Rural and Remote Health
MEDLINE listed
Impact factor .820
The International Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy
ISSN 1445-6354

ORIGINAL RESEARCH

Birthing in the Barkly: births to Barkly women in 2010

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Submitted: *2 November 2012;* ***Revised:*** *9 March 2013;* ***Accepted:*** *27 March 2013;* ***Published:*** *19 September 2013*

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Rural and Remote Health **13: 2396. (Online) 2013**

Available: http://www.rrh.org.au

ABSTRACT

Introduction: A 2007 review of maternity services in Australia's Northern Territory (NT) noted the dissatisfaction of women in the Barkly region where the birthing service closed in 2006. The review recommended improved integration of maternity services, a consumer focus, and a pilot study of birthing in Tennant Creek Hospital (TCH) in the Barkly region. Barkly region is sparsely populated, with 5700 people in 320 000 km^2. The town of Tennant Creek with 3100 population is the only centre of more than 1000 people. In the Barkly region, 64% of the population and 74% of birthing women are Aboriginal. Current NT Department of Health (NT DoH) policy requires all women to give birth in a town with facilities for operative delivery. For most Barkly women this means travelling 500 km to Alice Springs with limited support for travel and accommodation. Emergency air evacuation is arranged for all women who enter labour or give birth while in the Barkly region, whether at TCH or elsewhere. This project was a collaboration between Anyinginyi Health Aboriginal Corporation and NT DoH to examine clinical data to inform a discussion of re-introducing birthing to TCH.

Methods: Women who were resident in the Barkly region and gave birth in NT in 2010 were identified from the NT Midwives Data Collection. Women who gave birth in Central Australia were managed at Alice Springs Hospital (ASH), either for the birth or afterwards. Antenatal, birthing, postnatal and neonatal data were extracted from ASH records.

Results: In total 99 women were identified as residents in the Barkly region from all those who gave birth in 2010. Of these, 83 gave birth in Central Australia, and their records were reviewed for this study, showing that 69 (83%) were Aboriginal; 42 were resident in Tennant Creek; and 29% were aged under 20 years with one under 16 years. Regarding delivery, 53 (64%) women had

an unassisted vaginal birth; of 18 women who had had a previous caesarean section, 5 (28%) had a vaginal birth; of the 25 women who had had a normal vaginal birth previously and had no indications for obstetric consultation at the time of labour, three underwent emergency caesarean section. There were 86 infants, all liveborn; 16% were preterm; 21% were of low birth weight; and 6% weighed more than 4.5 kg. Six women gave birth in the Barkly region, two at TCH and four in health centres in remote townships. These mothers and babies were evacuated immediately following birth to ASH, irrespective of indications for referral. Eleven women were evacuated to ASH in labour and six of these were preterm.

Conclusion: Opportunities exist to improve maternity care through improved collaboration, even when women cannot give birth in or near their home community due to the absence of birthing services. The remote location of the Barkly region presents challenges to providing maternity care that addresses medical, cultural, psychological and social needs of the childbearing population. Because of this, every opportunity should be taken to optimise maternity care by improvements in continuity of care and carer, improved communication between service providers, and the use of evidence-based guidelines.

Key words: Aborigines, Australia, midwife, Northern Territory, place of birth.

Introduction

Geography, demography and maternity services in the Barkly region, Northern Territory, Australia

Australia's Barkly region in the Northern Territory (NT) has an area of 320 000 km^2 and a population of 5700, 64% of whom are Aboriginal. The regional centre Tennant Creek has a population of 3100, of whom 52% are Aboriginal[1,2]. The nearest health service that provides birthing is in Alice Springs Hospital (ASH), 500 km to the south. There are strong historical and cultural links to the town of Mt Isa, 660 km east in the neighbouring state Queensland, and some women travel there and to other locations to have their babies.

Aboriginal and Torres Strait Islander mothers throughout Australia are characterised by younger age, higher parity, and higher rates of preterm birth and low birthweight than non-Indigenous women[3]. Approximately 74% of Barkly mothers are Aboriginal[4-6].

In Tennant Creek there is a 20 bed public hospital, a general practice clinic, and an Aboriginal community controlled health service. Outside Tennant Creek, the Barkly region has 4 health centres in remote townships with largely Aboriginal populations[7-10]. These services provide antenatal and postnatal care by midwives, nurses, Aboriginal Health Practitioners and non-specialist doctors of varying levels of experience, but no planned birthing[11]. Specialist advice is available by telephone, and several times per year an obstetrician from Alice Springs conducts out-patient clinics[12]. Ultrasound is available in Tennant Creek one week per month, and in Alice Springs at all times. Since 2006 there has been no service for planned births in the Barkly region; prior to that women with low risk pregnancies could give birth at Tennant Creek Hospital (TCH)[13]. However, every year a small number of women give birth at TCH and in health centres despite the lack of planned birthing services[4-6].

It is current NT Department of Health (DoH) protocol that women who live in remote townships should give birth in their regional hospital[14]. However, since the provision of planned birthing services at Tennant Creek ceased in 2006, all Barkly women must leave the region to give birth in a hospital with facilities for operative delivery. To support their travel, usually to Alice Springs, women are offered limited financial assistance including bus fares or equivalent, and accommodation subsidies from 38 weeks gestation or earlier[15]. There is provision for one escort for women aged 16 years or younger and for nulliparous women[14,15]. Additional escorts may be approved at the discretion of the

delegated officer. In practice, most non-Aboriginal women drive to Alice Springs alone or with their partner or another family member and stay in commercial accommodation while they await the birth; most Aboriginal women travel by bus, often with a family member, and stay in an Aboriginal hostel.

Northern Territory maternity services review

The 2007 review of NT Maternity Services recommended improved integration of maternity care services to provide high quality woman-centred services throughout the NT[16]. The review noted the dissatisfaction of women and families in the Barkly region, who have no option of birthing within their region. A subsequent report on maternity services in the Barkly region noted that the number of births in TCH had been declining for many years before the birthing service officially closed in 2006 with the departure of the Director of Medical Services (Fig1). The maternity services review recommended a pilot study of birthing at TCH[13,16].

The closure of rural and remote maternity services in Australia is well documented[17]. Some clinicians express concern about the safety of re-commencing low risk birthing services in TCH due to the difficulty in maintaining an adequately skilled workforce to provide operative delivery[13]. At the same time, both Aboriginal and non-Aboriginal community members express concern about the need to travel to Alice Springs or elsewhere for birthing services, which means being separated from home and community for a number of weeks. This concern is shared by some clinicians. The vast distances separating Barkly townships and Tennant Creek from the nearest birthing services in Alice Springs increases the call for local birthing services. Assertions about the psychological, social and cultural risks of translocation to Alice Springs are met with counter claims about the perceived high levels of clinical risk[13,18].

Similar concerns are felt by families in communities throughout rural and remote NT and Australia as a whole[17-19]. In recognition of these issues and the disadvantage experienced by rural and remote families due to lack of services, Australia's National Maternity Services Plan has a strong focus on both rural and remote maternity care and Aboriginal and Torres Strait Islander populations. This includes a commitment to expand choices near women's homes and a focus on culturally competent maternity care[17].

This project was a collaboration between the local Aboriginal community controlled health service, Anyinginyi Health Aboriginal Corporation and the NT DoH. It aimed to provide clinical data to inform a discussion about birthing in TCH by reviewing the indications for specialist referral of Barkly women who gave birth in 2010. The *Australian College of Midwives National Guidelines for Consultation and Referral* (ACM Guidelines)[20] were used as a standard to determine if, hypothetically, specialist referral for birthing in ASH would have been indicated for the woman or baby. By the same standard, women with no indication for specialist referral based on the ACM Guidelines could have been offered the option of giving birth at TCH if planned low-risk birthing services were established.

Methods

The project was a retrospective cross-sectional study of women resident in the Barkly who gave birth in 2010. Women were identified from the NT Midwives Data Collection (*NT Department of Health, unpubl. data, 2010).* Those who gave birth outside Central Australia were excluded because the focus was on regional service provision rather than the birthing population.

Two midwives examined each woman's maternity records. All who gave birth in the Barkly, either at TCH or in a township health centre, were transferred to ASH with their baby. Therefore records were available at ASH for every birth. Demographic, medical, obstetric and neonatal information was extracted from the ASH records. Review of primary care records was found unnecessary as relevant antenatal information was provided from health centres to ASH.

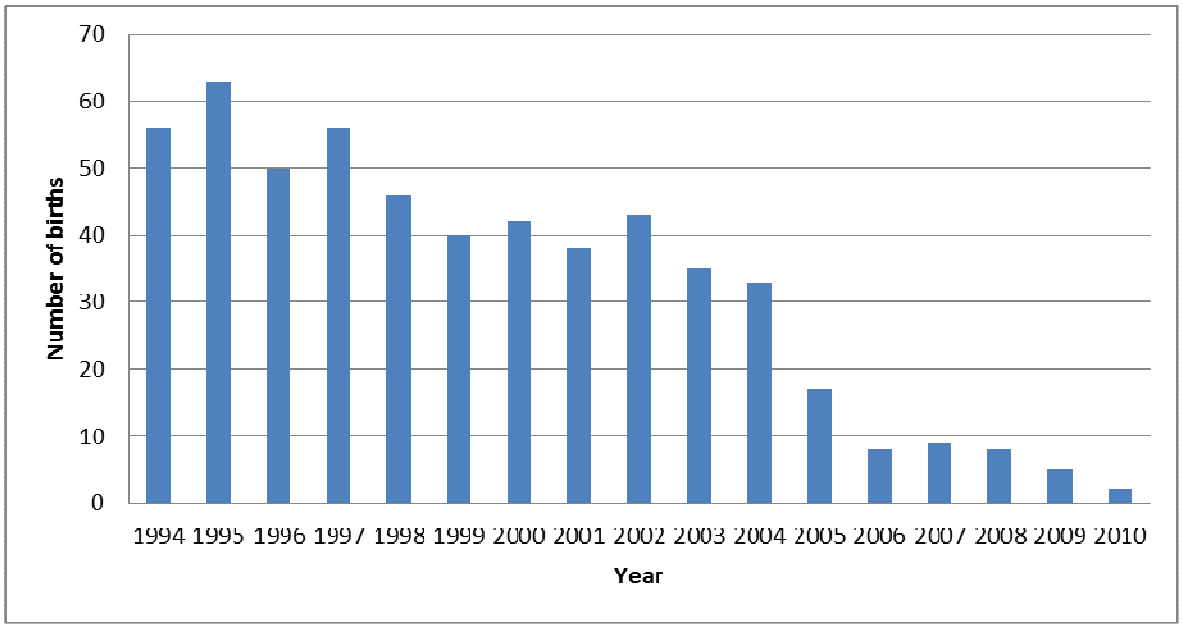

Figure 1: Births at Tennant Creek Hospital, Northern Territory, 1994 to 2010. Data sources: Mothers and Babies reports[4-6] (for 1994 to 2007); *NT Department of Health Perinatal Data Analyst, pers. comm., 18 July 2012* (for 2008 & 2009); Midwives Data Collection, NT Department of Health; unpubl. data, 2010 (for 2010).[4-6]

The ACM Guidelines provide evidence based guidance to midwives to optimise maternity care by promoting collaboration with other midwives, doctors and other professionals as required. They were developed by a multidisciplinary expert working group of midwives, obstetricians, neonatologists and consumers[20]. In this project the ACM Guidelines' recommendations were used for indications for referral to medical specialists. The ACM Guidelines provide a published standard referral guideline regarding who would require referral to ASH for birthing care.

Ethics approval

The project was approved by the Central Australian Human Research Ethics Committee (CAHREC): #2011:10:02.

Results

Barkly women who gave birth in 2010 and their babies

The NT Midwives Data Collection recorded 99 women resident in Barkly who gave birth in 2010. Sixteen delivered outside Central Australia and were excluded from further analysis. All 83 women who gave birth in Central Australia either gave birth at ASH or were transferred to ASH soon after birthing, and these women are the population of this study. Of the women, 69 (83%) were Aboriginal, and five women were born outside Australia (2 in the Philippines and one each in England, Fiji, and India).

Over half the women (n=42) were resident in Tennant Creek, while the others were resident in 10 smaller townships in the Barkly region. Of the identified women,

35% were nulliparous; 20 (29%) were aged under 20 years and one was under 16 years. The women's ages are shown (Fig2).

All infants were liveborn and there were three sets of twins. Sixteen percent (13/83) of all births and 12% (10/80) of singleton births occurred before 37 weeks gestation (preterm). Mean birthweight was 3154 g (standard deviation [SD] 744.3 g); mean singleton birthweight was 3176 g, (SD 677 g). In 21% (18/86) of all births and 15% (12/80) of singleton births, the baby weighed less than 2500g. Nine (10%) of the babies weighed more than 4000g, including five (6%) who weighed more than 4500g.

Indications for referral

Based on the ACM Guidelines[20], 24 women had 29 indications for obstetric referral identified on presentation in pregnancy or during antenatal care (Table 1). Indications for referral to specialist care were identified in a further 14 women during the pregnancy, and 13 during labour and delivery. Ten infants in total had indications for specialist referral. This includes two infants born to mothers who did not require referral themselves. Maternal and fetal/infant indications for referral identified during labour, delivery and postpartum periods are shown (Table 2). A flowchart is provided which shows the progress and outcomes of Barkly women and births in 2010 (Fig3).

Identification of women for birthing in Tennant Creek

If a low-risk birthing service were available at TCH without capacity for caesarean section, then 40 women could have been managed at TCH (22 multiparous & 18 nulliparous). If TCH was caesarean-section capable, 47 women could have been offered the option of birthing there (Fig3).

Women delivering in Barkly region or transferred in labour to Alice Springs Hospital

Six women gave birth in the Barkly region, in health centres or at TCH. All six women and their babies were transferred immediately by air to ASH. None of these women had indications for referral to specialist care prior to the onset of labour. Two women had three indications for referral during labour, birth and immediately postpartum. These were failure to progress followed by postpartum haemorrhage; and preterm labour at 35 weeks. No women gave birth in Alice Springs outside the hospital.

Eleven women were transferred to ASH in labour, either from TCH or a township health centre. None of these women gave birth en-route. Four had already reached 38 weeks gestation, at which time, if policy was strictly followed, the women would have been in Alice Springs. Indications for referral for the women transferred in labour were one each rheumatic heart disease, gestational diabetes, breech presentation and four with preterm labour, including one with breech presentation. Five had no indications for referral at the time the transfer was arranged.

Discussion

Demographic and obstetric characteristics of the Barkly women and their babies are shown (Table 3) compared with NT (2007)[6] and Australian (2009)[3] groups. Statistically significant differences were the younger age of the Barkly women, and the rates of low birthweight and preterm birth. These outcome differences reflect the younger age of the Barkly women and the much higher proportion of Aboriginal women.

The young age of the women is the most outstanding feature of the Barkly cohort. Young age reflects and amplifies other disadvantages of women in the region, and may increase their vulnerability, particularly if they are required to travel outside the region for birthing. Research in a range of settings has shown that poorer outcomes of young mothers are associated with their limited access to acceptable care. High quality, accessible maternity care may overcome the increased risks of adverse outcomes for young mothers and their babies[21,22].

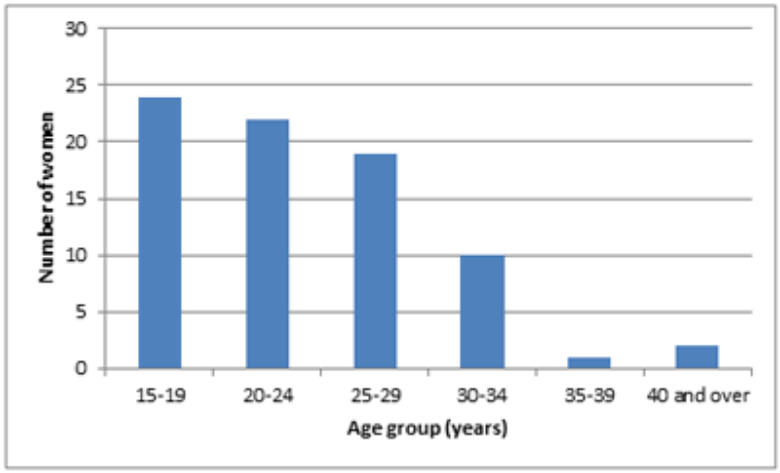

Figure 2: Age groups of Barkly women who gave birth at or were referred to Alice Springs Hospital in 2010.

Table 1: Indications for referral for obstetric consultation identified during antenatal period of Barkly women who delivered in Central Australia in 2010 (*n*=83)

Indication	Frequency (*N*=83)
Diabetes at the time of presentation	2
Rheumatic heart disease	2
Hypertension	1
Previous pre-eclampsia	1
Non-cephalic presentation	8
Fetal abnormality	4
Pre-eclampsia	4
Gestational diabetes requiring insulin	3
Multiple pregnancy	3
Deep vein thrombosis	1
Total	29

Table 2: Indications for referral to specialist care of Barkly women who gave birth in 2010 and their infants: indications arising during labour, delivery and post partum (*n*=83)

Indications	Frequency (*N*=83)
Maternal	
Preterm labour	4
Postpartum haemorrhage	3
Preterm prolonged rupture of membranes	2
Meconium-stained liquor	2
Non-cephalic presentation	1
Confirmed non-reassuring fetal heart patterns	1
Multiple pregnancy	1
Pre-eclampsia	1
Infant	
Apgar < 7 at 5 min	2
Congenital abnormality	3
Feeding problems	6
Suspected placental abruption or placenta praevia	1

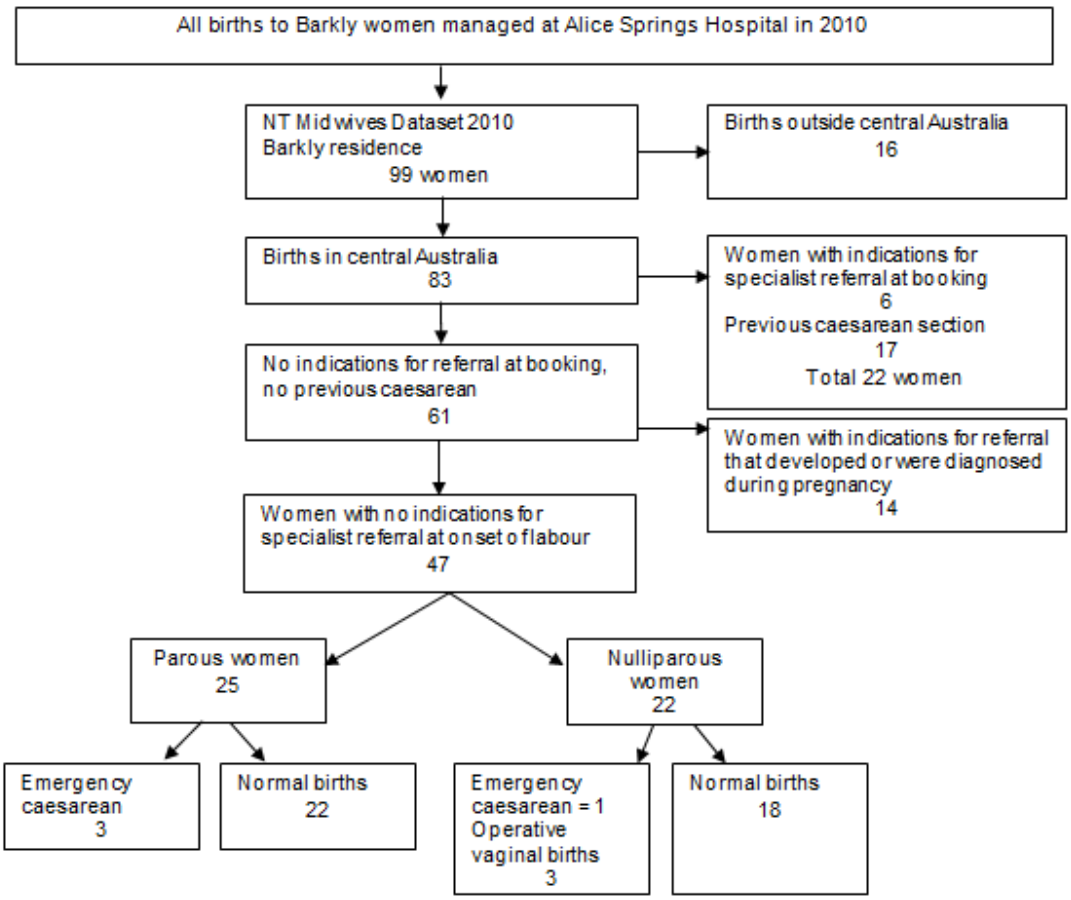

Figure 3: Flowchart of Barkly women and births in 2010. Data source: ***Midwives Data Collection, NT Department of Health; unpubl. data, 2010.***

Policy and planning considerations

In northern Canada an Indigenous midwife-led maternity service was initiated in 1986, with the explicit goal to end the routine evacuation of pregnant women to distant hospitals. Recent analysis of outcome data showed that women giving birth in remote villages experienced low rates of intervention. Perinatal mortality and congenital anomalies were within the expected range, despite high rates of food insecurity, unemployment, alcohol and drug use, and tobacco smoking[23]. Like their Canadian counterparts, the Aboriginal women in the Barkly region may benefit from midwifery services provided by their own people in their own communities[24].

Current NT DoH protocol requires all women in the Barkly who are in labour or who give birth in health centres to be transferred to a regional maternity service[25]. Although this protocol does not refer to TCH, transfer of mothers and newborns from TCH to ASH is routine. Such practice is not consistent with the ACM Guidelines, which contain specific indications for referral[20]. In the absence of identified indications for referral, the routine transfer of women during pregnancy, labour and after giving birth presents an additional source of disadvantage for women who may already be disadvantaged by remoteness, young age and the inequalities experienced by Aboriginal people. Implementation of such a policy to transfer all women and their babies to a specialist service may not always provide best-practice care[24]. Maternity care must address social, emotional and cultural health needs, and be as close to home as possible[24].

Table 3: Demographic and obstetric characteristics for Barkly mothers and babies in 2010 compared with other Australian women[6,3]

Characteristic	Group		
	Barkly women birthing or transferred to ASH 2010 *n*=83 (%)	NT women 2007 (*n*=3655) [ref6] %	Australian women 2009 (*n*=294 540) [ref3] %
Maternal			
Age < 20 years	24 (29)	14.1 **	4**
Nulliparous	29 (35)	31.1 NS	41.6 NS
Diabetes during pregnancy	6 (7.2)	ND	6.8 NS
Pre-eclampsia	4 (5)	3.3 NS	9.7 NS
Non-cephalic presentation	8 (9.6)	5.0 NS	5 NS
Fetal abnormality	4 (5)	NA	NA
Multiple pregnancy	3 (4)	2.2 NS	1.6 NS
Vaginal birth after caesarean	5/17 (29)	NA	16.4 NS
Anaesthesia for women who laboured	49/71 (69)	76 NS	75.2 NS
Normal vaginal birth	53 (64)	63.4 NS	56.8 NS
Operative vaginal delivery	6 (7)	6.9 NS	11 NS
Caesarean section	24 (29)	29.7 NS	31.5 NS
Infant			
Mean birthweight (g)	3154g (SD 744.3g)	3277g	3374g
Low birthweight	18/86 (21)	8.4 **	6.2 **
Preterm births	13/86 (15.6)	10.2 NS	8.2 *

ASH, Alice Springs Hospital; NA, not available; ND, no data; NT, Northern Territory.
NS, not statistically different from the Barkly women birthing or transferred to ASH 2010.
Significantly different from the Barkly women birthing or transferred to ASH 2010 *p<0.05, **p<0.01

Limitations and strengths

This study described births from a regional cohort of women who received birthing care at the regional hospital over one year. No information was sought about women who gave birth outside central Australia. The study presents a pragmatic approach to considering birthing services in the region. If low-risk birthing services were available at TCH, some women who previously chose to give birth outside the Barkly region, other than at Alice Springs, may choose to remain in Tennant Creek for birthing. Generalisations cannot be drawn from the data, either for other cohorts of Barkly women or for women from elsewhere. Rather, the data provide a framework to consider service development in the region, and discuss options with women and care providers.

Conclusion

While maternity services throughout Australia have closed in recent years[17], the Barkly region is distinctive in its extreme isolation and high proportion of Aboriginal women. This presents a challenge to the attempt to reconcile a range of medical, cultural, psychological and social issues. International examples of birthing services in remote areas, such as in Canada, need to be considered in planning future services in the Barkly region.

Analysis of the births to Barkly women in 2010 has highlighted the routine transfer of all women in labour and after giving birth, even in the absence of indications for specialist referral. The ACM Guidelines should be considered when local protocols are developed. Collaboration in the care of women who give birth outside ASH may enable specialists

to be involved even when mother and baby are not in ASH. This may enhance the quality of maternity care for Barkly women.

Acknowledgements

The authors acknowledge the work of midwives Rita Apelt and Suzanne Peel who collected the data from the ASH records, and the Acute Care Information Services for data on births in TCH 2008 and 2009.

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