



MIDTERM ANALYTICAL REVIEW OF  
PERFORMANCE OF THE  
HEALTH SECTOR STRATEGIC PLAN III  
2009–2015

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Ministry of Health and Social Welfare  
United Republic of Tanzania

in collaboration with

Ifakara Health Institute  
National Institute for Medical Research  
World Health Organization



# Foreword

The Analytical Review Report on the Performance of the Third Health Sector Strategic Plan 2009–2015 (HSSP III) is an important input to the overall Mid-Term Review (MTR) of HSSP III. The report provides a comprehensive overview of the current status of the health sector in Tanzania mainland, using all available data from the health management information system of the Ministry of Health, household surveys, and many other sources. The focus is on the core indicators and targets of HSSP III and the performance during 2009–2012. The analytical report clearly highlights many areas where significant progress has been made and also shows areas where efforts need to be redoubled to achieve the targets for 2015. The report pays special attention to equity and for the first time presents a comprehensive regional analysis. The equity analysis will help to guide us on which populations or regions of the country need a larger infusion of resources, efforts and investments in order to achieve parity as well as improve the national average. A comparative analysis with neighbouring countries in the East and Southern Africa (ESA) region and the African continent as a whole helps to give an idea where we stand in relation to global goals and target.

The publication of this report is a major input to the main MTR and will prove handy to the senior management and technical experts of the Ministry of Health and Social Welfare (MOHSW) and other government ministries, departments and agencies (MDA) that have an impact on the health sector. These include, but not limited to, President's office, Public Service Management (POPSM), Prime Minister's Office, Regional Administration and Local Government (PMORALG), Ministry of Finance (MOF) and National Bureau of Statistics. The report will also be useful for policy makers, parliamentarians, the civil society and the community at large. Some of these may need some assistance in interpreting some sections of the report and the MOHSW is prepared to do as we, as the custodian of the national Health Policy, are accountable for some or most of those results.

The analytical review report was prepared using information from existing reports – from surveys, health information system and research. Also the MOHSW prepared this report using experts from national institutions or international partners based in Tanzania. This means local capacity exists or has been unleashed by working closely with seasoned experts from WHO. It is my anticipation that future reports from the MOHSW programme will contain a similar level of analytical thinking with comparative and equity considerations.

On a personal level, being new to the health sector, the report provides me with a perfect audit of where we are and what I need to focus on as I take a senior leadership position in the sector. It is my hope therefore that all stakeholders in the health sector will use the report to increase efforts in service provision and raise standards for recording, documenting and reporting. We look forward to producing improved Annual Health Sector Performance Profile Reports in future.

On behalf of the Ministry of Health and Social Welfare, I would like to express appreciation to the Global Fund to Fight AIDS, Tuberculosis and Malaria for its financial support, the World Health Organization for providing the technical support and to the National Institute for Medical Research and Ifakara Health Institute for undertaking the assignment.

Charles Pallangyo  
Permanent Secretary  
Dar es Salaam, September 2013

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Once again, on the behalf of the Ministry of Health and Social Welfare and on my own behalf, I thank you all.

Dr. Donan W. Mmbando  
Chief Medical Officer  
Dar es Salaam, September 2013

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# ACRONYMS

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AMO	Assistant medical officer
ART	Antiretroviral therapy
ARV	Antiretroviral
BMI	Body mass index
CCHP	Comprehensive council health plans
CDC	Centers for Disease Control and Prevention
CFR	Case fatality rate
CHF	Community Health Fund
CMI	Chr. Michelsen Institute
CO	Clinical officer
COPD	Chronic obstructive pulmonary disease
CPT	Co-trimixazole preventive therapy
CTC	Care and treatment centre
DALY	Disability-adjusted life year
DHS	Demographic and health survey
DP	Development partner
DTP	Diphtheria–tetanus–pertussis
EPI	Expanded Programme on Immunization
FP	Family planning
FYDP	Five year development plan
GFATM	Global Fund to fight HIV/AIDS, TB and Malaria
GHO	Global Health Observatory
HAPCA	HIV and AIDS Prevention and Control Act
HDSS	Health and demographic surveillance system
HMIS	Health management information system
HRH	Human Resource for Health
HRHIS	Human resource for health information system
HSSP	Health sector strategic plan
ICD	International classification of diseases
IDSR	Integrated disease surveillance reporting system
IHI	Ifakara Health Institute
IHME	Institute for Health Metrics and Evaluation
IMCI	Integrated management of childhood illness
IMPAC	Integrated management of pregnancy and childbirth
IPT	Intermittent preventive therapy
IRS	Indoor residual spraying
ITN	Insecticide treated net
JAHSR	Joint annual health sector review
LiST	Lives saved tool



<b>LSHTM</b>	London School of Hygiene and Tropical Medicine
<b>MDG</b>	Millenium Development Goal
<b>MICS</b>	Multiple indicator cluster survey
<b>MMAM</b>	Mpango wa Maendeleo wa Afya ya Msingi (primary health care sector development plan)
<b>MMR</b>	Maternal mortality ratio
<b>MTCT</b>	Mother-to-child transmission
<b>MTEF</b>	Medium-term expenditure framework
<b>MTR</b>	Midterm review
<b>NACP</b>	National HIV/AIDS control program
<b>NACTE</b>	National council for technical education
<b>NCD</b>	Noncommunicable diseases
<b>NEHP</b>	National essential health package
<b>NHIF</b>	National health insurance fund
<b>NIMR</b>	National Institute for Medical Research
<b>NTD</b>	Neglected tropical diseases
<b>OPD</b>	Out patient department
<b>PHSDP</b>	Primary health services development programme
<b>PMTCT</b>	Prevention of mother-to-child transmission
<b>PPP</b>	Public private partnership
<b>RDT</b>	Rapid diagnostic test
<b>RMNCH</b>	Reproductive, maternal, newborn and child health
<b>RTI</b>	Research Triangle Institute
<b>SARA</b>	Service availability and readiness assessment
<b>SAVVY</b>	Sample vital statistics with verbal autopsy
<b>SBA</b>	Skilled birth attendance
<b>SPD</b>	Sentinel panel of districts
<b>STEPS</b>	STEPwise approach to surveillance
<b>TB</b>	Tuberculosis
<b>TDHS</b>	Tanzania demographic and health survey
<b>TFR</b>	Total fertility rate
<b>THE</b>	Total health expenditure
<b>THMIS</b>	Tanzania HIV/AIDS and malaria indicator survey
<b>TIIS</b>	Training Institution Information System
<b>UNAIDS</b>	Joint United Nations Programme on HIV/AIDS
<b>UNICEF</b>	United Nations Children's Fund
<b>WHO</b>	World Health Organization

# EXECUTIVE SUMMARY

## Background and objectives

The Health Sector Strategic Plan III (HSSP III), July 2009–June 2015, is a comprehensive national plan and provides the guiding framework for the detailed planning and implementation of health sector activities. It includes 42 indicators and many of those have a baseline for 2008–09 or earlier, and a target for 2015. The primary objective of this analytical report is to review, analyse, and document progress, during the first half of HSSP III implementation (2009–2012). The analytical review provides an in-depth analysis and synthesis of all relevant data, including health and other household surveys, census, health facility and disease surveillance data, facility assessments, administrative resources data, policy data and selected research studies. The focus is on progress on the HSSP III indicators, as well as equity and comparative analysis of Tanzania’s progress. The analytical review was conducted by the Ministry of Health and Social Welfare in collaboration with Ifakara Health Institute, National Institute for Medical Research and World Health Organization.

### RESULTS FRAMEWORK AND HSSP III INDICATORS WITH PROGRESS

INPUTS	OUTPUTS	OUTCOMES (COVERAGE)	IMPACT
Government expenditure on health (%) Total health expenditure per capita	Stockouts of tracer meds & vaccine	Measles immunization coverage DTP-Hb 3 immunization coverage Vit A coverage (2 doses)	Life expectancy (years) Under-5, infant, neonatal mortality Child stunting rate
Health worker density: doctors (& other clinicians) Health worker density: nurse - midwives Health worker density: pharmacists	Outpatient visits per capita / year Insurance coverage (CHF / TIKA)	TT2 immunization coverage ANC first visit > 16 weeks ANC at least 4 visits Births in health facilities Skilled birth attendance	Child underweight rate Maternal mortality ratio Total fertility rate Adolescent fertility rate HIV prevalence among young people HIV prevalence, pregnant women (15-24) TB notification rate
Training institutes with full accreditation	TB treatment success rate	Contraceptive prevalence rate ITN use (children / pregnant women) PMTCT coverage among pregnant women ART (antiretroviral therapy) coverage	Leprosy cases diagnosed and treated Cholera incidence rate Cholera case fatality rate Malaria prevalence in OPD Parasitemia prevalence (children)
<b>Additional</b>			
Expenditure by program	Service availability General Service readiness & quality Specific service readiness & quality	TB case detection Risk behaviours for STI/HIV Risk behaviours for NCD Postnatal care Treatment of childhood illness	Causes of death Causes of morbidity Out of pocket expenditure Catastrophic expenditure on health

The overall picture, shown in a results chain framework, can be summarized as follows:

#### ■ **Inputs**

- more money for health, increased government contribution during 2008–2009, increased external funding 2010–11.
- health worker situation; still shortages, major increase in training institutions outputs for physicians, but absorption capacity for doctors not sufficient.

#### ■ **Outputs**

- service access and general utilization appear unchanged quality: readiness of services (SARA 2008–09 and 2012) generally did not improve, except for few items (e.g. rapid test for malaria), and many gaps remain.

#### ■ **Outcomes or coverage**

- Reproductive, maternal and newborn health: slow progress or none (antenatal care /delivery care); family planning use improving.
- Child health: further improvement of high equitable levels (immunization), vitamin A supplementation; no clear improvement in treatment of sick children.
- HIV (ART and PMTCT) and malaria intervention (ITN) coverage: good progress.
- TB case detection rates not as good as thought; TB treatment success rates remain high; leprosy targets achieved.
- Neglected tropical diseases progress on several indicators, but data are limited.
- Risk factors for NCD are on the rise, especially among urban populations.

#### ■ **Impact**

- Remarkable progress in child mortality indicators, but newborn mortality decrease slower than other ages.
- Reductions in malaria prevalence, and to a lesser extent in HIV incidence; TB not declining.
- Maternal mortality somewhat down but still high.
- Child anthropometric indicators some progress, but more in underweight than in stunting which remains high.
- Adult mortality decline, driven by HIV mortality reduction.
- Life expectancy improved considerably to about 60 years.

For many indicators, there was a reduction in inequalities in the past five years by sex, urban-rural residence and socioeconomic position, although differences remained for many. Regional inequalities differ for indicators, but in general regions in Western and Lake zones are the worst off, while regions in the Eastern and Northern zones have better health systems, coverage rates and health status. Some regions perform markedly better than expected on the basis of socioeconomic level of development.

## Mortality and morbidity

Child mortality in Tanzania continues to decline rapidly to 81 per 1,000 live births for 2006–10, and according to projections, supported by more recent data from the Health and Demographic Surveillance Studies in Ifakara and Rufiji, the MDG/HSSP III target of 54 by 2015 is within reach. Neonatal mortality is also declining but at a slower pace and is becoming more prominent, with now almost one-third of child deaths occurring in the first month of life. The gaps between urban and rural children and between the poorest and best-off have reduced considerably and are generally small.

Adult mortality has also declined considerably since 2000, most likely due to reductions in AIDS mortality. The major declines in child and adult mortality have resulted in dramatic improvements in life expectancy in Tanzania to 61 and 58 years for women and men respectively.

## Reproductive and child health

The national maternal mortality decline is slow and well-off MDG5 pace. Also the maternal mortality ratio for births within institutions is not declining. Nearly all pregnant women attend antenatal care but make too few visits and come too late in pregnancy. Deliveries in health facilities and deliveries with a skilled birth attendant are increasing gradually but considerably slower than in neighbouring countries, especially in rural areas, and are still under 60% which is well off the 80% target for 2015. The facility surveys showed only modest progress in the availability of basic obstetric services.

Tanzania is making gradual progress towards its fertility and family planning targets. Contraceptive use increased by one-third to 27% during 2005–10, and more women were demanding modern family planning. The fertility rates declined modestly to 5.4 children per woman. The current decline is entirely due to rural women, and there was no progress among urban women (where fertility is much lower). There are however still large gaps within mainland Tanzania between urban and rural women, between the poorest and best off households, and between regions/zones. Adolescent fertility rates declined but are off-target.

Child immunization coverage in Tanzania has increased and is high with more than 90% of children receiving pentavalent and measles vaccines. Coverage is high in all socioeconomic groups. Child anthropometric indicators are improving, and child underweight has reached its HSSP III target, child stunting levels remain high and well behind the pace needed to meet the 2015 targets.

## Malaria, HIV and TB

Malaria mortality and morbidity in Tanzania have declined during HSSP III, as shown by declining hospital mortality and admission rates, outpatient visits and parasitaemia rates in household surveys, although it is still a leading cause. Insecticide treated net (ITN) use increased dramatically (threefold increase during 2007–08/2011–12) and is close to the 2015 target. Intermittent preventive therapy with two doses of SP/Fansidar during pregnancy however remained low and did not increase. The use of ACT in children with fever in the last 2 weeks increased from 24% to 33%, while ACT availability in clinics remained at 80% according to the facility surveys. The availability of malaria diagnostic tests increased dramatically from 30% to 75%, due to rapid diagnostic tests.

HIV transmission has continued to decrease gradually during HSSP III, but the number of people living with HIV has remained the same due to population growth and longer survival on treatment. Overall, for both sexes combined, HIV prevalence was 7.5% in the urban and 4.5% in the rural mainland. HIV prevalence is higher among the wealthier. There is evidence of a modest reduction in new infections among young women. PMTCT coverage increased to 71% of HIV positive pregnant women receiving ARV prophylaxis and ART coverage rose to 65% of adults and 48% of children.

The TB case notification rates have decreased (by 10% during 2008–2011) in almost every region of the mainland. A new estimate based on the results of the first tuberculosis prevalence survey in Tanzania, however, resulted in a high prevalence rate (295 per 100,000 population) and case detection rates only as high as 42–54%. TB treatment success rate among smear positive cases of pulmonary TB is as high as 89%. In terms of outbreaks, the number of reported cholera cases declined and the annual case fatality rate was high (2%), but reporting completeness may have affected these figures

## Health systems

General government expenditure on health as a proportion of total government expenditure reached the Abuja target of 15% during 2008–09 but has dropped to 11% since. Yet, per capita total health expenditure increased due to greater external funding (2010–11). Data from the 2012 National Health Accounts were not yet available at the time of this analysis.

The health workforce situation is slowly improving but shortages of health workers continue exist throughout the country. According to the HRHIS, there are 5.4 per 10,000 doctors and nurse/midwives in Tanzania mainland, and 7.2 per 10,000 if AMOs (assistant medical officers) and clinical officers are also included. There appears to be a modest upward trend. Threefold differences in health workers densities exist between regions. The output of training institutions however has increased, especially physicians and the challenge is shifting towards absorbing the large numbers of graduates from Tanzania's 134 training institutions.

Outpatient utilization rates, often considered an indicator of general access to health services, did not increase during 2009–12 and remained at a low 0.7 visits per person per year. Service readiness, in terms of general status, diagnostics and medicines availability, improved only slightly during 2009–12 and there is still much scope for improvement. Indicators of universal precautions for infection control in health facilities showed a deterioration.

# 1

## BACKGROUND, APPROACH AND MAIN IMPLICATIONS

The Health Sector Strategic Plan III (July 2009–June 2015) (HSSP III) is the key Ministry of Health and Social Welfare document to guide the health sector. It is the sector's comprehensive national plan and provides the guiding framework for the detailed planning and implementation of health sector activities. It includes 42 indicators and many of those have a baseline for 2008 or earlier, and a target for 2015.

For each annual health sector review a health sector performance profile is produced to assess progress towards the targets for the indicators of HSSP III. The midterm review (MTR) of HSSP III is envisaged to provide information that will guide further implementation of HSSP III and future design of HSSP IV requires a comprehensive and in-depth analysis of progress and performance.

The primary objective of the analytical report is to review, analyse, and document progress, during the first half of HSSP III implementation (2009–12). It provides an in-depth analysis and synthesis of all relevant data from multiple sources, including health and other household surveys, census, health facility and disease surveillance data, facility assessments, administrative resources data, policy data and research studies. The analytical MTR also aims to inform several other evidence-driven activities.<sup>1</sup>

The report covers all major health areas, focusing on the HSSP III indicators, but also taking into account core indicators in related programme-specific plans, which often have additional indicators and targets. The report is divided into sections on mortality and morbidity, reproductive, maternal, newborn and child health (RMNCH), malaria, HIV/AIDS, tuberculosis, neglected tropical diseases, outbreak diseases, and health systems. In addition, a brief section was added on risk factors for non-communicable diseases and injuries, even though there are currently no indicators on these conditions in the HSSP III. This was done as it is very likely that the new HSSP will have to pay considerable attention to these conditions.

This report is not only the analytical midterm review report for the period 2009–12, but also intended as the fourth annual health performance profile (the previous ones were done in 2010, 2011 and 2012).

### Methods

The analytical review was based on analysis of existing survey and HMIS data. These two sources are the main sources of data on the health situation and trends in Tanzania. For several indicators data were available from both sources which allowed an assessment of data quality and in-depth analysis to come up with the best figures for the indicators. This was done for national and regional level data. District level data were analysed for some indicators, based on the HMIS data, but are not included in this report. The levels of uncertainty in district statistics are much larger, presenting and discussing these data and statistics was beyond the scope of this report.

In addition, a desk review of technical reports was conducted including population surveys, programme evaluation reports, policy documents and research studies. No new data were collected.

The National Health Accounts exercise for 2012 was delayed and unfortunately its results could not be included in this report.

Even though the focus is on reviewing progress during the period 2009–2012, attention was also paid to trends prior to 2009 to help interpret more recent data.

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<sup>1</sup> This includes an assessment progress in the implementation of the acceleration plan for MNCH, as well as inform the preparation of a Countdown event in 2013; the *Global Fund (GF)* reviews of tuberculosis, AIDS and malaria; *Accountability framework*: To be part of the implementation of the roadmap towards better accountability for health, with special attention for women and children.

Overall, the data quality was found to be satisfactory. Tanzania is very data rich. For instance, it has five national health surveys during 2007–12 (one DHS, two HIV and malaria indicator surveys, one TB prevalence survey and one immunization coverage survey). The facility reporting system, also referred to as HMIS (health management information system, or MTUHA), is however the main source of annual data and also of regional and district data for a series of coverage indicators. While it is clear that the system is not perfect, the analysis presented here provides many encouraging signs that the HMIS data are very usable for detection of broad trends and patterns in Tanzania, and should always be analysed in greater detail. Where possible, this should be done in combination with the survey and other data, such as those obtained through the sentinel panel of districts (SPD).

The results of these analyses are presented in each section addressing the following aspects:

- a brief data quality assessment;
- an assessment of progress against targets for key HSSP III indicators;
- equity analysis by key stratifiers;
- a comparative analysis with countries in the subregion;
- analysis of additional indicators, including service delivery, where available.

In the final section overall performance and efficiency are assessed by comparing inputs and results at the sub-national level (mostly regions) and Tanzania's performance is compared with other countries in the region. A logical results framework is used to conduct a stepwise analysis.

## Process

A core analytical team consisting of the Ministry of Health and Social Welfare, National Institute of Medical Research, Ifakara Health Institute and World Health Organization prepared the data, conducted the analyses and wrote the report.

The plan of an analytical report was put forward at the annual health sector review meeting in October 2012, and subsequently approved by the M&E technical working group and health sector coordination group. It was proposed to prepare this analytical report, as the MTR review team usually does not have the resources to work extensively with the data and produce a comprehensive analysis. Furthermore, such rapid assessments by MTR teams leave little time for working with country institutions, which are often a key source of information and which can benefit from a more thorough approach.

This was followed by a meeting with the M&E technical working group in early 2013. In total, three meetings were held of the core team with the M&E working group. In September, a workshop to review the report was organized by the Ministry of Health and Social Welfare in Bagamoyo (10–13 September). The core team and the programme managers and M&E experts participated from almost all programmes. The inputs from this very successful meeting are taken into account in this final version of the report.

One of the long term goals of this report is to strengthen the monitoring and evaluation platform in Tanzania. The national M&E platform, providing information on results and accountability, should meet all standards of quality, and transparency and form the basis for all global reporting. The Global Fund to Fight AIDS, Tuberculosis and malaria and GAVI are both keen on strengthening country M&E platforms, and use this for their own reporting.

## DATA SOURCES FOR THE ANALYTICAL REPORT

### ■ Population health surveys

- Tanzania Demographic and Health Surveys 2011–12, 2004–05, 1999, 1996, 1991
- Tanzania HIV and Malaria Indicator Surveys 2011–12, 2007–08, 2003–04
- National TB prevalence survey 2012
- National Panel Survey: 2008–09, 2010/11
- Post-campaign immunization coverage survey 2011
- Non-communicable Diseases: STEPS 2012

### ■ Health facility data and reports

- Core HMIS data base
- Annual Health Statistics Report 2012, 2011, 2010, 2009, 2008, 2007
- Annual health Sector performance profile: 2011–12, 2010, 2009, 2008, 2007
- Programme databases and annual reports of disease programs

### ■ Facility assessments

- SARA 2012 (23 districts); SARA 2008–09 (15 districts); SPA 2006: SAM 2006

### ■ Administrative data

- Financing: annual PER (2011–12 last), NHA (2011, 2006, 2001); NHA with subaccounts 2013 (not yet included)
- Human resources: national data base and HRHIS, professional databases, training institutions database (TIIS), HMIS
- Infrastructure: national database of health facilities (HMIS)

### ■ Other data

- Health & Demographic Surveillance Systems (Ifakara, Rufiji, Kisesa)
- Sentinel panel of districts including SAVVY and facility based information
- Research studies

## Findings and implications

This table summarizes the findings on all indicators of HSSP III. The summary table shows the results for progress towards the target and for reduction of inequalities (G=gender, R = place of residence (urban-rural, region) and W=wealth quintile). It also compares the Tanzania results with subregional countries (the rank number is given if available).

### HSSP III INDICATORS

	Overall progress	Achievement	Target 2015	Equity	Compare (rank)
<b>HEALTH STATUS</b>					
Life expectancy (years)		61 (F)/58 (M) (2011)	62/59		
Under-5 mortality rate		81/1,000 (2006-10)	54		1
Neonatal mortality rate		26/1,000 (2006-10)	19		1
Infant mortality rate		51/1,000 (2006-10)	-		1
Child stunting rate		35% (2011)	22%	GRW	3
Child underweight rate		14% (2011)	14%		5
Maternal mortality ratio		454/100,000 (2004-10)	156	G	2
Total fertility rate		5.4 (2008-10)	5.1	GRW	4
Adolescent fertility rate		44% (2010)	39%	GRW	5
HIV prevalence among young people		2.0% (2011/2)	-	G	
HIV prevalence, pregnant women (15-24)					
TB notification rate		75% (2011) 52% (2012)	70%		
Leprosy cases diagnosed and treated					
Cholera incidence rate		343 cases	0		
Cholera case fatality rate		4.1%	<1%		
Malaria prevalence among OPD (lab)		33% (under 5) (2012)	-		
Parasitemia prevalence (children)		9.2% (2012)	5%		
<b>COVERAGE OF INTERVENTIONS</b>					
Measles immunization coverage		100% (2012)	85%		1
DTP-Hb 3 immunization coverage		95% (2012)	85%		4
Vit A coverage (2 doses)		60% (2010)	-	GW	7
TT2 immunization coverage		88% (2011)	90%		
ANC first visit > 16 weeks		15% (2006-10)	60%		5
ANC at least 4 visits		36% (2009-10)	90%	R	7
Births in health facilities		58% (2011)	70%	GRW	
Skilled birth attendance		62% (2010-11)	80%	GRW	8
Postnatal care coverage		31% (2006-10)	-		
Contraceptive prevalence rate		27% (2010)	60%*	GRW	5
ITN use (children / pregnant women)		73% /75% (2011/2)	80%		3
eMTCT coverage among pregnant women		77% (2011)	80%		
ART coverage among those in need		65% (2012)	60%		
TB treatment success rate		90% (2011)	85%		2
<b>HEALTH SYSTEMS</b>					
Government expenditure on health (%)		7.3% (2011)	15%		
Total health expenditure per capita		\$37			
Insurance coverage (CHF / TIKA)		3% (2010)	80%		
Health worker density: doctors & AMO		0.9 / 10,000	-		
Health worker density: nurse - midwives		4.9 / 10,000	-		
Health worker density: pharmacists		0.12 / 10,000	-		
Outpatient visits per capita / year		0.73 per person	-		
Training institutes with full accreditation		56	30		
Stockouts of tracer meds & vaccine					



A stepwise analysis in the last chapter of this report puts the indicators in a logical results framework to assess where the greatest progress is made. This analysis can be summarized as follows:

#### ■ Progress

- In general, good progress on health outcomes & coverage indicators.
- Less evidence of strengthening of health system: health workforce, service delivery.
- Maternal and newborn care least progress.

#### ■ Equity

- Greater equity for many indicators, with some notable exceptions such as stunting levels in children and skilled birth attendance.
- Regional differences fairly large for several indicators, associated with either lower socioeconomic status or weaker health systems; targeting of regions in Western and Lake zones should be considered.

#### ■ Efficiency/comparative performance

- Good performance compared to subregional peer countries.
- Good results on child mortality for the level of investment, but not on skilled birth attendance.

#### ■ Performance

- HSSP III: overall positive picture, strong progress made, well documented results.
- Several areas can be identified for greater attention in coming years, including enhancing the performance of low performing regions, the health worker issues, service delivery including quality, and maternal and newborn care.

The MTR review team has been tasked to assess the overall progress in HSSP III and interpret the data presented in this analytical report with data from discussions with key informants, document reviews etc. The Bagamoyo workshop participants however discussed the main achievements for the health system and key programme areas and proposed a number of priority strategies for action that need to be considered during the second half of HSSP III. The table below summarizes these discussions.

Program	Main achievement	Priority strategies for action in HSSP
Health systems	Limited progress in indicators of health system components	Address health workforce shortages in rural areas, especially nurses, pharmacists, lab technologists; strategy, production, distribution, retention Financing: meet targets and equitable distribution of funds within country; Medicines and diagnostics: improve supplies, focus on essential medicines
Maternal and newborn care	Modest decline maternal and newborn mortality	Translate MNC advocacy into actions to improve service access, readiness and quality, including human resources
Family planning	Increase in contraceptive use	Reach out to rural populations and regions with low coverage
Immunization	Sustained high levels of coverage, everywhere	Avoid national campaigns, target specific regions or districts with lower coverage
Child health and nutrition	Fairly good treatment utilization for sick children; reductions in underweight and child mortality	Facilitate multi-sectoral approaches to combat stunting in children; ensure/maintain high levels of treatment for sick children
TB	High treatment success rate	Develop strategy to address low case detection rate
Malaria	Rapid improvements in prevention coverage and reduced morbidity and mortality	Maintain high levels of coverage; increase lab-diagnosis based treatment; target higher prevalence regions/zones;
HIV	Better survival of persons living with HIV, prevention of mother to child transmission; modest reduction new infections	Improve prevention while implementing new guidelines for pregnant women and children
NTD	High levels of mass chemotherapy for some diseases	Collaboration with Ministry of Education to reach and maintain high levels of coverage and address causes
NCD	None (risk factors increasing)	Need to implement NCD plan, raise awareness of risk factors and diseases in communities
Injuries	None (some injuries increasing)	Requires a multi-sectoral approach

The Bagamoyo workshop participants also summarized the current situation of different components of the health information system. It was clear from the richness of the analytical review that many positive comments about the health information systems can be made. There are however also several areas that need strengthening such as the further strengthening of the human resources for health information system, the roll-out of the DHIS, a comprehensive 10 year survey plan and the use of ICD-10. The table below summarizes the recommended priority actions for data sources, analytical capacity, and data communication and use.

Area	Main achievement	Priority for action
Surveys	Regular surveys provide wealth of information	Need for 10-year costed plan for population and facility surveys, driven by country information needs More emphasis on survey analysis
HMIS	Improved availability of data from districts and regions which can be used for review	Complete roll-out of DHIS to enhance HMIS; regular reviews of the functioning of HMIS; regular interaction with stakeholders; further integration of parallel data systems; continued training program, with regional responsibilities or institutionalization of courses
Birth and death registration	Not present but sentinel panel of district is beginning to fill the gap; HDSS provide timely high quality data	ICD-10 coding needs to be introduced in HMIS register of deaths; continue SPD and SAVVY; support Civil registration system roll-out (RITA)
Administrative data	HRH information system improving; NHA becoming regular (institutionalized)	Use of facility registry service by all; also financial tracking and logistics management systems
Disease surveillance	System in place for surveillance of notifiable diseases	Integration of mobile reporting and IDSR tracking into DHIS/HMIS;
Analytical capacity	Ifakara Health Institute, NIMR can provide technical assistance to MoHSW	More emphasis on district and regional capacity; facilitate data analysis in DHIS
Data communication and use	Annual review and program reviews are key vehicles for data use and demand good statistics and analyses	Use new HMIS to effectively communicate data through dashboard, visualization etc.; continue to invest in conducting comprehensive analysis for annual reviews

# 2

## MORTALITY AND MORBIDITY

### Main findings

- Child mortality in Tanzania continued to rapidly decline to 81 per 1,000 live births for 2006–10, and the HSSP III and MDG target of 54 by 2014 is likely to be met.
  - The gaps between urban and rural children and between the poorest and best-off have reduced considerably and are generally small. Northern Tanzania stands out as having lower child mortality rates than elsewhere in the mainland.
  - Tanzania’s child mortality progress is among the best in the region.
  - Neonatal mortality is also declining but at a slightly slower pace and is becoming more prominent, with now almost one third of child deaths occurring in the first month of life.
- Life expectancy in Tanzania has also improved dramatically in the past decade to 61 and 58 years for women and men respectively. The national 2015 targets of 62 and 59 years are likely to be met. This is not only due to child survival improvements but also adult mortality declined, most likely due to reductions in HIV/AIDS mortality.
- Among children under 5, the leading causes of death are malaria, neonatal causes, including prematurity and asphyxia, and pneumonia, according to hospital and community research data. For deaths at ages 5 and over HIV, malaria, non-communicable conditions and injuries are the main causes.

#### HSSP III TARGETS & INDICATORS\*

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
Under-five mortality rate	91 (THMIS 2008 for 2004-08)	81 (TDHS 2010 for 2006-10)	54	Major progress in the past decade and on target for the MDG; the HDSS data support the survey findings.
Infant mortality rate	58 (THMIS 2008 for 2004-08)	51 (TDHS 2010 for 2006-10)	-	Major progress in last decade, especially in the post neonatal period.
Neonatal mortality rate	29 (THMIS 2008 for 2004-08)	26 (TDHS 2010 for 2006-10)	19	Gradual progress, but requires acceleration to achieve 2015 target; neonatal deaths are now one-third of under-5 mortality.
Life expectancy	Female 52 years Male 51 years (Census 2002)	F: 61 years; M: 58 years (WHO estimates for 2011)	F: 62 years; M: 59 years; (2025)	Estimate derived from WHO Life Tables, based on new child and adult mortality rates; major progress and ahead of target.

\* Other M&E documents: The 2010 targets of the National Strategy for Growth and Poverty Reduction (MKUKUTA II) were 50 and 78 per 1,000 live births for infant and child mortality respectively.

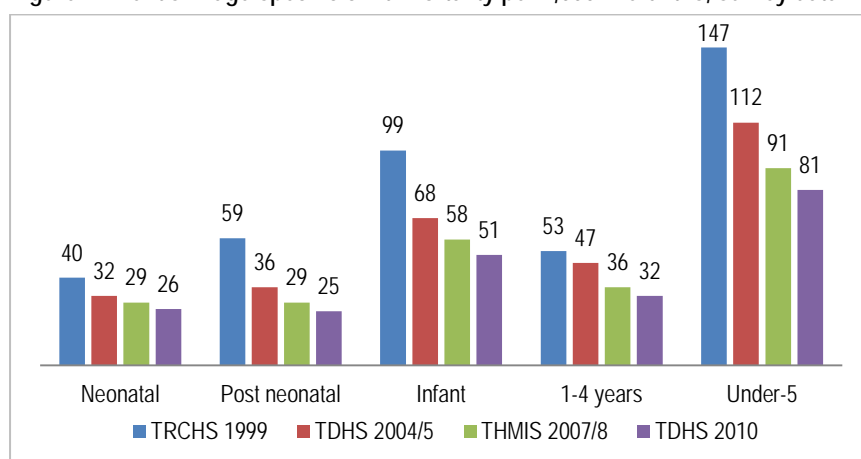
## DATA SOURCES AND QUALITY

- **Surveys:** DHS 2004–05 and 2010 are the main sources of national data on mortality. The rates are presented for the 5 or 10 year periods before each survey. The 2012 census data will provide mortality statistics, but the data are not yet available.
- **HDSS:** Ifakara and Rufiji HDSS provide reliable annual long term trend data and its findings are consistent with the surveys.
- **Estimates:** WHO, UNICEF, and other agencies use mortality data from DHS to estimate the trend in child (and adult) mortality and make predications. Life expectancy is estimated by WHO from the child and adult mortality estimates, mainly based on the household survey data.
- **Quality:** the child mortality data quality in Tanzania is good, but it has to be kept in mind that there are currently no data to ascertain the trends beyond 2010, except for the HDSS.

## National trends

### Under-five, infant and neonatal mortality

Figure 1: Trends in age-specific child mortality per 1,000 live births, survey data



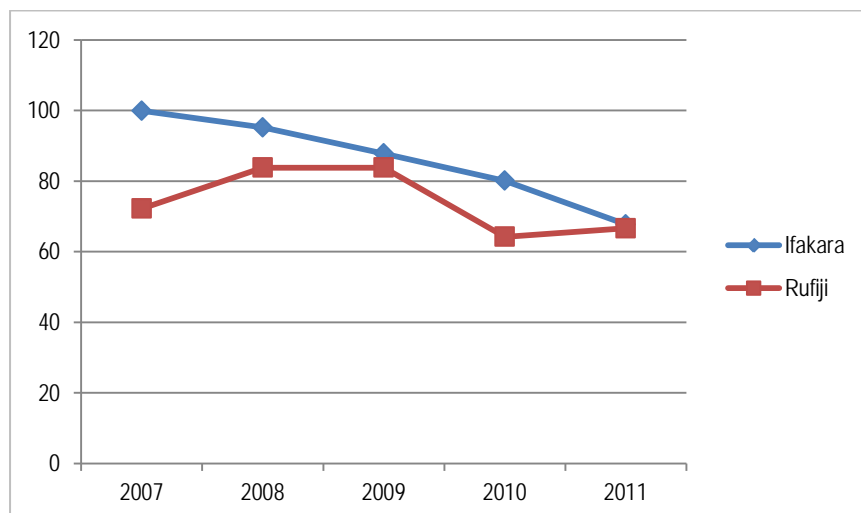
Child mortality rates declined in all age groups, most pronounced in the post-neonatal period, followed by 1-4 year olds.

Neonatal mortality also declined, but at a slower pace, and accounts now for 32% of all child deaths.

Child mortality (under-five) was 81 per 1,000 live births for 2006-2010 (mid-point 2008), which was lower than 91 for 2003–07. According to the surveys, the rate of decline however slowed down to 3.9% per year, which was slower than during period 1997–2005, when the annual rate of decline was 6.0%. The rate of decline during 2007–2015 would have to be 5.9% per year to meet the target of 54 per 1,000 live births.

The decline in mortality occurred at all ages. The biggest decline took place in the post-neonatal period, followed by ages 1-4 years. Neonatal mortality also declined considerably, but at a slower pace than among older children. The proportion of under-five deaths that take place in the neonatal period increased slightly from 29% in the TDHS 2004–05 to 32% in the TDHS 2010. All statistics refer to the five year period preceding each survey.

Figure 2: Under-five mortality per 1,000 live births in Ifakara and Rufiji HDSS, 2007–11



Ifakara and Rufiji HDSS show a similar level and decline in child mortality as Mainland.

The Ifakara and Rufiji health & demographic surveillance studies (HDSS) record all births and deaths on an ongoing basis and can provide more detailed and recent data on mortality trends. Under-five mortality rates were more than halved in both populations during 2000–11. Also during 2008–2011, the decline continued, most prominently in Ifakara. The under-five mortality rate was 67 and 68 per 1,000 live births in Rufiji and Ifakara respectively, which is very similar to national levels.

In 2011, neonatal mortality rates were 25 and 23 per 1,000 live births in Rufiji and Ifakara respectively, which are also very close to the national levels. This corresponds with just over one-third of all under-five deaths. In Ifakara, there was a substantial decline since 2007–08 when neonatal mortality was about 30. In Rufiji, very low levels of neonatal mortality were recorded in 2007–08 (15 per 1,000 live births) and rate has increased every year to its current level. Infant mortality rates in 2011 were 43 and 40 per 1,000 live births in Ifakara and Rufiji respectively.

The UN prediction of child mortality in Tanzania in 2012 is 55 per 1,000 live births.

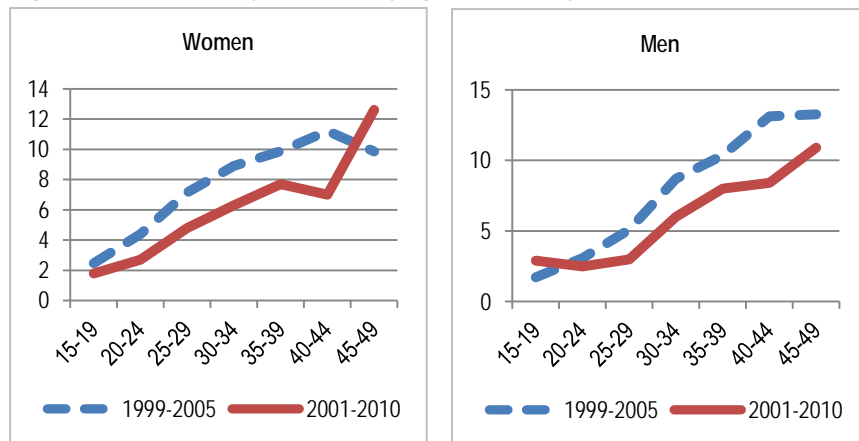
The UN predictions of child mortality in Tanzania in 2012 are based on fitting a new statistical model to all data sources and data points.<sup>2</sup> The decline is even stronger than previously estimated. There is a strong acceleration of progress from the mid to late nineties which has been sustained in the last decade. For 2008 child mortality was estimated at 71 per 1,000 live births, for 2012 at 55. The estimated infant mortality rate was 47 and 38 per 1,000 live births in 2008 and 2012 respectively.

<sup>2</sup> www.childmortality.org

Life expectancy at birth in Tanzania increased dramatically during the last decade. WHO estimated that in 2011 life expectancy at birth for females and males was 61 and 58 years respectively, up from 51 and 49 years in 2000. This is due to major improvements in both child and adult mortality.

Life expectancy at birth is estimated to have increased to 61 years for women and 58 years for men.

Figure 3: Adult mortality per 1,000, by age, DHS surveys



Adult mortality is declining, most likely due to HIV mortality reduction.

The adult mortality rates per 1,000 declined considerably according to the two DHS surveys in 2004–05 and 2010. Female mortality 15–49 years declined by 23% and male mortality by 19%, comparing the periods 1999–2005 and 2001–10. The declines are largest in the age groups 25–44 years for women and 30–49 years for men. Reductions in HIV-associated mortality are likely to be the main cause of this decline.

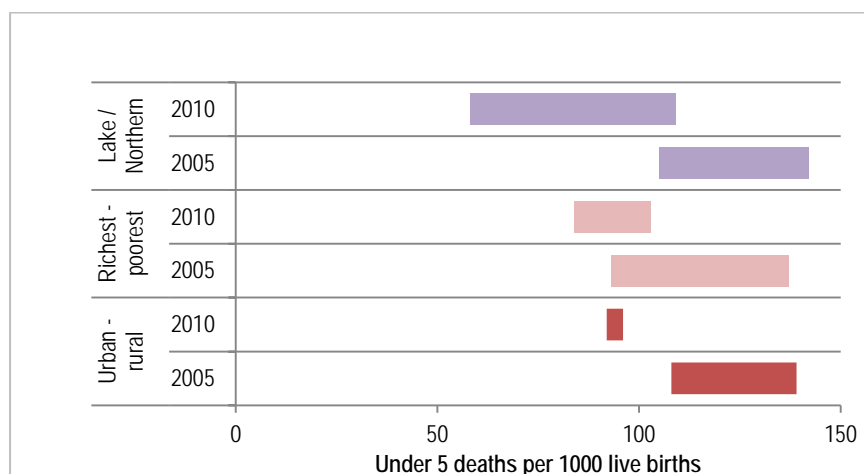
Crude death rates, which the number of deaths at all ages divided by the total population, have fallen by more than one-third during 2000–11 to 8.8 and 6.9 per 1,000 population in Rufiji and Ifakara HDSS respectively. The SAVVY project had enumerated almost half a million people in 16 districts by the end of 2012.<sup>3</sup> The crude death rate for the year preceding the census in the 16 districts was 9.8 per 1,000 population, ranging from 5.1 in Bagomoyo to 18.9 in Mtwara urban. The first year of follow-up with registration of vital events has been completed, but mortality statistics are not yet available. Life expectancy in the Rufiji and Ifakara and Kisesa HDSS was 67 and 68 years for 2011, respectively. In Kisesa HDSS, after correction for underreporting of infants deaths, life expectancy was 63 years for the period 2007-2012.

HDSS data from Ifakara, Kisesa and Rufiji confirm the national life expectancy estimates.

<sup>3</sup> The SAVVY project aims to include 23 districts, which is a national sample of districts. IN each district a sample of households is surveyed.

## Equity

Figure 4: Under-5 mortality rate, 1996–2005 and 2001–2010, TDHS 2004–05 and 2010



Gaps in child mortality between poorest and best-off quintiles and between urban and rural children have reduced.

Gaps in under-five mortality by urban-rural mainland, by wealth quintile (best-off (Q5) and poorest (Q1)) and by zone (highest and lowest mortality) are shown with data from the TDHS 2004–05 and TDHS 2010. The mortality data refer to the 10-year period before the surveys, which is used to reduce sampling errors. The trend is towards a substantial reduction of inequities in child mortality. For instance, the gap between urban and rural mortality was 21 points for 1996–2005 and only 4 points for 2001–2010. The gap between the richest and poorest quintile also reduced considerably.

The only exception is the gap between zones. The under-five mortality in the region with the highest mortality, Lake, was 109 per 1,000 live births compared to 58 in Northern zones. The main reason is because child mortality in the Northern zone is exceptionally low compared to all other zones which range from 84 to 109 per 1,000 live births for 2001–10.

Northern Tanzania has much lower child mortality than elsewhere in Mainland.

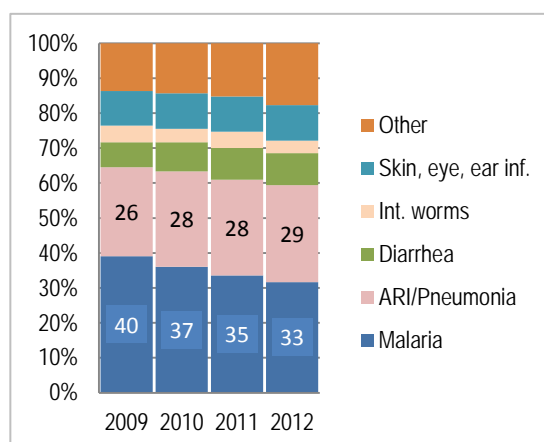
## Other indicators: health facility morbidity and causes of death

### Outpatient department (OPD) diagnoses

Figure 5: OPD diagnoses from HMIS, 2009–12

The number of OPD visits for under-fives ranged from 14–16 million during 2009–12. The distribution of outpatient diagnoses among children under 5 years shows that the relative share of malaria declined from 40% to 37%, 35% and 33% during 2009 to 2012 which is the main shift that occurred during this period.

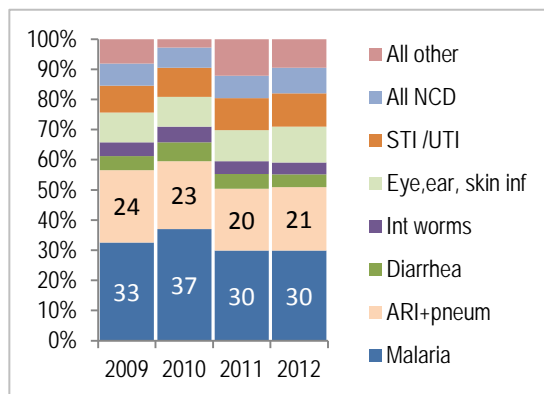
ARI/pneumonia was the second most common diagnosis accounting for 29% in 2012, which was 26% in 2009 and 28% in 2010 and 2011. Diarrhoeal diseases were the third most common diagnosis (9% in 2012, similar to 2010 and 2011). Skin, ear and eye infections accounted for 7% of OPD visits among children under 5 years in 2012.



Among children, malaria accounted for 33% of all visits, down from 40% in 2009, followed by ARI/ pneumonia (29%).

Figure 6: OPD diagnoses 5 years and over, HMIS 2009–2012

In 2012, there were 16.3 million OPD visits at ages 5+, similar to 2010 and 2011. As for inpatients, the trends in OPD diagnoses have to be interpreted with caution, as no ICD coding is used and changes in forms or diagnostic practices may have an impact. Malaria was the leading cause in 2012 at 30% and there appeared to be little change from the



previous years, in sharp contrast with what was observed among children under 5. ARI/pneumonia was also the second most OPD diagnosis in this age group, with 21%, similar to 2011. Noncommunicable conditions, such as cardiovascular disease, chronic respiratory disease, cancer, and diabetes, were associated with 8.5% of all visits in 2012, only slightly up from the previous years (7.3% in 2009). Sexually transmitted infections and urinary tract infections (often used to record a diagnosis of STI), accounted for 11% of diagnosis. A similar proportion of visits were associated with ear, eye and skin infections. It is noted that CTC/HIV care visits are not included in OPD visits.

Malaria is the leading diagnosis among 5 and older with 30%; ARI/ pneumonia is second (21%).

All NCD diagnoses combined accounted for just 8.5% of all visits.

### Hospital admissions

In 2012, there were 699,000 hospital admissions of children under 5 years. This was about the same as the average of the three years before (694,000 admissions per year). The reported number of admissions of persons 5 years and older increased over time.

There are 3.8 admissions per 100 population per year.

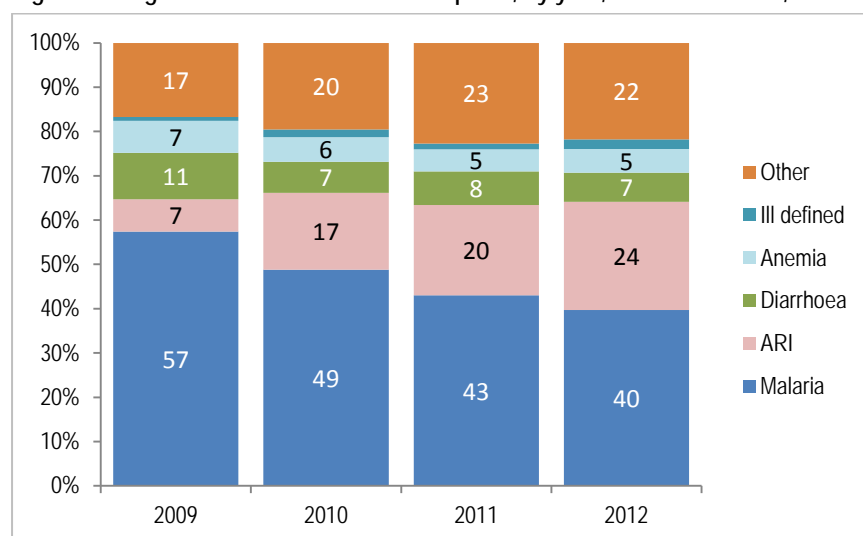
There were 888,000 admissions in this age group in 2012, which was 60,000 more than in 2011 and 80,000 more than the average for the three preceding years.

There were 3.8 admissions per 100 population in 2012, which was similar to the three years before (average 3.7 admissions). Note that some persons may have been admitted more than once in a year.

No changes in admission rates during 2009–12.



Figure 7: Diagnoses for admissions to hospitals, by year, children under 5, HMIS



Large reduction in malaria in children, but was still the lead cause with 40% of admissions in 2012.

Hospitals do not consistently use the ICD-10 to certify and code diagnoses and causes of death. Therefore, the emerging patterns are only a general indication. In addition, comparability over time is affected by changes in the code list over time. This appears to have affected acute respiratory infections and pneumonia most, especially in the earlier years. These changes can also have an effect on the other diseases, as the previously higher levels may have been due miscoding.

1 in 40 children admitted died in hospital.

In 2012, malaria was still the most common diagnosis for admissions/discharges, accounting for 39.7%, followed by pneumonia/ARI (24.4%), diarrhoeal diseases (6.6%) and anemia (5.3%).

15% of all child deaths in Tanzania took place in hospitals.

Also the case fatality rates among children remained similar: 2.4% in 2012, compared to 2.5% in the preceding three years. Overall, 15% of the estimated total of 120,000 child deaths in mainland Tanzania took place in health facilities in 2011–12.

Table 1: Leading causes of death in hospitals among children under 5 years, mainland Tanzania, 2009–12 (percent distribution), HMIS

	2009	2010	2011	2012
Malaria	48.9	39.8	37.3	30.4
ARI /pneumonia	3.3	18.6	21.9	18.9
Anemia	15.8	10.4	9.7	11.0
Perinatal causes	5.1	5.1	4.3	6.9
Diarrhoeal diseases	7.1	6.6	6.4	4.7
Protein-energy malnutrition	3.5	3.2	2.7	2.4
HIV/AIDS	2.7	3.0	2.3	2.1
Ill-defined causes	0.5	0.5	1.3	1.4
Other	13.1	12.8	14.1	22.2
Total percent	100.0	100.0	100.0	100.0
Number	16,696	18,129	17,558	16,887

Malaria declined but was still the lead cause of death among children in hospitals (30%), followed by pneumonia (19%) and anemia (11%).

In 2012, malaria was still the leading cause of death among children under 5 in hospitals, causing 30% of all deaths. This was much lower than in previous years (see also the Malaria section). ARI/pneumonia (19%), anemia (11%), perinatal causes (7%) and diarrhoeal diseases (5%) complete the top 5.

Table 2: Leading diagnosis for admissions to hospitals among persons 5 years and older, mainland Tanzania, 2009–2012 (percent distribution), HMIS

	2009	2010	2011	2012
Malaria	33.0	37.9	33.2	33.5
ARI/pneumonia	9.8	11.3	11.8	19.0
Diarrhoeal diseases	4.8	6.5	6.7	5.0
Anemia	4.0	3.2	3.3	3.3
Cardiovascular diseases	3.7	2.4	2.9	3.1
Fractures/dislocations	2.4	0.0	1.7	2.8
Chronic respiratory diseases	0.0	0.0	2.7	2.6
Urinary tract infections	2.5	3.2	2.4	2.6
HIV/AIDS	1.5	3.0	2.1	1.9
Sexually transmitted infections	1.7	1.7	2.5	1.8
Peptic ulcer	1.0	1.4	1.4	1.3
Tuberculosis	2.4	1.4	1.6	1.2
Ill-defined	1.9	1.7	2.4	2.1
Other	31.3	26.3	25.3	19.8
Total percent	100.0	100.0	100.0	100.0
Number of admissions	768,061	812,539	827,389	887,791

Malaria is also the leading diagnosis among admissions and was associated with one-third of all admissions in 2012, similar to the previous years. ARI/pneumonia was unexpectedly common in 2012 (19%), but it is not clear if this is genuine increase in its relative importance or a data quality issue. The latter explanation is more likely. There was also a major drop in the proportion of admissions with diagnoses in the other category which complicates the interpretation of these figures. Diarrhoeal diseases and anemia appear in the top 5 in this age group.

Cardiovascular diseases and chronic respiratory infections were 5<sup>th</sup> and 7<sup>th</sup> in 2012, while fractures were 6<sup>th</sup>. HIV/AIDS is increasing, but the trend needs to be interpreted with caution, as HIV/AIDS is often underdiagnosed because of stigma and with the increasing availability of ART stigma and recording practices may have changed over time.

Table 3: Leading causes of death in hospitals among people 5 years and over, mainland Tanzania, 2009–2012 (percent distribution), HMIS

	2009	2010	2011	2012
Malaria	19.1	31.6	23.1	22.2
HIV/AIDS	6.1	11.2	11.1	16.8
Cardiovascular disease	6.3	6.6	9.1	11.1
Acute respiratory disease/pneumonia	6.0	8.9	12.2	8.5
Anemia	4.4	6.9	6.0	8.4
Tuberculosis	4.3	5.1	4.4	4.6
Chronic respiratory disease	0.9	-	3.0	3.7
Cancers	2.1	-	2.4	3.0
Diarrhoeal diseases	2.0	3.2	2.4	2.0
Diabetes	0.7	1.6	1.6	2.0
Ill-defined	11.8	1.1	1.2	3.0
Other	36.4	23.8	23.5	14.7
Total percent	100.0	100.0	100.0	100.0
Number	29,849	22,080	22,516	20,620

Case fatality rate in 2012 was 2.3% of admissions, compared to 2.7% in 2010 and 2011. Overall, only 6% of an estimated total number of 300,000 deaths took place in health facilities during 2011–12.

Malaria and respiratory infections are also the leading diagnosis among admissions of people aged 5 years and older.

Non-communicable conditions are associated with less than 1 in 10 admissions at ages 5 and over.

Only 1 in 16 deaths at ages 5 years and over take place in hospitals.

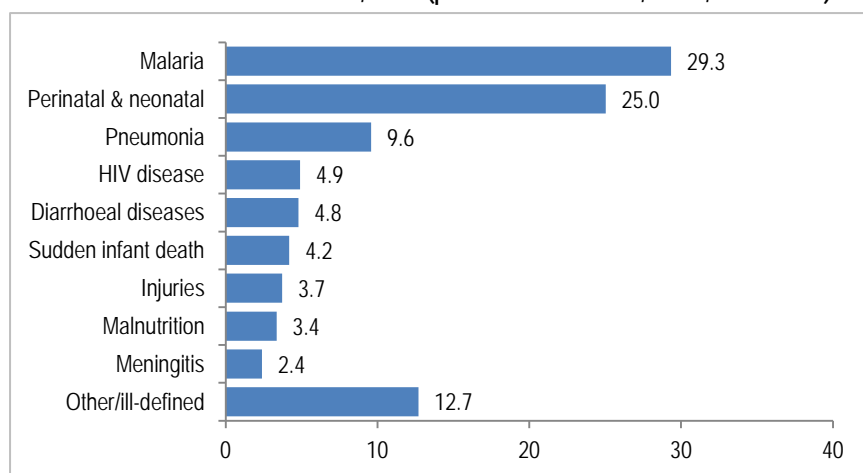
Malaria, HIV/AIDS and cardiovascular diseases are the top 3 causes of death in hospitals at 5 years and older.

Malaria was the leading cause of death in this age group (22% of all deaths). There is no apparent decline, if 2010 is considered an outlier. HIV/AIDS was the second most cause of death with 17%, higher than in the previous years. Tuberculosis adds another 5% of deaths. Four non-communicable chronic conditions are in the top 10: cardiovascular diseases (11%), chronic respiratory diseases (4%), cancers (3%) and diabetes (2%), although together they cause just one in five hospital deaths. The time trend is difficult to ascertain as there are likely to be differences in coding practices over time, as well as reporting errors.

### Causes of death in SAVVY

In the first year of SPD/SAVVY implementation<sup>4</sup> almost 4,500 deaths were registered in 16 districts. A standardized verbal autopsy instrument was used for all deaths and the results were analysed and coded by physicians to ascertain the probable cause of death.

**Figure 8: Main causes of death among under-fives, verbal autopsy, Sentinel Panel of Districts/SAVVY, 2012 (percent distribution, N = 1,519 deaths)**



In the community data malaria is also the leading cause of death, followed by the group of neonatal causes.

The lead cause in children under five years was acute febrile illness including malaria (29%), followed by perinatal causes (25%) and stillbirths. Pneumonia was associated with 10% of deaths. It is not clear what sudden infant death referred to. No cause was attributed to 13% of deaths.

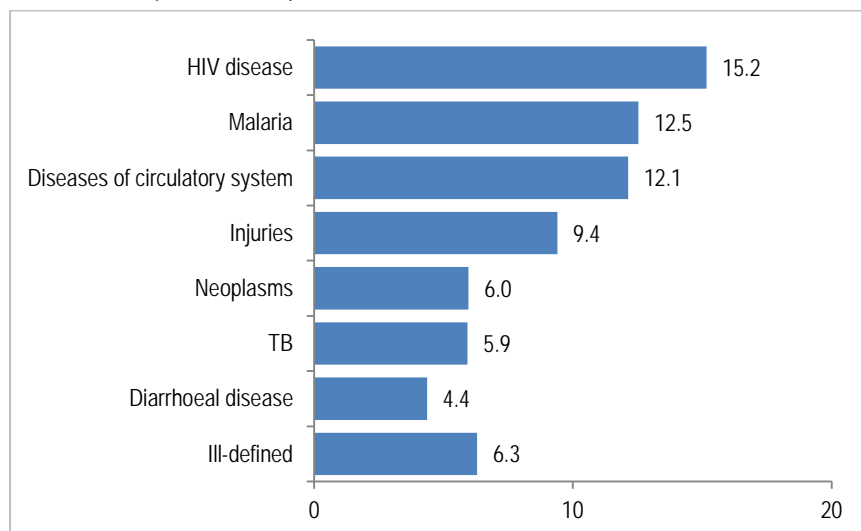
The cause pattern for children in the districts is fairly similar to that in the hospitals: malaria is the lead cause, pneumonia is prominent, although twice as common in the community as in the hospitals), and diarrhoeal disease accounts for 5% in both. Anemia appears in the hospital data, but not in the community verbal autopsy.

Among children 5–14 years acute febrile illnesses including malaria were even more prominent (36%) with injuries and accidents as the second most important cause of death (16%).

HIV disease was the most common cause of death among 15–64 year olds (22%) according to the verbal autopsy data. Injuries and accidents and malaria were second and third with each 11%. Disease of the circulatory system were the leading NCD with 10% of all deaths in this age group. In the older age group (65+) these diseases were the lead cause.

<sup>4</sup> The Sentinel Panel of Districts, which includes Sample Vital Registration with Verbal Autopsy (SAVVY), run by the Ifakara Health Institute, is being rolled out to a national sample of 23 districts.

Figure 9: Main causes of death among 5 years and older, verbal autopsy, SAVVY, 2012 (2,976 deaths)



Among 5 years and older, HIV disease is the leading cause with 15%, and TB adds another 6% in the community data.

The graph summarizes the main causes for the population 5 years and older. Infectious disease dominate, led by HIV/AIDS and malaria. Also TB is associated with 6% of deaths. Non-communicable diseases, notably diseases of the circulatory system and cancers accounted for 18% of deaths, more commonly older people. Finally, injuries were a common cause of death with 9%. Pneumonia or respiratory conditions do not appear in the top cause list.

Malaria, diseases of the circulatory system and injuries are the next most common causes of death.

Comparing the community verbal autopsy results with the hospital data shows that malaria was more common as a cause of death in hospitals (22% versus 13% in community), HIV/AIDS, tuberculosis and disease of the circulatory system were equally common. Injuries however were not included in the hospital statistics for most years. In 2012, burns and poisoning were listed as separate categories, but not others such as traffic related deaths, homicide and suicide.

#### Global estimates of causes of death

There are many gaps in the information on causes of death in Tanzania. The main sources are the hospital data and verbal autopsy from local health and demographic surveillance studies. WHO and others estimate the overall cause of death patterns from the existing verbal autopsy data and statistical models, often borrowing from regional models and historical data from today's high-income countries.

Table 4: Leading causes of death among children under 5 years, WHO/CHERG global health estimates

	2000	2011
Preterm birth	11.4	16.0
Lower resp. tract infections	13.5	14.3
Asphyxia and birth trauma	9.0	12.6
Malaria	16.2	9.8
Diarrhoeal diseases	11.4	7.7
HIV/AIDS	9.6	4.9
Injuries	3.1	4.9
Protein energy malnutrition	3.8	3.5
Congenital anomalies	2.9	4.8
Meningitis	2.0	2.1
Whooping cough	1.7	1.6
Measles	2.8	0.9
Other	12.6	16.9
All	100.0	100.0

Global estimates of child causes of death put neonatal causes at the top, followed by pneumonia.

Malaria mortality estimates are much lower than in the hospital data or community study.

According to WHO estimates, the leading causes of death among children under five years in 2000 and 2011 are neonatal causes: preterm birth complications and birth asphyxia and trauma are in first and third position and together accounted for 29% of all deaths under 5. Lower respiratory tract infections, notably pneumonia, is the second most frequent cause of death, while malaria, diarrhoea and HIV/AIDS are 4,5 and 6. These three causes all declined during 2000-2011, while the relative importance of pneumonia and neonatal causes increased.

**Table 5: Leading causes of death among persons 5 years and over, 2011, WHO global health estimates**

	Men	Women
HIV/AIDS	22.0	26.5
Cardiovascular diseases	12.6	13.7
Unintentional injuries	11.5	6.1
Acute respiratory infections	7.6	9.6
Diarrhoeal diseases	5.3	5.9
Cancer	4.9	5.6
Intentional injuries	4.4	1.7
Tuberculosis	2.8	1.3
Maternal conditions	-	5.4
Other	28.9	24.2
Total	100	100

According to the estimates, HIV/AIDS is the most common cause of death among men and women in 2011. Other infectious diseases are also prominent. Among women acute respiratory infections and diarrhoeal diseases are 3<sup>rd</sup> and 5<sup>th</sup> respectively. Maternal conditions are the 7<sup>th</sup> most common cause of death among females aged 5 and over. Among men unintentional injuries (including traffic accidents with 4.4%) are in 3<sup>rd</sup> place, while intentional injuries account for another 4.4% of deaths.

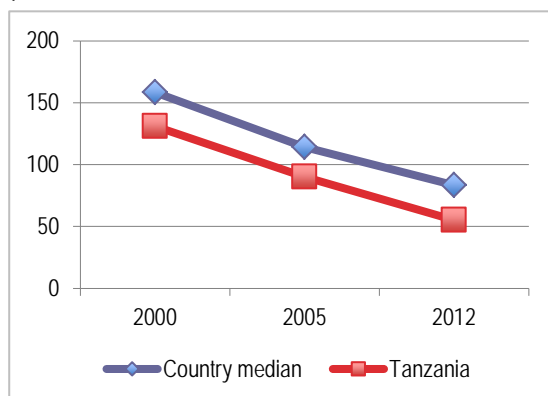
At ages under 5 years hospital statistics do not appear to capture most neonatal causes, while malaria is much higher in hospitals and the HDSS than in the WHO estimates. For ages 5 and over the cause of death patterns in the hospitals show several similarities with the WHO estimates. The main differences are the absence of malaria in the WHO estimates (0.5% of deaths), occurrence of anemia as a cause of death in the hospital statistics, and the larger proportion due to injuries in the WHO estimates than in hospitals but which is similar to the HDSS).

Global estimates are fairly consistent with the hospital and community data for HIV, cardiovascular diseases and injuries, but have much less malaria mortality.

## Comparative analysis

Figure 10: Comparison of child mortality per 1,000 live births in Tanzania with 10 subregional countries (median), UN estimates

The comparison of the child mortality decline in Tanzania with the median of 10 countries in the region shows that Tanzania's mortality is lower than in the group as a whole and continues to decline at least as fast. In 2000, Tanzania had the third lowest level in the group, after Zimbabwe and Kenya. In 2005, Tanzania had the lowest under-five mortality rate, and in 2012 is still had the lowest rate, just 1 point ahead of Rwanda. All figures are based on UN estimates for 2013.



Tanzania has one of the lowest child mortality rates in the region.

# 3

## REPRODUCTIVE AND CHILD HEALTH

### 3.1 MATERNAL & NEWBORN CARE

#### Main findings

- The maternal mortality decline is well-off MDG5 pace and there is no decline in institutional maternal mortality rates. The progress towards improving antenatal and delivery care falls well short of the HSSPIII targets.
- Virtually all pregnant women attend antenatal care but make too few visits and come too late in pregnancy. Deliveries with skilled birth attendance are increasing gradually, but considerably slower than the average pace in the region, especially in rural areas, and well off the 80% target for 2015. The facility surveys showed only modest progress in the availability of basic obstetric services. Postnatal care coverage has increased slightly but remains very low and availability of equipment for newborn care is limited.
- The inequalities between urban and rural women, and between the poorest and best-off women, for ANC and delivery care indicators are large and persisting, with little progress in closing the gaps.

#### HSSP III TARGETS & INDICATORS\*

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
Maternal mortality ratio (deaths per 100,000 live births)	578 (TDHS 2004–05 for 1996–2005)	454 (TDHS 2010 for 2001–2010)	193	Progress is slow and the indicator is well off target
Maternal case fatality rate in health facilities	170 (HMIS, 2009)	161 (HMIS, 2012)	-	Very modest decline over time
ANC: pregnant women attending at least 4 times	64% TDHS 2004–5	36% (2009/10, TDHS)	90%	Downward trend, even though almost all women attend at least twice
ANC: first visit before 16 weeks of pregnancy	14% (2000–4); 42% in HMIS (2009)	15% for 2006–2010 (TDHS); 43% in HMIS (2011)	60% (2010)	No progress, even though large differences between the survey and HMIS data exist
Tetanus Toxoid coverage: pregnant women receiving 2nd dose of TT	85%	88% life time protection; 77% (2011, HMIS)	90% in 90% of districts	Intermediate target of 90% by 2010; gradual increase, TT2 not on target, but life time protection indicator on track
Institutional delivery rate	51% (HMIS 2007)	56% (HMIS in 2012); 50% in TDHS 2010 for 2006–10	70%	Increase according to HMIS in recent years, but not enough to reach target
Skilled birth attendance: births attended by trained personnel	46% (TDHS 2004–5)	49% (TDHS for 2006–10); 62% (NPS for 2009–11)	80%	Gradual increase, but well off target; 50% target for 2010 in RMNCH roadmap met
Emergency Obstetrics Services: facilities that can provide EMOG (%)	5% (HSSP III)	BEMOC – 20% of dispensaries and 39% of HC CEMOC - 73% of hospitals (SARA, 2012)	BEMOC – 70% of all HC and dispensaries CEMOC – all hospitals	Indicator refers to offering emergency obstetric care; the full readiness or capacity to provide the service is considerably lower.

\* Other M&E documents: Ministry of Health and Social Welfare. National roadmap strategic plan to accelerate reduction of maternal, newborn and child deaths 2008–2015. April 2008. Additional indicators include at least one antenatal visit, Caesarian section rate, as well as indicators related to HIV and malaria (included elsewhere in this report); Plan of Action for Maternal and Neonatal Tetanus Elimination in Tanzania 2008/09 – provided 2015 target.

## DATA SOURCES AND QUALITY

- **Maternal mortality** is difficult to estimate because it is a relatively rare event. In the DHS surveys questions were asked about the survival and cause of death of respondents' sisters to identify pregnancy-related deaths. The survey rates usually refer to a six-year period before the survey, and have large uncertainty. Therefore, it is not possible to assess recent trends in maternal mortality through surveys.
- **Surveys and coverage:** The DHS 2004–05 and 2010, and the National Panel Survey (NPS) 2010–11, are nationally representative surveys that provide quality information on MNCH coverage indicators. Rates refer to 2 or 5 years before the survey. Sample sizes for regions are small, and regional estimates have large sampling errors.
- **Health facilities reports (HMIS):** provide annual data; assessment of reporting completeness and internal consistency, and comparison with the survey results, show that the quality is variable, especially for subnational levels.
- **Health facility assessment (SARA):** 2008–09 and 2012 provide information on trends in readiness of antenatal and delivery services, including EMOC.
- **Quality:** good for survey data, but substantive uncertainty at regional level. Facility reports provide annual data but have variable quality, especially at subnational levels.

## National trends

### Maternal mortality

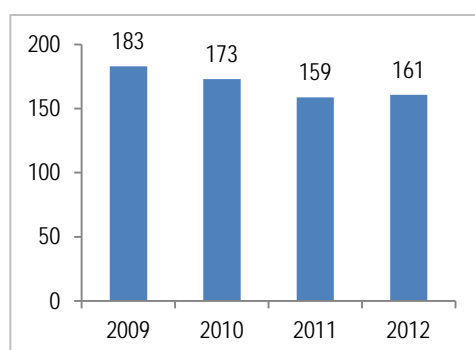
Table 6: Maternal deaths per 100,000 live births by time period, survey data and WHO best estimates

Source	Period	Ratio (95% confidence interval)
TDHS 1996	1987–1996	529
TDHS 2004–05	1996–2005	578 (466–690)
TDHS 2010	2001–2010	454 (353–556)
WHO/UN estimate	2005	650
WHO/UN estimate	2012	454 (provisional)

The *maternal mortality ratio* remains high in Tanzania. The household surveys provide data on the 10 year period prior to the survey. There may be a modest decline after 2005, and the most recent TDHS reported 454 (353–556) for the period 2001–10. One out of six deaths (17%) of all deaths among women 15–49 years were pregnancy-related during the 10 years preceding the TDHS 2010. This was similar to the results from the TDHS 2004–05 (18%).

Figure 11: Maternal mortality per 100,000 live births in health facilities, HMIS, 2009–12

During 2009 to 2012 there were about 1,700 maternal deaths reported each year in the HMIS. The national maternal mortality ratio per 100,000 live births declined slightly from 170 to 161 per 100,000 live births during 2009 and 2012 respectively. The trend data are consistent with the observation that no major decline in maternal mortality is taking place. It is noted that these ratios are likely to be an underestimate, as there is almost always underreporting of maternal deaths by health facilities.



Slight decline in the number of maternal deaths per 100,000 deliveries in health institutions.



If the maternal mortality ratio in health facilities is accurate, we can also estimate the maternal mortality ratio for home deliveries or deliveries outside of health facilities. At a maternal mortality level of about 400 per 100,000 live births and 170 in health facilities, the home delivery maternal mortality ratio would have to be 630, since about half of the births take place at home.

Table 7: Leading causes of maternal deaths in health facilities, HMIS, 2009–12 (percent distribution)

	2009	2010	2011	2012
<b>Obstetric</b>	61.7	64.0	61.0	62.6
Post-partum hemorrhage	21.3	20.4	20.2	23.6
Ante-partum hemorrhage	4.4	5.6	5.3	4.9
Eclampsia/pregnancy induced hypertension	14.6	15.6	13.5	14.6
Puerperal sepsis/septicemia	14.3	12.5	12.9	9.7
Ruptured uterus	3.4	4.0	3.7	2.8
Obstructed labour	3.8	6.0	4.7	4.2
Abortions	0.0		0.7	2.2
Other, obstetric				0.6
<b>Indirect</b>	26.5	23.7	27.0	24.8
HIV/AIDS	8.3	6.9	6.3	5.7
Anemia	9.7	10.1	12.7	9.0
Malaria	6.8	5.1	4.5	4.1
Other, indirect	1.7	1.7	3.5	6.0
<b>Other unspecified</b>	11.7	12.3	12.0	12.6
Total	100.0	100.0	100.0	100.0
Number of deaths	1694	1797	1695	1727

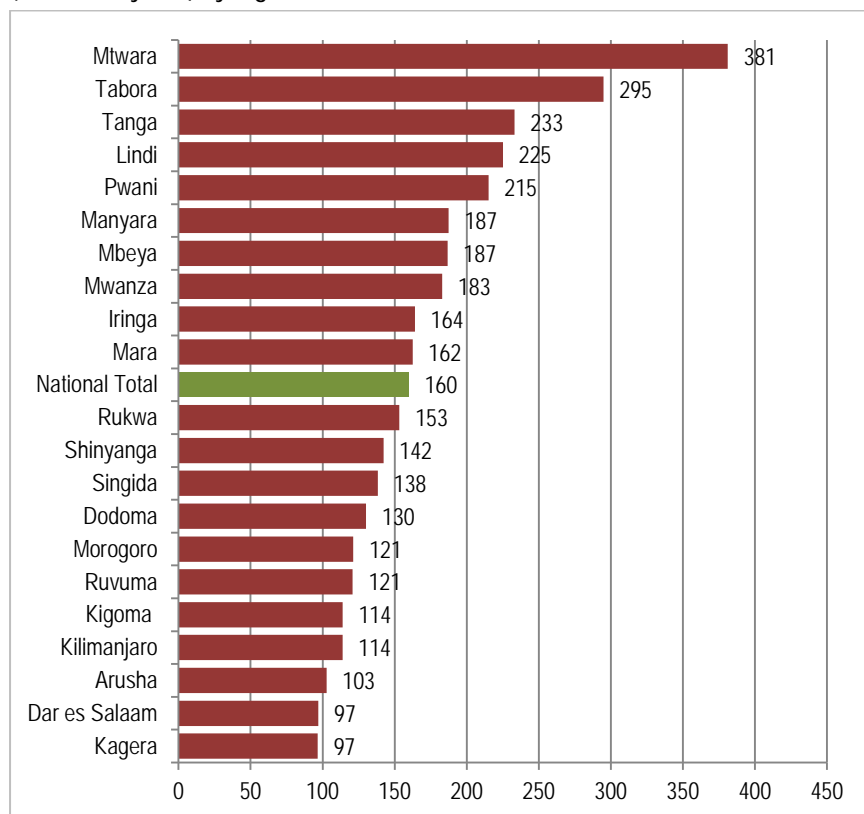
The leading cause of maternal deaths in health facilities is postpartum hemorrhage which was associated with almost one in four deaths in 2012 with little change in the last four years. Eclampsia or pregnancy-induced hypertension was the second most common cause responsible for 15% of maternal deaths, followed by sepsis with 10%. All obstetric causes combined accounted for about two-thirds of all maternal deaths in 2012 with little change over time. The most common indirect causes of maternal deaths were anemia (9%), HIV/AIDS (6%), and malaria (4%). All indirect causes combined were associated with one-fourth of maternal deaths. The remaining 13% were classified as other causes, without further specification. The consistency of the cause pattern over time is worth noting.

Maternal mortality ratio trends are fairly consistent and plausible in most regions, with little change over time, although underreporting of maternal deaths and/or deliveries is likely in several regions. The maternal mortality ratios are lowest in Dar es Salaam, Arusha and Kilimanjaro regions. Kagera region also has low maternal mortality but there is evidence of underreporting of deaths in 2012, as the number of deaths reported in 2012 is much lower than in previous years. Mtwara, Tabora, Tanga, Lindi and Pwani have institutional maternal mortality ratios exceeding 200 per 100,000 live births.

Leading causes of maternal death are postpartum hemorrhage (24%), eclampsia (15%) and sepsis (10%).

Regional institutional maternal mortality ratios vary from about 100 in Dar es Salaam, Arusha and Kilimanjaro to over 250 in Tabora and Mtwara.

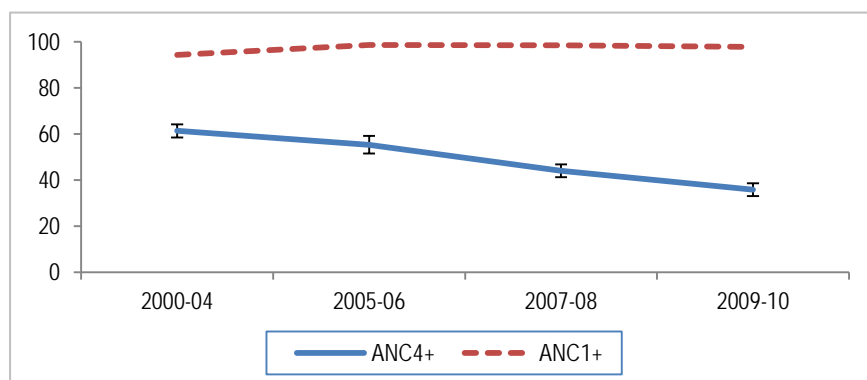
Figure 12: Maternal mortality per 100,000 live births in health facilities (case fatality rate) by region, HMIS, for 2011 and 2012 combined



In the first year of the Sentinel Panel of Districts/SAVVY project in 13 districts, where verbal autopsy was conducted for all deaths, maternal causes accounted for 4.5% of all deaths to women aged 15–49 (69 deaths). The four districts in the Lake zone had the highest proportion of deaths due to maternal causes (up to 10%), but numbers are small, so the results will have to be interpreted with caution. The proportion of adult female deaths 15–49 attributed to maternal causes was much smaller than in the TDHS (17%).

### Antenatal care

Figure 13: At least 4 antenatal care visits, Tanzania, TDHS 2004–05 and 2010



Virtually all pregnant women make at least one visit (and 94% at least two).

4 or more ANC visits is declining rapidly from 61% before 2005 to only 36% in 2009–10 (TDHS data).

Nearly all pregnant women attend antenatal care. In the DHS 2010, 98% of all mainland women visited at least once, and 94% made at least two visits. Also the HMIS data for 2009–11 indicate about 100% coverage. The HSSP III indicator of *at least four ANC visits* however shows a worrying trend. According to the DHS surveys, during 2000–04 61% of pregnant women made 4 or more visits, but during 2006–10 only 43% did so; and, based on a re-analysis of the TDHS 2010, only 36% during 2009–10.

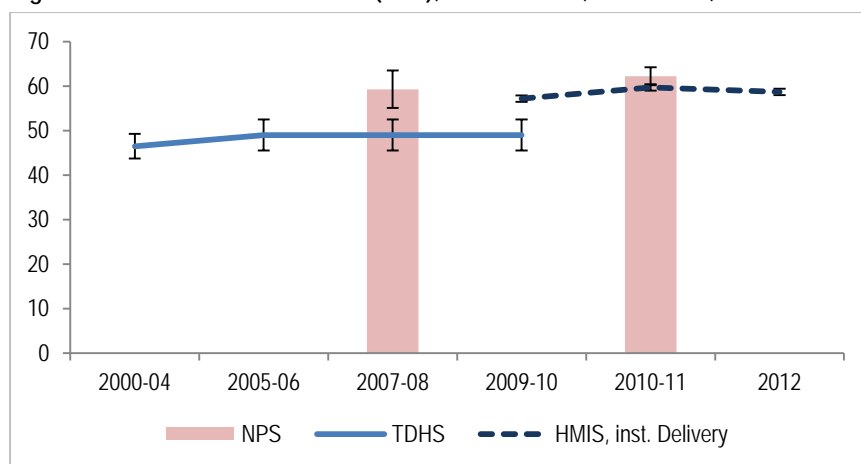
In terms of the *timing of the first ANC visit* there was no progress at all between the two DHS surveys: during 2006–10 15% of pregnant women made their first visit before 16 weeks, compared to 14% during 2000–04. The median duration of pregnancy at first visit was 22 weeks in both surveys. An investigation of possible reasons for the decline suggested that policy changes may contribute to reduced visits. Most lab tests are done at first visits and the women are supposed to come back on specific dates which appears to work less well. It is noted that nearly two-thirds of women made their first visit before the 6<sup>th</sup> month of pregnancy (TDHS 2010).

The HMIS data show much higher proportions of pregnant women attending before 16 or 20 weeks: 42%, 42% and 43% during 2009, 2010 and 2011 respectively. Note that the cut-off point in HMIS reporting changed from 20 weeks to 16 weeks in 2010, but it is not clear if this was well implemented. This implies that either the recall of the women in the survey is poor, or the recording and reporting by health facilities is not correct. But both data sources show no change and are off target.

*Tetanus toxoid vaccination* is recommended to be given twice in a pregnancy (TT2). According to the surveys, fewer pregnant women in the mainland received TT2 during 2006–10 (48%) than during 2000–04 (56%). Since, about 94% of pregnant women made at least two ANC visits, this means many opportunities to provide TT are missed. According to the HMIS, 77% of pregnant women received TT2 in 2010, slightly up from 74% in 2009 and 2010.

The TDHS 2010 also collected information on the preferred WHO indicator of life time protection that takes into account TT injections during previous pregnancies as well. Five or more injections provide life time protection: 88% of pregnant women had life time protection.

Figure 14: Skilled birth attendance (SBA), NPS 2010–11, TDHS 2010, HMIS



Gradual increase in SBA according to NPS 2011 (62%), but less so in TDHS 2010 or HMIS data.

SBA coverage increase too slow to reach the 70% target by 2015.

*Institutional deliveries and skilled birth attendance (SBA)* appear both on the rise, but at a slow pace that is not sufficient to reach the 2015 targets.

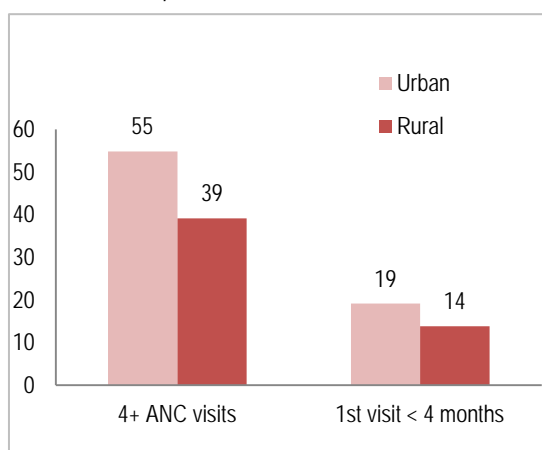
The HMIS data indicate that 56% of births occurred in health institutions in 2012, higher than in the baseline for HSSP III 2007, but very similar to the three preceding years. The TDHS 2010 suggests somewhat lower institutional delivery rates: for 2006–10, 50% delivered in health institutions, including 41% in public, 7.5% in NGO and 1.6% in private facilities. In other words, among the deliveries in facilities, 8 out of 10 are in public facilities.

Skilled birth attendance was 49% among 8,176 births during 2006–10 in the TDHS 2010. The 95% confidence interval was 45%–52.5%. Both National Panel Surveys suggest higher levels and an upward trend during 2007–08 and 2010–11, from 59% to 62% in the mainland (among 955 and 1,171 births during the 24 months before the survey respectively), although not statistically significant. The sample of births in the NPS is about only about one-eighth of the TDHS, and therefore likely to have a large sampling error, although this is not the case in the published figures.

## Equity

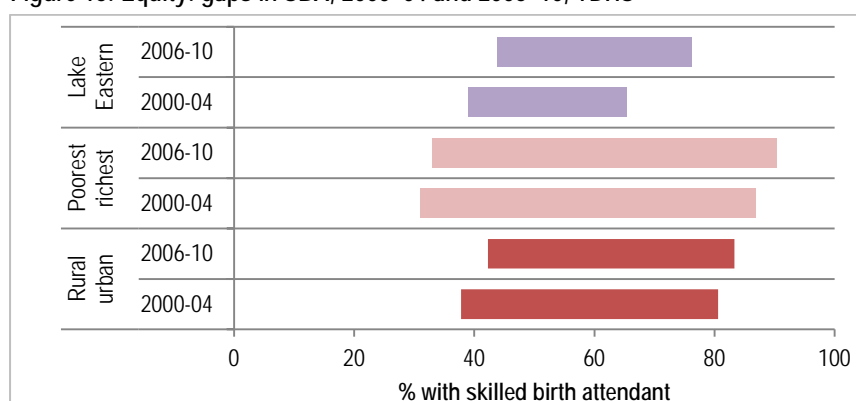
Figure 15: Antenatal care by place of residence, TDHS 2010

Antenatal care coverage at least one visit was high everywhere in mainland: for instance, 95% of rural pregnant women and 94% of the poorest women made at least one visit during 2006–10. There are however urban-rural differences for four or more visits and in the timing of the first visit, although these differences were much smaller than for skilled birth attendance.



Both among urban and rural women coverage of 4 or more ANC visits and timely ANC before 16 weeks are well-off target.

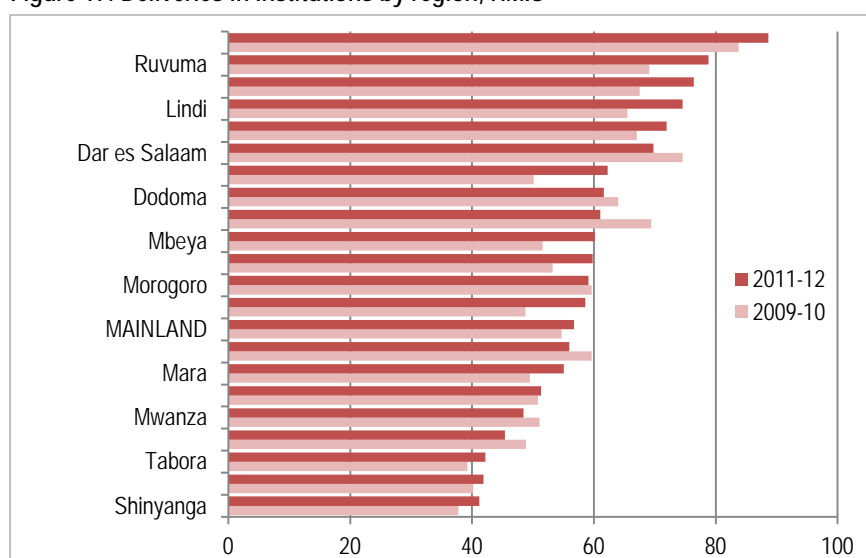
Figure 16: Equity: gaps in SBA, 2000–04 and 2006–10, TDHS



Skilled birth attendance coverage is examined to assess the trends in equity over time. The gaps between urban and rural women remained very large: 42% of rural pregnant women delivered with SBA, compared to 83% of urban women, during 2006–10. The gap between women in the poorest and richest quintiles were even larger and did not reduce over time (33% and 90%). The differences between the zones are considerably smaller, but still substantial, ranging from a low of 44% in Lake zone to 76% in Eastern during 2006–10.

Very large persistent gaps in SBA coverage between poorest and richest women, and between rural and urban women.

Figure 17: Deliveries in institutions by region, HMIS



Regional institutional delivery rates range from 41% in Shinyanga to over 80% in Kilimanjaro.

The HMIS data provide further regional data on the institutional deliveries. Because there is some fluctuation in the HMIS data 2009–10 and 2011–12 were combined to ascertain the trend.

The majority of regions experienced an increase in institutional delivery rates. Overall there was a 2% increase for the mainland. Twelve regions had an increase of at least 2% during the HSSP III.

According to the HMIS data the regions with the largest increases were Mtwara, Lindi, Ruvuma, Mbeya, Pwani and Arusha. The highest institutional delivery rates are reported by Kilimanjaro region. Dar es Salaam is much lower than expected, most likely due to underreporting of deliveries by institutions (especially private).

The HDSS provide independently collected data on institutional deliveries. In Rufiji HDSS, the proportion delivered in health institutions increased from 71% in 2008 to 79% in 2011. This meant that the gradual increase observed since 2003 (when the rate was 62%) continued during HSSP III. Ifakara HDSS present a picture that is similar to the mainland as a whole: both in 2008 and 2011 institutional delivery rates were 58%.

## Other indicators

### Components of antenatal care

68% of women in mainland Tanzania said their blood pressure had been measured during an ANC visit. 76% had blood taken and 51% had a urine sample taken (TDHS 2010).

### Caesarian section

Urban women in mainland Tanzania were three times more likely to deliver by caesarian section than rural women (9.7% and 3.2% respective, TDHS 2010). Caesarian sections were more than six times more common among women in the richest quintile compared to the poorest quintile (12.0% and 1.8% respectively). Overall, rates had increased since 2004–05, when urban and rural rates were 7.8% and 2.1% respectively.

Caesarian sections are 3 times more common among urban women than rural women, and 6 times more common among the wealthiest women.

### Postnatal care visit

In the TDHS 2004–05 only 13.4% of women received postnatal care within two days for the most recent childbirth. Five years later the proportion had more than doubled to 25%, a major increase but still far from universal coverage. Coverage of postnatal care was still only as low as 37% in urban women (22% in rural women).

Two large-scale facility surveys were conducted in 2008–09 (13 districts, NIMR) and 2012 (27 districts, Ifakara Health Institute). Over 80% of health facilities are providing ANC services.

**Table 8: ANC service readiness, district facility surveys (SARA), 2008–09 and 2011**

	2008–09	2012
<b>Total Facilities visited (N)</b>	<b>635</b>	<b>1297</b>
Providing ANC services (%)	82	85
<b>Number of facilities offering ANC</b>	<b>523</b>	<b>1071</b>
Trained staff (with guidelines available)	-	49 (60)
Diagnostics: BP apparatus (%)	84	88
Lab: Hb test on site (with equipment)	21	8
Lab: Urine protein dipstick (glucose)	27 (26)	17
Lab: Syphilis test (RPR) (%)	46	-
Meds: Iron tablets	-	81
Meds: folic acid	-	92
Vaccines: TT	-	91
Overall readiness (staff, equipment, diagnostics, medicines and commodities)	-	58

Among the facilities offering ANC services, 49% had a staff member trained in ANC and 60% had guidelines as well. Diagnostics were mostly not available, and in 2012 the situation was poorer than in 2008–09: only 8% could do an Hb test on site in 2012, down from 21% in 2008–09. Urine dipstick (protein and glucose) were available in one fourth of clinics in 2008–09, and only one in 6 in 2012. Medicines (iron and folic acid) and TT vaccine were in stock in almost all facilities.

**Table 9: Delivery service readiness, district facility surveys (SARA), 2008–09 and 2011**

	2008–09	2012
<b>Total Facilities visited (N)</b>	<b>635</b>	<b>1297</b>
Providing normal delivery services (%)	71	64
<b>Number of facilities offering deliveries</b>	<b>449</b>	<b>786</b>
Offers parenteral administration antibiotics	91	67
Offers parenteral administration oxytocin	43	61
Offers parenteral administration anticonvulsants	51	40
Offers assisted vaginal delivery	-	67
Offers manual removal placenta	78	61
Offers removal retained placenta	49	56
Offers Neonatal resuscitation	-	51
Offers all BEmOC interventions	21*	25
Trained in safe motherhood/IMPAC (guidelines)	87 (88)	20 (20)
Emergency transport available	12**	52
Delivery pack	-	85
Gloves	-	75
Neonatal bag and mask	-	21
Suction apparatus	-	35
Intravenous kit	55	79
Oxytocin in stock	91	75
Magnesium sulphate in stock	30	35
Antibiotic eye ointment newborn	-	75

About two-thirds of facilities offer delivery services, but only 25% all basic emergency obstetric care services (BEmOC).

Service readiness of those facilities did not change much during 2009–2012.

Overall, about two-thirds of health facilities offered normal delivery services. Among those, only a quarter offered all basic emergency obstetric care services. Overall, the situation was comparable in 2012 to three years earlier, with most gaps in service readiness persisting.

In recent years the IMPAC guidelines and training were introduced. By 2012 only 20% of the facilities had at least one staff who had received such training. In 2008–09 most clinics had a staff member who had received training in safe motherhood in the last two years (87%). It appears that during the transition the training intensity was reduced considerably during 2010–12 compared to previous years.

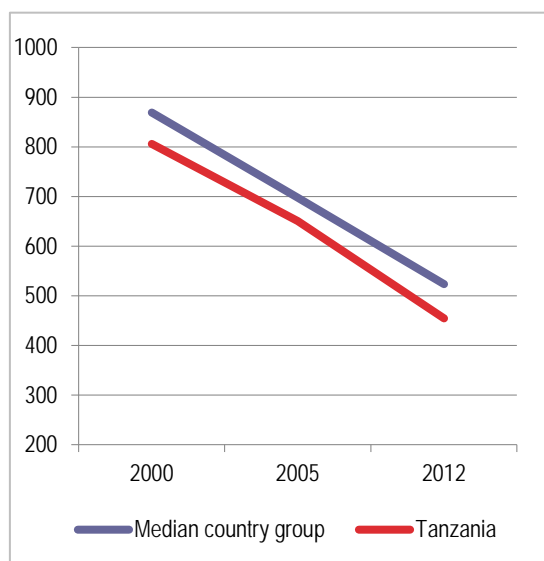
The service readiness was comparable, with an improvement in availability of i.v. kits from 50% to 79%, a decrease in injectable oxytocin from 91% to 75%, and a similar availability of magnesium sulphate for the treatment of eclampsia.

Essential neonatal equipment was available in only a minority of clinics offering delivery services: 21% had a neonatal bag and mask and 35% a suction apparatus.

## Comparative analysis

**Figure 18: Maternal mortality ratio**

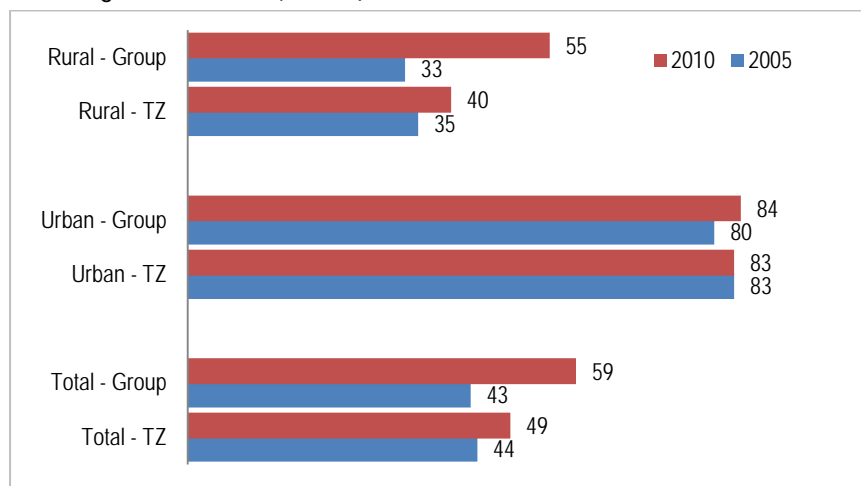
UN/WHO estimates of the trends of maternal mortality take into account all data sources, but have to rely heavily on statistical modelling, as there are many data gaps. Tanzania's maternal mortality ratio is estimated to have declined from just over 800 in 2000 to 454 per 100,000 live births in 2012. This implies an annual rate of decline of 4.8% which is close to the MDG pace of 5.5% per year. Tanzania is doing better than the median of 10



countries in the subregion. In 2000, Tanzania had the third lowest MMR, after Kenya, Zambia and Uganda, and in 2012, Tanzania was in second place after Uganda, and just before Ethiopia, Kenya and Zambia. It has to be noted that differences between the countries are small and that uncertainty ranges surrounding these estimates are very large, due to the paucity of high quality recent data.

According to UN estimates Tanzania's maternal mortality declined at the same pace as other countries in the subregion.

Figure 19: Skilled birth attendance trends (%), Tanzania compared with 10 subregional countries (median), 2005–10



Overall, Tanzania made less progress in SBA coverage than the median of 10 subregional countries.

The difference is due to slower rural progress in Tanzania than in the other countries.

The comparison of the proportion of births attended by a doctor, nurse or midwife in Tanzania with the median of 10 subregional countries (Burundi, DR Congo, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Uganda, Zambia, Zimbabwe) of which eight border Tanzania shows a very different picture from the MMR estimates. Only survey results are presented here. In order to make the country situations comparable, the DHS surveys were used, within similar time periods. The median year of the first survey was 2005, the second survey 2010. All coverage figures refer to the five year period before the survey.

Tanzania has made much slower progress than the median of the group where SBA coverage increased from 43% to 59% during 2005–10. Tanzania dropped from the 5<sup>th</sup> to the 8<sup>th</sup> place among the 11 countries. Urban coverage of SBA remained the same in Tanzania and increased only slightly in the group. The main difference is in the rural trends: while Tanzania increased its SBA coverage from 35 to 40% during 2005–10, the median of the group of 10 countries increased from 33% to 55% during the same period.



## 3.2 FAMILY PLANNING

### Main findings

- Tanzania is making gradual progress towards its fertility and family planning targets. Contraceptive use increased by one-third to 27% during 2005–10, and more women were demanding modern family planning. The fertility rates declined modestly to 5.4 children per woman. The current decline is entirely due to rural women, and there was no progress among urban women (where fertility is much lower).
- There are however still large gaps within mainland Tanzania between urban and rural women, between the poorest and best off households, and between regions/zones. These gaps reduced slightly, but remain large.
- With three quarters of health facilities offering FP services access is relatively good, but there is some evidence that contraceptive availability has declined between 2008–09 and 2012. Also, the proportion of women for whom the need for FP is satisfied did not increase and was only 58% in 2010.
- Adolescent fertility rates declined but are off-target

#### HSSP III TARGETS & INDICATORS\*

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
Total fertility rate of women 15-49 year	5.7 (2003-2005)	5.4 (2008-2010)	5.2	Fertility rates refer to 3 years before survey; current decline is on target
Contraceptive prevalence rate (among married women 15-49)	20% (2004-05)	27.4% (TDHS 2010)	30% (2012) 60% (2015)	On target; the 2015 target is very high and much higher than needed for a TFR of 5.2.
Adolescent fertility rate (pregnancy rate under 20 years)	52% (TDHS 2004-05)	44% (TDHS 2010)	39% for 2010 (RMNCH plan)	Adolescent fertility is still too high and unmet need for FP is highest among adolescents

\* Other M&E documents: Ministry of Health and Social Welfare. National roadmap strategic plan to accelerate reduction of maternal, newborn and child deaths 2008-2015. April 2008. Indicators for FP are: Total fertility rate, age-specific fertility rate, contraceptive prevalence rate by age group and socio-economic quintiles, met need for family planning by age, number of individuals accepting contraceptives new acceptors, number of service delivery points per 500,000 population offering the full range of contraceptive information counseling and supplies.

## DATA SOURCES AND QUALITY

- **Surveys:** The DHS 2004–05 and 2010 are nationally representative surveys that provide high quality and detailed information on fertility and FP indicators. Sample sizes for regions are small, causing large sampling errors in regional estimates of contraceptive prevalence rates.
- **Census:** will provide new information on fertility, disaggregated by small areas, but is not yet available.
- **Health facilities reports:** reports on new acceptors.
- **Health facility assessment (SARA):** 2008/09 and 2012 provide information on trends in readiness.
- **Quality:** good for survey data, but large uncertainty at regional level. Facility data quality varies between regions and districts and are not used here.

## National trends

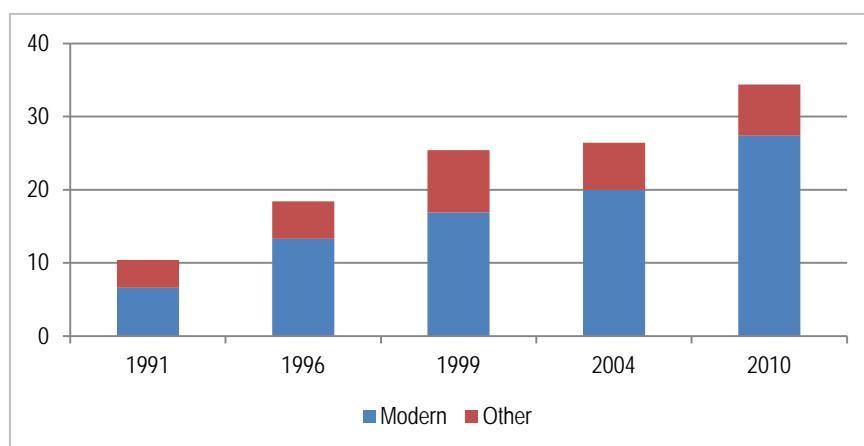
### Total fertility rate

According to the TDHS 2010, it was estimated that every woman would on average give birth to 5.4 children, based on the *fertility rates* during 2008–10. This estimate present a modest decline compared to 5.7 during 2003–05 (TDHS 2004–05), after a decade of stagnation of the fertility decline from the mid-nineties. The 2012 census will provide further data on more recent trends. The decline was largest among women under 25 years, modest at ages 25–34 years, and there was no decline over 35 years.

Fertility declined from 5.7 to 5.4 children per women, due to lower fertility among younger women.

### Contraceptive prevalence

Figure 20: Contraceptive prevalence rate, modern and other methods, among currently married women (%), TDHS 1991–2010



Use of modern contraceptives has increased most during 2004-2010.

The main determinant of fertility levels is the use of (modern) contraceptives. The results from the Tanzania DHS 2010 show that the *contraceptive prevalence rate* has been increasing in the past ten years and especially after 2005. The modern contraceptive prevalence rate among married women, the most commonly used indicator, 20% in 2004–05 to 27% in 2010.

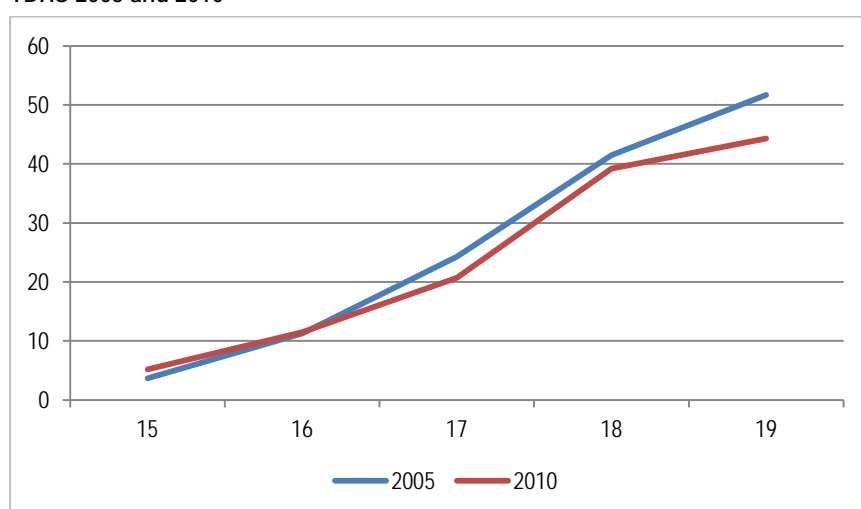
Fertility preferences change over time. Therefore, an important and related indicator of programme performance is the extent to which women who need contraceptives actually receive them: this is the coverage indicator.

In 2010, 58% of married women had their need for family planning satisfied. This represents only a small improvement from 56% in 2004–05. This indicates that the demand for family planning is increasing rapidly at almost the same pace as the need.

According to the HMIS, there were 11.5 family planning visits per 100 population per year, similar to the previous three years. The number of new family planning visits increased from 3.4 to 4.6 per 100 population in 2009 and 2012 respectively.

## Adolescent fertility

Figure 21: Women 15–19 who had a live birth or are pregnant (%), TDHS 2005 and 2010



Percent of women 15–19 who had had a live birth or are pregnant with their first child is slightly lower in 2010 compared to 2005.

Overall, 23% had a pregnancy compared in 2010 to 26% in 2005.

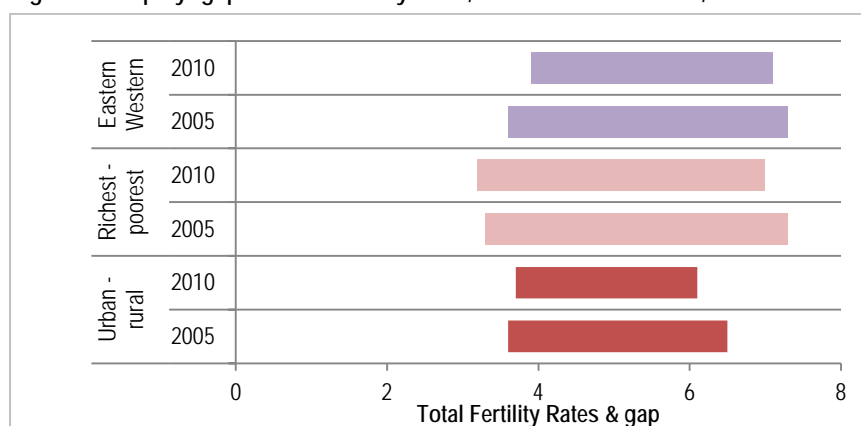
The median age at first birth in Tanzania mainland was 19.5 years in 2010. Adolescent fertility is common. There are two related indicators. The proportion of women 15–19 years who have had a live birth or are pregnant with their first child: 23% had a pregnancy in 2010 compared to 26% in 2005. The second indicator is used in the HSSP III: By age 19, 44% of women had either had a live birth or was pregnant with their first children. In 2005, the figure was 51%. Both figures fall short of the target in the RMNCH plan of 39% by 2010. There is no HSSP III target.

Contraceptive use among unmarried sexually active women aged 15–19 was 34.5% in the TDHS 2010 (12% among married women 15–19). 18% of women 15–19 were married or living together, and 1% had been divorced.

## Equity

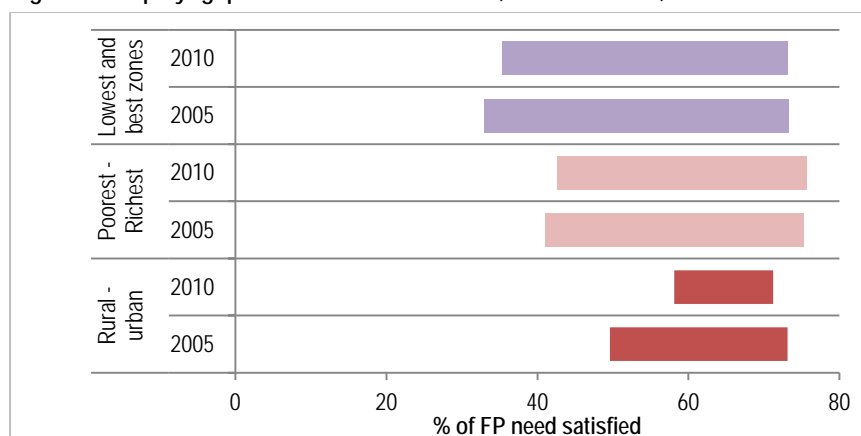
There is a large gap in total fertility rates between urban and rural women: in 2010 urban women had a TFR of 3.7 while rural women had a TFR of 6.1. The urban rural gap however had been reducing since 2005, with no fertility decline among urban women and a modest decline among rural women. The gap between women in the best-off and poorest wealth quintile is even larger but also reduced a little bit during the last five years. Finally, the gap between the zone with the lowest fertility (Eastern, 3.9) and the highest fertility (Western, 7.1) also narrowed somewhat.

Figure 22: Equity: gaps in total fertility rates, 2003–05 and 2008–10, TDHS



A similar picture emerges for the gaps in contraceptive use in 2004–05 and 2010. (Because the demand for FP differs between population groups, the percent of need for modern contraceptives satisfied was selected). The gap between rural and urban women reduced considerably because of improvements among rural women from 49.6% in 2005 to 58.1% in 2010. The gap between the poorest and best-off wealth quintiles remained about the same. Also the gap between the zones with lowest (Western and Lake zones) and highest coverage (Eastern and Southern Highlands) remained similar.

Figure 23: Equity: gaps in need for FP satisfied, 2005 and 2010, TDHS



The age patterns of contraceptive use and need for FP satisfied are indicators of the MNCH roadmap. Among married women, the percent of need for FP satisfied was lowest among women 15–19 (48.2%) and 45–49 (44.4%). This however represents an improvement for the youngest age group since 2004–05 when the met need was 35.9% among 15–19 year olds.

For adolescent fertility the largest differences were observed by place of residence: (15% and 26% of urban and rural women 15–19 had begun childbearing respectively). Also by wealth quintile large differences were observed between the wealthiest quintile (13%) and the lowest three quintiles (28–30%). Differences between the zones in the TDHS 2010 ranged from 16% in Northern to 30% in Western.

## Other indicators

### Service readiness

Two large-scale facility surveys were conducted in 2008–09 (13 districts, NIMR) and 2012 (27 districts, Ifakara Health Institute). About three quarters of health facilities are providing FP services.

Table 10: FP service readiness, district facility surveys (SARA), 2008–09 and 2011

	2008–09	2012
Total Facilities visited (N)	635	1297
Providing FP services (%)	77	83
Number of facilities offering FP	483	1071
Trained staff – with guidelines available (%)	45 (42)	45 (57)
Diagnostics: BP apparatus (%)	85	89
At least two contraceptives in stock (%)	89*	70

\* Oral contraceptives, injectables or male condoms

Among the facilities offering FP services, 58% had a staff member trained in FP and 56% had guidelines as well. This represented an increase from 2008–09. Fewer clinics reported having a BP apparatus, and fewer facilities had at least two modern contraceptives in stock. In 2008–09, 89% of health facilities had two contraceptives in stock. Most commonly these were injectables (91%), followed by oral contraceptives (83%) and male condoms (74%).

83% of health facilities offer FP services, but among those only 70% had at least two contraceptives in stock in 2012.

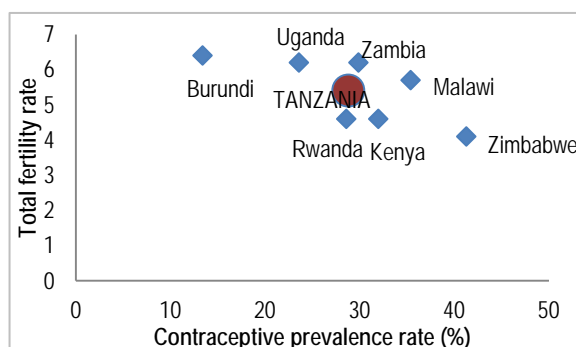
## Comparative analysis

Figure 24: Total fertility and contraceptive prevalence rates, by country, DHS since 2008

The comparative analysis uses data from DHS surveys conducted after 2008 in neighbouring countries for total fertility rates (TFR) and contraceptive prevalence rate among married women.

Among the eight countries with recent data, Tanzania has an

intermediate position, both on TFR and contraceptive prevalence. The current fertility levels in Tanzania mainland are closest to that of Malawi, Kenya and Zambia, but higher than that of Zimbabwe at 4.1 in 2010–11 and lower than that of Burundi at 6.4 in 2010. The contraceptive prevalence rate is very similar to that in Rwanda and Zambia, and lower than in Kenya, Malawi and Zimbabwe.



Tanzania has an intermediate position in fertility level and contraceptive use rate among 11 countries in the subregion.

In terms of adolescent fertility, the proportion of women 15–19 years who have begun childbearing ranges from 6.1% in Rwanda to 37.5% in Mozambique. Among the 11 countries, Tanzania is ranked fifth after Rwanda, Kenya, Burundi and Ethiopia which have much lower adolescent fertility rates. The Tanzania rate (23%) is very similar to Zimbabwe, Uganda, DR Congo and Malawi.

## 3.3 IMMUNIZATION

### Main findings

- Child immunization coverage in Tanzania is high with more than 90% of children receiving pentavalent and measles vaccines. Tanzania has improved its coverage during the first half of HSSP III, and the 2010 campaigns may have contributed. Its immunization coverage rates are among the highest in the African region.
- Coverage is high in all socioeconomic groups. Further improvements can still be made by focusing on children of mothers with no education, the poorest households and rural areas. The post-immunization campaign survey in 2011 showed that DTP3 immunization coverage was above 90% in all regions except Shinyanga (88%). The subnational trends based on health facility data indicate that some regions, such as Kigoma, need special attention.
- Access to services is good: three-quarters of facilities offered child immunization services and according to a large facility survey in 2012, over 90% of those facilities had key supplies such as vaccines and needles in stock at the time of the survey.

#### HSSP III TARGETS & INDICATORS\*

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
DTP3 /pentavalent coverage in children under 1(%)	91% (HMIS 2008)	92% (HMIS 2012)	85%	High coverage, remains well above target.
Measles vaccination in children under 1 (%)	92% (HMIS 2008)	97% (HMIS 2012)	85%	Well above target and increasing to reach nearly all children.

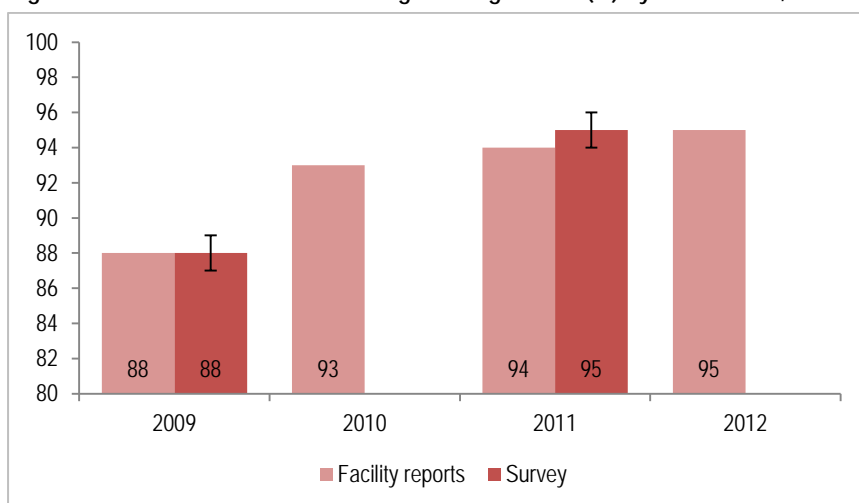
\* Other M&E documents: Ministry of Health and Social Welfare. National roadmap strategic plan to accelerate reduction of maternal, newborn and child deaths 2008-2015. April 2008. The indicators for immunization are the same as for the HSSP III.

#### DATA SOURCES AND QUALITY

- **Surveys:** TDHS 2010 and the national post-immunization campaign coverage survey 2011 are nationally representative surveys that provide information on vaccination coverage among children 12–23 months. About two-thirds of the information was copied from the child health card, the rest was recalled by the mother. Sample sizes for regions, however, are small, causing large sampling errors in regional estimates of immunization coverage.
- **Health facility reports:** reporting by all districts provides annual data, and with the 2012 census denominators for coverage estimates are improved. The HMIS and EPI program have different reporting systems and different numbers for districts.
- **Health facility assessment (SARA):** 2008–09 and 2012 provide information on trends in immunization service readiness.
- **Quality:** good for survey data, but large uncertainty at regional level because of small sample sizes. Facility data are of fairly good quality for national and regional levels with high completeness of reporting and good consistency with survey estimates. The EPI and HMIS facility reports were consistent at the regional and national level, although the EPI data led to slightly high coverage estimates. The alter had higher consistency and were used for this analysis.

## National trends

Figure 25: DTP3 immunization coverage among infants (%) by data source, 2009–12

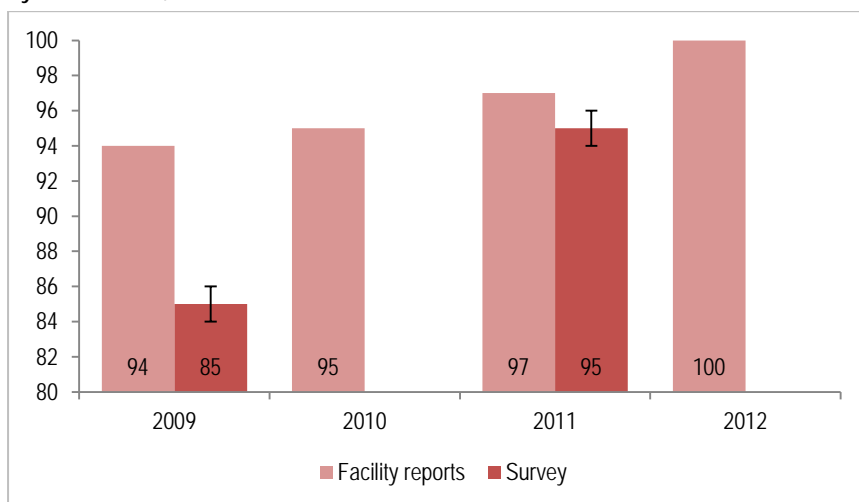


Both the facility reports and the two surveys in 2010 and 2012 (using reported data for children 12–23 months, therefore the data point falls one year before the survey) suggest that DTP3 coverage among children under 1 year is continuing to increase gradually. The survey results indicated that DTP3 coverage among children 12–23 months increased from 88% in TDHS 2009 to 97% in post campaign survey in 2011.

The health facility reports on numbers of vaccinations given to infants also show very high levels of coverage and no sign of a decline in 2012. In total, 1,606,223 DTP3 vaccinations were reported, which was 3.7% higher than in the previous year, and keeping up with population growth. According to the HMIS/EPI information system, about 95% of children received DTP3 vaccinations in 2012.

DTP3/pentavalent and measles immunization coverage rates are very high and have increased during 2009–2012.

Figure 26: Measles immunization coverage among infants (%) by data source, 2009–12

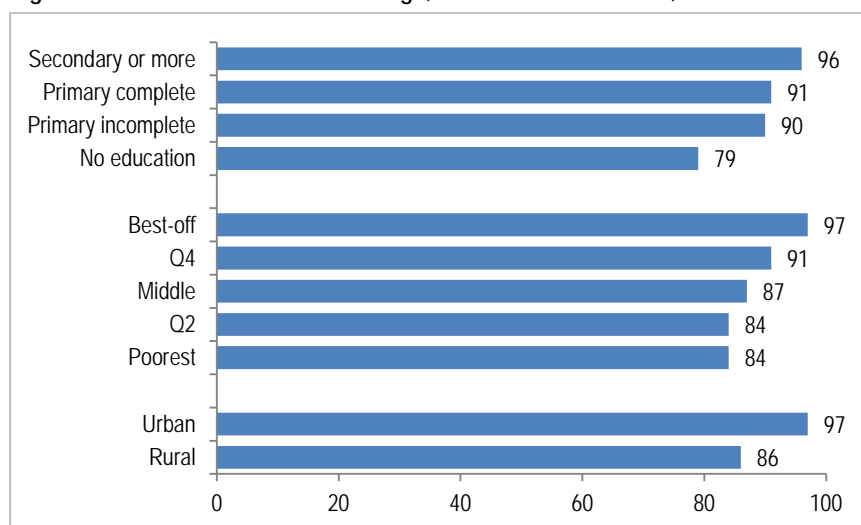


Measles coverage rates are also increasing and well above the HSSP III target of 85%. According to the surveys measles coverage had increased from 85% in the TDHS 2009 to 95% in the 2011–12 post vaccination campaign survey.

For measles, 1,674,344 vaccinations were reported, an increase of 6% compared to the previous year. The facility based coverage rate for 2012 based on the EPI reports was 100%. The true rate may be a little lower because of overreporting of vaccinations during infancy or underestimation of eligible children (based on the 2012 census), but there is little doubt that coverage in Tanzania is very high.

## Equity

Figure 27: DTP3 immunization coverage, children 12-23 months, TDHS 2010

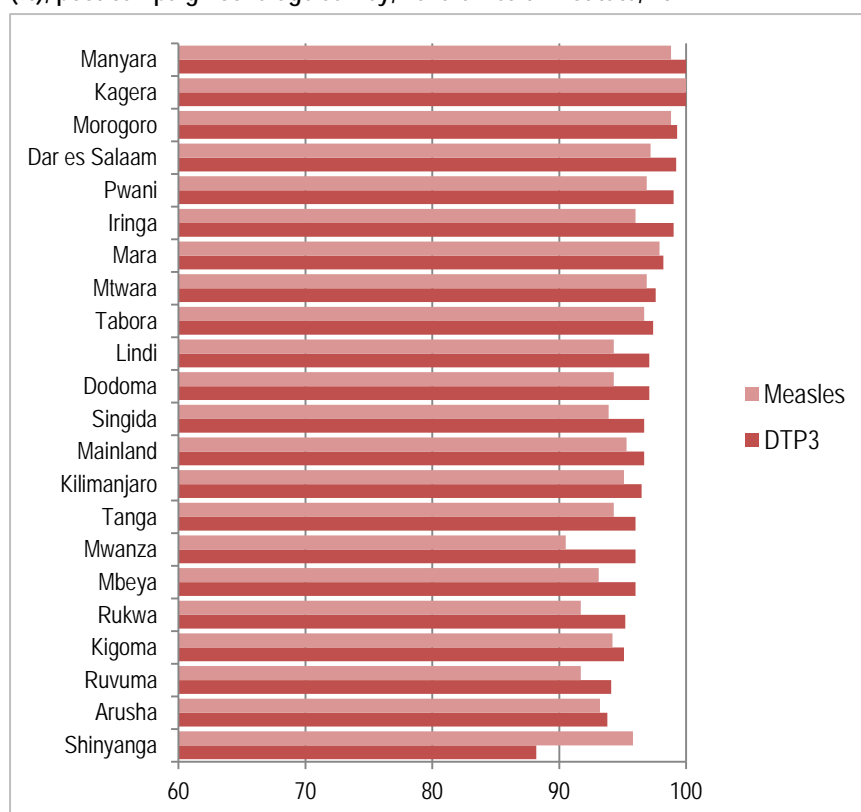


Coverage is high in every socioeconomic group and inequalities are modest.

The socioeconomic inequalities in immunization are small compared to other interventions. According to the TDHS 2010 almost all subgroups have DTP3 coverage over 80%, except children of women with no education (79%). There is a 11% gap between rural and urban children and 13% between children in the poorest and best off households.

For the urban rural gap this is the same situation compared to TDHS 2004–05 when the gap was 10%. The gap by wealth quintile however reduced as it was 20% in 2004–05.

Figure 28: Measles and DTP3 immunization coverage among children 12-23 months (%), post-campaign coverage survey, Ifakara Health Institute, 2011



DTP3/pentavalent and measles immunization coverage rates are very high in all regions by 2012.

Regional differences have narrowed down since 2009.



The post-campaign coverage survey in 2011 showed that coverage of DTP3/pentavalent and measles vaccines was high throughout the country. Only Shinyanga region had DTP3 coverage rate below 90% (88%). All other regions had DTP3 coverage rates of 93% or higher. All regions had measles coverage rates above 90%.

These differences between regions are smaller than a year earlier in the TDHS 2010: two zones had DTP3 below 85% (numbers were too small for regional coverage rates): Western (Kigoma, Shinyanga, Tabora – 74%) and Southern (Lindi, Mtwara, Ruvuma – 82%).

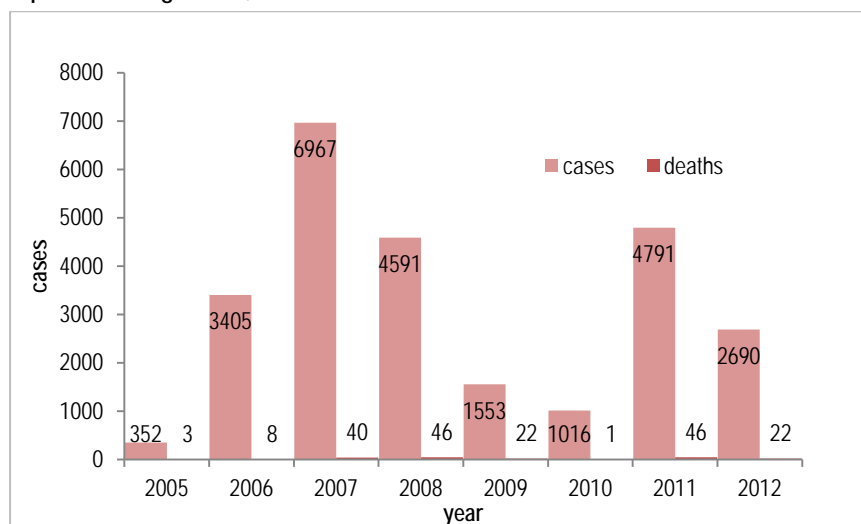
The HMIS-EPI data for 2012 allow an assessment of very recent trends. Small natural fluctuations on fertility and thus eligible infants affect the coverage estimate and our ability to detect small changes in coverage from year to year. In 2012, five regions had DTP3 immunization coverage just below 90%: Dar es Salaam, Mwanza, Kigoma, Iringa and Morogoro. For measles Dar es Salaam, Mwanza and Morogoro were below 90% in 2012. Compared to 2011, there was a slight decline in the numbers of vaccinations given in Dar es Salaam and Mwanza regions.

With such high levels of coverage district level estimation will lead to many coverage rates exceeding 100%. This is because district boundaries can easily be crossed to obtain vaccinations, and because denominators fluctuate from year to year. According to facility data the proportion of districts with DTP3 coverage below 80% was down from 27% in 2009 to 18% in 2011 and to 8% in 2012. The number of districts with coverage rates of 90% or higher increased from 55 in 2010 to 61 in 2011 and 85 in 2012 (71%), out of 119 districts in total.

## Other indicators

### Measles cases and deaths

Figure 29: Number of measles cases and deaths by year, reported through IDSR, 2005–10



Measles cases and deaths are still reported.

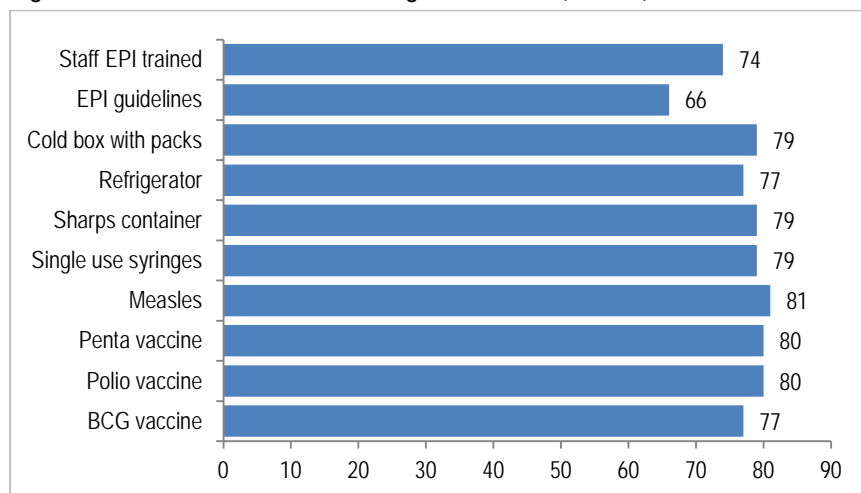
In spite of the very high levels of measles vaccination coverage, outbreaks and isolated cases and deaths continue to be reported through the Integrated Disease Surveillance Reporting System (IDSR). In 2012, 2690 cases were reported and 22 deaths. In 2011, nearly 5000 cases were reported and 46 deaths. Case fatality rates were below 1% in both years (0.96 and .84% respectively). True case rates may be higher as IDSR reporting is incomplete.

## Acute flaccid paralysis

In 2012, 100 cases were reported and 1 death occurred. This was similar to 2009 (109 cases and 1 death), 2010 (60 cases and 1 death) and 2011 (77 cases and 1 death). Dar es Salaam region reported the largest number of AFP cases, with an annual average of 17 cases. Other regions that reported the largest average number of cases ( $\geq 5$  cases per year) were Shinyanga, Pwani, Manyara and Lindi.

## Service readiness

Figure 30: Readiness of clinics offering EPI services (N=1029), IHI-SARA 2012



8 out of 10 facilities offering vaccination services had vaccines in stock.

Guidelines were missing in 34% of facilities in 2012 and 23% had no refrigerator.

Public facilities score better than private facilities.

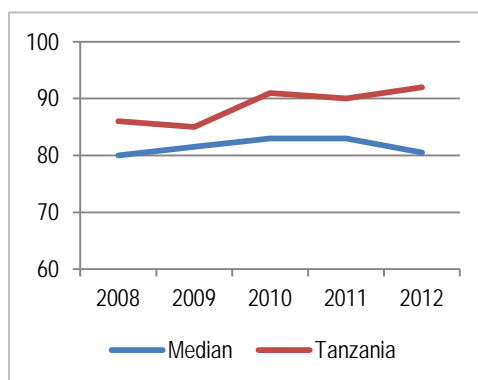
Two large-scale facility surveys were conducted in 2008–09 (13 districts, NIMR) and 2012 (27 districts, Ifakara Health Institute). The 2008–09 included only a few immunization questions and is not included here. About three-quarters of health facilities are providing immunization services. Among those facilities offering immunization services, about 80% had vaccines in stock, single use syringes, sharps container and other key items. Almost one-fourth of facilities offering immunization services had no refrigerator.

Public facilities scored better than private facilities on all items. For instance, 81% of public facilities had a refrigerator compared to 62% of private facilities; 83% of public facilities had pentavalent vaccine in stock compared to 67% of private facilities.

## Comparative analysis

Figure 31: DTP3 immunization coverage, Tanzania and median of 10 subregional countries, 2008–2012, WHO/UNICEF estimates

The comparative analysis uses data from WHO/UNICEF estimates for 10 subregional countries and Tanzania. These estimates are based on survey and facility data and are usually very close to the country official estimates. For both DTP3 vaccination coverage Tanzania is performing well above the subregional group of nine countries since 2010. In 2008, Tanzania was ranked sixth in DTP3 coverage. In 2012, Rwanda, Burundi and Malawi had slightly higher coverage than Tanzania in 2012.



Tanzania's immunization programme is a top performer in the subregion.

## 3.4 CHILD HEALTH AND NUTRITION

### Main findings

- In general, there are no major changes in the child health indicators during the first half of HSSP III. The proportion of children stunted and underweight have declined for the first time in the last decade according to the NPS 2010–11. But very large gaps between urban and rural children persist. Compared to other countries in the (sub)region, Tanzania is an average performer on the anthropometric indicators.
- The coverage of child health interventions, such as vitamin A supplementation, breastfeeding practices, treatment of sick children (ARI, diarrhea) either improved slightly or remained the same. Child health services were provided by most health facilities, but there are still gaps in the availability of trained staff, equipment, diagnostics and medicines. The child health service readiness did not improve during 2009–12.

#### HSSP III TARGETS & INDICATORS\*

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
Underweight among children under 5	22% (TDHS 2004–05); 16% (NPS 2008)	20.5% (TDHS 2010); 13.5% (NPS 2011)	14%	Old NCHS growth standard used; declined and reached the target.
Stunting among children under 5	38% (TDHS 2004–5); 43% (NPS 2008)	36% (TDHS 2010) 35% (NPS 2011)	22%	Improvement since 2008, but well off target.
Vitamin A supplementation coverage (2 doses/year)	95% (HMIS 2007); 46% (TDHS 2004–05)	60% (TDHS 2010)	-	Improvement since 2004–05

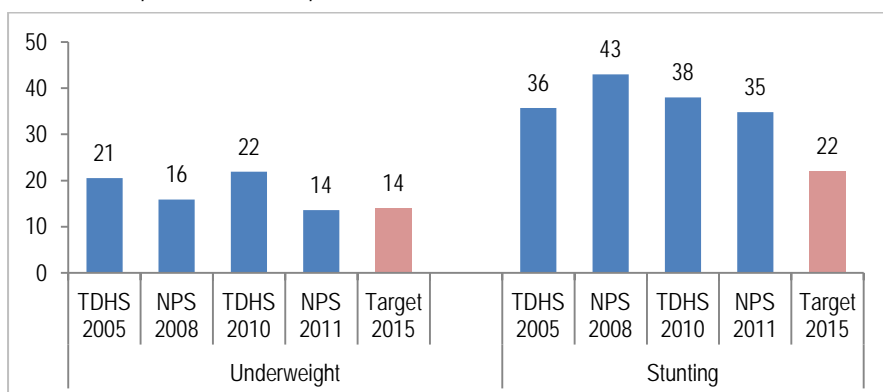
\* Other M&E documents: Ministry of Health and Social Welfare. National roadmap strategic plan to accelerate reduction of maternal, newborn and child deaths 2008-2015. April 2008. Indicators for FP are: Total fertility rate, age-specific fertility rate; contraceptive prevalence rate by age group and socio-economic quintiles, met need for family planning by age, number of individuals accepting contraceptives new acceptors; Number of service delivery points per 500,000 population offering the full range of contraceptive information counseling and supplies.

#### DATA SOURCES AND QUALITY

- **Surveys:** TDHS 2004–05 and 2010, and National Panel Survey 2008 and 2011–12, are nationally representative surveys that provide high quality and detailed information on child anthropometry. TDHS also provides data on vit. A supplementation and child health seeking behaviour for common illnesses.
- **Health facilities reports:** provide data on morbidity (clinical diagnosis) and interventions such as vit A supplementation
- **Health facility assessment (SARA):** 2008/09 and 2012 provide information on trends in readiness to provide integrated child health services
- **Quality:** good data on child anthropometry from surveys; data on treatment of childhood illness from surveys are only indicative as there is no proper measurement of need for treatment. Facility data on vitamin A have variable quality. The NCHS/CDC/WHO growth standard is used in this section as the target for 2015 used this standard. Since 2006 WHO launched new child growth standards as international reference.

## National trends

Figure 32: Underweight and stunting prevalence among under-fives (%), DHS 2005-10, NPS 2008-2011, NCHS/CDC/WHO standard



Child anthropometric indicators showed little change according to the TDHS 2004/05, NPS 2008 and TDHS 2010. The results of the 2010–11 NPS however showed lower rates of underweight and stunting than the TDHS 2010. All rates in the graph refer to below minus 2 standard deviations of the old WHO global standard. In the NPS 2011 the prevalence of underweight was as low as 14%. Which would imply that the 2015 target of 14% has been reached. The TDHS 2010 results however recorded no decline with 22% of children underweight. Note that the sample of the NPS (2,307 mainland children under 5 years in 2010–11) is considerably smaller than that of the TDHS (7,265 in 2010).

The proportion of children who are stunted – a sign of chronic undernutrition – was also lower in the NPS 2010–11 than in the TDHS 2010 but the difference was much smaller. The NPS 2011 showed a decline to 35% which is significantly lower from the previous survey in 2007/08 (43%). In the TDHS 2010, 35% of children were stunted, just 01% lower than in the TDHS 2004–05. The target of 22% is however still a long way to go. that was released in 2006

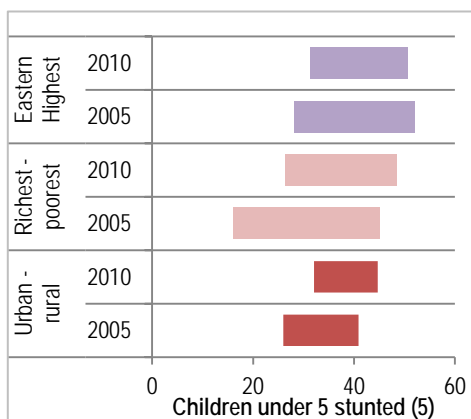
If the new WHO child growth standard launched in 2006 is used, the stunting levels go up and the underweight levels go down. Stunting in the TDHS 2010 is as high as 42%, down from 44% in TDHS 2004–05. Underweight rates are 16% in TDHS 2010, compared to 17% in TDHS 2004–05.

Vitamin A supplementation coverage is measured in the TDHS. In 2010, 60% of mainland children 6-59 months received vitamin A supplementation in the past six months. This was up from 46% in the TDHS 2004/05. The HMIS data were not used for this analysis.

## Equity

Figure 33: Equity: gaps in child stunting, TDHS 2005 and 2010

There are large differences between urban and rural child in child stunting persisted. For instance, children living in the poorest 20% of households had 48% stunting (below -2SD), compared to 26% among those living in the wealthiest 20% of households. Zonal differences were also large. Eastern zone children had the lowest level of stunting in both years but still had 31% of children under 5 stunted in 2010.



There was little change during 2005-2010 in both indicators of child nutritional status.

The NPS 2010/11 indicates a better nutritional status than the TDHS 2010, especially for stunting.

Very large gaps in child stunting for all stratifiers.

Eastern zone children have the lowest rate of stunting in both surveys.

Poor and rural children have 1.5 times higher levels of stunting than better off and urban children respectively.

Geographical variation was limited with the exception of the Western zone where coverage was only 30%, half of national average. Urban rural differences were small and also by wealth quintile the range from 53% among the poorest and 70% among the best off quintile was smaller than for many other indicators.

## Other indicators

Several indicators aim to assess childhood illness treatment patterns. These indicators are not part of the core set of indicators in HSSP III. The section on mortality described the morbidity and mortality patterns among children under five years, and showed that malaria, ARI/pneumonia and diarrhoeal diseases are lead causes. Malaria is dealt with in a separate chapter.

The proportion of children with *suspected lower respiratory tract infection who were taken to a health facility* is based on a question about the prevalence of symptoms of acute respiratory infection in the two weeks preceding the survey. If a child has cough accompanied by short rapid breathing it is considered suspected pneumonia and the child should be assessed by a health worker. In 2010 4.3% of children under five years had such symptoms according to their mothers or caretakers (8% in 2004–05). Among those children 71% were taken to a health facility. This is higher than in 2004–05 when it was 57% (but included both ARI symptoms and/or fever).

Almost 15% of children had *diarrhea* in the two weeks preceding the TDHS 2010 (13% in 2004–05). Among those 53% was taken to a health facility (47% in 2004–05), 44% received ORS packets (54% in 2004–05), and 63% (70% in 2004–05) received increased fluids or oral rehydration therapy.

There are several additional indicators that are not part of the core set of the HSSP III that provide information on trends in intervention coverage.

*Breastfeeding* is nearly universal in Tanzania: 97% of children were ever breastfed in 2010 (96% in 2004–05). Among those breastfeeding was initiated within the first hour after birth for 49% of newborns (59% in 2004–05), and 94% within the first day (92% in 2004–05). Among children 0-5 months 50% were exclusively breastfed, compared to 41% in 2004–05. Among breastfed children 6-9 months 93% received complementary foods, compared to 91% five years earlier.

There was no increase in the proportion of children living in households with adequately *iodized salt*, from 43% in 2004–05 to 40% in 2010. The gaps by residence and wealth quintile are large, with 67% urban coverage and only 33% rural coverage and ranging from 27% among the poorest to 72% among the best-off.

*Anemia prevalence* in children was lower in 2010 than in 2004–05. The prevalence of moderate to severe anemia (less than 10 g/dl) declined from 47% to 31%. According to the TDHS 35% of children under five years had iron deficiency including 24% who had anemia (mild or worse) and 11% who had no anemia.

Among women 15-49 years it also declined from 16% to 11%. The socio-economic and demographic differences for anemia prevalence tend to be relatively small compared to many other indicators. 30% of women had iron deficiency, including 16% who also had anemia. Among all anemic women about 40% had iron deficiency.

Anemia prevalence has declined during 2005-2010 among children and pregnant women.

### Service readiness

Two large-scale facility surveys were conducted in 2008–09 (13 districts, NIMR) and 2012 (27 districts, Ifakara Health Institute). About three quarters of health facilities are providing child health services.

No improvement in service readiness for child health during 2009–2012.

**Table 11: Integrated child health services, district facility surveys (SARA), 2008–09 and 2011**

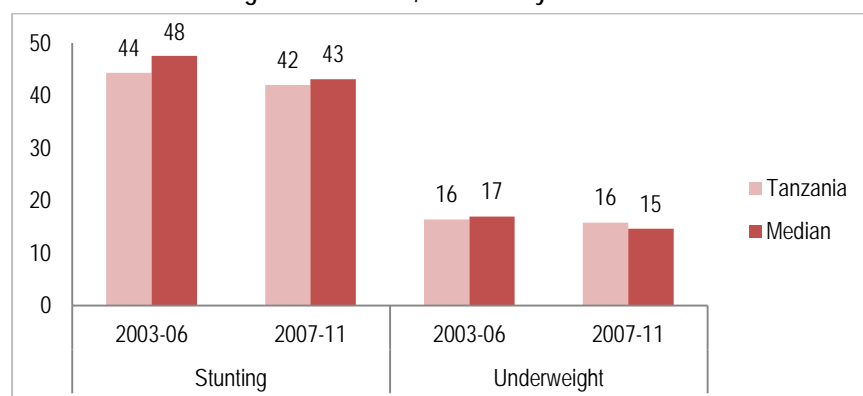
	2008–09	2012
<b>Total Facilities visited (Number)</b>	<b>625</b>	<b>1297</b>
Providing child health services/IMCI (%)	68	82
<b>Facilities offering child health services (Number)</b>	<b>423</b>	<b>1127</b>
At least one trained staff IMCI (%)	38	42
Guidelines IMCI (%)	59	52
Child scale (%)	92	76
Stethoscope (%)	92	87
Thermometer (%)	95	81
Growth chart (%)	-	75
Diagnostics: Hb (%)	33	19
Diagnostics: parasite in stools (%)	-	12
ORS packet (%)	85	87
Amoxicillin suspension/syrup (%)	-	79
Septtrin suspension/syrup (%)	54	77
Paracetamol suspension/syrup (%)	53	100
Vitamin A capsules (%)	73	89
Zinc tablets (%)	-	54
Mean readiness score		65

The comparison shows a similar picture in the two surveys and definitely no improvement. In 2008–09 the question was related to whether IMCI services were offered, while in 2012 it was asked whether the facility provided preventive and curative child health services. This may explain the difference in the proportion of facilities offering child health services. There are gaps in training and guidelines, equipment diagnostics and medicines in both years and HSSP III does not appear to have brought about major changes. The main change is the increase in amoxicillin and co-trimoxazole syrup/suspension, and the decline in the availability of vitamin A capsules, which points to a major supply problem in 2012.

## Comparative analysis

The comparative analysis uses data from DHS surveys conducted after 2008 in seven neighbouring countries with two surveys, one during 2003–2006 and one during 2007–11.

**Figure 34: Comparison of underweight and stunting trends in Tanzania and the median of 7 regional countries, DHS surveys**



Tanzania's rates of stunting and underweight are similar to the median of other countries in the region.

In general, Tanzania's stunting and underweight rates are close to the median of the seven countries. In the most recent period, Tanzania had the third lowest stunting rate, after Zimbabwe and Kenya. This situation also prevailed during 2003–06. For underweight, Tanzania had the third lowest rate in 2003–06 and fifth lowest in 2007–11, after Zimbabwe, Rwanda, Malawi and Zambia which all had rates below 15%.

# 4

## MALARIA, HIV/AIDS, TB & OTHER INFECTIOUS DISEASES

### 4.1 MALARIA

#### Main findings

- The evidence suggests that *malaria mortality and morbidity* in Tanzania mainland have declined during HSSP III, and probably also before. Malaria is still a leading cause of morbidity and mortality but rates have come down. Health facility data are suggestive of a reduction in malaria morbidity and mortality, particularly in children under 5. National parasitemia rates by rapid diagnostic tests in household surveys also appear to have declined substantially 2007–08–2011–12, with major regional differences and difference between children in the poorest and the best-off wealth quintiles persisting.
- *Insecticide treated net (ITN) use* increased dramatically: three quarters of children and pregnant women used ITN, a threefold increase during 2007–08–2011–12 and close to the 2015 target. *Intermittent preventive therapy* with two doses of SP/Fansidar during pregnancy however remained low and did not increase, with the poorest pregnant women having a coverage of only 25%. The use of ACT in children with fever in the last 2 weeks increased from 24% to 33%, while ACT availability in clinics remained at 80% according to the facility surveys. The availability of malaria diagnostic tests increased dramatically from 30% to 75%, due to rapid diagnostic tests.

#### TARGETS & INDICATORS\*

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
Prevalence of malaria parasitemia (under 5 years)	18% (2008 THMIS)	9.2% by RDT in 2011–12	10% by 2010; 5% by 2015	Close to target: major reduction but trend needs to be interpreted with caution
Proportion of laboratory confirmed malaria cases among all OPD visits (disaggregated < 5 and over 5)	(40% <5, 2009) (32%, <5, 2009)	(33% <5, 2012, HMIS) (29%, 5+, 2012, HMIS)	-	No data on lab confirmation, clinical malaria may be used as proxy; rapid decline
Proportion of mothers who received 2 doses of IPT for malaria during last pregnancy	30% for 2 doses (58% for 1 dose)	31% (THMIS 2011–12)	60% by 2012 80% by 2015	Limited progress, not on target. Baseline was corrected
Proportion of vulnerable groups (pregnant women 15-49 years of age, children under 5) sleeping under an ITN the previous night	26% (child) 27% (PW) (THMIS 2007/8)	73% (children) 76% (PW) (THMIS, 2010/11)	60% by 2010 80% by 2015	Both indicators are ahead of 2015 target schedule

\* Other M&E documents: Ministry of Health and Social Welfare, Malaria Control Program: National malaria medium term strategic plan 200-2013. The M&E component has five leading indicators with targets, some of which are used in HSSP III.

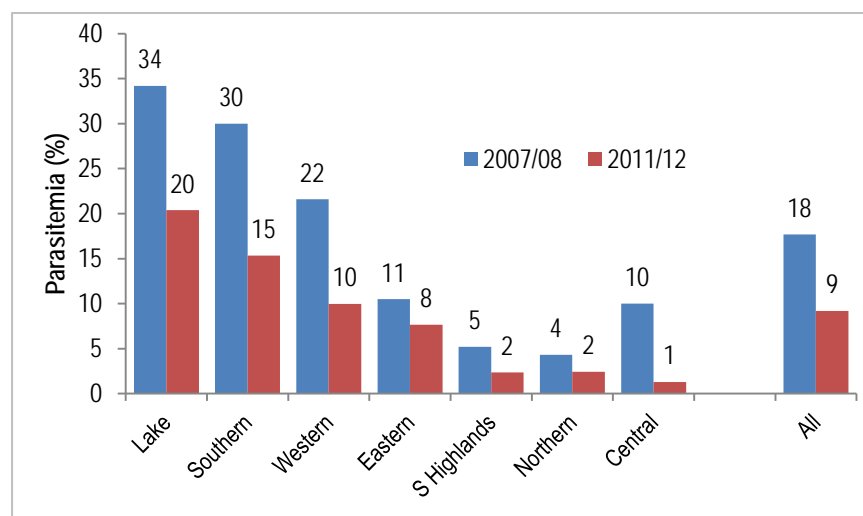
## DATA SOURCES AND QUALITY

- **Surveys:** Tanzania HIV/AIDS and Malaria Indicator Survey 2011–12, 2007–08 (and 2003–04), TDHS 2010 . The survey data provide data on overall mortality and coverage of interventions.
- **Health facilities:** HMIS annual reports for OPD data and hospital admission/discharge diagnoses and causes of death.
- **Quality:** the survey data are of good quality for child mortality trends and malaria parasitemia (but changes in testing procedures and seasonality may affect comparability), and coverage of preventive interventions. Malaria treatment data from surveys are less reliable, as they are based on recall of symptoms and health seeking behaviours. The health facility data can only provide a general indication of trends and overall OPD and hospital reporting is affected by incomplete reporting. ICD-10 is not used in hospitals.

## Mortality and morbidity

All-cause under-five mortality is often used as an indicator of the impact of malaria control measures, because it is difficult to attribute child deaths to malaria and because malaria contributes to other causes of death in childhood. Under-five mortality has been declining rapidly since the nineties (see mortality section).

Figure 35: Malaria parasitemia among under-fives, by zone, THMIS 2007–08 and 2011–12



Declines in malaria parasitemia rates the last 4 years in all zones of Mainland.

Different RDTs were used in the two surveys, therefore the trend needs to be interpreted with caution.

Malaria parasitemia in children under five years, as measured by rapid diagnostic test (RDT), declined from 17.7% to 9.2% during 2007–08 to 2011–12. Urban and rural parasitemia rates both halved to 3.3% and 10.4% respectively.

The trend results have to be interpreted with caution because different rapid diagnostic tests were conducted in the two THMIS. Also, the seasons of field work differed which may affect comparability. In 2011–12 THMIS, the proportion of children positive according to microscopy was much lower than for RDT, 4.1%.

Research from Ifakara DSS shows a decline of malaria parasitemia among all ages from 25% in 2004 to about 5% in 2009 and 2010.

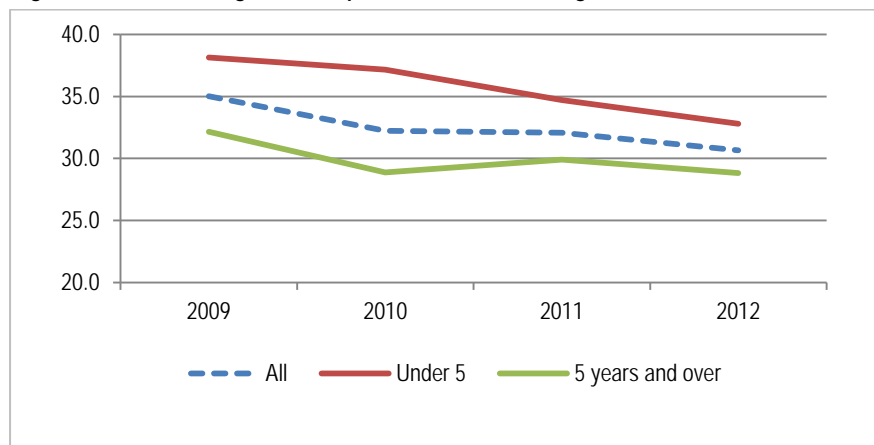
Research confirms a decline in parasitemia.

The decline occurred in all zones, while major regional differences in transmission persisted (using the 2007–08 grouping of regions). The Southern Highlands, Northern and Central zones have low prevalence of parasitemia,



presumably associated with geographic features such as altitude. Lake, Southern, Western and Eastern regions also observed large declines between 2007–08 and 2011–12, but remained high. Regional sample sizes in the surveys are small leading to large confidence intervals, but it appears that Geita, Kigoma, Mwanza, and Mara regions in the Lake and Western zones, Morogoro and Pwani in the Eastern zone, and Lindi, Mtwara and Ruvuma in the Southern zone have higher prevalence than elsewhere.

Figure 36: Malaria diagnoses as percent of all OPD diagnoses, HMIS 2009–12 (%)



There are no reliable data on the third HSSP III indicator, the proportion of lab confirmed malaria cases among OPD visits. The proportion of malaria diagnoses as a percent of all OPD diagnoses during 2009–2012 dropped considerably. This was most prominent among children under five years of age (see also mortality and morbidity chapter). This trend has to be interpreted with caution as there are differences in completeness in reporting by health facilities over time that may affect trends.

Similarly, malaria is a leading cause of admissions for children under five years, but according to the HMIS admissions data, there has been a large decline during 2009–2012. In 2012, 40% of all admissions were diagnosed as malaria. There has been a decline in the relative importance of malaria, but the trend has to be interpreted with caution because of changes in diagnosis and coding practices.

There are several hospital studies that show favourable trends among admissions although much of it was prior to 2008. For instance, Ifakara district hospital shows a decline in malaria admissions in children under five from 2003 and in slide positivity rates from 2000–06 but little change during 2006–10.

Figure 37: Proportion of deaths in hospitals due to malaria, by age group, HMIS 2009–12

Malaria is by far the leading cause of mortality among children under five. In 2012, 30% of child deaths in hospitals were caused by malaria.

This however represents a significant decline since 2009. Also among deaths at ages 5 years and older malaria is the leading cause of deaths in hospitals. Just over one-fifth of deaths were caused by malaria in 2012, and there is little evidence of a large decline as is the case for the under-fives.

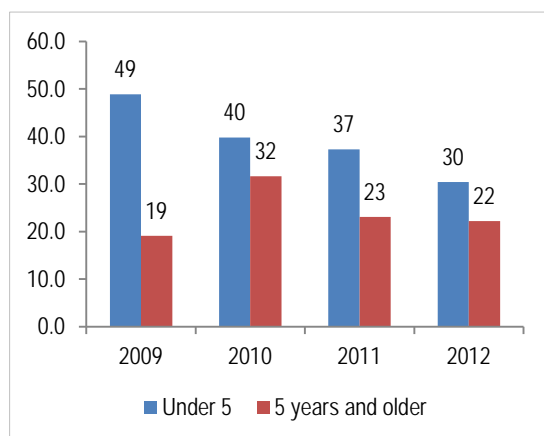
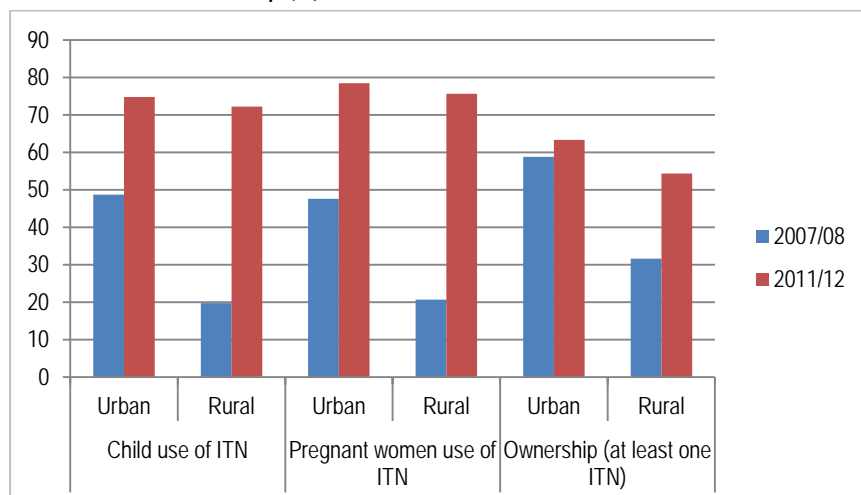


Figure 38: Children under five and pregnant women use of ITN and household ownership (%), THMIS 2007–08 and 2011–12



Major progress in ownership and use of ITN since 2008.

Rural ownership almost doubled and use by children and pregnant women increased three fold.

Dramatic progress was made in the ownership and use of ITN. During 2007–08 to 2011–12 the proportion of children under five years who slept under an ITN increased from 25% to 74%, pregnant women from 26% to 76%. The increase in household ownership of ITN increased, somewhat less, from 38% to 57%. The 80% target for 2015 is already within reach. There is limited variation in ITN use between zones or region.

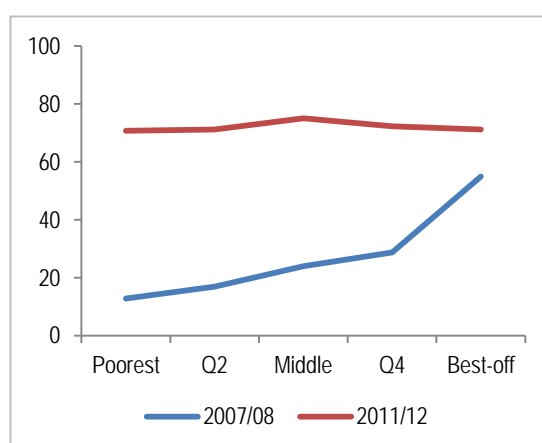
The bulk of the increase occurred in rural mainland where malaria transmission rates are highest. The gap between rural and urban populations was closed in four years, even when urban indicators were also improving.

Progress on the coverage of intermittent preventive therapy (IPT) was minor. The mainland coverage of two doses of SP/Fansidar during antenatal visits (IPT2) went from 29.6% in 2007–08 to 31.3% in 2011–12.

## Equity

Figure 39: Use of ITN by children of 5 during the last night, by wealth quintile

Parasitemia rates, as measured by RDT, differs considerably between the poorest and best-off children. In 2011–12 children in the best-off quintile had a prevalence of 1.3% compared with 12.6% in the poorest quintile, a tenfold difference. Yet, major declines in parasite prevalence (with the caveat of different tests used) occurred in all wealth quintiles.

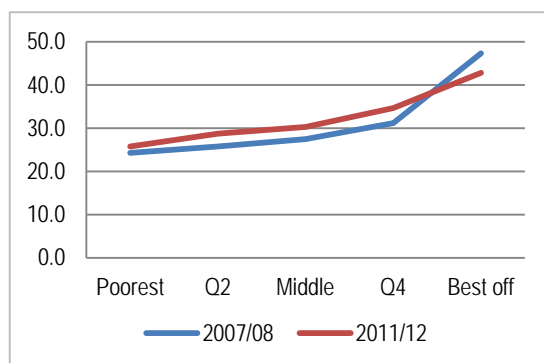


The big equity gap in 2007–08 in the use of ITN was completely closed by 2011–12.

In 2011–12, the percent of children under five who slept under an ITN during the last night showed no differences between boys and girls, between urban and rural children, and by wealth quintile. Also for pregnant women there were no major differences between urban and rural areas or by wealth quintile. This presents major progress among the poorest in Tanzania, as in 2007–08 coverage among the better-off households was much higher than among the poorest.

Figure 40: IPT2 coverage among pregnant women by wealth quintile

Progress on the coverage of intermittent preventive therapy (IPT) was minor for all wealth quintiles. The poorest wealth quintiles still have the lowest IPT2 coverage, only 25%, with no progress. Women in the best-off quintile have higher coverage rates but are still below 50%.



No wealth quintile scores above 50% coverage with IPT2, though the top quintile still scores better.

## Other indicators

### Malaria treatment

Other indicators are included in the Malaria Control strategic plan and include treatment of fever/malaria and use of indoor residual spraying (IRS). For about one in five children the mother reported fever in the last two weeks in household surveys. This indicator remained the same (19% and 21% in 2007–08 and 2011–12). Among those children 34% received ACT (21% on the same or next day of the fever) in 2011–12, compared with 25% (14%) in 2007–08. The proportion receiving any antimalarial remained the same (58 and 59% in 2007–08 and 2011–12 respectively).

Among children with fever, 34% received ACT in 2011–12, up from 21% in 2007/8.

### Indoor residual spraying

IRS is limited to a few regions. Only in Lake Region was more than one-third of households sprayed in the year preceding the 2011–12 THMIS. Overall, only 11.6% of households were sprayed in the year prior to the THMIS. IRS in 2007–08 only 3.9% of households had been sprayed in the last year.

### Service readiness

Two large-scale facility surveys were conducted in 2008–09 (13 districts, NIMR) and 2012 (27 districts, Ifakara Health Institute). Malaria services are provided in Tanzania using the DOTS strategy. Almost 9 out of 10 health facilities offer malaria diagnosis and treatment.

Table 12: Malaria service readiness in facility surveys, 2008–09 and 2012 (%)

	2008–09	2012
<b>Number of facilities</b>	<b>635</b>	<b>1297</b>
Offering diagnosis (%)	81	86
Offering treatment (%)	97	86
<b>Number of facilities with malaria treatment services</b>	<b>603</b>	<b>1209</b>
Trained staff (diagnosis and treatment) (%)	66	59
Guidelines available (%)	64	60
Trained IPT (%)	-	37
Guidelines IPT (%)	-	45
Diagnostic capacity on site (lab test available) (%)	30	75
ACT in stock (%)	80	77
SP/Fansidar (%)	80	78
ITN (%)	-	61

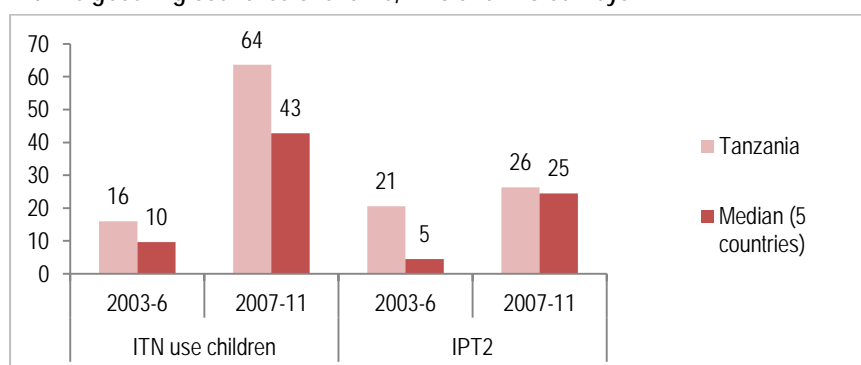
Among the facilities offering treatment, 59% had at least one staff trained in diagnosis and treatment, about the same as in 2008–09 (66%). A similar proportion had a copy of the guidelines. Diagnostic capacity on-site improved markedly from 30% in 2008–09 to 75% in 2012. This is mainly due to the major improvement in the availability of rapid diagnostic tests, which was only 6% of facilities in 2008–09.

The availability of ACT was the same in both facility surveys with 4 out of 5 facilities having the first line drug in stock on the day of visit. SP/Fansidar, used for IPT, had similar stock levels.

The service readiness was better in 2012 than in 2009 because of RDT availability, while ACT and SP availability remained the same.

## Comparative analysis

Figure 41: Comparison of ITN use (children) and IPT (2+ doses) in Tanzania with neighbouring countries over time, DHS and MIS surveys



In comparison Tanzania is among the higher coverage countries for malaria interventions in the region.

The comparison of survey data from five neighbouring countries with two data points in the last 10 years (Malawi, Rwanda, Kenya, Uganda, Zambia) shows that Tanzania is among the higher coverage countries for malaria interventions. For the indicator children sleeping under a ITN during the last night, Tanzania had the highest coverage in 2003-206 and second highest after Rwanda in 2007-11. IPT2 coverage in Tanzania was among the highest in 2004–05, but it dropped to third place well after Zambia (63%) and Malawi (54%) in the most recent period.

## 4.2 HIV/AIDS

### Main findings

- HIV transmission has been going down slowly since 2003, but number of people living with HIV remain the same due to population growth and longer survival on treatment. HIV prevalence rates are declining slowly but steadily, in urban areas and rural men, but not among rural women. Differences between the regions remain but are narrowing down with the low prevalence regions going up and the high prevalence regions going down. People with highest socioeconomic status have the highest prevalence. There is evidence of a modest reduction in new infections among young women, but there are still an estimated 110,000-140,000 new infections every year.
- Access to and coverage of PMTCT and ART continue to increase according to HSSP III national targets. There is good access to eMTCT (93% of RMNCH clinics) and coverage of ARV prophylaxis among HIV positive women has increased to 77%. ART coverage rates are on target and have increased to 53% (65%) of adults and 31% (48%) of children: 260,000 adults and 21,000 children were on ART by the end of 2011. Treatment is initiated earlier and survival rates in the first year have improved to 93% among those who initiated in 2010. Loss to follow up from the initial ART clinic is still a major challenge (25%).

## PREVALENCE AND INCIDENCE

### TARGETS & INDICATORS\*

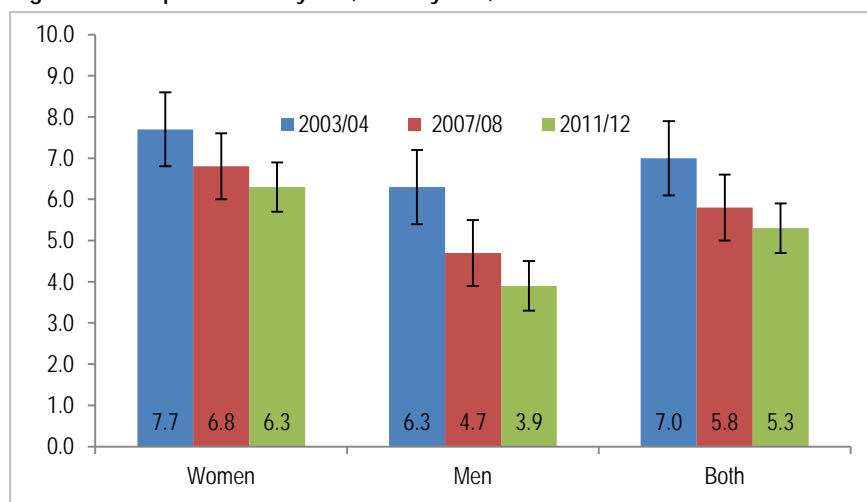
Indicator	Baseline (Year)	Achievement	Target 2015	Comments
HIV prevalence among 15-24 years (W/M)	3.6% (women) 1.1% (men) (2007-08)	2.8% (W) 1.2% (M)	-	HIV prevalence among 15-24 years (W/M)
HIV prevalence among pregnant women (15-24)	6.8% (2005-06)		-	HIV prevalence among pregnant women (15-24)
HIV prevalence among 15-49 year (W/M)	6.8% (W); 4.7% (M); 5.8% (both) TDHS 2007-08	6.3% (W); 3.9% (M) 5.3% (both) TDHS 2011-12	-	HIV prevalence among 15-49 year (W/M)

\* Other M&E documents: Ministry of Health and Social Welfare: Health sector HIV and AIDS strategic plan 2008-2012, M&E plan has about 8 indicators for thematic area of prevention; Prime Minister's Office. National multisectoral HIV prevention strategy 2009-2012. November 2009 (reduce new infection rate & number by 25% by 2012, from 1% in 2008 to .85% in 2012 and .75% in 2015, with about 40 programme indicators); Tanzania Commission for AIDS (TACAIDS): 2nd national multi-sectoral strategic framework on HIV and AIDS 2008-2012, with M&E system operational plan 2006-2012.

### DATA SOURCES AND QUALITY

- **Surveys:** Tanzania HIV/AIDS and Malaria Indicator Survey 2011-12, 2007-08 (and 2003-04).
- **Health facilities:** NACP HIV surveillance report 21 (2008) and 22 (2011): the last round of data collection from sentinel surveillance antenatal clinics was done mid-2008.
- **Estimates:** bi-annual estimates of the HIV epidemiological indicators using UNAIDS models.
- **Quality:** the surveys data are of good quality and provide a good idea of prevalence in the regions.

Figure 42: HIV prevalence by sex, 15–49 years, THMIS

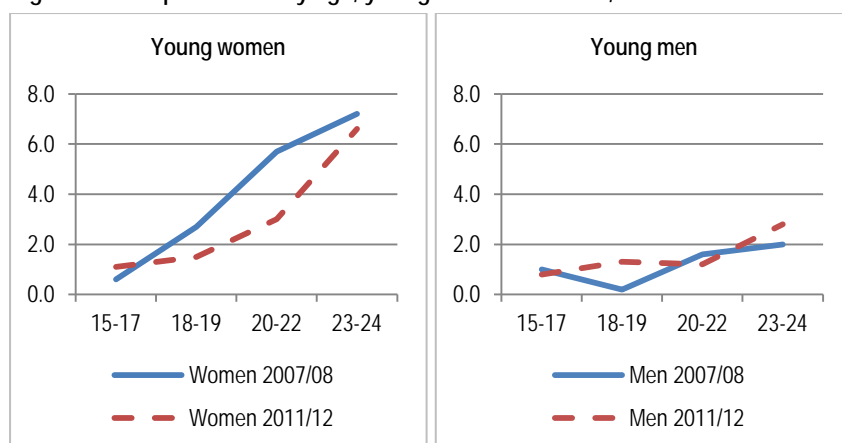


HIV prevalence among women and men has declined during 2007–08 and 2011–12.

HIV prevalence among 15–49 years old women and men in the general population continued to decline during 2008–12, and more so among men than among women. The decline had already started before 2008. In 2011, there were about 1.3 million adults (UNAIDS) and 136,000 children (CTC report) living with HIV.

The age patterns for women and men remained similar in 2011–12 to 2007–08 but there was a shift of the mean age of those who were infected. This “ageing” of the epidemic was especially clear for women where the average age of an infected woman increased from 34.6 to 36.3 years (36.7 to 37.5 years for men). This is likely to be due to mainly ART.

Figure 43: HIV prevalence by age, young women and men, THMIS



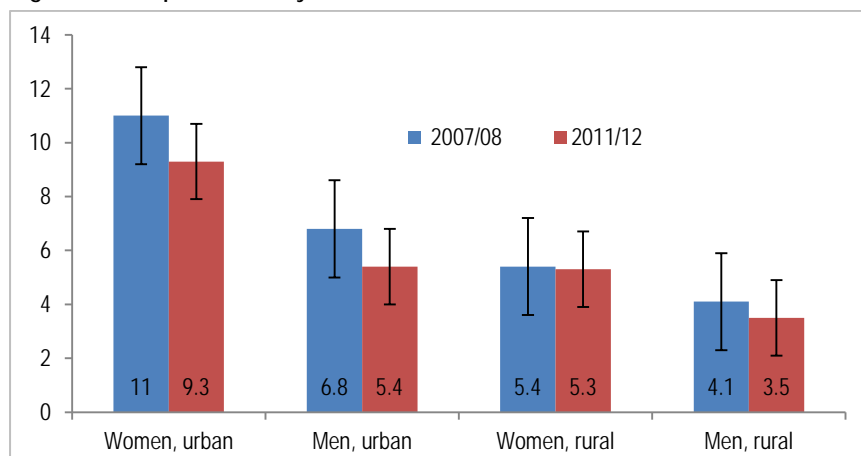
HIV prevalence among younger people, a good proxy for new infection rates, declined, especially women.

HIV prevalence trends among younger people are often taken as an approximation for new infection rates as many initiate sexual activity and mortality is still low. HIV prevalence among men 15–24 years remained at the same level (1.2% in 2011–12). Among women 15–24 years there was a decline from 3.8% (95% CI: 3.0–4.6%) to 2.8% (2.2–3.4%), and this mostly occurred at ages 18–22 years. For both sexes combined, HIV prevalence 15–24 declined from 2.4% to 2.0% (not statistically significant).

The adult HIV incidence rate is estimated at about 0.5–0.7% per year, which is about 110,000–140,000 new infections (UNAIDS/WHO).

# Equity

Figure 44: HIV prevalence by urban rural and sex, THMIS



Urban prevalence on the mainland is only moderately higher than rural prevalence among both sexes.

The declines in prevalence were concentrated in the urban population.

Overall, for both sexes combined, HIV prevalence was 7.5% in the urban mainland and 4.5% in the rural mainland. The urban-rural difference narrowed a bit since 2008, because urban women and men and rural men all experienced a decline, but rural women did not.

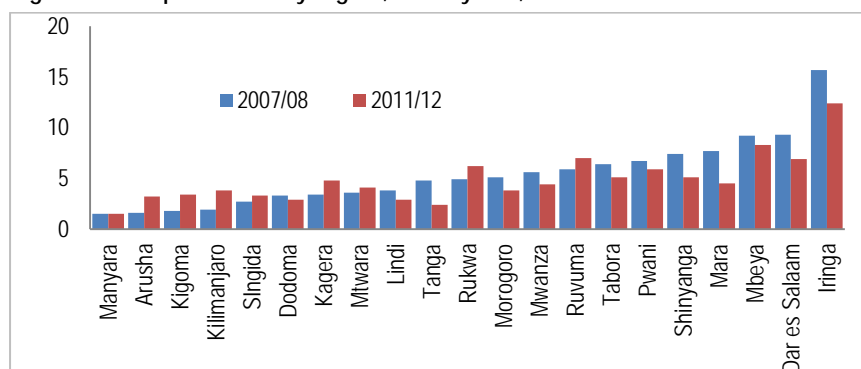
Figure 45: HIV prevalence 15–49, by wealth quintile, THMIS



HIV infection is still 1.7 times more common among the wealthiest quintile than among the poorest.

Contrary to many other health issues, HIV prevalence is higher among the wealthier. The poorest two wealth quintiles have the lowest HIV prevalence, both among men and women. Women and men in the best-off wealth quintile have about 1.7 times higher HIV prevalence than the poorest. The situation in 2011–12 was very similar to that in 2007–08.

Figure 46: HIV prevalence by region, 15–49 years, THMIS

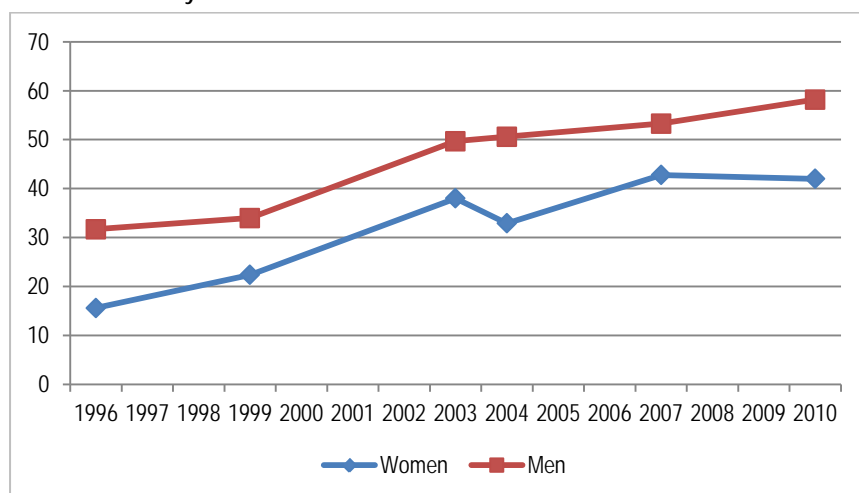


Regional differences in HIV prevalence narrowed since 2008.

Iringa, Dar es Salaam and Mbeya are about twice as high as the national rate.

The regional differences became smaller during 2008–12 (standard deviation reduced from 3.4 to 2.4). The regions with the highest prevalence remained similar with the top five including Iringa (still the highest in the country, Iringa and Njombe regions in the new administrative structure), Mbeya and Dar es Salaam, but all observed declines. The regions with the lowest prevalence also remained similar with the top 5 including Manyara (still the lowest in the country with 1.5%), Arusha and Singida, but all observed increases. All regional estimates have very wide confidence intervals, so the results must be interpreted with caution.

Figure 47: Condom use at last higher risk sex (%), men and women, household surveys



Condom use with non-marital non cohabiting partner increase since mid-nineties in both sexes continues but at slower pace since 2003.

Men with 2 or more partners in the last year declined from 30% to 21%.

The trends in risk reduction have continued in recent years. Condom use at last higher risk sex with a non-marital non cohabiting partner has been increasing to 60% among men and 40% among women by 2010. The increase appears to be levelling off among women but still continued among men. The proportion of respondents who said they had two or more partners in the last year went down. For men from 30% in 2004–05 to 21% in 2010. For women the corresponding figures were 4.3% and 3.5%.

Among men 15–24 years, 14% had more than one partner in the last 12 months, while 41% reported condom use at last higher risk sex (THMIS 2011). For women the corresponding figures were 4% and 33% respectively.

## ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

### TARGETS & INDICATORS\*

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
HIV positive women receiving ART to prevent MTCT	34% (2011, HMIS/NACP)	71% (2011, HMIS/NACP)	80%	On target, 2008 was 69%
Babies born to HIV positive mothers receiving ART prophylaxis to prevent MTCT	17% (2007, HMIS)	56% (2011, HMIS/NACP)		

\* Other M&E documents: National scale up plan for PMTCT 2009–12 aimed to achieve the 80% target by 2012, and improve child survival among HIV exposed and infected children by 50%; Tanzania elimination of MTCT 2012-15 is the new plan based on a bottleneck analysis for virtual elimination of MTCT. MoHSW; Bottleneck analysis for virtual elimination of mother to child transmission in Tanzania. Feb 2012; National Roadmap strategic plan to accelerate reduction of maternal, newborn and child deaths in Tanzania (2008–2015). This overall plan includes MTCT indicators as well.

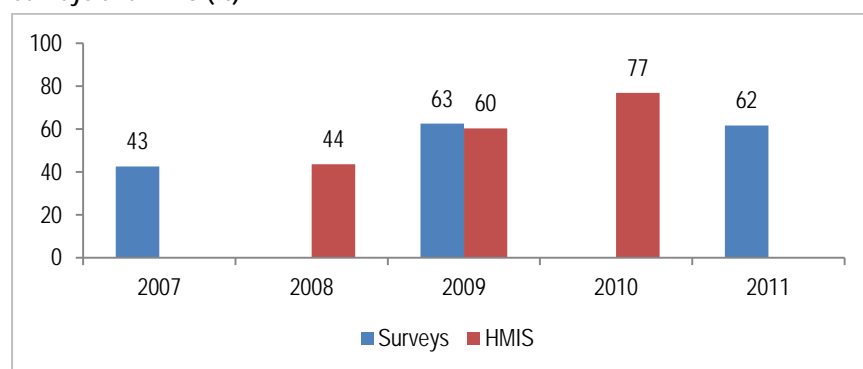


## DATA SOURCES AND QUALITY

- **Health facilities:** HMIS data on reported testing and interventions among pregnant women; NACP HIV surveillance reports 21 (2008) and 22 (2011) from sentinel surveillance antenatal clinics (last round mid-2008).
- **Surveys:** Tanzania HIV/AIDS and Malaria Indicator Surveys 2007–08 and 2011–12; TDHS 2010.
- **Analyses:** bottleneck analysis for elimination of MTCT (see footnote 1).
- **Estimates:** UNAIDS Spectrum.
- **Quality:** The facility reports on PMTCT interventions have quality issues, but show a positive trend.

The number of HIV positive women who were provided with ARVs to prevent mother to child transmission increased from 70,944 in 2008 to 86,875 in 2011, an increase of 22%. The estimated coverage among HIV positive women increased from 69% (2008) to 77% (2011).<sup>5</sup>

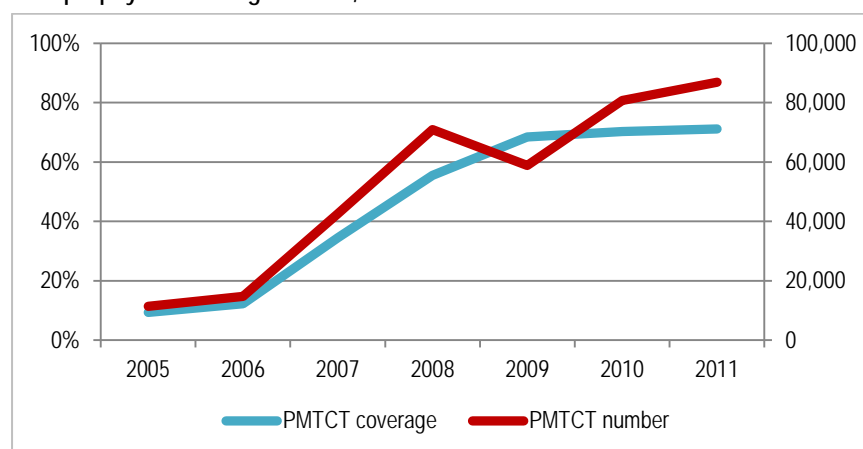
Figure 48: Pregnant women receiving HIV test with post-test counseling, surveys and HMIS (%)



The survey data (THMIS and TDHS 2010) and are shown in the mid-point of the 3 year period of the coverage figures.

According to the surveys the percent of pregnant women who received an HIV test with post-test counseling increased from about 40% in 2007–08 to over 60% in 2011.

Figure 49: Number and percent of HIV positive pregnant women who received ARV prophylaxis during 2005–11, HMIS/NACP



Coverage of HIV testing & counseling among pregnant women increased from 43% to 62% according to the surveys.

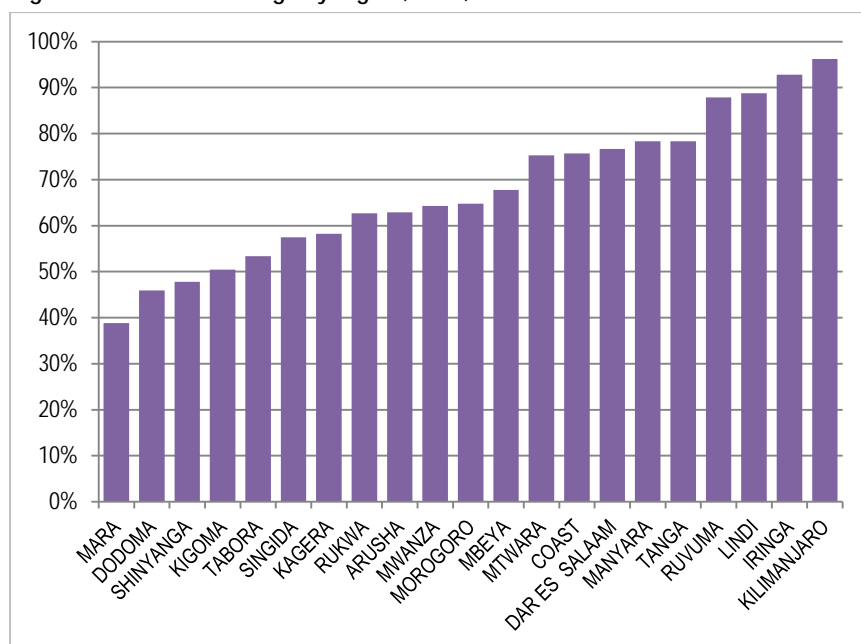
The health facility data (HMIS) also show an increase from 44% to 77%.

The proportion of HIV+ pregnant women receiving ARVs increased to 71% in 2011.

<sup>5</sup> The number of HIV positive pregnant women is estimated from the number of pregnant women (computed from the antenatal care visits and BCG vaccinations) and the HIV prevalence among pregnant women (here assumed 6% for all years, THMIS 2011–12 had 4.6% among women attending public antenatal clinics)

Based on the estimated prevalence of HIV in pregnant women (ANC surveillance) by 2011, 71% of women were receiving PMTCT prophylaxis, and 56% of babies born to HIV positive mothers receive a prophylactic dose. Among the 71%, 17% was already on ARV therapy, while an additional 54% received maternal prophylaxis.

Figure 50: PMTCT coverage by region, 2011, HMIS/NACP



The variation in PMTCT coverage – maternal prophylaxis with ARVs given at the time of delivery – ranged from 40% in Mara region to 95% in Kilimanjaro.

## Other indicators

Two large-scale facility surveys were conducted in 2008–09 (13 districts, NIMR) and 2012 (27 districts, Ifakara Health Institute). PMTCT services, here defined as HIV counselling and testing services with maternal prophylaxis was offered by 36% of facilities in 2008–09 and 78% in 2012.<sup>6</sup>

Table 13: PMTCT service readiness, district facility surveys (SARA), 2008–09 and 2012

	2008–09	2012
<b>Number of health facilities</b>	<b>635</b>	<b>1297</b>
Offers HIV Counselling & Testing (%)	60	69
Offers ARV prophylaxis (%)	36	
Offers PMTCT (%)	36	78
<b>Number of facilities with PMTCT</b>	<b>227</b>	<b>990</b>
Trained staff (%)	91	71
Guidelines available (%)	88	79
Diagnostic ability (%)	94	79
Maternal prophylaxis (%)	27	50

The percent of facilities that offered maternal ARV prophylaxis almost doubled to 78% in 2012

Half of these facilities had the required ARVs in stock.

According to the eMTCT bottleneck analysis, 93% of the health facilities that offer reproductive and child health services provided PMTCT services. The

<sup>6</sup> The 2012 facility survey also provides data on the other components of PMTCT services, such as ARV prophylaxis among newborns and counselling on young child feeding.

facility surveys showed the increase during 2008–09/2012. The proportion of facilities that offered maternal ARV prophylaxis more than doubled to 78%.

Among the facilities that offered PMCT services, the majority had trained staff, guidelines, and diagnostic ability (mostly rapid HIV test). The figures were slightly down for these three indicators in 2012.

The availability of drugs for maternal prophylaxis however improved, even though the recommendations changed. In 2008, 27% of facilities had either NVP or AZT in stock on the day of the visit. In 2012, half of all facilities that offered PMTCT had the recommended drugs for prophylaxis.<sup>7</sup>

## ANTIRETROVIRAL THERAPY (ART)

### TARGETS & INDICATORS\*

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
ART Coverage among persons with advanced HIV infection (under 5, 5+, by sex)	80 628 (2007)	65% of adults and 48% of children are on ART (end 2011)	60% of all eligible persons on ART (Health sector HIV plan); 20% are children	Progress is on target (or above target). The need (denominator) refers to CD4 cell count <200. The estimated coverage with a cut off of 350 CD4 cells is lower (see text)

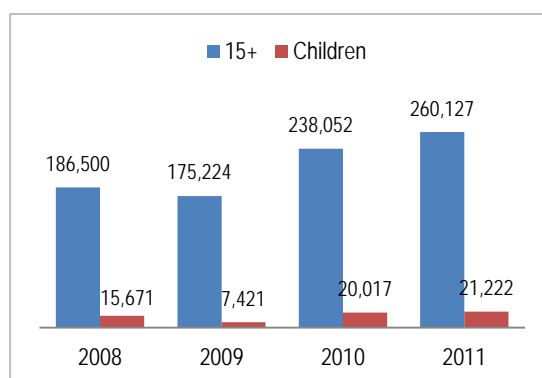
\* The 2012 facility survey also provides data on the other components of PMTCT services, such as ARV prophylaxis among newborns and counseling on young child feeding.

### DATA SOURCES AND QUALITY

- **Surveys:** for HIV prevalence (denominators): Tanzania HIV/AIDS and Malaria Indicator Surveys 2007–08 and 2011–12.
- **Health facility reports (CTC):** individual and aggregate data on ART; an indepth analysis was conducted for 2009 and for 2011 by NACP and partners.
- **Quality:** By the end of 2011 Tanzania had more than 1100 health facilities approved to provide care and treatment services; 348 clinics reported individual patient level data for 2011 and 379 clinics provide quarterly aggregate reports only, and 171 clinics used some other type of reporting. A large proportion is lost to follow which means adherence and survival rates are uncertain.

Figure 51: Number of people on ART, Tanzania mainland, 2008–11, NACP

The number of clinics reporting ART data was 666 in 2009 and 848 in 2011. In 2009, a large proportion of clinics were only reporting cumulative data which meant that the numbers currently and newly on ART had to be estimated with considerable uncertainty. By 2012, 348 clinics were reporting comprehensive patient level data electronically, and far fewer clinics were reporting incomplete data.



Major increase in number of people on ART, adults and children during 2009–11.

7.5% of all people on treatment are children.

<sup>7</sup> AZT + NVP + 3TC or AZT+3TC+LVP or AZT+3TC+ABC, or AZT+3TC+EFV or TDF+3TC(orFTC)+EFV.

The total number of people who are currently on ART has increased to 281,349 in 2011, up from 202,171 in 2008.

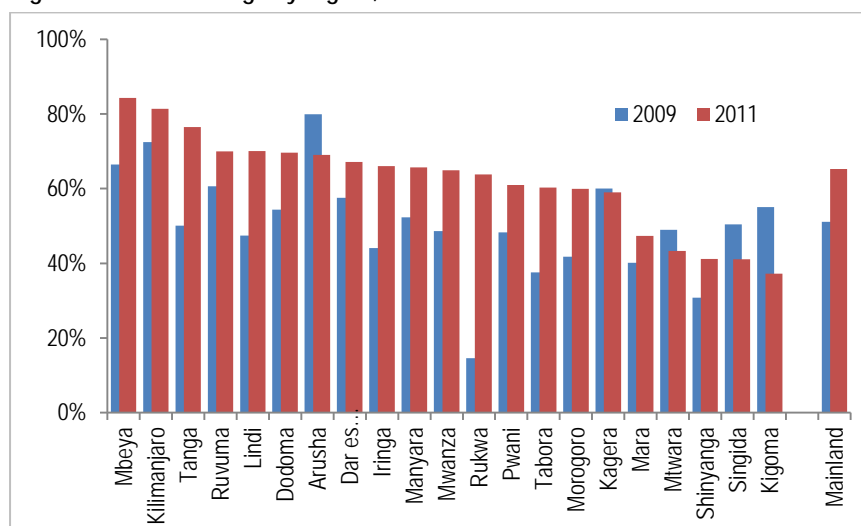
The total number of *new* patients on ART increased from just over 60,000 enrolments in 2008 to almost 70,000 in 2011 and to about 90,000 in 2012. Twice as many women were started on ART than men in 2012.

Using the 2012 population census data and the HIV prevalence surveys in 2007–08 and 2011–12 to estimate numbers of people living with HIV the ART coverage rate can be estimated. In 2009 and in 2011, an estimated 1.37 million people were living with HIV infection. National ART coverage increased considerably: from 51% to 65% among persons 15 years and older, and from 23% to 48% among children in 2009 and 2011 respectively. This uses a CD4 cell count below 200 to determine the need for treatment. If the more recent cutoff of 350 cells per mm<sup>3</sup> is used then the coverage drops to 40% of adults and 26% of children (assuming that 30% of all people living with HIV corresponds with a CD4 <350).

Two-thirds of the adults enrolling in CTC and starting ART are women. This implies that ART coverage among women is higher than among men, since the need for ART, measured by HIV prevalence, is less than twice as high among women.

## Regional coverage

Figure 52: ART coverage by region, HMIS/NACP



ART coverage ranges from 40% to over 80% in regions.

Almost all regions however had large increases in coverage since 2009.

Regional coverage rates were estimated using the 2008–09 and 2011–12 THMIS HIV prevalence results, using the 2012 population census estimates, for the years 2009 and 2011 (data and methods from CTC 2<sup>nd</sup> and 3<sup>rd</sup> reports).

Mbeya and Kilimanjaro region had over 80% the highest ART coverage rates among persons 15 years and over with advanced HIV infection, followed by Tanga. Most regions fall in the range of 60-75%.

Five regions have coverage rates below 50%: Kigoma, Singida, Shinyanga, Mtwara and Mara. In three of those regions coverage was lower in 2011 than in 2009.

## SURVIVAL RATES AND MORTALITY IMPACT

The third CTC report shows that people start treatment earlier and survival is improving. For instance, the median CD4 count for those starting ART increased from 214 in 2007 to 245 in 2010. The mortality in the first year on ART dropped from 9.7% in 2008 to 7.3% for those who started ART in 2010.

The survival rates of persons on ART are good and over 90% per year.

ART is initiated earlier.

After the first year on ART survival rates are very high among those with follow up data (99% per year). A major problem in the assessment of adherence and survival rates is however that high loss to follow up: as much as one quarter of those who start ART are no longer receiving treatment from the clinic where they initiated ART.

The impact of ART on child survival is as good as for adults. Mortality in the first year of ART was 8.3% in 2010.

The sibling histories in the DHS surveys in 2010 and 2004 give some insight into the adult mortality trends, where AIDS is the leading cause of death. The mortality section presents the graphs. Adult mortality rates per 1,000 population are markedly lower in the more recent period for both men and women and especially at ages 25–44 years, when AIDS mortality is most predominant.

## Service readiness

Two large-scale facility surveys were conducted in 2008–09 (13 districts, NIMR) and 2012 (27 districts, Ifakara Health Institute). ART services, was offered by 16% of facilities in 2008–09 and 28% in 2012.<sup>8</sup>

**Table 14: Availability and readiness of ART services, facility surveys.**

	2008–09	2012
<b>Number of health facilities</b>	<b>635</b>	<b>1297</b>
Offering ARV therapy (%)	16	28
<b>Number offering ART</b>	<b>104</b>	<b>394</b>
Trained staff (%)	-	45
Guidelines available (%)	-	42
CD4/VL (%)	21	11
Renal function test (%)	-	5
Liver function test (%)	-	6
First line ARVs in stock (%)	50	36

36% of facilities that offer ARVs had the three recommended first line combinations in stock, down from 50% in 2008–09.

In 2012, trained staff and ART guidelines were available in just under half of the clinics. Ability to conduct CD4 cell counts or viral load was only 11% on- or off site.

Half of the facilities had the three recommended first line combinations in stock in 2008–09 and only 36% did so in 2012.

<sup>8</sup> The 2012 facility survey also provides data on the other components of PMTCT services, such as ARV prophylaxis among newborns and counselling on young child feeding.

## 4.3 TUBERCULOSIS

### Main findings

- The TB case notification rates have decreased (by 10% during 2008–11) in almost every region of the mainland. The estimated case detection rate was 75% in 2011, and is not declining as in many other countries in Africa. A new estimate based on the results of the first tuberculosis prevalence survey in Tanzania, however, put case detection rates only as high as 42–54%. Especially, among older people (45 years and over) case detection rates were low.
- TB treatment success rate among smear positive cases of pulmonary TB is as high as 88%. Tanzania's performance is among the best in the region. In addition, the funding for the TB programme however is declining gradually.

#### HSSP III TARGETS & INDICATORS\*

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
TB notification rate	159 per 100,000 (HMIS 2008)	142 (HMIS/NTLP 2012); - 295 per 100,000 (Survey 2012)	-	Notification rate in the survey twice as high as in the HMIS
TB treatment success rate (among smear positive cases)	88% (2007)	88% (2011)	85% (2015)	Targets achieved
Leprosy treatment success rate	95% (PB*, 2008) 99% (MB**, 2008)	93% (PB, 2012) 94% (MB, 2010) NTLP data	-	Rates remain above 90%, no target

\* Other M&E documents: The NTLP Strategic objectives also highlighted in the HSSP III are: To expand and mainstream the strategy of Directly Observed Treatment – short course (DOTs) within the general health system and involve Faith-Based and Non-Governmental Organisations in DOTs; To introduce and implement Multi-Drug Resistant (MDR) and Extensively Drug Resistant (XDR) TB case management; Leprosy elimination and the prevention of disabilities and socio economic rehabilitation of the people affected by leprosy.

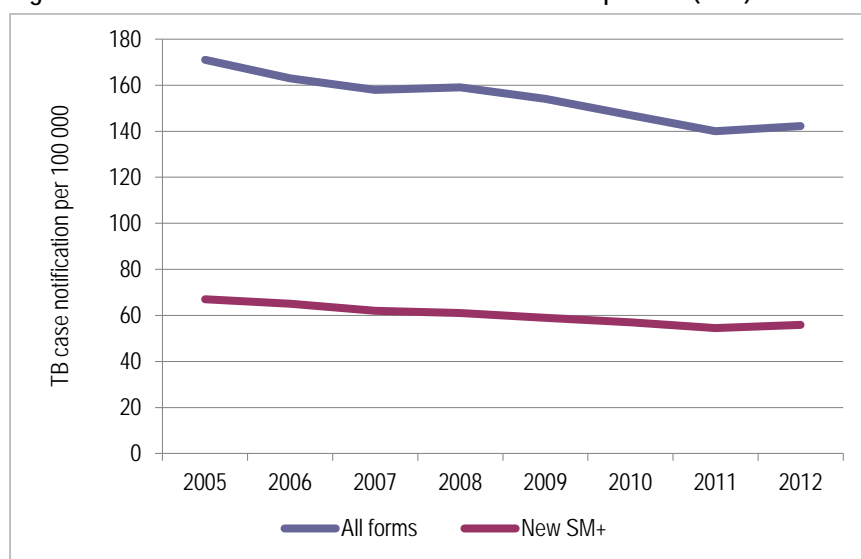
\*\* PB = pauci-bacillary; \*\* MB = multi-bacillary

#### DATA SOURCES AND QUALITY

- **Health facilities report:** HMIS/NTLCP annual reports; WHO TB profile.
- **Surveys:** TB prevalence survey 2012: large survey with symptom reporting and X ray in over national sample of over 50,000 individuals 15 years and older.
- **Quality:** health facility data are the main source of data. Data checks for regional data using several indicators of quality (completeness and consistency of report over time, by sex, age) suggest that good data quality. Case detection rate depends on modeling and the 2012 TB prevalence survey shows that case detection rates were overestimated and revisions are needed.

## National trends

Figure 53: TB case notification: all cases and new smear positive (SM+) cases



Gradual decline of TB case notifications during 2008–12.

The TB case notifications have been fairly stable at around 60,000 new cases per year, but since the population is growing, the case notification rate (all cases) has declined from 159 per 100,000 population in 2008 to 142 per 100,000 in 2012. The smear positive pulmonary cases declined modestly from 61 to 56 per 100,000 population during 2008–12.

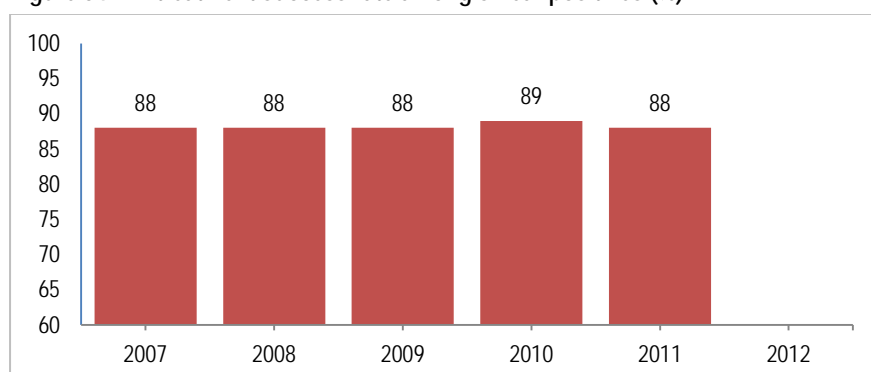
Among the new case notifications in 2011, 41% were smear positive, 35% smear negative and 24% extrapulmonary TB. There was little change over time: in 2008, these figures were 41%, 37% and 22% respectively.

In 2012, a TB prevalence survey was conducted in a nationally representative sample of over 50,000 adults (15 years and older). The prevalence of bacteriologically confirmed TB in the adult population was 295 per 100,000 (95% CI: 229-360) for Tanzania as a whole and 300 for the mainland.

Prior to the survey TB case detection rate for all cases was estimated at about 75% throughout the period according to WHO estimates. However, the case detection was estimated at 42–54% from the survey results which is well below the HSSP III target. This finding does not mean that TB case detection rates have declined. It is more likely that case detection rates have been over estimated during the past decade.

BUT: 2012 TB prevalence survey shows much higher TB prevalence rates which implies many people with TB are not using health services.

Figure 54: TB treatment success rate among smear positives (%)



TB treatment success rate remains high at almost 90%.

The HSSP III and WHO targets for 2015 are exceeded.

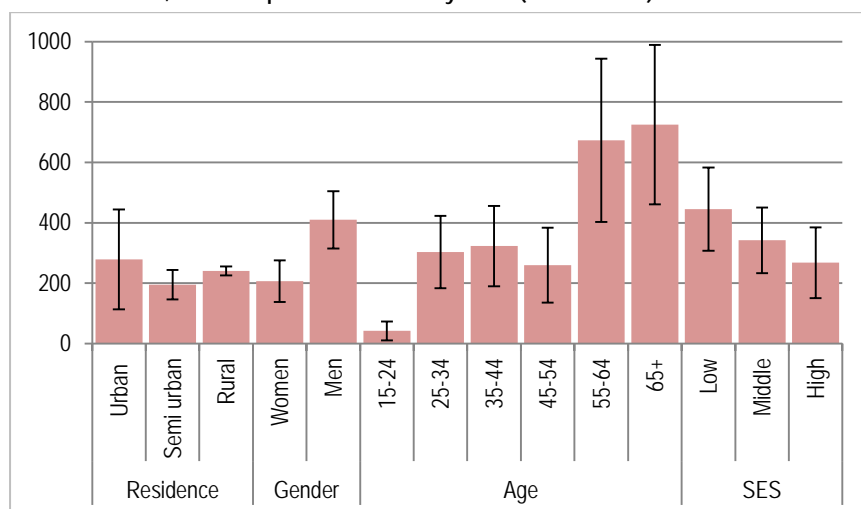
The treatment success rate among smear positive cases remained high at 88–89% with no change over time (data from 2012 refer to the performance of the programme in the preceding year). Also for smear negative cases and

extrapulmonary TB high success rates were reported: 82% in 2007 and 89% in 2010. The current figures are above the HSSP and WHO target of 82% and 85% success rate for 2015 respectively. The death rate among those on treatment dropped from 11% in 2008 to 4.7% in 2011.

## Equity

TB is more common among men. The male female ratio is 1.8 for smear positive TB, 1.3 for smear negative TB and 1.1 for extrapulmonary TB (2011). 8.3% of all new TB cases are children under 15 years.

Figure 55: TB prevalence (smear positive pulmonary) by background characteristics, national prevalence survey 2012 (with 95% CI)



Data from the national TB prevalence survey in 2012 on bacteriological confirmed TB per 1000,000 adult population (15+).

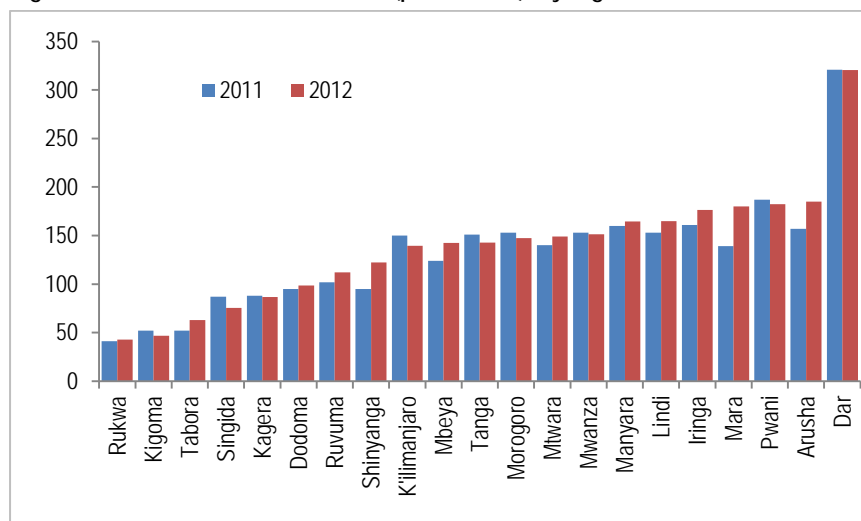
National prevalence 295/100,000.

Greatest variation by demographic variables: age and gender.

According to the 2012 TB prevalence survey, the differences in TB prevalence rates were larger for the demographic variables than for the socioeconomic variables. Prevalence was twice as high in men compared to women (410 and 207 respectively). Older age groups had the highest TB prevalence: 673 at 55–64 and 725 per 100,000 at 65 years and over. TB was however more common among the lowest socioeconomic stratum (445) than among the highest (268). Urban rural differences were small (279 and 316 respectively). Another findings was the low case detection rate among HIV negative men.



Figure 56: TB case notification rates (per 100,000), by region, 2011–12.



Dar es Salaam Region has much higher TB case notification rate than all other regions.

Case notification rates declined during 2009–11 in all regions.

TB case notification rates in 2012 were lower than in 2009 in all regions, except Lindi, Kilimanjaro, Mtwara and Kigoma. Dar es Salaam region continues to stand out with a more than twice as high case notification rate as elsewhere, while Tabora and Rukwa have rates below 50.

Treatment success rates for smear positive new cases (2010) were above the target of 85% in all but two regions. Also in 2009 and 2010, two out of the 21 regions were below 85%. In 2011, Arusha (83%) and Kigoma (73%) had lower treatment success rates. Both regions experienced a deterioration compared to the previous two years.

Treatment success rates were high in almost all regions.

## Other indicators

### TB & HIV

In 2012, 82% of the 63,453 TB cases (incident and retreatment) were counselled and tested for HIV status. This is close to the 85% target of Global Stop TB. In 2008, 77% of TB patients had been tested for HIV.

Among the TB cases, 39% were HIV positive (down from 41% in 2008); 96% of the co-infected patients were put on co-trimoxazole preventive therapy (CPT) against opportunistic infections in 2012. 54% of the co-infected were initiated on ARVs (2012).

High coverage of HIV testing among TB patients, and over 90% of positives put on CPT, and more than half initiated ART.

### TB drug resistance and TB management

The prevalence of drug resistance is still low both among new and relapses cases. WHO estimated that in 2011, 1.1% (0.3–2.8%) of TB cases were MDR-TB. A study showed low levels of multi-drug resistance TB (MDR-TB) (2.4%) (Range et al., 2012). Despite the current low drug resistance, there is a need for continuous monitoring of the resistance.

MDR-TB case management was launched in 2009 at Kibong'oto National TB Hospital (KNTH). A total of 74 MDR-TB cases had initiated treatment at KNTH by the end of 2011. The first cohort data analysis shows 70% of all cases were converted from smear positive to smear negative at 5 months of treatment.

## Leprosy

The goal of enhancing case finding and proper management of persons affected is measured by the proportion of new cases with grade 2 disability. The baseline was 11%, this was still the case in 2012 (12%), while the target is less than 8%.

The promotion of community-based rehabilitation for persons affected by leprosy with related disabilities is assessed on the coverage of the POD register. The baseline was 82% of persons affected by leprosy with disabilities will be assessed on the POD register, which was 84% in 2012, with a target of 100%. The proportion of individuals affected by leprosy involved in active self-care groups was 35%, up from less than 30% in 2008 but still far from the 75% target for 2015.

## Service readiness

Two large-scale facility surveys were conducted in 2008–09 (13 districts, NIMR) and 2012 (27 districts, Ifakara Health Institute). TB services are provided in Tanzania using the DOTS strategy. Just under 40% of health facilities are providing TB treatment services.

Table 15: TB service readiness, district facility surveys (SARA), 2008–09 and 2012

	2008–09	2012
<b>Total Facilities visited</b>	<b>635</b>	<b>1297</b>
Providing DOTS TB services (%)	39	38
<b>Number of facilities with DOTS</b>	<b>250</b>	<b>528</b>
Trained staff (with guidelines available)		
- diagnosis & treatment (%)	70 (66)	28 (3)
- MDR TB management (%)	34 (33)	23 (13)
- HIV/TB co-infection (%)	40 (34)	28 (7)
Diagnostics: microscope (%)	36	10
First line medicines in stock (4) (%)	82	60

\* Medicines include INH, ethambutol, pyrazinamide, and rifampicin

The proportions of staff trained and availability of guidelines was much lower in 2012 than in 2008–09. To some extent this may be due to weakening of the programme. On the other hand, the differences are larger than is plausible (e.g. it is unlikely that all guidelines disappear), and further work is needed to find the cause of these differences. A microscope for TB diagnosis was available in 1 in 10 facilities in 2012, partly reflecting that the majority of facilities do not offer TB microscopy.

All four first-line TB medications, as part of the recommended short course drug therapy, were available in 60% of health facilities offering TB services in 2012. This represents a decrease from 82% in 2008–09. It is however noted that drugs are only ordered if there are patients. This implies that those facilities that did not have drugs are not having any patients at the moment.

## FUNDING

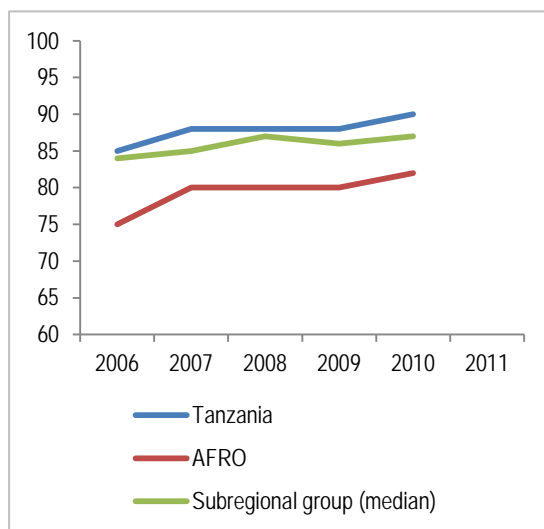
The available funding for TB control in 2012 was \$15 million (\$16 million projected for 2013, source: WHO). Domestic sources are the main source of funding (47%), followed by the Global Fund (23%). Funding levels in 2008 and 2009 were \$19–20 million per year.

## Comparative analysis

The comparative analysis uses WHO data (Global Health Observatory), comparing Tanzania with the average of all countries in the African region (AFRO) and with the median value of a subregional group of nine countries (Burundi, DR Congo, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Uganda, Zambia).

Figure 57: TB treatment success rate among smear positives (%), comparison, WHO estimates

Tanzania's treatment success rate is better than the average of the region and the subregional group. Tanzania is among the three countries in the subregion with the highest treatment success rates (with Burundi and DR Congo).

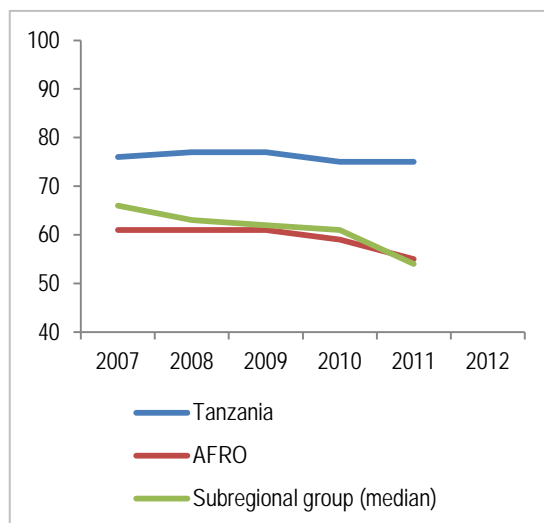


Tanzania is one of the best performing countries in the region.

Treatment success rates are somewhat better than the median of ten subregional countries.

Figure 58: TB case detection rate, all forms (%), comparison, WHO estimates

According to the WHO estimates, Tanzania's performance on the case detection rate is much better than that of the African region and the subregional group of countries. The level of case detection is much higher, but also the declining trend observed in many other countries is not observed in Tanzania. Only Kenya has a higher level of case detection rate. With the results of the new TB prevalence survey the Tanzania trend will have to be revised. Such surveys, however, may have a similar impact in other countries.



Case detection rates in Tanzania are higher than in the subregional group of 10 countries, but the new survey data will lead to estimates closer to the regional median.

## 4.4 NEGLECTED TROPICAL DISEASES

There are no indicators for neglected tropical diseases in HSSP III. The NTD control programme however has developed a set of indicators and targets in its Strategic Master Plan for Neglected Tropical Diseases 2012-2017. The following table captures the current status of NTD control in Tanzania. Geographical coverage is defined as the proportion of programme implementation units (i.e districts) implementing PCT and other NTD interventions. Therapeutic coverage is defined as the proportion of individuals who need preventive measures or treatment actually receive it.

**Table 16: Programme objectives, key indicators and targets set over years**

Programme	Objective.	Key indicator	Baseline	2012	As of Dec 2012	Target
Lymphatic Filariasis	Ensure population at risk is covered with Mectizan and Albendazole by 2017	Geographical coverage	70 districts (53%)	92 (70%)	93/155 (60%)	132 (100%)
	Ensure all people requiring surgery have had hydrocelectomy by 2017	Therapeutic coverage	25%	53%	400 surgeries (7%)	80%
Schistosomiasis and Soil Transmitted Helminths	Treat at least 75% of schoolchildren at risk with antihelminthic by 2017	Geographical coverage	36%	65%	93/155 (60%)	100%
		Therapeutic coverage	25%	53%	79%	80%
Onchocerciasis	Sustain $\geq$ 80% MDA with Ivermectin therapeutic coverage in all implementation areas	Geographic coverage	5278 (100%)	100%	100%	100%
Trachoma	Complete mapping of the remaining districts by 2013	N and % of districts mapped for trachoma	54 (41%)	63 (47%)	63 (47%)	132 (100%)
Plague	Treat 100% of all cases	N of cases identified (and % treated)	65%	75%		100%
TBRF	Treat 100% of all cases	N of cases identified (and % treated)	40%	50%		90%
HAT	Map HAT sites	N and % of suspected sites /districts mapped for HAT	11 (54%)	60%		100%
	Treat 100% of all cases	N of cases identified (and % treated)	70%	80%		100%
Echinococcosis	Treat 100% of all cases	N of cases identified (and % treated)	40%	50%		
Taeniosis	Treat 100% of all cases	N of cases identified (and % treated)	45%	50%		100%

Assessment has been carried out between 2007 and 2012:

- There had been several prevalence assessments. Specifically, Onchocerciasis survey in Tanga, Tukuyu and Ruvuma focus. Results indicated that transmission of Onchocerciasis is below 20% in the hyper- and meso endemic areas and mass drug administration with Ivermectin is ongoing due to lymphatic filariasis prevalence being above 1% mf.
- Lymphatic Filariasis transmission assessments surveys have been conducted in Tandahimba district Mtwara
- Mapping survey for Trachoma in 9 out of 10 planned districts and impact survey in 1 out of 3 planned.

The programme has reached the following major recent achievements:

- received multi donor support for MDA activities;
- developed and endorsed its Master Strategic Plan for NTD 2012-2017;
- managed to reach 76 districts i.e. 53% geographical coverage and 70 % epidemiological coverage countrywide by 2012;
- developed an integrated data collection and reporting tools;
- developed a Management of Information System (MIS) for preventive chemotherapy targeted NTDs.

## 4.5 OUTBREAK/NOTIFIABLE DISEASES

### Cholera

#### HSSP III TARGETS & INDICATORS

Indicator	Baseline (Year)	Achievement	Target 2015	Comments
Number of cholera incidence notified	2,391	343	0	Strong reduction in number of reported cases
Cholera case fatality rate (%)	3.05%	4.08%	<1%	Increase in CFR, not on target
Proportion (%) of districts submitting weekly (or monthly) surveillance reports on time to the next higher level	60% (2008) 85% (2009)	73% (2012)	>80%	Average reporting is lower than target

Cholera is one of the most common and persistent infectious outbreak diseases in Tanzania. The first outbreak of cholera in Tanzania was reported in Rufiji District in October 1977. Cholera has now become endemic to Tanzania with small outbreaks being reported every year and a much larger outbreak occurring every 4-5 years. There was an increase in the number of cholera cases from 2007 (2,860) to 2009 (6,244), then a decrease to 343 in 2012. On average, there were 3,101 cases of cholera per year with an average case fatality rate of 1.96%.

The larger cholera epidemics were reported in 1977, 1983, 1988, 1993, 1997, 2002, 2006 and 2009. The overall mean annual case fatality rate (CFR) is 1.96% (range=1.2-4.07%), which is high, exceeding the WHO recommended rate of below 1%. There are variations both in number of cases and CFR between regions. Significant regional variations in the number of cases, deaths and CFR have been observed. Over the past six years, Shinyanga (8.1%) and Rukwa (5.7%) reported the highest average annual CFR. Most cases of cholera during the recent past reported from Tanga (accounting for 16.9% of total cases) followed by Dar es Salaam (16.4%), Morogoro (9.5%), Kigoma (9.2%) and Manyara (9.1%). No cholera outbreaks were reported from Iringa, Kagera, Mwanza and Ruvuma during the past six years.

Table 17: Number of cases and deaths due to cholera in Tanzania Mainland, 2004–12, HMIS

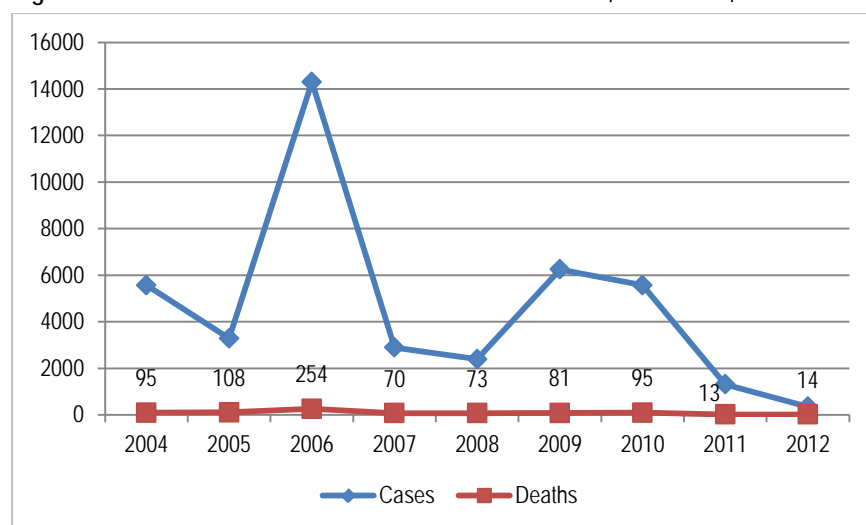
Year	Cases	Incidence per 100,000	Deaths	Case Fatality Rate (%)
2004	5566	15.7	95	1.7
2005	3284	9.0	108	9.3
2006	14297	37.2	254	1.8
2007	2890	7.6	70	2.4
2008	2391	6.1	73	3.1
2009	6244	15.5	81	1.3
2010	5566	13.5	95	1.7
2011	1149	2.7	32	2.7
2012	343	0.8	14	4.1

Cholera cases and deaths were much less frequent in 2011–12 than in 2010–11.

#### MORBIDITY AND CASE FATALITY RATE DURING THE HSSP III

During the HSSP III period (2009–2012), a total of 13,302 cases and 222 deaths due to cholera were reported in Tanzania Mainland. There was a remarkable decline (18-fold) in the number of cholera cases from 2009 to 2012 and number of deaths from 2010 to 2012. The incidence of cholera cases per 100,000 people in 2008 was estimated 6.1 and in 2012 was 0.8. This indicator measures the number of cholera in a year as a proportion of the total population at risk.

Figure 59: Trend of cholera cases and deaths in Tanzania, 2004–2009, HMIS



The case fatality rate has increased over the review period (from 1.3 to 4.1%). This may be due to poorer reporting of especially milder cases (the denominator) or truly higher mortality among reported cases.

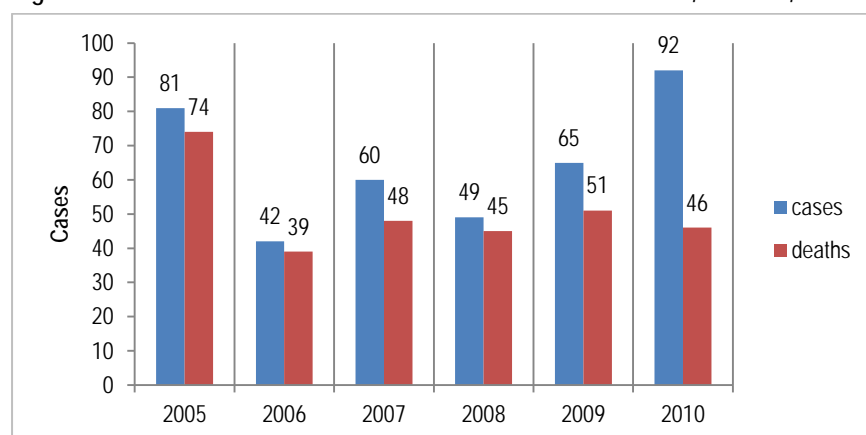
**Table 18: Regions with the highest and lowest average case fatality rate (CFR), 2007–12, HMIS**

Highest CFR		Lowest CFR		Regions with no cholera cases
Region	%	Region	%	
Shinyanga	8.1	Manyara	0.7	Iringa
Rukwa	5.7	Dar es Salaam	0.8	Kagera
Pwani	4.9	Mtwara	0.8	Mwanza
Lindi	4.3	Kilimanjaro	0.9	Ruvuma
Dodoma	4.0	Arusha	0.9	

The highest Case Fatality Rate has been reported in Shinyanga, Ruvuma, Rukwa, Lindi and Dodoma while the lowest CFR have been reported from Manyara, Dar es Salaam, Mtwara, Kilimanjaro and Arusha. The higher CFRs indicate poor clinical management of cases. This is likely to be associated with the quality of care of patients at treatment sites.

## Rabies

**Figure 60: Trend in the number of cases and deaths due to rabies, 2005–12, HMIS**



From 2005 to 2012, the number of cases and deaths due to rabies have fluctuated over time. Most (92) cases of rabies were reported in 2010. The number of cases declined in 2011 but increased again in 2012. Most cases of rabies during the period were reported from Dodoma, Mara, Manyara, Kilimanjaro and Mbeya (Table 3). The lower case fatality rate in Mara is most likely due to reporting of non-rabies animal bits in the denominator.

**Table 19: Number of rabies cases, deaths, case fatality rate in regions with the highest incidence of rabies, 2005–12, HMIS**

Region	Number of cases	No. of deaths	CFR (%)
Dodoma	56	50	89.3
Mara	53	11	20.8
Manyara	50	44	88.0
Kilimanjaro	44	29	65.9
Mbeya	37	32	86.5

## Dysentery and typhoid

Table 20: Cases, deaths and case fatality rate (CFR) per 1,000 for typhoid and dysentery, 2008–10, IDSR

	Year	Cases	Deaths	CFR (per 1,000)
Typhoid	2008	23,492	66	2.8
	2009	34,329	88	2.6
	2010	31,038	99	3.2
	All	88,859	253	2.8
Dysentery	2008	69,866	54	0.8
	2009	88,979	103	1.2
	2010	80,674	83	1.0
	All	359,416	592	1.6

The Integrated Disease Surveillance & Response information system provided data for 2008, 2009 and 2010. The annual number of typhoid and dysentery cases was fairly constant during 2008–10, with about 30,000 cases of typhoid and 80,000 of dysentery. Case fatality rates were 2.8 per 1,000 cases for typhoid and 1.6 per 1,000 cases of dysentery.



# 5

## NONCOMMUNICABLE CONDITIONS AND INJURIES

Although there are no indicators for non-communicable diseases, mental disorders or injuries in HSSP III, tracking these conditions, their risk factors and interventions is important. This is because they are gradually getting more important in Tanzania, as a cause of death and ill-health. These conditions are therefore likely to be more prominent in the next health sector strategic plan.

There are no reliable data on cause-specific mortality and burden of disease in Tanzania. Therefore, one has to rely on estimates. According to WHO statistics for 2008, 13% of the total years of life lost were due to noncommunicable diseases and 8% due to injuries. The remaining 78% was due to communicable diseases. According to the recent IHME-GBD 2010 study none of the non-communicable conditions appears in the top 10 causes of disability-adjusted life years (DALYs)<sup>9</sup>. This section briefly describes the current evidence, as future plans will likely give greater prominence to NCDs and injuries.

### 5.1 NONCOMMUNICABLE DISEASES

There is evidence from community and hospital studies that several NCDs are a common cause of illness and death, such as ischemic heart disease, stroke, diabetes, chronic obstructive pulmonary disease (COPD) and cancers. Data from cancer registry 2006 to 2009 shows that cervical cancer, Kaposi's sarcoma and breast cancers are the three most common cancers seen at Ocean Road Cancer Institute representing 35%, 12% and 8% of all cancers respectively. According to THMIS (2011–12), 66% of women age 15-49 years reported having heard of cervical cancer. Respondents living in urban areas were more likely to have heard of cervical cancer than women in rural areas (81% vs 61%). The proportion of women who have heard of cervical cancer increased with education level and wealth.

In 2012 a national population based survey was conducted among 5,860 adults 25–64 years (WHO STEPS) (Mayige et al., 2012). The survey provides a comprehensive picture of chronic disease risk factors in Tanzania. It shows that many risk factors are highly prevalent in Tanzania and greatly increase the risk of cardiovascular and other diseases:

- Tobacco: 14% of the respondents were currently smoking, including 12% on a daily basis. Tobacco use is still concentrated among men where one in four smoke.
- Alcohol: 29% of respondents drank alcohol in the past 30 days, 38% of men and 21% of women. A high proportion reported that they had engaged in heavy episodic drinking (at least once) in the past 30 days: 27% of men and 13% of women.
- Fruit and vegetables: the average number of servings per day was just 1.
- Physical activity: 7.5% had low levels of activity and 83% high levels. The proportion not engaging in vigorous activity were 23% for men and 41% for women.

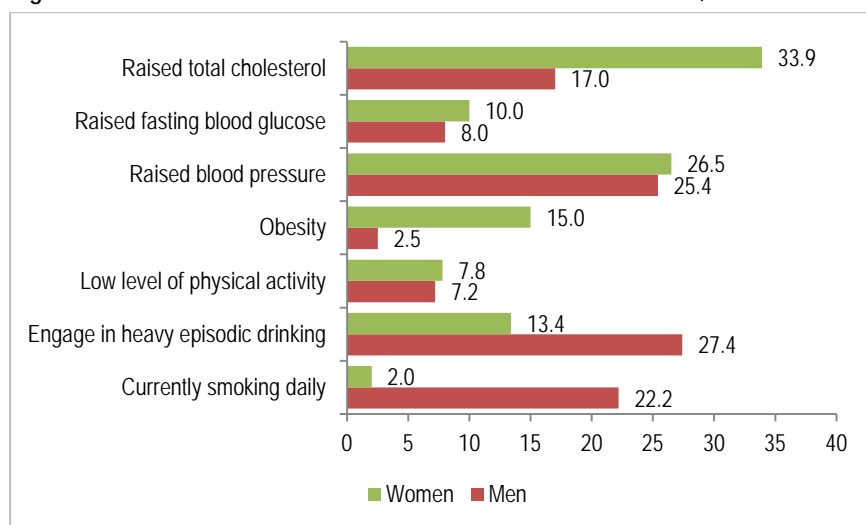
In general, risk factors for chronic diseases are common.

<sup>9</sup> Among the non-communicable disorders major depression disorder (14), epilepsy (15), low back pain (16), congenital anomalies (20), COPD (20), stroke (23), ischemic heart disease (24) and anxiety disorders (25) are in the top 25. Also road injuries (11), fire (19), interpersonal violence (21), drowning (22) are in the top 25. Most of these conditions are on the rise.

- Obesity: only 2.5% of men but 15% of women were obese, and 15% and 37% overweight.
- Blood pressure: 26% had raised blood pressure or was on medication for high blood pressure (systole above 140 and/or diastole above 90). Among those 93% were not on medication.
- Blood glucose: 9% had raised fasting blood glucose or were on medication for it
- Cholesterol and triglycerides: 26% had raised cholesterol (or was on medication) and this was much higher among women than men (34% and 17% respectively). 34% had raised TG.
- Overall, 17% of the respondents had three or more of the above risk factors, 15% of men and 18% of women.

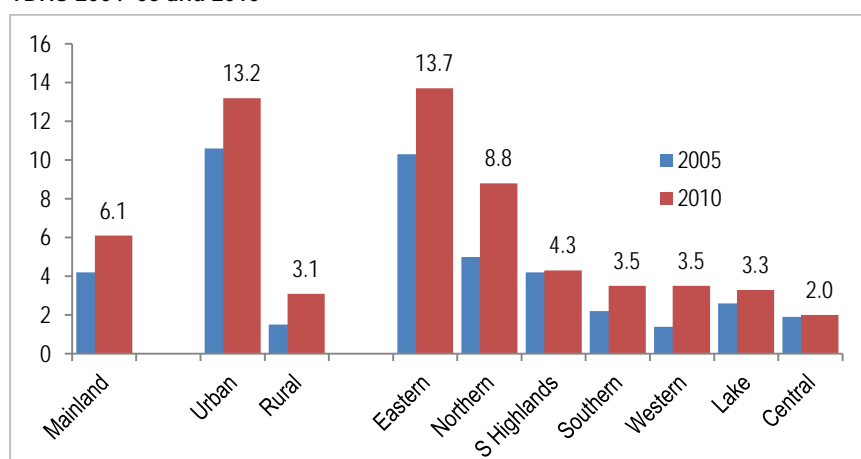
High blood pressure and raised lipids were the most common risk factors in a national survey in 2012.

Figure 61: Prevalence of selected risk factors for chronic diseases, STEPS 2012



The TDHS 2004–05 and 2010 provides more information on the prevalence of obesity and overweight, as weight and height were measured for all women 15–49 years (see also Nutrition section). The proportion of women who were obese increased from 4.2% to 6.1% in the mainland.

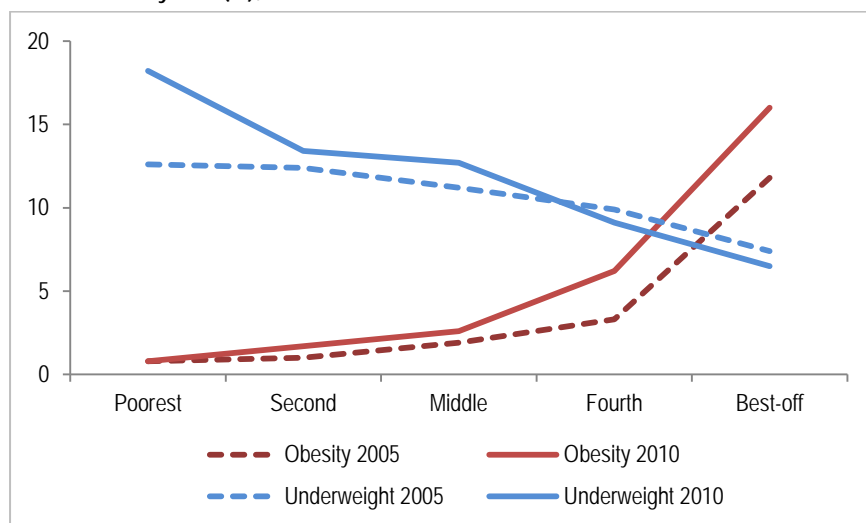
Figure 62: Obesity among women 15–49 years (%) by place of residence and zone, TDHS 2004–05 and 2010



Obesity is four times more common among urban women than among rural women. The prevalence of obesity however doubled among rural women from 1.5% to 3.1% in five years. There are also very large zonal differences with women in Eastern and to a lesser extent in Northern having two to three times

higher prevalence of obesity than in the other zones. Central has the lowest prevalence.

Figure 63: Underweight and obesity by wealth quintile among women 15–49 years (%), TDHS 2004–05 and 2010



Obesity is increasing rapidly among the better-off in Tanzania.

At the same time underweight increased among the poorest.

An interesting shift is taking place in Tanzania. Comparing the prevalence of underweight (BMI<18.5) and obesity (BMI >= 30) by socioeconomic position, measured by wealth quintile, shows that in 2005 about 13% of women were underweight and only 1% obese (dotted lines). Underweight is more common among all quintiles, except among the best-off quintile slightly more women were obese (12%) than underweight (7%). In 2010, just five years later, the gaps for the poorest three quintiles persisted, or grew larger as underweight prevalence increased (continuous lines). But obesity in the 4<sup>th</sup> (6%) and 5<sup>th</sup> (16%) quintiles also increased considerably. The cross-over point, obesity exceeding underweight, is shifting to the left.

Sickle cell anemia is a common condition that also falls in this category. The frequency of sickle heterozygous carrier state (AS) in Tanzania is 13% with an estimated annual birth of 8,000 homozygous SS children (Christianson *et al.*, 2006). Sickle cell anaemia mortality rate of 1.9 per 100 PYO, and 7.3 per 100 PYO in under five-years old in a hospital based cohort.

Ifakara Health Institute has also been collecting data through the Sentinel Panel of Districts (SAVVY project) from 2008 onwards on key NCD indicators. The data confirm some of the STEPS survey findings:

- Hypertension is very common, with levels among adults varying from 13% and 26% during 2009–12.
- Diabetes prevalence, measured by fasting blood glucose test, was 3% in 2009 and 9% between 2009 and 2012.
- Mortality due to CVD is the leading cause of death amongst individuals aged 65 years and older (based on verbal autopsy, see section 2 of this report).

The MZIMA cohort study of the Ifakara Health Institute also shows the high prevalences of diabetes and hypertension in 2012-13, increasing with age and more common among women than men. Less than 30% of people living with diabetes were aware of their illness.

Figure 64: Prevalence of diabetes as determined by fasting glucose in adult aged 15+ years living in Ifakara, May 2012–June 2013

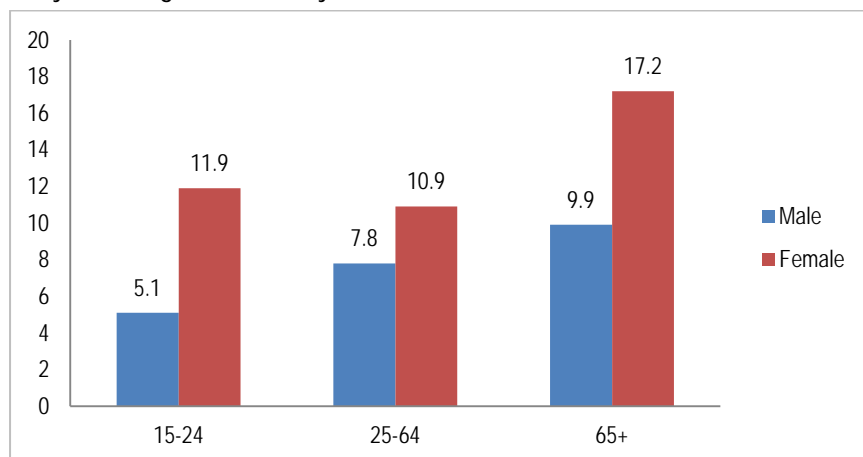
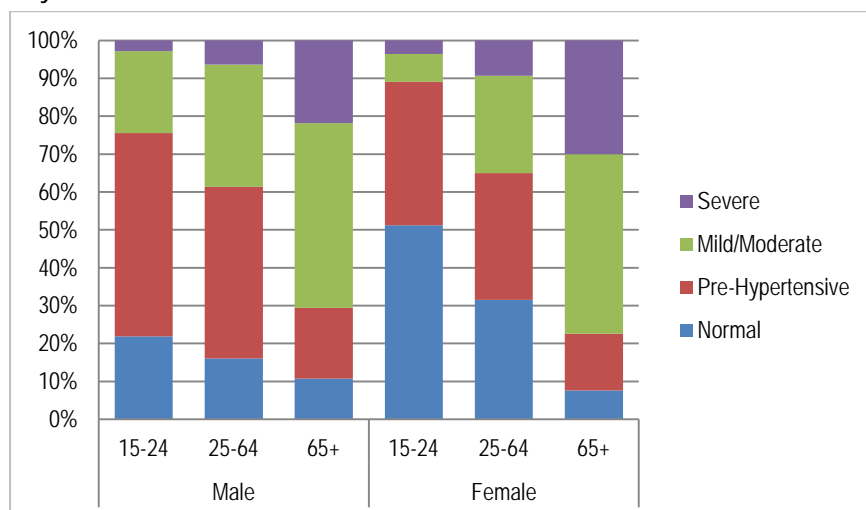


Figure 65: Hypertension by age and sex in adult living in Ifakara, May 2012-June 2013



## 5.2 MENTAL DISORDERS

The HSSP outlines that mental health in the community should be promoted and the focus should be on prevention of mental illnesses. There are very little reliable data on the relative importance of mental disorders, as well as the coverage of key interventions and service availability.

The WHO World Mental Health Survey occurring between 2001 and 2003 showed that the prevalence of a lifetime risk of a DSM-IV disorder is between 18% and 36%.<sup>10</sup> There are several local studies. For instance, a study was conducted in Dar es Salaam to examine rates of common mental disorders stratified by socio-economic factors, demographic characteristics and social functioning. Women had higher prevalence of mental disorders in comparison to males (36% v/s 25%). Relationship problems, income instability and death of a loved one demonstrated higher odds for mental disorders.<sup>11</sup>

Epidemiological data on mental health are lacking.

<sup>10</sup> Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Chatterji, S., Lee, S., Ormel, J., ... Wang, P. S. (n.d.). The global burden of mental disorders: an update from the WHO World Mental Health (WMH) surveys. *Epidemiologia e psichiatria sociale*, 18(1), 23–33. Retrieved from <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3039289&tool=pmcentrez&rendertype=abstract>.

<sup>11</sup> Jenkins, R., Mbatia, J., Singleton, N., & White, B. (2010). Common mental disorders and risk factors in urban Tanzania. *International journal of environmental research and public health*, 7(6), 2543–58. doi:10.3390/ijerph7062543.

In the absence of data modeling is used to obtain an idea of the relative importance of mental and behavioural disorders in Tanzania. These are heavily based on modeling data from other countries and providing disability weights to those living with the condition. According to the IHME GBD, the DALY due to mental and behavioral disorders in Tanzania has increased from 2.3% to 4.1% between 1990 and 2010. Females are more affected than males. Unipolar depressive disorders have the highest DALY across time, sex and age within the country (GBD, 2012).<sup>12</sup>

## 5.3 INJURIES

Road traffic injuries are a major cause of disability and death globally, with a disproportionate number occurring in developing countries. The problem is increasing at a fast rate in developing countries due to rapid motorization and other factors.

In Tanzania, just under 1 million vehicles were registered by 2010 (977,468). In 2010, 10,162 road traffic accident related deaths were estimated to have occurred (22.7 per 100,000 population), and about one third are pedestrians. For every deaths there were five injured persons reported. The number of deaths has been increasing over time.

In 2011, the Tanzanian Traffic Police reported 3,981 deaths and 20,802 injuries on Tanzanian roads. Pedestrians accounted for 32% of deaths and 20% of injuries (Tanzania Traffic Police (2011)). Since 2007, the number of road deaths has increased by an average of 10% per year, and injuries by an average of 7% per year. Dangerous driving is the leading cause, followed by bad roads, defective motor vehicles, excessive speed and careless pedestrians. Three fourth (75%) of accidents are caused by human factors, namely careless driving, speeding and overtaking.

Violence-related deaths in Tanzania was 10,357 deaths or 2.35% of all deaths. The HMIS hospital mortality reports do not include traffic deaths and several other injuries. The verbal autopsy based data from the sentinel panel of districts/SAVVY project however provide an idea of the relative important of injuries as a cause of death. As presented in Section 2 on Mortality and Morbidity, injuries are associated with 4% of deaths in children under five years and 9% of deaths in persons aged 5 years

Reliable data on injuries including road accidents are lacking.

According to the sentinel panel of districts 9% of deaths 5 years and older are due to injuries.

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<sup>12</sup> IHME (2013). Global Burden of Disease. Retrieved from <http://www.healthmetricsandevaluation.org/gbd>



## Main findings

According to the HSSP III indicators on financing, health workforce, and service delivery, there is only limited progress in the strengthening the health system components. There was more money for health as total health expenditure went up, particularly from external sources in 2011–12. The government contribution reached the Abuja target of 15% during 2008–09 but has dropped to 11% since. Coverage of financial risk protection is still low, and out-of-pocket expenses made up almost one-third of total health expenditure in 2011. Data from the 2012 National Health Accounts were not yet available at the time of this analysis.

The *health workforce* situation is slowly improving but shortages of health workers continue exist throughout the country. According to the HRHIS, there are 5.4 per 10,000 doctors and nurse/midwives in Tanzania mainland, and 7.2 per 10,000 if AMOs and clinical officers are also included. There appears to be a modest upward trend, but no reliable trend data are available. Threefold differences in health workers densities exist between regions. The output of training institutions however has increased greatly and the challenge is shifting towards absorbing the large numbers of graduates from Tanzania's 134 training institutions.

*Outpatient utilization* rates, often considered an indicator of general access to health services, did not increase during 2009–12 and remained at a low 0.7 visits per person per year. Service readiness, in terms of general status, diagnostics and medicines availability, improved only slightly during 2009–2012 and there is still much scope for improvement. Indicators of universal precautions for infection control in health facilities showed a deterioration.

Tanzania has many *policies* and strategic plans, with some but not sufficient coordination. Some specific policy measures during or just prior HSSP III are having positive effects on programme coverage indicators, as shown in the previous sections.

### 6.1 POLICIES

Tanzania has multiple policies and strategy documents that relate to health and health programmes which can be classified into three categories: overall development plans with a health component, general health plans, and specific health programme plans.

## Overall development plans with a health component

The most critical documents, which direct health policy within Tanzania, are: Tanzania vision 2025 (1999–2025), the national strategy for growth and reduction of poverty 2010–15 (MKUKUTA II) and more recently the Tanzania Five Year Development Plan (FYDP) 2011–12/2015–16. Of these, MKUKUTA has several health indicators that are linked to the Global Millennium Development Goals (MDGs). While the FYDP recognises the progress made in the health sector (also noted in this MTR analytical report) it also has a comprehensive list of areas where the Tanzania health sector faces challenges and needs to focus its interventions. These include:

- Insufficient mechanisms and methods for care and rehabilitative treatment services at all levels;
- Insufficient resources to facilitate the construction and rehabilitation of health facilities at all levels;
- Inadequate housing and low incentives for public health workers;
- Inadequate health personnel (medical doctors, nurses and paramedical graduates, laboratory technicians);
- Inadequate health tools and equipment at all levels;
- Inadequate pharmaceuticals and drugs for curative and preventive measures;
- Inadequate health information systems to facilitate efficient health planning and programmes;
- Inadequate resources/finances to improve the health systems and services;
- Inadequate disease prevention and control.

The FYDP further identifies goals and priority strategic interventions to address the above challenges in order to reach to the following key outputs/targets for 2015–16:

- To reduce the burden of Malaria by 80% by the end of 2015–16 from current levels;
- To increase and strengthen services for care and treatment of people living with HIV/AIDS to reach 800,000 by 2015–16;
- To reduce prevalence and death rates associated with Tuberculosis by 50% by 2015–16;
- To reduce maternal mortality from 578 to 175 per 100,000 live births and under-five mortality from 112 to 45 per 1,000 live births by 2017;
- To increase percentage of women delivered by skilled attendant from 46% of 2004 till 80% by 2015–16;

It is anticipated that the health goals and targets in the general development plans (Vision 2025, MKUKUTA and FYDP) are translated into the general health plans and the specific health programme plans.

## General health plans

The first Tanzania national health policy was released in 1990 and was revised in 2007. The current version of the National Health Policy (2007) was updated based on the above national development strategies and goals. The third Health Sector Strategic Plan July 2008–June 2015 (HSSP III) and the Primary Health Services Development Programme 2007–17 (MMAM or PHSDP) interpret the policy with clear strategies, goals and plans to achieve the stated goals.

Tanzania has many strategic plans with some but not sufficient linkage to the overall strategic plan for the health sector.



HSSP III was released in 2009 for implementation until 2015. It was developed using the MDGs, MKUKUTA II, Vision 2025 and MMAM. The HSSP III is the main document that guides the implementation of the National Health Policy taking into consideration of the national development plans and global strategies.

On the other hand, the health sector HIV and AIDS response is in addition guided by the National Policy on HIV/AIDS 2001, the HIV and AIDS Prevention and Control Act (HAPCA) 2008 and the second National Multisectoral Strategic Framework for HIV and AIDS (NMSF II) 2008–2012 (just recently replaced by NMSF III 2013–17).

Finally, there is a Ministry of Health and Social Welfare (HQ) Medium Term Strategic Plan that guides the MOHSW on delivery of health and Social Welfare services. There are some linkages with MMAM and HSSP III.

## Specific health plans

There are many health programmes which are guided by five or more year plans. Some are strongly linked to HSSP III, others are not. The reviews for the programmes are usually conducted independently from the annual health sector review, which focuses on HSSP III. There are many plans were developed before HSSP III. For example, the National road map strategic plan to accelerate reduction of maternal and newborn and child deaths (One plan) (2008–2015) determines the health sector maternal, newborn and child health goals but this document was released before the HSSP III. Also some plans have ended or outdated but were not updated to be in line with HSSP III. The following plans for major health programmes exist:

- The National Road Map Strategic Plan to accelerate reduction of maternal and newborn and child deaths (One plan) (2008–15);
- National Malaria medium term strategic plan 2008–13;
- National TB and leprosy programs 2009–10/2015–16;
- Health sector HIV/AIDS strategic Plan 2008–12;
- National strategy for NCD control 2008 (draft);
- National strategy for NTD control 2012–17;
- The Expanded Programme on Immunization (EPI) Comprehensive Multi-year plan 2006–10;
- Human Resource for Health (HRH) Strategic Plan 2008–13
- Social Welfare Plan 2008–13
- National Drug Policy and Pharmaceutical Master Plan 1992-2000

Within the context of the general and specific plans, policies have been development and implemented during HSSP III (or shortly before). Some of the major policy changes during 2007–12 included:

### HUMAN RESOURCES FOR HEALTH

- Increased production of HRH that includes reinstatement of some lower cadres like Clinical Assistants, two year Nursing courses that were removed at the beginning of the health sector reforms.
- Pay for performance: a pilot project in one region, Pwani, was initiated in 2012 (see box). The P4P work has only limited coverage and cannot be expected to have had any effect on national trends in health indicators.
- Lessons from the Mkapa Fellows programme, Emergency Hiring Project and Tanzania Human Resource Capacity Project on recruitment, deployment and retention of health workers in the rural areas have been adopted by the government (POPSM, PMORALG and MOHSW).

Tanzania has many strategic plans with some but not sufficient linkage to the overall strategic plan for the health sector.

## HEALTH FINANCING

- Introduction and expansion of complementary health financing mechanisms (Community Health Fund-CHF, National Health Insurance). In the efforts to increase funding to the health sector and improving management of the schemes, the Government shifted the management and administration of the CHF to be under under the National Health Insurance Fund (NHIF)
- The MOHSW started the development of a comprehensive health financing strategy. The strategy (in the final stage of completion) will be a road map towards the development of a National Health Financing policy

## ESSENTIAL HEALTH PACKAGE

- Tanzania has set guidelines and assessment tools for a National Essential Health Package (NEHP). Also the guidelines for Comprehensive Council Health Plans (CCHP) have been updated to be in line with HSSP III and the NEHP

## PUBLIC PRIVATE PARTNERSHIP (PPP)

- The objective is to engage the private sector in the efforts to improve access to health services. The Government has developed a PPP policy (2009), Act (2010) and Regulation (2011). Reforms that have been implemented include Service Agreements between district councils with non-public providers (Faith based or Private) to deliver services to the population. MOHSW milestones for 2012-2013 set the target of all hospitals having service agreements by June 2013. As of May 2012, 37 out of 130 districts/councils had entered into service agreement with private providers

## Innovative approaches

The Ministry of Health and Social Welfare, with financial support from the Government of Norway has been piloting a Pay-for-Performance (P4P) scheme in Pwani Region. The Scheme aims to motivate health workers at facility level, as well as their managers at the Council and Regional level by providing 6-monthly results-based bonus payments on achieving pre-defined performance targets for specific Reproductive and Child Health (RCH) services. The Scheme is designed to improve maternal and newborn health (MNH) service use and quality. All public, private and faith based facilities providing RCH services in all seven districts of Pwani Region are eligible to participate. The implementation of P4P has been accompanied by the introduction of the new Health Management Information System (HMIS) that has been designed to strengthen the collection and use of HMIS data.

The Government of Tanzania through the Health Sector Strategic Plan has endorsed P4P as an approach to improving motivation and performance in the health sector. Following a national stakeholders' meeting in January 2013, the Ministry of Health and Social Welfare is now reportedly engaged in a transition phase, from a pilot phase to a national programme slated to begin in July 2014. According to the proposed plan, the completion for scale up to all 25 regions will occur by June 2018. To this end, a task force has been set up to consolidate lessons learnt from ongoing or recent P4P initiatives in the country, including the Pwani pilot, to inform the national approach. The process of developing a sustainable financing is ongoing.

The recent evaluation by Ifakara Health Institute (IHI) in collaboration with the London School of Hygiene and Tropical Medicine (LSHTM) and the Chr. Michelsen Institute (CMI) covered the process, impact and economic evaluation/costing of the P4P Pilot. The preliminary analysis reported several positive effects, and multiple challenges related to the implementation of the scheme.

## Operational plans and budget

The government has adopted the Medium Term Expenditure framework (MTEF) as a tool for planning and allocating resources to priority interventions funded by GOT and development partners (DPs). The MOHSW has managed to ensure that most of the funding from GOT and DPs (general budget support, basket funding or direct to project) are channelled through the MTEF. At the council level, the CCHP is used for this purpose. However, there are still many specific health programmes with interventions not fully included in the MTEF or CCHP.

## Program reviews

The monitoring of progress is not well aligned. Most of the major programs have specific monitoring and evaluation plans supported a Monitoring and Evaluation Unit that is independent and not accountable or responsive MOHSW M&E Unit. Also, many of the programmes conduct specific reviews or evaluations based on the their strategic plans. Ideally the specific reviews should be conducted prior to the main sector review and the results are fed into the overall joint annual health sector review (JAHSR). This is always an exception rather than the norm. Each year, the MOHSW M&E unit organises a M&E day prior to the JAHSR to focus on specific achievements in the sector. This is an opportunity for specific health programmes to coordinate and align with the monitoring and evaluation of the HSSP III, but in most cases it becomes a missed opportunity.

## Way forward

As shown above, with separate strategic plans, operational plans (work plans) and budgets, specific health programmes are less in sync with the HSSP III, the MTEF and CCHP. However, they are addressing key priority interventions that are inline with national development plans and global targets. At the same time, there is a large amount of resources used for program management, M&E, planning, reviews and evaluation that can be saved to increase the cost effectiveness of these interventions.

In the past, the MOHSW had several policies for each health programme addressing diverse health priorities. A policy decision was made to have only one policy and instead, health programmes can develop policy guidelines to interpret the national policy and guide lower levels in its implementation. To date, there are very few policy guidelines that are up to date. Instead, health programmes are developing specific strategic plans with accompanying operational plans and budgets.

The ongoing MTR presents an opportunity for further harmonization of plans and documents. In particular, there is a need to have a national health sector strategic framework that addresses the needs of all health programmes. The specific health programmes would however continue to have individual operational plans and budgets (in line with MTEF) that emanate for the fourth Health sector Strategic Plan (HSSP IV) or could be the renamed as first Health Sector Strategic Framework (HSSF I) as it will be broader than the current HSSP III.

Tanzania would benefit from a policy decision of having one Health Sector Strategic Framework that interprets the national development plans into specific guidance for the health sector. Specific health programs to develop costed operational plans from HSSP IV or HSSF I.

## 6.2 HEALTH FINANCING

### HSSP III TARGETS AND INDICATORS\*

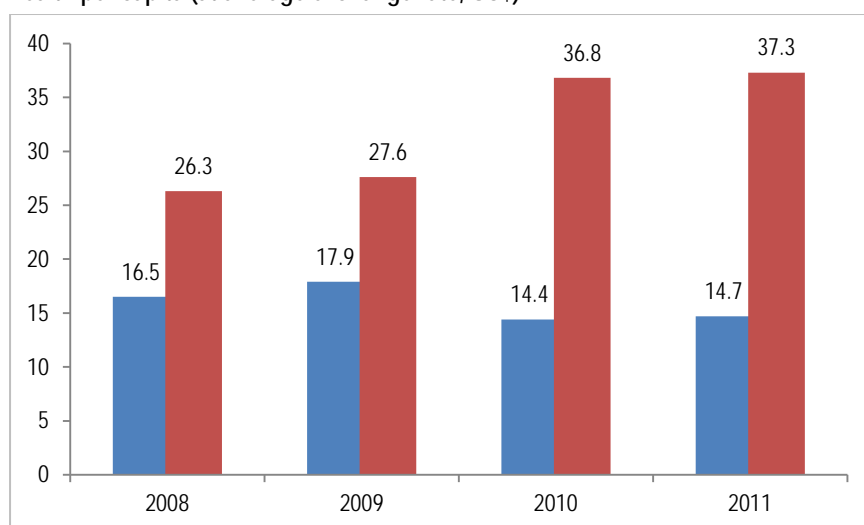
Indicator	Baseline 2008	Target 2015	Achievement 2012	Status/comment
General government expenditure on health as % of total government expenditure	5.4% (WHO, 2008) 10.2% (PER 2007)	15% (Abuja)	11.1% (2011, WHO)	Was above Abuja target of 15% in 2008 and 2009 but dropped to 11% in 2010–11
Total expenditure on health per capita (average international \$)	37.3		37.3	No progress
Insurance coverage/enrollment in CHF/THIKA	9% (2007, VHF report)	80% of target population	3% of women and 4% of men (TDHS 2010)	93% of men and 94% of women have no insurance coverage

\* Ministry of Health and Social welfare. Human resource for health strategic plan 2008–2013. January 2008. The plan includes over 100 process indicators for monitoring.

### DATA SOURCES AND QUALITY

- Public expenditure reviews are conducted on an annual basis.
- National Health Accounts: the last NHA was conducted in 2010; the data of the 2012 NHA were not yet available at the time of this analysis.

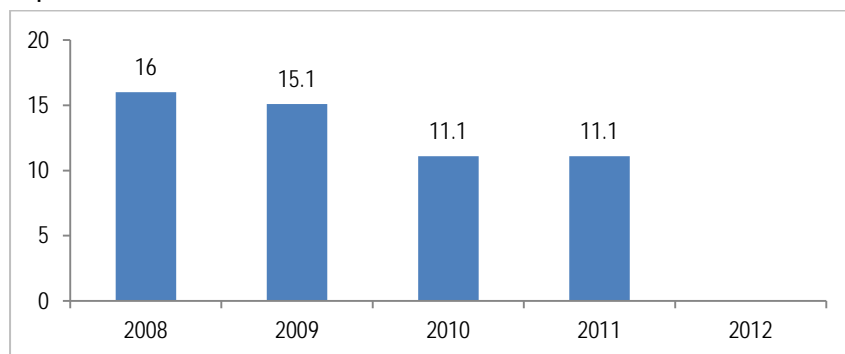
Figure 66: Total Health Expenditure and government expenditure on health per capita (at average exchange rate, US\$)



WHO statistics provide an indicator of the trends in the key indicators. Per capita Total Health Expenditure increased dramatically from \$26 to \$37 (at average exchange rate) during 2008–11. The government contribution however declined in both absolute and relative amounts: from \$16.5 to \$14.7, or from 63% to 37% of the total health expenditure.

**Total health expenditure per capita increased from \$26 to \$37, mainly due to greater external resources.**

Figure 67: Government Expenditure on Health as percent of Total Government Expenditure, 2008–12



The government expenditure on health as part of total government expenditure was 11% in 2010 and 2011. This was considerably lower than in the two previous years when the Abuja target was met. The total expenditure per capita (at PPP international \$, as specified in the HSSP III indicator) increased during 2008–2011 from \$68 to \$107, for an important due to the increased external sources.

The NHA exercise in 2013 will provide new data on the key indicators and also include subaccounts for the health priorities.

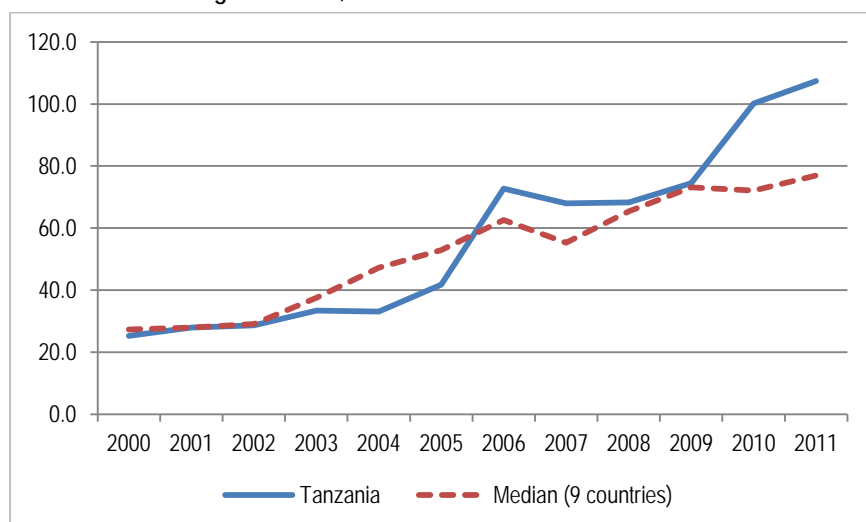
According to the THDS 2010, less than 1% of respondents report having health insurance through social security, 4% of women and 3% of men are covered by health insurance through their employers, and 2% of women and 3% of men have mutual health organization or community-based insurance. In other words, 94% of women and 93% of men have no health insurance coverage.

For 2011, private expenditure was estimated at 61% of total health expenditure. Of the private expenditure 52% was out-of-pocket expenditure. Thus, overall, 31% of total health expenditure was out of pocket.

Government expenditure on health as part of total government expenditure was 11% in 2011–12.

Insurance coverage levels are below 10%; out-of-pocket expenditure was 31% of total health expenditure.

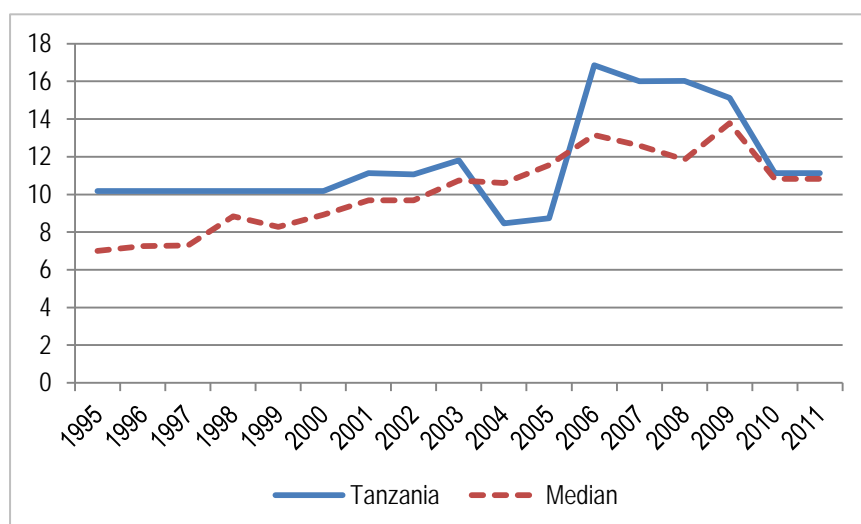
Figure 68: Per capita total health expenditure (PPP int. \$), Tanzania and subregional trend, 2000–11



The comparison of trends in per capita total health expenditure (in PPP international \$) between Tanzania and the median of nine subregional countries during 2000–11 shows that the increase over time was similar until 2009 when expenditure increased more than three times in Tanzania and the comparison countries. In 2010 and 2011 however Tanzania had a much larger increase than the median of the nine countries (not data for Zimbabwe), using WHO data. In 2011, Tanzania had the third highest per capita total health expenditure, after Rwanda and Uganda. In 2008, Tanzania was still ranked fifth after Uganda, Rwanda, Zambia and Malawi, but before Kenya.

Tanzania Total Health Expenditure per capita and the government expenditure on health are about average for the subregion.

Figure 69: General government expenditure on health as % of total government expenditure, Tanzania and regional median



In 2011, general government expenditure on health as a percent of total government expenditure in Tanzania was the same as the median for the nine subregional countries. Tanzania had the fifth highest proportion, after Rwanda, Malawi, Zambia and Ethiopia, and just ahead of DR Congo and Uganda. In 2008, the situation was different, when Tanzania spent a much larger proportion than the median of the nine countries and was ranked third after Rwanda and Malawi.

## 6.3 HEALTH WORKFORCE

### HSSP III TARGETS AND INDICATORS\*

Indicator	Baseline 2008	Achievement 2012	Target 2015	Status/comment
Medical Officers and Assistant Medical Officers (AMO) per 10,000 population (by region)	0.7 (0.4 MO and 0.3 AMO (HMIS 2004–5)	0.9 (0.5 doctors and 0.4 AMO) (HRHIS 2012)	-	Data quality issues, increase during 2009–12 is possible but data not conclusive
Nurse midwives per 10,000 population (by region)	2.6 (HMIS 2004–05)	4.9 (HRHIS 2012)	-	Increase over time
Pharmacists & pharmacy technicians per 10,000 population (by region)	0.15 (HMIS 2008)	0.15 (HRHIS 2012)	-	No increase during 2009–2012
Number of training institutions with full NACTE accreditation	1 (2008)	56/134 institutions	30	56 have full accreditation

\* Ministry of Health and Social welfare. Human resource for health strategic plan 2008–2013. January 2008. The plan includes over 100 process indicators for monitoring.

#### DATA SOURCES AND QUALITY

- **Health facilities reports:** HMIS data includes staffing by cadre for the facilities, which are aggregated at the districts.
- **Human resources for health information system (HRHIS):** maintained by the HRH unit in the Ministry of Health and Social Welfare. The HRHIS is separate from the payroll and includes the whole health workforce. It has improved in 2012 following the development of an individual level registry of health workers. It also includes the **Training institution information system (TIIS)** which has comprehensive data on all training institutions.
- **Quality:** the comparison of the two sources and the same source over time shows many inconsistencies in reporting completeness and quality. The HRHIS data base is more comprehensive and will be used but it is difficult to compare with previous years, as the system is improving every year. The reporting by national referral institutions is still incomplete. Also reporting by private institutions is considerably poorer than for public institutions.

## National levels and trends

The HRHIS is gradually improving. Since 2009, work has been ongoing to develop an individual health worker based registry with some 30 variables. A national profile based on the HRHIS compared 2001, 2006 and 2011 data on numbers and density of health workers for broad groupings.<sup>13</sup> For 2012 more detailed lists of cadres were provided. The HMIS data also provide information on annual trends during 2009–12 for a large number of cadres, but data are less complete for most cadres. Completeness of the register is difficult to estimate in the absence of a census of health workers. Incomplete reporting is likely to be higher for the eight national referral hospitals, especially Muhimbili Medical Centre, KCMC and Buganda. In fact, Muhimbili Medical Centre data were not yet complete by the time of this analysis. In addition, data from the private sector are less complete than those from the public sector.

<sup>13</sup> Ministry of Health and Social Welfare. Human resource for health profile country profile 2011. Dar es Salaam. July 2012.

**Table 21: Number of health workers for selected core cadres, 2011 (National HRH profile) and 2012 (HRHIS)**

	2011	2012	Density per 10,000 population (2012)	Graduates in 2012
Medical officers	1,123	1,353		625
Medical specialists	1,099	916		205
Total medical doctors	2,210	2,269	0.5	830
Assistant medical officer	1,561	1,868	0.4	235
Clinical officer	4,780	6,006	1.4	523
Paramedical practitioners (AMO, Clinical Officer)	6,341	7,874	1.8	758
Nurses/midwives	21,252	21,736	5.0	(2450)
Total doctors/nurses /midwives	23,462	24,005	5.5	
Total health professionals	29,803	31,879	7.3	
Skills mix (ratio nurses/clinicians)	2.5	2.1	-	

\* The actual number of nurses/ midwives graduating in 2012 was uncertain at the time of this publication

According to the HRH profile 2011, there was a major increase in doctors during 2006-2011: generalist medical practitioners went up from 447 to 1,121 and specialist medical practitioners from 130 to 1,099, totalling 2,210 physicians.

The 2012 data showed a similar number of medical doctors but considerably less medical specialists. This may be due to incomplete coverage of the national referral hospitals. It may also be partly due to differences in how medical doctors are classified into general practitioners and specialists. The density was 0.5 doctors per 10,000 population in 2012. According to the 2011 profile, 69% of the medical doctors and over 90% of the medical specialists were working in urban districts.

In 2012, there were 1,868 assistant medical officers (AMOs), who are part of paramedical practitioners (with clinical officers), or also referred to as non-physician clinicians. The density is 0.4 per 10,000 population and 39% of the AMOs are working in urban districts. Clinical officers are more numerous: 6,006 in 2012, or 1.4 per 10,000 population.

In 2012, the classification of nurses and midwives differed from previous years, making it hard to assess the trend. The three main categories are nurse & nurse-midwife (not separated, 14,096), assistant nursing officer and nursing officer. These combined figures correspond with 21,736 or 5.0 nurse-midwives per 10,000 population. Nurse-midwives are predominantly working in rural districts (64%), while about six in 10 (assistant) nursing officers are working in urban districts.

The four main cadres add up to 31,879, or 7.3 health professionals per 10,000 population. For the mainland there are 2.7 nurse-midwives for each physician or AMO. The skills mix ratio becomes 2.1 clinical officers are added.

In 2012, there were 339 pharmacists, 224 pharmaceutical technologists, and 81 assistant pharmaceutical technologists. Together this corresponds with 0.15 pharmaceutical staff per 10,000 population. It is an upside down distribution: more higher qualified pharmacists than lower qualified pharmaceutical technologists.

The HRHIS registry also provides data on many other cadres in 2012. For instance, there are 118 dental surgeons in Tanzania, plus 187 dental therapists; 390 environmental health officers; and 19,542 medical attendants (who often

There are 5.4 doctors + nurses/midwives per 10,000 population.

And 1.9 per 10,000 assistant medical officers and clinical officers.

It is difficult to ascertain the trend, because of improvements in the HRHIS over time.



have very little training). In total, the health workforce consists of 64,449 persons, of which two-thirds are female and 61% is located in rural districts.

The accreditation of training programmes for health professionals is done by the National Council for Technical Education, requiring the institutions to have programs and quality assurance systems in place that ensure education standards. In 2011, there were 134 training institutions of which half were government. Half (68) were nursing and midwifery training institutions. There are eight medical schools, two from the government, 4 not for profit and 2 for profit. By 2012, 56 of the 134 training institutions had been fully accredited by NACTE. In addition, 14 had received a provisional license.

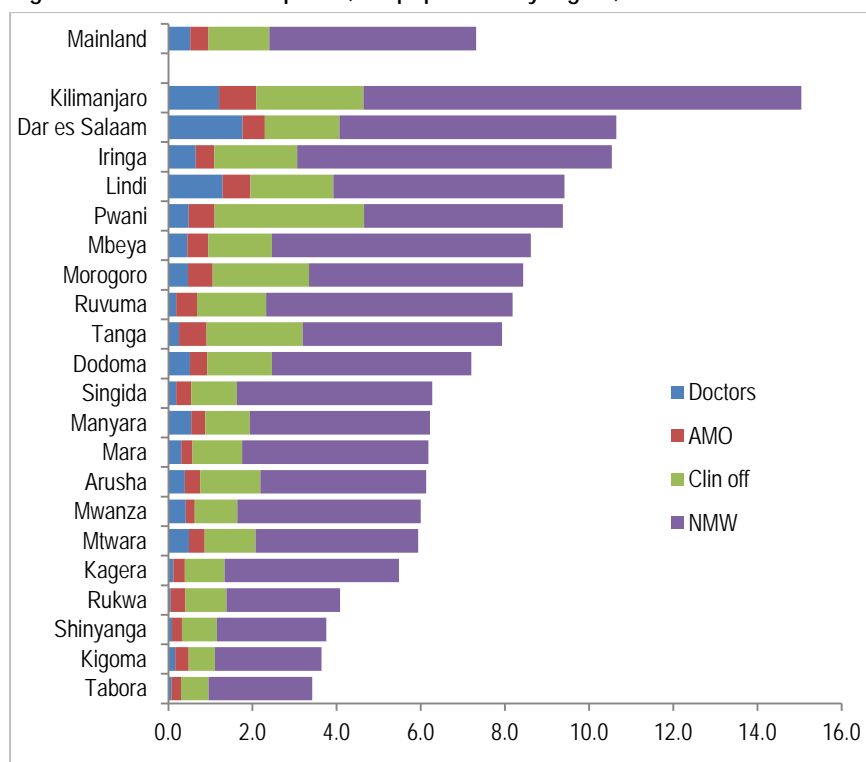
The output of training institutions in 2012 was high for doctors and non-physician clinicians. In 2012, 830 physicians graduated, which is 37% of the total number of physicians working in 2012. If these medical doctors can be absorbed by the labour market, the medical doctor densities would increase very rapidly. There is however an absorption capacity issue in Tanzania.

For other cadres the output of training institutions is more in proportion to the numbers currently employed. For AMO, CO and nurses/midwives the output of training institutions was 13%, 9% and 12% respectively of the numbers working.

The output of training institutions has increased, especially for doctors with the number graduating in 2012 equal to one-third of the working population.

### Regional levels and trends

Figure 70: Health workers per 10,000 population by region, 2012



Health worker density varies from below 4 per 10,000 in Rukwa, Kigoma, Shinyanga and Tabora regions to more than 10 in Kilimanjaro, Dar es Salaam and Iringa regions.

The HRHIS data show the substantial differences in health worker density between regions. Kilimanjaro and Dar es Salaam region already have higher workforce density without the major referral hospital data. The range of the densities of core health workers - medical doctors, AMO and nurse-midwives - is from below 4 per 10,000 in Rukwa, Kigoma, Shinyanga and Tabora to 8 in Iringa, with a mainland average of 5 per 10,000 population. Adding clinical officers to the core health professionals changes the picture slightly for Pwani and Tanga regions which have high numbers of clinical officers. The skills mix varies by region from 1.7 in Tanga to 3.6 in Kagera and 3.8 in Mwanza.

## 6.4 HEALTH INFRASTRUCTURE & SERVICE DELIVERY

### HSSP III TARGETS AND INDICATORS\*

Indicator	Baseline 2008	Target 2015	Achievement 2012	Status/comment
Number of outpatient visits per capita	0.78 (Health indicator profile 2007/8)		0.69 (HMIS, 2012)	There is no clear increase in OPD visits over the past 4 years
Health facilities without any stockout of 4 tracer medicines and 1 vaccine	0% (2006)			Change indicator to 10 tracer drugs which is now routinely collected in DHIS

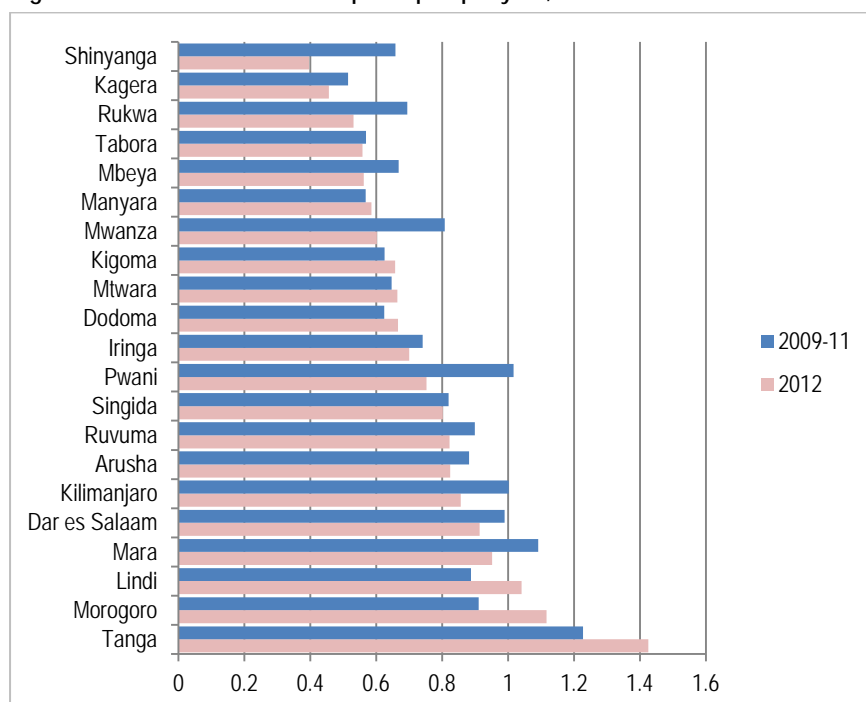
\* Ministry of Health and Social welfare. Human resource for health strategic plan 2008–2013. January 2008. The plan includes over 100 process indicators for monitoring.

### DATA SOURCES AND QUALITY

- **Health facilities reports:** HMIS data are the main source of OPD visit data. Reporting of stockouts is also monitored in the HMIS (self-reports by facilities).
- **Facility surveys:** provide objective data on the readiness of services including the availability of tracer drugs. SARA 2008–09 and SARA 2012 provide such data.
- **Quality:** the quality of the OPD data is affected by issues related completeness and accuracy of reporting, and the trend has to be interpreted with great caution.

### Outpatient department (OPD) visits

Figure 71: Number of OPD visits per capita per year, 2009 and 2012



On average there was 0.7-0.8 outpatient visit per person per year, with no increase during 2009–2012.

The mean number of OPD visits per person per year is an indicator of the overall utilization (and indirectly of access) of curative health services.

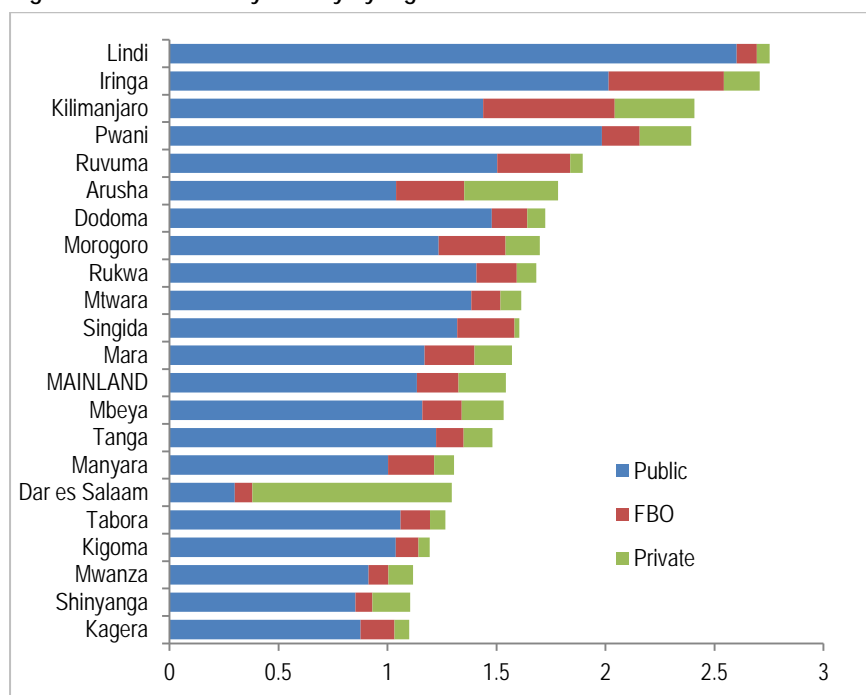
According to the HMIS, the number of OPD visits remained well below 1 visit per person per year. In fact, the mean OPD visits per capita per year declined from 0.85 in 2009, to 0.81 in 2010, 0.73 in 2011 and 0.69 in 2012. This may be a true trend, but it may also be related to reporting completeness and accuracy. Children under five accounted for 45% of the visits in 2009 and for 47% in 2012.

In 2012, two regions had mean OPD utilization rates below 0.5: Shinyanga and Kagera. Only Lindi (1.04) and Tanga (1.42) recorded figures above one visit per person per year. Most regions had lower rates in 2012 than in 2009–2011. For Tanga this is likely to be a overreporting issue, as the rate is not consistent with the previous year. Some regions such as Shinyanga and Pwani showed considerable drops in the number of visits. For Pwani this is possibly associated with the transition to a new HMIS system (DHIS 2.0). In general, the regional comparison appears to be affected by data quality issues. It is likely that OPD figures are an underestimate of the true number of visits. It is not clear why this is more pronounced in 2012 than in the earlier years.

### Facility density

There are no HSSP III Targets and indicators for health infrastructure. The number of health facilities increased from 6,214 in 2009 to 6,734 in 2012. This corresponds with a density of 1.5 facilities per 10,000 population, remaining the same throughout the period. The increase in the number of health facilities is just keeping up with population growth. The proportion of health facilities that are private did not increase: 15% in 2009, and 14% in 2012. Also the proportion of facilities owned by faith-based organizations went down from 14% in 2009 to 12% in 2012.

Figure 72: Health facility density by region



There is 1.5 health facility per 10,000 persons.

On 1 in 7 facilities is private for profit.

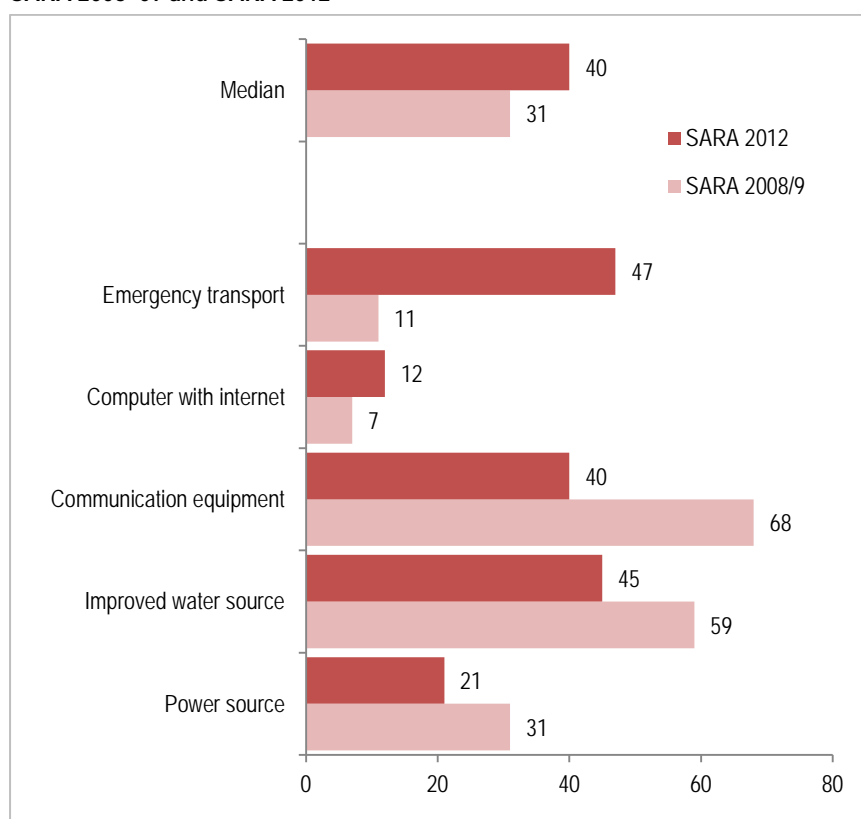
The health facility density ranged from 1.1 in Kagera, Shinyanga and Mwanza to over 2 per 10,000 population in Lindi, Iringa and Kilimanjaro. One reason for the relatively higher numbers of facilities in for instance Lindi region may be low population density. In Dar es Salaam 70% of the facilities are private, in three regions less than 5% are private for profit. Facilities with ownership by faith-based organizations are most common in Kilimanjaro (25%) and Iringa (20%). The MMAM indicator of the number of villages with a health facility could not be reported.

## General service availability and readiness

The private sector facilities accounted for 15% of the total in 2009 and 14% in 2010–12. This indicates little growth of the private sector, although there may be differential reporting or recording in the HMIS: private facilities have a smaller chance of getting registered in the HMIS. In Dar es Salaam 71% of all health facilities were private. Health facilities managed by faith-based organizations accounted for 12.4% of facilities in 2012. Hospitals and health centres constitute 14% of all health facilities.

The SARA 2012 and 2009 provide insights in the trend in general capacity of health facilities to deliver the health services.

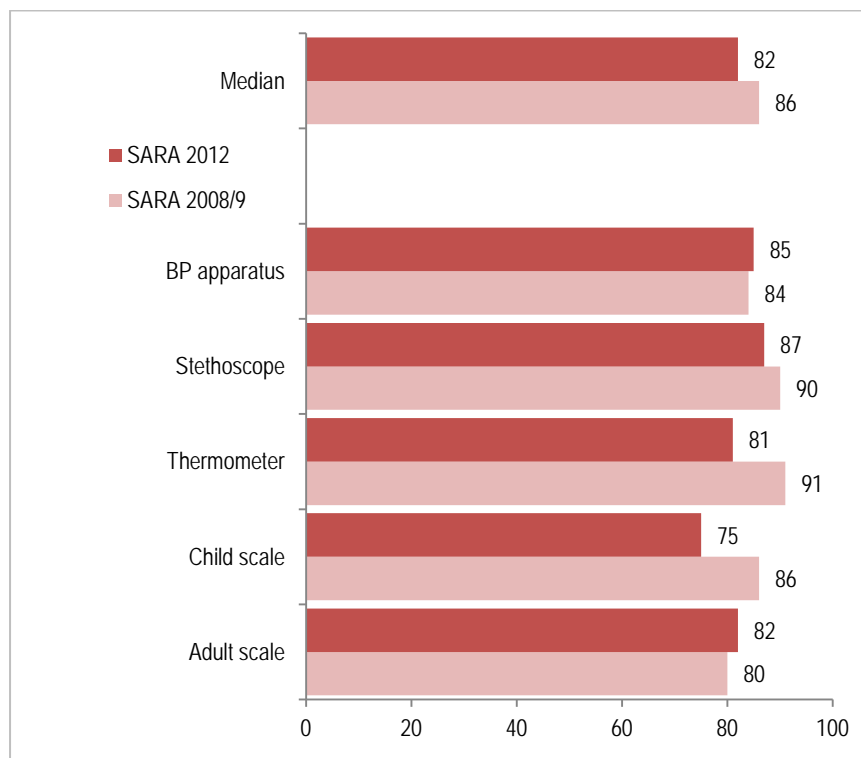
Figure 73: Availability of basic amenities (%), health facility surveys, SARA 2008–09 and SARA 2012



In 2012, more than half of health facilities do not have a regular power source, an improved water source, or designated communication equipment.

Five basic amenities were asked in both the SARA 2008–09 and SARA 2012. The proportion of facilities with three major amenities declined between the surveys: power source (facility connected to the grid, facility has power during working hours, or working generator), proportion using an improved water source was lower in 2012, and those having communication equipment (landline telephone, cellular phone or short wave radio). The latter figures are not entirely comparable, as the earlier SARA may have included mobile phones that were for private use, while these were explicitly excluded in the 2012 SARA. There was a small increase in the per cent of facilities that had computer with internet/email access. The large difference in the availability of emergency transport needs further investigation.

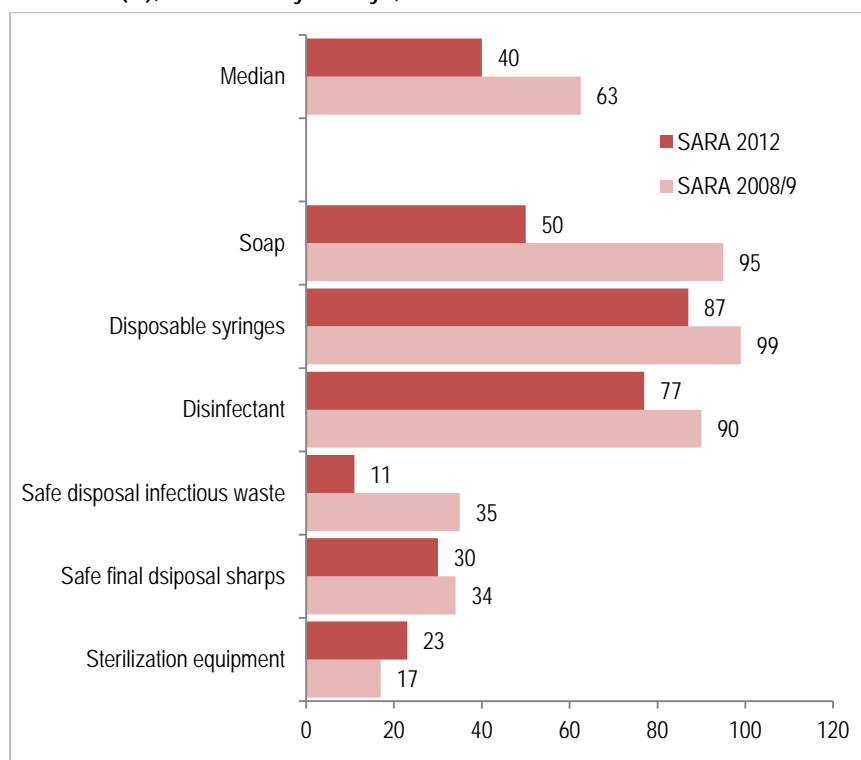
Figure 74: Availability of basic equipment (%), health facility surveys, SARA 2008–09 and SARA 2012



In 2012, over 80% of health facilities had the tracer equipment items, similar to 2008–09.

Six pieces of equipment could be compared between the two facility surveys. In general there was little change between 2009 and 2010 with over 80% of facilities having the key equipment. There was however a decrease in the availability of child/infant weighing scales.

Figure 75: Availability of elements for universal precautions to prevent infections (%), health facility surveys, SARA 2008–09 and SARA 2012

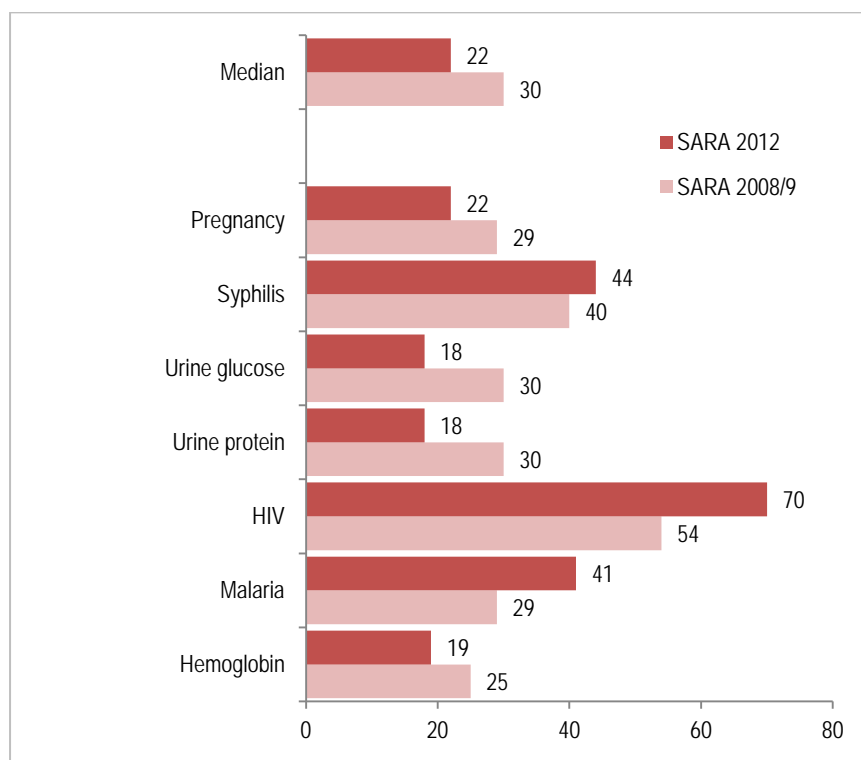


The availability of elements for universal precautions to prevent infections was poor and lower in 2012 than in 2008–09.

Gaps in the readiness of health facilities to implement standard precautions for prevention of infections remained, and if anything got more serious. Disposal of infectious waste and sharps remained unsatisfactory in the majority of facilities. Sterilizing equipment (autoclave, or dry heat sterilizer and heat source if not electric) was available only in the minority of facilities (78% of hospitals in 2012). The availability of soap and disinfectant declined. Latex gloves, only measured in 2012, were available in 64% of facilities. Only 38% had the guidelines for standard precautions. It is notable that the special programme for universal precautions to prevent nosocomial infections was ended and all services were integrated into other programmes. This may have had a negative effect as is suggested by the SARA trend data.

## Medicines and diagnostics

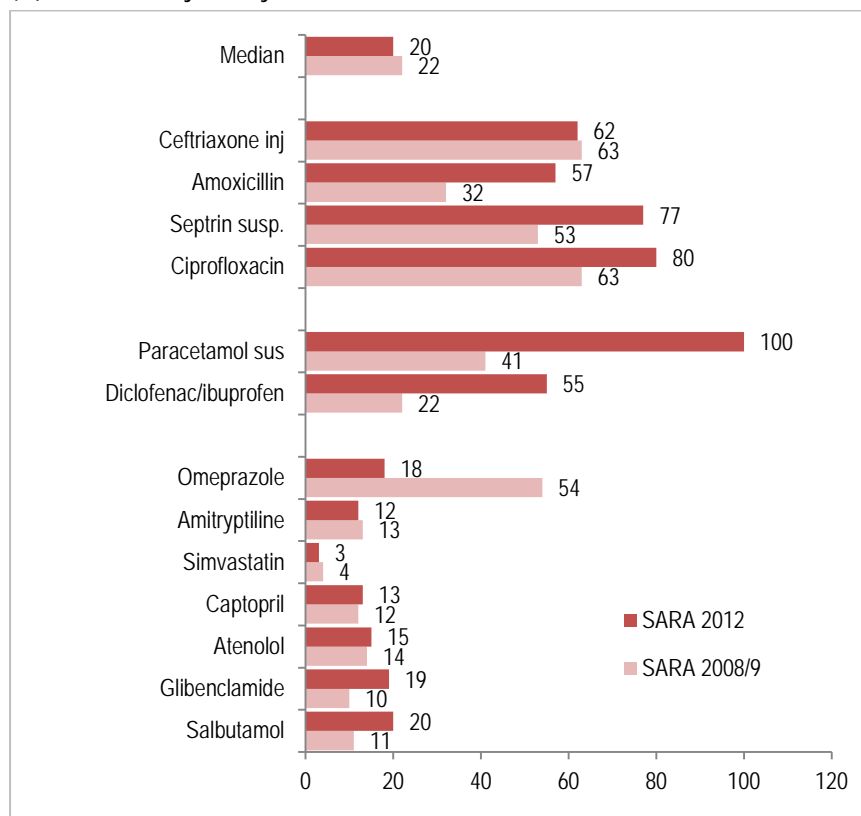
Figure 76: Availability of diagnostic tests (%), health facility surveys, SARA 2008–09 and SARA 2012



The availability of diagnostic tests on-site was low and declined during 2008–09 and 2012.

The availability of diagnostic tests on-site, meaning the capacity to do so and having the equipment and reagents, went down between 2008–09 and 2012 from 30% to 22%, based on the median of seven tests. Malaria and HIV tests became more available, but all other tests went down. Only 19% of health facilities could do an Hb test in 2012.

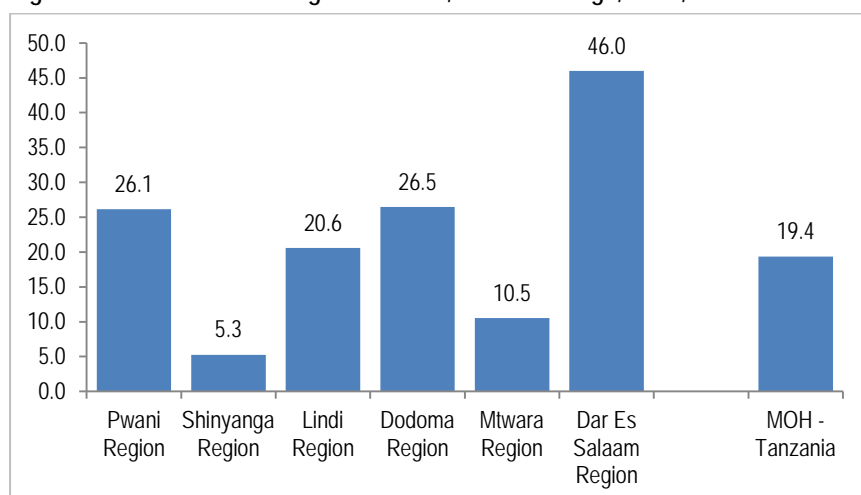
**Figure 77: Availability of WHO tracer medicines (non-expired) on the day of visit (%), health facility surveys, SARA 2008–09 and SARA 2012**



The availability of 14 WHO tracer medicines was very low for medicines against chronic adult conditions, and overall did not change between 2008–09 and 2012.

The SARA 2008–9 and SARA 2012 provide an objective picture of stock outs on the day of visit of the survey team. WHO has developed a list of 14 tracer drugs, all generic, to track the availability of medicines in facilities. The comparison shows that the availability of antibiotics improved during 2008–9 and 2012: for instance, amoxicillin went from 32% to 57%. Overall, however, the median remained low at about 20%, due to the very low availability of generic drugs against chronic diseases. The availability of drugs against malaria, TB, HIV etc. are described in previous sections.

**Figure 78: No stockout during March 2013, 10 tracer drugs, DHIS, selected districts**



The DHIS 2.0 system of reporting will provide monthly data on 10 medicines and commodities.

March 2013 data show that stockouts were very common.

The new DHIS has selected 10 tracer items to track the availability of medicines and commodities. The system has been implemented in six regions and shows that stock outs in the reporting month of at least one of the ten medicines were common. Overall, 19% had all items available during March 2013. The availability was much better in the reporting facilities in Dar es Salaam, Dodoma and Pwani than in Shinyanga.





# 7

## PERFORMANCE ASSESSMENT

The performance review aims to put all the results together and included three components:

- **Progress (effectiveness):** stepwise analysis using the results framework. This provides a general overview of where investments have been successful and whether the results follow a logical pattern where more investments led to better results or whether other factors played a more important role.
- **Equity:** Inequalities between regions/districts; urban-rural; Inequalities by gender, socioeconomic position; the previous sections provided disaggregated data for many indicators by a range of stratifiers. This analysis focuses on the performance of the 21 regions of the mainland.
- **Efficiency:** relative performance of Tanzania compared to peer countries with similar input characteristics. The results were presented in the previous sections, comparing Tanzania's inputs, coverage and health status with 10 subregional countries.

In addition, a brief lives saved (LiST) analysis is conducted for child deaths, using the coverage rates from this report as an input into the model.

### Stepwise analysis

The logical results framework includes four levels. Inputs refer to financing, health workforce, medicines, governance etc.; outputs to all aspects of service delivery including quality; outcomes are coverage of interventions including reductions of risk behaviours, and impact refers to health status measures, as well as financial risk protection. The framework is used to organize the indicators of HSSP III and provide a big picture of progress (Figure). The progress of the different indicators is shown in three colour coding where red indicates limited or no progress towards the target, orange means some progress but not enough to reach the target, and green indicates good progress and likely to meet 2015 targets.

## RESULTS FRAMEWORK AND HSSP III INDICATORS WITH PROGRESS

INPUTS	OUTPUTS	OUTCOMES (COVERAGE)	IMPACT
Government expenditure on health (%) Total health expenditure per capita	Stockouts of tracer meds & vaccine	Measles immunization coverage DTP-Hb 3 immunization coverage Vit A coverage (2 doses)	Life expectancy (years) Under-5, infant, neonatal mortality Child stunting rate
Health worker density: doctors (& other clinicians) Health worker density: nurse - midwives Health worker density: pharmacists	Outpatient visits per capita / year Insurance coverage (CHF / TIKA)	TT2 immunization coverage ANC first visit > 16 weeks ANC at least 4 visits Births in health facilities Skilled birth attendance Contraceptive prevalence rate	Child underweight rate Maternal mortality ratio Total fertility rate Adolescent fertility rate HIV prevalence among young people HIV prevalence, pregnant women (15-24) TB notification rate
Training institutes with full accreditation	TB treatment success rate	ITN use (children / pregnant women) PMTCT coverage among pregnant women ART coverage	Leprosy cases diagnosed and treated Cholera incidence rate Cholera case fatality rate Malaria prevalence in OPD Parasitemia prevalence (children)
<b>Additional</b>			
Expenditure by program	Service availability General Service readiness & quality Specific service readiness & quality	TB case detection Risk behaviours for STI/HIV Risk behaviours for NCD Postnatal care Treatment of childhood illness	Causes of death Causes of morbidity Out of pocket expenditure Catastrophic expenditure on health

The overall picture can be summarized as follows:

### ■ Inputs

- more money for health (no data on distribution across programme areas, as NHA data were not yet available at the time of this publication).
- health worker situation; still shortages, major increase in training institutions outputs for physicians, but absorption capacity for doctors not sufficient.

### ■ Outputs

- service access and general utilization appear unchanged (see Table below).
- quality: readiness of services (SARA 2008–09 and 2012) generally not improved, except for few items (e.g. RDT), and many gaps remain.

## ■ Outcomes or coverage

- Reproductive, maternal and newborn health: slow progress or none (ANC /delivery care); FP improving.
- Child health: high equitable levels (immunization), vitamin A supplementation; no clear improvement in treatment of sick children.
- HIV (PMTCT, ART) and malaria interventions (ITN especially) coverage: good progress.
- TB case detection rates not as good as thought; leprosy targets achieved.
- NTD progress on several indicators, but data are limited.
- Risk factors for NCD are on the rise, especially among urban populations.

## ■ Impact

- Remarkable progress in child mortality indicators, but newborn mortality slower than at other ages.
- But also reductions in malaria, and to a lesser extent in HIV incidence; TB not declining.
- Maternal mortality somewhat down but not much.
- Child anthropometric indicators some progress, but less so in stunting.
- Adult mortality decline, driven by HIV mortality reduction.
- Life expectancy improved considerably.

Table 22: Summary of the situation on service delivery (outputs) from the SARA 2008–9 and 2012.

	Availability	Readiness
General services	More facilities overall, but density the same	Some decline in readiness: concerns about universal precautions for infection control
Maternal and newborn care	Most facilities offer delivery services: no change	Only 25% offer BEMoC (up from 21%)
Family planning	Availability good (83% of facilities)	Contraceptives in stock slightly down to 70%
Immunization	Availability good (75% of facilities), plus campaign	Most vaccines in stock (80%)
Child health and nutrition	Availability good (82% of facilities)	Most essential drugs in stock (increased), diagnostics poorer than 2008–9
Malaria	most facilities offer malaria services (86%), no change;	More widely available RDT; ACT and SP mostly in stock
TB	No change in availability (38% of facilities)	Meds only provided when needed
HIV/AIDS	More facilities offering PMTCT (78%), same ART (28%)	ARVs for PMTCT more in stock, but still gap; first line regimen ARV less in stock

## Equity

The previous chapters examined the levels and trends in equity in the health indicators by sex, urban-rural residence and socioeconomic position. For many indicators, there was a reduction in inequalities in the past five to ten years, although differences remained for many. Large inequalities persisted for maternal care, family planning and child stunting indicators. The overview table at the beginning of the report summarizes the assessments of equity for each indicator.

This section focuses on regional inequalities. The annex of this report contains indicator data sheets for the 21 regions of mainland Tanzania. The regions are very suitable for such an analysis as their populations are large (average about 2 million people) and survey-based estimates as well as HMIS data are available. District level data are often preferred but have much more “noise” in the facility data derived estimates of coverage and health system strength, and usually do not have survey data. A detailed district analysis of the immunization data was conducted but is not reported here.

In the analysis of regional inequalities and the relative performance of regions the aim was to assess health system strength, taking into account the level of socio-economic development, and the coverage of interventions using a wide range of indicators.

The following indexes were computed:

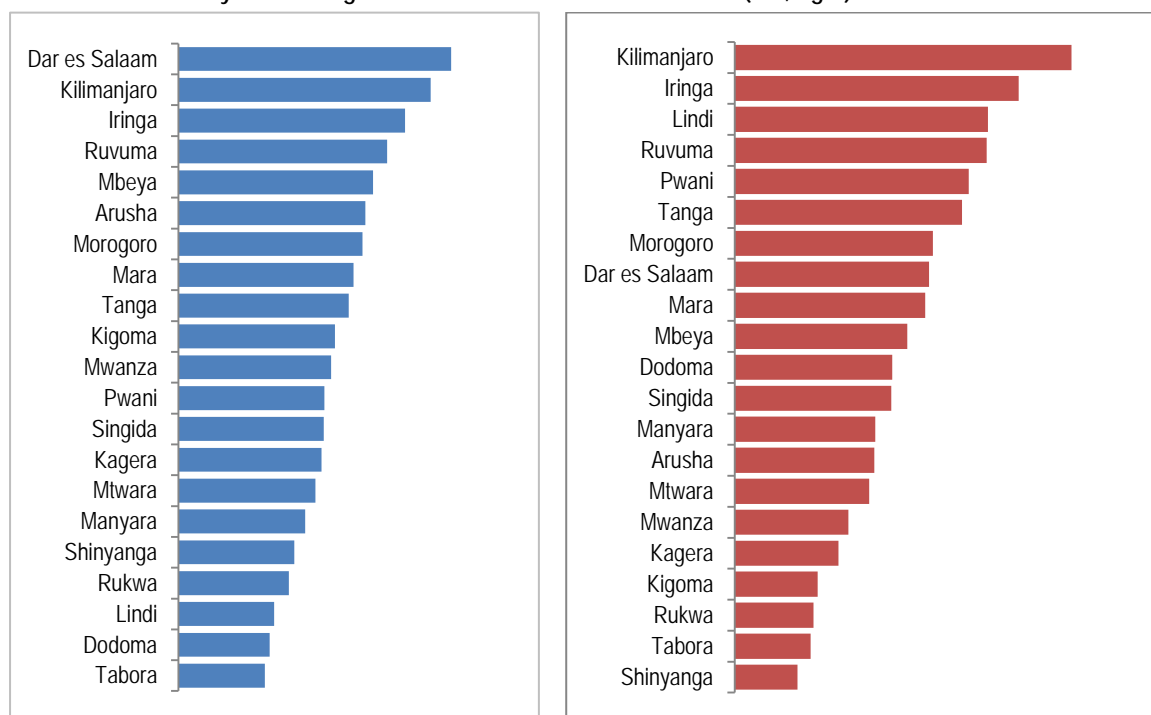
- *Socioeconomic development level*: based on two components, equally weighted, the proportion of population living in the poorest two wealth quintiles (the bottom 40% of the mainland) and the mean years of education of women and men 6 years and older in households. The TDHS 2010 was used as the source of these data.
- *Health system strength*: based on three components, equally weighted, (1) infrastructure (health facilities, beds), (2) health workforce (clinicians, nurse-midwives) and (3) service utilization and quality (hospital admission rate, outpatient department utilization rate, hospital case fatality rate)
- *MDG intervention coverage*: based on 19 interventions which are grouped according to intervention areas. The RCH index combined 15 indicators in four intervention areas (family planning, maternal care, antenatal care and child health) which are given equal weight. The RCH indicators also include some malaria (IPT2) and HIV/AIDS indicators (PMTCT related). In addition, there are four indicators for three additional intervention areas: HIV (ART, VCT), TB (treatment success) and malaria (ITN use). The MDG intervention index is a weighted average of all seven intervention areas.

The annex provides a compilation of all health statistics for each region. The rankings of the regions are shown in the annex on each regional data sheet. In some cases there are unexpected findings. For instance, the health system strength in Dar es Salaam is well below expectations. This is due to underreporting by private facilities and partly also by Muhimbili National Hospital. Overall, however, the patterns appear very plausible and provide some important pointers for the HSSP III and beyond. Notably the regions in Western and Northwestern Tanzania have weaker health systems and lower performance in terms of the MDG coverage index. Eastern and Northern Tanzania score better in most other indicators. The best performance in terms of results for the level of investment are coming from southern Tanzania, especially Lindi, which is 19<sup>th</sup> based on socioeconomic status, but fourth on the basis of health system strength.

The differences between level of socioeconomic development and health system strength by region can be summarized as follows:

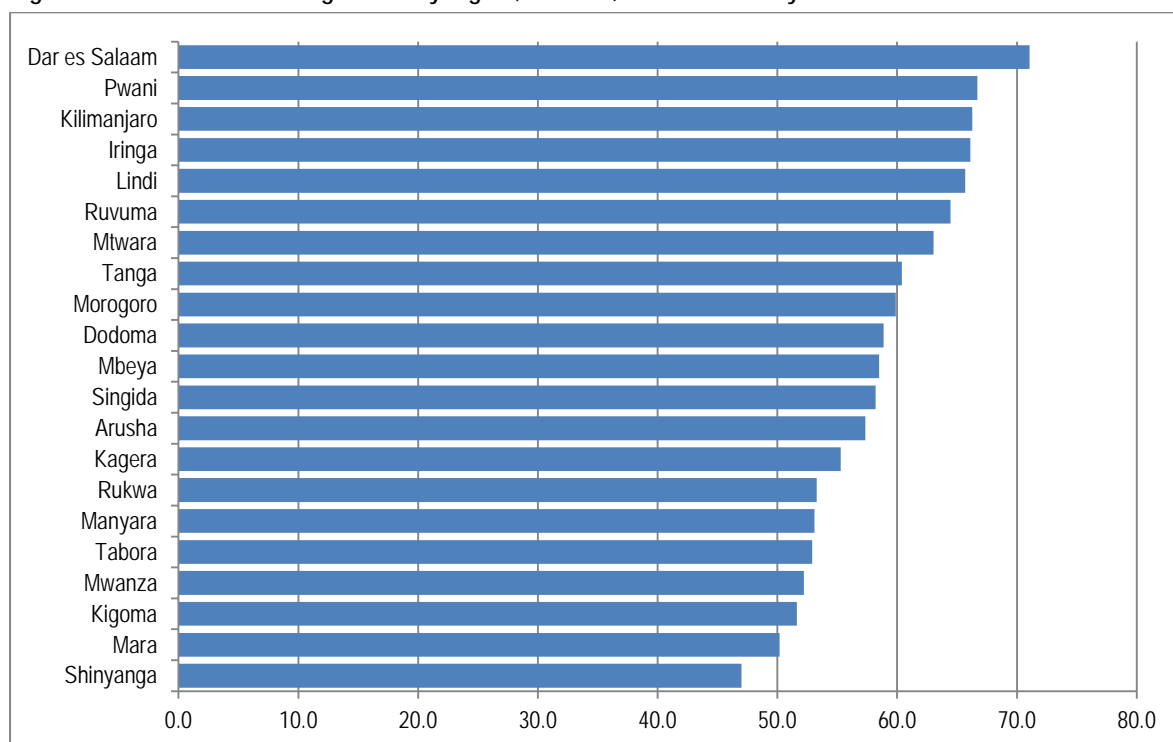
Regions that have stronger health systems than expected on the basis of their level of socioeconomic development	Regions where the strength of the health system is what one would expect on the basis of their level of development	Regions that have weaker health systems than expected on the basis of their level of socioeconomic development
Lindi	Tabora	Kigoma
Kilimanjaro	Shinyanga	Dar es Salaam
Pwani	Mtwara	Rukwa
Tanga	Singida	Kagera
Ruvuma	Mara	Mwanza
Iringa	Morogoro	Arusha
Dodoma	Manyara	Mbeya

Figure 79: Regions of Tanzania ranked on socioeconomic index derived from TDHS 2010 (blue, left) and ranked on the basis of health system strength based on 2011–12 data from HMIS (red, right)



The next step is to consider the performance of the regions through the MDG coverage index.

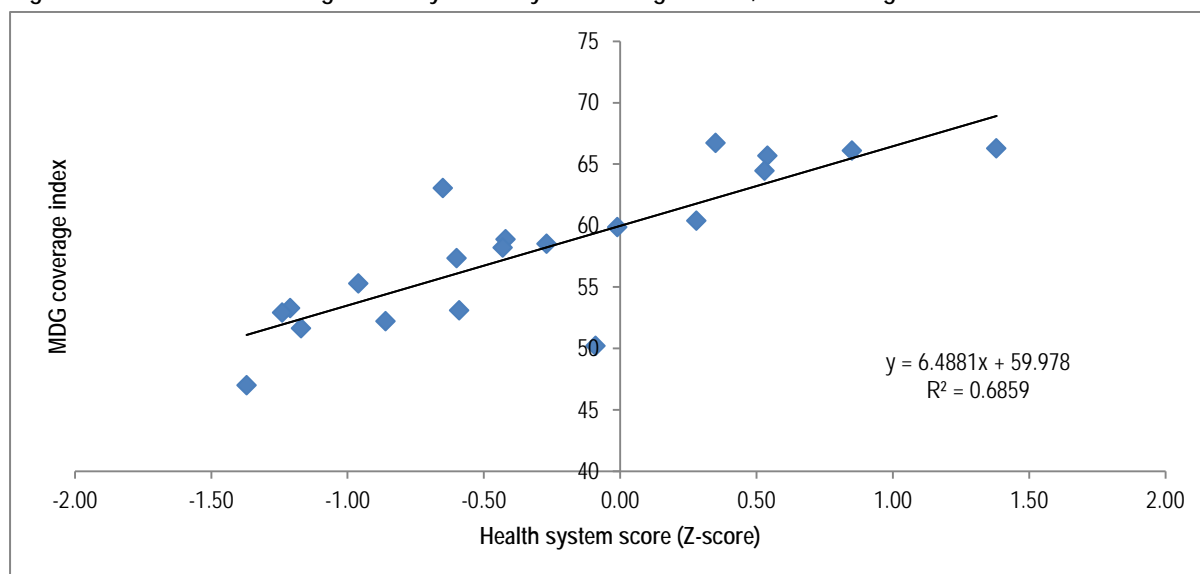
Figure 80: Health MDG coverage index by region, 2010–12, HMIS and survey data



The MDG coverage index is fairly strongly associated with the health system score ( $r^2 = 0.60$ ). If Dar es Salaam region is taken out, because it is an outlier due to its unreliable data on health system strength, the association becomes even stronger (see Figure,  $r^2 = .69$ ). The effect of the health system on the MDG coverage index is considerably stronger than that of the level of socioeconomic development of the region ( $r^2 = .17$ , excluding Dar es Salaam)). This means that regions can perform better than expected on the basis of the level of development.

Part of this better performance works through stronger health systems, but several regions obtain better results than expected on the basis of their health system strength.

Figure 81: Health MDG coverage index by health system strength index, Tanzania regions



A few regions lie well above the regression line. These are the good performers: regions that have higher MDG intervention coverage than expected on the basis of their health system strength. These include Mtwaru, Pwani and Lindi.

Two regions stand out as strongly underperforming: they have much lower MDG coverage than expected on the basis of their health system strength. These regions are Mara and Shinyanga. Mwanza, Manyara and Kilimanjaro are also below the line, meaning they are underperforming but much less than Mara and Shinyanga. Kilimanjaro still has one of the highest MDG coverage rates but could do even better based on the health system strength. All other regions are fairly close to the regression line, meaning they have MDG intervention coverage as expected on the basis of the strength of the health system.

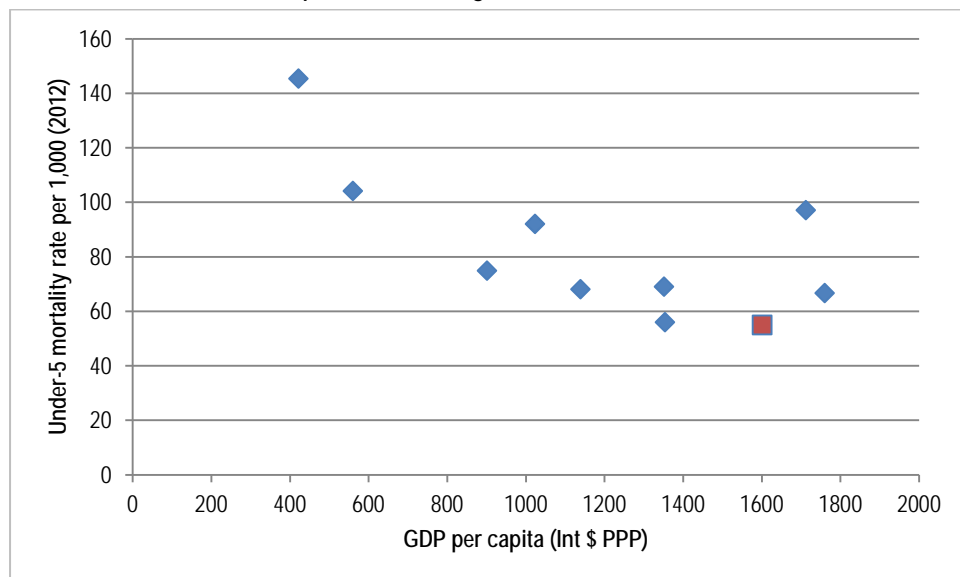
Finally, the table below shows the relative performance of regions based on their MDG coverage compared to what would be expected on the basis of their level of socioeconomic development. A better than average performance may be because of stronger health systems or for other reasons. (Dar es Salaam was not included in this analysis).

Very good performance	Good performance	Average performers	Poor performers
Lindi	Iringa	Tanga	Shinyanga
Pwani	Ruvuma	Singida	Mara
Mtwara	Kilimanjaro	Morogoro	Kigoma
Dodoma		Tabora	Mwanza
		Mbeya	
		Arusha	
		Rukwa	
		Kagera	
		Manyara	

## Comparative performance

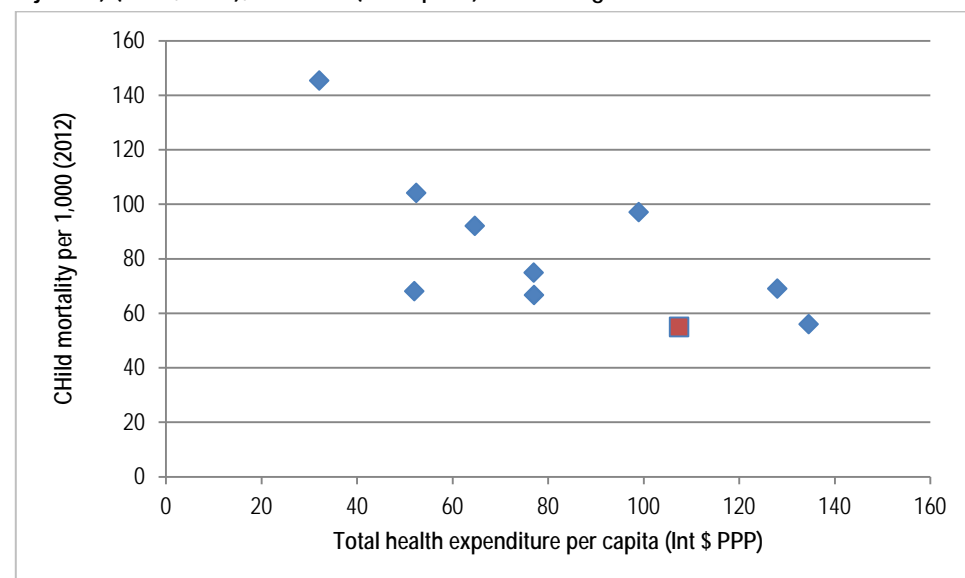
The previous chapters examined the relative performance of Tanzania in comparison with a group of 10 subregional countries, of which eight are bordering Tanzania mainland. The overview table at the beginning of the report summarizes the assessment of the relative position for each indicator. Overall, Tanzania does very well on most indicators and is ranked in the top half, if not top three. A notable exception is skilled birth attendance where Tanzania performed less well, especially in terms of progress during 2005-2011 than most other countries. This was particularly strong when focusing on the rural skilled birth attendance rates.

Figure 82: Under-5 mortality rates (UN estimates, 2012) by GDP per capita (international \$, PPP adjusted) (World bank 2012), Tanzania (red square) and subregional countries



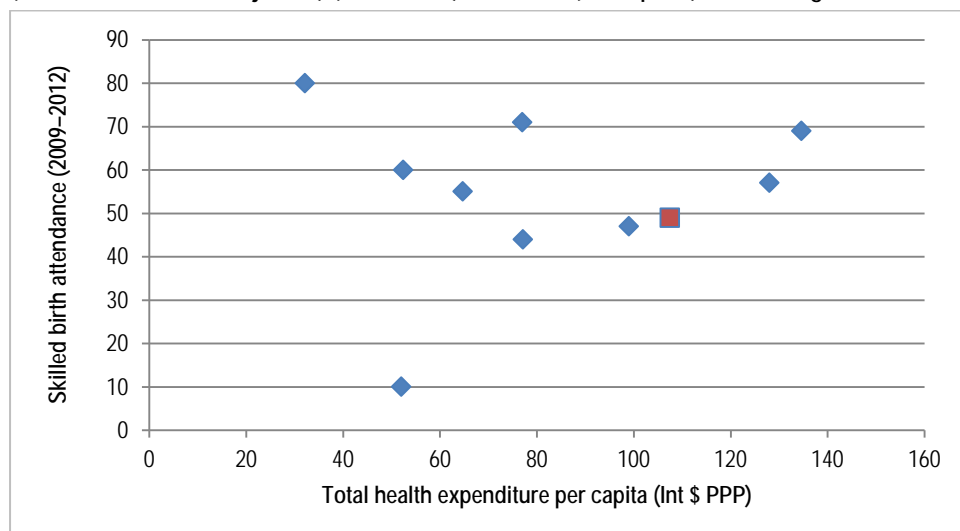
Among the 10 subregional countries with economic data, Tanzania has the third highest GDP per capita after Kenya and Zambia, but higher than Rwanda and Uganda. Its child mortality rate is what one would expect on the basis of its level of economic development.

Figure 83: Under-5 mortality rates (UN estimates, 2012) by total health expenditure per capita (international \$, PPP adjusted) (WHO, 2011), Tanzania (red square) and subregional countries.



A similar picture emerges for under-5 mortality rates by total health expenditure (THE) per capita. Tanzania has the third highest THE per capita after Rwanda and Uganda, but higher than Zambia, Kenya and Malawi. In terms of performance, Tanzania does better than expected on the basis of its health investment level.

Figure 84: Skilled birth attendance (latest DHS or other survey) by total health expenditure per capita (international \$, PPP adjusted) (WHO, 2011), Tanzania (red square) and subregional countries



Skilled birth attendance gives a slightly different picture. Tanzania is no longer performing better than the other countries in terms of coverage and even less so when the THE per capita is taken into account. Dr Congo (lowest THE per capita but highest skilled birth attendance rate), Rwanda, Burundi and Malawi all perform much better. Zambia, Kenya, and Uganda have similar low levels of performance as Tanzania.

## Lives saved

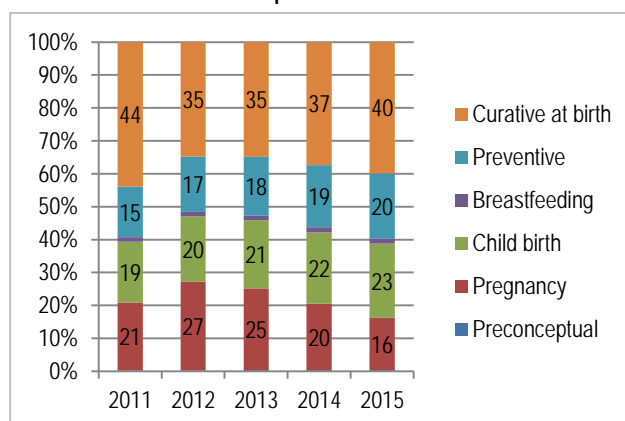
This section reports the impact of scaling up interventions on deaths of children younger than five years. Life Saved Tool (LiST) was used to project the changes in child and maternal survival in accordance with changes in coverage of different child and maternal health interventions. The software is embedded in Spectrum computer models that analyze existing information on health status, mortality, intervention coverage and effectiveness to determine the future consequences of today's development programs and policies. The software was developed by the USAID|Health Policy Initiative.

Input parameters of the model were estimated from spectrum demographic projection, AIDS impact and family planning model. Baseline values of interventions coverage (table below) evaluated in this report are based on existing literature refereeing to the time when the software was developed (2009–10). Few additional changes were made to accommodate HPSS III indicators targets.

Figure below present percent contribution of broad category intervention on annual additional deaths prevented. Details of what constitute each category are shown on table next to the figure. Curative at birth interventions contributed about 40% of additional deaths prevented each year. Treatment for moderate acute malnutrition had the largest impact in this category. Other intervention includes case management of neonatal infections and ORS for treatment of diarrhea. Preventive interventions account for almost 20% of additional deaths prevented, with the use of ITN/IRS contributing to more than 60% in this category. PMTCT have the largest impact of all intervention falling under pregnancy. It contributes about 90% of all additional deaths prevented. Details of impact of all intervention evaluated are shown on table below.

Most of interventions evaluated in this report are not 100% coverage. Scaling up of these interventions to full coverage could produce better impact compared to the observed values in this report. It should be noted that breast feeding intervention has the smallest impact in this analysis due to the small coverage intervention specified.

Figure 85: Contribution of intervention (broad category) on annual additional deaths prevented





**Table 23: Intervention baseline, target and percent contribution of additional deaths prevented projected to 2015**

Category	Intervention	Baseline	Target	2011	2012	2013	2014	2015
<b>Preconceptional</b>	Contraceptive use							
	Folic acid supplementation	0	10	100	100	100	100	100
<b>Pregnancy</b>	ANC care	42.8	60					
	TT vaccination	83	90	2.44	2.05	2.34	3.06	4.06
	IPTp	57	82	3.95	3.27	3.73	4.86	6.44
	Syphilis detection and treatment	21	25	0.36	0.26	0.30	0.41	0.53
	Balanced energy sup	0	10	1.72	1.45	1.65	2.14	2.83
	PMTCT			91.53	92.98	91.98	89.52	86.14
<b>Child birth</b>	Clean birth practices	43	47	8.05	16.41	25.10	34.02	43.27
	Immediate assesment and stimulation	39	44	7.81	7.83	7.82	7.81	7.81
	Labour and delivery management	51	56	48.45	48.41	48.44	48.47	48.49
	Neonatal resuscination	23	25	7.49	7.51	7.52	7.51	7.51
	Antenatal corticosteroids for pre-term birth	37	42	22.55	22.50	22.47	22.46	22.43
	Antibiotics for pPRoM	37	42	5.66	5.68	5.67	5.68	5.68
<b>Breastfeeding</b>	Promotion of breastfeeding	14	30	100	100	100	100	100
<b>Preventive</b>	Thermal care	7	24	7.18	6.89	6.64	6.38	6.14
	Clean postnatal practives	7	20	7.85	7.63	7.45	7.26	7.11
	Complementary feeding - education	21	26	1.15	1.39	1.56	1.70	1.80
	Zinc sup	0	10	3.64	3.70	3.74	3.79	3.83
	Improved water sources	53	59	0.86	0.93	0.93	0.94	0.95
	Water connection at home	8	12	5.07	5.13	5.12	5.14	5.14
	Improved sanitation - utilization of latrine or toilets	10	14	2.78	2.78	2.78	2.81	2.80
	Hand washing with soap	13	21	7.18	7.26	7.27	7.30	7.29
	ITN/IRS	39	80	64.31	64.29	64.50	64.68	64.94
<b>Curative at birth</b>	Neonatal							
	Kangaroo mother care	0	13	6.33	8.30	8.38	7.94	7.45
	Case managementof neonatal infections			9.30	12.39	12.75	12.32	11.80
	ORS	44	55	9.57	12.73	13.07	12.60	12.01
	Antibiotics	50	61	0.51	0.67	0.70	0.67	0.64
	Zinc - for treatment of diarrhea	0	11	1.41	1.88	1.92	1.86	1.77
	Oral antibiotics - case management of pneumonia in children	71	80	11.99	16.38	17.21	16.97	16.57
	Antimalarials - Artemesinin compounds for malaria	14	25	7.95	10.27	10.17	9.40	8.57
	Therapeutic feeding - for fever wasting	0	10	3.00	4.12	4.34	4.27	4.17
	Treatment for moderate acute malnutrition	0	0	48.06	26.38	18.42	14.90	12.36
	ART			1.89	6.89	13.04	19.06	24.66

# Conclusion

This section can be summarized as follows:

## ■ Progress

- In general, good progress on health outcomes & coverage indicators.
- Less evidence of strengthening of health system: health workforce, service delivery.
- Maternal and newborn care least progress.

## ■ Equity

- Greater equity for many indicators, with some notable exceptions such as stunting levels in children and skilled birth attendance.
- Regional differences fairly large for several indicators, associated with either lower socioeconomic status or weaker health systems; targeting of regions in Western and Lake zones should be considered.

## ■ Efficiency/comparative performance

- Good performance compared to subregional peer countries.
- Good results on child mortality for the level of investment, but not on skilled birth attendance.

## ■ Performance

- HSSP III: overall positive picture, strong progress made, well documented results.
- Several areas for greater attention in coming years (see Chapter 1).

# ANNEX

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## Regional statistics

- Data sources
- Mainland summary – selected indicators
- Arusha
- Dar es Salaam
- Dodoma
- Iringa
- Kagera
- Kigoma
- Kilimanjaro
- Lindi
- Manyara
- Mara
- Mbeya
- Morogoro
- Mtwara
- Mwanza
- Pwani
- Rukwa
- Ruvuma
- Shinyanga
- Singida
- Tabora
- Tanga



# Regional statistics

## DATA SOURCES

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	From census 2012	Population in poorest 40% (%)	From TDHS 2010
Births (est.)	Team estimates	Education, mean years	From TDHS 2010
Under-5 mortality per 1,000 (Northern)	From TDHS 2004/05 and TDHS 2010, no statistics available by region		
Infant mortality per 1,000 (Northern)	From TDHS 2004/05 and TDHS 2010, no statistics available by region		
Neonatal mortality per 1,000 (Northern)	From TDHS 2004/05 and TDHS 2010, no statistics available by region		

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012
Health facility density per 10,000 population	HMIS database			
In patient beds per 10,000 pop	HMIS database			
Health worker density per 10,000 (clinicians)	HRHIS database			
Health worker density per 10,000 (nurse midwife)	HRHIS database			
Health worker density per 10,000 (total)	HRHIS database			
Health worker skills mix (nurses/clinicians)	HRHIS database			
Hospital admissions per 100 persons per year	HMIS database			
Hospital case fatality rate (%)	HMIS database			
OPD visits per person per year	HMIS database			

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012
FP visits per 100 population	HMIS data & survey data (need satisfied)			
FP, new visits per 100 population	HMIS data			
Antenatal care, 1+ visit (%)	HMIS data & survey data (TDHS 2010)			
Antenatal care, 1st visit <20 wks (%)	HMIS data & survey data (TDHS 2010)			
PMTCT per 100 HIV+ pregnant women	HMIS data			
Tetanus protected at birth (%)	Survey data (TDHS 2010)			
IPT2 during pregnancy (%)	HMIS data & survey data (THMIS 2011/12)			
HIV counseling & testing pregnant women (%)	HMIS data & survey data (THMIS 2011/12)			
Institutional delivery rate (%)	HMIS data & survey data (TDHS 2010)			
Postnatal checkup (%)	Survey data (TDHS 2010)			
BCG immunization, infants (%)	HMIS data & survey data (TDHS 2010)			
DTP3/pentavalent immunization (%)	HMIS data & survey data (TDHS 2010)			
Measles immunization (%)	HMIS data & survey data (TDHS 2010)			
Vit A supplementation children (%)	Survey data (TDHS 2010)			
MMR in institutions (per 100,000 LB)	HMIS data			
Birth registration (%)	Survey data (TDHS 2010)			

\* FP need satisfied;

NUTRITION	2005-10	2010-12
Stunting, children under 5 (%)	Survey data (TDHS 2010)	
Underweight, children under 5 (%)	Survey data (TDHS 2010)	
Anemia (moderate/severe), children	Survey data (TDHS 2010)	
Underweight, women (BMI<18.5)	Survey data (TDHS 2010)	

HIV/TB /MALARIA	2005-10	2010-12
HIV prevalence, 15-49 years	Survey data (THMIS 2011/2)	
ART coverage, all ages	NACP / CTC data	
VCT (HIV), last 12 months, both sexes	Survey data (THMIS 2011/2)	
TB case notification rate (per 100,000)	NTLCP data	
TB treatment success rate	NTLCP data	
Malaria parasitemia, children (RDT)	Survey data (THMIS 2011/2)	
ITN use, children	Survey data (THMIS 2011/2)	

# Regional statistics

## MAINLAND SUMMARY – SELECTED INDICATORS

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010 SOURCE
Population	43625353.99 Census	Population in poorest 40% (%)	40 TDHS
Births (est.)	1,919,495 Est.	Education, mean years	3.6 TDHS
Under-5 mortality per 1,000 live births	81 <b>2006-10</b>	112 <b>1996-2005</b> (TDHS)	
Infant mortality per 1,000	51 <b>2006-10</b>	68 <b>1996-2005</b> (TDHS)	
Neonatal mortality per 1,000	26 <b>2006-10</b>	32 <b>1996-2005</b> (TDHS)	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	SOURCE
Health facility density per 10,000 population	1.5	1.5	1.5	1.5	HMIS
In patient beds per 10,000 pop			15.6	-	HMIS
Health worker density per 10,000 (clinicians)			2.2	2.1	HRHIS
Health worker density per 10,000 (nurse midwife)			3.1	4.8	HRHIS
Health worker density per 10,000 (total)			5.3	6.9	HRHIS
Health worker skills mix (nurses/clinicians)			1.4	2.3	HMIS
Hospital admissions per 100 persons per year	3.7	3.8	3.6	3.6	HMIS
Hospital case fatality rate (%)	3.2	2.6	2.8	2.4	HMIS
OPD visits per person per year	0.9	0.8	0.7	0.7	HMIS

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND SURVEY	SOURCE
FP visits per 100 population		11.6	11.1	11.5		61.1* HMIS & TDHS 2010
FP, new visits per 100 population	3.4	3.8	3.8	4.6		HMIS
Antenatal care, 1+ visit (%)	88.3	90.7	91.6	89.4		95.9 HMIS & TDHS 2010
Antenatal care, 1st visit <20 wks (%)	41.1	42.9	41.0	37.6		15.0** HMIS & TDHS 2010
PMTCT per 100 HIV+ pregnant women	66	69	71.1			HMIS/NACP
Tetanus protected at birth (%)						88.2 TDHS 2010
IPT2 during pregnancy (%)						32.7 THMIS 2011/12
HIV counseling & testing pregnant women (%)						51.3 THMIS 2011/12
Institutional delivery rate (%)	52.3	56.7	57.1	56.0		50.2 HMIS & TDHS 2010
Postnatal checkup, first month (%)						35.4 TDHS 2010
BCG immunization, infants (%)	90.8	95.7	99.3	100.0		98 HMIS & TDHS 2010
DTP3/pentavalent immunization (%)	87.3	93.0	93.7	94.5		96.7 HMIS & TDHS 2010
Measles immunization (%)	94.0	94.7	96.6	99.7		95.3 HMIS & TDHS 2010
Vit A supplementation children (%)						60.3 TDHS 2010
MMR in institutions (per 100,000 LB)	183	173	159	161		HMIS
Birth registration (%)						16.3 TDHS 2010

\* FP need satisfied; \*\* Before 4 months

NUTRITION	2005-10	2010-12	SOURCE
Stunting, children under 5 (%)	44.4	42.5	TDHS 2004/05 & TDHS 2010 (WHO 2006 standard)
Underweight, children under 5 (%)	16.7	16.2	TDHS 2004/05 & TDHS 2010 (WHO 2006 standard)
Anemia (moderate/severe), children	47.4	31.1	TDHS 2004/05 & TDHS 2010
Underweight, women (BMI<18.5)	10.2	11.3	TDHS 2004/05 & TDHS 2010

HIV/TB /MALARIA	2005-10	2010-12	SOURCE
HIV prevalence, 15-49 years	5.9	5.3	THMIS 2007/08 & THMIS 2011/12
ART coverage, all ages	51.1	65.3	HMIS/NACP 2009 & 2011
VCT (HIV), last 12 months, both sexes	19.3	28.4	THMIS 2007/08 & THMIS 2011/12
TB case notification rate (per 100,000)	159	142	HMIS/NLCP 2008 and 2012
TB treatment success rate	88	88	HMIS/NLCP 2008 and 2011
Malaria parasitemia, children (RDT)	18.1	9.5	THMIS 2007/08 & THMIS 2011/12 (different tests)
ITN use, children	24.8	72.7	THMIS 2007/08 & THMIS 2011/12

# Regional statistics

## ARUSHA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,694,310	Population in poorest 40% (%)	34.1
Births (est.)	71,161	Education, mean years	4.7
Under-5 mortality per 1,000 (Northern)	58 <b>2001-10</b>	105 <b>1996-2005</b>	
Infant mortality per 1,000 (Northern)	40 <b>2001-10</b>	67 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Northern)	22 <b>2001-10</b>	26 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	1.7	1.8	1.8	1.8	1.5	6
In patient beds per 10,000 pop			9.3	-	15.6	20
Health worker density per 10,000 (clinicians)			2.5	2.0	2.1	9
Health worker density per 10,000 (nurse midwife)			3.4	2.5	4.8	17
Health worker density per 10,000 (total)			5.9	4.5	6.9	13
Health worker skills mix (nurses/clinicians)			1.4	1.2	2.3	
Hospital admissions per 100 persons per year	3.4	3.8	3.6	3.9	3.6	6
Hospital case fatality rate (%)	3.7	3.9	3.5	4.1	2.4	20
OPD visits per person per year	0.9	1.0	0.8	0.8	0.7	7

REPRODUCTIVE AND CHILD HEALTH	HMIS	2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	9.7	9.4	8.2	8.3		11.5	52.1	14
FP, new visits per 100 population	3.4	3.3	2.4	3.4		4.6		12
Antenatal care, 1+ visit (%)	80.8	95.0	95.5	74.1		95.9	95.8	16
Antenatal care, 1st visit <20 wks (%)	24.9	34.8	37.4	33.6		37.6		17
PMTCT per 100 HIV+ pregnant women			62.9			71.1		13
Tetanus protected at birth (%)						88.2	85.3	16
IPT2 during pregnancy (%)						51.9	36.3	10
HIV counseling & testing pregnant women (%)						51.3	64.7	8
Institutional delivery rate (%)	49.0	51.2	52.6	71.9		56.0	46.2	9
Postnatal checkup (%)						35.4	33.3	13
BCG immunization, infants (%)	94.5	77.6	92.0	100.0		100	99.7	15
DTP3/pentavalent immunization (%)	90.6	86.3	97.4	95.1		94.5	93.8	8
Measles immunization (%)	91.8	82.9	99.3	91.4		99.7	93.2	14
Vit A supplementation children (%)						60.3	69.9	6
MMR in institutions (per 100,000 LB)	121	246	126	86		161		3
Birth registration (%)						16.3	14.5	12

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	33.2	43.9	11
Underweight, children under 5 (%)	16.2	28.2	21
Anemia (moderate/severe), children		42.4	20
Underweight, women (BMI<18.5)	11.4	18.7	18

HIV/TB/MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	1.6	3.2	5
ART coverage, all ages	79.9	69.0	7
VCT (HIV), last 12 months, both sexes		26.3	13
TB case notification rate (per 100,000)	170	159	16
TB treatment success rate	85	83	20
Malaria parasitemia, children (RDT)		0.0	1
ITN use, children		67	17

SUMMARY RANKING REGION	RANK
Socioeconomic level	6
Health system strength	14
RMNCH coverage	53.0% 13
Health MDG coverage	57.3% 13

# Regional statistics

## DAR ES SALAAM

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	4,364,541	Population in poorest 40% (%)	0.2
Births (est.)	130,936	Education, mean years	6.5
Under-5 mortality per 1,000 (Eastern)	94 <b>2001-10</b>	126 <b>1996-2005</b>	
Infant mortality per 1,000 (Eastern)	70 <b>2001-10</b>	84 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Eastern)	38 <b>2001-10</b>	44 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	1.4	1.3	1.4	1.3	1.5	16
In patient beds per 10,000 pop			30.3		15.6	1
Health worker density per 10,000 (clinicians)			1.7	2.1	2.1	7
Health worker density per 10,000 (nurse midwife)			7.3	2.9	4.8	12
Health worker density per 10,000 (total)			8.9	5.0	6.9	10
Health worker skills mix (nurses/clinicians)			4.3	1.4	2.3	
Hospital admissions per 100 persons per year	3.8	3.5	3.6	3.1	3.6	16
Hospital case fatality rate (%)	3.8	3.5	3.3	1.7	2.4	3
OPD visits per person per year	1.3	0.8	0.8	0.9	0.7	5

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	15	23	16.9	19.3	11.5	79.0	2
FP, new visits per 100 population	4	10	7.7	10.6	4.6		1
Antenatal care, 1+ visit (%)	102	103	103.4	106.6	95.9	94.1	1
Antenatal care, 1st visit <20 wks (%)	63	59	65.4	44.6	37.6		5
PMTCT per 100 HIV+ pregnant women			76.6		71.1		7
Tetanus protected at birth (%)					88.2	87.5	14
IPT2 during pregnancy (%)					51.9	48.3	3
HIV counseling & testing pregnant women (%)					51.3	74.8	4
Institutional delivery rate (%)	76	88	71.8	81.7	56.0	90.2	1
Postnatal checkup (%)					35.4	50.2	4
BCG immunization, infants (%)	100	100	100.0	100.0	100.0	100.0	6
DTP3/pentavalent immunization (%)	98	102	90.9	81.6	94.5	99.2	17
Measles immunization (%)	98	94	94.5	83.5	99.7	97.2	18
Vit A supplementation children (%)					60.3	67.4	9
MMR in institutions (per 100,000 LB)	163	36	95.7	98.1	161.0		1
Birth registration (%)					16.3	74.8	1

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	22.1	18.8	1
Underweight, children under 5 (%)	10.9	11.8	7
Anemia (moderate/severe), children		39.1	18
Underweight, women (BMI<18.5)	8.8	5.9	4

HIV/TB/MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	9.3	6.9	18
ART coverage, all ages	57.6	67.2	8
VCT (HIV), last 12 months, both sexes		33.0	6
TB case notification rate (per 100,000)	344	313	21
TB treatment success rate	86	87	17
Malaria parasitemia, children (RDT)		3.6	8
ITN use, children		62.8	21

SUMMARY RANKING REGION	RANK
Socioeconomic level	1
Health system strength	8
RMNCH coverage	69.0%
Health MDG coverage	71.1%



# Regional statistics

## DODOMA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	2,083,055	Population in poorest 40% (%)	63.4
Births (est.)	87,488	Education, mean years	1.85
Under-5 mortality per 1,000 (Central)	102 <b>2001-10</b>	136 <b>1996-2005</b>	
Infant mortality per 1,000 (Central)	70 <b>2001-10</b>	82 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Central)	38 <b>2001-10</b>	38 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	1.7	1.7	1.5	7
In patient beds per 10,000 pop			17.1		15.6	6
Health worker density per 10,000 (clinicians)			1.4	1.9	2.1	11
Health worker density per 10,000 (nurse midwife)			4.6	3.6	4.8	6
Health worker density per 10,000 (total)			5.9	5.5	6.9	9
Health worker skills mix (nurses/clinicians)			3.4	1.9	2.3	
Hospital admissions per 100 persons per year	2	2	1.8	1.7	3.6	21
Hospital case fatality rate (%)	3	2	4.7	3.6	2.4	18
OPD visits per person per year	1	1	0.5	0.7	0.7	12

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	28	17	20.1	19.5	11.5	47.3	9
FP, new visits per 100 population	12	5	8.2	8.2	4.6		2
Antenatal care, 1+ visit (%)	93	89	87.1	72.4	95.9	97.5	18
Antenatal care, 1st visit <20 wks (%)	58	60	56.8	43.1	37.6		6
PMTCT per 100 HIV+ pregnant women			45.9		71.1		20
Tetanus protected at birth (%)					88.2	89.5	10
IPT2 during pregnancy (%)					51.9	50.4	2
HIV counseling & testing pregnant women (%)					51.3	36.2	18
Institutional delivery rate (%)	65	63	59.9	63.4	56.0	45.1	11
Postnatal checkup (%)					35.4	33.8	12
BCG immunization, infants (%)	96	91	91.0	100.0	100.0	99.0	16
DTP3/pentavalent immunization (%)	101	102	97.6	94.9	94.5	97.1	7
Measles immunization (%)	106	98	99.8	99.8	99.7	94.3	9
Vit A supplementation children (%)					60.3	63.3	12
MMR in institutions (per 100,000 LB)	184	109	113.1	145.9	161.0		8
Birth registration (%)					16.3	8.0	17

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	50.1	56.0	21
Underweight, children under 5 (%)	24.4	26.8	20
Anemia (moderate/severe), children		20.7	5
Underweight, women (BMI<18.5)	13.4	24.5	21

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	3.3	2.9	3
ART coverage, all ages	54.4	69.7	6
VCT (HIV), last 12 months, both sexes		21.6	19
TB case notification rate (per 100,000)	109	99	6
TB treatment success rate	93	91	6
Malaria parasitemia, children (RDT)		2.5	7
ITN use, children		74.6	11

SUMMARY RANKING REGION	RANK
Socioeconomic level	20
Health system strength	11
RMNCH coverage	55.0% 10
Health MDG coverage	58.9% 10

# Regional statistics

## IRINGA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,643,335	Population in poorest 40% (%)	18.7
Births (est.)	69,020	Education, mean years	5.55
Under-5 mortality per 1,000 (S Highlands)	102 <b>2001-10</b>	136 <b>1996-2005</b>	
Infant mortality per 1,000 (S Highlands)	70 <b>2001-10</b>	82 <b>1996-2005</b>	
Neonatal mortality per 1,000 (S Highlands)	38 <b>2001-10</b>	38 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	3	3	2.7	2.7	1.5	2
In patient beds per 10,000 pop			28.5		15.6	2
Health worker density per 10,000 (clinicians)			2.4	2.4	2.1	6
Health worker density per 10,000 (nurse midwife)			3.9	6.2	4.8	2
Health worker density per 10,000 (total)			6.3	8.5	6.9	2
Health worker skills mix (nurses/clinicians)			1.6	2.6	2.3	
Hospital admissions per 100 persons per year	6	6	4.0	3.7	3.6	9
Hospital case fatality rate (%)	3	3	4.2	2.9	2.4	14
OPD visits per person per year	1	1	0.6	0.7	0.7	11

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	10	10	9.6	9.4	11.5	63.2	13
FP, new visits per 100 population	2	3	2.8	2.8	4.6		15
Antenatal care, 1+ visit (%)	94	81	81.9	86.0	95.9	85.9	19
Antenatal care, 1st visit <20 wks (%)	54	46	44.2	45.8	37.6		3
PMTCT per 100 HIV+ pregnant women			92.8		71.1		2
Tetanus protected at birth (%)					88.2	93.5	2
IPT2 during pregnancy (%)					51.9	59.4	1
HIV counseling & testing pregnant women (%)					51.3	81.4	1
Institutional delivery rate (%)	65	69	71.2	72.7	56.0	80.4	5
Postnatal checkup (%)					35.4	71.9	1
BCG immunization, infants (%)	85	94	92.1	100.0	100.0	99.8	10
DTP3/pentavalent immunization (%)	81	85	82.7	87.0	94.5	99.0	20
Measles immunization (%)	82	85	88.0	93.1	99.7	96.0	17
Vit A supplementation children (%)					60.3	81.9	1
MMR in institutions (per 100,000 LB)	168	166	144.1	183.3	161.0		13
Birth registration (%)					16.3	4.3	18

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	62.2	51.9	19
Underweight, children under 5 (%)	17.9	18.2	14
Anemia (moderate/severe), children		15.4	2
Underweight, women (BMI<18.5)	6.9	5	2

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	15.7	12.4	21
ART coverage, all ages	44.1	66.0	9
VCT (HIV), last 12 months, both sexes		27.1	11
TB case notification rate (per 100,000)	211	173	19
TB treatment success rate	84	89	10
Malaria parasitemia, children (RDT)		0.4	4
ITN use, children		70.5	15

SUMMARY RANKING REGION	RANK
Socioeconomic level	3
Health system strength	2
RMNCH coverage	64.0% 2
Health MDG coverage	66.1% 4

# Regional statistics

## KAGERA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	2,773,054	Population in poorest 40% (%)	43.7
Births (est.)	122,014	Education, mean years	3
Under-5 mortality per 1,000 (Lake)	109 <b>2001-10</b>	142 <b>1996-2005</b>	
Infant mortality per 1,000 (Lake)	64 <b>2001-10</b>	90 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Lake)	21 <b>2001-10</b>	36 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	1	1	1.1	1.1	1.5	21
In patient beds per 10,000 pop			11.7		15.6	15
Health worker density per 10,000 (clinicians)			1.0	1.1	2.1	18
Health worker density per 10,000 (nurse midwife)			1.8	2.8	4.8	14
Health worker density per 10,000 (total)			2.8	4.0	6.9	17
Health worker skills mix (nurses/clinicians)			1.8	2.5	2.3	
Hospital admissions per 100 persons per year	1	5	4.1	4.3	3.6	4
Hospital case fatality rate (%)	3	2	2.6	3.3	2.4	17
OPD visits per person per year	1	0	0.5	0.5	0.7	20

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	8	7	5.2	5.0	11.5	49.7	18
FP, new visits per 100 population	2	2	2.3	2.0	4.6		19
Antenatal care, 1+ visit (%)	97	95	80.8	67.1	95.9	92.9	20
Antenatal care, 1st visit <20 wks (%)	40	43	30.1	36.7	37.6		14
PMTCT per 100 HIV+ pregnant women			58.2		71.1		7
Tetanus protected at birth (%)					88.2	92.5	3
IPT2 during pregnancy (%)					51.9	32.6	13
HIV counseling & testing pregnant women (%)					51.3	62.4	9
Institutional delivery rate (%)	58	56	53.9	53.0	56.0	53.8	12
Postnatal checkup (%)					35.4	26.5	17
BCG immunization, infants (%)	90	94	94.3	100.0	100.0	100.0	13
DTP3/pentavalent immunization (%)	99	100	100.0	100.0	94.5	100.0	2
Measles immunization (%)	99	95	100.0	100.0	99.7	100.0	3
Vit A supplementation children (%)					60.3	77.0	4
MMR in institutions (per 100,000 LB)	110	191	130.3	63.4	161.0		2
Birth registration (%)					16.3	10.6	14

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	43.4	43.6	10
Underweight, children under 5 (%)	18.3	17.1	13
Anemia (moderate/severe), children		30	12
Underweight, women (BMI<18.5)	10.4	12.4	11

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	3.4	4.8	13
ART coverage, all ages	60.1	59.0	16
VCT (HIV), last 12 months, both sexes		26.1	14
TB case notification rate (per 100,000)	97	84	4
TB treatment success rate	95	95	3
Malaria parasitemia, children (RDT)		8.3	12
ITN use, children		70.1	16

SUMMARY RANKING REGION	RANK
Socioeconomic level	14
Health system strength	17
RMNCH coverage	50.9% 14
Health MDG coverage	55.3% 14

# Regional statistics

## KIGOMA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	2,127,930	Population in poorest 40% (%)	39
Births (est.)	89,373	Education, mean years	3.35
Under-5 mortality per 1,000 (Western)	98 <b>2001-10</b>	138 <b>1996-2005</b>	
Infant mortality per 1,000 (Western)	56 <b>2001-10</b>	76 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Western)	25 <b>2001-10</b>	23 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	1	1	1.2	1.2	1.5	18
In patient beds per 10,000 pop			10.0		15.6	17
Health worker density per 10,000 (clinicians)			0.9	0.9	2.1	20
Health worker density per 10,000 (nurse midwife)			1.7	1.9	4.8	19
Health worker density per 10,000 (total)			2.6	2.8	6.9	20
Health worker skills mix (nurses/clinicians)			1.8	2.2	2.3	
Hospital admissions per 100 persons per year	3	3	1.8	2.5	3.6	18
Hospital case fatality rate (%)	2	2	3.4	2.5	2.4	10
OPD visits per person per year	1	1	0.5	0.7	0.7	14

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	8	7	4.9	5.4	11.5	37.9	21
FP, new visits per 100 population	2	3	2.1	1.9	4.6		20
Antenatal care, 1+ visit (%)	84	89	97.1	83.3	95.9	97.1	11
Antenatal care, 1st visit <20 wks (%)	38	42	51.7	42.5	37.6		8
PMTCT per 100 HIV+ pregnant women			50.4		71.1		18
Tetanus protected at birth (%)					88.2	91.5	6
IPT2 during pregnancy (%)					51.9	28.3	18
HIV counseling & testing pregnant women (%)					51.3	49.4	13
Institutional delivery rate (%)	50	57	71.7	47.9	56.0	33.3	14
Postnatal checkup (%)					35.4	23.4	18
BCG immunization, infants (%)	86	91	92.7	100.0	100.0	97.2	11
DTP3/pentavalent immunization (%)	87	92	85.2	87.6	94.5	95.1	21
Measles immunization (%)	91	93	86.8	94.1	99.7	94.2	19
Vit A supplementation children (%)					60.3	65.3	11
MMR in institutions (per 100,000 LB)	143	208	113.5	114.5	161.0		5
Birth registration (%)					16.3	24.3	6

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	59.7	48.2	15
Underweight, children under 5 (%)	28.4	15.4	10
Anemia (moderate/severe), children		37.2	17
Underweight, women (BMI<18.5)	13.6	14	16

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	1.8	3.4	7
ART coverage, all ages	55.0	37.3	21
VCT (HIV), last 12 months, both sexes		31.7	9
TB case notification rate (per 100,000)	42	46	2
TB treatment success rate	89	73	21
Malaria parasitemia, children (RDT)		26.0	20
ITN use, children		80	3

SUMMARY RANKING REGION	RANK
Socioeconomic level	10
Health system strength	18
RMNCH coverage	48.0% 17
Health MDG coverage	51.6% 19

# Regional statistics

## KILIMANJARO

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,640,087	Population in poorest 40% (%)	9.2
Births (est.)	49,203	Education, mean years	6.15
Under-5 mortality per 1,000 (Northern)	58 <b>2001-10</b>	105 <b>1996-2005</b>	
Infant mortality per 1,000 (Northern)	40 <b>2001-10</b>	67 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Northern)	22 <b>2001-10</b>	26 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	3	2	2.4	2.4	1.5	3
In patient beds per 10,000 pop			27.1		15.6	4
Health worker density per 10,000 (clinicians)			5.4	3.3	2.1	2
Health worker density per 10,000 (nurse midwife)			6.1	6.5	4.8	1
Health worker density per 10,000 (total)			11.6	9.8	6.9	1
Health worker skills mix (nurses/clinicians)			1.1	2.0	2.3	
Hospital admissions per 100 persons per year	4	4	6.2	6.8	3.6	3
Hospital case fatality rate (%)	1	3	3.6	1.9	2.4	5
OPD visits per person per year	1	1	1.1	0.9	0.7	6

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	4	8	11.8	10.0	11.5	80.4	4
FP, new visits per 100 population	1	2	2.5	3.7	4.6		11
Antenatal care, 1+ visit (%)	78	90	83.4	81.3	95.9	99.5	17
Antenatal care, 1st visit <20 wks (%)	31	39	36.4	34.9	37.6		15
PMTCT per 100 HIV+ pregnant women			96.2		71.1		1
Tetanus protected at birth (%)					88.2	97.5	1
IPT2 during pregnancy (%)					51.9	32.0	14
HIV counseling & testing pregnant women (%)					51.3	65.2	7
Institutional delivery rate (%)	67	73	73.7	74.0	56.0	86.7	3
Postnatal checkup (%)					35.4	48.3	5
BCG immunization, infants (%)	90	95	93.2	88.0	100.0	97.9	21
DTP3/pentavalent immunization (%)	88	100	95.3	91.9	94.5	96.5	13
Measles immunization (%)	94	99	96.4	100.0	99.7	95.1	7
Vit A supplementation children (%)					60.3	60.5	14
MMR in institutions (per 100,000 LB)	128	186	115.1	112.5	161.0		4
Birth registration (%)					16.3	48.4	3

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	28.1	27.6	2
Underweight, children under 5 (%)	14.4	11	3
Anemia (moderate/severe), children		21.6	6
Underweight, women (BMI<18.5)	12.1	8	5

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	1.9	3.8	8
ART coverage, all ages	72.4	81.4	2
VCT (HIV), last 12 months, both sexes		25.1	15
TB case notification rate (per 100,000)	150	153	15
TB treatment success rate	77	87	18
Malaria parasitemia, children (RDT)		0.0	2
ITN use, children		74.9	9

SUMMARY RANKING REGION	RANK
Socioeconomic level	2
Health system strength	1
RMNCH coverage	63.1% 4
Health MDG coverage	66.3% 3

# Regional statistics

## LINDI

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	864,652	Population in poorest 40% (%)	70.3
Births (est.)	31,127	Education, mean years	2.8
Under-5 mortality per 1,000 (Southern)	94 <b>2001-10</b>	153 <b>1996-2005</b>	
Infant mortality per 1,000 (Southern)	68 <b>2001-10</b>	121 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Southern)	31 <b>2001-10</b>	47 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	2.4	2.8	1.5	1
In patient beds per 10,000 pop			18.0		15.6	5
Health worker density per 10,000 (clinicians)			2.0	2.6	2.1	5
Health worker density per 10,000 (nurse midwife)			3.2	4.0	4.8	5
Health worker density per 10,000 (total)			5.2	6.6	6.9	5
Health worker skills mix (nurses/clinicians)			1.5	1.6	2.3	
Hospital admissions per 100 persons per year	3	3	2.5	4.2	3.6	5
Hospital case fatality rate (%)	4	3	6.6	1.9	2.4	6
OPD visits per person per year	1	1	1.0	1.0	0.7	3

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	20	18	18.5	16.8	11.5	63.1	9
FP, new visits per 100 population	10	8	8.1	7.3	4.6		6
Antenatal care, 1+ visit (%)	88	96	98.6	87.7	95.9	98.3	7
Antenatal care, 1st visit <20 wks (%)	52	54	59.4	51.4	37.6		1
PMTCT per 100 HIV+ pregnant women			88.8		71.1		3
Tetanus protected at birth (%)					88.2	82.6	19
IPT2 during pregnancy (%)					51.9	47.7	5
HIV counseling & testing pregnant women (%)					51.3	67.0	6
Institutional delivery rate (%)	66	65	76.4	72.8	56.0	51.7	6
Postnatal checkup (%)					35.4	44.7	7
BCG immunization, infants (%)	83	81	94.0	100.0	100.0	99.3	14
DTP3/pentavalent immunization (%)	80	80	92.8	100.0	94.5	97.1	5
Measles immunization (%)	90	86	98.4	97.6	99.7	94.3	12
Vit A supplementation children (%)					60.3	57.0	18
MMR in institutions (per 100,000 LB)	196	356	191.0	260.5	161.0		18
Birth registration (%)					16.3	18.4	8

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	58.6	53.5	20
Underweight, children under 5 (%)	18.4	24.3	19
Anemia (moderate/severe), children		42.6	21
Underweight, women (BMI<18.5)	11	20.4	20

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	3.8	2.9	4
ART coverage, all ages	47.5	70.0	4
VCT (HIV), last 12 months, both sexes		33.6	4
TB case notification rate (per 100,000)	148	166	18
TB treatment success rate	90	90	8
Malaria parasitemia, children (RDT)		26.3	21
ITN use, children		87.2	1

SUMMARY RANKING REGION	RANK
Socioeconomic level	19
Health system strength	3
RMNCH coverage	61.5%
Health MDG coverage	65.7%

# Regional statistics

## MANYARA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,425,131	Population in poorest 40% (%)	57.5
Births (est.)	64,131	Education, mean years	3.4
Under-5 mortality per 1,000 (Northern)	58 <b>2001-10</b>	105 <b>1996-2005</b>	
Infant mortality per 1,000 (Northern)	40 <b>2001-10</b>	67 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Northern)	22 <b>2001-10</b>	26 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	1	1	1.3	1.3	1.5	15
In patient beds per 10,000 pop			14.9		15.6	10
Health worker density per 10,000 (clinicians)			1.4	1.3	2.1	15
Health worker density per 10,000 (nurse midwife)			0.1	2.7	4.8	16
Health worker density per 10,000 (total)			1.5	4.0	6.9	16
Health worker skills mix (nurses/clinicians)			0.1	2.0	2.3	
Hospital admissions per 100 persons per year	3	5	4.0	3.8	3.6	7
Hospital case fatality rate (%)	4	3	2.6	0.5	2.4	1
OPD visits per person per year	1	1	0.6	0.6	0.7	16

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	5	5	7.1	7.0	11.5	44.0	16
FP, new visits per 100 population	2	1	2.5	2.4	4.6		17
Antenatal care, 1+ visit (%)	94	85	100.3	97.2	95.9	98.3	3
Antenatal care, 1st visit <20 wks (%)	34	24	32.9	10.4	37.6		21
PMTCT per 100 HIV+ pregnant women			78.3		71.1		6
Tetanus protected at birth (%)					88.2	86.6	15
IPT2 during pregnancy (%)					51.9	30.6	16
HIV counseling & testing pregnant women (%)					51.3	59.7	10
Institutional delivery rate (%)	38	43	43.3	40.4	56.0	38.0	20
Postnatal checkup (%)					35.4	30.5	15
BCG immunization, infants (%)	96	100	100.0	100.0	100.0	100.0	1
DTP3/pentavalent immunization (%)	87	98	91.0	93.4	94.5	100.0	9
Measles immunization (%)	92	97	98.3	95.8	99.7	98.8	10
Vit A supplementation children (%)					60.3	60.1	15
MMR in institutions (per 100,000 LB)	204	109	238.0	135.0	161.0		15
Birth registration (%)					16.3	8.1	16

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	48.1	45.8	13
Underweight, children under 5 (%)	4.9	24.2	18
Anemia (moderate/severe), children		28	11
Underweight, women (BMI<18.5)	15.2	15.7	17

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	1.5	1.5	1
ART coverage, all ages	52.4	65.7	10
VCT (HIV), last 12 months, both sexes		23.5	18
TB case notification rate (per 100,000)	196	162	17
TB treatment success rate	89	89	11
Malaria parasitemia, children (RDT)		0.9	6
ITN use, children		64.5	20

SUMMARY RANKING REGION	RANK
Socioeconomic level	16
Health system strength	13
RMNCH coverage	48.3% 16
Health MDG coverage	53.1% 16

# Regional statistics

## MARA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,743,830	Population in poorest 40% (%)	36.8
Births (est.)	92,423	Education, mean years	4.25
Under-5 mortality per 1,000 (Lake)	109 <b>2001-10</b>	142 <b>1996-2005</b>	
Infant mortality per 1,000 (Lake)	64 <b>2001-10</b>	90 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Lake)	21 <b>2001-10</b>	36 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	1.5	1.6	1.5	12
In patient beds per 10,000 pop			12.5		15.6	13
Health worker density per 10,000 (clinicians)			1.4	1.4	2.1	13
Health worker density per 10,000 (nurse midwife)			2.8	3.6	4.8	7
Health worker density per 10,000 (total)			4.1	4.9	6.9	11
Health worker skills mix (nurses/clinicians)			2.0	2.6	2.3	
Hospital admissions per 100 persons per year	7	7	7.9	8.6	3.6	1
Hospital case fatality rate (%)	2	1	1.6	1.4	2.4	2
OPD visits per person per year	1	1	1.0	1.0	0.7	4

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	9	11	10.7	9.9	11.5	25.7	17
FP, new visits per 100 population	5	4	5.8	4.4	4.6		10
Antenatal care, 1+ visit (%)	83	99	100.4	97.9	95.9	97.3	4
Antenatal care, 1st visit <20 wks (%)	51	55	54.6	46.6	37.6		2
PMTCT per 100 HIV+ pregnant women			38.8		71.1		21
Tetanus protected at birth (%)					88.2	91.1	8
IPT2 during pregnancy (%)					51.9	10.0	21
HIV counseling & testing pregnant women (%)					51.3	28.7	21
Institutional delivery rate (%)	46	53	59.8	50.3	56.0	33.3	15
Postnatal checkup (%)					35.4	19.1	20
BCG immunization, infants (%)	87	99	100.0	100.0	100.0	99.0	3
DTP3/pentavalent immunization (%)	87	95	98.0	100.0	94.5	98.2	4
Measles immunization (%)	94	98	100.0	100.0	99.7	97.9	4
Vit A supplementation children (%)					60.3	69.4	8
MMR in institutions (per 100,000 LB)	178	381	146.5	180.8	161.0		12
Birth registration (%)					16.3	11.3	13

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	46.6	31.0	3
Underweight, children under 5 (%)	13.1	11.9	8
Anemia (moderate/severe), children		24.2	7
Underweight, women (BMI<18.5)	11.4	13.8	15

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	7.7	4.5	12
ART coverage, all ages	40.2	47.3	17
VCT (HIV), last 12 months, both sexes		32.9	7
TB case notification rate (per 100,000)	153	151	14
TB treatment success rate	86	89	12
Malaria parasitemia, children (RDT)		25.4	19
ITN use, children		73.6	13

SUMMARY RANKING REGION	RANK
Socioeconomic level	8
Health system strength	9
RMNCH coverage	45.3% 20
Health MDG coverage	50.2% 20



# Regional statistics

## MBEYA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	2,707,410	Population in poorest 40% (%)	26.4
Births (est.)	119,126	Education, mean years	4.4
Under-5 mortality per 1,000 (S Highlands)	102 <b>2001-10</b>	136 <b>1996-2005</b>	
Infant mortality per 1,000 (S Highlands)	70 <b>2001-10</b>	82 <b>1996-2005</b>	
Neonatal mortality per 1,000 (S Highlands)	38 <b>2001-10</b>	38 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	1.6	1.5	1.5	13
In patient beds per 10,000 pop			12.3		15.6	14
Health worker density per 10,000 (clinicians)			1.5	1.9	2.1	10
Health worker density per 10,000 (nurse midwife)			3.0	4.5	4.8	4
Health worker density per 10,000 (total)			4.5	6.4	6.9	6
Health worker skills mix (nurses/clinicians)			2.0	2.3	2.3	
Hospital admissions per 100 persons per year	4	4	3.2	3.0	3.6	17
Hospital case fatality rate (%)	2	2	2.8	2.8	2.4	13
OPD visits per person per year	1	1	0.5	0.6	0.7	17

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	11	9	10.6	10.6	11.5	76.0	6
FP, new visits per 100 population	2	3	2.9	3.2	4.6		14
Antenatal care, 1+ visit (%)	95	93	93.2	85.9	95.9	99.5	9
Antenatal care, 1st visit <20 wks (%)	46	37	49.1	43.0	37.6		7
PMTCT per 100 HIV+ pregnant women			67.8		71.1		10
Tetanus protected at birth (%)					88.2	81.9	20
IPT2 during pregnancy (%)					51.9	36.6	9
HIV counseling & testing pregnant women (%)					51.3	45.2	17
Institutional delivery rate (%)	45	53	58.2	56.6	56.0	43.1	13
Postnatal checkup (%)					35.4	31.0	14
BCG immunization, infants (%)	94	100	100.0	100.0	100.0	96.7	5
DTP3/pentavalent immunization (%)	90	100	100.0	100.0	94.5	96.0	1
Measles immunization (%)	100	100	100.0	100.0	99.7	93.1	1
Vit A supplementation children (%)					60.3	62.6	13
MMR in institutions (per 100,000 LB)	222	120	185.2	188.3	161.0		16
Birth registration (%)					16.3	9.3	15

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	44.7	49.8	17
Underweight, children under 5 (%)	9.4	9.7	1
Anemia (moderate/severe), children		26.9	8
Underweight, women (BMI<18.5)	4.8	4.5	1

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	9.2	8.3	5
ART coverage, all ages	66.5	84.3	7
VCT (HIV), last 12 months, both sexes		24.1	13
TB case notification rate (per 100,000)	122	125	16
TB treatment success rate	92	90	20
Malaria parasitemia, children (RDT)		0.5	1
ITN use, children		64.7	17

SUMMARY RANKING REGION	RANK
Socioeconomic level	5
Health system strength	10
RMNCH coverage	54.6% 11
Health MDG coverage	58.5% 11

# Regional statistics

## MOROGORO

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	2,218,492	Population in poorest 40% (%)	32.8
Births (est.)	93,177	Education, mean years	4.4
Under-5 mortality per 1,000 (Eastern)	94 <b>2001-10</b>	126 <b>1996-2005</b>	
Infant mortality per 1,000 (Eastern)	70 <b>2001-10</b>	84 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Eastern)	38 <b>2001-10</b>	44 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	1.7	1.7	1.5	8
In patient beds per 10,000 pop			13.1		15.6	12
Health worker density per 10,000 (clinicians)			3.0	2.7	2.1	4
Health worker density per 10,000 (nurse midwife)			2.9	3.4	4.8	10
Health worker density per 10,000 (total)			5.9	6.1	6.9	8
Health worker skills mix (nurses/clinicians)			1.0	1.2	2.3	
Hospital admissions per 100 persons per year	3	3	2.2	3.2	3.6	14
Hospital case fatality rate (%)	5	3	3.1	3.1	2.4	15
OPD visits per person per year	1	1	0.9	1.1	0.7	2

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	9	6	6.9	13.8	11.5	67.4	9
FP, new visits per 100 population	2	1	2.0	4.4	4.6		9
Antenatal care, 1+ visit (%)	87	73	81.0	94.8	95.9	99.6	12
Antenatal care, 1st visit <20 wks (%)	43	37	37.5	41.5	37.6		12
PMTCT per 100 HIV+ pregnant women			64.8		71.1		11
Tetanus protected at birth (%)					88.2	88.8	11
IPT2 during pregnancy (%)					51.9	46.1	6
HIV counseling & testing pregnant women (%)					51.3	54.2	11
Institutional delivery rate (%)	57	62	60.7	57.5	56.0	58.0	8
Postnatal checkup (%)					35.4	35.4	11
BCG immunization, infants (%)	80	80	85.1	97.0	100.0	100.0	20
DTP3/pentavalent immunization (%)	84	68	84.1	86.3	94.5	99.3	19
Measles immunization (%)	88	80	84.6	86.2	99.7	98.8	20
Vit A supplementation children (%)					60.3	77.1	3
MMR in institutions (per 100,000 LB)	207	147	103.2	139.9	161.0		7
Birth registration (%)					16.3	22.4	7

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	43.0	44.4	12
Underweight, children under 5 (%)	13.5	16	12
Anemia (moderate/severe), children		32.5	14
Underweight, women (BMI<18.5)	5.4	5.5	3

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	5.1	3.8	9
ART coverage, all ages	41.8	60.0	15
VCT (HIV), last 12 months, both sexes		20.7	20
TB case notification rate (per 100,000)	174	150	13
TB treatment success rate	93	93	5
Malaria parasitemia, children (RDT)		13.0	16
ITN use, children		78.4	7

SUMMARY RANKING REGION	RANK
Socioeconomic level	7
Health system strength	7
RMNCH coverage	56.9% 8
Health MDG coverage	59.9% 9

# Regional statistics

## MTWARA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,270,854	Population in poorest 40% (%)	57.7
Births (est.)	53,376	Education, mean years	4.05
Under-5 mortality per 1,000 (Northern)	58 <b>2001-10</b>	105 <b>1996-2005</b>	
Infant mortality per 1,000 (Northern)	40 <b>2001-10</b>	67 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Northern)	22 <b>2001-10</b>	26 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	1.6	1.6	1.5	10
In patient beds per 10,000 pop			16.2		15.6	7
Health worker density per 10,000 (clinicians)			1.3	1.6	2.1	12
Health worker density per 10,000 (nurse midwife)			2.2	2.8	4.8	15
Health worker density per 10,000 (total)			3.6	4.3	6.9	14
Health worker skills mix (nurses/clinicians)			1.7	1.8	2.3	
Hospital admissions per 100 persons per year	3	3	2.7	3.7	3.6	10
Hospital case fatality rate (%)	3	2	2.2	3.9	2.4	19
OPD visits per person per year	1	1	0.6	0.7	0.7	13

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	16	20	13.6	17.9	11.5	61.4	6
FP, new visits per 100 population	6	7	6.1	7.7	4.6		3
Antenatal care, 1+ visit (%)	66	77	83.1	87.2	95.9	99.0	15
Antenatal care, 1st visit <20 wks (%)	35	40	43.0	44.9	37.6		4
PMTCT per 100 HIV+ pregnant women			75.3		71.1		9
Tetanus protected at birth (%)					88.2	92.1	5
IPT2 during pregnancy (%)					51.9	41.1	7
HIV counseling & testing pregnant women (%)					51.3	79.8	2
Institutional delivery rate (%)	49	48	57.1	60.1	56.0	58.6	7
Postnatal checkup (%)					35.4	57.8	3
BCG immunization, infants (%)	74	75	87.4	102.1	100.0	98.7	18
DTP3/pentavalent immunization (%)	86	79	80.3	92.5	94.5	97.6	18
Measles immunization (%)	90	81	88.9	94.9	99.7	96.9	15
Vit A supplementation children (%)					60.3	69.6	7
MMR in institutions (per 100,000 LB)	229	517	375.1	386.8	161.0		21
Birth registration (%)					16.3	25.0	5

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	56.6	43.5	9
Underweight, children under 5 (%)	19.6	18.9	15
Anemia (moderate/severe), children		36.2	15
Underweight, women (BMI<18.5)	17.3	12.8	12

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	3.6	4.1	10
ART coverage, all ages	49.0	43.4	18
VCT (HIV), last 12 months, both sexes		33.2	5
TB case notification rate (per 100,000)	159	148	12
TB treatment success rate	87	88	15
Malaria parasitemia, children (RDT)		17.4	17
ITN use, children		74	12

SUMMARY RANKING REGION	RANK
Socioeconomic level	15
Health system strength	15
RMNCH coverage	60.3% 7
Health MDG coverage	63.0% 7

# Regional statistics

## MWANZA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	3,855,324	Population in poorest 40% (%)	42.9
Births (est.)	196,621	Education, mean years	3.5
Under-5 mortality per 1,000 (Lake)	109 <b>2001-10</b>	142 <b>1996-2005</b>	
Infant mortality per 1,000 (Lake)	64 <b>2001-10</b>	90 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Lake)	21 <b>2001-10</b>	36 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	1	1	1.1	1.1	1.5	19
In patient beds per 10,000 pop			9.3		15.6	19
Health worker density per 10,000 (clinicians)			1.7	1.2	2.1	17
Health worker density per 10,000 (nurse midwife)			2.3	3.1	4.8	11
Health worker density per 10,000 (total)			4.0	4.2	6.9	15
Health worker skills mix (nurses/clinicians)			1.4	2.6	2.3	
Hospital admissions per 100 persons per year	4	4	3.3	3.4	3.6	13
Hospital case fatality rate (%)	3	3	2.1	2.2	2.4	8
OPD visits per person per year	1	1	0.7	0.6	0.7	15

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	4	6	3.4	5.7	11.5	28.5	20
FP, new visits per 100 population	1	2	1.6	2.6	4.6		16
Antenatal care, 1+ visit (%)	92	93	99.1	95.7	95.9	100.0	5
Antenatal care, 1st visit <20 wks (%)	37	40	38.2	37.0	37.6		13
PMTCT per 100 HIV+ pregnant women			64.3		71.1		12
Tetanus protected at birth (%)					88.2	83.8	17
IPT2 during pregnancy (%)					51.9	29.2	17
HIV counseling & testing pregnant women (%)					51.3	47.4	16
Institutional delivery rate (%)	51	51	48.8	48.0	56.0	45.9	16
Postnatal checkup (%)					35.4	12.3	21
BCG immunization, infants (%)	100	94	100.0	100.0	100.0	96.9	12
DTP3/pentavalent immunization (%)	76	100	95.4	83.3	94.5	96.0	14
Measles immunization (%)	94	100	90.5	86.6	99.7	90.5	21
Vit A supplementation children (%)					60.3	76.9	5
MMR in institutions (per 100,000 LB)	191	186	193.1	172.7	161.0		14
Birth registration (%)					16.3	31.0	4

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	34.8	38.7	6
Underweight, children under 5 (%)	11.0	11.4	5
Anemia (moderate/severe), children		37	16
Underweight, women (BMI<18.5)	7.1	10	8

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	5.6	4.4	11
ART coverage, all ages	48.7	65.0	11
VCT (HIV), last 12 months, both sexes		32.7	8
TB case notification rate (per 100,000)	150	146	10
TB treatment success rate	89	89	13
Malaria parasitemia, children (RDT)		18.6	18
ITN use, children		78.7	4

SUMMARY RANKING REGION	RANK
Socioeconomic level	11
Health system strength	16
RMNCH coverage	46.9% 19
Health MDG coverage	52.2% 18

# Regional statistics

## PWANI

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,098,668	Population in poorest 40% (%)	43.8
Births (est.)	46,144	Education, mean years	3.2
Under-5 mortality per 1,000 (Eastern)	94 <b>2001-10</b>	126 <b>1996-2005</b>	
Infant mortality per 1,000 (Eastern)	70 <b>2001-10</b>	84 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Eastern)	38 <b>2001-10</b>	44 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	2.3	2.4	1.5	4
In patient beds per 10,000 pop			13.3		15.6	11
Health worker density per 10,000 (clinicians)			3.6	4.0	2.1	1
Health worker density per 10,000 (nurse midwife)			3.2	2.9	4.8	13
Health worker density per 10,000 (total)			6.8	6.9	6.9	3
Health worker skills mix (nurses/clinicians)			0.9	0.7	2.3	
Hospital admissions per 100 persons per year	9	4	2.6	3.4	3.6	12
Hospital case fatality rate (%)	5	2	3.0	2.7	2.4	12
OPD visits per person per year	1	1	0.7	0.8	0.7	10

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	28	24	19.7	17.1	11.5	68.3	3
FP, new visits per 100 population	9	7	5.8	7.4	4.6		5
Antenatal care, 1+ visit (%)	73	82	81.3	94.3	95.9	96.2	14
Antenatal care, 1st visit <20 wks (%)	25	28	21.4	17.5	37.6		20
PMTCT per 100 HIV+ pregnant women			75.7		71.1		8
Tetanus protected at birth (%)					88.2	88.8	12
IPT2 during pregnancy (%)					51.9	48.1	4
HIV counseling & testing pregnant women (%)					51.3	77.3	3
Institutional delivery rate (%)	62	73	74.7	78.1	56.0	73.1	4
Postnatal checkup (%)					35.4	47.4	6
BCG immunization, infants (%)	75	79	79.2	100.0	100.0	99.5	19
DTP3/pentavalent immunization (%)	83	79	77.3	100.0	94.5	99.0	11
Measles immunization (%)	85	80	82.6	99.9	99.7	96.9	16
Vit A supplementation children (%)					60.3	58.2	16
MMR in institutions (per 100,000 LB)	113	158	222.5	208.1	161.0		17
Birth registration (%)					16.3	49.4	2

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	42.6	31.7	4
Underweight, children under 5 (%)	22.0	11.6	6
Anemia (moderate/severe), children		42.1	19
Underweight, women (BMI<18.5)	12.2	13.6	14

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	6.7	5.9	16
ART coverage, all ages	48.3	60.9	13
VCT (HIV), last 12 months, both sexes		31.3	10
TB case notification rate (per 100,000)	190	185	20
TB treatment success rate	93	96	2
Malaria parasitemia, children (RDT)		10.2	14
ITN use, children		84.4	2

SUMMARY RANKING REGION	RANK
Socioeconomic level	12
Health system strength	5
RMNCH coverage	63.4% 3
Health MDG coverage	66.7% 2

# Regional statistics

## RUKWA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,569,143	Population in poorest 40% (%)	57.9
Births (est.)	91,010	Education, mean years	2.45
Under-5 mortality per 1,000 (S Highlands)	102 <b>2001-10</b>	136 <b>1996-2005</b>	
Infant mortality per 1,000 (S Highlands)	70 <b>2001-10</b>	82 <b>1996-2005</b>	
Neonatal mortality per 1,000 (S Highlands)	38 <b>2001-10</b>	38 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	1.7	1.7	1.5	9
In patient beds per 10,000 pop			10.9		15.6	16
Health worker density per 10,000 (clinicians)			1.2	1.2	2.1	16
Health worker density per 10,000 (nurse midwife)			1.6	2.1	4.8	18
Health worker density per 10,000 (total)			2.8	3.4	6.9	18
Health worker skills mix (nurses/clinicians)			1.3	1.7	2.3	
Hospital admissions per 100 persons per year	2	2	1.8	1.7	3.6	20
Hospital case fatality rate (%)	3	5	4.7	5.5	2.4	21
OPD visits per person per year	1	1	0.8	0.5	0.7	19

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	8	11	8.2	14.7	11.5	65.8	8
FP, new visits per 100 population	3	4	2.9	5.3	4.6		8
Antenatal care, 1+ visit (%)	72	84	95.2	96.3	95.9	97.2	6
Antenatal care, 1st visit <20 wks (%)	41	51	40.0	42.3	37.6		9
PMTCT per 100 HIV+ pregnant women			62.7		71.1		14
Tetanus protected at birth (%)					88.2	88.1	13
IPT2 during pregnancy (%)					51.9	23.5	20
HIV counseling & testing pregnant women (%)					51.3	33.8	19
Institutional delivery rate (%)	45	57	49.4	53.3	56.0	29.5	17
Postnatal checkup (%)					35.4	22.0	19
BCG immunization, infants (%)	74	98	93.5	133.7	100.0	98.3	4
DTP3/pentavalent immunization (%)	69	91	85.9	92.6	94.5	95.2	16
Measles immunization (%)	88	92	95.5	100.0	99.7	91.7	6
Vit A supplementation children (%)					60.3	52.4	19
MMR in institutions (per 100,000 LB)	184	74	158.6	148.4	161.0		11
Birth registration (%)					16.3	2.7	20

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	53.4	50.4	18
Underweight, children under 5 (%)	18.5	13.5	9
Anemia (moderate/severe), children		15.9	3
Underweight, women (BMI<18.5)	13.2	8.2	6

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	4.9	6.2	17
ART coverage, all ages	14.6	63.9	12
VCT (HIV), last 12 months, both sexes		19.5	21
TB case notification rate (per 100,000)	52	40	1
TB treatment success rate	91	88	16
Malaria parasitemia, children (RDT)		4.5	9
ITN use, children		66.8	18

SUMMARY RANKING REGION	RANK
Socioeconomic level	<b>18</b>
Health system strength	<b>19</b>
RMNCH coverage	53.0% <b>15</b>
Health MDG coverage	57.3% <b>15</b>

# Regional statistics

## RUVUMA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,376,891	Population in poorest 40% (%)	32.4
Births (est.)	57,829	Education, mean years	5.85
Under-5 mortality per 1,000 (Southern)	94 <b>2001-10</b>	153 <b>1996-2005</b>	
Infant mortality per 1,000 (Southern)	68 <b>2001-10</b>	121 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Southern)	31 <b>2001-10</b>	47 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	1.9	1.9	1.5	5
In patient beds per 10,000 pop			27.2		15.6	3
Health worker density per 10,000 (clinicians)			1.9	2.1	2.1	8
Health worker density per 10,000 (nurse midwife)			3.5	4.7	4.8	3
Health worker density per 10,000 (total)			5.4	6.8	6.9	4
Health worker skills mix (nurses/clinicians)			1.8	2.3	2.3	
Hospital admissions per 100 persons per year	7	7	7.1	7.0	3.6	2
Hospital case fatality rate (%)	2	2	1.4	2.0	2.4	7
OPD visits per person per year	1	1	0.8	0.8	0.7	8

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	12	10	11.9	14.3	11.5	68.8	4
FP, new visits per 100 population	3	3	3.1	3.3	4.6		13
Antenatal care, 1+ visit (%)	87	92	90.6	89.2	95.9	92.9	13
Antenatal care, 1st visit <20 wks (%)	40	43	13.4	42.0	37.6		10
PMTCT per 100 HIV+ pregnant women			87.9		71.1		4
Tetanus protected at birth (%)					88.2	90.7	7
IPT2 during pregnancy (%)					51.9	38.9	8
HIV counseling & testing pregnant women (%)					51.3	67.3	5
Institutional delivery rate (%)	67	71	78.7	79.0	56.0	85.9	2
Postnatal checkup (%)					35.4	60.2	2
BCG immunization, infants (%)	90	92	97.9	100.0	100.0	98.1	7
DTP3/pentavalent immunization (%)	89	88	84.0	95.7	94.5	94.1	15
Measles immunization (%)	92	90	86.9	100.0	99.7	91.7	13
Vit A supplementation children (%)					60.3	79.8	2
MMR in institutions (per 100,000 LB)	172	127	137.0	105.1	161.0		6
Birth registration (%)					16.3	14.7	11

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	59.7	46.2	14
Underweight, children under 5 (%)	16.7	15.8	11
Anemia (moderate/severe), children		30.3	13
Underweight, women (BMI<18.5)	6.8	11.2	9

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	5.9	7	19
ART coverage, all ages	60.7	70.0	5
VCT (HIV), last 12 months, both sexes		37.1	1
TB case notification rate (per 100,000)	126	105	7
TB treatment success rate	85	89	14
Malaria parasitemia, children (RDT)		12.0	15
ITN use, children		78.7	5

SUMMARY RANKING REGION	RANK
Socioeconomic level	4
Health system strength	4
RMNCH coverage	60.7% 6
Health MDG coverage	64.4% 6

# Regional statistics

## SHINYANGA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	3,461,182	Population in poorest 40% (%)	59.5
Births (est.)	197,287	Education, mean years	2.95
Under-5 mortality per 1,000 (Western)	98 <b>2001-10</b>	138 <b>1996-2005</b>	
Infant mortality per 1,000 (Western)	56 <b>2001-10</b>	76 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Western)	25 <b>2001-10</b>	23 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	1	1	1.1	1.1	1.5	20
In patient beds per 10,000 pop			8.5		15.6	21
Health worker density per 10,000 (clinicians)			1.1	1.0	2.1	19
Health worker density per 10,000 (nurse midwife)			1.8	1.9	4.8	20
Health worker density per 10,000 (total)			3.0	2.9	6.9	19
Health worker skills mix (nurses/clinicians)			1.6	1.8	2.3	
Hospital admissions per 100 persons per year	3	2	2.6	2.0	3.6	19
Hospital case fatality rate (%)	4	3	1.8	3.2	2.4	16
OPD visits per person per year	1	1	0.5	0.4	0.7	21

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	9	9	5.6	5.5	11.5	40.6	19
FP, new visits per 100 population	2	2	1.9	1.8	4.6		21
Antenatal care, 1+ visit (%)	90	97	87.2	99.0	95.9	97.8	8
Antenatal care, 1st visit <20 wks (%)	31	33	27.1	29.9	37.6		18
PMTCT per 100 HIV+ pregnant women			47.8		71.1		19
Tetanus protected at birth (%)					88.2	89.7	9
IPT2 during pregnancy (%)					51.9	33.6	12
HIV counseling & testing pregnant women (%)					51.3	30.4	20
Institutional delivery rate (%)	37	38	39.5	42.9	56.0	33.1	21
Postnatal checkup (%)					35.4	27.3	16
BCG immunization, infants (%)	94	99	98.7	100.0	100.0	99.2	9
DTP3/pentavalent immunization (%)	92	99	96.9	99.0	94.5	88.2	12
Measles immunization (%)	93	95	96.7	100.0	99.7	95.8	5
Vit A supplementation children (%)					60.3	12.1	21
MMR in institutions (per 100,000 LB)	220	129	167.6	119.3	161.0		10
Birth registration (%)					16.3	2.5	21

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	44.3	43.3	8
Underweight, children under 5 (%)	14.0	10.1	2
Anemia (moderate/severe), children		14.6	1
Underweight, women (BMI<18.5)	9	13.2	13

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	7.4	5.1	14
ART coverage, all ages	30.8	41.2	19
VCT (HIV), last 12 months, both sexes		23.7	17
TB case notification rate (per 100,000)	118	110	8
TB treatment success rate	85	86	19
Malaria parasitemia, children (RDT)		6.8	11
ITN use, children		77.2	8

SUMMARY RANKING REGION	RANK
Socioeconomic level	17
Health system strength	21
RMNCH coverage	42.8% 21
Health MDG coverage	47.0% 21



# Regional statistics

## SINGIDA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	1,370,637	Population in poorest 40% (%)	56.8
Births (est.)	57,567	Education, mean years	4.45
Under-5 mortality per 1,000 (Central)	102 <b>2001-10</b>	136 <b>1996-2005</b>	
Infant mortality per 1,000 (Central)	70 <b>2001-10</b>	82 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Central)	38 <b>2001-10</b>	38 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	1.6	1.6	1.5	11
In patient beds per 10,000 pop			15.9		15.6	9
Health worker density per 10,000 (clinicians)			1.4	1.4	2.1	14
Health worker density per 10,000 (nurse midwife)			2.1	3.4	4.8	9
Health worker density per 10,000 (total)			3.5	4.8	6.9	12
Health worker skills mix (nurses/clinicians)			1.5	2.5	2.3	
Hospital admissions per 100 persons per year	3	7	5.1	3.5	3.6	11
Hospital case fatality rate (%)	3	2	2.9	2.5	2.4	11
OPD visits per person per year	1	1	0.8	0.8	0.7	9

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	15	12	35.0	17.4	11.5	42.3	12
FP, new visits per 100 population	3	3	2.0	5.7	4.6		7
Antenatal care, 1+ visit (%)	96	98	99.3	90.4	95.9	88.2	10
Antenatal care, 1st visit <20 wks (%)	54	86	53.7	41.5	37.6		11
PMTCT per 100 HIV+ pregnant women			57.5		71.1		16
Tetanus protected at birth (%)					88.2	83.6	18
IPT2 during pregnancy (%)					51.9	30.7	15
HIV counseling & testing pregnant women (%)					51.3	48.6	15
Institutional delivery rate (%)	70	69	65.5	56.6	56.0	47.7	10
Postnatal checkup (%)					35.4	36.9	10
BCG immunization, infants (%)	88	87	96.5	96.6	100.0	96.9	17
DTP3/pentavalent immunization (%)	94	91	98.3	95.8	94.5	96.7	6
Measles immunization (%)	99	100	99.8	100.0	99.7	93.9	8
Vit A supplementation children (%)					60.3	66.2	10
MMR in institutions (per 100,000 LB)	130	281	143.7	132.1	161.0		9
Birth registration (%)					16.3	16.1	10

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	44.8	39.0	7
Underweight, children under 5 (%)	23.8	18.9	16
Anemia (moderate/severe), children		15.9	4
Underweight, women (BMI<18.5)	21.6	19.2	19

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	2.7	3.3	6
ART coverage, all ages	50.4	41.1	20
VCT (HIV), last 12 months, both sexes		34.1	3
TB case notification rate (per 100,000)	89	89	5
TB treatment success rate	91	98	1
Malaria parasitemia, children (RDT)		0.2	3
ITN use, children		74.8	10

SUMMARY RANKING REGION	RANK
Socioeconomic level	13
Health system strength	12
RMNCH coverage	54.1% 12
Health MDG coverage	58.2% 12

# Regional statistics

## TABORA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	2,291,623	Population in poorest 40% (%)	66.3
Births (est.)	114,581	Education, mean years	1.85
Under-5 mortality per 1,000 (Western)	98 <b>2001-10</b>	138 <b>1996-2005</b>	
Infant mortality per 1,000 (Western)	56 <b>2001-10</b>	76 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Western)	25 <b>2001-10</b>	23 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	1	1	1.2	1.3	1.5	6
In patient beds per 10,000 pop			9.6		15.6	20
Health worker density per 10,000 (clinicians)			0.9	0.8	2.1	9
Health worker density per 10,000 (nurse midwife)			1.1	1.7	4.8	17
Health worker density per 10,000 (total)			1.9	2.5	6.9	13
Health worker skills mix (nurses/clinicians)			1.2	2.0	2.3	
Hospital admissions per 100 persons per year	3	3	3.2	3.1	3.6	6
Hospital case fatality rate (%)	3	3	2.8	2.4	2.4	20
OPD visits per person per year	1	1	0.5	0.6	0.7	7

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	9	8	7.1	6.9	11.5	56.7	15
FP, new visits per 100 population	4	3	2.4	2.3	4.6		18
Antenatal care, 1+ visit (%)	94	93	92.1	104.2	95.9	100.0	2
Antenatal care, 1st visit <20 wks (%)	33	35	36.6	34.0	37.6		16
PMTCT per 100 HIV+ pregnant women			53.4		71.1		17
Tetanus protected at birth (%)					88.2	79.7	21
IPT2 during pregnancy (%)					51.9	27.6	19
HIV counseling & testing pregnant women (%)					51.3	50.0	12
Institutional delivery rate (%)	31	47	52.3	32.1	56.0	45.7	19
Postnatal checkup (%)					35.4	37.4	9
BCG immunization, infants (%)	93	100	100.0	100.0	100.0	98.8	2
DTP3/pentavalent immunization (%)	85	96	100.0	100.0	94.5	97.4	3
Measles immunization (%)	95	100	100.0	100.0	99.7	96.7	2
Vit A supplementation children (%)					60.3	27.5	20
MMR in institutions (per 100,000 LB)	502	185	187.4	464.7	161.0		20
Birth registration (%)					16.3	2.9	19

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	42.0	33.0	5
Underweight, children under 5 (%)	15.4	11.0	4
Anemia (moderate/severe), children		26.9	9
Underweight, women (BMI<18.5)	7.3	11.3	10

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	6.4	5.1	15
ART coverage, all ages	37.6	60.3	14
VCT (HIV), last 12 months, both sexes		34.6	2
TB case notification rate (per 100,000)	63	55	3
TB treatment success rate	79	94	4
Malaria parasitemia, children (RDT)		9.2	13
ITN use, children		78.5	6

SUMMARY RANKING REGION	RANK
Socioeconomic level	21
Health system strength	20
RMNCH coverage	47.6% 18
Health MDG coverage	52.9% 17

# Regional statistics

## TANGA

POPULATION	2012	SOCIOECONOMIC DEVELOPMENT	2010
Population	2,045,205	Population in poorest 40% (%)	40.7
Births (est.)	85,899	Education, mean years	4.35
Under-5 mortality per 1,000 (Northern)	58 <b>2001-10</b>	105 <b>1996-2005</b>	
Infant mortality per 1,000 (Northern)	40 <b>2001-10</b>	67 <b>1996-2005</b>	
Neonatal mortality per 1,000 (Northern)	22 <b>2001-10</b>	26 <b>1996-2005</b>	

HEALTH SYSTEM INPUTS AND OUTPUTS	2009	2010	2011	2012	MAINLAND 2012	RANK REGION
Health facility density per 10,000 population	2	2	1.7	1.5	1.5	14
In patient beds per 10,000 pop			16.2		15.6	8
Health worker density per 10,000 (clinicians)			2.2	2.8	2.1	3
Health worker density per 10,000 (nurse midwife)			3.4	3.6	4.8	8
Health worker density per 10,000 (total)			5.6	6.4	6.9	7
Health worker skills mix (nurses/clinicians)			1.6	1.3	2.3	
Hospital admissions per 100 persons per year	4	3	3.8	3.7	3.6	8
Hospital case fatality rate (%)	4	2	1.8	1.8	2.4	4
OPD visits per person per year	1	1	1.5	1.4	0.7	1

REPRODUCTIVE AND CHILD HEALTH	HMIS 2009	2010	2011	2012	MAINLAND 2012	SURVEY REGION	RANK REGION
FP visits per 100 population	16	21	20.3	19.9	11.5	83.1	1
FP, new visits per 100 population	3	5	7.6	7.4	4.6		4
Antenatal care, 1+ visit (%)	74	73	83.9	58.9	95.9	95.0	21
Antenatal care, 1st visit <20 wks (%)	35	34	38.5	29.3	37.6		19
PMTCT per 100 HIV+ pregnant women			78.3		71.1		5
Tetanus protected at birth (%)					88.2	92.4	4
IPT2 during pregnancy (%)					51.9	35.1	11
HIV counseling & testing pregnant women (%)					51.3	49.0	14
Institutional delivery rate (%)	48	50	43.4	47.4	56.0	41.3	18
Postnatal checkup (%)					35.4	40.9	8
BCG immunization, infants (%)	84	92	100.0	100.0	100.0	98.6	8
DTP3/pentavalent immunization (%)	85	64	96.0	92.2	94.5	96.0	10
Measles immunization (%)	91	88	97.7	100.0	99.7	94.3	11
Vit A supplementation children (%)					60.3	57.6	17
MMR in institutions (per 100,000 LB)	125	190	227.7	238.1	161.0		19
Birth registration (%)					16.3	18.3	9

\* FP need satisfied;

NUTRITION	2005-10	2010-12	RANK
Stunting, children under 5 (%)	49.6	49.4	16
Underweight, children under 5 (%)	26.4	24.1	17
Anemia (moderate/severe), children		27.5	10
Underweight, women (BMI<18.5)	12.3	8.4	7

HIV/TB /MALARIA	2005-10	2010-12	RANK
HIV prevalence, 15-49 years	4.8	2.4	2
ART coverage, all ages	50.1	76.5	3
VCT (HIV), last 12 months, both sexes		26.5	12
TB case notification rate (per 100,000)	179	148	11
TB treatment success rate	91	91	7
Malaria parasitemia, children (RDT)		5.6	10
ITN use, children		72.3	14

SUMMARY RANKING REGION	RANK
Socioeconomic level	9
Health system strength	6
RMNCH coverage	56.6%
Health MDG coverage	60.4%