	420	10.1	0.21
Maternal conditions	27	0.41	23	0.35	38	0.60	32	0.49	26	0.42	36	0.58	34	0.57	182	4.4	0.11
Specific perinatal conditions	57	0.87	71	1.08	76	1.19	69	1.06	73	1.17	70	1.12	63	1.05	416	10.0	0.36
Hypoxic peripartum death	33	0.50	34	0.52	28	0.44	20	0.31	20	0.32	20	0.32	11	0.18	155	3.7	0.00030
Fetal growth restriction	46	0.70	62	0.94	53	0.83	48	0.74	44	0.70	49	0.78	48	0.80	302	7.3	0.80
Spontaneous preterm	98	1.49	94	1.43	109	1.71	111	1.70	84	1.34	102	1.63	80	1.33	598	14.4	0.62
Unexplained antepartum death	99	1.51	102	1.55	103	1.62	71	1.09	92	1.47	86	1.38	91	1.52	553	13.4	0.53
No obstetric antecedent	11	0.17	14	0.21	7	0.11	10	0.15	4	0.06	9	0.14	6	0.10	55	1.3	0.11

Table A3: Neonatal death classification (PSANZ-NDC) specific neonatal death rates (per 1000 live births) 2007-2013

Neonatal death classification (PSANZ-NDC)	2007		2008		2009		2010		2011		2012		2013	
	n=65,602		n=65,872		n=63,665		n=65,124		n=62,604		n=62,425		n=60,039	
	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate
Congenital abnormality	38	0.58	43	0.66	43	0.68	46	0.71	50	0.80	38	0.61	32	0.54
Extreme prematurity	57	0.87	52	0.79	57	0.90	84	1.30	54	0.87	69	1.11	62	1.04
Cardio-respiratory disorders	11	0.17	11	0.17	11	0.17	18	0.28	11	0.18	14	0.23	6	0.10
Infection	14	0.21	21	0.32	12	0.19	19	0.29	15	0.24	15	0.24	12	0.20
Neurological	31	0.48	33	0.50	40	0.63	28	0.43	23	0.37	25	0.40	25	0.42
Gastrointestinal	2	0.03	-	-	8	0.13	5	0.08	2	0.03	3	0.05	1	0.02
Other	14	0.21	17	0.26	11	0.17	10	0.15	8	0.13	14	0.23	14	0.23

Table A4: Intrapartum stillbirth rate (per 1000 ongoing pregnancies) by gestation excluding congenital abnormalities 2007-2013

Gestation at birth (weeks)	2007			2008			2009			2010			2011			2012			2013		
	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate
24-27	4	65,221	0.06	4	65,424	0.06	7	63,326	0.11	6	64,738	0.09	9	62,218	0.14	5	62,057	0.08	2	59,709	0.03
28-36	6	64,938	0.09	5	65,164	0.08	4	63,060	0.06	2	64,472	0.03	4	61,993	0.06	3	61,827	0.05	2	59,470	0.03
≥ 37	25	60,522	0.41	21	60,552	0.35	22	58,643	0.38	16	59,850	0.27	9	57,583	0.16	12	57,353	0.21	3	55,262	0.05

Table A5: Perinatal related mortality rate (per 1000 births) by maternal age excluding congenital abnormalities 2007-2013

Maternal age (years)	2007			2008			2009			2010			2011			2012			2013			Chi-squared test for trend (p)
	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	
< 20	41	5,091	8.1	70	5,365	13.0	60	4,764	12.6	41	4,624	8.9	44	4,093	10.8	46	3,914	11.8	56	3,436	16.3	0.033
20-24	105	11,506	9.1	101	11,892	8.5	117	11,764	9.9	115	12,116	9.5	87	11,674	7.5	95	11,596	8.2	87	11,024	7.9	0.14
25-29	124	15,931	7.8	114	16,020	7.1	125	15,609	8.0	115	16,231	7.1	106	15,736	6.7	109	15,937	6.8	105	15,573	6.7	0.17
30-34	109	18,838	5.8	120	18,150	6.6	123	17,560	7.0	110	17,978	6.1	105	17,464	6.0	118	17,742	6.7	101	17,069	5.9	0.90
35-39	81	11,794	6.9	89	11,997	7.4	97	11,472	8.5	90	11,502	7.8	96	11,049	8.7	68	10,540	6.5	57	10,291	5.5	0.23
≥ 40	19	2,440	7.8	22	2,447	9.0	20	2,495	8.0	22	2,673	8.2	23	2,588	8.9	31	2,696	11.5	30	2,646	11.3	0.10
Unknown	-	2	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A6: Perinatal related mortality rate (per 1000 births) by maternal prioritised ethnicity excluding congenital abnormalities 2007-2013

Maternal ethnicity	2007			2008			2009			2010			2011			2012			2013			Chi-squared test for trend (p)
	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	
Māori	143	15,384	9.3	147	15,530	9.5	166	14,646	11.3	157	14,877	10.6	129	14,244	9.1	121	14,143	8.6	118	13,488	8.7	0.22
Pacific peoples	66	6,774	9.7	80	6,987	11.4	86	6,823	12.6	72	6,999	10.3	56	6,832	8.2	76	6,631	11.5	69	6,161	11.2	0.97
Indian	16	2,131	7.5	20	2,263	8.8	22	2,190	10.0	28	2,378	11.8	26	2,338	11.1	25	2,459	10.2	29	2,705	10.7	0.24
Other Asian	15	4,264	3.5	30	4,394	6.8	23	4,590	5.0	31	5,088	6.1	30	5,231	5.7	32	6,199	5.2	21	6,002	3.5	0.47
Other (including unknown)	35	5,768	6.1	37	5,835	6.3	44	5,732	7.7	30	6,032	5.0	45	5,576	8.1	40	5,317	7.5	34	5,454	6.2	0.57
NZ European	204	31,281	6.5	202	30,863	6.5	201	29,684	6.8	175	29,750	5.9	175	28,383	6.2	173	27,676	6.3	165	26,229	6.3	0.41

Table A7: Perinatal related mortality rate (per 1000 births) by deprivation quintile excluding congenital abnormalities 2007-2013

Deprivation quintile	2007			2008			2009			2010			2011			2012			2013			Chi-square test for trend (p)
	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	n	N	Rate	
1 (least deprived)	50	10,813	4.6	57	10,431	5.5	52	10,177	5.1	51	10,304	4.9	77	9,904	7.8	47	9,767	4.8	39	9,183	4.2	0.53
2	61	11,610	5.3	79	11,580	6.8	76	11,225	6.8	77	11,485	6.7	82	11,125	7.4	82	10,928	7.5	63	10,651	5.9	0.14
3	80	12,063	6.6	87	12,192	7.1	90	12,088	7.4	85	12,311	6.9	75	11,969	6.3	73	12,093	6.0	89	11,777	7.6	0.69
4	112	13,395	8.4	104	13,768	7.6	126	13,342	9.4	98	13,797	7.1	97	13,174	7.4	84	13,241	6.3	99	12,366	8.0	0.31
5 (most deprived)	171	17,245	9.9	184	17,554	10.5	185	16,530	11.2	175	16,862	10.4	127	16,182	7.8	176	16,184	10.9	140	15,830	8.8	0.54
Unknown	5	476	-	5	347	-	13	303	-	7	365	-	3	250	-	5	212	-	6	232	-	-

Table A8: Perinatal related death rate (per 1000 births) by maternal age 2007-2013

Maternal age (years)	Total births		Fetal deaths						Neonatal deaths			Total perinatal related deaths		
	Termination of pregnancy		Stillbirths			Neonatal deaths			Total perinatal related deaths					
	n	%	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
	n=445,331		n=1,056			n=2,453			n=1,229			n=4,738		
< 20	31,287	7.0	81	7.7	2.59	232	9.5	7.42	156	12.7	5.04	469	9.9	14.99
20-24	81,572	18.3	171	16.2	2.10	499	20.3	6.12	264	21.5	3.26	934	19.7	11.45
25-29	111,037	24.9	230	21.8	2.07	551	22.5	4.96	298	24.2	2.70	1,079	22.8	9.72
30-34	124,801	28.0	280	26.5	2.24	591	24.1	4.74	245	19.9	1.98	1,116	23.6	8.94
35-39	78,645	17.7	227	21.5	2.89	440	17.9	5.59	206	16.8	2.64	873	18.4	11.10
≥ 40	17,985	4.0	67	6.3	3.73	140	5.7	7.78	59	4.8	3.32	266	5.6	14.79
Unknown	4	0.0	-	-	-	-	-	-	1	0.1	-	1	0.0	-

Table A9: Perinatal death classification (PSANZ-PDC) specific perinatal related death rates (excluding termination of pregnancy) by maternal age 2007-2013

Perinatal death classification (PSANZ-PDC)	Maternal age (years)														
	< 20			20-24			25-34			35 – 39			≥ 40		
	n=31,287			n=81,572			n=235,838			n=78,645			n=17,985		
	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
Congenital abnormality *	51	13.1	1.63	92	12.1	1.13	200	11.9	0.85	103	15.9	1.31	47	23.6	2.61
Perinatal infection	21	5.4	0.67	30	3.9	0.37	78	4.6	0.33	20	3.1	0.25	6	3.0	0.33
Hypertension	3	0.8	0.10	31	4.1	0.38	56	3.3	0.24	23	3.6	0.29	9	4.5	0.50
Antepartum haemorrhage	52	13.4	1.66	99	13.0	1.21	223	13.2	0.95	78	12.1	0.99	18	9.0	1.00
Maternal conditions	8	2.1	0.26	32	4.2	0.39	81	4.8	0.34	35	5.4	0.45	14	7.0	0.78
Specific perinatal condition	32	8.2	1.02	62	8.1	0.76	221	13.1	0.94	90	13.9	1.14	30	15.1	1.67
Hypoxic peripartum death	17	4.4	0.54	33	4.3	0.40	86	5.1	0.36	25	3.9	0.32	5	2.5	0.28
Fetal growth restriction	37	9.5	1.18	73	9.6	0.89	154	9.1	0.65	54	8.4	0.69	11	5.5	0.61
Spontaneous preterm	106	27.3	3.39	140	18.3	1.72	270	16.0	1.14	95	14.7	1.21	25	12.6	1.39
Unexplained antepartum death	50	12.9	1.60	155	20.3	1.90	290	17.2	1.23	116	18.0	1.47	33	16.6	1.83
No obstetric antecedent	11	2.8	0.35	16	2.1	0.20	26	1.5	0.11	7	1.1	0.09	1	0.5	0.06

* Excludes one maternal age missing

Table A10: Perinatal related death rate (per 1000 births) by baby prioritised ethnicity 2013

Ethnicity (baby)	Total births		Fetal deaths						Neonatal deaths			Perinatal related deaths		
	n=60,039		Termination of pregnancy n=139			Stillbirths n=307			n=152			n=598		
	n	%	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
Māori	17,239	28.7	38	27.3	2.20	100	32.6	5.80	56	36.8	3.27	194	32.4	11.25
Pacific peoples	6,474	11.5	8	5.8	1.24	48	15.6	7.41	31	20.4	4.83	87	14.5	13.44
Indian	2,857	3.9	8	5.8	2.80	19	6.2	6.65	10	6.6	3.53	37	6.2	12.95
Other Asian	5,910	8.2	20	14.4	3.38	16	5.2	2.71	8	5.3	1.36	44	7.4	7.45
Other (including unknown)	3,744	6.1	8	5.8	2.14	19	6.2	5.07	3	2.0	0.81	30	5.0	8.01
NZ European	23,815	41.3	57	41.0	2.39	105	34.2	4.41	44	28.9	1.86	206	34.4	8.65

Table A11: Perinatal related death rate (per 1000 births) by maternal and baby prioritised ethnicity 2007-2013

	Total births		Fetal deaths						Neonatal deaths			Perinatal related deaths		
	n=445,331		Termination of pregnancy			Stillbirths			n=1,229			n=4,738		
	n	%	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
Ethnicity (mother)														
Māori	102,312	23.0	166	15.7	1.62	674	27.5	6.59	401	32.6	3.95	1,241	26.2	12.13
Pacific peoples	47,207	10.6	89	8.4	1.89	369	15.0	7.82	194	15.8	4.15	652	13.8	13.81
Indian	16,464	3.7	65	6.2	3.95	112	4.6	6.80	55	4.5	3.38	232	4.9	14.09
Other Asian	35,768	8.0	128	12.1	3.58	134	5.5	3.75	68	5.5	1.92	330	7.0	9.23
Other (including unknown)	39,714	8.9	103	9.8	2.59	202	8.2	5.09	78	6.3	1.98	383	8.1	9.64
NZ European	203,866	45.8	505	47.8	2.48	962	39.2	4.72	433	35.2	2.14	1,900	40.1	9.32
Ethnicity (baby)														
Māori	130,136	29.2	239	22.6	1.84	822	33.5	6.32	451	36.7	3.49	1,512	31.9	11.62
Pacific peoples	49,498	11.1	91	8.6	1.84	370	15.1	7.48	197	16.0	4.02	658	13.9	13.29
Indian	17,268	3.9	67	6.3	3.88	113	4.6	6.54	57	4.6	3.34	237	5.0	13.72
Other Asian	35,125	7.9	126	11.9	3.59	137	5.6	3.90	64	5.2	1.84	327	6.9	9.31
Other (including unknown)	27,171	6.1	63	6.0	2.32	151	6.2	5.56	51	4.1	1.89	265	5.6	9.75
NZ European	186,133	41.8	470	44.5	2.53	860	35.1	4.62	409	33.3	2.21	1,739	36.7	9.34

Table A12: Perinatal death classification (PSANZ-PDC) specific perinatal related death rates (excluding termination of pregnancy) by maternal prioritised ethnicity 2007-2013

Perinatal death classification (PSANZ-PDC)	Māori			Pacific peoples			Indian			Other Asian			Other (including unknown)			NZ European		
	n=102,312			n=47,207			n=16,464			n=35,768			n=39,714			n=203,866		
	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
Congenital abnormality	128	11.9	1.25	79	14.0	1.67	16	9.6	0.97	39	19.3	1.09	38	13.6	0.96	194	13.9	0.95
Perinatal infection	42	3.9	0.41	26	4.6	0.55	6	3.6	0.36	11	5.4	0.31	17	6.1	0.43	53	3.8	0.26
Hypertension	30	2.8	0.29	27	4.8	0.57	8	4.8	0.49	6	3.0	0.17	6	2.1	0.15	45	3.2	0.22
Antepartum haemorrhage	154	14.3	1.51	65	11.5	1.38	19	11.4	1.15	25	12.4	0.70	30	10.7	0.76	177	12.7	0.87
Maternal conditions	51	4.7	0.50	44	7.8	0.93	11	6.6	0.67	5	2.5	0.14	10	3.6	0.25	49	3.5	0.24
Specific perinatal conditions	95	8.8	0.93	57	10.1	1.21	24	14.4	1.46	25	12.4	0.70	41	14.6	1.03	193	13.8	0.95
Hypoxic peripartum death	43	4.0	0.42	17	3.0	0.36	6	3.6	0.36	5	2.5	0.14	19	6.8	0.48	76	5.5	0.37
Fetal growth restriction	80	7.4	0.78	42	7.5	0.89	22	13.2	1.34	23	11.4	0.64	26	9.3	0.65	136	9.8	0.67
Spontaneous preterm	241	22.4	2.36	103	18.3	2.18	30	18.0	1.82	29	14.4	0.81	44	15.7	1.11	189	13.6	0.93
Unexplained antepartum death	178	16.5	1.74	92	16.3	1.95	24	14.4	1.46	34	16.8	0.95	49	17.5	1.23	267	19.2	1.31
No obstetric antecedent	34	3.2	0.33	11	2.0	0.23	1	0.6	0.06	-	-	-	-	-	-	15	1.1	0.07

Table A13: Distribution of births by deprivation decile (NZDep2013) 2013

NZ Deprivation Index (NZDep 2013)	Total births	
	n=60,039	
	n	%
1 (least deprived)	4,337	7.2
2	4,846	8.1
3	5,178	8.6
4	5,473	9.1
5	5,726	9.5
6	6,051	10.1
7	5,886	9.8
8	6,480	10.8
9	6,987	11.6
10 (most deprived)	8,843	14.7
Unknown	232	0.4

Table A14: Perinatal related deaths by deprivation quintile 2007-2013

Deprivation quintile	Total births		Fetal deaths						Neonatal deaths			Perinatal related deaths		
	n=445,331		Termination of pregnancy			Stillbirths			n=1,229			n=4,738		
	n	%	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
1 (least deprived)	70,579	15.8	199	18.8	2.82	282	11.5	4.00	132	10.7	1.88	613	12.9	8.69
2	78,604	17.7	209	19.8	2.66	355	14.5	4.52	164	13.3	2.10	728	15.4	9.26
3	84,493	19.0	208	19.7	2.46	431	17.6	5.10	200	16.3	2.39	839	17.7	9.93
4	93,083	20.9	220	20.8	2.36	511	20.8	5.49	258	21.0	2.79	989	20.9	10.62
5 (most deprived)	116,387	26.1	215	20.4	1.85	842	34.3	7.23	458	37.3	3.97	1,515	32.0	13.02
Unknown	2,185	0.5	5	0.5	-	32	1.3	-	17	1.4	-	54	1.1	-

Table A15: Perinatal death classification (PSANZ-PDC) specific perinatal related death rates (per 1000 births) (excluding termination of pregnancy) by deprivation quintile 20 07-2013

Perinatal death classification (PSANZ-PDC)	Quintile 1 (least deprived)			Quintile 2			Quintile 3			Quintile 4			Quintile 5 (most deprived)		
	n=70,579			n=78,604			n=84,493			n=93,083			n=116,387		
	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
Congenital abnormality	72	17.4	1.02	55	10.6	0.70	82	13.0	0.97	106	13.8	1.14	174	13.4	1.50
Perinatal infection	17	4.1	0.24	24	4.6	0.31	35	5.5	0.41	26	3.4	0.28	52	4.0	0.45
Hypertension	8	1.9	0.11	13	2.5	0.17	24	3.8	0.28	26	3.4	0.28	50	3.8	0.43
Antepartum haemorrhage	44	10.6	0.62	63	12.1	0.80	74	11.7	0.88	101	13.1	1.09	183	14.1	1.57
Maternal conditions	13	3.1	0.18	10	1.9	0.13	20	3.2	0.24	37	4.8	0.40	88	6.8	0.76
Specific perinatal condition	65	15.7	0.92	68	13.1	0.87	93	14.7	1.10	90	11.7	0.97	113	8.7	0.97
Hypoxic peripartum death	14	3.4	0.20	32	6.2	0.41	29	4.6	0.34	36	4.7	0.39	51	3.9	0.44
Fetal growth restriction	44	10.6	0.62	48	9.2	0.61	63	10.0	0.75	64	8.3	0.69	108	8.3	0.93
Spontaneous preterm	51	12.3	0.72	93	17.9	1.18	95	15.1	1.12	140	18.2	1.50	243	18.7	2.09
Unexplained antepartum death	82	19.8	1.16	103	19.8	1.31	109	17.3	1.29	132	17.2	1.42	210	16.2	1.80
No obstetric antecedent	4	1.0	0.06	10	1.9	0.13	7	1.1	0.08	11	1.4	0.12	28	2.2	0.24

Table A16: Perinatal related death rate (per 1000 births) by DHB of maternal residence 2013

DHB of maternal residence	Total births		Fetal deaths						Neonatal deaths			Perinatal related deaths		
			Termination of pregnancy			Stillbirths								
	n=60,039		n=139		n=307		n=152			n=598				
	n	%	n	%	Rate	n	%	Rate	n	%	Rate	n	%	Rate
Northland	2,210	3.7	4	2.9	1.81	16	5.2	7.24	10	6.6	4.57	30	5.0	13.57
Waitemata	7,731	12.9	25	18.0	3.23	28	9.1	3.62	11	7.2	1.43	64	10.7	8.28
Auckland	6,261	10.4	26	18.7	4.15	29	9.4	4.63	13	8.6	2.09	68	11.4	10.86
Counties Manukau	8,387	14.0	20	14.4	2.38	59	19.2	7.03	36	23.7	4.33	115	19.2	13.71
Waikato	5,312	8.8	11	7.9	2.07	28	9.1	5.27	13	8.6	2.47	52	8.7	9.79
Bay of Plenty	2,814	4.7	6	4.3	2.13	9	2.9	3.20	9	5.9	3.22	24	4.0	8.53
Lakes	1,489	2.5	4	2.9	2.69	8	2.6	5.37	4	2.6	2.71	16	2.7	10.75
Tairāwhiti	717	1.2	1	0.7	1.39	3	1.0	4.18	1	0.7	1.40	5	0.8	6.97
Taranaki	1,532	2.6	3	2.2	1.96	12	3.9	7.83	4	2.6	2.64	19	3.2	12.40
Hawke's Bay	2,228	3.7	4	2.9	1.80	16	5.2	7.18	7	4.6	3.17	27	4.5	12.12
Whanganui	872	1.5	2	1.4	2.29	3	1.0	3.44	-	-	-	5	0.8	5.73
MidCentral	2,155	3.6	3	2.2	1.39	12	3.9	5.57	8	5.3	3.74	23	3.8	10.67
Wairarapa	506	0.8	1	0.7	1.98	8	2.6	15.81	-	-	-	9	1.5	17.79
Capital & Coast	3,652	6.1	10	7.2	2.74	10	3.3	2.74	5	3.3	1.38	25	4.2	6.85
Hutt Valley	1,911	3.2	2	1.4	1.05	9	2.9	4.71	6	3.9	3.16	17	2.8	8.90
Nelson Marlborough	1,564	2.6	4	2.9	2.56	9	2.9	5.75	5	3.3	3.22	18	3.0	11.51
West Coast	397	0.7	2	1.4	5.04	2	0.7	5.04	-	-	-	4	0.7	10.08
Canterbury	5,973	9.9	9	6.5	1.51	30	9.8	5.02	7	4.6	1.18	46	7.7	7.70
South Canterbury	634	1.1	-	-	-	3	1.0	4.73	5	3.3	7.92	8	1.3	12.62
Southern	3,495	5.8	2	1.4	0.57	11	3.6	3.15	7	4.6	2.01	20	3.3	5.72
Other	199	0.3	-	-	-	2	0.7	-	1	0.7	-	3	0.5	-

Other includes Overseas, Unknown and Other

Table A17: Perinatal related death rate (per 1000 births) by DHB of maternal residence 2007-2013

DHB of maternal residence	Total births		Fetal deaths						Neonatal deaths			Perinatal related deaths		
			Termination of pregnancy			Stillbirths			n	%	Rate	n	%	Rate
	n	%	Rate	n	%	Rate	n	%						
	n=445,331		n=1,056			n=2,453			n=1,229			n=4,738		
Northland	16,382	3.7	28	2.7	1.71	112	4.6	6.84	61	5.0	3.76	201	4.2	12.27
Waitemata	55,501	12.5	176	16.7	3.17	279	11.4	5.03	101	8.2	1.83	556	11.7	10.02
Auckland	46,395	10.4	167	15.8	3.60	235	9.6	5.07	114	9.3	2.48	516	10.9	11.12
Counties Manukau	61,634	13.8	149	14.1	2.42	426	17.4	6.91	238	19.4	3.90	813	17.2	13.19
Waikato	39,145	8.8	88	8.3	2.25	205	8.4	5.24	129	10.5	3.32	422	8.9	10.78
Bay of Plenty	20,848	4.7	33	3.1	1.58	93	3.8	4.46	78	6.3	3.76	204	4.3	9.79
Lakes	11,360	2.6	23	2.2	2.02	71	2.9	6.25	42	3.4	3.73	136	2.9	11.97
Tairāwhiti	5,467	1.2	8	0.8	1.46	27	1.1	4.94	18	1.5	3.31	53	1.1	9.69
Taranaki	11,168	2.5	15	1.4	1.34	67	2.7	6.00	29	2.4	2.62	111	2.3	9.94
Hawke's Bay	16,406	3.7	38	3.6	2.32	90	3.7	5.49	48	3.9	2.95	176	3.7	10.73
Whanganui	6,286	1.4	16	1.5	2.55	44	1.8	7.00	15	1.2	2.41	75	1.6	11.93
MidCentral	16,189	3.6	50	4.7	3.09	90	3.7	5.56	50	4.1	3.12	190	4.0	11.74
Wairarapa	3,753	0.8	9	0.9	2.40	27	1.1	7.19	9	0.7	2.42	45	0.9	11.99
Capital & Coast	27,693	6.2	61	5.8	2.20	124	5.1	4.48	48	3.9	1.74	233	4.9	8.41
Hutt Valley	14,971	3.4	34	3.2	2.27	83	3.4	5.54	36	2.9	2.42	153	3.2	10.22
Nelson Marlborough	11,662	2.6	21	2.0	1.80	50	2.0	4.29	27	2.2	2.33	98	2.1	8.40
West Coast	2,988	0.7	5	0.5	1.67	16	0.7	5.35	14	1.1	4.72	35	0.7	11.71
Canterbury	45,123	10.1	84	8.0	1.86	246	10.0	5.45	107	8.7	2.39	437	9.2	9.68
South Canterbury	4,471	1.0	8	0.8	1.79	24	1.0	5.37	15	1.2	3.38	47	1.0	10.51
Southern	25,963	5.8	43	4.1	1.66	138	5.6	5.32	46	3.7	1.78	227	4.8	8.74
Other	1,926	0.4	-	-	-	6	0.2	-	4	0.3	-	10	0.2	-

Other includes Overseas, Unknown and Other

Table A18: Perinatal related death risk (per 1000 ongoing pregnancies) 2007-2013

	2007			2008			2009			2010			2011			2012			2013			Chi-squared test for trend (p)
	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	
Gestation at birth (weeks)																						
20-23	246	262	3.99	316	279	4.24	200	268	4.21	248	293	4.50	257	294	4.70	259	306	4.90	232	274	4.56	0.011
24-27	304	97	1.48	279	98	1.49	281	119	1.88	298	105	1.62	248	88	1.41	255	105	1.69	259	81	1.35	0.61
28-31	539	58	0.89	574	65	1.00	527	65	1.03	551	52	0.81	521	58	0.93	519	50	0.81	472	49	0.82	0.29
32-36	3,912	88	1.36	4,075	80	1.24	3,930	90	1.44	4,116	101	1.58	3,938	86	1.40	3,992	73	1.19	3,771	91	1.54	0.62
37-40	47,925	136	2.24	48,492	141	2.33	46,950	150	2.55	47,992	127	2.12	46,578	122	2.12	46,680	116	2.02	45,508	89	1.61	0.0043
≥41	12,625	34	2.68	12,090	37	3.05	11,721	32	2.72	11,890	26	2.18	11,039	17	1.54	10,700	20	1.87	9,775	14	1.43	0.0021
Unknown	51	1	-	46	-	-	56	1	-	29	-	-	23	-	-	20	-	-	22	-	-	-

Table A19: Perinatal related deaths by primary and associated perinatal death classification (PSANZ-PDC) 2013

Perinatal death classification (PSANZ-PDC)	Primary PSANZ-PDC		Associated PSANZ-PDC 1		Associated PSANZ-PDC 2		Assigned PSANZ-PDCs	
	n=598		n=598		n=598		n=598	
	n	%	n	%	n	%	n	%
Congenital abnormality	158	26.4	9	1.5	1	0.2	166	27.8
Perinatal infection	20	3.3	7	1.2	1	0.2	28	4.7
Hypertension	13	2.2	4	0.7	1	0.2	18	3.0
Antepartum haemorrhage	74	12.4	17	2.8	1	0.2	92	15.4
Maternal conditions	34	5.7	3	0.5	2	0.3	39	6.5
Specific perinatal condition	63	10.5	3	0.5	-	-	66	11.0
Hypoxic peripartum death	11	1.8	2	0.3	-	-	13	2.2
Fetal growth restriction	48	8.0	14	2.3	1	0.2	63	10.5
Spontaneous preterm	80	13.4	47	7.9	2	0.3	129	21.6
Unexplained antepartum death	91	15.2	1	0.2	-	-	91	15.2
No obstetric antecedent	6	1.0	-	-	-	-	6	1.0

Table A20: Neonatal deaths by primary and associated neonatal death classification (PSANZ-NDC) 2013

Neonatal death classification (PSANZ-NDC)	Primary PSANZ-NDC		Associated PSANZ-NDC 1		Associated PSANZ-NDC 2		Assigned PSANZ-NDCs	
	n=152		n=152		n=152		n=152	
	n	%	n	%	n	%	n	%
Congenital abnormality	32	21.1	1	0.7	1	0.7	32	21.1
Extreme prematurity	62	40.8	-	-	1	0.7	62	40.8
Cardio-respiratory disorders	6	3.9	10	6.6	-	-	14	9.2
Infection	12	7.9	4	2.6	1	0.7	17	11.2
Neurological	25	16.4	5	3.3	-	-	30	19.7
Gastrointestinal	1	0.7	-	-	-	-	1	0.7
Other	14	9.2	-	-	-	-	14	9.2

Table A21: Perinatal related death rate among babies born in multiple pregnancies 2007-2013

Year of death	Total multiple births	Fetal deaths				Neonatal deaths		Perinatal related deaths	
		Termination of pregnancy		Stillbirths		n	Rate	n	Rate
		n=59	n=257	n=184	n=500				
n	Rate	n	Rate	n	Rate	n	Rate		
2007	2,033	3	1.48	34	16.72	25	12.53	62	30.50
2008	1,940	3	1.55	33	17.01	18	9.45	54	27.84
2009	1,803	5	2.77	32	17.75	31	17.55	68	37.71
2010	1,896	9	4.75	35	18.46	35	18.90	79	41.67
2011	1,811	18	9.94	48	26.50	27	15.47	93	51.35
2012	1,749	14	8.00	34	19.44	32	18.81	80	45.74
2013	1,753	7	3.99	41	23.39	16	9.38	64	36.51

Table A22: Optimal investigation of perinatal related death by DHB of maternal residence 2013

DHB of maternal residence	Perinatal related deaths	Offered post-mortem		Optimal investigation*	
	n=598	n	%	n	%
Northland	30	26	86.7	9	30.0
Waitemata	64	60	93.8	40	62.5
Auckland	68	66	97.1	43	63.2
Counties Manukau	115	110	95.7	53	46.1
Waikato	52	45	86.5	28	53.8
Bay of Plenty	24	22	91.7	12	50.0
Lakes	16	14	87.5	6	37.5
Tairāwhiti	5	5	100.0	3	60.0
Taranaki	19	18	94.7	11	57.9
Hawke's Bay	27	25	92.6	13	48.1
Whanganui	5	5	100.0	2	40.0
MidCentral	23	21	91.3	15	65.2
Wairarapa	9	9	100.0	6	66.7
Capital & Coast	25	24	96.0	15	60.0
Hutt Valley	17	17	100.0	6	35.3
Nelson Marlborough	18	15	83.3	13	72.2
West Coast	4	4	100.0	1	25.0
Canterbury	46	44	95.7	23	50.0
South Canterbury	8	7	87.5	1	12.5
Southern	20	20	100.0	16	80.0
Overseas	3	2	66.7	3	100.0

* Optimal investigation is defined as post-mortem or karyotype confirming congenital abnormality or clinical examination/investigation confirming diagnosis.

Table A23: Stillbirth rate (per 1000 ongoing pregnancies) by gestation group and year 2007-2013

	2007 n=65,602			2008 n=65,872			2009 n=63,665			2010 n=65,124			2011 n=62,604			2012 n=62,425			2013 n=60,039			Chi-squared test for trend (p)
	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	Total births	n	Risk	
Gestation at birth (weeks)																						
20-23	246	89	1.36	316	123	1.87	200	108	1.70	248	109	1.67	257	114	1.82	259	98	1.57	232	105	1.75	0.41
24-27	304	53	0.81	279	46	0.70	281	60	0.95	298	44	0.68	248	37	0.59	255	51	0.82	259	38	0.64	0.27
28-31	539	43	0.66	574	38	0.58	527	47	0.74	551	32	0.50	521	34	0.55	519	30	0.48	472	32	0.54	0.13
32-36	3912	64	0.99	4075	54	0.83	3930	60	0.96	4116	66	1.03	3938	55	0.89	3992	54	0.88	3771	63	1.07	0.72
37-40	47925	97	1.60	48492	99	1.63	46950	111	1.89	47992	78	1.30	46578	82	1.42	46680	78	1.36	45508	60	1.08	0.0026
≥41	12625	20	1.58	12090	19	1.57	11721	19	1.61	11890	14	1.17	11039	9	0.81	10700	9	0.84	9775	9	0.92	0.015
Unknown	51	1	-	46	-	-	56	1	-	29	-	-	23	-	-	20	-	-	22	-	-	-

Table A24: Contributory factors and potentially avoidable perinatal related death by perinatal death classification (PSANZ-PDC) 2013

Perinatal death classification (PSANZ-PDC)	Perinatal related deaths n=598	Contributory factors and potentially avoidable		Contributory factors BUT NOT or unknown if potentially avoidable		No contributory factors		Unknown	
		n	%	n	%	n	%	n	%
Congenital abnormality	158	-	-	13	8.2	143	90.5	2	1.3
Perinatal infection	20	6	30.0	3	15.0	11	55.0	-	-
Hypertension	13	3	23.1	2	15.4	8	61.5	-	-
Antepartum haemorrhage	74	9	12.2	11	14.9	52	70.3	2	2.7
Maternal conditions	34	18	52.9	1	2.9	14	41.2	1	2.9
Specific perinatal conditions	63	9	14.3	3	4.8	49	77.8	2	3.2
Hypoxic peripartum death	11	6	54.5	-	-	4	36.4	1	9.1
Fetal growth restriction	48	13	27.1	7	14.6	28	58.3	-	-
Spontaneous preterm	80	12	15.0	16	20.0	51	63.8	1	1.3
Unexplained antepartum death	91	15	16.5	9	9.9	66	72.5	1	1.1
No obstetric antecedent	6	4	66.7	-	-	2	33.3	-	-

Table A25: Main contributory factor(s) in potentially avoidable perinatal related death by perinatal death classification (PSANZ-PDC) 2011-2013

Perinatal death classification (PSANZ-PDC)	Perinatal related deaths		Organisation/ Management		Personnel		Barriers		Specific contributory factor not identified	
	n	%	n	%	n	%	n	%	n	%
Congenital abnormality	561	-	-	-	3	0.5	3	0.5	-	-
Perinatal infection	60	1	1.7	5	8.3	10	16.7	2	3.3	
Hypertension	52	3	5.8	7	13.5	11	21.2	2	3.8	
Antepartum haemorrhage	212	4	1.9	7	3.3	24	11.3	2	0.9	
Maternal conditions	96	4	4.2	11	11.5	37	38.5	2	2.1	
Specific perinatal conditions	206	10	4.9	14	6.8	13	6.3	2	1.0	
Hypoxic peripartum death	51	9	17.6	14	27.5	7	13.7	7	13.7	
Fetal growth restriction	141	7	5.0	21	14.9	19	13.5	3	2.1	
Spontaneous preterm	266	4	1.5	12	4.5	45	16.9	1	0.4	
Unexplained antepartum death	269	3	1.1	5	1.9	29	10.8	-	-	
No obstetric antecedent	19	-	-	2	10.5	10	52.6	-	-	

Table A26: Contributory factors and potentially avoidable perinatal related death by maternal prioritised ethnicity (95% CIs surround the estimate of the proportion of cases within each ethnicity where death was potentially avoidable) 2009-2013

Maternal ethnicity	Perinatal related deaths n=3,362	Contributory factors and potentially avoidable			Contributory factors BUT NOT or unknown if potentially avoidable		No contributory factors		Unknown	
		n	%	95% CI	n	%	n	%	n	%
Māori	894	202	22.6	19.48–25.71	146	16.3	510	57.0	36	4.0
Pacific peoples	468	110	23.5	19.11–27.90	61	13.0	273	58.3	24	5.1
Indian	177	28	15.8	10.51–22.86	10	5.6	131	74.0	8	4.5
Other Asian	255	27	10.6	6.98–15.41	16	6.3	208	81.6	4	1.6
Other (including unknown)	272	27	9.9	6.54–14.44	28	10.3	211	77.6	6	2.2
NZ European	1,296	174	13.4	11.43–15.42	67	5.2	1,010	77.9	45	3.5

Table A27: Main contributory factor(s) in potentially avoidable perinatal related deaths by maternal prioritised ethnicity (with 95 % CIs) 2011-2013

Maternal ethnicity	Perinatal related deaths n	Potentially avoidable											
		Organisation/Management			Personnel			Barriers			Specific contributory factor not identified		
		n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI
Māori	494	5	1.0	0.33–2.36	19	3.8	2.32–6.01	82	16.6	13.20–20.60	6	1.2	0.45–2.64
Pacific peoples	255	7	2.7	1.10–5.66	10	3.9	1.88–7.21	54	21.2	15.91–27.63	2	0.8	0.09–2.83
Indian	110	1	0.9	0.02–5.07	10	9.1	4.36–16.72	8	7.3	3.14–14.33	2	1.8	0.22–6.57
Other Asian	159	5	3.1	1.02–7.34	7	4.4	1.77–9.07	7	4.4	1.77–9.07	-	-	-
Other (including unknown)	174	2	1.1	0.14–4.15	7	4.0	1.62–8.29	5	2.9	0.93–6.71	3	1.7	0.36–5.04
NZ European	741	25	3.4	2.18–4.98	48	6.5	4.78–8.59	52	7.0	5.24–9.20	8	1.1	0.47–2.13

Table A28: Contributory factors and potentially avoidable perinatal related death by deprivation quintile (95% CIs surround the estimate of the proportion of cases within quintile where death was potentially avoidable) 2009-2013

Deprivation quintile	Perinatal related deaths n=3,362	Contributory factors and potentially avoidable			Contributory factors BUT NOT or unknown if potentially avoidable		No contributory factors		Unknown	
		n	%	95% CI	n	%	n	%	n	%
1 (least deprived)	429	49	11.4	8.45–15.10	16	3.7	349	81.4	15	3.5
2	521	76	14.6	11.49–18.26	34	6.5	392	75.2	19	3.6
3	598	72	12.0	9.42–15.16	53	8.9	459	76.8	14	2.3
4	683	117	17.1	14.03–20.23	45	6.6	494	72.3	27	4.0
5 (most deprived)	1,087	241	22.2	19.37–24.97	174	16.0	627	57.7	45	4.1
Unknown	44	13	29.5	15.73–50.52	6	13.6	22	50.0	3	6.8

Table A29: Main contributory factor(s) in potentially avoidable perinatal related deaths by deprivation quintile (with 95% CIs) 2011-2013

Deprivation quintile	Perinatal related deaths n	Potentially avoidable											
		Organisation/Management			Personnel			Barriers			Specific contributory factor not identified		
	n	n	%	95% CI	n	%	95% CI	n	%	95% CI	n	%	95% CI
1 (least deprived)	262	8	3.1	1.32–6.02	10	3.8	1.83–7.02	12	4.6	2.37–8.00	3	1.1	0.24–3.35
2	308	2	0.6	0.08–2.35	24	7.8	4.99–11.59	21	6.8	4.22–10.42	6	1.9	0.71–4.24
3	350	10	2.9	1.37–5.25	13	3.7	1.98–6.35	25	7.1	4.62–10.54	1	0.3	0.01–1.59
4	378	12	3.2	1.64–5.55	23	6.1	3.86–9.13	38	10.1	7.11–13.80	2	0.5	0.06–1.91
5 (most deprived)	615	12	2.0	1.01–3.41	31	5.0	3.42–7.15	105	17.1	13.81–20.34	9	1.5	0.67–2.78
Unknown	20	1	5.0	-	-	-	-	7	35.0	-	-	-	-

Table A30: Specific barriers to access and/or engagement with care in potentially avoidable perinatal related deaths (as a percentage of all perinatal related deaths) by maternal prioritised ethnicity (Māori, Pacific peoples, Indian, and New Zealand European) 2011-2013

Specific barriers factors in potentially avoidable perinatal related deaths	Māori		Pacific peoples		Indian		Other Asian		Other (including unknown)		NZ European	
	n=339		n=172		n=73		n=113		n=127		n=511	
	n	%	n	%	n	%	n	%	n	%	n	%
No antenatal care	25	7.4	14	8.1	1	1.4	-	-	1	0.8	7	1.4
Infrequent care or late booking	23	6.8	12	7.0	1	1.4	1	0.9	2	1.6	6	1.2
Declined treatment or advice	12	3.5	5	2.9	1	1.4	1	0.9	2	1.6	6	1.2
Obesity impacted on delivery of optimal care	-	-	1	0.6	-	-	1	0.9	-	-	-	-
Substance use	16	4.7	1	0.6	-	-	1	0.9	-	-	3	0.6
Family violence	7	2.1	1	0.6	-	-	-	-	-	-	2	0.4
Lack of recognition of complexity or seriousness of condition by the woman and/or family	16	4.7	4	2.3	2	2.7	4	3.5	1	0.8	9	1.8
Maternal mental illness	3	0.9	1	0.6	-	-	1	0.9	-	-	1	0.2
Cultural barriers	1	0.3	5	2.9	1	1.4	1	0.9	-	-	2	0.4
Language barriers	-	-	2	1.2	2	2.7	1	0.9	-	-	-	-
Not eligible to access free care	-	-	5	2.9	1	1.4	-	-	-	-	-	-
Environment	7	2.1	3	1.7	-	-	1	0.9	1	0.8	7	1.4
Other	11	3.2	5	2.9	-	-	-	-	-	-	8	1.6
Not stated	-	-	-	-	1	1.4	-	-	-	-	1	0.2

Table A32: Perinatal related death and primary perinatal death classification (PSANZ-PDC) 2007-2013

Perinatal death classification (PSANZ-PDC)	2007	2008	2009	2010	2011	2012	2013	2007-2013
	n=676	n=700	n=725	n=704	n=665	n=670	n=598	n=4,738
	n	n	n	n	n	n	n	n
Congenital abnormality								
1.1 Central nervous system	43	42	35	36	41	35	32	264
1.2 Cardiovascular system	20	31	22	29	27	23	23	175
1.3 Urinary system	9	15	8	18	16	12	13	91
1.4 Gastrointestinal system	7	3	4	3	4	4	1	26
1.5 Chromosomal	60	48	62	72	55	64	46	407
1.6 Metabolic	3	1	6	1	3	3	1	18
1.7 Multiple/non chromosomal syndromes	31	20	22	24	29	29	17	172
1.8 Other congenital abnormality								
1.81 Musculoskeletal	4	4	7	9	14	11	16	65
1.82 Respiratory	1	1	1	1	1	1	-	6
1.83 Diaphragmatic hernia	4	5	7	8	4	6	2	36
1.84 Haematological	-	-	-	2	3	1	2	8
1.85 Tumours	3	5	1	1	2	2	1	15
1.88 Other specified congenital abnormality	10	3	1	5	1	6	4	30
1.9 Unspecified congenital abnormality	1	6	5	2	2	4	-	20
Perinatal infections								
2.1 Bacterial								
2.11 Group B Streptococcus	9	4	8	8	3	-	3	35
2.12 E coli	2	3	4	3	1	1	3	17
2.13 Listeria monocytogenes	1	2	2	2	-	1	3	11
2.14 Spirochaetal e.g. Syphilis	-	-	-	-	-	1	-	1
2.18 Other bacterial	1	6	1	-	3	3	3	17
2.19 Unspecified bacterial	2	3	1	3	1	3	-	13
2.2 Viral								
2.21 Cytomegalovirus	3	6	4	7	3	3	3	29
2.22 Parvovirus	3	1	-	-	4	4	-	12
2.23 Herpes simplex virus	2	1	1	-	1	-	3	8
2.28 Other viral	-	-	1	-	-	-	-	1
2.29 Unspecified viral	2	1	-	-	-	-	-	3
2.3 Protozoal e.g. Toxoplasma								
2.3 Protozoal e.g. Toxoplasma	1	-	-	3	3	1	-	8
2.8 Other specified organism								
2.8 Other specified organism	-	-	-	-	1	-	-	1
2.9 Other unspecified organism								
2.9 Other unspecified organism	3	1	3	2	1	2	2	14

Perinatal death classification (PSANZ-PDC)	2007	2008	2009	2010	2011	2012	2013	2007-2013
	n=676	n=700	n=725	n=704	n=665	n=670	n=598	n=4,738
	n	n	n	n	n	n	n	n
Hypertension								
3.1 Chronic hypertension: essential	1	2	1	-	1	3	3	11
3.2 Chronic hypertension: secondary, e.g. renal disease	-	3	-	1	1	-	-	5
3.3 Chronic hypertension: unspecified	-	2	1	1	-	-	1	5
3.4 Gestational hypertension	2	1	3	1	3	2	1	13
3.5 Pre-eclampsia	12	10	15	18	12	8	6	81
3.51 Pre-eclampsia: With laboratory evidence of thrombophilia	-	-	2	1	-	1	-	4
3.6 Pre-eclampsia superimposed on chronic hypertension	4	2	4	1	4	4	2	21
3.61 Pre-eclampsia superimposed on chronic hypertension: With laboratory evidence of thrombophilia	-	1	-	2	-	-	-	3
3.9 Unspecified hypertension	-	1	2	1	-	-	-	4
Antepartum haemorrhage (APH)								
4.1 Placental abruption	37	40	44	37	38	29	39	264
4.11 Placental abruption: With laboratory evidence of thrombophilia	3	5	2	3	4	2	1	20
4.2 Placenta praevia	2	-	4	3	1	1	-	11
4.3 Vasa praevia	1	-	1	1	1	-	-	4
4.8 Other APH	10	7	9	9	11	4	15	65
4.9 APH of undetermined origin	8	14	17	25	23	24	19	130
Maternal conditions								
5.1 Termination of pregnancy for maternal psychosocial indications	4	5	3	2	5	4	1	24
5.2 Diabetes / Gestational diabetes	12	7	14	18	7	16	16	90
5.3 Maternal injury								
5.31 Maternal injury: Accidental	2	-	1	2	-	3	-	8
5.32 Maternal injury: Non-accidental	-	3	1	1	-	-	1	6
5.4 Maternal sepsis	1	-	3	2	2	1	4	13
5.5 Antiphospholipid syndrome	3	2	6	4	3	-	2	20
5.51 Other maternal thrombophilia (if considered cause of death)	-	1	-	-	1	1	-	3
5.8 Other specified maternal conditions	5	5	10	3	8	11	10	52
Specific perinatal conditions								
6.1 Twin-twin transfusion	17	15	32	22	18	23	21	148
6.2 Fetomaternal haemorrhage	6	4	13	8	12	8	2	53

Perinatal death classification (PSANZ-PDC)	2007	2008	2009	2010	2011	2012	2013	2007-2013
	n=676	n=700	n=725	n=704	n=665	n=670	n=598	n=4,738
	n	n	n	n	n	n	n	n
6.3 Antepartum cord complications (e.g. cord haemorrhage; true knot with evidence of occlusion)	15	12	-	-	-	-	-	27
6.31 Cord haemorrhage	-	2	1	1	-	2	2	8
6.32 True knot with evidence of occlusion	-	1	2	3	6	1	2	15
6.38 Other	-	1	8	15	12	6	6	48
6.4 Uterine abnormalities, e.g. bicornuate uterus, cervical incompetence	10	15	12	10	10	14	12	83
6.5 Birth trauma (typically infants of >24 weeks gestation or >600g birthweight)	-	-	1	-	-	-	-	1
6.6 Alloimmune disease								
6.61 Alloimmune disease: Rhesus	-	-	-	-	-	1	1	2
6.64 Alloimmune disease: Alloimmune thrombocytopenia	1	-	1	2	-	-	-	4
6.7 Idiopathic hydrops	-	7	2	3	3	5	4	24
6.8 Other specific perinatal conditions (includes iatrogenic conditions such as rupture of membranes after amniocentesis, termination of pregnancy for suspected but unconfirmed congenital abnormality.								
6.81 Rupture of membranes after amniocentesis	2	4	-	1	1	2	1	11
6.82 Termination of pregnancy for suspected but unconfirmed congenital abnormality	-	-	-	-	-	-	3	3
6.83 Fetal subdural haematoma	-	2	-	2	-	-	-	4
6.88 Other	6	8	4	2	11	8	9	48
Hypoxic peripartum death								
7.1 With intrapartum complications								
7.11 With intrapartum complications: Uterine rupture	1	1	2	1	1	1	-	7
7.12 With intrapartum complications: Cord prolapse	2	1	1	5	4	2	-	15
7.13 With intrapartum complications: Shoulder dystocia	1	1	2	-	-	-	-	4
7.18 With intrapartum complications: Other	6	4	2	3	2	3	1	21
7.2 Evidence of non-reassuring fetal status in a normally grown infant. (e.g. abnormal fetal heart rate, fetal scalp ph/lactate, fetal pulse oximetry without intrapartum complications)	16	11	13	7	9	11	6	73
7.3 No intrapartum complications and no evidence of non-reassuring fetal status.	1	2	1	1	1	2	3	11
7.9 Unspecified hypoxic peripartum death	6	14	7	3	3	1	1	35

Perinatal death classification (PSANZ-PDC)	2007	2008	2009	2010	2011	2012	2013	2007-2013
	n=676	n=700	n=725	n=704	n=665	n=670	n=598	n=4,738
	n	n	n	n	n	n	n	n
Fetal growth restriction (FGR)								
8.1 With evidence of reduced vascular perfusion on Doppler studies and/or placental histopathology (e.g. significant infarction, acute atherosclerosis, maternal and/or fetal vascular thrombosis or maternal floor infarction)	34	37	28	33	33	30	31	226
8.2 With chronic villitis	1	-	1	-	1	-	3	6
8.3 No placental pathology	2	9	6	5	3	2	3	30
8.4 No examination of placenta	4	3	3	2	3	4	1	20
8.8 Other specified placental pathology	4	12	14	8	4	13	10	65
8.9 Unspecified or not known whether placenta examined	1	1	1	-	-	-	-	3
Spontaneous preterm								
9.1 Spontaneous preterm with intact membranes, or membrane rupture <24 hours before delivery								
9.11 Spontaneous preterm with intact membranes, or membrane rupture <24 hours before delivery: With chorioamnionitis	19	17	26	29	17	22	25	155
9.12 Spontaneous preterm with intact membranes, or membrane rupture <24 hours before delivery: Without chorioamnionitis	17	15	13	14	13	6	5	83
9.13 Spontaneous preterm with intact membranes, or membrane rupture <24 hours before delivery: No examination of placenta	-	1	-	3	3	-	5	12
9.17 No clinical signs of chorioamnionitis, no examination of placenta	12	4	14	17	11	13	4	75
9.19 Spontaneous preterm with intact membranes, or membrane rupture <24 hours before delivery: Unspecified or not known whether placenta examined	6	10	10	6	1	7	1	41
9.2 Spontaneous preterm with membrane rupture \geq 24 hours before delivery								
9.21 Spontaneous preterm with membrane rupture \geq 24 hours before delivery: With chorioamnionitis	18	25	26	34	22	23	32	180
9.22 Spontaneous preterm with membrane rupture \geq 24 hours before delivery: Without chorioamnionitis	3	5	3	2	1	8	2	24

Perinatal death classification (PSANZ-PDC)	2007	2008	2009	2010	2011	2012	2013	2007-2013
	n=676	n=700	n=725	n=704	n=665	n=670	n=598	n=4,738
	n	n	n	n	n	n	n	n
9.23 Spontaneous preterm with membrane rupture \geq 24 hours before delivery: With clinical evidence of chorioamnionitis, no examination of placenta	1	4	3	3	7	3	3	24
9.27 No clinical signs of chorioamnionitis, no examination of placenta	4	2	3	2	3	9	1	24
9.29 Spontaneous preterm with membrane rupture \geq 24 hours before delivery: Unspecified or not known whether placenta examined	2	3	3	-	3	2	-	13
9.3 Spontaneous preterm with membrane rupture of unknown duration before delivery								
9.31 Spontaneous preterm with membrane rupture of unknown duration before delivery: With chorioamnionitis	6	1	2	-	2	3	1	15
9.32 Spontaneous preterm with membrane rupture of unknown duration before delivery: Without chorioamnionitis	3	1	1	-	1	-	-	6
9.33 Spontaneous preterm with membrane rupture of unknown duration before delivery: With clinical evidence of chorioamnionitis, no examination of placenta	-	3	-	-	-	1	-	4
9.37 No clinical signs of chorioamnionitis, no examination of placenta	-	-	2	1	-	2	1	6
9.39 Spontaneous preterm with membrane rupture of unknown duration before delivery: Unspecified or not known whether placenta examined	7	3	3	-	-	3	-	16
Unexplained antepartum death								
10.1 With evidence of reduced vascular perfusion on Doppler studies and/or placental histopathology (e.g. significant infarction, acute atherosclerosis, maternal and/or fetal vascular thrombosis or maternal floor infarction)	14	14	13	10	11	17	7	86
10.2 With chronic villitis	3	-	1	-	3	2	1	10
10.3 No placental pathology	30	25	28	19	25	12	27	166
10.4 No examination of placenta	18	25	21	14	13	20	12	123
10.8 Other specified placental pathology	28	31	34	26	40	34	44	237
10.9 Unspecified or not known whether placenta examined	6	7	6	2	-	1	-	22

Perinatal death classification (PSANZ-PDC)	2007	2008	2009	2010	2011	2012	2013	2007-2013
	n=676	n=700	n=725	n=704	n=665	n=670	n=598	n=4,738
	n	n	n	n	n	n	n	n
No obstetric antecedent								
11.1 Sudden Infant Death Syndrome (SIDS)								
11.11 SIDS Category IA: Classic features of SIDS present, completely documented	-	-	-	-	-	-	1	1
11.13 SIDS Category II: Infant deaths that meet Category I except for one or more features	1	-	2	-	-	-	-	3
11.2 Postnatally acquired infection	1	2	1	2	2	3	1	12
11.3 Accidental asphyxiation	1	2	-	-	-	1	-	4
11.4 Other accident, poisoning or violence (postnatal)	-	1	-	-	1	1	-	3
11.8 Other specified	-	1	-	1	-	1	1	4
11.9 Unknown/Undetermined	1	1	-	-	-	2	-	4
11.91 Unclassified Sudden Infant Death	7	7	3	7	1	1	3	29
11.92 Other Unknown/Undetermined	-	-	1	-	-	-	-	1

Table A33: Neonatal death and primary neonatal death classification (PSANZ-NDC) 2007-2013

Neonatal death classification (PSANZ-NDC)	2007	2008	2009	2010	2011	2012	2013	2007-2013
	n=167	n=177	n=182	n=210	n=163	n=178	n=152	n=1,229
	n	n	n	n	n	n	n	n
Congenital abnormality								
1.1 Central nervous system	2	2	6	6	5	4	4	29
1.2 Cardiovascular system	9	12	6	7	6	3	5	48
1.3 Urinary system	4	7	3	6	6	4	2	32
1.4 Gastrointestinal system	2	1	-	-	1	2	1	7
1.5 Chromosomal	6	7	8	12	14	11	5	63
1.6 Metabolic	1	1	5	1	3	3	1	15
1.7 Multiple/non chromosomal syndromes	9	6	8	6	6	4	9	48
1.8 Other congenital abnormality								
1.81 Musculoskeletal	-	-	-	1	4	1	2	8
1.82 Respiratory	-	1	-	1	1	1	-	4
1.83 Diaphragmatic hernia	2	4	7	4	3	3	-	23
1.84 Haematological	-	-	-	1	-	-	1	2
1.85 Tumours	1	2	-	-	-	-	1	4
1.88 Other specified congenital abnormality	2	-	-	1	1	2	1	7
Extreme prematurity								
2.1 Not resuscitated	48	37	51	71	45	60	57	369
2.2 Unsuccessful resuscitation	9	15	6	13	9	9	4	65
2.9 Unspecified or not known whether resuscitation attempted	-	-	-	-	-	-	1	1
Cardio-respiratory disorders								
3.1 Hyaline membrane disease / Respiratory distress syndrome (RDS)	6	7	5	8	3	5	1	35
3.2 Meconium aspiration syndrome	-	-	-	-	-	-	1	1
3.3 Primary persistent pulmonary hypertension	-	-	-	1	-	2	1	4
3.4 Pulmonary hypoplasia	3	4	2	3	5	1	1	19
3.5 Chronic neonatal lung disease (typically, bronchopulmonary dysplasia)	-	-	2	2	-	1	-	5
3.6 Pulmonary haemorrhage	-	-	2	3	2	2	2	11
3.8 Other	2	-	-	1	1	3	-	7
Infection								
4.1 Bacterial								
4.11 Congenital bacterial								
4.111 Congenital bacterial: Group B Streptococcus	4	4	2	6	2	-	2	20

Neonatal death classification (PSANZ-NDC)	2007	2008	2009	2010	2011	2012	2013	2007-2013
	n=167	n=177	n=182	n=210	n=163	n=178	n=152	n=1,229
	n	n	n	n	n	n	n	n
4.112 Congenital bacterial: E coli	1	-	-	3	3	3	1	11
4.113 Congenital bacterial: Listeria monocytogenes	-	1	-	-	-	-	-	1
4.118 Congenital bacterial: Other bacterial	-	3	2	-	2	2	1	10
4.119 Congenital bacterial: Unspecified bacterial	3	-	1	3	-	2	1	10
4.12 Acquired bacterial								
4.121 Acquired bacterial: Group B Streptococcus	-	-	-	-	3	1	-	4
4.122 Acquired bacterial: E coli	-	3	-	1	-	-	-	4
4.125 Acquired bacterial: Other Gram negative bacilli (other than E coli)	1	1	-	1	-	1	1	5
4.126 Acquired bacterial: Staphylococcus aureus	1	2	-	1	-	1	1	6
4.127 Acquired bacterial: Coagulase negative Staphylococcus	-	3	-	-	-	-	-	3
4.128 Acquired bacterial: Other specified bacterial	-	-	2	3	1	1	1	8
4.129 Acquired bacterial: Unspecified bacterial	1	1	-	-	-	-	-	2
4.2 Viral								
4.21 Congenital viral								
4.211 Congenital viral: Cytomegalovirus	-	1	-	-	2	-	-	3
4.213 Congenital viral: Herpes simplex virus	2	-	-	-	1	-	3	6
4.218 Congenital viral: Other specified viral	-	-	-	-	1	1	-	2
4.22 Acquired viral								
4.223 Acquired viral: Herpes simplex virus	-	-	1	-	-	1	1	3
4.228 Acquired viral: Other specified viral	-	1	-	1	-	1	-	3
4.229 Acquired viral: Unspecified viral	-	1	-	-	-	-	-	1
4.9 Unspecified organism	1	-	4	-	-	1	-	6
Neurological								
5.1 Hypoxic ischaemic encephalopathy / Perinatal asphyxia (typically infants of >24 weeks gestation or >600g birthweight)	26	28	31	25	15	18	16	159
5.2 Intracranial haemorrhage								
5.21 Intraventricular Haemorrhage	5	2	7	1	8	6	8	37
5.22 Subgaleal Haemorrhage	-	1	1	-	-	-	-	2
5.23 Subarachnoid Haemorrhage	-	1	-	-	-	-	-	1
5.24 Subdural Haemorrhage	-	-	-	1	-	-	1	2
5.28 Other Intracranial Haemorrhage	-	-	1	-	-	-	-	1
5.8 Other	-	1	-	1	-	1	-	3

Neonatal death classification (PSANZ-NDC)	2007	2008	2009	2010	2011	2012	2013	2007-2013
	n=167	n=177	n=182	n=210	n=163	n=178	n=152	n=1,229
	n	n	n	n	n	n	n	n
Gastrointestinal								
6.1 Necrotising enterocolitis	2	-	6	5	2	2	1	18
6.8 Other	-	-	2	-	-	1	-	3
Other								
7.1 Sudden Infant Death Syndrome (SIDS)								
7.11 SIDS Category IA: Classic features of SIDS present and completely documented	-	-	-	-	-	-	1	1
7.13 SIDS Category II: Infant deaths that meet category I except for one or more features	1	-	2	-	-	-	-	3
7.2 Multisystem failure								
7.21 Multisystem failure: Secondary to intrauterine growth restriction	-	-	3	-	-	-	2	5
7.28 Multisystem failure: Other specified	-	-	1	-	2	1	2	6
7.29 Multisystem failure: Unspecified/undetermined primary cause or trigger event	-	-	-	-	-	1	-	1
7.3 Trauma								
7.31 Trauma: Accidental	-	3	-	-	-	3	1	7
7.32 Trauma: Non accidental	-	-	-	-	1	-	-	1
7.39 Trauma: Unspecified	-	-	-	-	-	-	1	1
7.4 Treatment complications								
7.42 Treatment complications: Medical	3	-	-	-	-	-	-	3
7.8 Other specified	-	3	-	2	-	2	3	10
7.9 Unknown/Undetermined	-	1	-	-	-	2	-	3
7.91 Unclassified Sudden Infant Death								
7.911 Unclassified Sudden Infant Death: Bed sharing	10	1	-	-	-	-	-	11
7.912 Unclassified Sudden Infant Death: Not bed sharing	-	7	4	7	3	5	4	30
7.912 Unclassified Sudden Infant Death: Not bed sharing	-	-	1	1	2	-	-	4

Table A35: Neonatal encephalopathy rate (per 1000 term births) by maternal prioritised ethnicity, maternal age and deprivation quintile 2010-2013

	NZ registered births ≥ 37 weeks n=230,162		NE cases n=298		Rate (/1000 births) Term only	
	n	%	n	%	/1000	95% CI
Maternal ethnicity						
Māori	51,749	22.5	78	26.2	1.51	1.19 – 1.88
Pacific peoples	24,466	10.6	49	16.4	2.00	1.48 – 2.65
Indian	8,986	3.9	16	5.4	1.78	1.02 – 2.89
Other Asian	20,947	9.1	21	7.0	1.00	0.62 – 1.53
Other (including unknown)	20,683	9.0	19	6.4	0.92	0.55 – 1.43
NZ European	103,331	44.9	115	38.6	1.11	0.91 – 1.32
Maternal age (years)						
< 20	14,618	6.4	19	6.4	1.30	0.78 – 2.03
20-34	166,535	72.4	222	74.5	1.33	1.16 – 1.51
35-39	39,584	17.2	49	16.4	1.24	0.92 – 1.64
≥ 40	9,425	4.1	8	2.7	0.85	0.37 – 1.67
Deprivation quintile						
1 (least deprived)	36,124	15.7	32	10.7	0.89	0.61 – 1.25
2	40,871	17.8	46	15.4	1.13	0.82 – 1.50
3	44,447	19.3	61	20.5	1.37	1.05 – 1.76
4	48,404	21.0	53	17.8	1.09	0.82 – 1.43
5 (most deprived)	59,366	25.8	105	35.2	1.77	1.43 – 2.11
Unknown	950	0.4	1	0.3	-	-

Table A36: Lead maternity carer (LMC) at registration and birth among neonatal encephalopathy cases 2010-2013

Lead maternity carer at booking	NE cases		LMC at birth												
	n=298		Not registered		General practitioner		Self-employed midwife		Private obstetrician		Hospital-employed midwife		Hospital clinic/obstetrician		
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
Not registered	5	1.3	1	20.0	-	-	-	-	-	-	-	-	-	4	80.0
General practitioner	8	2.7	-	-	2	25.0	1	12.5	-	-	1	12.5	4	50.0	
Self-employed midwife	228	77.9	-	-	-	-	175	76.8	-	-	2	0.9	51	22.4	
Private obstetrician	7	2.0	-	-	-	-	-	-	7	100.0	-	-	-	-	
Hospital employed midwife	29	8.7	-	-	-	-	1	3.4	-	-	19	65.5	9	31.0	
Hospital clinic/obstetrician	20	6.7	-	-	-	-	-	-	-	-	-	-	20	100.0	
Unknown	1	0.7	-	-	-	-	1	100.0	-	-	-	-	-	-	
TOTAL	298		1	0.3	2	0.7	178	59.7	7	2.3	22	7.4	88	29.5	

Table A37: Neonatal encephalopathy rate (per 1000 term births) by DHB of maternal residence 2010-2013

DHB of residence	NZ registered births ≥ 37 weeks	2010	2011	2012	2013	Total NE cases	Rate (/1000 term births)	
	n=230,162	n=82	n=67	n=79	n=70	n=298	/1000	95% CI
	n	n	n	n	n	n		
Northland	8,662	2	2	1	1	6	0.69	0.25 – 1.51
Waitemata	29,377	10	6	5	5	26	0.89	0.58 – 1.30
Auckland	24,210	4	8	4	8	24	0.99	0.64 – 1.48
Counties Manukau	31,908	14	11	14	6	45	1.41	1.03 – 1.89
Waikato	20,268	14	9	9	5	37	1.83	1.29 – 2.52
Bay of Plenty	10,866	3	4	2	3	12	1.10	0.57 – 1.93
Lakes	5,747	2	4	2	1	9	1.57	0.72 – 2.97
Tairāwhiti	2,767	1	2	2	1	6	2.17	0.80 – 4.72
Taranaki	5,780	2	-	6	4	12	2.08	1.07 – 3.63
Hawke's Bay	8,350	2	1	4	2	9	1.08	0.49 – 2.05
Whanganui	3,201	1	-	2	2	5	1.56	0.51 – 3.65
MidCentral	8,407	2	1	1	3	7	0.83	0.33 – 1.72
Wairarapa	1,958	1	-	-	-	1	0.51	0.01 – 2.85
Capital and Coast	14,115	6	4	9	9	28	1.98	1.32 – 2.87
Hutt Valley	7,530	4	4	2	6	16	2.12	1.21 – 3.45
Nelson and Marlborough	6,042	-	1	2	5	8	1.32	0.57 – 2.61
West Coast	1,547	-	1	1	-	2	1.29	0.16 – 4.67
Canterbury	22,820	11	6	7	2	26	1.14	0.74 – 1.67
South Canterbury	2,308	1	2	2	1	6	2.60	0.95 – 5.66
Southern	13,447	2	1	4	6	13	0.97	0.51 – 1.65
Unknown	852	-	-	-	-	-	-	-

Appendix B: Classifications of the Perinatal Society of Australia and New Zealand (PSANZ 2009)

PSANZ Perinatal mortality classification

PSANZ perinatal death classification (PSANZ-PDC)

1. Congenital abnormality (including terminations for congenital abnormalities)

- 1.1 Central nervous system
- 1.2 Cardiovascular system
- 1.3 Urinary system
- 1.4 Gastrointestinal system
- 1.5 Chromosomal
- 1.6 Metabolic
- 1.7 Multiple/non-chromosomal syndromes
- 1.8 Other congenital abnormality
 - 1.81 Musculoskeletal
 - 1.82 Respiratory
 - 1.83 Diaphragmatic hernia
 - 1.84 Haematological
 - 1.85 Tumours
 - 1.88 Other specified congenital abnormality
- 1.9 Unspecified congenital abnormality

2. Perinatal infection

- 2.1 Bacterial
 - 2.11 Group B Streptococcus
 - 2.12 E. coli
 - 2.13 Listeria monocytogenes
 - 2.14 Spirochaetal (eg, syphilis)
 - 2.18 Other bacterial
 - 2.19 Unspecified bacterial
- 2.2 Viral
 - 2.21 Cytomegalovirus
 - 2.22 Parvovirus
 - 2.23 Herpes simplex virus
 - 2.24 Rubella virus
 - 2.28 Other viral
 - 2.29 Unspecified viral
- 2.3 Protozoal (eg, Toxoplasma)
- 2.5 Fungal
- 2.8 Other specified organism
- 2.9 Other unspecified organism

3. Hypertension

- 3.1 Chronic hypertension: essential
- 3.2 Chronic hypertension: secondary (eg, renal disease)
- 3.3 Chronic hypertension: unspecified
- 3.4 Gestational hypertension
- 3.5 Pre-eclampsia
 - 3.51 With laboratory evidence of thrombophilia
- 3.6 Pre-eclampsia superimposed on chronic hypertension
 - 3.61 With laboratory evidence of thrombophilia
- 3.9 Unspecified hypertension

4. **Antepartum haemorrhage (APH)**
 - 4.1 Placental abruption
 - 4.11 With laboratory evidence of thrombophilia
 - 4.2 Placenta praevia
 - 4.3 Vasa praevia
 - 4.8 Other APH
 - 4.9 APH of undetermined origin

5. **Maternal conditions**
 - 5.1 Termination of pregnancy for maternal psychosocial indications
 - 5.2 Diabetes/Gestational diabetes
 - 5.3 Maternal injury
 - 5.31 Accidental
 - 5.32 Non-accidental
 - 5.4 Maternal sepsis
 - 5.5 Antiphospholipid syndrome
 - 5.51 Other maternal thrombophilia (if considered cause of death)
 - 5.6 Obstetric cholestasis
 - 5.8 Other specified maternal conditions

6. **Specific perinatal conditions**
 - 6.1 Twin–twin transfusion
 - 6.2 Fetomaternal haemorrhage
 - 6.3 Antepartum cord complications
 - 6.31 Cord haemorrhage
 - 6.32 True knot with evidence of occlusion
 - 6.38 Other
 - 6.39 Unspecified
 - 6.4 Uterine abnormalities (eg, bicornuate uterus, cervical incompetence)
 - 6.5 Birth trauma (typically infants of >24 weeks gestation or >600g birthweight)
 - 6.6 Alloimmune disease
 - 6.61 Rhesus
 - 6.62 ABO
 - 6.63 Kell
 - 6.64 Alloimmune thrombocytopenia
 - 6.68 Other
 - 6.69 Unspecified
 - 6.7 Idiopathic hydrops
 - 6.8 Other specific perinatal conditions
 - 6.81 Rupture of membranes after amniocentesis
 - 6.82 Termination of pregnancy for suspected but unconfirmed congenital abnormality
 - 6.83 Fetal subdural haematoma
 - 6.88 Other
 - 6.89 Unspecified

7. **Hypoxic peripartum death (typically infants of >24 weeks gestation or >600g birthweight)**
 - 7.1 With intrapartum complications
 - 7.11 Uterine rupture
 - 7.12 Cord prolapse
 - 7.13 Shoulder dystocia
 - 7.18 Other
 - 7.2 Evidence of non-reassuring fetal status in a normally grown infant (eg, abnormal fetal heart rate, fetal scalp pH/lactate, fetal pulse oximetry without intrapartum complications)
 - 7.3 No intrapartum complications and no evidence of non-reassuring fetal status.
 - 7.9 Unspecified hypoxic peripartum death

8. **Fetal growth restriction (FGR)**
 - 8.1 With evidence of reduced vascular perfusion on Doppler studies and/or placental histopathology (eg, significant infarction, acute atherosclerosis, maternal and/or fetal vascular thrombosis or maternal floor infarction)
 - 8.2 With chronic villitis
 - 8.3 No placental pathology
 - 8.4 No examination of placenta
 - 8.8 Other specified placental pathology
 - 8.9 Unspecified or not known whether placenta examined

9. **Spontaneous preterm (<37 weeks gestation)**
 - 9.1 Spontaneous preterm with intact membranes or membrane rupture <24 hours before delivery
 - 9.11 With chorioamnionitis confirmed on placental histopathology
 - 9.12 Without chorioamnionitis on placental histopathology
 - 9.13 With clinical evidence of chorioamnionitis, no examination of placenta
 - 9.17 No clinical signs of chorioamnionitis, no examination of placenta
 - 9.19 Unspecified or not known whether placenta examined
 - 9.2 Spontaneous preterm with membrane rupture ≥24 hours before delivery
 - 9.21 With chorioamnionitis confirmed on placental histopathology
 - 9.22 Without chorioamnionitis on placental histopathology
 - 9.23 With clinical evidence of chorioamnionitis, no examination of placenta
 - 9.27 No clinical signs of chorioamnionitis, no examination of placenta
 - 9.29 Unspecified or not known whether placenta examined
 - 9.3 Spontaneous preterm with membrane rupture of unknown duration before delivery
 - 9.31 With chorioamnionitis confirmed on placental histopathology
 - 9.32 Without chorioamnionitis on placental histopathology
 - 9.33 With clinical evidence of chorioamnionitis, no examination of placenta
 - 9.37 No clinical signs of chorioamnionitis, no examination of placenta
 - 9.39 Unspecified or not known whether placenta examined

10. **Unexplained antepartum death**
 - 10.1 With evidence of reduced vascular perfusion on Doppler studies and/or placental histopathology (eg, significant infarction, acute atherosclerosis, maternal and/or fetal vascular thrombosis or maternal floor infarction)
 - 10.2 With chronic villitis
 - 10.3 No placental pathology
 - 10.4 No examination of placenta
 - 10.8 Other specified placental pathology
 - 10.9 Unspecified or not known whether placenta examined

11. **No obstetric antecedent**
 - 11.1 Sudden infant death syndrome (SIDS)
 - 11.11 SIDS Category IA: classic features of SIDS present and completely documented
 - 11.12 SIDS Category IB: classic features of SIDS present but incompletely documented
 - 11.13 SIDS Category II: infant deaths that meet Category I except for one or more features
 - 11.2 Postnatally acquired infection
 - 11.3 Accidental asphyxiation
 - 11.4 Other accident, poisoning or violence (postnatal)
 - 11.8 Other specified
 - 11.9 Unknown/Undetermined
 - 11.91 Unclassified sudden infant death
 - 11.92 Other unknown/undetermined

PSANZ neonatal death classification (PSANZ-NDC)

- 1. Congenital abnormality (including terminations for congenital abnormalities)**
 - 1.1 Central nervous system
 - 1.2 Cardiovascular system
 - 1.3 Urinary system
 - 1.4 Gastrointestinal system
 - 1.5 Chromosomal
 - 1.6 Metabolic
 - 1.7 Multiple/Non-chromosomal syndromes
 - 1.8 Other congenital abnormality
 - 1.81 Musculoskeletal
 - 1.82 Respiratory
 - 1.83 Diaphragmatic hernia
 - 1.84 Haematological
 - 1.85 Tumours
 - 1.88 Other specified congenital abnormality
 - 1.9 Unspecified congenital abnormality
- 2. Extreme prematurity (typically infants of ≤ 24 weeks gestation or ≤ 600 g birthweight)**
 - 2.1 Not resuscitated
 - 2.2 Unsuccessful resuscitation
 - 2.9 Unspecified or not known whether resuscitation attempted
- 3. Cardio-respiratory disorders**
 - 3.1 Hyaline membrane disease/Respiratory distress syndrome (RDS)
 - 3.2 Meconium aspiration syndrome
 - 3.3 Primary persistent pulmonary hypertension
 - 3.4 Pulmonary hypoplasia
 - 3.5 Chronic neonatal lung disease (typically, bronchopulmonary dysplasia)
 - 3.6 Pulmonary haemorrhage
 - 3.7 Pneumothorax
 - 3.8 Other
- 4. Infection**
 - 4.1 Bacterial
 - 4.11 Congenital bacterial
 - 4.111 Group B Streptococcus
 - 4.112 E. coli
 - 4.113 Listeria monocytogenes
 - 4.114 Spirochaetal (eg, syphilis)
 - 4.118 Other bacterial
 - 4.119 Unspecified bacterial
 - 4.12 Acquired bacterial
 - 4.121 Group B Streptococcus
 - 4.122 E. coli
 - 4.125 Other Gram-negative bacilli (other than E. coli)
 - 4.126 Staphylococcus aureus
 - 4.127 Coagulase negative Staphylococcus
 - 4.128 Other specified bacterial
 - 4.129 Unspecified bacterial
 - 4.2 Viral
 - 4.21 Congenital viral
 - 4.211 Cytomegalovirus
 - 4.213 Herpes simplex virus
 - 4.214 Rubella virus

- 4.218 Other specified viral
- 4.219 Unspecified viral
- 4.22 Acquired viral
 - 4.221 Cytomegalovirus
 - 4.223 Herpes simplex virus
 - 4.224 Rubella virus
 - 4.228 Other specified viral
 - 4.229 Unspecified viral
- 4.3 Protozoal (eg, Toxoplasma)
- 4.5 Fungal
- 4.8 Other
- 4.9 Unspecified organism

5. Neurological

- 5.1 Hypoxic ischaemic encephalopathy/Perinatal asphyxia (typically infants of >24 weeks gestation or >600g birthweight)
- 5.2 Intracranial haemorrhage
 - 5.21 Intraventricular haemorrhage
 - 5.22 Subgaleal haemorrhage
 - 5.23 Subarachnoid haemorrhage
 - 5.24 Subdural haemorrhage
 - 5.28 Other intracranial haemorrhage
- 5.8 Other

6. Gastrointestinal

- 6.1 Necrotising enterocolitis
- 6.8 Other

7. Other

- 7.1 Sudden infant death syndrome (SIDS)
 - 7.11 SIDS Category IA: classic features of SIDS present and completely documented
 - 7.12 SIDS Category IB: classic features of SIDS present but incompletely documented
 - 7.13 SIDS Category II: infant deaths that meet Category I except for one or more features
- 7.2 Multisystem failure
 - 7.21 Secondary to intrauterine growth restriction
 - 7.28 Other specified
 - 7.29 Unspecified/Undetermined primary cause or trigger event
- 7.3 Trauma
 - 7.31 Accidental
 - 7.32 Non-accidental
 - 7.39 Unspecified
- 7.4 Treatment complications
 - 7.41 Surgical
 - 7.42 Medical
- 7.8 Other specified
- 7.9 Unknown/Undetermined
 - 7.91 Unclassified sudden infant death
 - 7.911 Bed sharing
 - 7.912 Not bed sharing
 - 7.92 Other unknown/undetermined

Appendix C: PMMRC Classification of Contributory Factors and Potential Avoidability (2012 version)

Systems review – contributory factors

Contributory factors may be highly specific to the death or generalised to the system(s). Identifying contributory factors that occur and are inherent in the system is an important part of the review. These factors are commonly sub-classified into organisational/management, personnel and those relating to barriers to access and/or engagement in care.

Please read options below and select if any of the following were present

Have any organisational and/or management factors been identified? Yes No

(eg, inadequate supervision of staff, lack of appropriate clinical management protocols or guidelines, lack of communication between services)

If 'yes' please classify – select ALL relevant:

- Poor organisational arrangements of staff
- Inadequate education and training
- Lack of policies, protocols or guidelines
- Inadequate numbers of staff
- Poor access to senior clinical staff
- Failure or delay in emergency response
- Delay in procedure (eg, caesarean section)
- Delayed access to test results or inaccurate results
- Equipment (eg, faulty equipment, inadequate maintenance, quality of or lack of equipment)
- Building and design functionality (eg, space, privacy, ease of access, lighting, noise, power failure, operating theatre in distant location)

Other – if other please state or provide any comments:

Have factors relating to personnel been identified?
(eg, staff factors relating to professional care and service provision)

Yes No

If 'yes' please classify – select ALL relevant:

- Knowledge and skills of staff were lacking
- Delayed emergency response by staff
- Failure to maintain competence
- Communication between staff was inadequate
- Failure to seek help/supervision
- Failure to follow recommended best practice
- Lack of recognition of complexity or seriousness of condition by caregiver

Other – if other please state or provide any comments:

Have barriers to access and/or engagement with care been identified?
(eg, no, infrequent or late booking for antenatal care, woman declined treatment/advice)

Yes No

If 'yes' please classify – select ALL relevant:

- No antenatal care
- Infrequent care or late booking
- Declined treatment or advice
- Obesity impacted on delivery of optimal care (eg, ultrasound scan)
- Substance use
- Family violence
- Lack of recognition by the woman or family of the complexity or seriousness of condition
- Maternal mental illness
- Cultural barriers
- Language barriers
- Not eligible to access free care
- Environment (eg, isolated, long transfer, weather prevented transport)

Other – if other, please state or provide any comments:

Was this death potentially avoidable?

Yes No

Complete this after considering the selected contributory factors above.

If 'yes', the absence of which contributory factor(s) might have meant the death was avoidable?

Organisation and/or management

Personnel

Barriers to access and/or engagement with care

Name of person completing this form:

Contact person for additional information:

Phone number:

Signed:

Date:

Appendix D: PMMRC DHB Local Coordinators (April 2015)

DHB	DHB Local Coordinator	Contact details
Northland	Yvonne Morgan Clinical Charge Midwife Kristy Wolff Obstetrician	Whangarei Hospital
Waitemata	Dr Sue Belgrave Clinical Director of Obstetrics Claire Shears Midwife Sharon Williams Midwife Carol Chamley Midwife	North Shore Hospital Waitakere Hospital
Auckland	Professor Lesley McCowan Obstetrician Teresa Krishnan Midwife Dr Claire McLintock Obstetric Physician (AMOSS)	Auckland City Hospital
Counties Manukau	Dr Sarah Wadsworth Obstetrician Dr Graeme Parry Obstetrician Debbie Davies Midwife	Middlemore Hospital
Waikato	Dr Sarah Wymouth Obstetrician Phil Weston Paediatrician Pauline Martyn Midwife Tracey Williams Midwife	Waikato Hospital
Bay of Plenty	Margret Norris Midwife Leader	Tauranga Hospital
Lakes	Amanda Griffiths Midwife	Rotorua Hospital
Tairāwhiti	Sheila Noakes Midwife Mary-Clare Reilly Midwife	Gisborne Hospital
Taranaki	Finola Mooney Midwife Belinda Chapman Midwife	Taranaki Base Hospital
Hawke's Bay	Dr Lynda Croft Obstetrician Sara Paley Midwifery Educator	Hawke's Bay Hospital
Whanganui	Lucy Pettit Midwife Jo McDonnell Midwife	Whanganui Hospital
MidCentral	Carol Collins Midwife Educator Dr Steven Grant Consultant Obstetrician	Palmerston North Hospital
Wairarapa	Michelle Thomas Midwife	Masterton Hospital
Capital & Coast	Dr Rose Elder Consultant Obstetrician Hazel Irvine Midwife	Wellington Hospital
Hutt Valley	Joanne McMullan Midwife	Hutt Hospital
Nelson Marlborough	Lois McTaggart Clinical Midwife Leader	Nelson Hospital
West Coast	Erica Lobb Midwife	Grey Base Hospital
Canterbury	Dianne Leishman Midwife Sonya Matthews Midwife	Christchurch Women's Hospital
South Canterbury	Julie Dockrill Midwife Manager	Timaru Hospital
Southern	Helen Flockton Charge Midwife Sheridan Massey Midwife Dr Helen Patterson Obstetrician Jenny Humphries Director of Nursing and Midwifery Mel Rackham Midwife	Dunedin Hospital Southland Hospital