Antenatal care reduces perinatal death in rural Bangladesh

Key Messages:

- Antenatal care is associated with improved perinatal survival in the area with functional integrated community and facility service delivery system.
- Antenatal care is associated with perinatal death in a dose-dependent way – the more ANC visits the less probability of perinatal mortality
- Antenatal care coverage, quality assurance and linking between different levels of service delivery are important to maximize the benefits and ultimately reduce perinatal deaths.

Background:

Antenatal Care (ANC) can play an important role in the uptake of evidence-based practices vital to the health of women and their infants [1, 2].Yet the coverage of ANC is poor in Bangladesh; it is reported that about 50% and 21% pregnant women receive 1 and 4 ANC visits, respectively [3]. A number of studies have evaluated the association between ANC and perinatal death in both developing and developed countries but the results are not consistent [4, 5]. This study analyzed prospectively collected data by a Health and Demographic surveillance system (HDSS) from two areas with separate ANC service and health delivery systems to assess association between ANC and perinatal mortality in rural Bangladesh.

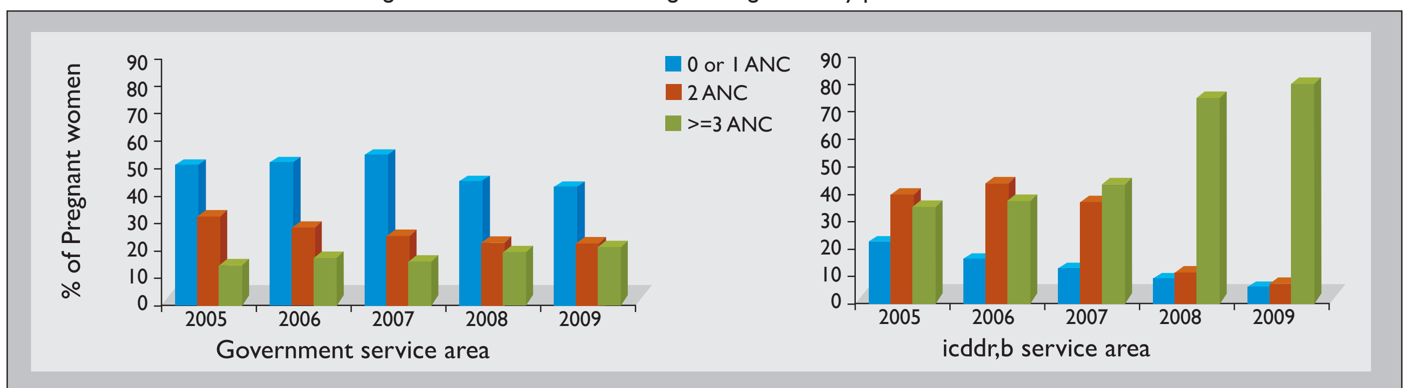
Methods:

This study was conducted in Matlab, a rural sub-district in Bangladesh, and took advantage of ongoing HDSS run by icddr,b. The HDSS captures information of women of reproductive age and children less than 5 years in both the icddr,b Service Area (SA) and the government SA. In the icddr,b SA – the women and children receive services from icddr,b through a functional integrated community and facility service delivery system. This includes ANC provided to pregnant women according to World Health Organization (WHO) recommendation of 4 focused ANC visits for each pregnant woman. In 2007, the contents in the ANC packages was strengthened further through the addition of new evidence based interventions (including formation of community support person, routine ultrasound examination, risk tracking, corticosteroid use for preterm labor, and induction of labor for postdated pregnancy), training and refresher training of health care providers, and monitoring of care through a quality assurance system. In the government SA there is policy for provision of at least 3 ANC to women, however the interventions in the package were less intensive (e.g. cover history taking, measurement of weight and blood pressure including occasional laboratory testing for selected morbidities, risk assessment, and educating women regarding danger signs including counseling of evidence based practices). In the government SA, the link between community and facility services is not well established and there is no quality assurance system. In this analysis we included pregnant women who delivered during the period 2005-2009 in both the icddr,b and government SAs. Information on ANC (no.of visits), perinatal mortality (death of fetus after 28 weeks of gestation or death of a live-born baby within 7 days of birth) and related co-variates were collected prospectively through bi-monthly home-visits of icddr,b community health research workers.

Results:

Out of 26,041 pregnant women included in the study, 13,287 women were from icddr,b SA and 12,750 women from the

Figure 1. Antenatal care coverage during the study period, 2005-2009



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government SA. There is wide variation in ANC coverage between the two SAs as shown in Figure 1.

In the icddr,b area the coverage of 3 or more ANC visits wasabout 80% at the end of the study period, whereas it was 27% in the Government SA.

Table1. Change of perinatal mortality rate among women residing in the icddr,b and government service area, 2005-9.

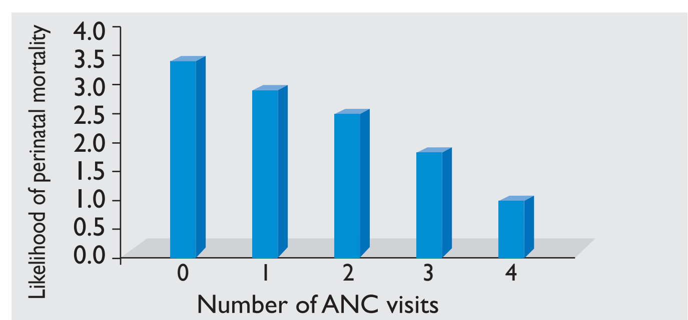
Perinatal mortality		
Years	icddr,b SA	Government SA
	Rate/100 birth	Rate/100 birth
2005	4.8	5.9
2006	4.8	5.8
2007	4.1	6.1
2008	3.4	5.5
2009	2.9	5.7

The perinatal mortality rate reduced significantly in the icddr,b SA (from 4.8% to 2.9%) during the study period while no change was seen in the Government SA (Table 1).There was an observed association of ANC visits with the perinatal mortality in the icddr,b SA but not in the Government SA. In the icddr,b SA, the risk of perinatal mortality was 3.4 times higher among the women who received no ANC in comparison to women who received 4 ANC (Figure 2). A significant dose-dependent association between number of ANC visits and perinatal mortality was observed.

Conclusion:

The present study demonstrates that high ANC coverage increased perinatal survival in the study area where interventions within the ANC package are more focused, in addition to linkage between community- and facility-based services is established, and quality of services offered by health care providers is maintained through regular monitoring system and training activities.

Figure 2: Dose dependent association of antenatal care with perinatal mortality in icddr,b area



Implications and Recommendations:

- Increased use of ANC can prevent perinatal mortality and thereby can play a significant role in achieving theMillennium Development Goal 4 in countries where under-five mortality has already reduced substantially.
- Keys to this reduced perinatal mortality rate include inclusion of evidence-based interventions in the ANC package, quality of services provided, and a functional linkage between community- and facility- based services to maximize the benefits of ANC.
- ANC in the government health system should be evaluated in relation to content and quality of services offered and should consider the World Health Organization's policy of 4 focused ANC visits for low risk pregnant woman.

References

1. Abou-Zahr C, Wardlaw T: *Antenatal care in developing countries: Promises, achievements, and missed opportunities: An analysis of trends, levels and differentials, 1990-2001*. Geneva: World Health Organization; 2003.
2. Banta D: *What is the efficacy/effectiveness of antenatal care and the financial and organizational implicaitons?* In. Copenhagen: WHO Regional Office for Europe; 2003.
3. National Institute of Population Research and Training (NIPORT), Mitra and Associates, and Macro International. 2009. *Bangladesh Demographic and Health Survey 2007*. Dhaka, Bangladesh and Calverton, Maryland, USA: National Institute of Population Research and Training, Mitra and Associates, and Macro International.
4. Brown CA, Sohani SB, Khan K, Lilford R, Mukhwana W: Antenatal care and perinatal outcomes in Kwale district, Kenya. *BMC Pregnancy Childbirth* 2008, 8:2.
5. Petrou S, Kupek E, Vause S, Maresh M: Antenatal visits and adverse perinatal outcomes: results from a British population-based study. *Eur J Obstet Gynecol Reprod Biol* 2003, 106(1):40-49.

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