

ISSUES IN PUBLIC HEALTH

Ending preventable child deaths in South Africa: What role can ward-based outreach teams play?

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South Africa (SA) has emerged from the Millennium Development Goal era with a mixture of success and failure. The successful national scale-up of prevention of mother-to-child transmission of HIV services with increasingly efficacious antiretroviral regimens has reduced the mother-to-child transmission rate dramatically; however, over the same period there appears to have been no progress in coverage of high-impact interventions for pneumonia and diarrhoea, which are now leading causes of under-5 mortality. SA embarked on a strategy to re-engineer the primary healthcare system in 2011, which included the creation of ward-based outreach teams consisting of community health workers (CHWs). In this article we argue that the proposed ratio of CHWs to population is too low for public health impact and that the role and scope of CHWs should be extended beyond giving of health information to include assessment and treatment of childhood illnesses (particularly diarrhoea and suspected pneumonia). Evidence and experience amply demonstrate that CHWs in sufficient density can have a rapid and positive impact on neonatal and young child mortality, especially when they are allowed to treat common acute conditions. SA's mediocre performance in child survival could be dramatically improved if there were more CHWs who were allowed to do more.

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South Africa (SA) has emerged from the Millennium Development Goal (MDG) era with a mixture of success and failure. MDG4 aimed to reduce the under-5 mortality rate (U5MR) by two-thirds between 1990 and 2015. SA's MDG baseline (1990) of 60 under-5 deaths per 1 000 live births meant a target of 20.^[1] Estimates from rapid mortality surveillance placed the U5MR in 2014 at 39^[2] (Fig. 1). Much of this reduction has been due to the successful national scale-up of prevention of mother-to-child transmission (PMTCT) of HIV services with increasingly efficacious antiretroviral regimens reducing the mother-to-child transmission rate at 4 - 8 weeks of infant age to around 2.6%.^[3] As a result, HIV/AIDS is no longer the leading cause of under-5 mortality – it has been surpassed by neonatal deaths (25%), gastroenteritis (15%) and suspected pneumonia (13%).^[4]

Although no current data are available, over the past few decades – including during the height of the HIV/AIDS epidemic – there appears to have been no progress in coverage of high-impact interventions for pneumonia and diarrhoea. The proportion of children <5 years old with symptoms of pneumonia taken to an appropriate healthcare provider declined from 75% in 1998 to 65% in 2003 (the most recent Demographic and Health Survey); similarly, coverage of oral rehydration solution (ORS) for children with diarrhoea declined from 51% in 1998 to 40% in 2003.^[5] A recent review^[6] of child deaths in two medicolegal mortuaries in Cape Town and Durban found that lower respiratory tract infections (LRTIs) and diarrhoea were the most common causes of sudden, unexpected natural deaths among children under-5 at both sites. Of the natural deaths, LRTIs accounted for 65% of infant deaths and 56% of 1 - 4-year-old deaths, respectively. Deaths due

to diarrhoea accounted for 12% of infant and 26% of 1 - 4-year-old natural deaths, respectively. Importantly, the majority of these deaths occurred outside healthcare facilities. Almost half (44%) of the LRTI deaths were among infants born prematurely, with many of these deaths occurring soon after babies were discharged from hospital.

Furthermore, the study reported that 11% of the natural deaths were associated with possible health systems failures where a child was taken to a health facility within 48 hours of death and medical management was suspected to be lacking. This study highlights that even in the metropolitan areas of Durban and Cape Town, access to care is poor. The situation in other less well-resourced provinces is likely to be significantly worse.

As a strategy to complement facility-based integrated management of childhood illness (IMCI) and in conjunction with broader efforts to address the major causes of child mortality, integrated community case management (iCCM) was endorsed by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) in 2012 as an equity-focused strategy to train, supply and supervise community health workers (CHWs) to diagnose and treat diarrhoea, malaria and pneumonia among children aged 2 - 59 months in communities where access to health services is poor.^[7] In some settings, the package of treatment services includes severe acute malnutrition and antibiotics for neonatal sepsis. The joint statement by the WHO and UNICEF was based on accumulated evidence of the effectiveness of CHWs in increasing uptake of high-impact child survival interventions,^[8] reducing child mortality^[9] and reducing both early and late neonatal mortality^[10] through a package of community-based interventions including treatment. The

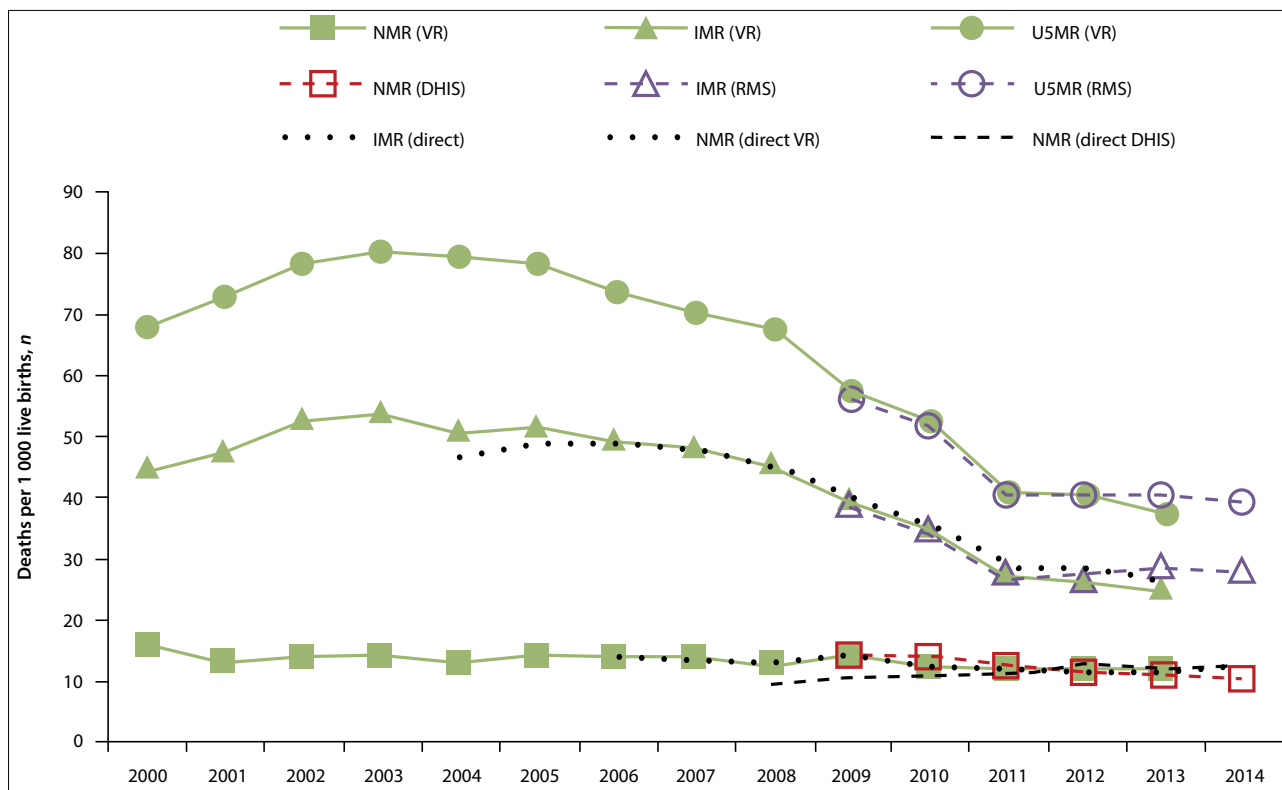


Fig. 1. U5MR and infant mortality rate (IMR) from vital registration (VR) and rapid mortality surveillance (RMS) and neonatal mortality rate (NMR) from VR/DHIS (District Health Information System), 2000 - 2014 (after adjusting for incompleteness). Reproduced with permission from Dorrington et al.^[2]

uptake of iCCM by national governments in Africa has been rapid, increasing from a total of 7 countries with iCCM policies in 2005 to 28 countries by 2013.^[11] The scale-up of community-based delivery platforms, including treatment of the common causes of child deaths, has contributed to the achievement of MDG4 in several countries in Africa, including Malawi and Niger.^[12,13]

SA embarked on a strategy to re-engineer the primary healthcare (PHC) system in 2011, including the creation of ward-based outreach teams (WBOs), comprising approximately six CHWs supervised by one nurse.^[14] According to national guidelines, each ward should have one or more PHC outreach teams serving a population of ~7 660 people (1 CHW to 1 276 people). Given the quadruple burden of disease in SA^[15] and the important role of social determinants of health, this ratio of CHWs to population is unlikely to achieve the desired health improvements, and compares unfavourably with Brazil (1 CHW to 800 people) or Rwanda (1 CHW to 255 people).

A higher CHW-to-population ratio would increase the frequency of contact with community members and thus increase the potential impact on behaviour change and coverage of health interventions. In Ethiopia, there is a two-tier community-based delivery platform with trained health extension workers (HEWs), who operate out of static health posts. They are supported by a volunteer cadre known as the health development army, who are mainly responsible for promoting essential family practices.^[16] An evaluation of the nutrition support programme concluded that volunteers most likely contributed to a drop in stunting levels and underweight children and that the high ratio of volunteers to households (1 volunteer to 10 - 15 households and 10 volunteers to 1 full-time CHW) was central to this success.^[17] The evaluation report noted that the support volunteers received from CHWs was key to their effectiveness. The ratio of volunteers to population is close to the volunteer-to-child

population ratio of 1:10 – the WHO-recommended optimal density for effective preventive healthcare.^[18] In SA, ~24% of children under 5 are moderately or severely stunted; a prevalence rate that has not shifted significantly over the past few decades.^[5] Furthermore, SA has one of the lowest exclusive breastfeeding rates in Africa (8% in infants under 6 months of age).^[19] There is evidence from low- and middle-income countries,^[8] including SA,^[20] of the impact of CHWs undertaking breastfeeding promotion and counselling on improving exclusive breastfeeding.

In addition to concerns over the low CHW-to-population ratio, the proposed role for CHWs in SA is extremely narrow, focusing primarily on counselling around prevention activities and adherence support. There are no curative functions included in their scope of work. We welcome the recent policy shift enabling CHWs in SA to administer biannual mebendazole and vitamin A to children aged 1 - 5 years in their catchment areas.^[21] This is hopefully the first step towards an enlarged scope that should also include community-based support for premature babies in the critical few weeks following discharge and treatment of neonatal sepsis, diarrhoea, suspected pneumonia and acute malnutrition.

The high coverage of PMTCT services needs to be maintained; however, limited additional mortality reduction is likely unless the prevention and treatment of the current leading causes of child deaths – most notably pneumonia, diarrhoea and neonatal deaths – are tackled in an integrated manner, including increasing access to care through community-based delivery.

Evidence and experience amply demonstrate that CHWs in sufficient density can have a rapid and positive impact on neonatal and young child mortality, especially when allowed to treat common acute conditions. SA's mediocre performance in child survival could be dramatically improved if there were more CHWs who were allowed to do more.

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