Identification of Indigenous status for measurement of perinatal risk factors and outcomes: mother or baby?

Lennan Petersen, Taku Endo and Trisha Johnston

For further information contact:

Health Statistics Branch
Queensland Health
GPO Box 48
Brisbane Queensland 4001 Australia
tel (+61) (07) 3234 1875
hlthstat@health.qld.gov.au
www.health.qld.gov.au

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Identification of Indigenous status for measurement of perinatal risk factors and outcomes: mother or baby?

Lennan Petersen, Taku Endo and Trisha Johnston
Health Statistics Branch, Queensland Health

A number of government initiatives measure the gap between Indigenous and non-Indigenous Australians on perinatal risk factors and outcomes based on data from the Queensland Perinatal Data Collection (PDC). For instance, the Queensland Department of Health 'Performance Indicators in Aboriginal and Torres Strait Islander Health' track the progress of Hospital and Health Services (HHSs) towards closing the gap on several indicators relating to maternal and child health.[1] These Performance Indicators have been reported since 2007 (using data from 2002/03), and it is planned that measurement of progress on these indicators will continue until 2032/33.

Currently, comparisons of Indigenous and non-Indigenous groups on perinatal risk factors and outcomes are made on the basis of the Indigenous status of the mother. That is, the outcomes of babies born to Indigenous mothers are compared with those of babies born to non-Indigenous mothers. The rationale for assessing outcomes in terms of the Indigenous status of the mother is that the health and behaviour of women during pregnancy (e.g. smoking, antenatal visits) can have a large impact on the health of the baby[2] and differences in the rates of some maternal risk factors between Indigenous and non-Indigenous mothers in Queensland have been found to partly explain the worse perinatal outcomes of babies born to Indigenous mothers.[3]

From 2010/11, the Indigenous status of babies has also been recorded in the PDC. Thus, this field can now also be used to define Indigenous status in perinatal analyses. The impact of using the Indigenous status of the baby compared with using the Indigenous status of the mother on the estimation of perinatal risk factors and outcomes was investigated and described in a Technical Report released in 2009 using linked admitted patient and PDC data.[4] In this report it was found that the difference between Indigenous and non-Indigenous perinatal risk factors and outcomes (low birthweight, preterm birth and attending less than 5 antenatal visits) was larger when Indigenous status was defined by the mother's Indigenous status than when the baby's Indigenous status (as recorded in admitted patient data) was used. These results suggested that if there was a change in the way Indigenous status was defined, the gap in risk factors and outcomes could be seen to have reduced without any material change in risk factors and outcome having been achieved.

The current StatBite provides an update to this Technical Report using the now-available PDC measure of babies' Indigenous status. Specifically, it examines (1) the difference between categorisation by Indigenous mother and Indigenous baby within the PDC, (2) the consistency of PDC coding of babies' Indigenous status with other sources, and (3) how the Indigenous gap on perinatal risk factors and outcomes differs according to whether Indigenous status is defined as the status of the mother or the baby.

Mother and baby Indigenous status in the PDC

Cross-tabulations of singleton births were produced to compare the Indigenous status of mothers and babies in the PDC (Table 1). There were more Indigenous babies (16,920) than Indigenous mothers (14,652). Of Indigenous babies, 18% were born to non-Indigenous mothers. Also, of non-Indigenous babies, 0.34% were recorded as having Indigenous mothers.

Table 1. PDC Indigenous status of mothers and babies for singleton births occurring between 2010/11 and 2013/14p.

Indigenous status of mother	Indigenous status of baby			
	Indigenous	Non-Indigenous	Not stated	Total
Indigenous	13,873 (81.99%)	765 (0.34%)	14 (3.8%)	14,652 (6.05%)
Non-Indigenous	3,046 (18.00%)	223,820 (99.65%)	348 (94.57%)	227,214 (93.93%)
Not stated	1 (0.01%)	19 (0.01%)	6 (1.63%)	26 (0.01%)
Total	16,920 (100.00%)	224,604 (100.00%)	368 (100.00%)	241,892 (100.00%)

Source: PDC - Extracted 19 December 2014.

p – preliminary. Subject to change

Consistency of PDC coding of baby Indigenous status with other sources

Linked data was used to compare the Indigenous status of babies in the PDC with (1) the Queensland Registrar General's birth registrations (Table 2), and (2) hospital admissions in the Queensland Hospital Admitted Patient Data Collection (QHAPDC) (Table 3). The comparison between the PDC and birth registration data used linked data from a previous analysis[5]. The comparison between the PDC and QHAPDC used linked data from the Master Linkage File[5*]. Only records that could be linked to both databases (i.e. both PDC and birth registrations, or both PDC and QHAPDC) were retained in analyses.

Table 2. Indigenous status in PDC and birth registration between 2010/11 and 2011/12

Baby status (birth registration)	Baby status (PDC)			
	Indigenous	Non-Indigenous	Not stated	Total
Indigenous	6,373 (86.97%)	2,783 (2.45%)	26 (7.67%)	9,182 (7.57%)
Non-Indigenous	938 (12.80%)	110,546 (97.37%)	313 (92.33%)	111,797 (92.23%)
Not stated	17 (0.23%)	208 (0.18%)	0 (0%)	225 (0.18%)
Total	7,328 (100.00%)	113,537 (100.00%)	339 (100.00%)	121,204 (100.00%)

Source: Linked PDC and Queensland Registrar General's birth registration data – Accessed 19 December 2014.

In the birth register, the baby's Indigenous status is derived from the Indigenous status of the parents. A baby is coded as Indigenous if either the mother or father identify as Indigenous, and as Not Stated if both the mother and father have unknown Indigenous status. Otherwise, the baby is coded as non-Indigenous.

Where suspected duplicated birth registration records were linked to a PDC record, the record with the earliest birth registration date was used for comparison, as it was deemed more comparable to the Indigenous status recorded in the PDC record.

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[*] The Master Linkage File (MLF) has been constructed using probabilistic linkage techniques by the Health Statistics Branch. Further details regarding the MLF and the data linkage process are available at http://www.health.qld.gov.au/hsu/pdf/other/qlddatalinkframework.pdf.

Table 3. Indigenous status in PDC and QHAPDC between 2010/11 and 2012/13

	Baby status (PDC)			
Baby status (QHAPDC)	**Indigenous**	**Non-Indigenous**	**Not stated**	**Total**
Indigenous	10,108 (78.88%)	1,622 (0.94%)	1 (0.28%)	11,731 (6.31%)
Non-Indigenous	1,978 (15.44%)	150,062 (86.88%)	68 (19.26%)	152,108 (81.82%)
Not stated	728 (5.68%)	21,034 (12.18%)	284 (80.45%)	22,046 (11.86%)
Total	12,814 (100.00%)	172,718 (100.00%)	353 (100.00%)	185,885 (100.00%)

Source: PDC, QHAPDC and Master Linkage File- Extracted 19 December 2014. Where PDC records were linked to multiple admitted patient episodes of care, the earliest episode of care for the individual was used for comparison. This episode of care was not necessarily the birth episode.

There was a moderate disparity between the coding of Indigenous status in the PDC and other sources. Of babies identified as Indigenous in the PDC, 12.80% were considered as non-Indigenous in the birth registration data based on the criteria used (Table 2). Similarly, of babies identified as Indigenous in the PDC, 15.44% were identified as non-Indigenous in QHAPDC (Table 3). In cases of inconsistency, it is not possible to identify which of the data collections is correct.

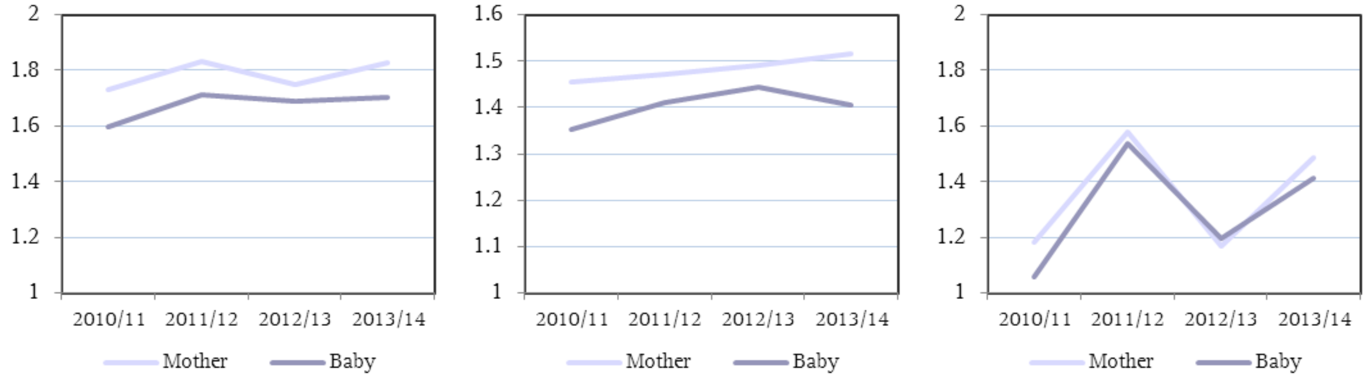
The previous analysis of this issue[4] was based on comparison of baby Indigenous status in QHAPDC data and mother Indigenous status in the PDC. There are indications that the data collection used to identify Indigenous status - QHAPDC or PDC - would influence results. As stated above, there are discrepancies in the coding of baby Indigenous status between the PDC and QHAPDC (Table 3). As can be seen in Table 3, above, and in the previous Technical Report, linked data suggests that a larger proportion of babies in QHAPDC have an Indigenous status recorded as not stated (11.86%) than in the PDC (0.19%). Comparing the number of Indigenous babies in PDC and QHAPDC shows that there are over 1000 fewer Indigenous babies recorded in QHAPDC than in the PDC (Table 3). These factors suggest that some of the inconsistency in rates based on mother and baby Indigenous status reported in the previous report may have been due to inconsistencies in the recording of Indigenous status in the data source rather than due to whether the Indigenous status was based on the status of the mother or the status of the baby. The current report overcomes this issue because a single source (the PDC) is available to compare the impact of use of maternal or baby Indigenous status. Because the current StatBite sources baby Indigenous status from the PDC rather than QHADPC, the results reported here are not directly comparable to the results in the previous Technical Report.

Indigenous rate ratios by Indigenous definition

Ratios of the rates of perinatal risk factors and outcomes for Indigenous versus non-Indigenous births were calculated, with Indigenous status defined by either the mother or the baby based on the PDC. As Figure 1 shows, rate ratios tended to be higher based on maternal identification than baby identification. This pattern was more marked for outcomes of the baby (Figure 1A to 1D) than for the maternal risk behaviours (Figure 1E to 1I).

For many perinatal measures, the definition of Indigenous status substantially influenced the rate ratios. This suggests that changing the definition of Indigenous status from mother to baby mid-trend would confound comparison by year. For most perinatal trends, such a change would create the appearance of closing the Indigenous gap in the absence of real change.

Figure 1. Rate ratios of various maternal or perinatal indicators by Indigenous status between 2010/11 and 2013/14p, based on the Indigenous status of the mother and the baby.



A. Low birth weight (< 2500 grams)

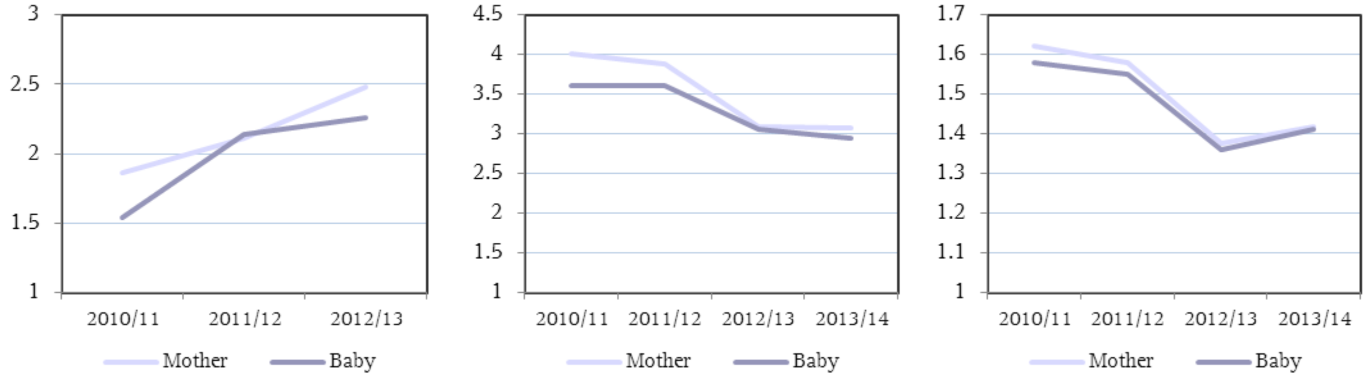
B. Preterm birth (< 36 weeks)

C. Stillbirth

D. Neonatal death

E. Less than 5 antenatal visits

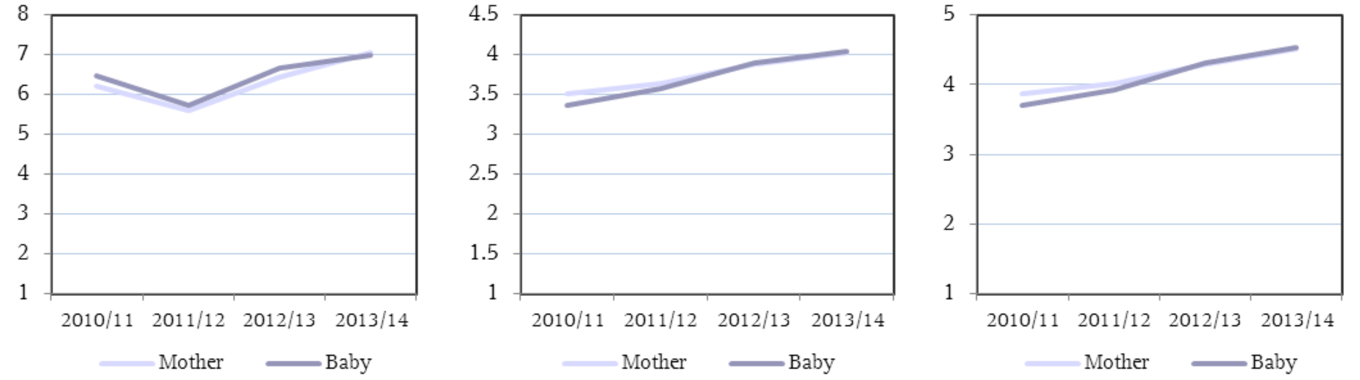
F. No antenatal visits in first trimester (0-13 weeks)



G. Young mothers (birth when < 18 years old)

H. Smoking during pregnancy

I. Smoking after 20 weeks gestation



Source: PDC – Extracted 19 December 2014. Where Indigenous status was not stated, records were classified as non-Indigenous.

For maternal behaviour indicators, results based on the mother's Indigenous status are shown at the mother's record level, while results based on the baby's Indigenous status are shown at the baby's record level.

The following records were excluded; A – unknown birthweight; B – unknown gestational weeks; D – stillbirths, 2013/14 data (neonatal death records have not been finalised for Jan-Jun 2014); E – unknown antenatal visits, unknown gestational weeks, pre-term births (< 37 weeks gestation); F – unknown antenatal visits, unknown date of first antenatal visit; G – unknown mother's age; H – unknown smoking before 20 weeks gestation or unknown smoking after 20 weeks gestation, unless the mother smoked before 20 weeks gestation or after 20 weeks gestation; I – unknown smoking after 20 weeks gestation.

p- preliminary, subject to change.

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