

Learning from Success: How Rwanda Achieved the Millennium Development Goals for Health

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Summary. — Although it is one of the poorest countries in the world, devastated by the 1994 Genocide against the Tutsi and heavily aid-dependent, Rwanda has achieved most of its Millennium Development targets for health. This article discusses how it managed this, when many countries in Sub-Saharan Africa failed to achieve theirs, and assesses the sustainability of its solutions. Determined government policies involving investment in health and education and their energetic implementation with the support of development partners are identified as ultimately responsible for this success in improving the lives of ordinary Rwandans. The major mechanisms for implementation have been the provision of relatively local health centers, payment of health providers by results, setting up an affordable health insurance scheme (with support for those most in poverty) and the appointment of volunteer Community Health Workers who are unpaid but are encouraged and supported to form cooperatives for their own and their families' support. The effectiveness of this level of community involvement suggests that the "Sustainable Development Goals" which replace the MDGs may also be attainable. A marked reduction in Official Development Assistance because of the success would be counterproductive, however, probably putting the cost of medical and preventative supplies beyond the reach of the average Rwandan citizen.

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Key words — Rwanda, Sub-Saharan Africa, Millennium Development Goals, community health provision, official aid for health provision

1. INTRODUCTION

Rwanda is one of the poorest and most aid-dependent countries in the world. It is the most densely populated country of the African mainland, depends on agriculture, is landlocked, hilly and heavily forested, lacks exportable natural resources, has a workforce that is still not well skilled or educated (despite determined efforts to overcome this) and has spent the last twenty years rebuilding its physical, economic and social infrastructure after the devastating 1994 Genocide against the Tutsi. Its colonial background is more like that of the Congo, which struggles even to maintain itself as a coherent state, than that of the remainder of the East African Community, which it is outperforming in several respects. Nonetheless it has achieved its MDG targets for health. This paper discusses how it managed this, against the odds, when many countries in Sub-Saharan Africa failed to achieve their targets. The article concludes with a discussion of some of the challenges Rwanda still faces in improving the health of the country in the context of the post-2015 Sustainable Development Goals.

In 2000 the United Nations agreed a set of Goals with measurable targets to be achieved by 2015, the Millennium Development Goals (MDGs), for reducing poverty and improving the health, wellbeing, and quality of life of people living in developing countries. The underlying aim of the MDGs is to give people control over their lives and let them follow a way of life that they value (Sen, 1993). The MDGs have formed the basis of a global partnership for development and have become a key metric for measuring the performance of developing countries in addressing critical development challenges, including health. While originally framed as global targets they have been widely applied as national ones, with regular updates published by the United Nations on the progress that countries are making. They measure progress to

achieving the targets between 1990 and 2015 with indicators that are to reach 100% (for example, 100% of one-year-olds vaccinated against measles), or achieve a proportional reduction/increase (for example, reducing the maternal mortality rate by three quarters between 1990 and 2015), or else they just express an open-ended expectation of progress.

Rwanda has been widely recognized as one of the most successful countries in Africa for the general social and economic progress it has made over the last 15 years (Collier, 2010) and specifically for developments in health (Abbott, Sapsford, & Rwirahira, 2015a; Chambers & Booth, 2012a; Collier, 2010; Farmer *et al.*, 2013; Pose & Samuels, 2011). Not only has it made significant progress on a range of development indicators, but on many of these it has narrowed the gap between the poorest and the better off. Rwanda's success has been attributed to Developmental Patrimonialism and the political settlement among potential ruling groups—see Golooba-Mutebi and Booth (2013). ("Patrimonialism" involves a mix of impersonal/bureaucratic and personal/clientelistic forms of rent allocation, but the qualifier "Developmental" is intended to convey that the aim is enhancing their own *and others'* income in the long run, rather than short-term income maximization, and is allied in their writings with a political settlement which looks beyond clients or allies to the population as a whole—see Booth and Golooba-Mutebi (2012). The priority has been investment in the development of the country, with government through dialog and consensus, a rigorous suppression of corruption at all levels and mainly pro-poor evidence-based policies. Despite high aid intensity, Rwanda has managed to develop the good institutions which

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are arguably essential for social and economic progress and to increase its own tax revenues.

The MDGs were set as eight goals with targets for 2015 and a series of indicators for measuring progress. Three of the Goals were specifically related to health: a substantial reduction in child mortality; a substantial improvement in maternal health, and a reduction in the incidence of HIV/AIDS, malaria and other diseases (represented by tuberculosis)—see Table 1. We also include improving child nutrition and eradicating extreme poverty and hunger, a target under MDG 1.

The data used to measure progress are mostly taken from Rwanda Demographic and Health Surveys for 1992, 2000, 2005, 2010, 2014–15 and the Interim RDHS 2007/8. These are referred to throughout the report as RDHS. The data are mostly taken from the published reports which are available on the website of the National Institute of Statistics of Rwanda (<http://www.statistics.gov.rw/publications>) or from original analysis of the microdata available there (<http://>

www.statistics.gov.rw/surveys). The surveys have been carried out by the Government of Rwanda with support from teams of international experts, on large representative samples, and have been approved by the Rwandan National Research Ethics Committee.

2. RWANDA'S PERFORMANCE

(a) *Child malnutrition*

There has been a decline of 20 percentage points since 1992 in the proportion of underweight children in the population, and the MDG target of 14.5% was achieved between 2005 and 2010 (Figure 1). However, nearly half of all Rwandan children show other signs of malnutrition, with 38% stunted (under height for age)—see RDHS (2014/15). Stunting is an avoidable condition and is not simply a product of poverty

Table 1. *Millennium development goals for health*

Goals and targets	Indicators for monitoring progress
<p><i>Goal: Eradicate extreme poverty and hunger</i> Target: Halve, between 1990 and 2015, the proportion of people who suffer from hunger</p>	<ul style="list-style-type: none"> • Prevalence of underweight children under-five years of age • halving the proportion of people who suffer from chronic hunger (i.e., those in extreme poverty)
<p><i>Goal: Reduce child mortality</i> Target: Reduce by two-thirds, during 1990–2015, the under-five mortality rate</p>	<ul style="list-style-type: none"> • Under-five mortality rate • Infant mortality rate • Proportion of 1 year-old children immunised against measles
<p><i>Goal: Improve maternal health</i> Target: Reduce by three quarters, during 1990–2015, the maternal mortality ratio Target: Achieve, by 2015, universal access to reproductive health</p>	<ul style="list-style-type: none"> • Maternal mortality ratio • Proportion of births attended by skilled health personnel • Contraception prevalence rate • Adolescent birth rate • Antenatal care coverage (at least one visit and at least four visits) • Unmet need for family planning
<p><i>Goal: Combat HIV/AIDS, malaria and other diseases</i> Target: Have halted by 2015 and begun to reverse the spread of HIV/AIDS</p>	<ul style="list-style-type: none"> • HIV prevalence among population aged 15–24 years • Condom use at last high-risk sex • Proportion of population aged 15–24 years with comprehensive correct knowledge of HIV/AIDS
<p>Target: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it</p>	<ul style="list-style-type: none"> • Proportion of population with advanced HIV infection with access to antiretroviral drugs
<p>Target: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases</p>	<ul style="list-style-type: none"> • Incidence and death rates associated with malaria • Proportion of children under 5 sleeping under insecticide-treated bed nets • Proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs • Incidence, prevalence and death rates associated with tuberculosis • Proportion of tuberculosis cases detected and cured under directly observed treatment short course
<p><i>Goal: Develop a global partnership</i> Target: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries</p>	<ul style="list-style-type: none"> • Proportion of population with access to affordable essential drugs on a sustainable basis

Source: United Nations (1999).

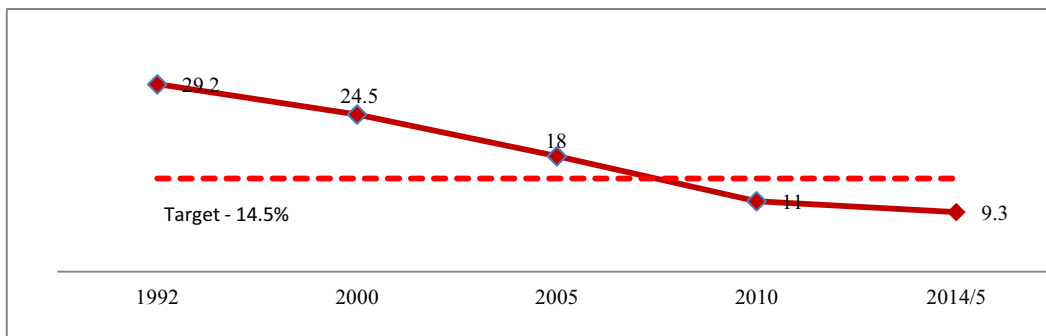


Figure 1. Trend in prevalence of moderately underweight children, 6 months to 5 years, 1992–2014/15. Sources: RDHS (1992, 2000, 2005, 2010, 2014/15).

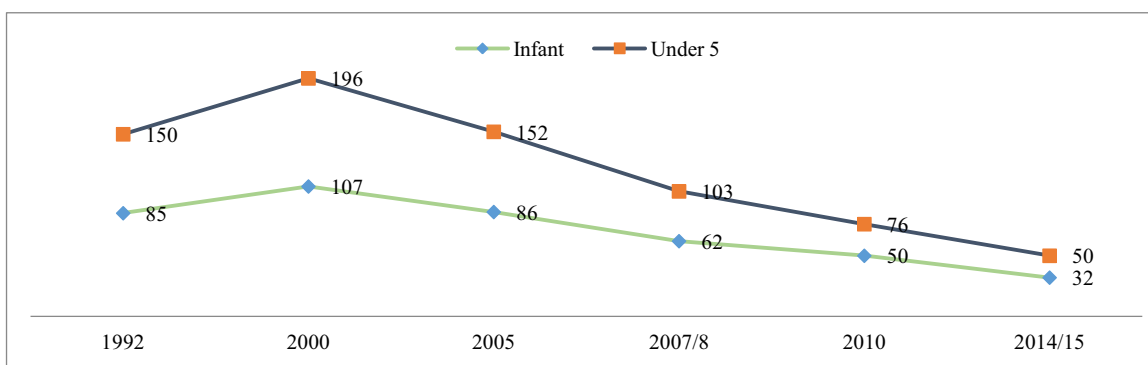


Figure 2. Infant and under-five mortality rate per 1,000 live births 1992–2014/15. Sources: RDHS (1992, 2000, 2005, 2007/8, 2010, 2014/15).

but of specific malnutrition; only 18% of infants and young children aged 6–23 months are being fed an appropriate diet, and even in the highest wealth quintile more than 20% of infants are stunted as a result (RDHS 2014/15).

(b) Infant and child mortality

The targets under this heading are to reduce infant and child mortality by two thirds and to ensure 100% vaccination against measles among 1-year-old children. The infant mortality rate (IMR) stood at 32 per 1,000 live births in 2014–15 (Figure 2), marginally above the MDG target of 28, and the

under-five rate stood at 50, hitting the MDG target exactly and exceeding the sub-Saharan average decline since 1990 by about 15% (United Nations, 2015). The graphs show what a remarkable achievement this is given the steep rise in infant and under-five mortality during and immediately after the Genocide.

(c) Vaccination

The target for the proportion of children immunized against measles has almost been achieved (Figure 3); by 2010 the percentage aged 12–23 months vaccinated stood at 95%, with 90%

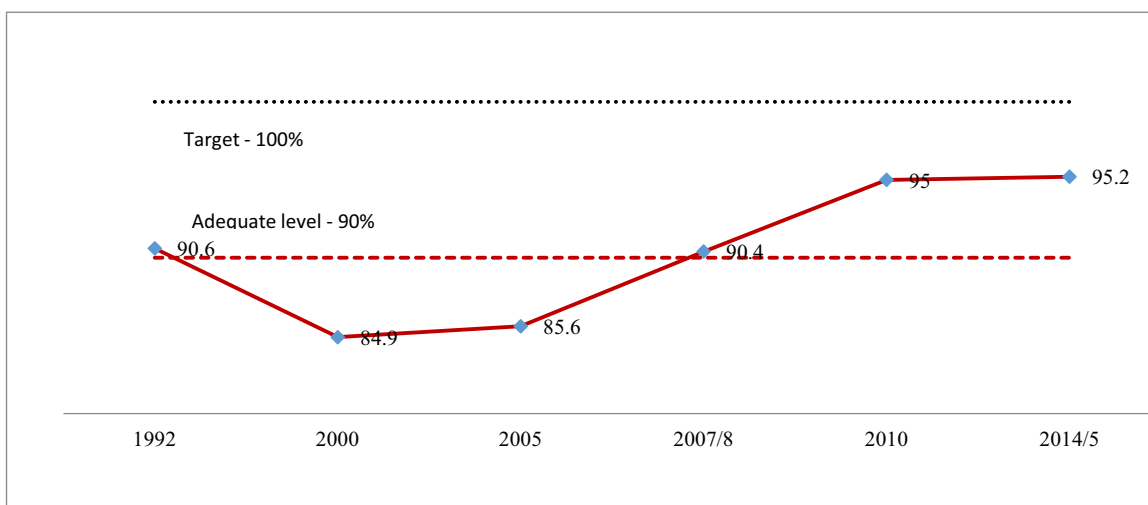


Figure 3. Percentage of children 12–23 months immunised against measles 1992–2014/15. Sources: RDHS (1992, 2000, 2005, 2007/8, 2010, 2014/15).

vaccinated by the age of 12 months, and the percentage of children vaccinated in 2013–14 was much the same; this is well ahead of the sub-Saharan average of 74% (United Nations, 2015). Although the MDG target of 100% of one-year-olds has not been met, a vaccination rate for measles 90% would be adequate to break the cycle of transmission (www.immunisation.nhs.uk/about/immunisation/Science/Factors_affecting_herd_immunity). It is at a level such that the remainder of the population will probably acquire immunity without themselves being immunized, and we can therefore argue that the target has been achieved in practice. Not only has the vaccination target for measles nearly been reached, but general vaccination coverage is also high, with the proportion of children aged 12–23 months who have had all vaccinations rising from 75% in 2005 to 92.3% in 2014–15.

(d) Maternal health

The main direct measure here is the maternal mortality rate (MMR), which was to be reduced by three quarters to 325 per 100,000 by 2015. Other issues are the proportion of births attended by a skilled (or at least trained) health worker, the extent of antenatal care coverage, the take-up of family planning and the adolescent birth rate. There has been a significant decrease in the MMR. Despite a shortage of healthcare professionals and particularly midwives Rwanda has achieved the target by some way (Figure 4)—an 84% reduction, compared with a sub-Saharan average of 49% (United Nations, 2015).

There has been a large increase in the proportion of married women using modern contraception since 2000 but the rate of increase has slowed since 2010 (Figure 5). There also remains an unmet need for contraception among married women of 19% (RDHS 2014/15) which remains unchanged compared to 2010 but constitutes a significant decline from 2005, when it stood at 38%.

Antenatal care is also important, to ensure mothers are given access to supplements, that they and their partners can be tested for HIV and given advice on mother-to-child transmission if necessary, and so that the health of mother and baby can be monitored and any potential risks to either spotted early. Attendance for at least one antenatal care visit is high, with virtually 100% of pregnant women making one visit (and in practice most make two or three). However, only just over 40% turn up for all four antenatal visits as recommended by the World Health Organization, although the attendance rate for 4+ visits is a substantial increase on 1992, when it was 12% (Figure 6).

Attendance by a skilled healthcare worker during delivery is important to ensure the health of mother and baby. Rwanda encourages all women to give birth in a healthcare facility, given the importance of hygienic conditions and the need for swift medical intervention when necessary. Ninety-one per cent of women now give birth in a healthcare facility attended by a skilled health care worker, meeting the United Nations' 1999 target of 90% (Figure 7). This is a threefold increase compared with 1992 and 2000, when it stood at 30% and 31% respectively.

Postnatal care is another intervention that is important for ensuring the health of the mother. In 2014–15, 41.6% of mothers, just half of the proportion that gave birth in a healthcare facility, had a postnatal check-up within two days of delivery. However, this is a substantial increase on 2010, when it stood at 16.6%. It is impossible to draw comparisons with earlier RDHSs because the assumption was made (seemingly incorrectly) that if a mother gave birth in a healthcare facility she would automatically have had a postnatal check-up. The Government's own 2015 target was for 50% of mothers to have a check-up within one week of delivery (Ministry of Health, 2012).

Younger women are at greater risk of maternity-related death, so reducing the teenage pregnancy rate can help with lowering the maternal mortality rate as well as ensuring that young women are able to complete their education and establish a career before becoming mothers. Children born to young mothers are at greater risk of illness and death and of complications during pregnancy. In Rwanda according to the 2014–15 RDHS about 7.3% of teenagers aged 15–19 have already begun bearing children, with the likelihood increasing with age from 1% of 15-year-olds to 20.8% of 19-year-olds. This is an increase on the 2010 rate, when the percentage of the age group that had given birth stood at 6.1%, and continues a steady rise in the rate observed since 2005, when it stood at 4.1%; it indicates a reversal of the declining rate from 1992, when it was 11%, to 2005. Although the proportion of 16- and 17-year olds that have begun childbearing remains low, it seems to be increasing; for example, in 2005 0.3% of 15-year olds had begun bearing children and by 2014–15 this had risen to 1%, and in 2005 1% of 16-year olds had begun compared with 2% in 2014–15.

(e) HIV/AIDS, malaria and tuberculosis

Particular targets in this area are the incidence of HIV/AIDS—particularly in the 15–24 age group—the extent of

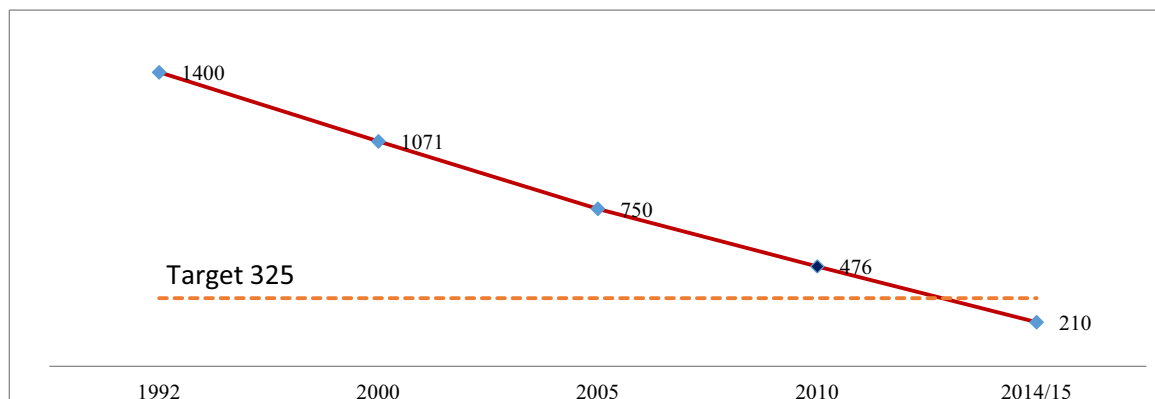


Figure 4. Maternal mortality rate per 100,000 births. Sources: WHO http://www.who.int/gho/maternal_health/countries/rwa.pdf?ua=1 RDHS (1992, 2000, 2005, 2010, 2014/15).

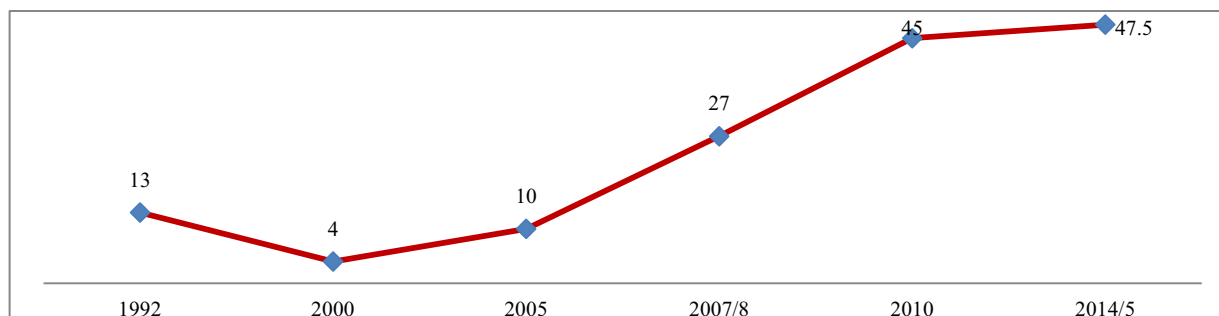


Figure 5. Married women aged 15–49 years uptake of modern contraception 1992–2014/15. Sources: RDHS (1992, 2000, 2005, 2007/8, 2010, 2014/15).

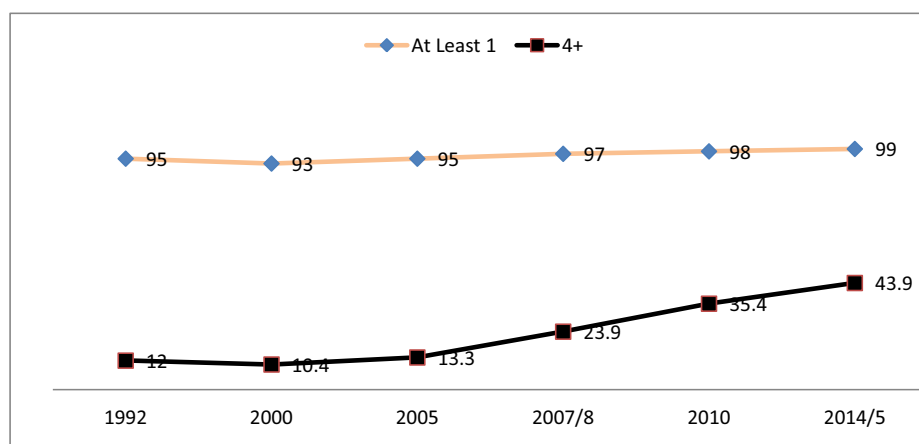


Figure 6. Antenatal care visits 1992–2015, % at least 1 visit and 4+ visits. Sources: RDHS (1992, 2000, 2005, 2007/8, 2010, 2014/15).

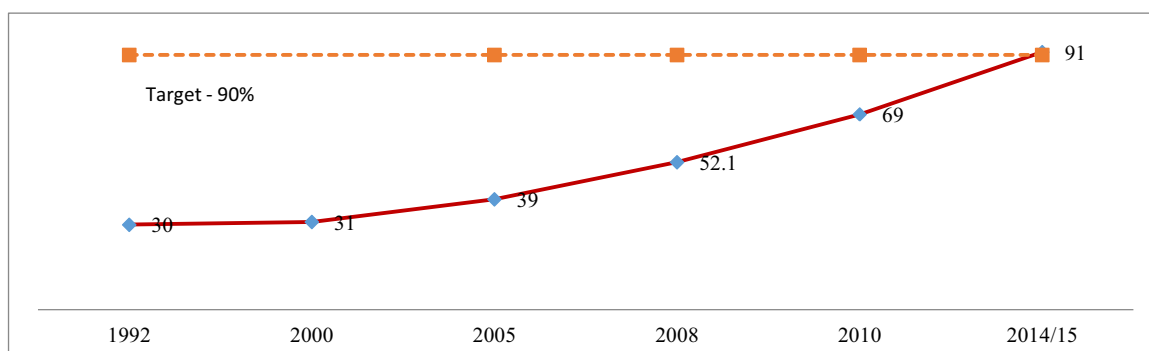


Figure 7. Percentage of deliveries assisted by a skilled worker 1992–2014/15. Sources: RDHS (1992, 2000, 2005, 2007/8, 2010, 2014/15).

knowledge about AIDS in this age group and the use of condoms for “high risk” sex. Progress has been made, but Rwanda is not on track to meet the targets by 2015. (Access to drugs is considered in the next main section.) Malaria and Tuberculosis (TB) have also been targeted for action. In 2010 Malaria was the leading cause of mortality, HIV/AIDS the third and TB the sixth (Naghav, Murray, & Lopez, 2014).

(i) HIV/AIDS

The Government remains strongly committed to fighting HIV (Ministry of Health, 2012, 2013a). HIV prevalence remained unchanged at 3% in the general population aged 15–49 (RDHS, 2005, 2010). The same prevalence of 3% was

found in 2013 in the Rwanda Aids Indicator Survey (Ministry of Health & Rwanda Biomedical Centre, 2015). The prevalence rate among the 15–24 age group was 1% in both years. The information for 2014–15 is not yet available, but the figure was 0.7% in the 2013 RAIS; the difference from the 2010 Figure is not statistically significant. Evidence from other sources suggests that there is no reason to believe the prevalence rate will have increased even with the exceptional retention of 94% after one year of treatment among people living with HIV (Ministry of Health, 2013a; Ministry of Health and Rwanda Biomedical Centre, 2015). There was a low HIV mother-to-child transmission rate of 1.83% by 18 months in 2014.

Basic knowledge about HIV is widespread, with no variation by background characteristics. Over 90% of both men and women aged 15–49 know that using a condom reduces the risk of HIV, and 89% of women and 92% of men say that limiting sexual intercourse to one uninfected partner also reduces the risk. Overall, 83% of women and 88% of men know that both approaches reduce the risk of infection, an increase on 2010, and especially so for men; in 2010 79% of women and 74% of men answered correctly. The 2010 Figures are 40% or more above the sub-Saharan average (United Nations, 2015).

The 2013 RAIS showed that only 14.6% of women and 19.8% of men have never been tested for HIV. The same results, 14.5% of women and 19.2% of men, were found in RDHS 2015. There is an improvement compared to RDHS 2010, where 22.8% of women and 27.2% of men had never tested for HIV. Major reasons for not being tested for HIV in 2013 RAIS were “confident of being HIV negative” (79%), “VCT site too far away” (5.3%), “Afraid of others knowing that he/she has the AIDS virus” (3.8%) and “Don’t want to know if I have the AIDS virus” (3.5%).

Although over 90% of men and women age 15–49 say that the risk of HIV transmission can be reduced by using a condom every time they have sex, only 28% of men and 48% of women who had had more than one sexual partner in the previous 12 months reported using one in their last sexual encounter. The proportion of women has increased since 2005, when it was 19.7%, to 29% in 2010, when it was 29%, did not change significantly from 2010 to 2013. Among men it declined from 40.9% in 2005 and has remained unchanged at about 28% during 2010–13. The proportions are encouragingly higher for young people, with 75% of young men and 61% of young women who engage in high-risk sex saying they had used a condom in their last sexual encounter (Figure 8), and with a steep rise over the last 15 years in the proportion doing so. The increase for young women since 2010 is especially steep and may be a reflection of changing gender norms among the younger age groups, with young women being increasingly able to negotiate safer sex. However, it has not yet become the statistical norm. According to the RAIS, 88.5% of young men (15–24) used a condom at their last sexual intercourse but only 52.1% of young women.

While knowledge of HIV prevention may be high, only 65% of women and 64% of men have a full and comprehensive understanding of HIV, although again this is a significant increase on the 2010 RDHS, when just over half of men and women demonstrated a full and comprehensive knowledge

(55.5% of women, 51.6% of men). The MDG target is specifically for an increase in comprehensive knowledge among those aged 15–24, and it has been increasing for both the 15–19 and 20–24 age groups, although it is noticeably lower in the former than the latter (Figure 9).

(ii) Malaria and TB

Recent data on the mortality rate for malaria are not available. However, the rapid decline in mortality from malaria can be seen in the decline in the percentage of deaths due to it since 2005 (Figure 10). In 2005, 62% of such deaths among children under five were caused by malaria, but by 2013 this figure had fallen to 3.5%. For those aged five or over the decline was from 31% in 2005 to 5.3% in 2013.

The best preventive measure for malaria is to sleep under a long-lasting insecticide-treated net (LLIN). Ownership of at least one LLIN has risen dramatically in recent years, from 15% of households in 2005 to 56% in 2007–08 and 82% in 2010, but declining to 80.6 in 2014–15. Usage by children and pregnant women follows the same pattern and is shown in Figure 11.

All health facilities that offer TB services provide directly observed TB treatment. Therapeutic success rates have increased from 58% in 2003 to 90% in 2013 (NISR, 2013, 2014).

(f) Access to drugs and treatment

Historically, poor countries have had difficulty in accessing medicines because of the high prices charged by drug companies. The increased availability of generic drugs, the growth of the pharmaceutical industry in India and the introduction of agreements to permit drugs to be manufactured for sale at a lower price in developing countries have made essential drugs more affordable. Through the assistance of development partners antiretroviral treatment for HIV/AIDS is available in Rwanda without charge for all those considered to need it. However, not all those who are eligible do access treatment, and this is especially the case for children. (The main problem appears to be parents, who may decide that it is better not to inform the child of his or her condition; parental permission is needed for the medical treatment of minors—see Binagwaho *et al.*, 2012; Binagwaho, Nutt, Nsanzimana, Wagner, & Mukherjee, 2013) By 2009, antiretroviral treatment coverage was estimated to be 82.4% for those eligible—86.6% for adults, but only 53.9% for children under 15 (www.unaids.org/

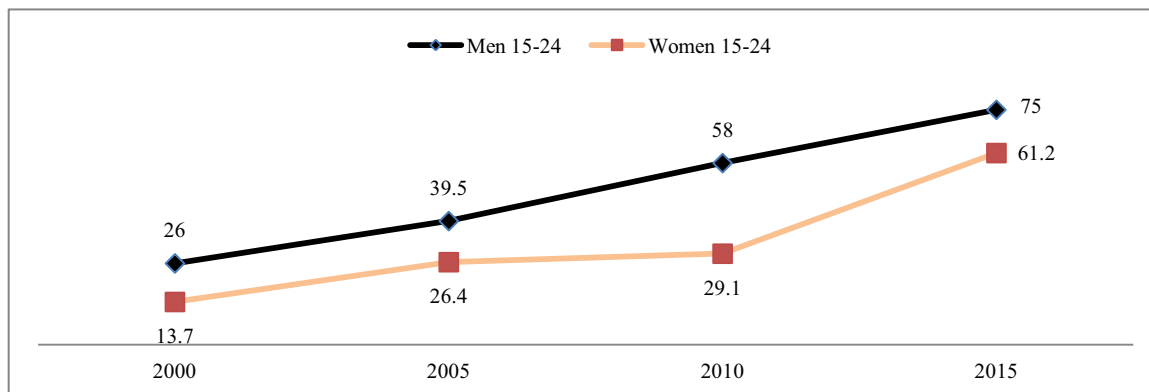


Figure 8. Percentage of young people 15–24 years that engage in unsafe sex and used a condom at last sexual intercourse—2000, 2005, 2010 and 2014/15. Sources: RDHS (2000, 2005, 2010, 2014/15).

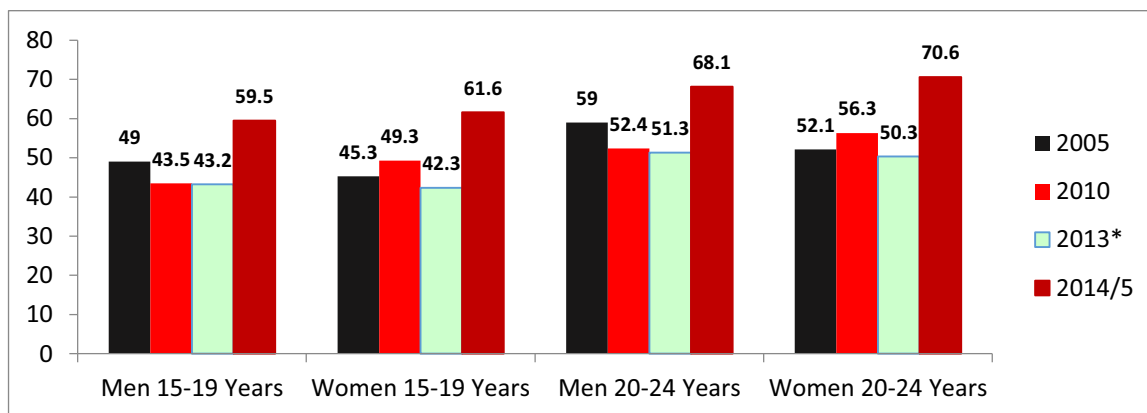


Figure 9. Comprehensive knowledge about HIV amongst young people aged 15–24 years, 2005–2014/15. Note: This means knowing that consistent use of condoms during sexual intercourse and having one faithful uninfected partner can reduce the chance of getting HIV, knowing that a healthy-looking person can have HIV and rejecting the two most common local misconceptions about transmission or prevention of HIV (that HIV can be transmitted by a mosquito bites and by sharing food with a person who has HIV). Sources: RDHS (2005, 2010, 2014/15).

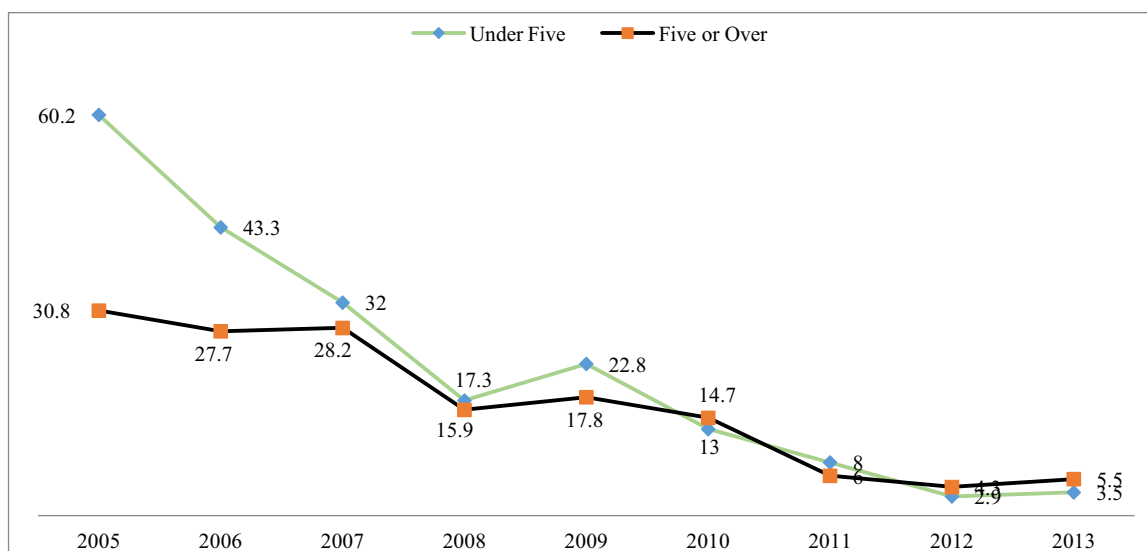


Figure 10. % malaria: proportional mortality under 5 years and 5 years or over, 2005–13. Sources: RDHS (2005, 2007/8, 2010, 2014/15).

en/dataanalysis/). In 2014 an estimated 78.2% were covered out of those eligible for ART based on new guidelines.

Other essential drugs are available through the Mutuelle de Santé (Mutual Health Insurance Scheme), with members being entitled to basic healthcare for a small user fee (10% of the cost). Seventy-six per cent of the population are covered by the scheme (with a further 6% covered by private and other schemes) and are therefore entitled to medicines (Figure 12). This leaves about 18% of the population without subsidized access to essential medicines, some of whom are unable to afford to pay for health care.

3. UNDERSTANDING WHAT RWANDA HAS DONE RIGHT

There is strong evidence that it is the policies of a determined government and their implementation with the support of its development partners that has largely been responsible

for these significant improvements in the lives of ordinary Rwandans. Rwanda’s Vision 2020 (Ministry of Finance and Economic Planning, 2000) sets out—in a participatory process involving all segment of the population—the country’s goals for development, including cross-cutting goals for improving the health of the population, recognising that health and well-being are a foundation for development. All of the MDGs have been incorporated into the country’s strategic plans (Ministry of Finance and Economic Planning, 2002, 2007, 2013), thus ensuring country ownership. The government has taken strong ownership of development support, skilfully taking up the Development Assistance Committee’s rhetoric to exert leverage (Abbott & Rwirahira, 2012; OECD, 2011). At national level there is a Sector-Wide Approach for health, with the Health Sector Working Group and different working groups chaired by the Ministry of Health and co-chaired by the USA as the coordination mechanism for cooperation. This ensures that resources are used efficiently and effectively to fund the government’s health policy and strategic plan.

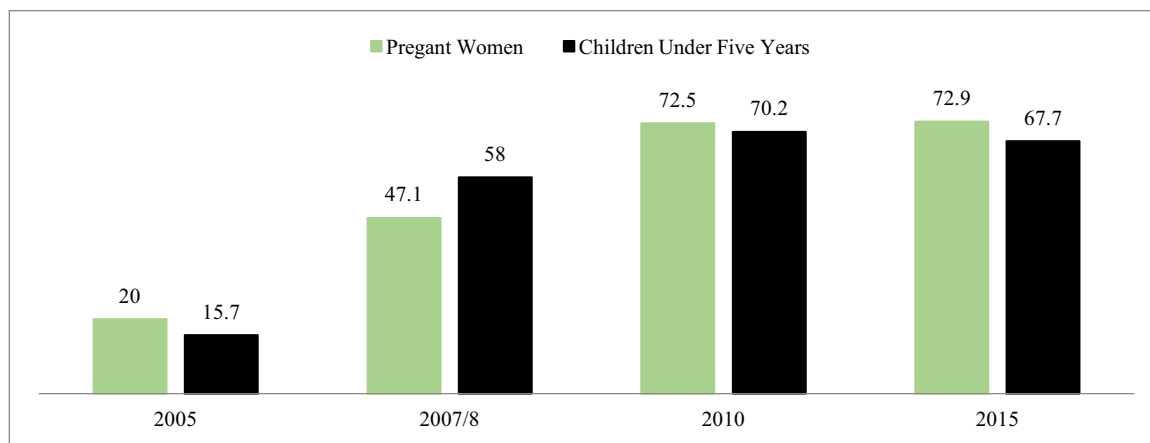


Figure 11. Pregnant women's and children's (under five years) use of a treated mosquito net 2005–2014/15. Sources: RDHS (2005, 2007/8, 2010, 2014/15).

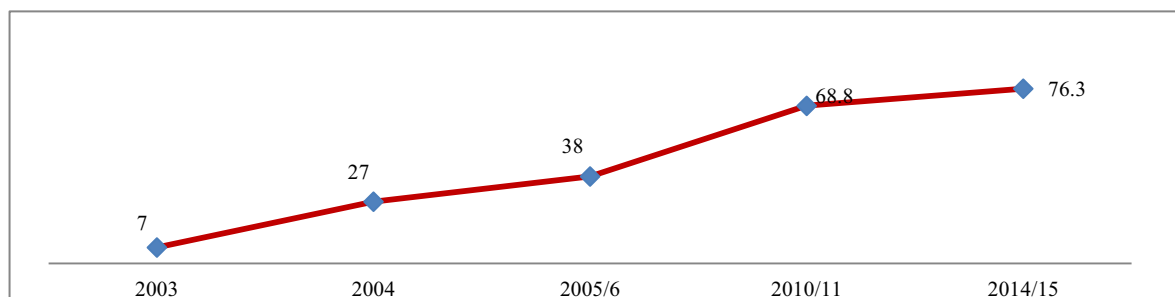


Figure 12. Population covered by mutual health insurance (%). Sources: RDHS (2007/8, 2010/11, 2014/15).

Decentralization and community development policies (Ministry of Local Government, 2011, 2012, 2013) ensure that the Government is able to hold local government accountable, and the Government has skilfully incorporated citizens into the development effort through Imihigo (performance contracts). These contracts are used at every level to hold public institutions and even ordinary citizens accountable for their contribution to the county's development priorities, including those for health. The same contracts, in principle, enable citizens to hold district councils responsible for service delivery. District annual plans are aligned to the national economic and poverty reduction strategies and include health targets aligned to the strategic plan for the health sector. At local level, development partners, non-governmental organizations and the private sector are expected to agree with district Joint Action Development Forums that projects and programs they wish to implement are in line with the district development plan (see Official Gazette (2014) for the Prime Minister's Instruction setting them up). There are coordinated communication channels that ensure that messages about government priorities and initiatives (including those about health) reach every layer of society, with local residents being kept informed at local meetings, most noticeably the meetings held after Umuganda, the monthly compulsory community work (Abbott & Malunda, 2014; Abbott, Mugisha, & Lodge, 2014).

The Government has relied on surveys which are quality-assured internationally to monitor progress and set priorities and targets rather than the Health Management Information System, which was unreliable, at least until recently, as it did not always include data from non-government health facilities. (Country Management Information Systems can be unreliable

in Sub-Saharan Africa, including Rwanda (Sandefur & Glassman, 2015) and consequently have a negative impact on development.) Health policy has been mostly research-informed, oriented to problem solving and demonstrating a willingness to learn from experience (Booth & Golooba-Mutebi, 2014). One notable example of this was the introduction of maternal death audit. Between 2008 and 2010, the hospital-based MMR nearly halved, from 400 to 217. The audit in 2008 showed that the two main causes of maternal mortality, accounting for 72% of all deaths, were postpartum hemorrhage and obstructed labor. Strategies were set up to ensure supplies of blood and the swift transfer of mothers from health centers to district hospitals. By 2010 not only had the MMR declined significantly but the proportion of maternal deaths due to postpartum hemorrhage had declined to 28%, showing that the procedures introduced to reduce MMR had had a significant impact.

Rwanda has put in place a healthcare system that overcomes bottlenecks commonly found in Sub-Saharan African countries, including delays in seeking healthcare because of cost and/or ignorance or suspicion of modern approaches, delays in transferring patients to healthcare facilities, and shortcomings in the quality of care such as inappropriately trained or poorly motivated staff and essential supplies being out of stock. The health reforms are mutually reinforcing, with, for example, health promotion and making services affordable and accessible going hand in hand.

The health service delivery system is structured in the same way as the administrative structure of the country, to ensure that healthcare is more equitably accessible to all at a local level; district, provincial, referral, and teaching hospitals are

available for more specialist cases. At national level there are five national referral hospitals, each of the 30 districts has at least one district hospital, and below the district level 396 of the 416 sectors have a health center. At cell level health posts are being introduced in phases. At the village level (communities of between 50 and 150 households) there are 45,000 elected community health workers nationally (three per village). A performance-based financing system rewards CHW cooperatives, health centers and district hospitals, and arguably such incentives have helped boost the take-up of maternal and child health services (Basinga *et al.*, 2011; Farmer *et al.*, 2013; Humuza, Mugeni, Gasherebuka, Masiye, & Ngabo 2013; Rusa & Fritsche, 2007), HIV testing and counseling (Walque *et al.*, 2015) and other curative services (Rusa, Schneidman, Fritsch, & Musango, 2007). Health center opening hours 24/365 are respected, levels of hygiene are good and staff generally provide a good service. This kind of structure, passing at least some of the responsibility for care and support out into the community and making it the business of everyone, is a prerequisite for getting healthcare delivery out from the budget and the aid subvention to the villages and sectors where people live, fall ill, have babies and care for the young and the elderly. It was necessary to rebuild a system from scratch after the Genocide; the rudimentary system that preceded it was of course demolished in 1994.

The establishment of Community Health Workers (CHWs) has been an important social innovation for the improvement of health in a resource-constrained country with financial, infrastructural and geographical barriers to accessing healthcare. In many other countries a similar approach has been carried out ‘top down’, using the people on the ground mostly as untrained labor (Walt, 1990), reminiscent of the early history of nursing in the United Kingdom (Abbott & Wallace, 1998), but the Rwanda version involves selection of personnel by the local community and involves them as semi-autonomous agents—practitioners rather than just assistants. They have undoubtedly had a major impact on improving health by encouraging the use of health services and since 2007 by providing front-line treatment and triage services. The Ministry of Health (2013b, chap. 5) carried out an appraisal at the end of the most recent Strategy Period which (a) made “rapid appraisal” field visits to look at the system in practice and get at the experiences of providers, funders and clients, and (b) looked at administrative records documenting the extent of and reasons for their use, pointing to a decline in some of the more common illnesses and ailments which are related to lifestyle, hygiene, and/or nutrition, particularly of mothers and children, assessed the extent to which trained medical personnel were freed to spend more time on strictly medical matters. Condo *et al.* (2014) carried out extensive qualitative interviewing with groups of health workers and clients. Both studies demonstrated the respect in which CHWs are held and the extent to which their services are valued. Indeed, it has been our experience that almost any qualitative research in Rwanda which looks at people’s daily lives, even if not focused on what would normally be seen as medical or health issues, elicits somewhere an account of how central CHWs’ have become to health, reproductive behavior, maternity and childcare in the villages.

CHWs are elected volunteers, but for each service rendered the central level provide a performance-based payment of which 70% is used to create income-generating activities through cooperatives. They are trained by the Government to provide a preventative and curative service at community level (Table 2), with one CHW at cell level elected as a supervisor and districts responsible for overall coordination. Mobile

phones enable them to communicate with health centers and call for an ambulance in an emergency. They are generally well respected in the communities in which they live and villagers tend to respect them as authority figures (Chambers, 2014; Chambers & Booth, 2012b; Mugeni, Levine, Munyaneza, Mulidahabi, & Cockrell, 2011).

Voluntary counseling and testing for HIV, prevention of mother-to-child transfer of HIV, antiretroviral treatment for HIV, palliative care and condoms are provided on a universal basis. The basic services of CHWs are free, but if they provide treatment there is a fee. Affordable access to health care is provided for by the *mutuelle de santé*, introduced in 2002 and rolled out in 2005, which is a community-based micro-insurance scheme that covers the costs of basic health care with clients paying a 10% out-of-pocket contribution. The scheme, compulsory since 2007, was upgraded in the first time in 2008 and a second time in 2011. The poorest 25% are exempt from payments for insurance and out-of-pocket expenses, with the government mobilising domestic and external funds to pay for them. No-one is denied health care if they cannot pay at the time of delivery. Research suggests that membership of the mutual health scheme improves healthcare utilization and protects households from catastrophic health spending (Lu *et al.*, 2012).

4. CHALLENGES

With the support of its development partners Rwanda has succeeded in hitting most of its MDG targets and improving the health and wellbeing of its population, but credit must also be given to its well-considered policies and the effectiveness of their implementation; many countries which have not had to face the aftermath of a Genocide, have higher national incomes and have received equally generous development support will not achieve this. Challenges remain to be faced, however, as the country moves forward to tackle new targets identified as part of the Sustainable Development Goals initiative, which are expected to be harder to meet than those attempted in the first round. An over-riding challenge that Rwanda faces is keeping up the momentum—continuing to make progress across the board in improving maternal and child health and tackling HIV, malaria and other diseases as well as taking on new challenges such as fighting non-communicable diseases. Progress may be slower here precisely because there has been great progress already with the more obvious and easier causes.

Uncertainty about the development assistance that Rwanda will receive in the future makes this problematic. Funding from the Global Fund is already being reduced because Rwanda is no longer seen as a priority. If the progress that has been made to date is to continue, then maintaining support from development partners or finding alternative funding sources is important; though great strides have been taken in establishing an eventually sustainable health infrastructure, external funds are still required. Forging ahead with an ambitious program to achieve MDG and now SDG goals and provide decent health cover, at present Rwanda remains dependent on donor aid for some of the basic maintenance work in health. Debt financing is not the answer to recurrent expenditure; ultimately, the only way to reduce dependency on development assistance is to increase domestic revenues. Revenues have indeed increased significantly since 2000, but tax revenues in 2014 were only 16% of GDP, well below the EAC target of 25% (IMF, 2014). Aid as a proportion of the money available for development has more or less halved since

Table 2. *Community health workers' responsibilities*

Preventative services	Curative services	Promotion services
<ul style="list-style-type: none"> • Community sensitization on prevention of common diseases • Education for prevention of sexually transmitted diseases • Community mobilization, health campaign on hygiene and sanitation, immunization etc. • Educate communities on use of water treatment solutions and distribute them 	<ul style="list-style-type: none"> • Community Case Management of malaria, ARI diarrhea, vaccinations, malnutrition (e.g., Community Integrated Management of Childhood Illnesses/Community IMCI) • Provision of family planning services including FP products • Engage in community DOTs for tuberculosis, HIV 	<ul style="list-style-type: none"> • Nutrition education to communities • Growth monitoring, particularly among children under five years old • Nutrition surveillance Routine home visits for active case finding

Source: Mugeni *et al.* (2011).

2006 (Figure 13), and government revenues have increased to take up most of the slack, with the remainder being accounted for by higher levels of remittances and foreign direct investment (but the figure shows that these are at best unpredictable year on year). There is clearly a need to broaden the tax base, which means completing the transition from substantially subsistence agriculture to industrial production and/or service delivery, thereby expanding the economy, bringing in foreign investment, significantly expanding exports and/or driving out imports. Another element to which the Government is undoubtedly turning its attention is the question of 'illicit financial outflows'—funds illegally earned, transferred or used—some portion of which would normally finish up as government revenue; they amounted to over a billion US dollars in 2013, an amount not far short of the entirety of aid the country received (Dev Kar & Spanjers, 2015).

The size of the problem is greater than in other sectors because quite a lot of aid comes in for health but not much of it is 'on budget' and reported to Parliament as part of the annual allocation of government funds. Health and Education are both areas in which Rwanda has undergone enormous expansion in order to provide a decent life for citizens on the one hand and meet MDG targets on the other. In health a strategic paper at the beginning of the most recent planning cycle (Ministry of Health, 2011) demonstrated that it would be necessary to more than double the current numbers of medical and nursing staff in order to meet the decent but not excessively indulgent targets set out in Vision 2020 (Ministry of Finance and Economic Planning, 2000). Much can be done, in typical Rwandan fashion, by mobilising the population. However, this still leaves capital costs—which are high in the case of health care—and running costs for maintenance and replacement of equipment and buildings, payment of staff and purchase of consumables, including drugs. Another medical expense is the state's Mutuelle insurance scheme, not free except to the poorest but charging patients only 10% of the real costs; this is the only way that many Rwandans can afford medical care and the expenses of maternity and child-rearing, and the cost falls on the state's very limited revenues. The result is that the difference has to be made up at Budget time, and how much needs to be made up is a function of how much aid has been raised.

Rwanda has been fortunate in its donors in both Education and Health. Education aid funding has more or less held its own in Rwanda but has tended to decline over the past ten years in, for example, other countries of the East African Community. In Education the lead donor is DfID (UK), which pays much of its aid in the form of Sector Budget Support (i.e., the aid becomes part of the Government budget, to be used within reason for whatever the Government feels is

needed within the Education sector). Health aid, from a variety of sources but particularly from the USA and the Global Fund, is more likely to be in the form of project aid restricted to a specific program—and not always the programs which might be the first choice, as the Ministry of Health sometimes remarks, it being much easier to raise money for HIV or Malaria, for example, than for reducing maternal mortality—and the remainder has to be found from government revenues. Health aid as a proportion of total aid has tended to increase steadily over the last ten years in East Africa, and it is far and away the best funded of all the sectors (Figure 14), which has freed domestic resources for other uses. However, this has meant that the sector has become dependent on its donors for recurrent budget items such as drugs, mosquito nets, free condoms and the expensive salaries of skilled expatriate staff capable of passing on their skills to Rwandans.

It was explicitly understood that providing a decent health service would mean relying on external resource in more than the short term.

The current limited financing capacities of the national budget make it necessary to rely on external support for the development of national structures and service delivery in the medium-term. Development partners therefore have a major role to play in the achievement of universal coverage. Financial sustainability and self-sufficiency of the health financing system is not and cannot be a short-term or medium-term objective. Nevertheless, the above specific medium-term objectives imply seeking to maximize the collection of national resources and moving toward self-sufficiency.

[Antunes and Saksensa (2008, p. 118)]

Some distance has been traveled along the route that was planned in 2008 but there is still a way to go.

As well as money, Rwanda depends on donor partners for the support of medical and nursing staff to cover specialties unavailable in country and to train Rwandans for the future. In February 2011 there were 661 qualified medical staff in the hospitals and the Medical School, of whom 58 (9%) were expatriates (Ministry of Health, 2011). At the Kigali Health Institute (which trains and qualifies nursing staff) expatriates formed a quarter of full-time staff and nearly a third of part-time lecturers.

Perhaps the strongest part of the Rwandan health initiatives has been the way in which reforms have been embedded in the community, with a fair measure of devolved decision-making and local responsibility for performance. This kind of community action is one of Rwanda's particular strengths; not being divided into geographically separate tribes as in most of the surrounding countries, but rather being used since

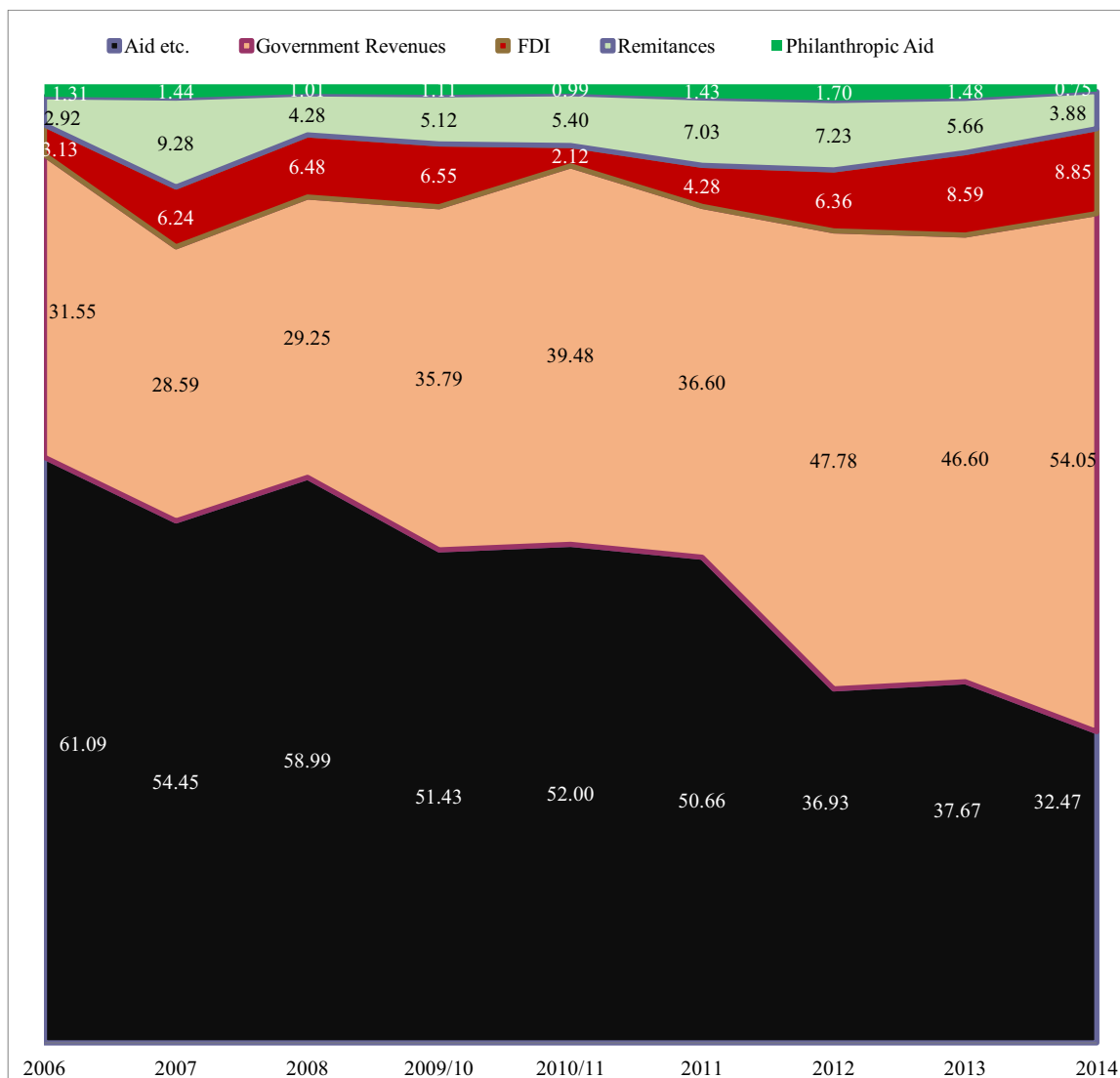


Figure 13. Sources of funding for development 2006–14 (%). Sources of data: Aid: OECD (nd) plus a variety of sources for aid from China and India. Government revenues: annual Rwandan Government Budget papers. Philanthropic aid: Equal Footing (nd), GAVI (nd). Remittances and FDI: World Bank (nd).

pre-colonial times to conceiving of themselves as one nation governed from the center, Rwandans are good at behaving as one people, with local action following the lines of national plans and conceptions.

Poverty is a health issue. Rwanda has met its MDG target for extreme poverty (defined as being restricted to a diet which contains insufficient calories to maintain normal functioning) and has made progress in reducing poverty in general although it has not managed to meet its MDG target (Abbott, Sapsford, & Rwirahira, 2015b). An area that the Ministry of Health has identified as a particular priority for intensive intervention is mother and child nutrition. Although the MDG target for underweight children has been more than met at 9.3%, it still four times what would be expected in a well-nourished population (<http://www.who.int/nutgrowthdb/about/introduction/en/index5.html>). Furthermore, the high level of stunting, which stood at 38% of children aged 6 months to five years in 2014–15, is of considerable concern. Progress in reducing its incidence has been slow, with no noticeable progress at all between 1992 and 2010, but modest progress has been

made since 2010, when 44% of children were stunted. Stunting is not a product simply of poverty or poor health but of poor hygiene causing recurrent bouts of diarrhea and of specific malnutrition. Only 17.8% of infants and young children are being fed an appropriate diet in Rwanda in 2014–15 according to RDHS, much the same as in 2010 when the figure was 17%. Qualitative research suggests that mothers’ understanding of the nutritional needs of their infants is patchy and that even where they do know what they should be feeding them they cannot always afford to do so (Abbott, Rwirahira, Mugisha, & Mutesi, 2014).

Although there has been a dramatic decline in infant and child mortality the rates remain high. The main causes of child mortality—diarrhea, malaria, and pneumonia—are preventable, with the main underlying cause being poverty. However, the proximate causes of most deaths are preventable through comprehensive and well-coordinated interventions, including the continued use of mosquito nets (for which some contribution will have to be made in the future by all except the poorest), improved access to clean water and sanitation,

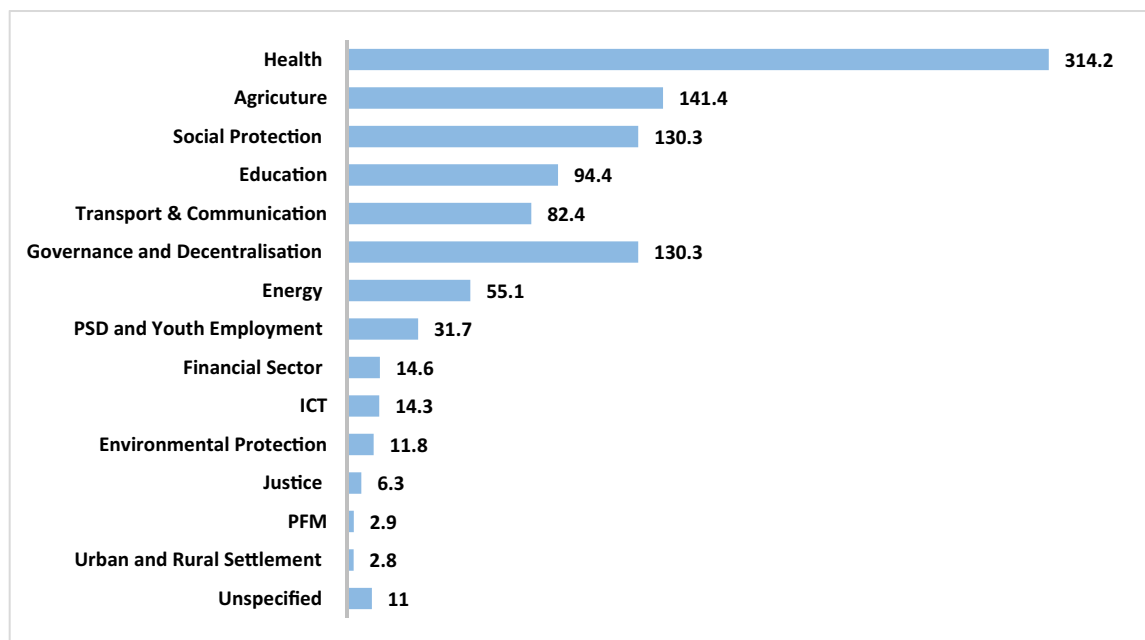


Figure 14. Aid to Rwanda 2013–14 by EDPRS sector (US\$ millions). Source: Ministry of Finance and Economic Planning (2015).

improved cooking stoves and simple health interventions such as rehydration salts (Ministry of Health, 2009), all of which the government has been and is still actively pursuing. Similarly, the maternal mortality rate, although declining, remains high and women are still dying needlessly in childbirth. While excellent progress has been made along the continuum of care there is still room for significant improvement.

Fertility is also a health issue for Rwanda, directly because fewer births means better use of scarce medical skills and resources and better nutrition, and indirectly because taking the country out of poverty and dependency on aid requires drastically reducing population growth. The total fertility rate of 4.2 remains high and nearly half of all pregnancies were unplanned in 2012 (Basinga *et al.*, 2012), although the proportion is likely to have decreased since then, as Community Health Workers can now dispense all modern contraceptives except the IUD and implants. The rate of increase in uptake of modern contraceptives has slowed dramatically since 2010, with an increase of only 2.7 percentage points compared with 35 percentage points between 2005 and 2010. The resulting uptake is below the Government's 2015 target of 62%. There also remains an unmet need for contraception among married women—a discrepancy between those who say they would like to limit their family size and those who say they are using contraception—of 19% (RDHS 2014/15), which is unchanged since 2010 and is higher than the Government's 2015 target of 12% (Ministry of Health, 2012). Renewed effort will need to be put into providing information on modern contraception and enabling women and men to make informed choice about limiting the size of their families. Given population pressure in the country, the unmet need for contraception and the high proportion of unplanned pregnancies, there is clearly a need to strengthen the service.

There is a continuing need to encourage all pregnant women to attend for at least four antenatal care visits, including one in

the first trimester; attendance is still below the Government's 2015 target of 50% (Ministry of Health, 2012). While the increase in the proportion of women having a post-natal check-up is encouraging, extending this service needs to be a priority so that all women giving birth in a health facility are examined automatically.

There is a continuing need to invest in nets and spraying to fight malaria. Climate change is resulting in increased incidence, and 19% of households do not have even one treated net. There was no increase in the proportion of under-fives and pregnant women sleeping under mosquito nets between 2010 and 2014, and 32% of under-fives and 27% of pregnant women are still not sleeping under one.

Overall there are four risks to the sustainability of the Integrated Community Case Management system (Sarriot *et al.*, 2015), putting the achievements of community health at risk—risks that are faced, indeed, by the whole healthcare system more generally.

- Political shocks weakening the internal political commitment to community health before the economy and the tax base have grown sufficiently would undermine the whole program, but we think that an erosion of political commitment to improving health is extremely unlikely in Rwanda.
- Given the success of the policy of performance-based financing, both for Community Health Workers and for staff at hospitals and health centers, a reduction in resources before government revenues have grown sufficiently to take over responsibility would threaten the program. Any reduction of externally provided resources may be offset in the case of CHWs by the success and profitability of their cooperatives, but depending on this as a funding stream would require the creation of a legal framework to ensure that the current system's effectiveness is not reduced.

- Rwanda runs its own School of Medicine within the University of Rwanda which offers both the basic medical qualification and post-qualification specialisms, and it is also training nurses and midwives. However, expatriate expertise will continue to be necessary for some time, to bring the world's knowledge to the training of the Rwandan personnel (including those who are teaching doctors and nurses), to cover the full range of specialisms a country's medical service needs, and at present to take on senior practitioner roles. It is hoped that development partners will continue to supply these need.
- Funding and/or donated supplies continue to be necessary for the maintenance of the current provision, for attempts to resolve district health system performance gaps and certainly for any expansion of the system. Treated nets, condoms and antiretroviral drugs at a price which is accessible to the population are needed if Rwanda is to continue to make progress against malaria and HIV/AIDS and to bring down the birth rate, which in turn is needed for economic progress and the alleviation of poverty. Any loss of resource cannot be made

up from locally generated taxes until the economic policy has begun to generate a sizeable surplus and brought more of the population out of poverty.

While the next round of international development goals may be as challenging as the last, or more so, the achievement of any reasonable health sector target within a reasonable period of time is not the greatest of the Government's worries. Great changes in the provision of healthcare have been made in the last fifteen years, and because they involve community action and devolved control at district, sector, cell and even village level, coupled with firm central monitoring, they are likely to be sustainable and to form a good foundation on which to build further improvements. Nonetheless the good work could be undone if success in beginning to tackle the major health problems leads to a sudden reduction in Development Aid. It is by no means clear that the amount by which taxes would have to be increased even to maintain the present system with a reduction in Aid, or the extent of Government borrowing, could be absorbed by the Rwandan economy.

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