

## Measuring Indigenous perinatal outcomes – should we use the Indigenous status of the mother, father or baby ?

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### Key findings

Perinatal outcomes are perceived as important predictors of whole of life outcomes. There is a long recognised gap in perinatal outcomes between babies born to Indigenous mothers and those born to non-Indigenous mothers. There are a number of government initiatives focusing on reducing the gap in the outcomes between these two groups.

This report focuses on whether the patterns of perinatal outcomes, historically drawn from the Perinatal (midwives) Data Collection and based on the Indigenous status of the mother, would change significantly if babies born with an Indigenous father and a non-Indigenous mother were included in the assessment of outcomes.

Low birthweight, gestational age and mother's use of antenatal services have been used as key perinatal outcome indicators for this report.

Analyses of these indicators showed that while the perinatal outcome measures for babies with an Indigenous father and non-Indigenous mother were worse than other babies with non-Indigenous parents, they were much better than those outcomes experienced by babies born to Indigenous mothers. The inclusion of this group with Indigenous mothers would statistically reduce the gap in perinatal outcomes between the two groups and potentially reduce the focus on achieving equity.

The results of the analysis were:

- The Indigenous status of the mother rather than the baby or father has the greatest effect on determining critical birth outcomes.
- There is a significant difference in the proportion of low birthweight babies between the non-Indigenous mother/Indigenous baby grouping (6.8%, ll5.8%, ul8.0%) and the non-Indigenous mother/non-Indigenous baby grouping (4.7%, ll4.6%, ul4.8%).
- There is a significant difference in the proportion of babies born with a gestational age of less than 37 weeks between the non-Indigenous mother/Indigenous baby grouping (7.4%, ll6.3%, ul8.6%) and the non-Indigenous mother/non-Indigenous baby grouping (6.2%, ll6.1%, ul6.3%).
- There is a significant difference in the proportion of mothers in the non-Indigenous mother/Indigenous baby grouping attending less than 5 antenatal visits (13.7%, ll12.2%, ul15.2%) and the non-Indigenous mother/non-Indigenous baby grouping (6.6%, ll6.5%, ul6.7%).

## Background and purpose of the report

In measuring perinatal outcomes there is a concern that a growing proportion of babies that could be potentially identified as Indigenous (that is those with an Indigenous father and a non-Indigenous mother) are not being captured in perinatal collections.

Perinatal outcomes are perceived as important indicators of predictors of whole of life outcomes. There has been a long recognised gap in perinatal outcomes for babies born to Indigenous mothers and those born to non-Indigenous mothers. There are a number of government initiatives focusing on reducing the gap in the outcomes for these two groups.

This report focuses on whether the patterns of perinatal outcomes, historically drawn from the Perinatal (midwives) Data Collection and based on the Indigenous status of the mother, would be changed if babies born with an Indigenous father and a non-Indigenous mother were included.

Low birthweight, gestational age and mother's use of antenatal services have been used as key perinatal outcome indicators for this report.

The Perinatal (midwives) Data Collection (PDC) currently collects the Indigenous status of the mother only. No information is collected on the social and demographic characteristics of the father or baby. Analysis of Indigenous/non-Indigenous birth outcomes compare the outcomes of babies born with Indigenous mothers to babies born with non-Indigenous mothers.

Birth registrations in Queensland were reviewed to identify what the impact of extending the assignment of Indigenous status of babies beyond Indigenous mothers might be.

The current practice for assigning an Indigenous status for babies registered in Queensland is on the basis of the status of either parent, i.e. if either the mother or father document that they are Indigenous, during the registration process the baby is classified as Indigenous.

Birth registrations data show that about 30 per cent of babies recorded as Indigenous have an Indigenous father and a non-Indigenous mother. This cohort is not included in analyses of birth outcomes in the PDC.

While there may be value in independently collecting the Indigenous status of the baby, this paper argues that it would statistically reduce the gap for perinatal outcomes between babies born to Indigenous and non-Indigenous mothers. Improving the gap in perinatal outcomes is the subject of considerable national focus and is included in key health performance indicators.

**Methodology**

Data were analysed from three distinct sources

- Queensland Registrar General’s Birth registrations 2003 to 2006
- Queensland Perinatal Data Collection (PDC) 2003 to 2006
- Queensland Hospital Admitted Patient Data Collection (QHAPDC) 2003 to 2006

The recording and method of collection of Indigenous status of the mother, the baby and the father varies across the three collections used for this analysis. Table 1 provides a summary of the current recording of Indigenous status.

**Table 1. Presence or absence of Indigenous identifier for the mother, baby and father across three collections analysed, Queensland, 2003 – 2006**

Variable area	Perinatal collection 2003 to 06	Hospital admissions 2003 to 06	Registrar General’s Birth registration 2003 to 06
Indigenous status of baby	No	Yes Independently ascertained from parent(s) 5.5% of all births 8.3% not stated	Yes/no? – Derived from status of parents where either is Indigenous 6.9% of all births 0.9% not stated
Indigenous status of mother	Yes 5.5% of all births <sup>1</sup> 0.01% not stated	Yes	Yes 4.9% of all births
Indigenous status of father	No	No	Yes 4.3% of births Paternity not acknowledged <ul style="list-style-type: none"> <li>• 3.9% all births</li> <li>• 10.3% Indigenous births</li> </ul>

<sup>1</sup>Live born singleton births

**Queensland Birth Registration data 2003 to 2006**

Data were extracted from the Queensland Registrar General’s birth registrations, 2003 to 2006 to quantify the parental characteristics of registered Indigenous babies. As Indigenous identification of the baby is directly ascribed from the Indigenous status of the parents, there were no babies recorded as non-Indigenous where either or both parents were Indigenous. Of the 13,823 babies recorded as Indigenous, 32.5% had an Indigenous father and mother, 37.9% had an Indigenous mother and a father who was non-Indigenous or paternity was not acknowledged, 29.6% had an Indigenous father and a non-Indigenous mother. Paternity was less likely to be acknowledged for a significantly higher proportion of births to Indigenous mothers (10.3%) compared with all births (3.9%) (Table 1).

Table 2. Birth registration data for babies identified as Indigenous (Indigenous status of baby is directly ascribed from parents), Queensland, 2003 - 2006

Parental status	Count	Per cent
<b>Indigenous mothers</b>		
• Paternity not acknowledged	1,425	10.3%
• Non-Indigenous father/not stated	3,811	27.6%
• Indigenous father	4,497	32.5%
<b>Total Indigenous mothers</b>	<b>9,733</b>	<b>70.4%</b>
<b>Indigenous father*</b>		
• Non-Indigenous mother	4,020	29.1%
• Mother's status not stated	70	0.5%
<b>Total Indigenous fathers</b>	<b>4,090</b>	<b>29.6%</b>
*Note: Indigenous fathers where mother is Indigenous are included only in Indigenous mother grouping		
<b>All Indigenous babies</b>	<b>13,823</b>	<b>100%</b>

In future we will attempt to link registered births (which are typically less in number than those in the PDC) to births in the PDC, and analyse the different outcomes for those babies assigned an Indigenous status different to their mother.

### Perinatal and Admitted Patient data

While linkage against registered births is not currently possible, an alternative linkage was undertaken with the Queensland Hospitals Admitted Patient Collection (QHAPDC). Babies admitted in Queensland hospitals have their own Indigenous status assigned. Where possible all live born singleton babies admitted to a Queensland hospital were linked to their equivalent PDC record for the period 2003 to 2006. This resulted in 204,281 linked records with 223 (0.11%) not able to be matched. There were a large number of records in the QHAPDC where the Indigenous status had not been stated (for both the mother and the baby) therefore the Indigenous status of the mother was assigned from the PDC. The Indigenous status of the baby was necessarily assigned from the QHAPDC where available.

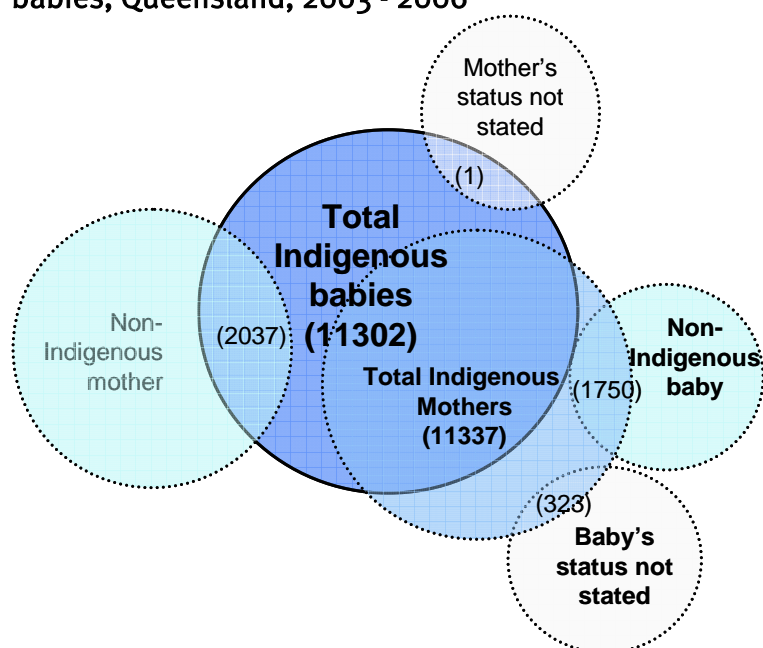
Once the baby records were linked across the two collections, details of the perinatal outcomes (from the PDC) could be associated with the Indigenous status of the baby (as independently recorded in the QHAPDC).

Table 3. Hospital births data by the recorded Indigenous status of the mother and baby, Queensland, 2003 - 2006

Baby's status (QHAPDC)	Mother's status (PDC)			Total Indigenous babies
	Indigenous	Non-Indigenous	Not stated	
Indigenous	9,264 (81.7%)	2,037 (1.1%)	1 (4.3%)	11,302 (5.5%)
Non-Indigenous	1,750 (15.4%)	174,186 (90.3%)	6 (26.1%)	175,942 (86.1%)
Not stated	323 (2.8%)	16,698 (8.7%)	16 (69.6%)	17,037 (8.3%)
<b>Total Indigenous mothers</b>	<b>11,337</b>	192,921	23	204,281

Figure 1 shows the complex relationship in recording of Indigenous status of both the mother and baby. Of the 11,302 babies whose status was recorded as Indigenous, 2,037 had a non-Indigenous mother and in 1 case the mother's Indigenous status was recorded as not stated. This may be the result of two main factors, firstly, the Indigenous status of the mother may not have been correctly recorded as non-Indigenous while the baby was, or secondly, while the mother was non-Indigenous, the father was Indigenous.

Figure 1 – Indigenous mothers and babies and their relationship to non-Indigenous mothers and babies, Queensland, 2003 - 2006



Of the 11,337 mothers whose status was recorded as Indigenous, 1,750 babies were recorded as non-Indigenous with another 323 babies where Indigenous status was not stated. This may be the result of mis-recording of the Indigenous status of either the mother or the baby, or where there had been a conscious decision made by the mother or parents not to record the baby's Indigenous status at all.

It is important to recognise that there are three components to be considered when identifying as Indigenous. The Australian Bureau of Statistics and National Health Data Dictionary definition, commonly known as 'The Commonwealth Definition', which was given in a High Court judgement and which is standard across health collections, is:

An Aboriginal or Torres Strait Islander is -

- a person of Aboriginal or Torres Strait Islander descent, and
- who identifies as an Aboriginal or Torres Strait Islander, and
- is accepted as such by the community in which he or she lives.

While babies born to Indigenous mothers automatically meet the first criterion of Indigenous descent, the other two criteria are the prerogative of the individual to identify or not, or in the case of a baby, it is the prerogative of the parent or parents how their baby is identified.

For the purposes of this paper it is assumed that babies identified as Indigenous but born to non-Indigenous mothers are likely to have an Indigenous father and therefore some Indigenous heritage.

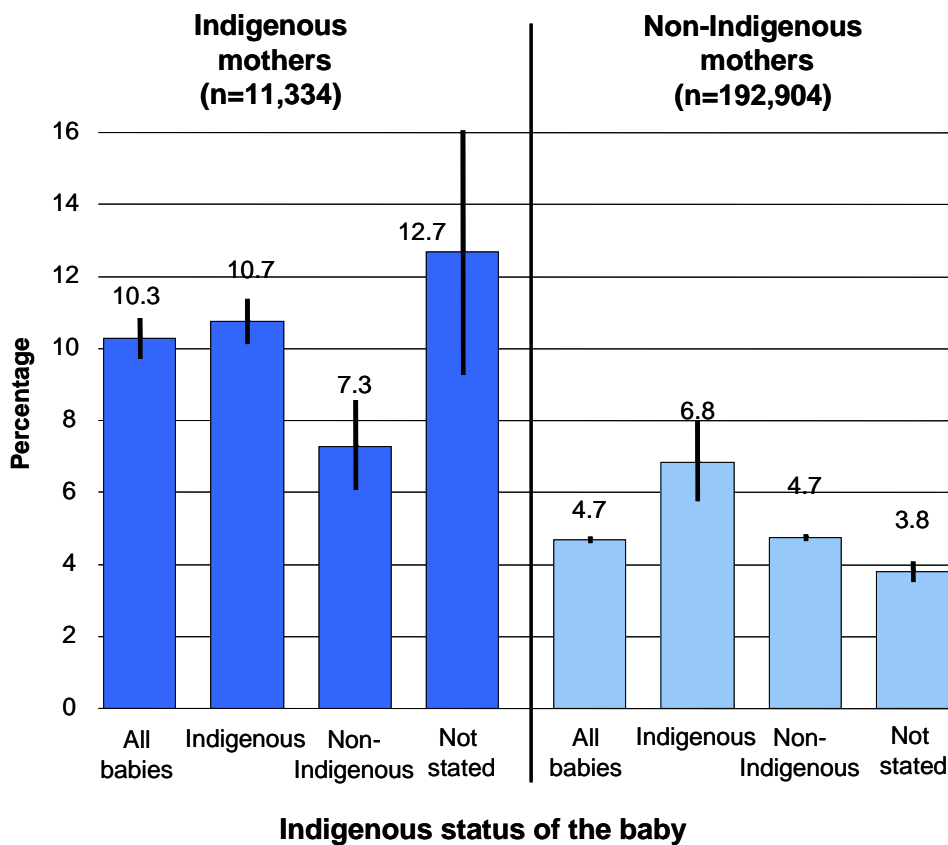
Results of analysis:

Low Birthweight

As Figure 2 shows, babies born to Indigenous mothers were significantly more likely to be of low birthweight regardless of the Indigenous status of the baby.

For babies born to non-Indigenous mothers where the baby was identified as Indigenous (presumably with an Indigenous father), there was a significantly higher proportion of low birth weight babies (6.8%) compared with all births to non-Indigenous mothers (4.7%). However, the non-Indigenous mother/Indigenous baby group had significantly lower rates of low birthweight (6.8%) compared with all births to Indigenous mothers (10.3%).

Figure 2. Proportion of low birthweight babies by Indigenous status of the mother and baby, Queensland, 2003 - 2006

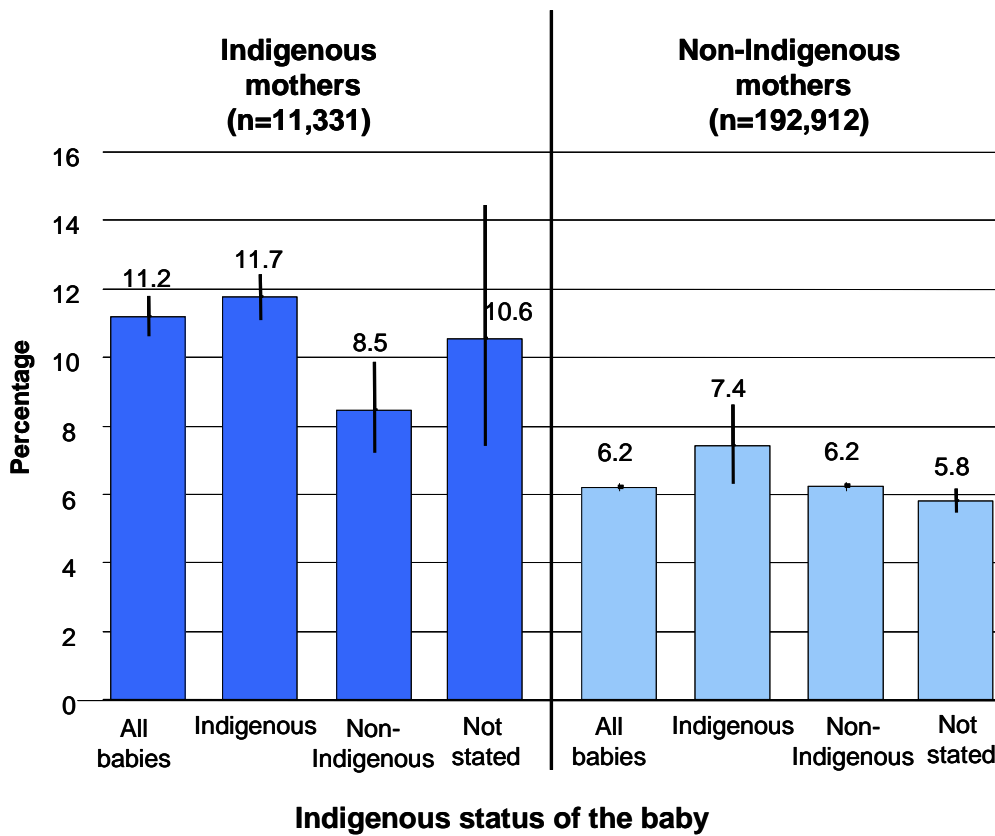


**Low Gestational Age (less than 37 weeks gestation)**

As Figure 3 shows, babies born to Indigenous mothers were significantly more likely to be of low gestational age regardless of the Indigenous status of the baby (11.2% and 6.2% respectively).

For babies born to non-Indigenous mothers where the baby was identified as Indigenous (presumably with an Indigenous father), there was a significantly higher proportion of low gestational age babies (7.4%) compared with all births to non-Indigenous mothers (6.2%). However, the non-Indigenous mother/Indigenous baby group had significantly lower rates of low gestational age (7.4%) compared with all births to Indigenous mothers (11.2%).

**Figure 3. Proportion of low gestational age (less than 37 weeks) by Indigenous status of the mother and baby, Queensland, 2003 - 2006**

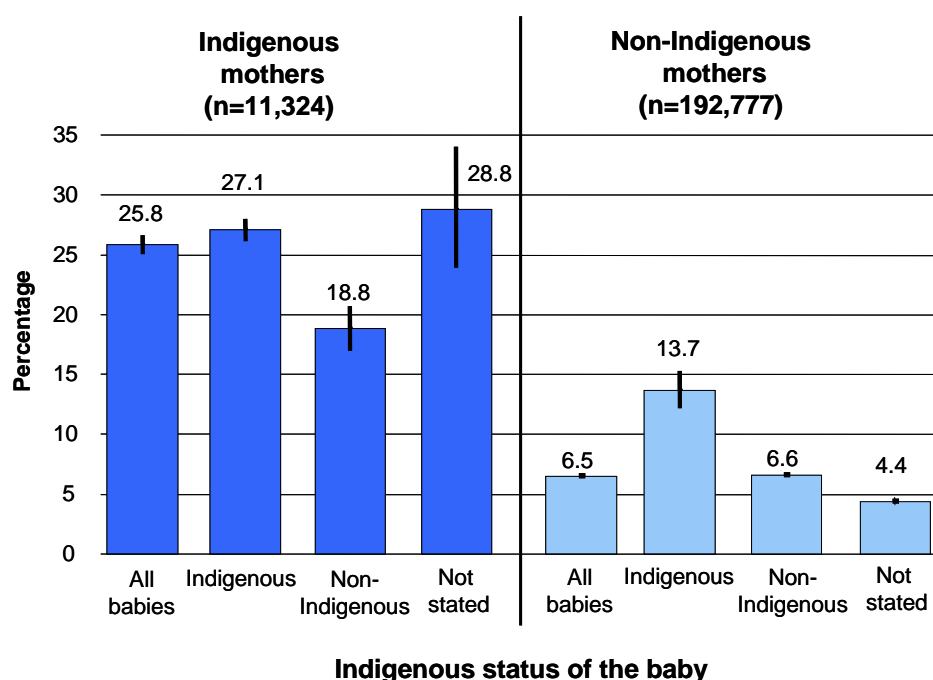




### Antenatal Visits

As Figure 4 shows, Indigenous mothers (25.8%) were significantly more likely to attend less than five antenatal visits during pregnancy than non-Indigenous mothers (6.5%). However, non-Indigenous mothers whose baby was identified as Indigenous were also more likely to attend less than 5 antenatal visits (13.7%) than non-Indigenous mothers as a total (6.5%).

**Figure 4. Proportion of mothers who attended less than five antenatal visits by Indigenous status of the mother and baby, Queensland, 2003 - 2006**



### Discussion:

The recording of the Indigenous status of the mother was included in the PDC at the commencement of the collection in 1987 (although there have been minor changes in the method of collection, for example, the inclusion of a category to allow mothers to identify as both Aboriginal and Torres Strait Islander from 1997). All states and territories have included Indigenous status of the mother in their perinatal collections from 1991, although the level of completeness varies significantly by jurisdiction. As a result, there is a long and well established time series available to monitor trends in birthing outcomes of babies born to Indigenous mothers both at a Queensland level and nationally.

If the Indigenous status of the baby is captured as a separate entity from that of the mother and is used for monitoring trends, there are two likely risks.

The inclusion of Indigenous babies born to non-Indigenous mothers which the analysis shows have better outcomes than babies born to Indigenous mothers will create the impression of an improvement in outcomes over time that is merely an artefact of a different collection method.

In order to gauge the magnitude of the potential effect of adding in Indigenous babies born to non-Indigenous mothers to the Indigenous mother group, the annual percentage point improvement required to meet the closing the gap 2018 target was calculated for Queensland (Table 4). This demonstrates that by adding in this group, a statistical gain on the closing the gap target of between 2 to 3 years would be made.

Any change in data collection will require a careful consideration of the impact on trend measurement. Because of the long established time series based on the Indigenous status of the mother only, it is recommended that this approach be continued for monitoring closing the gap.

**Table 4. Estimated statistical years gain on the closing the gap trajectory by using Indigenous mother and/or baby identification.**

	Perinatal outcome		
	% low birth weight	% low gestational age	% less than 5 antenatal visits
Identification using Indigenous mother only	10.26%	11.2%	25.83%
Identification using Indigenous mother and/or baby	9.74%	10.62%	23.98%
% point difference	0.52%	0.58%	1.85%
Estimated % point annual gain required to meet 2018 closing the gap target	0.26%	0.20%	0.80%
Estimated statistical years gained by using mother and/or Indigenous status rather than mother's Indigenous status only	2.01 Years	2.92 Years	2.31 Years

Inclusion of Indigenous babies born to non-Indigenous mothers in analyses of perinatal outcomes and performance of health services in closing the gap may distract attention from the group at greatest risk (i.e. babies of Indigenous mothers).

The ability to influence perinatal outcomes of low birthweight and low gestational age to a large extent relies on reducing the incidence of and modifications of recognised maternal health risk factors such as age, smoking, nutrition and general health status before and during pregnancy, as well as better monitoring of maternal health status during the antenatal period.

As the above analysis shows, it is the Indigenous status of the mother rather than the baby which is the most significant determining variable of poorer perinatal outcomes. To improve perinatal outcomes, the focus for service delivery should continue to be based on mothers at risk.

While the perinatal outcome measures for babies with an Indigenous father and non-Indigenous mother are worse than for babies with non-Indigenous mothers, they are better than those outcomes experienced by babies born to Indigenous mothers. The inclusion of this group with babies of Indigenous mothers would statistically reduce the gap and potentially reduce the focus on achieving equity in perinatal outcomes.

Issues such as identification of Indigenous status according to the Australian Bureau of Statistics and National Health Data Dictionary definition, rather than by automatic ascription or linkage, and analyses of the different cohorts, require further consideration in the context of measurement and reporting of performance and outcomes.