Critique by

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My biases

- For the most of my time as an Obstetrician I have worked in a midwifery-led, obstetrician-supported multidisciplinary labour and birth unit in another part of the world.
- I have never practiced as a private obstetrician.
- I currently don't work in a tertiary unit.

In this critique

- I will assume NWH is ONE unit
- I will not propose solutions
- I will raise questions
- I may come up with suggestions
- I don't know what your problems are
- I may have misunderstood
- I may be wrong



Requires conistency over time and between individuals within a unit

In this critique

Focus on labour and birth, Chapters 6 and 7

Acknowledgement to all who have put their time and energy into other parts of the report.

Labour and Birth

- Plan for a vaginal birth or an elective CS?
 - Woman, Midwife, Obstetrician
 - IOL or wait for spontaneous onset?
 - Woman, Midwife, Obstetrician
- When in labour
 - Progress Cervical dilatation Descent
 - Fetal experience
 - Maternal experience

What factors are most important when we audit interventions and outcomes of labour and birth?

> Parity Previous CS? Number of fetuses Gestational age Presentation Onset of labour

How do we assess events and outcomes of labour and birth?

Who?

The mother and her whānau
The midwives and obstetricians
The managers
The government

Definition of normal – what we are trying to achieve?

- Normal Abnormal
- Natural Artficial
- Physiological Unphysiological
- Good bad
- Process Outcome

Definition of normal – what we are trying to achieve

Normal birth in NZ according to the Ministry of Health:

- spontaneous vaginal birth (cephalic or breech), no epidural, no oxytocin, no episiotomy.
- 1/3 of all births in NZ 2017

How do we assess events and outcomes of labour and delivery?

Each unit must decide what they are trying to achieve

Normality needs to be defined

Everyone must agree and be aware The mother and her whānau The midwives and obstetricians The managers

Events and Outcomes should be audited and the results should be used to set up and follow up guidelines and policies

Figure 64: Onset of Birth at term (37-42 weeks) 2006-2020



Figure 66: Mode of birth following induced onset of labour at term 2006-2020



Figure 65: Pathways to mode of birth at term 2006-2020



Figure 67: Mode of birth following spontaneous labour at term 2006-2020



No differentiation of women based on parity, previous CS, presentation, number of fetuses.

Table 76: Use of syntocinon by onset of labour and parity NWH 2020

	Total birth	Syntocinon
	Ν	n %
Total	6212	2365 38.1
Induced labour		
Nullipara	1402	1127 80.4
Multipara	982	703 71.6
Spontaneous labour		
Nullipara	1175	440 37.4
Multipara	1259	86 6.8

No differentiation of women based on previous CS, gestational age, presentation or number of fetuses.

Table 83: Mode of birth at term by onset of birth and parity (excluding wāhine with prior CS) among intended vaginal births NWH 2020

		Nul	lipara		Μι	Multipara (no prev CS)					
	Spontaneous Iabour N=1048		Ind Iat N=	Induced Iabour N=1342		Spontaneous labour N=967		uced our 809			
	N %		n	%	n	%	n	%			
Mode of birth											
SVB	592	56.5	518	38.6	907	93.8	692	85.5			
Operative vaginal	280	26.7	278	20.7	41	4.2	46	5.7			
CS emergency in labour	176	16.8	394	29.4	19	2.0	57	7.0			
CS emergency not in labour *	0		152	11.3	0	0.0	14	1.7			
Epidural	698	66.6	1162	86.6	332	34.3	572	70.7			

No differentiation of women based on presentation or number of fetuses.

Figure 78: Caesarean section rate among all nullipara by LMC 2006 - 2020



Figure 75: Mode of birth by ethnicity among nulliparous wāhine NWH 2020



Figure 76: Mode of birth by maternal age among nullipara NWH 2020



No differentiation based on gestational age, number of fetuses or presentation



Figure 25: LMC at birth and maternal age NWH 2020

Figure 26: LMC at birth and maternal ethnicity NWH 2020



Women under a private obststrician tend to be older and European

Figure 77: Spontaneous vaginal birth rate among all nullipara by LMC 2006 – 2020



Figure 78: Caesarean section rate among all nullipara by LMC 2006 - 2020



The increase in CS rate and the decrease in SVB rate are in women under NW High risk

Table 96: Mode of birth by ethnicity NWH 2020													
	Māori		Pac	cific	Ind	Indian		Other Asian		AA	Euro	pean	
	N=	N=454		N=726		N=705		N=1597		289	N=2	423	
	n	%	n	%	n	%	n	%	n	%	n	%	
Spontaneous									109				
vertex	293	64.5	468	64.5	285	40.4	802	50.2	3	45.1	141	48.8	
Vaginal breech	6	1.3	7	1.0	3	0.4	10	0.6	13	0.5	1	0.3	
Forceps	10	2.2	18	2.5	44	6.2	104	6.5	115	4.7	15	5.2	
Ventouse	10	2.2	23	3.2	65	9.2	120	7.5	180	7.4	19	6.6	
CS elective	53	11.7	76	10.5	136	19.3	287	18.0	577	23.8	57	19.7	
CS emergency	82	18.1	134	18.5	172	24.4	274	17.2	445	18.4	56	19.4	

Table 115: Epidural use (epidural or CSE) among wāhine with spontaneous and induced labour 2009-2020

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of births	7753	7709	7523	7695	7223	7400	6933	7241	6846	6481	6660	6212
Number wāhine with spontaneous labour	4125	4007	3628	3666	3270	3523	3139	3292	2924	2633	2703	2434
Spontaneous labour and epidural	1717	1686	1483	1571	1297	1423	1237	1301	1249	1125	1146	1107
%	41.6	42.1	40.9	42.9	39.7	40.4	39.4	39.5	42.7	42.7	42.4	45.5
Number of wāhine with induced labour	2238	2214	2463	2485	2438	2315	2289	2423	2312	2290	2381	2384
Induced labour and epidural	1599	1557	1707	1780	1709	1583	1624	1702	1660	1642	1721	1790
%	71.4	70.3	69.3	71.6	70.1	68.3	70.9	70.2	71.8	71.7	72.3	75.1

Tables 89-103 and 113-118 again shows mixed groups of women which makes it hard to draw any conclusions

Figure 96: Perineal trauma among vaginal births by ethnicity NWH 2020

Figure 11: Parity distribution by maternal ethnicity NWH 2020



Women of Maori and Pacific ethnicity have less 3rd/4th degree tears...but they are also multiparous to a larger extent.

Table 132: Neonatal morbidity and mortality among live births by mode of birth (all gestations) NWH 2020

	Spontaneous vertex	Vaginal breech	Forceps birth	Ventouse birth	CS elective	CS emergency	Total	
	n=3071	n=26	n=308	n=417	n=1225	n=1196	N=6243	
	n %	n %	n %	n %	n %	n %	n %	
1 min Apgar <4	45 1.5	11 42.3	6 1.9	9 2.2	23 1.9	89 7.4	183 2.9	
1 min Apgar <7	197 6.4	14 53.8	38 12.3	42 10.1	98 8.0	226 18.9	615 9.9	
5 min Apgar <7	50 1.6	10 38.5	3 1.0	8 1.9	39 3.2	80 6.7	190 3.0	
Admitted to NICU	237 7.7	14 53.8	24 7.8	31 7.4	143 11.7	249 20.8	698 11.2	
<u>></u> 2 days in NICU	174 5.7	12 46.2	14 4.5	19 4.6	106 8.7	218 18.2	543 8.7	
Neonatal deaths		192.						
(/1000 live births)	14 4.6	53	0	0	0	16 13.4	35 5.6	

Table 134: Neonatal morbidity by mode of birth in live born term or post term (≥37 weeks) pēpi NWH 2020

	Spontaneous vertex		Spontaneous Vaginal Forceps Ventouse CS vertex breech birth birth electiv				S tive	CS /e emergency			Total			
		2955	n		n=	=201	n=	526	n=1	204	n=	1045	N=0	110
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
1 min Apgar <4	28	1.0	2	22.2	6	2.1	9	2.2	11	1.0	43	4.4	99	1.8
1 min Apgar <7	139	4.9	3	33.3	34	11.9	42	10.3	65	5.9	122	12.4	405	7.2
5 min Apgar <7	50	1.6	10	38.5	3	1.0	8	1.9	39	3.2	80	6.7	190	3.0
Admitted to NICU	129	4.5	1	11.1	17	5.9	29	7.1	67	6.0	89	9.1	332	5.9
>2 days in NICU	71	2.5	1	11.1	8	2.8	17	4.2	33	3.0	63	6.4	193	3.4
Neonatal deaths														
(/1000 live births)	4	1.4	0		0		0		0		3	3.1	7	1.2

Mixed groups of women, impossible to draw any conclusions apart from the fact that vaginal breech birth is dangerous for babies, regardless of gestational age.

Epidemiology of Perinatal Events and Outcomes

We need to classify all perinatal events and outcome

SO

that objective comparisons can be made of fetal and maternal events and outcomes over time in one unit and between different units both nationally and internationally

But to do that

We need a consistent and objective structure within which we can examine fetal and maternal outcomes

With permission of Dr Mike Robson

What factors are most important when we audit interventions and outcomes of labour and birth?

> Parity Previous CS? Number of fetuses Gestational age Presentation Onset of labour

The Ten Group Classification System – Robson Groups

0 Group



Nulliparous with single

99 N

Group

Nulliparous with single ≥37 weeks gestation induced or were delivered by caesarean section before labour



All multiparous



Multiparous without pregnancy, ≥37 weeks abour



multiple pregnancies,



Multiparous without with single cephalic pregnancy, ≥37 weeks gestation who either had labour induced or were delivered by caesarean ection before labour



pregnancy with a



with at least one previous uterine scar,



<37 weeks gestation,

The Ten Group Classification System – Robson Groups

- Endorsed by the WHO as a global standard for assessing, monitoring, and comparing caesarean section rates both within healthcare facilities and between them.
- Useful for comparisons of other events and outcomes in labour and birth. (Rossen 2017, Kempe 2019)
- Divides women into groups by parity, gestational age, fetal presentation, previous CS, number of fetuses, and onset of labour.

European CS rates 2015



Zeitlin et al, BJOG 2020, * indicates countries with National TGCS reporting

CS rates by TGCS in European countries 2015



Zeitlin et al, BJOG 2020

Comparisons

NWH	2020 2356/6212 37,9%	Size of group	C/S rate	Contr of each gp
1 Nullip single ceph >=37 wks spon lab	174/1044	16,8%	16,7%	2,8%
2 Nullip single ceph >=37wks ind. or CS before lab	746/1540	24,8%	48,4%	12,0%
2A Nullip single ceph >=37wks ind lab				
2B Nullip single ceph >=37wks CS before lab				
3 Multip (excl prev caesarean sections) single ceph >=37 wks spon lab	19/964	15,5%	2,0%	0,3%
4 Multip (excl prev caesarean sections) single ceph >=37wks ind. or CS before lab	155/887	14,2%	17,5%	2,5%
4A Multip (excl prev caesarean sections) single ceph >=37wks ind lab				
4B Multip (excl prev caesarean sections) single ceph >=37wks CS before lab				
5 Previous caesarean section single ceph >= 37 wks	807/1004	16,2%	80,4%	13,1%
5A Previous caesarean section single ceph >= 37 wks spont lab				
5B Previous caesarean section single ceph >= 37 wks ind lab				
5C Previous caesarean section single ceph >= 37 wks CS before lab				
6 All nulliparous breeches	122/136	2,2%	89,7%	2,0%
7 All multiparous breeches (incl previous caesarean sections)	83/98	1,6%	84,7%	1,3%
8 All multiple pregnancies (incl previous caesarean sections)	69/94	1,5%	73,4%	1,1%
e All abnormal lies (incl previous caesarean sections)	19/21	0,3%	90,5%	0,3%
10 All single ceph <= 36 wks (incl previous caesarean sections)	162/424	6,8%	38,2%	2,6%

мсднв	2020 472/1986 23,8%	Size of group	C/S rate	Contr of each gp
1 Nullip single ceph >=37 wks spon lab	67/430	21,7%	15,6%	3,4%
2 Nullip single ceph >=37wks ind. or CS before lab	90/258	13,0%	34,9%	4,6%
2A Nullip single ceph >=37wks ind lab	72/241	12,1%	29,9%	3,6%
2B Nullip single ceph >=37wks CS before lab	18/18	1,0%	100%	1,0%
3 Multip (excl prev caesarean sections) single ceph >=37 wks spon lab	12/627	31,6%	1,9%	0,6%
4 Multip (excl prev caesarean sections) single ceph >=37wks ind. or CS before ab	24/200	10,1%	12,0%	1,2%
4A Multip (excl prev caesarean sections) single ceph >=37wks ind lab	4/180	9,1%	2,2%	0,2%
4B Multip (excl prev caesarean sections) single ceph >=37wks CS before ab	20/20	1,0%	100%	1,0%
5 Previous caesarean section single ceph >= 37 wks	188/293	14,0%	64,2%	9,5%
5A Previous caesarean section single ceph >= 37 wks spont lab	41/120	6,0%	34,2%	2,1%
5B Previous caesarean section single ceph >= 37 wks ind lab	11/37	1,9%	29,7%	0,6%
5C Previous caesarean section single ceph >= 37 wks CS before lab	136/136	6,8%	100%	6,8%
6 All nulliparous breeches	25/27	1,4%	92,6%	1,3%
7 All multiparous breeches (incl previous caesarean sections)	22/25	1,3%	88,0%	1,2%
8 All multiple pregnancies (incl previous caesarean sections)	11/21	1,1%	52,4%	0,6%
9 All abnormal lies (incl previous caesarean sections)	4/4	0,2%	100%	0,2%
10 All single ceph <= 36 wks (incl previous caesarean sections)	31/100	5,0%	31,0%	1,6%

Comparisons

	NWH	2020 2356/6212 37,9%	Size of group	C/S rate	Contr of each gp	NMH, Dublin, Ireland	2020 2279/7263 31,4%	Size of group	C/S rate	Contr of each gp
	1 Nullip single ceph >=37 wks spon lab	174/1044	16,8%	16,7%	2,8%	1 Nullip single ceph >=37 wks spon lab	113/1283	17,7%	8,8%	1,6%
	2 Nullip single ceph >=37wks ind. or CS before lab	746/1540	24,8%	48,4%	12,0%	2 Nullip single ceph >=37wks ind. or CS before lab	646/1531	21,1%	42,2%	8,9%
	2A Nullip single ceph >=37wks ind lab					2A Nullip single ceph >=37wks ind lab				
/	2B Nullip single ceph >=37wks CS before lab					2B Nullip single ceph >=37wks CS before lab				
	3 Multip (excl prev caesarean sections) single ceph >=37 wks spon lab	19/964	15,5%	2,0%	0,3%	3 Multip (excl prev caesarean sections) single ceph >=37 wks spon lab	11/1568	21,6%	0,7%	0,2%
	4 Multip (excl prev caesarean sections) single ceph >=37wks ind. or CS before lab	155/887	14,2%	17,5%	2,5%	4 Multip (excl prev caesarean sections) single ceph >=37wks ind. or CS before lab	177/1113	15,3%	15,9%	2,4%
	4A Multip (excl prev caesarean sections) single ceph >=37wks ind lab					4A Multip (excl prev caesarean sections) single ceph >=37wks ind lab				
	4B Multip (excl prev caesarean sections) single ceph >=37wks CS before lab					4B Multip (excl prev caesarean sections) single ceph >=37wks CS before lab				
	5 Previous caesarean section single ceph >= 37 wks	807/1004	16,2%	80,4%	13,1%	5 Previous caesarean section single ceph >= 37 wks	792/979	14,5%	80,9%	10,9%
	5A Previous caesarean section single ceph >= 37 wks spont lab					5A Previous caesarean section single ceph >= 37 wks spont lab				
	5B Previous caesarean section single ceph >= 37 wks ind lab					5B Previous caesarean section single ceph >= 37 wks ind lab				
	5C Previous caesarean section single ceph >= 37 wks CS before lab					5C Previous caesarean section single ceph >= 37 wks CS before lab				
	6 All nulliparous breeches	122/136	2,2%	89,7%	2,0%	6 All nulliparous breeches	143/152	2,1%	94,1%	2,0%
	7 All multiparous breeches (incl previous caesarean sections)	83/98	1,6%	84,7%	1,3%	7 All multiparous breeches (incl previous caesarean sections)	123/133	1,8%	92,5%	1,7%
	8 All multiple pregnancies (incl previous caesarean sections)	69/94	1,5%	73,4%	1,1%	8 All multiple pregnancies (incl previous caesarean sections)	93/134	1,8%	69,4%	1,3%
	9 All abnormal lies (incl previous caesarean sections)	19/21	0,3%	90,5%	0,3%	9 All abnormal lies (incl previous caesarean sections)	45/45	0,6%	100%	0,6%
	10 All single ceph <= 36 wks (incl previous caesarean sections)	162/424	6,8%	38,2%	2,6%	10 All single ceph <= 36 wks (incl previous caesarean sections)	136/325	4,5%	41.8%	1,8%

Comparisons

NWH	2020 2356/6212 37,9%	Size of group	C/S rate	Contr of each gp	inköping, Sweden Size of group C/S	S rate Contr of each gp
1 Nullip single ceph >=37 wks spon lab	174/1044	16,8%	16,7%	2,8%	I Nullip single ceph >=37 wks spon lab 37/766 27,5% 4,	,8% 1,3%
2 Nullip single ceph >=37wks ind. or CS before lab	746/1540	24,8%	48,4%	12,0%	2 Nullip single ceph >=37wks ind. or CS 84/295 10,6% 28	3,5% 3,0%
2A Nullip single ceph >=37wks ind lab					2A Nullip single ceph >=37wks ind lab 53/264 9,5% 20	0,1% 1,9%
2B Nullip single ceph >=37wks CS before lab					2B Nullip single ceph >=37wks CS before 31/31 1,1% 10	00% 1,1%
3 Multip (excl prev caesarean sections) single ceph >=37 wks spon lab	19/964	15,5%	2,0%	0,3%	B Multip (excl prev caesarean sections) 10/1004 36,0% 1, single ceph >=37 wks spon lab 10/1004 36,0% 1,	,0% 0,4%
4 Multip (excl prev caesarean sections) single ceph >=37wks ind. or CS before lab	155/887	14,2%	17,5%	2,5%	4 Multip (excl prev caesarean sections) single ceph >=37wks ind. or CS before lab),7% 1,0%
4A Multip (excl prev caesarean sections) single ceph >=37wks ind lab					4A Multip (excl prev caesarean sections) single ceph >=37wks ind lab 6/247 8,9% 2.	,4% 0,2%
4B Multip (excl prev caesarean sections) single ceph >=37wks CS before lab					4B Multip (excl prev caesarean sections) single ceph >=37wks CS before lab	00% 0,8%
5 Previous caesarean section single ceph >= 37 wks	807/1004	16,2%	80,4%	13,1%	5 Previous caesarean section single ceph >= 37 wks 6,5% 42	2,2% 2,7%
5A Previous caesarean section single ceph >= 37 wks spont lab					5A Previous caesarean section single ceph 12/87 3,1% 13	3,8% 0,4%
5B Previous caesarean section single ceph >= 37 wks ind lab					5B Previous caesarean section single ceph 6/35 1,3% 17	7,1% 0,2%
5C Previous caesarean section single ceph >= 37 wks CS before lab					5C Previous caesarean section single ceph = 37 wks CS before lab 58/58 2,1% 10	00% 2,1%
6 All nulliparous breeches	122/136	2,2%	89,7%	2,0%	6 All nulliparous breeches 39/50 1,8% 7	'8% 1,4%
7 All multiparous breeches (incl previous caesarean sections)	83/98	1,6%	84,7%	1,3%	7 All multiparous breeches (incl previous 21/26 0,9% 80 caesarean sections)),8% 0,8%
8 All multiple pregnancies (incl previous caesarean sections)	69/94	1,5%	73,4%	1,1%	3 All multiple pregnancies (incl previous 19/42 1,5% 45 caesarean sections)	5,2% 0,7%
9 All abnormal lies (incl previous caesarean sections)	19/21	0,3%	90,5%	0,3%	All abnormal lies (incl previous caesarean 10/10 0,4% 10	00% 0,4%
10 All single ceph <= 36 wks (incl previous caesarean sections)	162/424	6,8%	38,2%	2,6%	10 All single ceph <= 36 wks (incl previous caesarean sections) 31/146 5,2% 21	1,2% 1,1%

Figure 79: Robson groups 1&2: Nulliparous Caesarean section rates among singleton cephalic term pregnancies by onset of labour NWH 2004-2020 Figure 80: Robson groups 3-5: Multiparous Caesarean section rates among singleton cephalic term pregnancies by onset of labour and previous Caesarean status NWH 2004-2020



CS rate in Group 1 is actually not increasing, while it is in Group 2. This results in an increasing number of repeat CS's in group 5. Separation of group 2A and 2B would be interesting.

Group 5 was 13,5% of all births in 2013 increasing to 16,2% in 2020

MidCentral DHB, Groups 1 and 3 2016 and 2020

МСДНВ	Group 1 2016 (n=427)	Group 1 2020 (n=430)	Group 3 2016 (n=586)	Group 3 2020 (n=627)
Nr of deliveries	427	430	586	627
BMI (Median)	24,7	24,9	26,1	26,3
ARM	35,0%	39,2%	22,0%	29,1%
Oxytocin	26,7%	36,4%	2,2%	4,8%
Epidural	25,6%	40,0%	3,6%	7,2%
NVB	61,2%	69,1%	95,4%	96,2%
OVB	17,3%	15,3%	2,2%	1,9%
CS /	21,5%	15,6%	2,4%	1,9%
CS second stage	5,4%	8,1%		0,5%
Apgar ≠7 at 5 min	1,3%	2,8%	1,1%	1,3%
Episiotomy		23,3%		4,0%
Sphincter tear	5,0%	4,2%	0,7%	1,7%
Labour > 12 hours		19,0%		0,9%
Baby weight >4000g	10,9%	11,6%	18,2%	19,1%
Age ≥ 35 years	5,9%	6,5%	17,6%	15,0%
PPH > 1000 ml	5,2%	6,0%	3,2%	4,1%
Admission to NNU	13,7%	16,3%	8,0%	8,9%
NVB European	62,5%	69,9%	96,4%	97,5%
OVB European	17,3%	15,8%	2,4%	1,9%
CS European	20,1%	14,3%	1,2%	0,6%
NVB Maori	70,0%	74,2%	95,6%	95,3%
OVB Maori	13,8%	11,3%	1,3%	1,2%
CS Maori	16,3%	14,4%	3,1%	3,5%
NVB Indian	27,8%	63,6%	83,3%	89,2%
OVB Indian	33,3%	0,0%	8,3%	5,4%
CS Indian	38,9%	36,4%	8,3%	5,4%

National Maternity Hospital, Dublin, Ireland Group 1

Group 1	2	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
ARM to accelerate	49.9%	857/1716	52.4%	50.2%	51.5%	54.0%	52.8%	53.6%	52.9%	52.4%	53.5%
Oxytocin	47.3%	812/1716	43.9%	41.8%	49.1%	53.9%	53.9%	53.2%	51.2%	49.6%	50.3%
Epidural	68.4%	1173/1716	65.9%	66.8%	70.1%	70.0%	73.0%	73.7%	68.6%	66.4%	63.9%
Electronic monitoring	92.0%	1578/1716	89.9%	86.0%	88.1%	87.7%	86.0%	79.0%	77.2%	75.7%	74.1%
Fetal blood sample	18.8%	323/1716	21.0%	25.2%	20.0%	20.8%	22.4%	24.6%	21.5%	20.3%	18.4%
Vaginal operative delivery	28.7%	493/1716	31.3%	27.6%	23.9%	23.5%	24.0%	24.6%	25.7%	27.8%	24.1%
Apgars <7 at 5 mins	1.0%	17/1716	1.0%	0.7%	0.4%	0.7%	0.8%	1.1%	0.2%	0.6%	0.7%
Cord pH < 7.0	0.4%	7/1716	0.2%	0.3%	0.6%	0.2%	0.3%	0.5%	0.2%	0.3%	0.3%
Overall caesarean section	9.0%	155/1716	7.8%	8.7%	8.4%	7.2%	9.3%	7.4%	7.5%	7.8%	7.2%
Caesarean section at VE=10	1.5%	25/1716	1.7%	1.5%	1.6%	0.9%	1.2%	1.4%	1.3%	1.4%	1.2%
Admitted to Neonatal Unit	18.8%	349/1716	18.1%	18.6%	17.9%	17.1%	10.1%	11.7%	10.6%	9.8%	9.4%
Episiotomy*	45.7%	785/1716	49.5%	45.4%	42.6%	45.9%	48.6%	56.8%	56.1%	52.6%	51.0%
OASIS*	2.2%	37/1716	3.7%	2.3%	2.7%	2.7%	3.1%	2.5%	2.9%	2.6%	3.0%
Length of labour >12 hrs	5.1%	88/1716	3.9%	3.3%	2.6%	2.9%	3.4%	2.8%	2.2%	1.5%	3.5%
Babies >=4.0kg	12.7%	218/1716	12.8%	14.0%	15.0%	14.5%	15.4%	15.9%	13.6%	13.2%	13.6%
Aged >=35	26.6%	457/1716	23.7%	23.1%	24.2%	18.3%	16.7%	16.7%	14.5%	14.0%	13.8%
BMI >=30	8.6%	147/1716	7.6%	7.9%	6.9%	7.2%	8.2%	8.1%	8.4%	7.2%	7.3%
PPH > 1000mls	2.9%	49/1716	3.0%	1.9%	1.4%	1.7%	1.3%	1.0%	0.4%	0.5%	0.2%
HIE	0.1%	1/1716	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.1%	0.1%
Blood transfusion	2.7%	47/1716	0.0%	2.1%	2.1%	1.7%	1.5%				
*includes Episiotomy	and Sphinct	ter Damage (24))								

Summary

- The impressive amount of data, figures and tables
- The lack of a definition of what NWH wants to achieve as a unit and an analysis of how the data shows whether you do or not.
- The presentation of data in Chapters 6 and 7.
- The lack of comparisons to other units nationally and internationally
- Why this focus on differentiation by type of LMC?
- Chapter 10 stands out in a positive way with the introductory analysis and reflection, as well as the education points.

Definition of normal – what we are trying to achieve

- Normal birth in NZ according to the Ministry of Health:
 - spontaneous vaginal birth (cephalic or breech), no epidural, no oxytocin, no episiotomy.
 - 1/3 of all births in NZ 2017
- Another suggestion:
 - spontaneous vaginal birth with no major physical or mental trauma to mother or baby

How do we assess events and outcomes of labour and delivery?

Each unit must decide what they are trying to achieve

Normality needs to be defined

Everyone must agree and be aware The mother and her whānau The midwives and obstetricians The managers

Events and Outcomes should be audited and the results should be used to set up and follow up guidelines

Where to from here?

- What do you want to achieve as a unit?
- What is your normal?
- Collect the data to see if you are achieving your wanted outcomes
- Define your improvement areas
- Agree on solutions = policies
- Continuous audit