## Reduction in child mortality in Niger: a Countdown to 2015 country case study.

Amouzou A, Habi O, Bensaid K, and the Niger Countdown Case Study Working Group. Lancet online publication: http://dx.doi.org/10.1016/S0140-6736(12)61376-2 (September, 2012).

**Introduction**

"Countdown to 2015" is a multi-disciplinary, multi-institutional collaboration of representatives of governments, international donor agencies, non-governmental organizations, health-care professional associations, and academic institutions, who use country-specific data to stimulate and support progress towards achieving the health-related Millennium Development Goals (http://www.countdown2015mnch.org/ ). The Countdown group tracks progress in 75 countries where more than 95% of all maternal and child deaths occur, and promotes accountability from governments and development partners, identifies knowledge gaps, and proposes new actions to reduce child mortality and improve maternal health. Countdown focuses primarily on coverage — the proportion of individuals needing a health service or intervention who actually receive it — and on the policy, health system, and financial factors that affect coverage levels, patterns and trends.

To provide better understanding of the factors that contribute to national performance in scaling-up interventions to reduce maternal, newborn and child mortality, Countdown has commissioned a series of in-depth country case studies. Niger was selected as one of the first countries for detailed analysis of the national child survival program because it has achieved remarkable gains in coverage of child survival interventions and mortality reduction during the period from 1998-2009. This edition of NNA summarizes the findings of the Niger case study, with particular focus on the association between scale-up of nutrition-related interventions and reductions in child mortality.

Changes in child mortality during the period of interest were estimated by using standard life-table procedures based on information from birth histories of women of reproductive age obtained from four nationally representative surveys. Intervention coverage and nutritional status were summarized from eight available national surveys. Data on coverage of some interventions (like high-dose vitamin A capsule distribution) were not available from some of the earlier surveys, so the overall coverage and mortality impact is likely to be underestimated for these interventions.

Initially, the child mortality rate in 2009 was estimated using the Lives Saved Tool (LiST) based on mortality and program coverage data for 1998, the change in coverage in 2009, and the estimated

impact of each intervention on specific causes of mortality. This was done to assess the ability of the LiST software to predict the actual observed changes in mortality during this interval of time. Then, the same software was used to estimate the relative contribution of each intervention to the observed reduction in child deaths in 2009. Finally, information on child survival policies and programs was compiled through interviews with key informants to assess which strategies were associated with the changes in program coverage. (For more information on LiST, see http://www.jhsph.edu/departments/international-health/IIP/list/index.html and Fox et al, 2011)

**Results and conclusions**

The observed child mortality rate per thousand live births (based on maternal birth histories) declined rapidly and significantly from 226 in 1998 to 128 in 2009, but neonatal mortality fell relatively little, and non-significantly, from 39 to 33. Coverage of vitamin A supplementation programs and use of insecticide-treated bednets to prevent malaria increased from very low levels in 1998 to nearly 80% in 2009. By contrast, the prevalence of exclusive breast feeding from birth to six months of age remained low, and there was little change in appropriate complementary feeding practices. ORS and zinc treatment of diarrhea increased nearly two-fold, although coverage was still less than 40% in 2009. The prevalence of moderate and severe stunting decreased only slightly during the period of analysis, but the prevalence of severe wasting fell by nearly half to ~5%.

Compared with the observed 2009 child mortality rate of 128 per thousand, the LiST software estimated this rate as 144; the observed and estimated neonatal mortality rates were 33 and 34, respectively. The authors concluded that these fairly similar sets of observed and LiST-predicted results permitted examination of the relative contribution of changes in nutritional status and the coverage of different interventions to the observed reductions in child mortality, using the LiST software. Of the estimated 58,795 lives saved in 2009, insecticide-treated bed nets alone were identified as being responsible for ~25% of the mortality reduction, and the combination of nutritional improvements (reductions in wasting and stunting and minor improvements in breast feeding practices) and increased coverage with vitamin A supplements were estimated to be responsible for ~31% of the reduction. Other interventions that were found to be responsible for important, but smaller, proportions of the mortality reduction were community-based treatment (and improved care-seeking) for malaria, pneumonia, and diarrhea and increased coverage with measles and Hib vaccines.

According to interviews with key informants, the main strategies that favored increased program coverage of key mortality reduction interventions were improved universal access to primary health care for children, the use of mass campaigns to scale up selected intervention programs, and an increased focus on nutrition. Access to primary health care was improved by constructing, equipping and staffing

more primary health care facilities, by providing training in integrated management of childhood diseases, and by abolishing user fees for women and children. Mass campaigns were deployed to increase coverage with immunizations and vitamin A supplementation and to distribute bednets. Better nutrition was further supported through new policies on the management of acute malnutrition and the creation of a network of nutrition rehabilitation centers, as well implementation of targeted cash transfer, food for work, and other special programs to enhance food security.

**Program and Policy Implications**

Niger is currently on track to achieve the Millennium Development Goal for reduction in child mortality, as evidenced by the 43% reduction in child mortality from 1998 to 2009. The findings from the present analyses suggest that three sets of policies and program strategies operated synergistically to produce these outcomes: 1) prioritizing access to primary health care services for children, with special attention to achieving high coverage for interventions to reduce mortality from malaria, pneumonia, diarrhea and measles; 2) rapid scale-up in coverage of disease prevention through mass campaigns to distribute insecticide-treated bednets and deliver vitamin A supplements and measles vaccination; and 3) a special focus on prevention and treatment of child malnutrition and food insecurity.

Notably, there was no significant reduction in neonatal mortality during the period of this review, which is consistent with the fact that there was relatively little change in coverage of interventions that are known to affect neonatal mortality, such as antenatal care and maternal tetanus toxoid immunization, presence of skilled birth attendants, or improvements in early breast feeding practices.

**NNA Editors' comments***

These results indicate that nutrition interventions were as important as specific health programs in contributing to decreased child mortality in Niger. In particular, reductions in wasting and stunting, high coverage of vitamin A supplementation, and slight improvements in breast feeding practices explained nearly one third of the lives saved in Niger in 2009.

It is important to realize that nutrition interventions could save even more lives if programs were successfully implemented to improve maternal nutrition during pregnancy, increase early breast feeding practices, enhance complementary feeding and further reduce the prevalence of child stunting. Moreover, greater coverage with preventive and therapeutic zinc supplementation could reduce child mortality directly and possibly contribute further to mortality reduction by enhancing linear growth. Finally, the current analyses do not account for possible mortality reductions due to salt iodization, and may under-count the impact of vitamin A supplementation by considering the effect of vitamin A only on diarrhea-associated deaths. Thus, continuation and further expansion of nutrition interventions are

essential for maintaining and augmenting the laudable improvements in child survival already achieved in Niger.

**References**

1. Fox MJ, Martorell R, Van den Broek N, Walker N. Assumptions and methods in the Lives Saved Tool (LiST). BMC Pub Hlth 11 (suppl 3): 1-3, 2011.

*These comments have been added by the editorial team and are not part of the cited publication.

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