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SolidarMed's baby package initiative

Demand-side financing increases institutional deliveries in Northern Mozambique

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In rural Northern Mozambique, a 12 USD baby package is enough of an incentive to significantly change women's birthing practice in favour of institutional deliveries. This study demonstrates that a demand side financing scheme such as that of "baby packages" can produce significant results in this context.


Women that gave birth at a health centre presenting themselves at a community meeting

Mozambique is one of the poorest countries in the world, ranked 184/187 on the UNDP human development index of 2011. 70% of the population do not have access to clean water, 60% have no access adequate to healthcare and 80% of women are illiterate. In addition, Mozambique is one of countries most affected by the HIV/AIDS epidemic, with prevalence rates on the rise currently at 12.5% of the adult population. Although Mozambique has undertaken significant efforts to improve the health of its population, maternal and neonatal health indicators continue to be poor. Maternal mortality rates are estimated between 500 and 600per 100´000 live births, with neonatal mortality rates at around 40 per 1´000 live births (WHO statistics 2011, Hogan et al. 2010). However, it is important to note that data quality is poor, numbers are often contested and the real figures are likely to be higher. In addition, there have been no significant improvements in these rates in recent years.

SolidarMed has been working in Northern Mozambique, in the province of Cabo Delgado, since the end of the civil war in 1995, primarily in the two districts of Ancuabe and Chiure with a population of about 125'000 and 250'000 inhabitants, respectively. The health system of both districts is typical for Northern Mozambique, with low numbers of health staff, poor funding and insufficient access to healthcare for the population. Missing infrastructure, lack of transport and insufficient medical equipment are additional challenges. The national trend - of stagnating improvements in maternal and neonatal health - is also replicated in Northern Mozambique. To identify the main bottlenecks and challenges in improving maternal and

neonatal health at district level, SolidarMed, together with partners from Government, representatives from local communities and civil society launched a participatory assessment process in 2010. This local assessment was complemented by a detailed external assessment mission carried out by the Swiss Centre for International Health (SCIH-SwissTPH) to ensure the proposed plans were coherent with local, national and international strategies regarding what works in improving maternal and new-born health in low resource settings. One of the recommendations of this external assessment was to embed a "baby package" pilot intervention into the overall programme, as an incentive to get women to deliver their children at a local health centre, instead of at home.

Birthing practices

Studies have shown that the promotion of institutional births is a core strategy for reducing maternal and neonatal deaths. (Campbell OM et al. 2006) In addition, the use of financial incentives to promote health seeking behaviour is well-documented. With regard to institutional births, positive results have been described in both India (Lim SS et al. 2010) and Pakistan. (Agha S. 2011) Mozambique adopted demand-side financing in the form of baby packages to promote institutional births as a national recommendation in 2009/2010. As shown by the graph below, women's health seeking behaviour varies quite widely along the spectrum of reproductive and child health.

SolidarMed conducted a survey of 235 women (12-50 years of age) visiting the health centre for an outpatient consultation in Ancuabe district for further insight into local birthing behaviour (internal communication). This smaller sample replicated the results of the graph above: although 87.5% of women interviewed did attend ANC during their last pregnancy, only 50% went on to deliver their child at a local health centre. Nine per cent reported giving birth "on the way" to the health centre. Most interestingly, nearly 65% of women did not know *anyone* who had given birth in a health centre (unpublished data). The latter highlights the how in general women to not see the health facility as a place they should go to give birth.

The baby package initiative

SolidarMed launched the "baby package" pilot initiative in the district of Ancuabe in June 2010. Ancuabe district has 6 primary health centres with restricted BEmONC services and no CEmONC services, for a population of 117'000 inhabitants living in an area of 4606km2. The aim of this intervention was to investigate the effect of offering a baby package on the number of institutional deliveries in the district.

From June 2010 to December 2011, every woman delivering her child at a health centre in Ancuabe district received a baby package consisting of a plastic basin containing three cloth nappies, some soap and a traditional cloth. The total value of each package was USD 12. Each

woman's age, village of origin as well the distance they had travelled to the health centre was recorded. As a baseline, the number of expected births was estimated as 4.5% of the district population (based on the 2007 census), applying a 2.2% annual population growth rate. (Mozambique census data 2007) The resulting data were recorded on Excel, randomly verified and the statistical analysis was done with Epi Info.

This analysis is based on the time period of June 2010 to December 2011 (the intervention itself is on-going). In the time period under analysis, a total of 8996 women with an average 24.9 years of age (SD=6.68, range 12-50 years old), had an institutional delivery after travelling on average 8 KM (SD=7.74; range 0-60 KM) to reach the health centre from home.

From 2010 to 2011, institutional births in Ancuabe District increased by 96%, while in the remainder of the province, the number of institutional births increased by 15% (see table 1).

	Ancuabe district			**Cabo Delgado province**		
Year	**Births**	**% increase**	**95% CI**	**Births**	**% increase**	**95% CI**
2009	2741			40870		
2010	4391	96.3%*	95.2 – 97.1	46535	15.8%*	15.3 – 16.2
2011	5790	31.9%†	30.5 – 33.3	49096	5.5%†	30.5 – 33.3

***Table 1**: Institutional births in Ancuabe district compared to Cabo Delgado province. *comparison between the last 6 months of 2009 with the last 6 months 2010. †comparison between the year of 2010 with the year of 2011.*

***Figure 2:** Overall course of institutional deliveries in Ancuabe district compared to institutional birth rates in the rest of the province of Cabo Delgado. Denominator is the expected number of births as 4.5% of the population according to the census 2007 (with a population growth rate of 2.2% per year); X^2 for trend $p < 0.0001$ for all groups*

Compared to the rest of the Province, women in Ancuabe were approximately 20 times more likely to have an institutional birth after the start of the intervention, when compared to those women outside the intervention district.

Year	**OR**	**95%CI**	**p-value**

2006-2009	0.85	0.83, 0.88	0.0001
2010-2011	22.61	19.86, 25.74	0.0001

Table 2: *Likelihood of institutional births*

The baby packages' critical discussion

In rural Northern Mozambique, a 12 USD baby package is enough of an incentive to significantly change women's birthing practice in favour of institutional deliveries. This study demonstrates that a demand side financing scheme such as that of "baby packages" can produce significant results in this context.

Nevertheless, given the weak health system and the quality of services at district level, an increase in institutional deliveries cannot be directly interpreted as a lifesaving outcome. The health facility assessment by the Swiss Centre for International Health (SCIH-SwissTPH) mentioned earlier revealed that the quality and range of services offered in the facilities was not sufficient for adequate maternal and neonatal care. In the Ancuabe district, only 50% of the midwifes working in peripheral health centres are trained to provide BEmONC. In addition, they often lack experience and the necessary equipment. The district does not have a CEmONC facility. All obstetric emergencies require referral to the provincial capital Pemba more than 100kms away. Lack of communication channels, running water and electricity are the norm compounding the precarious situation. According to the cross-sectional study at the reference health centre in Ancuabe in December 2010, 1/4 women (25.5%) knew someone who had died during childbirth at home, and 24.6% knew someone whose baby had died during a home birth.

In recognition of the wider challenges, the baby package initiative is embedded in a comprehensive maternal and neonatal health care programme called "MAMÁ". The overall goal of the programme is to improve maternal and neonatal care by improving the quality of the existing health service delivery. The focus is on the provision of BEmONC and CEmONC. The programme has a variety of health system strengthening components – including financial support at provincial level to a midwifery training course which will then feed into the district, rehabilitation of health centres to allow for provision of water and electricity, purchase of obstetric equipment and support to improve referral and communication systems as well as the development of the mother waiting home strategy.

With the increase in institutional deliveries, a parallel increase in delivery complications and referrals for C-sections would have been expected. However, these numbers have increased only moderately. A likely reason is because the health system has not adequately responded to

the increase in service demand. Expertise in the recognition of those complications arising and prompt referral is one of the contributing factors. Hence, the planned health system strengthening interventions as part of the comprehensive programme "MAMÁ".

It is important to investigate whether the initiative reaches all women equally to fight inequity in access. Preliminary analysis reveals that for some women, the baby package is not a sufficient incentive to overcome barriers to come for an institutional birth. More research is necessary to describe these women and get them into care.

Finally, the study results rely on data recorded by the health system, which – in general terms - is known to be of poor quality. In recognition of this, SolidarMed began supporting data quality improvement strategies from 2009, such as providing missing material and forms and organising regular supportive supervisions to each health centre. Results showed that recorded error-rates decreased significantly. So, although errors cannot be completely excluded, given previous support in the area of data quality, the main outcome measure (number of institutional births) was judged as of acceptable quality to estimate time bound trends.

In conclusion, offering a 12 USD baby package to every women delivering at a health centre significantly increases institutional deliveries. The baby package initiative has shown that in rural Northern Mozambique, women can change their behaviour, overcome significant barriers and deliver their babies with medical supervision in a health facility. This is one of the most important steps in the direction of improved maternal and neonatal health. Nevertheless, it is clear that national health delivery systems need parallel strengthening in order to cope with the increased demand.

It is the belief of the authors that once local women's experience of health care is secure, useful and enjoyable; they will decide to give birth at the health centre time and time again, even without the incentive of a baby package.

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