

Time for 'basic antenatal care plus' in South Africa?



Antenatal care is a unique preventive public health intervention, offered routinely to healthy pregnant women. The overall objectives include health education, routine dietary supplementation, and, most importantly, to improve pregnancy outcomes

for mother and child by detecting complications, particularly those without obvious symptoms, early.

The principle of antenatal care is firmly entrenched in most health services. For many decades, the South African (SA) National Department of Health followed the schedule of routine antenatal visits implemented in the UK in the 1920s.^[1] Similar schedules were implemented in North America at around the same time.^[2] This included visits every 4 weeks to 28 weeks, every 2 weeks to 36 weeks, then weekly to delivery.

In recent years, the need for such frequent routine antenatal visits, which were introduced arbitrarily and without evidence of effectiveness and represent a significant cost to both women and health services, has been challenged.

In 2001, the results of a landmark cluster randomised trial comparing a package of antenatal care with reduced, goal-orientated visits v. standard antenatal care were published in *The Lancet*.^[3] Although perinatal mortality was increased in the reduced-visit package (234/11 672, 2.0% v. 190/11 121, 1.7%), the conclusion arrived at by the authors was that provision of antenatal care using the new model seemed not to affect maternal and perinatal outcomes.

This article and derivative publications such as the World Health Organization (WHO) manual for the implementation of the new model^[4] have impacted on antenatal care practice in low-income countries such as Thailand,^[5] and in SA, where the model was implemented in 2008.^[6] A subsequent reanalysis of the original

data from the WHO antenatal care trial confirmed that perinatal mortality was increased with the reduced-visit model (risk ratio (RR) 1.20, 95% confidence interval (CI) 1.04 - 1.38), and that this increase persisted after adjustment for potential confounding factors (RR 1.18, 95% CI 1.01 - 1.37).^[7] The authors indicated that the increased risk of fetal death between 32 and 36 weeks' gestation could be due to heterogeneity in study populations or differences in quality of care, or to the reduced number of visits *per se*. This finding was consistent with trends in two cluster randomised trials conducted in Zimbabwe, summarised in a Cochrane systematic review.^[8] The limited information on women's views in the Cochrane review indicates that women may feel anxious about the reduction in routine antenatal visits, and prefer more frequent visits.

Experience from our weekly mortality meetings since implementation of the 'basic antenatal care' (BANC) programme in SA is that infrequent antenatal visits in late pregnancy are commonly identified as an avoidable cause of perinatal or occasionally maternal mortality. This is not surprising, as infrequent visits in the third trimester may lead to missed opportunities to intervene in response to diagnoses such as pre-eclampsia, fetal growth impairment and reduced fetal movements.

The following cases serve as illustrations:

A 22-year-old nulliparous woman was seen antenatally at 26 weeks' and 35 weeks' gestation and was well. Her blood pressure was 110/60 mmHg, urine tests were normal, and fetal movements were felt. Her next visit was booked for 6 weeks later. After 23 days she presented at 08h30 in labour with severe pulmonary oedema. Her blood pressure was 189/93 mmHg, and oxygen saturation 70% on room air and 85% on 40% oxygen by mask. After stabilisation, caesarean section was performed for fetal distress under general

anaesthesia. A male baby was delivered at 09h50, with an Apgar score of 6/10 at 5 minutes. During closure of the uterus the mother had a cardiac arrest. Resuscitation was carried out and she was transferred to the intensive care unit. Her condition deteriorated despite intensive care and she died at 15h40.

The most important avoidable factor was the long interval between routine BANC antenatal visits. Under the traditional antenatal model, she would have been seen 2 weeks after her visit at 35 weeks, and it is very likely that early pre-eclampsia would have been diagnosed and managed with delivery before she progressed to severe pre-eclampsia with pulmonary oedema.

A 29-year-old primigravid woman was seen antenatally at 12, 21, 26 and 32 weeks' gestation and was well. Her subsequent visit was booked for 6 weeks later. Three weeks later she presented with abdominal pain for 8 hours, having last felt fetal movements on the previous day. Her blood pressure was 151/97 mmHg and proteinuria was present. The uterine symphysis-fundus measurement had fallen from 31 cm to 28 cm. The fetal heart was not heard, and ultrasound confirmed intrauterine death, severe growth impairment and a retroplacental clot. Antihypertensives were administered and labour was induced with an extra-amniotic Foley catheter bulb. Labour progressed to delivery of a macerated infant. The mother was well after delivery.

The avoidable factor identified was the 6-week interval between BANC visits. A traditional visit 2 weeks after the visit at 32 weeks would probably have detected early pre-eclampsia and fetal growth impairment, and fetal death might have been avoided.

The importance of early booking

The WHO report^[8] highlighted the lack of early antenatal booking in low-resource settings, with loss of the opportunity for early gestational age determination, treatment of infections such as syphilis, dietary supplementation and early institution of antiretroviral therapy. Uncertain gestational age is an important cause of pregnancy morbidity, being linked to missed diagnosis of fetal growth impairment, iatrogenic preterm delivery and unnecessary labour induction for suspected post-dates pregnancy, leading to increased use of caesarean section.

Previous research in SA has indicated that many women attend private or public health services for early pregnancy confirmation, but the crucial information from this visit is not linked to subsequent late booking at the antenatal clinic.^[9] Many women who have early ultrasound scans by private practitioners do not have the crucial information from the early scan available to assist decision-making in late pregnancy. We have previously recommended a policy

whereby every woman who attends a public or private facility and is diagnosed to be pregnant is issued with a patient-held antenatal record.^[10]

Recommendations

The cost of antenatal visits, both to the state and to individual women, is an important consideration. However, too few visits result in missed opportunities to detect and treat asymptomatic pregnancy complications. We recommend that for a middle-income country such as SA, a reasonable compromise would be to continue to implement the WHO BANC model with reduced, goal-orientated visits up to 32 weeks' gestation, and thereafter to revert to routine visits every 2 weeks to 36 or 38 weeks, followed by weekly checks. We call this model 'BANC plus'.

Secondly, we recommend that copies of the national patient-held antenatal records be made available at all public and private health facilities, with a directive that every pregnant woman who does not yet have a record be issued with one and that relevant information be recorded on it, irrespective of the reason for her attendance.

These two practical public health interventions have the potential to improve outcomes for pregnant women and their babies.

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