PERFORMANCE EVALUATION SYSTEM OF HOSPITALS AND HEALTH DISTRICTS IN ETHIOPIA, TANZANIA AND UGANDA

REPORT 2022

DOCTORS WITH AFRICA CUAMM

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ISBN 979-12-5486-322-0

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The authors would like to thank all the professionals of the four hospitals and health districts for their precious work on data extraction and collection:

Wolisso Catchment Area and St. Luke - Wolisso Hospital
Enzo Facci, Desalegn Abebe, Abebe Bedada, Yonas Desta, Worku Nigussa, Solomon Alemayehu

Iringa District Council and Tosamaganga Voluntary Agency Hospital
Anza Lema, William Mbuta, Beni Tweve, Noemi Bazzanini, Stefan Alexandru Panaite, Martina Borellini

Napak District and St. Kizito - Matany Hospital
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Oyam District and Pope John XXIII - Aber Hospital
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PREMISE

This is the third release of the report on the Performance evaluation system of hospitals and districts in Ethiopia, Tanzania, and Uganda.

This report is the result of a fruitful partnership between the researcher of the Management and Health research center, the MeS Lab of Scuola Superiore Sant'Anna of Pisa, and the Doctors with Africa CUAMM. Of course, it would have not been possible without the cooperation of the health professional and the health authorities of the four hospitals and districts involved. Indeed, the final scope of this report is to support strengthening the managerial skills of the professionals working in African hospitals and districts.

In particular, the report compares the performance of four realities in Africa for more than 100 indicators covering different dimensions (efficiency, quality, and appropriateness) with a focus on three healthcare pathways: mother and childcare (including malnutrition); infectious diseases, and chronic diseases. These indicators come from routine data, already collected as an administrative fulfilment but then we try to give another sense to them.

Since the pilot project, we added new indicators (such as those on malnutrition) and disseminated the results among workshops and lastly through a web platform that includes both graphical visualizations and tables of indicators that can be downloaded or recalled feeding other information systems. However, public disclosure of the performance results is not enough to make the health system improve. Hence, in 2023 we asked the representatives of each organization to work on disentangling the causes of 2022 poor performance for specific areas with respect to other realities. A valuable experiment was done in Uganda where the representative of CUAMM decided to monitor the performance of a specific indicator weekly, registering great improvement. This was only the first attempt to introduce a sort of audit and feedback process related to the performance evaluation system summed up in this report.

After three years of this initiative, we can state that comparing performance among hospitals and districts in Africa is feasible. However, to strengthen managerial skills and to have an impact, information coming from this report needs to be integrated with other initiatives or programs (such as training courses or strategic plans of the hospitals) hopefully including in the comparison other providers that can enhance the potential power of bench learning of these pioneer hospitals and districts.

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PERFORMANCE EVALUATION
OF HOSPITAL AND HEALTH DISTRICTS
IN ETHIOPIA, TANZANIA AND UGANDA

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1

INTRODUCTION

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DOCTORS WITH AFRICA CUAMM

Introduction

Healthcare performance evaluation is a relevant topic in all health systems. Since 2000s several countries and international organizations have designed frameworks to assess health systems performance though the monitoring of different key dimensions (1–3). As for example, the OECD suggests accessibility, effectiveness, expenditure or cost, efficiency, equity or patient – centeredness (4).

More particularly, the last two decades saw an extensive effort to develop and implement Performance Evaluation Systems (PES) in high income countries (HIC) to evaluate the multidimensional performance of healthcare, with the purpose to improve performance of the health systems and the quality of the healthcare services. Instead, few evidences are reported in the literature on the evaluation of healthcare performance in low- and middle- income countries (LMIC). Moreover, when available, these frameworks usually imply top-down approaches intended to evaluate outcomes at macro or project level. In addition, they usually refer to specific services or geographical settings and they do not compare performance using a multidimensional perspective (5–8).

The COVID-19 pandemic has caused a dramatic setback of the recent advances in healthcare, and also produced notable backward steps with respect of what had been previously achieved since the implementation of the Millennium Development Goals (MDPs) at the beginning of the century (9–11). To deal with the effects of this brutal pandemic, health-related challenges and goals cannot be tackled with answers of the past and actions at all levels should be focused on "recovering better" for fairer and higher quality health systems (12).

As suggested by the Lancet Global Health Commission in 2018 (13), health quality systems in the Sustainable Development Goals should generate and use "fewer but better measures" both at national and subnational levels.

The present report collects and illustrates the results of a study aimed at understanding the core features and principles of a PES in the specific contexts in LMICs. More particularly, its primary objective is to evaluate and compare the performance of four different health care settings across national boundaries, providing policy makers and health care managers with a tool that can contribute to improving efficacy when assessing performance of health care services within the local healthcare system.

The entities involved are four health districts and their reference hospitals in Ethiopia, Uganda and Tanzania.

The hospitals and health districts selected for this study are the following:

- five "Woredas" in Shoa-west zone and St. Luke - Wolisso Hospital in the Oromia region, Ethiopia;
- Iringa District Council and Tosamaganga District Designated Hospital in the Iringa region, Tanzania;
- Napak district and St. Kizito - Matany Hospital in the northern region, Uganda
- Oyam district and Pope John XXIII - Aber Hospital in the norther region, Uganda

In all these contexts the hospitals have the same institutional setting: they are private, faith-based and not for profit. These hospitals are part of the public health system and are mainly funded by both regional governments and out of pocket payments. Alongside, the health districts are managed by the regional government and are characterized by similar organizational models, featuring a wide variety of health care providers at different levels. Primary and secondary care is offered by dispensaries and health centres, which are spread within the reference territory and are intended to provide mainly outpatient services, e.g. prevention, health promotion, maternity, and some in-patient curative services. Tertiary care is provided by regional hospitals, which offer more specialized services, including consultation, emergency, and surgical services, and serve as referral hospitals for the districts. The distribution of facilities across levels of care reflect the healthcare needs of the population, with most cases treated at the district level, whilst more complex cases are referred to reference hospitals.

Nevertheless, these contexts differ with respect to these factors: epidemiological priorities and issues, organizational and governance models, levels of development of the hospitals and health districts information and IT infrastructure. For further detail on differences, Table 1 shows the main information related to the four hospitals and districts participating in this study.

Table 1. *List of the analysed hospitals and their relative health districts or catchment areas*

Country	Region	Health District*	Estimated population (Year 2022)	Reference Hospital	Hospital beds (2022)	Surface area (km2)	Population Density (citizens per km2)
Ethiopia	Oromia region	Wolisso Area (Wolisso Town, Wolisso Rural, Ameya, Wonchi, Goro)	670 037	St. Luke - Wolisso Hospital	208	27 000	24.8
Tanzania	Iringa region	Iringa District Council	322 704	Tosamaganga Voluntary Agency Hospital	192	19 256	16.7
Uganda	Northern region	Napak District	162 300	St. Kizito - Matany Hospital	250	4978.4	32.6
Uganda	Northern region	Oyam District	485 300	Pope John XXIII - Aber Hospital	210	2190.8	221.5

*With regard to Ethiopia, the information reported in the cell does not refer to an institutional health district, bu
covered by Wolisso Hospital.

The development of a PES that compares local settings within supranational contexts may support the management and decision-making activities in three main different ways.

Firstly, the system can be adopted as a management tool. It helps identify good practices, providing opportunities to standardise processes and activities in a replicable manner

which could be applied to other settings within the system. It also supports the identification of poor performances, thus highlighting potential areas of improvement. In addition, it may serve as a potential tool to appropriately allocate the resources available.

Secondly, another important aspect is related to the improved accountability of the involved hospitals and health districts with respect to all stakeholders, including policy makers and key figures at political and governance level as well as national and international donors.

Thirdly, the system may work as a tool to foster capacity building in the professional environment. Particularly, it can promote the development of skills and competencies among professionals in data collection and analysis, sharpening their ability to adopt a population-based approach when interpreting the results. In addition, the PES could eventually accelerate the transition from traditional paper-based information system towards a fully digitalized information system.

The abovementioned objectives are made possible by the core features of the described system, which make it innovative in the field of performance measurement and evaluation in LMICs.

This system came into existence as the result of an action research carried out by the Management and Health Laboratory (MeS Lab) of the Institute of Management of the Sant'Anna School of Advanced Studies in Pisa and Doctors with Africa CUAMM (CUAMM), a leading Italian NGO in the delivery of healthcare services in Sub-Saharan African countries. This initiative has been characterized by the voluntary participation of the hospitals involved that, in collaboration with their respective health districts, have favourably welcomed the development of an integrated evaluation system (14). This aspect is important because the measurement of the integration of different care settings is challenging not only in terms of appropriate measures, but also in relation to their joint acceptability by all healthcare providers and professionals involved in the delivery of healthcare services (15,16).

In order to gain a general knowledge of the broader context in which the CUAMM-MeS PES operates, it may be useful to look at some general indexes regarding the level of development and population health status of the countries involved, analysing the data in comparison with the same figures of Italy. As shown by Figure 1, the three target countries are comparable in terms of median age and life expectancy, level of mortality and child mortality rates and prevalence of infectious diseases, namely Tuberculosis and HIV, as well as the number of physicians per capita. Moreover, Ethiopia, Tanzania and Uganda rank at the lowest scores with reference to the Human Development Index and GDP per capita.

This project arose as a bottom-up initiative and it represents a scalable model that can be applied in different contexts at diverse system level. Therefore, these findings can be of interest also for decision makers at regional and national level.

Moreover, the effective graphical representation of results helps identify the different contributions of the variety of national and international actors involved in the healthcare system. Therefore, the MeS Lab-CUAMM PES combines different contributions in a unique representative solution and highlights the weaknesses and strengths of the integrated system as a whole.

In conclusion, this system is the fruit of a work in progress process oriented towards the identification of strengths in order to boost performance across different levels of the healthcare system.

Figure 1. *Analysed countries in comparison*

	Ethiopia	Tanzania	Uganda	Italy
Population median age (1)	19,5	17,9	16,7	47,3
Life expectancy at birth (years) (1)	68,87	67,74	66	83,2
Maternal mortality ratio, deaths per 100,000 live births (1)	353	398	343	2,9
Under-five mortality, per 1,000 live births (2)	49	49	43	3,1
Neonatal mortality, per 1,000 live births (2)	27	20	19	2
Number of medical doctors (physicians), per 10,000 people (1)	1	0,5	1,5	39,5
TB prevalence rate at national level (4)	140	237	200	7
Prevalence of HIV, total (% of population aged 15-49) (4)	0,009	0,047	0,054	0.2%
Gini Index (5)	35	40.5	42.7	35.2
GDP per capita (current US$) (6)	$944,00	$1.135,50	$858,10	$35.551
Human Development Index ranking position (1)	173/189	163/189	159/189	29/189

Sources:
(1) United Nation Development programme (UNDP), 2020
(2) World Bank, 2020
(3) World Health Organization (WHO), 2019
(4) WHO, 2020
(5) World Bank, 2015 - 2019
(6) World Bank, 2021

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2

METHODOLOGY AND REPRESENTATION OF RESULTS

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Introduction

The PES designed, developed, and implemented in Ethiopia, Tanzania and Uganda is inspired by the PES of Tuscany Region (Italy) and in the Inter-Regional Performance Evaluation System (IRPES) implemented by the MES lab since 2004 and 2008, respectively (1,2). It represents a voluntary based governance tool to support healthcare managers and policy makers at regional and local level.

The PES has been developed with scientific rigour to guarantee the correctness of computation, thus ensuring transparency of performance results, and overcoming of self-referential attitudes (3,4,5).

The goal of this tool is to share a PES of the hospitals and health districts supported by CUAMM through the development and benchmarking of 129 indicators aimed at describing and analysing the multiple dimensions of healthcare delivery (6).

Architecture of the PES

To offer a multidimensional evaluation of healthcare performance, the results are analysed according to different perspectives. The different subsets, or dimensions, of indicators are intended to highlight the fundamental dimensions of healthcare performance. The eight dimensions, which are in turn subdivided into 24 areas of evaluation, are listed below:

- Regional Health Strategies
- Efficiency and Sustainability
- Users, staff, and communication
- Emergency care
- Governance and quality of supply
- Mother and Childcare
- Infectious Diseases
- Chronic Diseases

The indicators included in the PES refer to the years 2020, 2021 and 2022 with the aim of better realizing the relevance as well as the consistency of some phenomena and therefore the evaluation of the performance indicators.

Among the selected indicators, some have been considered as observation indicators over the three years while 55 indicators have been evaluated for 2022 according to the methodology designed and implemented as inspired by the IRPES. More particularly, the indicators have been calculated both at hospital and district level. The richness of information of the performance evaluation system comes from the valorisation of a wide spectrum of data sources, which can be grouped under two broad categories: health and administrative registries for hospital indicators and District Health Information System (DHIS) of each country involved in the study for indicators calculated at residential level.

The indicators have been evaluated through the identification of five bands, considering the statistical distribution of indicators values. Evaluation scores have been built through an algorithm associating each band with a value in between 0 and 5, and a colour from red to dark green (Figure 1). The bands construction varies according to the sign of the indicator that can be increasing or decreasing (1).

Figure 1 *The evaluation bands*

The evaluation scores are determined based on international standards, when available, or on data assessment in benchmarking. Furthermore, the scores of some indicators are defined according to those already applied in the PES of Tuscany Region and in the IRPES. Each indicator has been evaluated by considering the identified reference standard across the hospitals and health districts included in the study. A context analysis was conducted to ascertain the consistency and sensibility of standards and indicators signs applied in the evaluation process. Table 1 provides the full list of indicators included in the PES.

Table 1. *List of indicators shared between the network of health districts and hospitals*

Each dimension is subdivided into different areas of evaluation.
Observation indicators are reported in italics, whilst evaluation indicators in bold.

				Extremes of the evaluation bands									
		Computation level	Page										
Regional Health Strategies													
Area	**Vaccination Coverage**												
B7.10	*Vaccination coverage for tetanus (reproductive women)*	*Residence*	74										
B7.1A	**Vaccination coverage for measles**	**Residence**	75	86	89	89	92	92	95	95	98	98	100
B7.6	**Vaccination coverage against pneumococcal (PCV)**	**Residence**	76	86	89	89	92	92	95	95	98	98	100
B7.7A	**Pentavalent vaccine coverage (HIB; diphteria; partusis, tetanus, HBV)**	**Residence**	77	86	89	89	92	92	95	95	98	98	100
B7.7B	**Vaccination coverage for polio**	**Residence**	78	86	89	89	92	92	95	95	98	98	100
B7.9	**Vaccination coverage for rotavirus**	**Residence**	79	86	89	89	92	92	95	95	98	98	100
Area	**Hospital Attraction**												
C30.3.1.2	*Percentage of hospital admissions for patients resident in other districts*	*Hospital*	80										
C30.3.2.2	*Hospital admissions for patients resident in other districts - Complex cases*	*Hospital*	81										
Efficiency and Sustainability													
Area	**Economic and financial viability**												
F1.1	**General economic equilibrium**	**Hospital**	84	-25,5	-19,1	-19,1	-12,6	-12,6	-6,2	-6,2	0,3	0,3	6,7
F1.2	**Economic equilibrium of health management**	**Hospital**	85	-11,4	-3,8	-3,8	3,7	3,7	11,3	11,3	18,8	18,8	26,4
F1.3	**Return on Investment (ROI)**	**Hospital**	86	-5,6	-2,7	-2,7	0,3	0,3	3,3	3,3	6,3	6,3	9,2
Area	**Per capita cost for healthcare services**												
F17.1A.1	*Average cost for Inpatient Day Equivalent, PPP (current international $)*	*Hospital*	87										
F17.1A.2	*Average cost for Inpatient Day Equivalent (without D&A), PPP (current international $)*	*Hospital*	88										
F17.3.1A	*Average cost for specialized care per procedure, PPP (current international $)*	*Hospital*	89										
F17.3.1.1	*Average cost for specialized care per procedure - medical department, PPP (current international $)*	*Hospital*	90										
F17.3.1.3	*Average cost for specialized care per procedure - operating theatre, PPP (current international $)*	*Hospital*	91										
F17.3.1.4	*Average cost for specialized care per procedure - department of surgery, PPP (current international $)*	*Hospital*	92										
F17.3.1.5	*Average cost for specialized care per procedure - maternity department, PPP (current international $)*	*Hospital*	93										
Area	**Assets and liability analyses**												
F3.1	**Current ratio**	**Hospital**	94	0,4	0,6	0,6	0,8	0,8	1,0	1,0	1,5	1,5	2,0
Area	**Inpatients Efficiency**												
C2A.2	**Bed occupancy rate**	**Hospital**	95	65	70	70	75	75	80	80	85	85	90
C2A.3	**Average lenght of stay (ALOS) - inpatients**	**Hospital**	96	6,8	7,3	6,2	6,8	5,6	6,2	5,0	5,6	4,4	5,0

		Computation level	Page	Extremes of the evaluation bands									
	Users, staff and communication												
D18	**Percentage of hospitalized patients leaving against medical advice**	**Hospital**	98	1,4	1,8	1,1	1,4	0,7	1,1	0,4	0,7	0,0	0,4
E2A	**Percentage of staff absence**	**Hospital**	99	13,1	14,0	12,2	13,1	11,4	12,2	10,5	11,4	9,6	10,5
E3	*Employee annual turnover rate*	*Hospital*	100										
E4	*Average number of training hour per employee*	*Hospital*	101										
	Emergency care												
C16.10A	*Percentage of repeated admissions in Emergency Department within 96 hours*	*Hospital*	104										
	Governance and quality of supply												
Area	**Hospital - territory integration**												
C8B.1A	*Emergency room access rate, per 1.000 residents*	*Hospital*	106										
C17.1.4.8A	*Hospitalization rate for hospital admissions over 15 days, per 1.000 residents*	*Hospital*	107										
Area	**Healthcare demand management capability**												
C1.1A	*Hospitalization rate, per 1.000 residents*	*Hospital*	108										
C1.1B	*Per capita hospital beds, per 100.000 residents*	*Hospital*	109										
Area	**Care appropriateness of chronic diseases**												
C11A.1.1A	*Heart failure hospitalization rate per 100.000 residents (>15 years)*	*Hospital*	110										
C11A.2.1A	*Diabetes hospitalization rate per 100.000 residents (>15 years)*	*Hospital*	111										
Area	**Diagnostic appropriateness**												
C13.2A	*Average number of outpatient consult, per resident*	*Residence*	112										
C13.2A.12	**Average number of outpatient consult (<5 years), per resident**	**Residence**	113	0,6	0,7	0,7	0,8	0,8	0,9	0,9	1,0	1,0	3,0
C13.2B	*Average number of diagnostic procedures per patient (lab tests)*	*Hospital*	114										
C13.2C	*Average number of diagnostic procedures per patient (imaging)*	*Hospital*	115										
Area	**Quality of process**												
C16.4	*Percentage of admissions in Emergency Department hospitalised within 8 hours*	*Hospital*	116										
Area	**Surgery variation**												
C18.9A	*Hysterectomy hospitalization rate, per 100.000 residents (women > 15 years)*	*Hospital*	117										
Area	**Repeated hospital admissions for any causes**												
C5.1E.A	*Repeated hospital admissions for any causes*	*Hospital*	118										
C5.1E.A1	*Repeated hospital admissions for any causes (medical department)*	*Hospital*	119										
C5.1E.A2	*Repeated hospital admissions for any causes (surgical department)*	*Hospital*	120										
C5.1E.A3	*Repeated hospital admissions for any causes (maternity department)*	*Hospital*	121										
Area	**Clinical risk**												
C6.4.1A	*Infection rate due to surgical wounds (emergency and elective surgery procedures)*	*Hospital*	122										
C6.4.2A	*Inpatient mortality rate in low-mortality cases*	*Hospital*	123										
C6.4.2B	*Inpatient mortality rate in high-mortality cases*	*Hospital*	124										

		Computation level	Page	Extremes of the evaluation bands									
Mother and Child care													
Area	**Maternal and child care - residence level**												
C7.28	**Proportion of pregnant women who attended ANC 4+ during the current pregnancy**	**Residence**	126	30	40	40	50	50	65	65	80	80	100
C7.29	**Drop out Rate of ANC1 to ANC4**	**Residence**	127	45	100	35	45	25	35	15	25	0	15
C7.30	**Proportion of pregnant women who tested for syphilis**	**Residence**	128	40	50	50	60	60	70	70	80	80	100
C7.32	**Proportion of women with early PNC**	**Residence**	129	20	35	35	50	50	65	65	80	80	100
C7.31	*Percentage of avoidable referrals*	*Hospital*	130										
C7.33A	*Percentage of deliveries in lower level units*	*Residence*	131										
C7.34	**Percentage of supervised deliveries in the catchment area (deliveries in the reference hospital and in the district' lower leve**	**Residence**	132	35	55	55	65	65	75	75	85	85	100
Area	**Maternal and child care - hospital level**												
C7.1	**Percentage of C-section deliveries (NTSV)**	**Hospital**	133	30	40	25	30	20	25	15	20	0	15
C7.1.1	*Percentage of caesareans*	*Hospital*	134										
C7.1.1A	*Percentage of caesarean sections over expected deliveries*	*Residence*	135										
C7.1.4	*Percentage of elective caesareans (NTSV)*	*Hospital*	136										
C7.1.4A	*Percentage of elective caesareans*	*Hospital*	137										
C7.2	*Percentage of induced labours*	*Hospital*	138										
C7.20A	**Percentage of peri-/intra-partum asphyxia**	**Hospital**	139	5,7	7,1	4,3	5,7	3,0	4,3	1,6	3,0	0,2	1,6
C7.3	*Percentage of episiotomies (NTSV)*	*Hospital*	140										
C7.3A	**Percentage of episiotomies**	**Hospital**	141	36	44	28	36	20	28	12	20	0	12
C7.6	**Percentage of assisted deliveries (forceps or ventouse)**	**Hospital**	142	10	100	7,5	10	5,0	7,5	2,5	5	0	2,5
C7.7.1	*Paediatric hospitalization rate (<1 year) , per 1.000 residents*	*Hospital*	143										
C7.7A	*Paediatric hospitalization rate (<15 years), per 1.000 residents*	*Hospital*	144										
C7D.19.1A	*Paediatric hospitalization rate for ARI (0-5 years), per 1.000 residents*	*Hospital*	145										
C7D.19.2A	*Paediatric hospitalization rate for gastroenteritis (<15 years), per 1.000 residents*	*Hospital*	146										
Area	**Maternal and child care - child malnutrition**												
C7M.2	*Percentage of women who have started breastfeeding within one hour (or by the end of discharge)*	*Hospital*	147										
C7M.3	**Percentage of children aged 6-59 months who received two doses of vitamin A supplementation**	**Residence**	148	0	20	20	40	40	60	60	80	80	100
C7M.4	**Percentage of pregnant women who received any iron folic acid (IFA) in the reporting period**	**Residence**	149	60	70	70	74	74	80	80	85	85	100
C7M.5	**Percentage of children aged 6-59 months screened for malnutrition and identified with MAM**	**Residence**	150	15	20	10	15	5	10	2,5	5	0	2,5
C7M.6	*Percentage of complicated SAM amongst children aged 6-59 months treated in the IMAM programme*	*Residence*	151										
C7M.7	**Percentage of children aged 6-59 months with SAM who were treated over expected cases in the reference area**	**Residence**	152	55	60	60	65	65	70	70	75	75	80
C7M.8	*Hospitalization rate of children aged 6-59 months for SAM, per 1.000 inhabitants*	*Hospital*	153										
C7M.9	**Percentage of deaths among SAM cases aged 6-59 months (Outpatient Therapeutic Programme + Stabilization Centre)**	**Residence**	154	20	25	15	20	10	15	5	10	0	5
C7M.10	**Percentage of cured among SAM cases aged 6-59 months (Outpatient Therapeutic Programme + Stabilization Centre)**	**Residence**	155	30	40	40	50	50	60	60	75	75	100

Infectious Diseases

Area		Computation level	Page	Extremes of the evaluation bands									
Area	**Infectious Diseases - Malaria**												
IDPM01	*Percentage of ANC visits during which a LLIN (or similar) is distributed*	*Residence*	158										
IDPM02	**Average number of sulfadoxine-pyrimethamine (SP) doses per ANC visit**	**Residence**	159	0	1.5	1.5	2	2.0	2.5	2.5	3	3	100
IDPM03	**Percentage of confirmed malaria cases (BS+RDT)**	**Residence**	160	50	60	60	70	70	80	80	90	90	100
IDPM04	*Percentage of discharges for severe malaria*	*Hospital*	161										
IDPM05	**Percentage of treatments with ACT**	**Hospital**	162	130	150	120	130	110	120	100	110	90	100
IDPM06	**Percentage of IV/IM (parenteral artesunate or Quinine) treatments**	**Hospital**	163	130	150	120	130	110	120	100	110	90	100
IDPM07	*Percentage of malaria cases (< 5 years)*	*Hospital*	164										
IDPM08	*Percentage of deaths for malaria*	*Hospital*	165										
IDPM09	*ALOS (malaria cases)*	*Hospital*	166										
Area	**Infectious Diseases - Tubercolosis**												
IDPT01	**Percentage of treatments with isoniazide (IPT)**	**Residence**	167	50	60	60	70	70	80	80	90	90	100
IDPT02	**Percentage of TB cases undergoing the HIV screening**	**Residence**	168	87	90	90	92.5	92.5	95	95	98	98	100
IDPT03	*Percentage of positive TB cases on number of tests*	*Residence*	169										
IDPT04	**Percentage of confirmed TB cases on diagnosed cases**	**Hospital**	170	60	65	65	70	70	75	75	80	80	100
IDPT05	**Percentage of confirmed PTB**	**Residence**	171	40	60	60	70	70	80	80	90	90	100
IDPT06	**Percentage of positive Xpert cases**	**Hospital**	172	0	10	10	15	15	20	20	25	25	100
IDPT06.1	*Percentage of positive Xpert RR*	*Residence*	173										
IDPT07	**Percentage of treatments for extrapolmunary TB**	**Residence**	174	30	32	27.5	30	25	27.5	22.5	25	20	22.5
IDPT08	*Percentage of PTB MDR initiated treatments*	*Hospital*	175										
IDPT09	**Percentage of TB cured patients**	**Residence**	176	65	70	70	75	75	80	80	85	85	100
IDPT10	**Percentage of TB treatment success**	**Residence**	177	70	75	75	80	80	85	85	90	90	100
IDPT11	*Percentage of TB deaths*	*Residence*	178										
IDPT12	**Percentage of TB interrupted treatments**	**Residence**	179	10	12	7.5	10	5	7.5	2.5	5	0	2.5
IDPT13	*Percentage of admitted patients due to TB*	*Hospital*	180										
Area	**Infectious Diseases - Gastroenteritis**												
IDPD02	**Average number of water sources by Hospital**	**Hospital**	181	0	0.2	0.2	0.4	0.4	0.6	0.6	0.8	0.8	1.0
IDPD03	*Availability of an hand washing programme (Hospital)*	*Hospital*	182										
IDPD04	**Average number of toilets per bed in IPD**	**Hospital**	183	0	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05
IDPD05	**Average number of toilets in OPD per number of rooms**	**Hospital**	184	0	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	1.0
IDPD06	*Percentage of positive stool tests (for parasites)*	*Hospital*	185										
IDPD07	*Percentage of gastroenteritis diagnosed (<5 years - Outpatient)*	*Residence*	186										
IDPD08	*Percentage of gastroenteritis diagnosed (>5 years - Outpatient)*	*Residence*	187										
IDPD09	*Percentage of diarrhoea cases with severe dehydration due to gastroenteritis and diarrhoea*	*Hospital*	188										
IDPD10	**Percentage of discharged patients for diarrhoea and gastroenteritis**	**Hospital**	189	9.1	10	7.9	9.1	6.7	7.9	5.4	6.7	0.0	5.4
IDPD11	*Percentage of diarrhoea cases (<5 years)*	*Residence*	190										
IDPD12	**Average number of ORS packages delivered per patient with diarrhoea (<5years)**	**Residence**	191	0	0.6	0.6	0.7	0.7	0.8	0.8	1	1	100
IDPD13	**Average number of Zinc Tablets doses delivered per patient with diarrhoea (<5years)**	**Residence**	192	0	0.6	0.6	0.7	0.7	0.8	0.8	1	1	100
IDPD14	**Percentage of deaths with a diagnosis of gastroenteritis**	**Hospital**	193	1.6	2	1.2	1.6	0.8	1.2	0.4	0.8	0	0.4
IDPD15	*ALOS for gastroenteritis*	*Hospital*	194										

Chronic Diseases

Area		Computation level	Page	Extremes of the evaluation bands									
Area	**Chronic Diseases - HIV**												
CPHIV01	*Percentage of HIV screening coverage*	*Residence*	196										
CPHIV02	**Percentage of performed tests to pregnant women**	**Residence**	197	75	80	80	85	85	90	90	95	95	100
CPHIV03	**Percentage of HIV+ cases undergoing the TB screening**	**Residence**	198	75	80	80	85	85	90	90	95	95	100
CPHIV03.1	*Percentage of HIV patients screened for TB with Xpert*	*Hospital*	199										
CPHIV04	*Percentage of new diagnosed patients with CD4 < 350cell/ml*	*Hospital*	200										
CPHIV05	*Percentage of HIV+ patients with opportunistic infections (or advanced HIV)*	*Hospital*	201										
CPHIV06	*Percentage of malnourished patients followed in a HIV unit*	*Residence*	202										
CPHIV07	**Percentage of new HIV+ linked to ART**	**Residence**	203	70	75	75	80	80	85	85	90	90	100
CPHIV08	**Coverage rate of the therapy**	**Residence**	204	75	80	80	85	85	90	90	95	95	100
CPHIV09	*Average number of nutritional supplements delivered per patients currently on ART therapy*	*Residence*	205										
CPHIV10	**Percentage of VL tests over the patients undergoing ART therapy**	**Hospital**	206	75	80	80	85	85	90	90	95	95	100
CPHIV11	**Percentage of patients undergoing ART therapy andf tested with VL with suppression of viremia**	**Hospital**	207	60	70	70	80	80	85	85	90	90	100
CPHIV12	*Percentage of deaths undergoing ART therapy (within 12 months)*	*Residence*	208										
CPHIV13	*ALOS (HIV admitted patients)*	*Hospital*	209										
Area	**Other Chronic Diseases**												
CP02	*Hospitalization rate for chronic liver diseases, per 100.000 residents (>15 years)*	*Hospital*	210										
CP05	*Hospitalization rate of hypertension cases, per 100.000 residents (>15 years)*	*Hospital*	211										
CP06	*Hospitalization rate for stroke, per 100.000 residents (>15 years)*	*Hospital*	212										

Details on reference time

It is important to specify that for the calculation of indicators data with different time frames were considered according to the distinct data collection procedures of each context analysed. Although such differences, it is relevant to clarify that the data used are comparable because the time periods considered coincide. Table 2 illustrates the different time frames within each setting, respectively for hospital and health district.

Table 2 *Time frames used in different contexts*

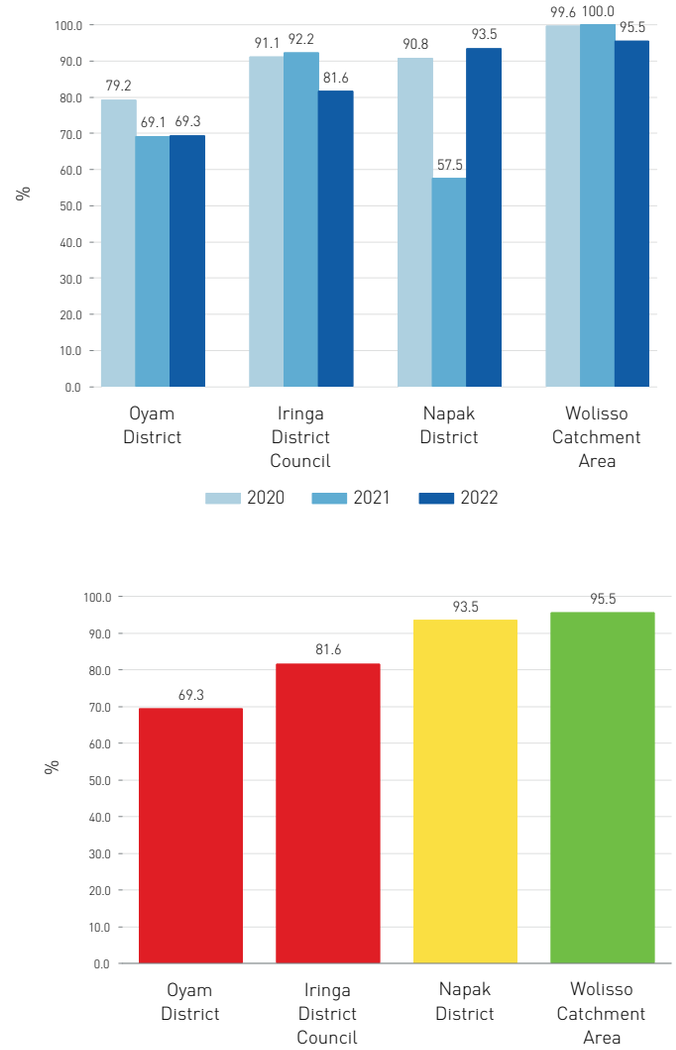
Area	Year 2020		Year 2021		Year 2022	
	Hospital	Health District	Hospital	Health District	Hospital	Health District
Wolisso Catchment Area	Jan 20 - Dec 20	Sep 19 - Aug 20	Jan 21 - Dec 21	Sep 20 - Aug 21	Jan 22 - Dec 22	Sep 21 - Aug 22
Iringa District Council	Jan 20 - Dec 20	Jan 20 - Dec 20	Jan 21 - Dec 21	Jan 21 - Dec 21	Jan 22 - Dec 22	Jan 22 - Dec 22
Napak District	Jul 19 - Jun 20	Jul 19 - Jun 20	Jul 20 - Jun 21	Jul 20 - Jun 21	Jul 21 - Jun 22	Jul 22 - Jun 22
Oyam District	Jul 19 - Jun 20	Jul 19 - Jun 20	Jul 20 - Jun 21	Jul 20 - Jun 21	Jul 21 - Jun 22	Jul 21 - Jun 22

Graphical representation of results

Return of results is based on the use of four different graphical solutions to provide an immediate and effective representation of performance in benchmarking.

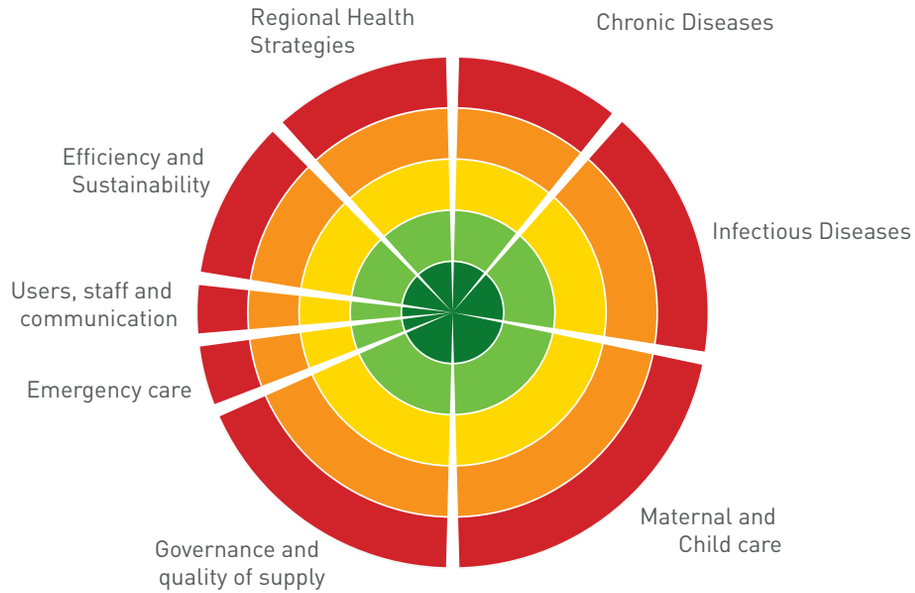
a) Each indicator is represented by bar charts. When considering evaluation indicators, two bar charts are provided, namely the evaluation bands referring to 2021 and data in trend over the years 2020 – 2022. Instead, when considering observation indicators, only data in trend over the years 2020 – 2022 are provided.

Figure 2. *Examples of the representation of an observation indicator and an evaluation indicator*



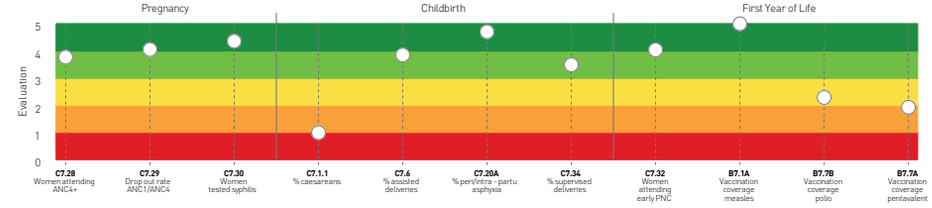
b) In order to provide an intuitive and concise representation of results at both hospital and residential level, the over mentioned evaluation scores are used to populate a target chart (the "dartboard"), which consists of five coloured strips, from red to dark green, corresponding respectively to the five evaluation bands. The dots of the dartboard represent the performance of the indicators and are ordered following the evaluation dimensions. The white dots refer to health district indicators, while the grey ones refer to hospital indicators. The indicators with very good performance are located at the centre of the dartboard while those with very low performance are located on the external band. In practical terms, the objective of the dartboard is to offer a picture of strengths and weaknesses of healthcare institutions and highlight the different contributions of involved national and international organizations (1).

Figure 3. *The dartboard*



c) In order to understand if health services provision is organized so to respond to user's needs, the "stave" has been realized to provide an integrated and continuous view of performance between different settings, considering the whole patient journey along different care pathways. Therefore, the stave allows readers to focus on the strengths and weaknesses that characterize the healthcare services delivery along the continuum of care. The stave also uses five colour bands (from red to dark green), now displayed horizontally and framed into different phases of healthcare services delivery. The identified care pathways are 1) the Maternal and Childcare pathway (including pregnancy, childbirth and first year of life phases), 2) the Child Health care pathway (including prevention, treatment, and outcome phases), 3,4) the Infectious Diseases pathways (including prevention, diagnosis, treatment, and outcome phases) for both tuberculosis and gastroenteritis, and 5) the Chronic Diseases pathway (including screening, diagnosis, treatment, and outcome phases) for HIV (7). In particular, regarding the pathways of child health, infectious diseases and HIV, MeS Lab and CUAMM researchers jointly designed and developed the staves considering the peculiarities of the epidemiological context characterizing the countries included in the analysis.

Figure 4. *Example of a stave*



d) Finally, a performance/trend map further analyses the improvement margin regarding clinical pathways indicators. It includes:

- on the y axis, the 2021-2022 trend recorded by the hospitals and health districts (re-calculated so that it varies between -2 and +2, where -2 indicates low and +2 high improvement margin);
- on the x axis, the evaluation scores between 0 and 5 obtained in 2022.

Particularly, the crosscheck of these two dimensions identifies 4 areas divided by the four quadrants:

1. upper-right quadrant: area with indicators with good or outstanding performance and improvement, for which the results obtained are confirmed over time;
2. upper-left quadrant: area with under-average but improving performance indicators, which identify the measures with a positive evolution, hopefully also confirmed in the long run;
3. bottom-right quadrant: area with indicators characterized by good or outstanding performance, but worsening, i.e., measures that require specific attention to avoid negative results in the future;
4. bottom-left quadrant: area with under-average and worsening indicators for which priority attention is needed.

Figure 5 *Example of a trend/map*

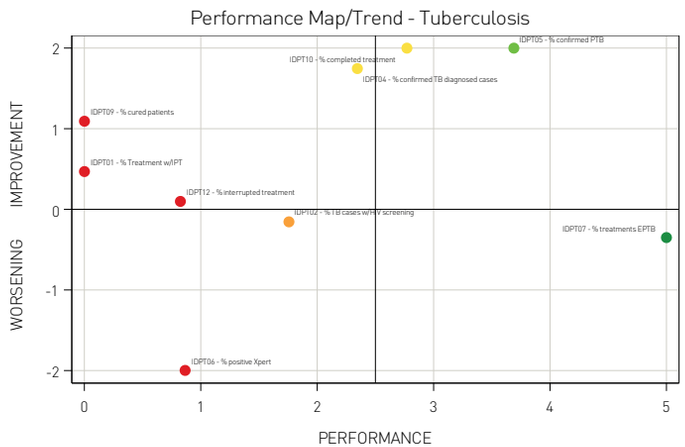


Table 3. *List of indicators populating the Maternal and Child care pathway*

	Maternal and Child care pathway	
C7.28	Proportion of pregnant women who attended ANC 4+ during the current pregnancy	Pregnancy
C7.29	Drop out Rate of ANC1 to ANC4	
C7.30	Proportion of pregnant women tested for syphilis	
C7M.4	Percentage of pregnant women who received any iron folic acid (IFA) in the reporting period	
C7.1	Percentage of C-section deliveries (NTSV)	Childbirth
C7.1.1	*Percentage of caesareans*	
C7.1.1A	*Percentage of caesareans over expected deliveries*	
C7.1.4	*Percentage of elective caesareans (NTSV)*	
C7.1.4A	*Percentage of elective caesareans*	
C7.2	*Percentage of induced labours*	
C7.3	*Percentage of episiotomies (NTSV)*	
C7.3A	Percentage of episiotomies	
C7.6	Percentage of assisted deliveries (forceps or ventouse)	
C7.20A	Percentage of peri/intra-partum asphyxia	
C7.33A	*Percentage of deliveries in lower level units*	
C7.34	Percentage of supervised deliveries in the catchment area	
C7.32	Proportion of women with early PNC	First Year of Life
B7.1A	Vaccination coverage for measles	
B7.7B	Vaccination coverage for polio	
B7.9	Vaccination coverage for rotavirus	
B7.7A	Pentavalent vaccine coverage (HIB; difteria; pertussis, tetanus, HBV)	
C7M.5	Percentage of children aged 6-59 months screened for malnutrition and identified with MAM	
C7.7.1	*Paediatric hospitalization rate (<1 year) , per 1.000 residents*	
C7.7A	*Paediatric hospitalization rate (0-12 years), per 1.000 residents*	
C7D.19.1A	*Paediatric hospitalization rate for ARI (0-5 years), per 1.000 residents*	
C7D.19.2A	*Paediatric hospitalization rate for gastroenteritis (<15 years), per 1.000 residents*	

Observation indicators are reported in italics.

Table 4. *List of indicators populating the Child Health care pathway*

	Child Health pathway	
C7M.3	Percentage of children aged 6-59 months who received two doses of vitamin A supplementation	Prevention
C7M.4	Percentage of pregnant women who received any iron folic acid (IFA) in the reporting period	
C7M.5	Percentage of children aged 6-59 months screened for malnutrition and identified with MAM	
B7.7A	Pentavalent vaccine coverage (HIB; difteria; pertussis, tetanus, HBV)	
B7.1A	Vaccination coverage for measles	
B7.7B	Vaccination coverage for polio	
B7.9	Vaccination coverage for rotavirus	
C7M.7	Percentage of children aged 6-59 months with SAM who were treated over expected cases	Treatment
C7M.9	Percentage of deaths among SAM cases aged 6-59 months (OTP + SC)	Outcome
C7M.10	Percentage of cured among SAM cases aged 6-59 months (OTP + SC)	
C7.7.1	*Paediatric hospitalization rate (<1 year) , per 1.000 residents*	
C7.7A	*Paediatric hospitalization rate (0-12 years), per 1.000 residents*	
C7D.19.1A	*Paediatric hospitalization rate for ARI (0-5 years), per 1.000 residents*	
C7D.19.2A	*Paediatric hospitalization rate for gastroenteritis (<15 years), per 1.000 residents*	

Observation indicators are reported in italics.

Table 5. *List of indicators populating the Infectious Diseases - Tuberculosis pathway*

Infectious Diseases - Tuberculosis pathway		
IDPT01	Percentage of treatments with isoniazide (IPT)	**Prevention**
IDPT02	Percentage of TB cases undergoing the HIV screening	
IDPT03	*Percentage of positive TB cases on number of tests*	**Diagnosis**
IDPT04	Percentage of confirmed TB cases on diagnosed cases	
IDPT05	Percentage of confirmed PTB	
IDPT06	Percentage of positive Xpert cases	
IDPT06.1	*Percentage of positive Xpert RR*	
IDPT07	Percentage of treatments for extrapolmunary TB	**Treatment**
IDPT08	*Percentage of PTB MDR initiated treatments*	**Outcome**
IDPT09	Percentage of cured patients	
IDPT10	Percentage of completed treatments	
IDPT11	*Percentage of deaths*	
IDPT12	Percentage of interrupted treatments	
IDPT13	*Percentage of admitted patients due to TB*	

Observation indicators are reported in italics.

Table 6. *List of indicators populating the Infectious Diseases - Gastroenteritis pathway*

Infectious Diseases - Gastroenteritis pathway

B7.9	Vaccination coverage for rotavirus	Prevention
IDPD02	Average number of water sources by Hospital	
IDPD03	*Availability of an hand washing programme (Hospital)*	
IDPD04	Average number of toilets per beds in IPD	
IDPD05	Average number of toilets in OPD per number of rooms	
IDPD06	*Percentage of positive stool tests (for parasites)*	Diagnosis
IDPD07	*Percentage of gastroenteritis diagnosed (<5 years - Outpatient)*	
IDPD08	*Percentage of gastroenteritis diagnosed (>5 years - Outpatient)*	
IDPD09	*Percentage of diarrhoea cases with severe dehydration due to gastroenteritis and diarrhoea*	
IDPD10	Percentage of discharged patients for diarrhoea and gastroenteritis	
IDPD11	*Percentage of diarrhoea cases (<1 year)*	
IDPD12	Average number of ORS packages delivered per patient with diarrhoea (<5years)	Treatment
IDPD13	Average number of Zinc Tablets doses delivered per patient with diarrhoea (<5years)	
IDPD14	Percentage of deaths with a diagnosis of gastroenteritis	Outcome
IDPD15	*ALOS for gastroenteritis*	

Observation indicators are reported in italics.

Table 7. *List of indicators populating the Chronic Diseases - HIV pathway*

Chronic Diseases - HIV pathway		
CPHIV01	*HIV screening coverage*	**Screening**
CPHIV02	Percentage of performed tests to pregnant women	
IDPT02	Percentage of TB cases undergoing the HIV screening	
CPHIV03	Percentage of HIV cases undergoing TB screening	
CPHIV03.1	*Percentage of HIV patients screened for TB w/Xpert*	
CPHIV04	*Percentage of new diagnosed patients with CD4 < 350cell/ml*	**Diagnosis**
CPHIV05	*Percentage of HIV+ patients with opportunistic infections (or advanced HIV)*	
CPHIV06	*Percentage of malnourished patients followed in a HIV unit*	
CPHIV07	Percentage of new HIV+ linked to ART	**Treatment**
CPHIV08	Coverage rate of the therapy	
CPHIV09	*Average number of nutritional supplements delivered per patients currently on ART therapy*	
CPHIV10	Percentage of VL tests over the patient undergoing ART therapy	
CPHIV11	Percentage of patients undergoing ART therapy andf tested with VL with suppression of viremia	**Outcome**
CPHIV12	*Percentage of deaths undergoing ART therapy (within 12 months)*	
CPHIV13	*ALOS (HIV admitted patients)*	

Observation indicators are reported in italics.

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3

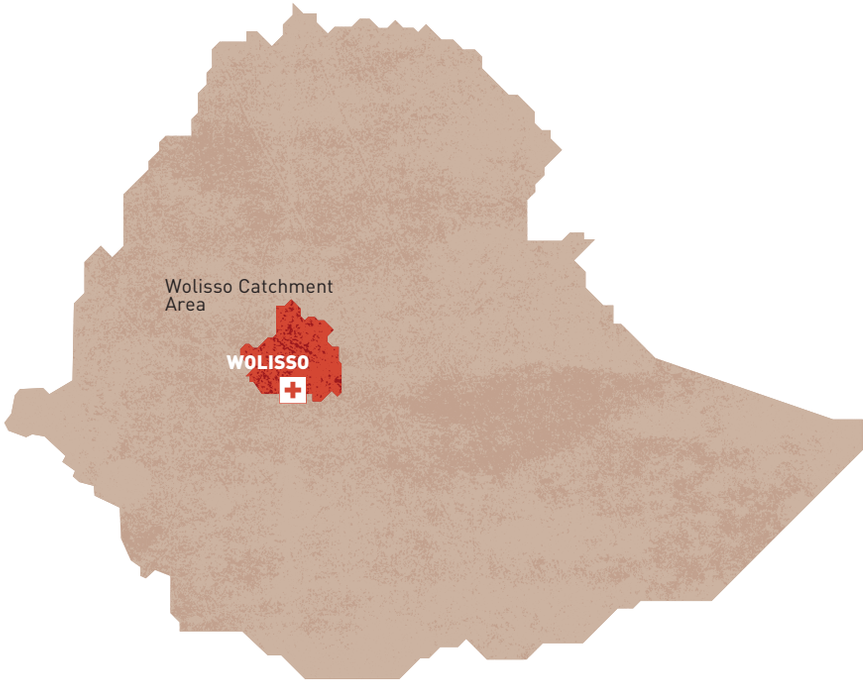
RESULTS 2022

management e sanità

DOCTORS WITH AFRICA CUAMM

ETHIOPIA

Wolisso Catchment Area



The Ethiopia's Health System

The Ethiopia's Health Care System has a federal structure, in which governance is shared, according to mutual agreements, among the National Government, the Regional States, the Woreda Authorities and the Kebele (village) authorities(1).

It is characterized by a mixed financing model, which includes multiple financing sources: government budget financed by general taxation at various federal levels, external funding by international and national agencies and NGOs, and private funding, such as out-of-pocket (OOP) payments by patients or by social insurance companies. According to the World Health Organization (WHO)(2), in 2020 general Government and OOP expenditures amounted for 28.2% and 33% of the total health expenditure, respectively. In terms of expenditure per capita expressed in PPP US$, the domestic general Government expenditure on health was equal to 23.3$ and the OOP one equal to 27.3$.

The current health care system is structured according to three levels of services delivery: i) primary hospitals, health centres, and health posts; ii) general hospitals; and iii) specialized hospitals, serving as referrals from general hospitals.

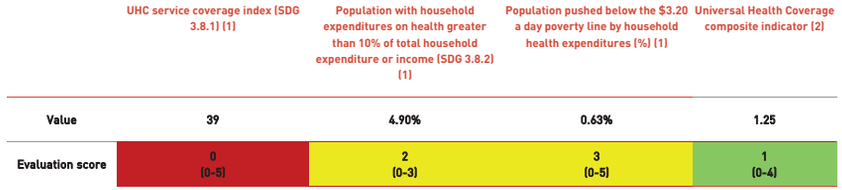
In addition to the abovementioned macroeconomic figures, the following indicators at macro level were considered, in order to evaluate the level of attainment to the Universal Health Coverage (UHC) principle. For this purpose, the scale elaborated by the Italian National Institute of Health (3) was used, which includes three indicators covering two dimensions, namely Universality and Financial Protection.

The dimension of Universality is expressed by the WHO UHC Service Coverage Index (SCI), reported on a dimensionless scale from 0 to 100 and computed as the geometric mean of 14 tracer indicators regarding health service coverage and referring to the four components of service coverage: i) reproductive, maternal, new born and child health; ii) infectious diseases; iii) non-communicable diseases; and iv) service capacity and access.

The dimension of Financial Protection is expressed by two indicators, namely the proportion of the population with household expenditures on health greater than 10% of total household expenditure or income and the proportion of the population pushed below the $3.20 a day poverty line by household health expenditures. Each of the three indicators has been associated with an evaluation score, based on a division into classes by source of reference and with every evaluation band associated with a colour (from red for the worst performance to green for the best).

The unique indicator of UHC is calculated as the mean of the three scores, in which the SCI weights 100% of its value, while the financial protection indicators weight each 50% of its value. Therefore, UHC is calculated as [(A+B/2+C/2)/2]. There are five bands of UHC performance, associated with five coloured bands, from red to dark green (Figure 1).

Figure 1. *UHC Index*



Sources:
(1) WHO, Global Health Observatory, 2017-2020
(2) La copertura sanitaria universale nel mondo. Istruzioni per l'uso: una logica di confronto, Higher Health Institute (HHI), 2020.

Table 1. *OOP ratios in Wolisso Catchment Area - Wolisso Hospital*

	Value
Percentage of revenues from OOP fees over total hospital's revenues (in %)	27%
OOP hospital's revenues per Inpatient days equivalent*, PPP (current international $)	$5.2
OOP hospital's revenues per Standard Unit of Output (SUO)**, PPP (current international $)	$5.9
OOP hospital's revenues per capita***, PPP (current international $)	$2.7

** It is expressed as the sum of inpatient days and the number of outpatient visits multiplied by a standard coefficient equal to 4.*
*** The SUO is expressed as the number of inpatients multiplied by a std. coefficient of 15, the number of OPD visits multiplied by 1, the number of deliveries multiplied by 5, the number of vaccinations by 0.2, and the number of ANC visits multiplied by 0.5.*
**** It refers to the estimated resident population in the reference Catchment Area.*

Wolisso Catchment Area

The Wolisso catchment area is in the Southwest Shoa Zone, one of the eighteen zones of Oromia Region in central Ethiopia. The catchment area includes five health districts (referred to as a "woreda" in Ethiopia) inhabited by 670,037 people (2022). In the reference area primary care is offered by a total of 22 health centres that refer to the St. Luke Hospital - Wolisso hospital, a private, not-for-profit institution established in the early 2000s.

Wolisso hospital provides both outpatient and inpatient services. It has a total of 208 beds divided into eight wards: Medical (38 beds), Surgical (23), Paediatric (73), Neonatal unit (6), Orthopaedics (32), Delivery and Maternity (24) and Gynaecology (12). The outpatient department includes a 24hrs emergency service, Mother and Child clinic, Ophthalmology unit, Dental clinic, Mental and Orthopaedic units, the clinic for chronic-non communicable diseases, which comprises the Antiretroviral (ART) clinic. Laboratory, X-ray, and ultrasound are the main diagnostic services offered by the hospital. Additionally, in 2022 the hospital provided 62,742 outpatient visits, 10,509 admissions and a total of 3,576 deliveries.

From the macro to the micro perspective

Four indicators were included regarding details of OOP expenditures at hospital level. Table 1 reports the ratio of OOP and revenues, the ratio of OOP and number of patients stays, expressed by Inpatient Days Equivalent, and the ratio of OOP and Standard Unit of Output (SUO), and the ratio of OOP and number of residents in the Wolisso Catchment Area.

The Performance of Wolisso Catchment Area in 2022

The aim of the present section is to interpret the performance of the health system. The indicators calculated at residence level include the joint contribution of the health district and reference hospital, whilst the indicators calculated at hospital level illustrate specifically the hospital performance. The performance of the health district and the hospital is reported on the dartboard by means of white and grey dots, respectively. More particularly, the dartboard and the staves summarize and represent graphically the performance of the local health system, while the performance maps, associated with the respective care pathways, provide a view of the evolution of performance in trend.

The dartboard shows a quite dispersed configuration of indicators. There are some aspects that should be analysed carefully. At health district level, these are represented by the pregnancy and childbirth phases: the proportion of pregnant women who attended more than four antenatal care visits during the current pregnancy (C7.28) and with the drop-out rate in between the first and the fourth antenatal care visit (C7.29). Regarding childbirth, the indicator about the percentage of supervised deliveries (C7.34) scores quite low. At the hospital level, the indicators related to current ratio (F3.1), the percentage of VL tests over the patients undergoing ART therapy (CPHIV10), the average number of toilets per OPD consultation rooms (IDPD05) and the percentage of deaths with the diagnosis of gastroenteritis (IDPD14).

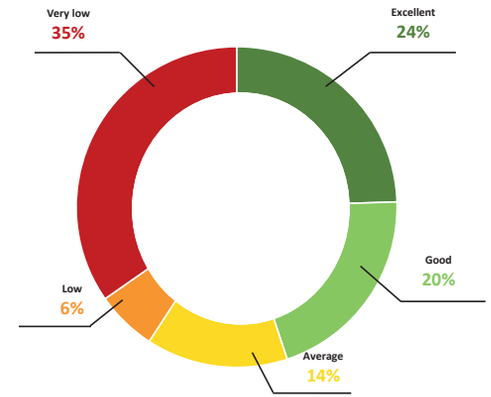
Comparing the evaluation data of 2023 with the evaluation data of the previous year for the maternal and childcare pathway, the indicators that require special attention lay along the different phases of the care pathway, as they score quite low in terms of performance. It is worth mentioning however that three indicators, although well performing, have been worsened over the past year: the vaccination coverage for pentavalent (B7.1A), rotavirus (B7.9) and polio (B7.7B).

Regarding the child health pathway, although the positive performance for 2022, some indicators result in a slight decrease. The indicators presenting some criticalities are, in particular, the percentage of pregnant women who received any iron folic acid (IFA) in the reporting period (C7M.4), the percentage of SAM cases treated over expected cases (C7M.7) and the vaccination coverage for measles (B7.1A).

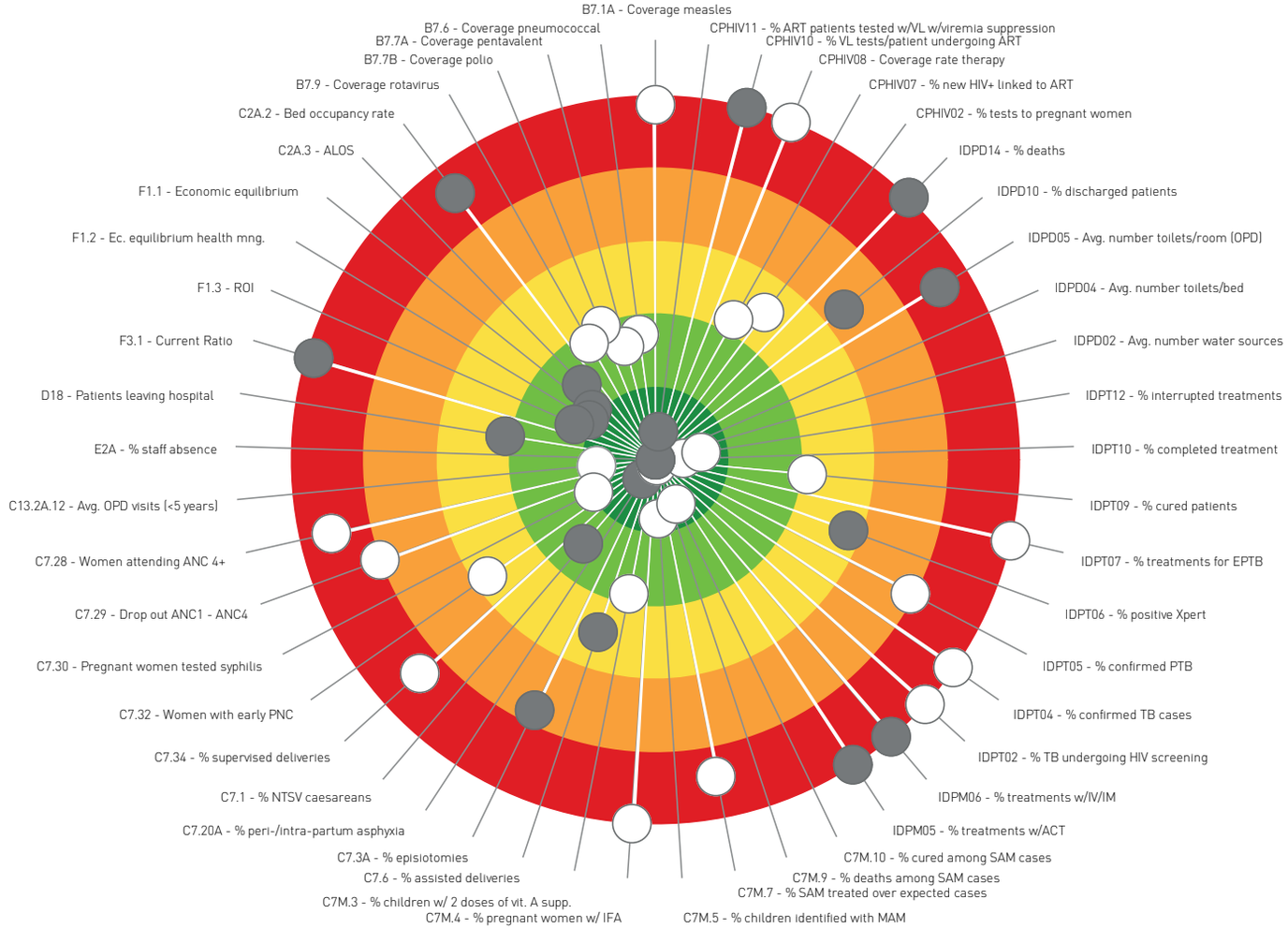
The tuberculosis pathway still presents a low performance in the prevention and diagnosis phases and an excellent performance in the outcome phase; however, the indicator of the treatment phase (IDPT07) shows a strong decrease. Moreover, regarding the gastroenteritis pathway, the performance map shows that it is necessary to monitor the indicators IDPD14 and IDPD05 because they have still performed poorly over the last year. The same applies to the malaria indicators IDPM05 (percentage of treatments with ACT) and IDPM06 (percentage of IV/IM treatments), which show a very low performance.

Finally, regarding the chronic HIV care pathway, there is an evidence of improving trend in all three phases of the pathway, with particular regard to the percentage of performed tests to pregnant women (CPHIV02), percentage of new HIV+ linked to ART (CPHIV07) and percentage of patients undergoing ART therapy and tested with VL with suppression of viremia (CPHIV11).

The donut chart below summarizes the proportion of evaluated indicators for each performance level.

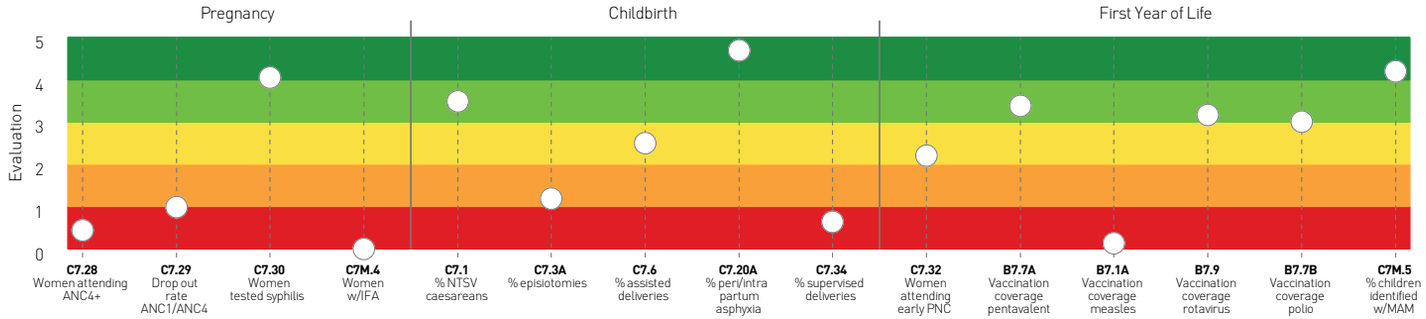


DARTBOARD
Wolisso Catchment Area
Year 2022

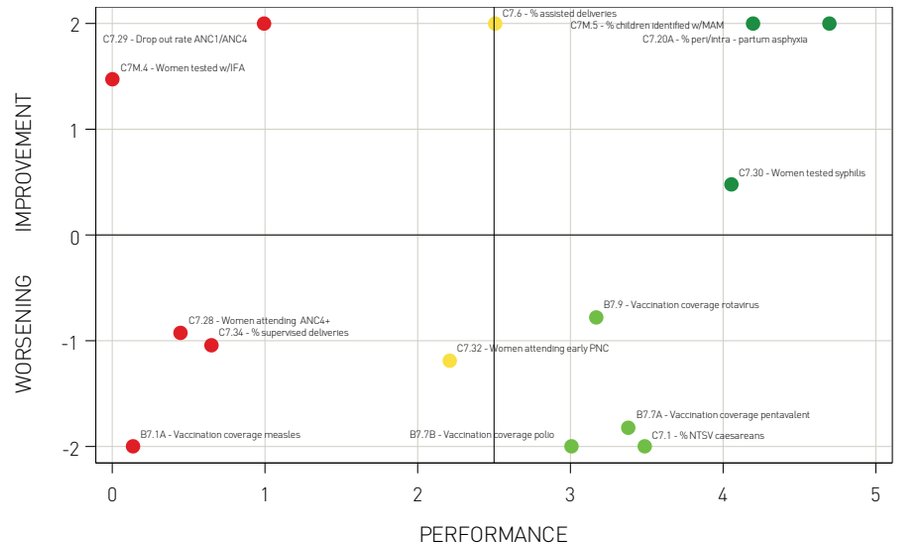


Please note that, as explained in the methodological section, the grey dots on the dartboard refer to the hospital evaluation, while the white dots refer to the health district evaluation.

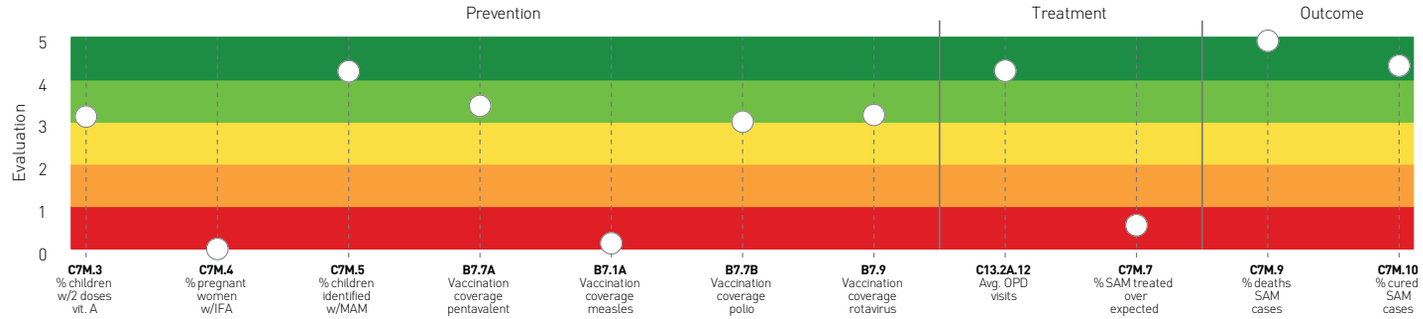
MATERNAL AND CHILD CARE PATHWAY
Wolisso Catchment Area
Year 2022

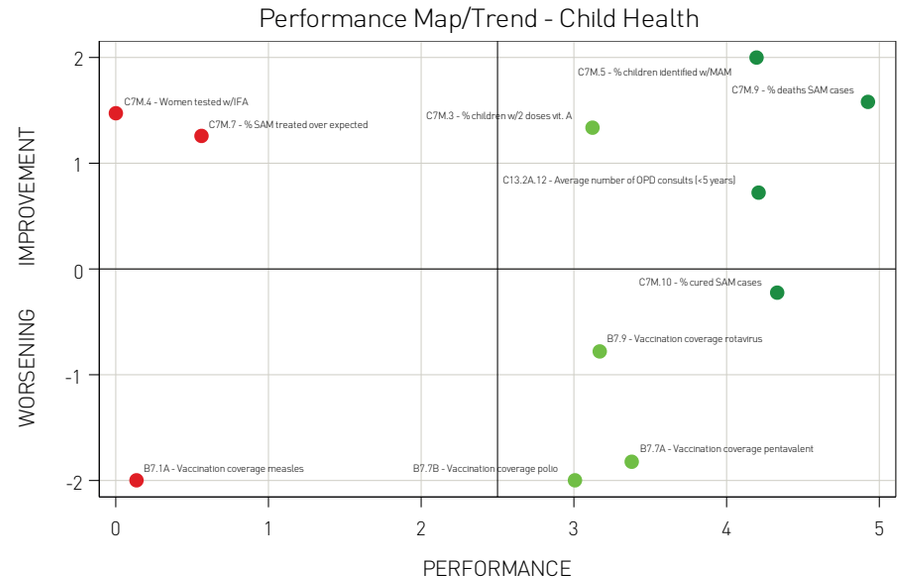


Performance Map/Trend - Mother and Child care

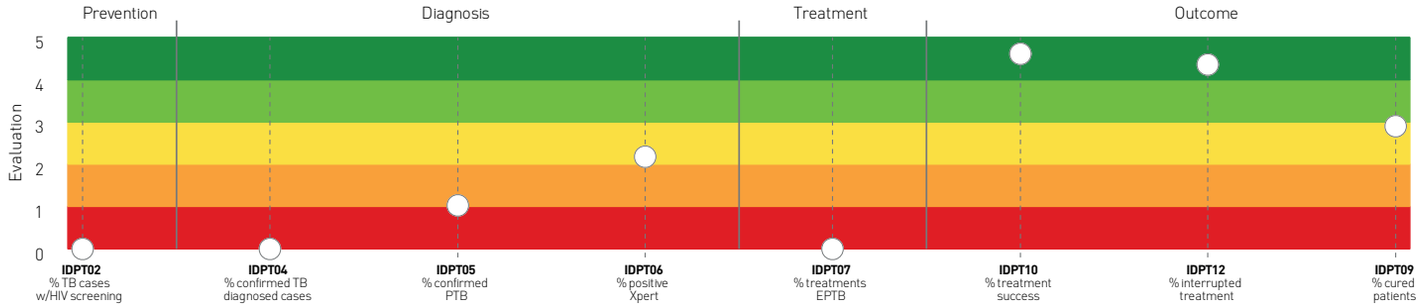


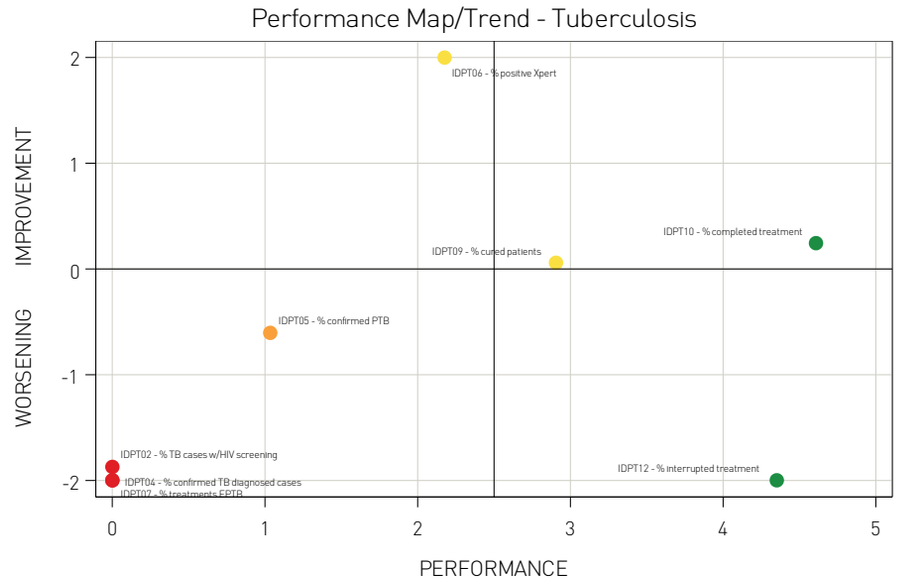
CHILD HEALTH CARE PATHWAY
Wolisso Catchment Area
Year 2022



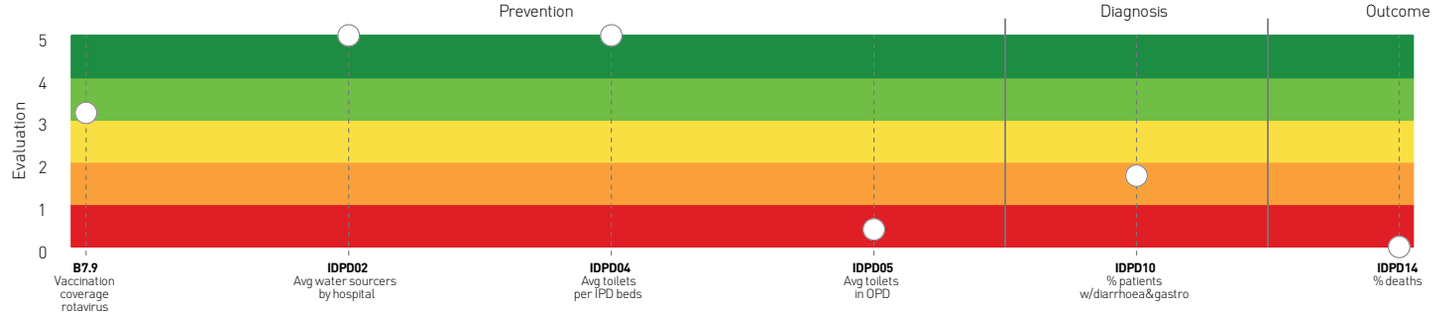


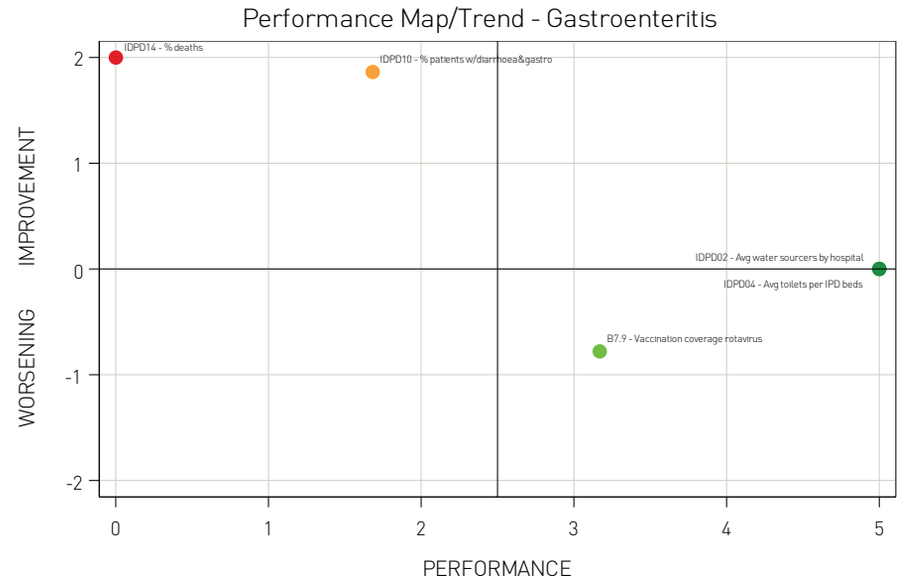
INFECTIOUS DISEASES: TUBERCULOSIS CARE PATHWAY
Wolisso Catchment Area
Year 2022



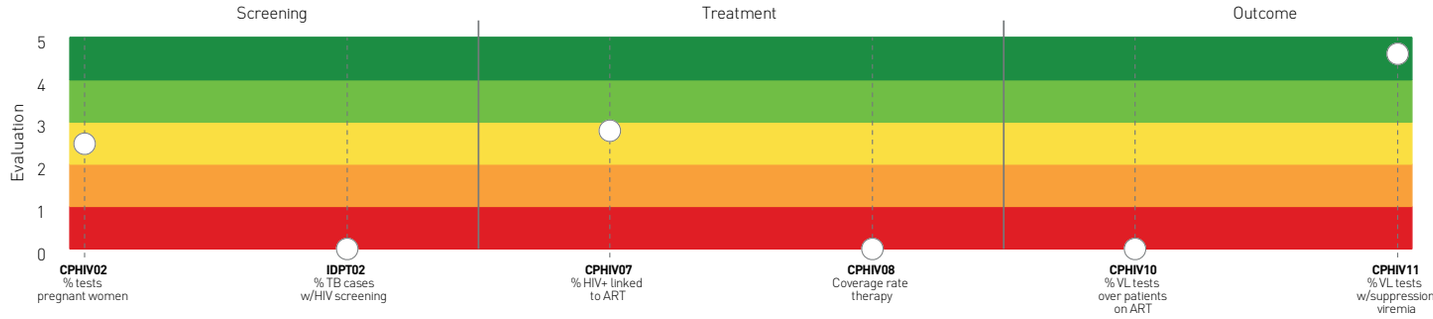


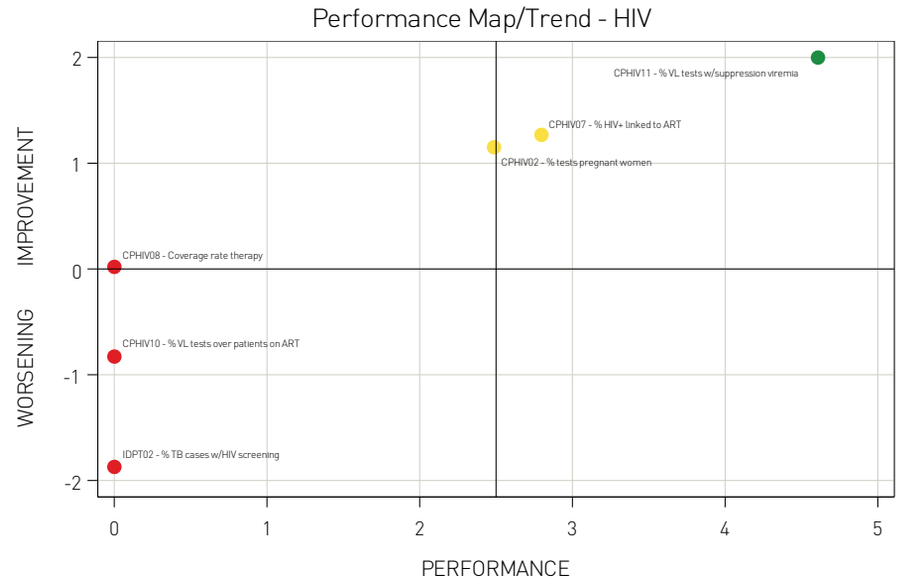
INFECTIOUS DISEASES: GASTROENTERITIS CARE PATHWAY
Wolisso Catchment Area
Year 2022





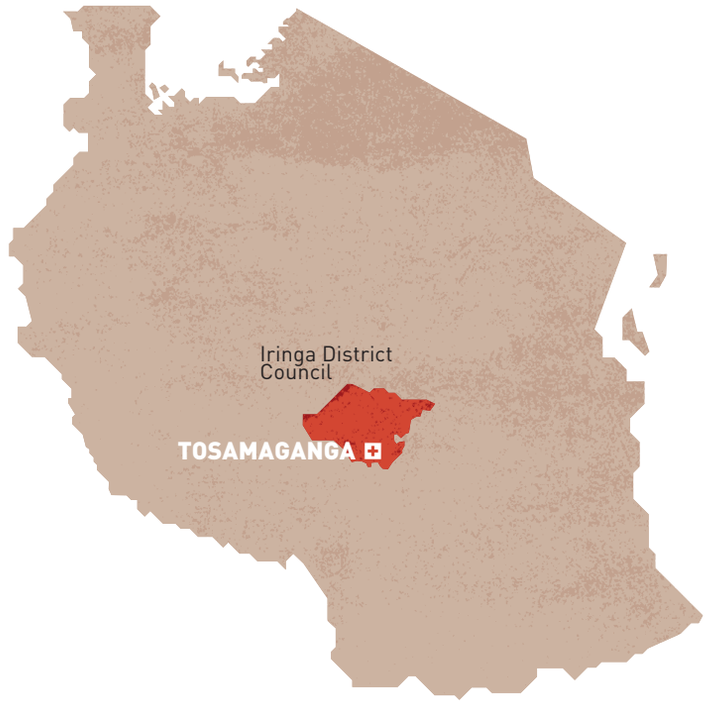
CHRONIC HIV CARE PATHWAY
Wolisso Catchment Area
Year 2022





TANZANIA

Iringa District Council



The Tanzania's Health System

The Tanzania's health system is structured according to three territorial levels: local government authorities (districts), regional authorities and national government. Due to the progressive decentralization obtained through recent reforms, both district and regional levels are fully responsible for delivering health services within their area of jurisdiction (4).

It is characterized by a mixed financing model, which includes multiple financing sources: government budget financed by general taxation at various federal levels, external funding by international and national agencies and NGOs, and private funding, such as OOP or payments by social insurance companies. According to the World Health Organization (WHO)(2), in 2020 general Government and OOP expenditures amounted for 42.85% and 23% of the total health expenditure, respectively. In terms of expenditure per capita expressed in PPP US$, the domestic general Government expenditure on health was equal to 43.5$ and the OOP one equal to 23.45$.

The current health care system is structured according to three levels of services delivery: i) dispensaries and health centres; ii) district designated hospital; and iii) regional hospitals, serving as referrals from district designated hospitals.

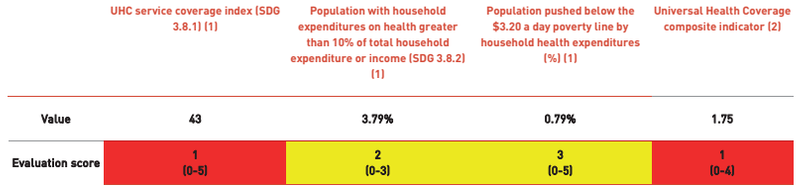
In addition to the abovementioned macroeconomic figures, the following indicators at macro level were considered, in order to evaluate the level of attainment to the Universal Health Coverage (UHC) principle. For this purpose, the scale elaborated by the Italian National Institute of Health (3) was used, which includes three indicators covering two dimensions, namely Universality and Financial Protection.

The dimension of Universality is expressed by the WHO UHC Service Coverage Index (SCI), reported on a dimensionless scale from 0 to 100 and computed as the geometric mean of 14 tracer indicators regarding health service coverage and referring to the four components of service coverage: i) reproductive, maternal, new born and child health; ii) infectious diseases; iii) non-communicable diseases; and iv) service capacity and access.

The dimension of Financial Protection is expressed by two indicators, namely the proportion of the population with household expenditures on health greater than 10% of total household expenditure or income and the proportion of the population pushed below the $3.20 a day poverty line by household health expenditures. Each of the three indicators has been associated with an evaluation score, based on a division into classes by source of reference and with every evaluation band associated with a colour (from red for the worst performance to green for the best).

The unique indicator of UHC is calculated as the mean of the three scores, in which the SCI weights 100% of its value, while the financial protection indicators weight each 50% of its value. Therefore, UHC is calculated as [(A+B/2+C/2)/2]. There are five bands of UHC performance, associated with five coloured bands, from red to dark green (Figure 2).

Figure 2. *UHC Index*



Sources:
[1] WHO, Global Health Observatory, 2017-2020
[2] La copertura sanitaria universale nel mondo. Istruzioni per l'uso: una logica di confronto, Higher Health Institute (HHI), 2020.

Table 2. *OOP ratios in Iringa District Council - Tosamaganga Hospital*

	Value
Percentage of revenues from OOP fees over total hospital's revenues (in %)	20%
OOP hospital's revenues per Inpatient days equivalent*, PPP (current international $)	$3.4
OOP hospital's revenues per Standard Unit of Output (SUO)**, PPP (current international $)	$4.6
OOP hospital's revenues per capita***, PPP (current international $)	$2.1

** It is expressed as the sum of inpatient days and the number of outpatient visits multiplied by a standard coefficient equal to 4.*
*** The SUO is expressed as the number of inpatients multiplied by a std. coefficient of 15, the number of OPD visits multiplied by 1, the number of deliveries multiplied by 5, the number of vaccinations by 0.2, and the number of ANC visits multiplied by 0.5.*
**** It refers to the estimated resident population in the reference Catchment Area.*

Iringa District Council

The Iringa District Council is one of the 113 health districts of the country, and it is in the region of Iringa, in South-Western Tanzania. The health district comprises a rural area outside Iringa, the regional capital city. Primary care is provided by 9 health centres, serving an estimated population of approximately 322.704 inhabitants (2022).

Tosamaganga Voluntary Agency Hospital (Tosamaganga) is a private not for profit facility. The hospital has a capacity of 192 beds distributed as follows: Medical wards (80 beds), Maternity ward (52), Paediatric ward (31), Surgical ward (18) with one major operating theatre, and Neonatal Unit (11). Moreover, the outpatient department includes Adult and Child clinic, Reproductive and Child Health (RCH), the Care and Treatment Centre (CTC), the TB unit, the Dental Unit, and the minor operating theatre. The Laboratory and Radiology departments provide lab tests, x-rays, and ultrasounds. In 2022 the hospital offered 32,077 outpatient visits, 9,051 admissions, and a total of 3.503 deliveries.

From the macro to the micro perspective

Four indicators were included regarding details of OOP expenditures at hospital level. In particular, Table 2 reports the ratio of OOP and revenues, the ratio of OOP and number of patients stays, expressed by Inpatient Days Equivalent, and the ratio of OOP and Standard Unit of Output (SUO), and the ratio of OOP and number of residents in the Iringa District Council.

The Performance of Iringa District Council in 2022

The aim of the present section is to interpret the performance of the health system. The indicators calculated at residence level include the joint contribution of the health district and reference hospital, whilst the indicators calculated at the hospital level illustrate specifically the hospital performance. The performance of the health district and the hospital is reported on the dartboard by means of white and grey dots, respectively. More particularly, the dartboard and the staves summarize and represent graphically the performance of the local health system, while the performance maps, associated with the respective care pathways, provide a view of the evolution of performance in trend.

The dartboard shows a high concentration of indicators in the central sector of the dartboard both at hospital and health district level. However, there are some aspects that should be analysed carefully because they show a poor performance. At health district level, the indicators regarding prevention and diagnosis phases of the tuberculosis (IDPT01, IDPT04, IDPT05), the coverage rate of the ART therapy (CPHIV08) and the percentage of SAM treated over expected cases (C7M.7). At hospital level, these are the indicators related to the current ratio (F3.1), the percentage of episiotomies (C7.3A), and the percentage of deaths with a diagnosis of gastroenteritis (IDPD14). There are some other indicators which require special attention: the percentage of TB patients screened with Xpert (IPDT06) and the percentage of VL tests over the patients undergoing ART therapy (CPHIV10) for the hospital, and the coverage rate of rotavirus vaccination (B7.9) for the health district.

The mother and child care pathway for 2022 is generally positive; however, there are some aspects to pay attention to. The proportion of pregnant women tested for syphilis (C7.30) presents a low performance and a decrease over the last year. There is also a slight decrease regarding intra-partum asphyxia (C7.20A). On the other hand, the percentage of episiotomies (C7.3A) scores was quite low, but it slightly improved over the last year. Even the vaccination coverages should be monitored because they present a decreasing trend in the past year, for example: rotavirus (B7.9) and pentavalent (B7.7A). The pneumococcal coverage (B7.6) has improved but it still does not perform very well.

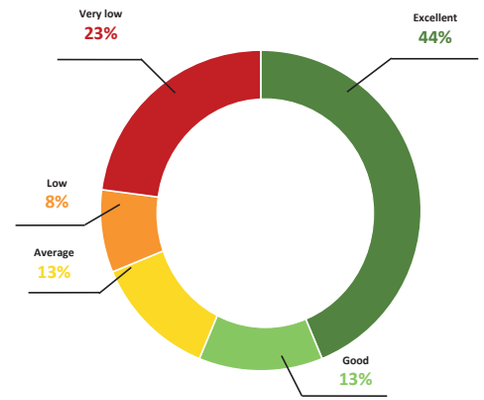
The child health performance map presents an overall positive scenario with hints of improvement in comparison to the previous year. The percentage of deaths among SAM cases (C7M.9) has an excellent performance and it has been decreasing over the last year. Instead, regarding infant malnutrition, the percentage of SAM treated over expected cases (C7M.7) has a quite low performance and a decreasing trend compared to the last year.

The evaluation data of this year for the tuberculosis pathway still presents some indicators, regarding the outcome phase, that perform well, namely the percentage of treatment success (IDPT10) and the percentage of interrupted treatments (IDPT12), except for the percentage of cured patients (IDPT09) which is strongly decreased. The performance map confirms the very low performance attained by the percentage of treatments with isoniazide (IDPT01), the percentage of confirmed TB cases on diagnosed cases (IDPT04) and the percentage of confirmed PTB (IDPT05), with a weak improvement regarding the Percentage of positive Xpert cases (IDPT06).

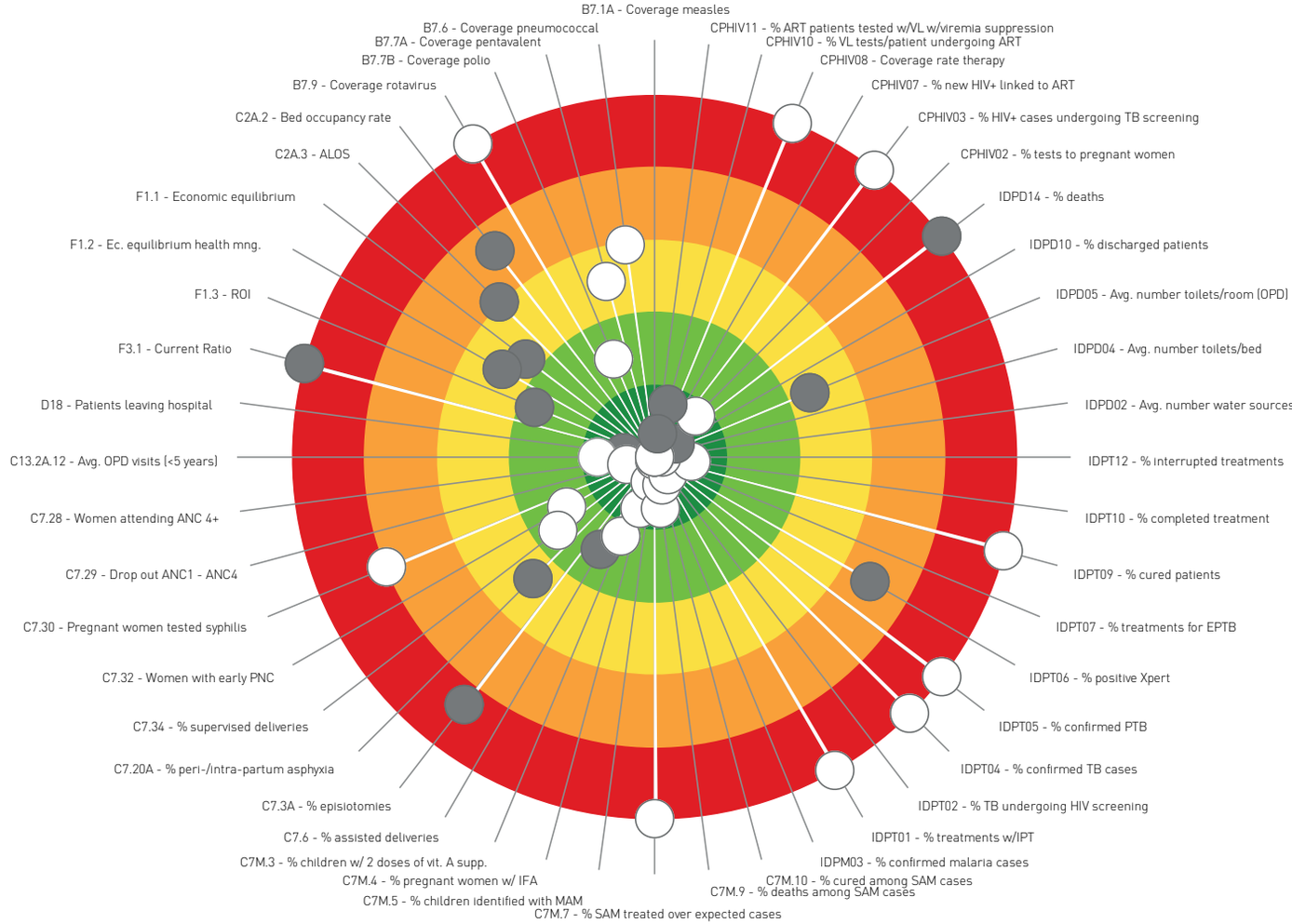
Regarding the gastroenteritis pathway for 2022, the performance stave illustrates overall a positive scenario, with the vaccination coverage of rotavirus (B7.9) that should be monitored.

Finally, in the chronic HIV care pathway, it emerges that the percentage of HIV cases with TB screening has decreased but, in contrast, the outcome phase is now performing well, as the CPHIV10 indicator has improved.

The donut chart below summarizes the proportion of evaluated indicators for each performance level.

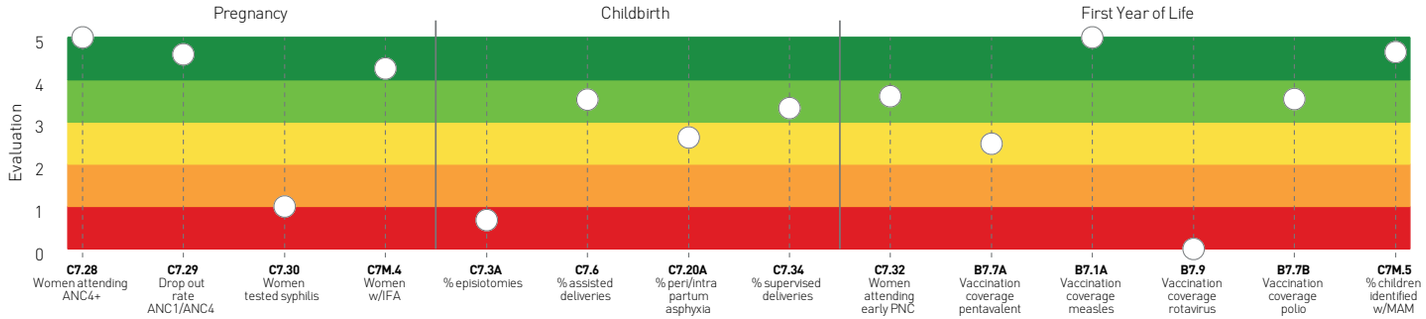


DARTBOARD
Iringa District Council
Year 2022

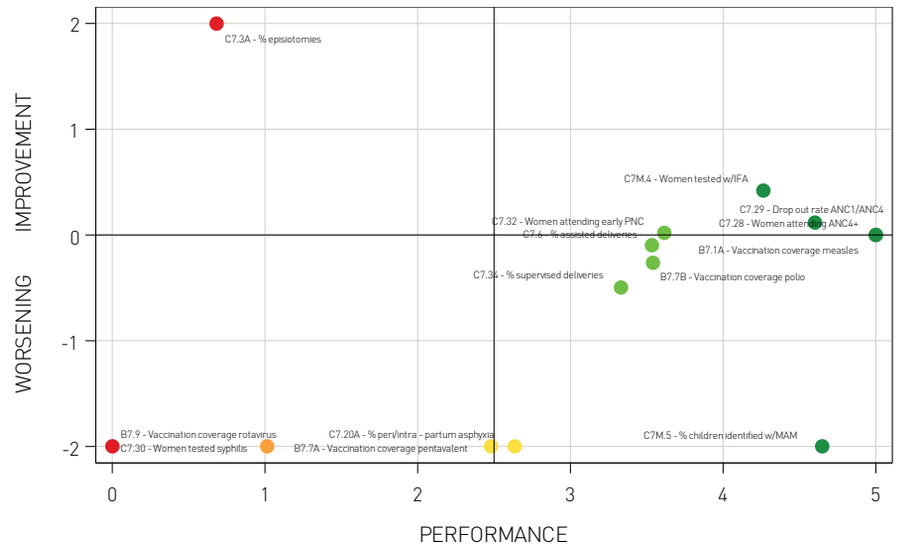


Please note that, as explained in the methodological section, the grey dots on the dartboard refer to the hospital evaluation, while the white dots refer to the health district evaluation.

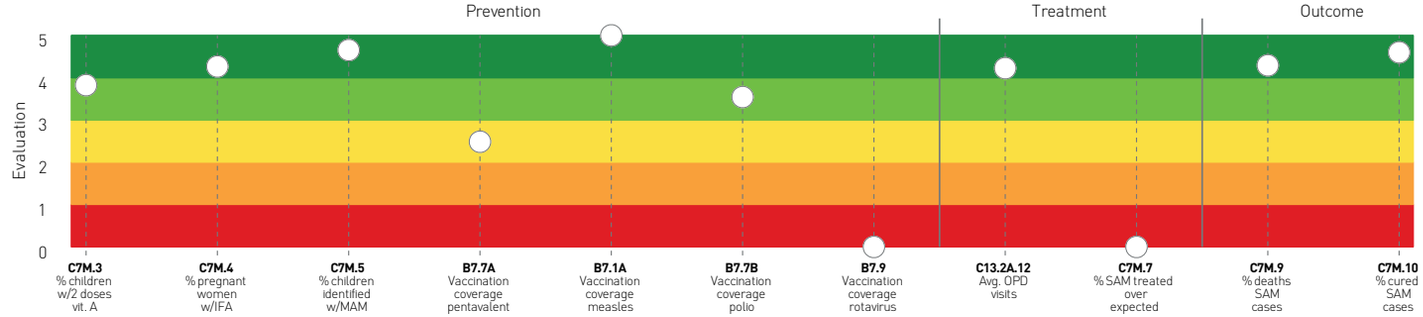
MATERNAL AND CHILD CARE PATHWAY
Iringa District Council
Year 2022

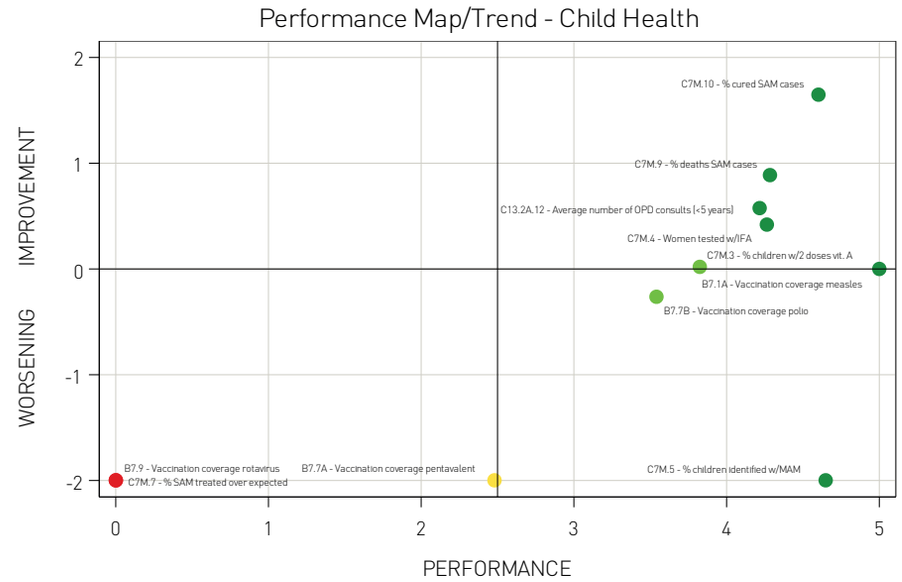


Performance Map/Trend - Mother and Child care

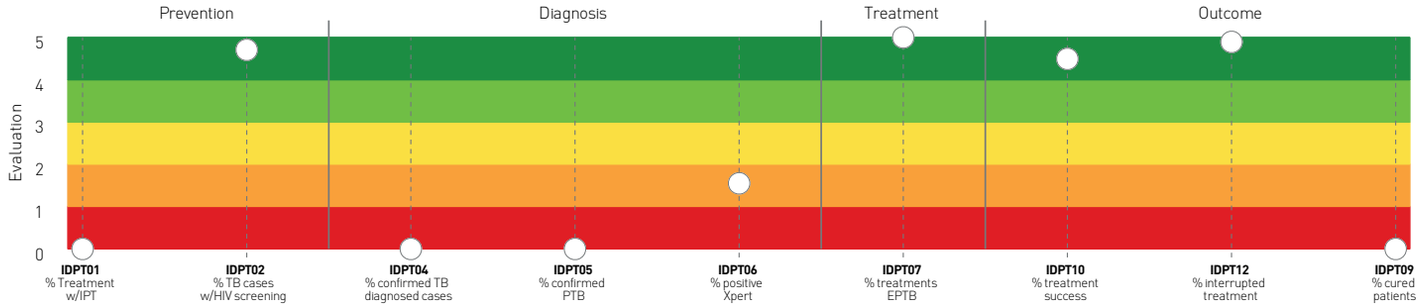


CHILD HEALTH CARE PATHWAY
Iringa District Council
Year 2022

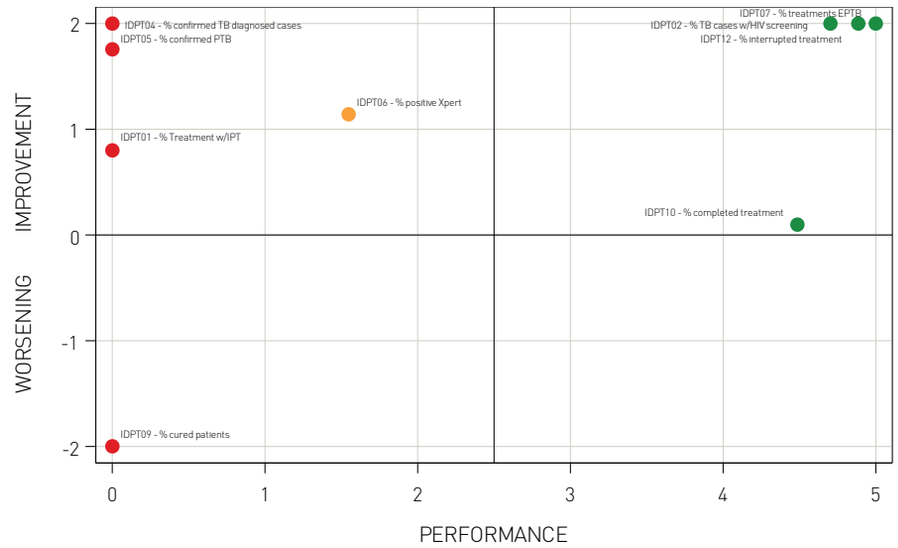




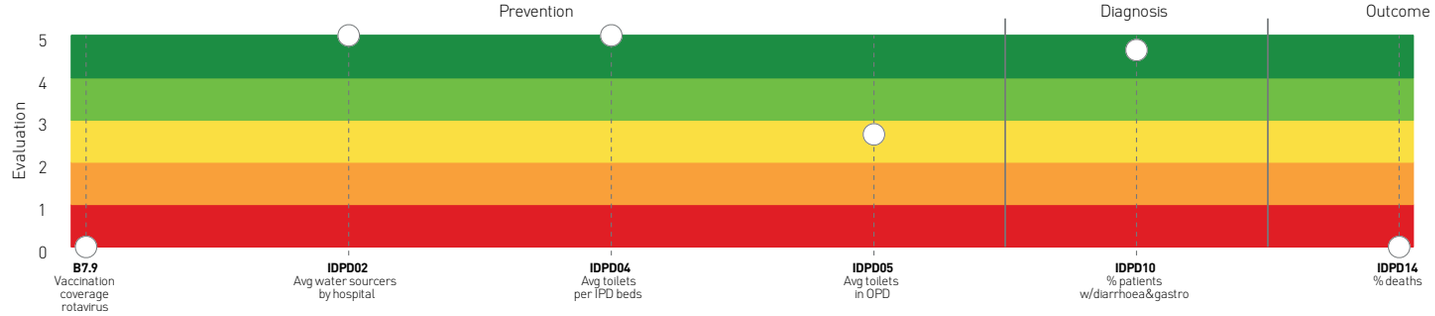
INFECTIOUS DISEASES: TUBERCULOSIS CARE PATHWAY
Iringa District Council
Year 2022

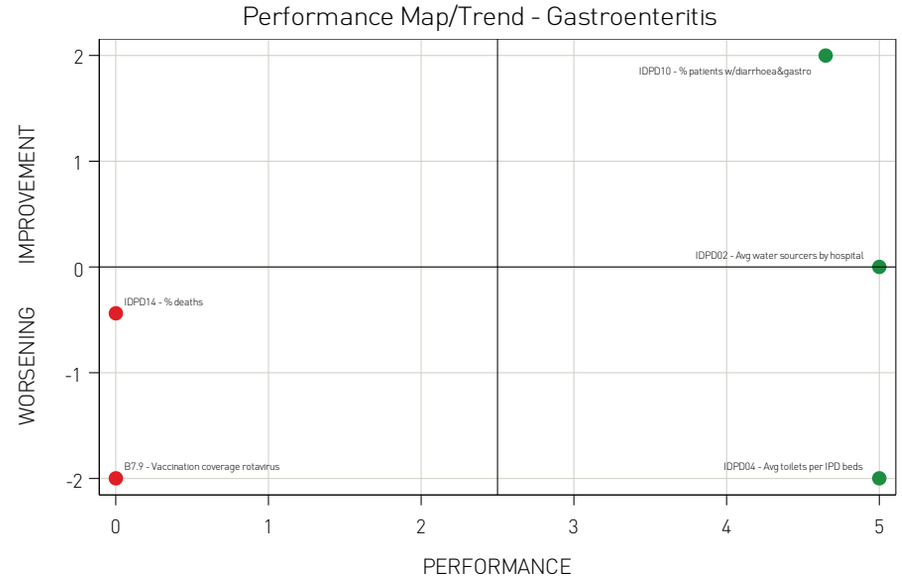


Performance Map/Trend - Tuberculosis

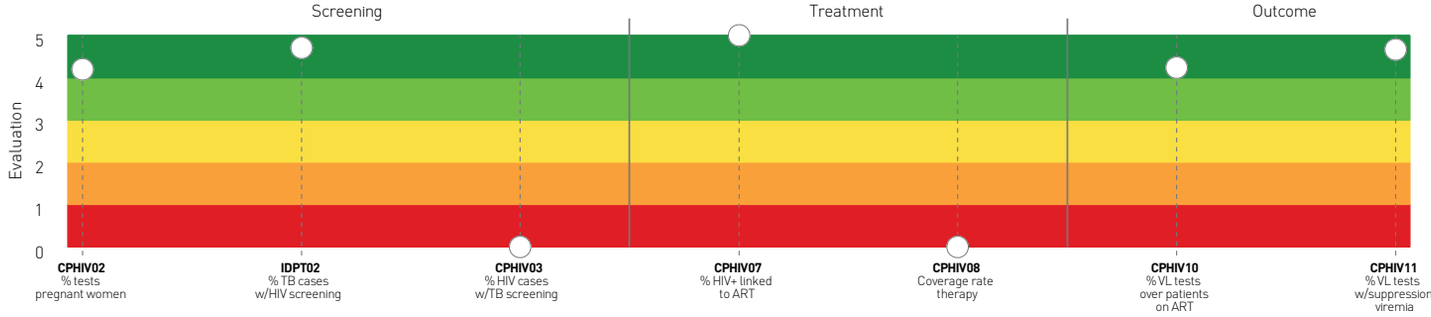


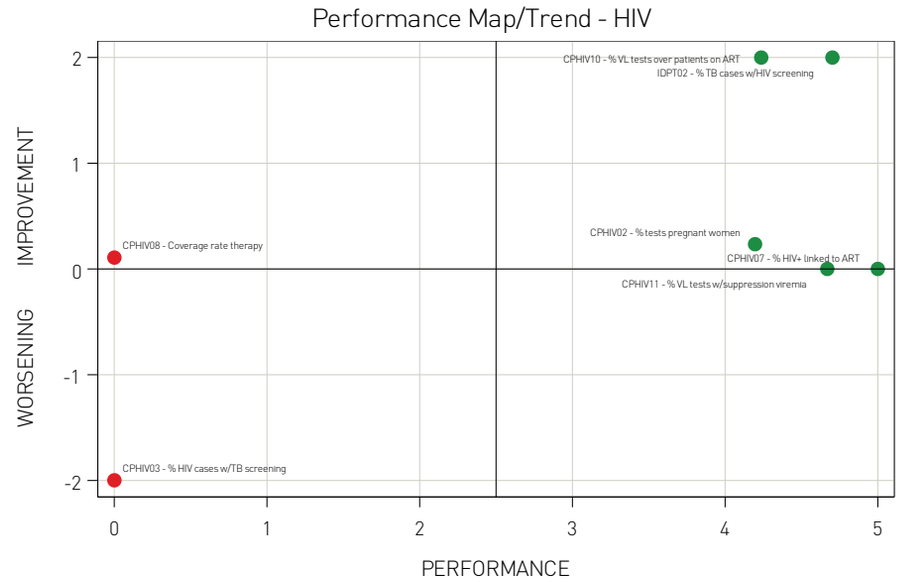
INFECTIOUS DISEASES: GASTROENTERITIS CARE PATHWAY
Iringa District Council
Year 2022





CHRONIC HIV CARE PATHWAY
Iringa District Council
Year 2022





UGANDA

Napak District

The Uganda's Health System

The governance of health system is decentralized, being shared according to mutual agreements between the Central Government (national level) and the local governments (district level)(5).

It is characterized by a mixed financing model, which includes multiple financing sources: government budget financed by general taxation at various federal levels, external funding by international and national agencies and NGOs, and private funding, such as OOP or payments by social insurance companies. According to the World Health Organization (WHO) (2), in 2020 general Government and OOP expenditures amounted for 17% and 37.4% of the total health expenditure, respectively. In terms of expenditure per capita expressed in PPP US$, the domestic general Government expenditure on health was equal to 16$ and the OOP one equal to 35.4$.

The current health care system is structured according to three levels of services delivery: i) health subdistricts composed of village health teams, health centres or hospitals; ii) regional referral hospitals; and iii) national referral hospitals.

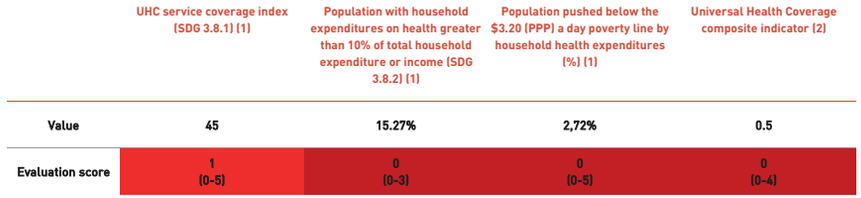
In addition to the abovementioned macroeconomic figures, the following indicators at macro level were considered, in order to evaluate the level of attainment to the Universal Health Coverage (UHC) principle. For this purpose, the scale elaborated by the Italian National Institute of Health (3) was used, which includes three indicators covering two dimensions, namely Universality and Financial Protection.

The dimension of Universality is expressed by the WHO UHC Service Coverage Index (SCI), reported on a dimensionless scale from 0 to 100 and computed as the geometric mean of 14 tracer indicators regarding health service coverage and referring to the four components of service coverage: i) reproductive, maternal, new born and child health; ii) infectious diseases; iii) non-communicable diseases; and iv) service capacity and access.

The dimension of Financial Protection is expressed by two indicators, namely the proportion of the population with household expenditures on health greater than 10% of total household expenditure or income and the proportion of the population pushed below the $3.20 a day poverty line by household health expenditures. Each of the three indicators has been associated with an evaluation score, based on a division into classes by source of reference and with every evaluation band associated with a colour (from red for the worst performance to green for the best).

The unique indicator of UHC is calculated as the mean of the three scores, in which the SCI weights 100% of its value, while the financial protection indicators weight each 50% of its value. Therefore, UHC is calculated as [(A+B/2+C/2)/2]. There are five bands of UHC performance, associated with five coloured bands, from red to dark green (Figure 3).

Figure 3. *UHC Index*



Sources:
(1) WHO, Global Health Observatory, 2017-2020
(2) La copertura sanitaria universale nel mondo. Istruzioni per l'uso: una logica di confronto, Higher Health Institute (HHI), 2020.

Napak District

The Napak District is in the Karamoja region in North-Eastern Uganda, near the border with Kenya. The Karamoja region is a semi-arid and vulnerable region that is inhabited by a nomadic population. The district, which is in turn subdivided into 6 sub-counties and 200 villages, comprises 16 health centres providing primary healthcare services to approximately 162,300 people (2022).

St. Kizito – Matany (Matany) Hospital, a private, not-for-profit institution, was built at the beginning of the 70's and it is designed as the referral center for Napak District. The Hospital capacity constitutes 250 beds distributed through Obstetrics/Gynaecology, Internal Medicine, Tuberculosis, Paediatrics and general Surgery departments. Other services provided by the Hospital include Diagnostic Laboratory, Diagnostic Imaging, General surgery, Orthopaedic and Physiotherapy, Counselling, HIV/AIDS Clinic, Antenatal Clinic, Prevention of Mother to Child Transmission (PMTCT). In 2022 the hospital offered 34,652 outpatient visits, 13,683 admissions and a total of approximately 1,560 deliveries.

From the macro to the micro perspective

Four indicators were included regarding details of OOP expenditures at hospital level. Table 3 reports the ratio of OOP and revenues, the ratio of OOP and number of patients stays, expressed by Inpatient Days Equivalent, and the ratio of OOP and Standard Unit of Output (SUO), and the ratio of OOP and number of residents in the Napak District.

Table 3. *OOP ratios in Napak District - Matany Hospital*

	Value
Percentage of revenues from OOP fees over total hospital's revenues (in %)	14%
OOP hospital's revenues per Inpatient days equivalent*, PPP (current international $)	$1.9
OOP hospital's revenues per Standard Unit of Output (SUO)**, PPP (current international $)	$1.8
OOP hospital's revenues per capita***, PPP (current international $)	$2.9

** It is expressed as the sum of inpatient days and the number of outpatient visits multiplied by a standard coefficient equal to 4.*
*** The SUO is expressed as the number of inpatients multiplied by a std. coefficient of 15, the number of OPD visits multiplied by 1, the number of deliveries multiplied by 5, the number of vaccinations by 0.2, and the number of ANC visits multiplied by 0.5.*
**** It refers to the estimated resident population in the reference Catchment Area.*

The Performance of Napak District in 2022

The aim of the present section is to interpret the performance of the health system. The indicators calculated at residence level include the joint contribution of the health district and reference hospital, whilst the indicators calculated at hospital level illustrate specifically the hospital performance. The performance of the health district and the hospital is reported on the dartboard by means of white and grey dots, respectively. More particularly, the dartboard and the staves summarize and represent graphically the performance of the local health system, while the performance maps, associated with the respective care pathways, provide a view of the evolution of performance in trend.

Overall, the dartboard shows that there has been an improvement in the performance. What emerges is that at the hospital level some critical issues remain over time, for example at the financial and economic level, namely the general economic equilibrium (F1.1), the economic equilibrium of health management (F1.2) and the return on investment (F1.3).

At the district level, for the maternal and childcare pathway, the vaccination coverages have overall improved. These are the vaccination coverage for rotavirus (B7.9), the vaccination coverage for polio (B7.7B), the pentavalent vaccine coverage (B7.7A), the vaccination coverage against pneumococcal (B7.6) and the vaccination coverage for measles (B7.1A). Even the proportion of pregnant women who attended more than four antenatal care visits during this pregnancy (C7.28) has slightly improved.

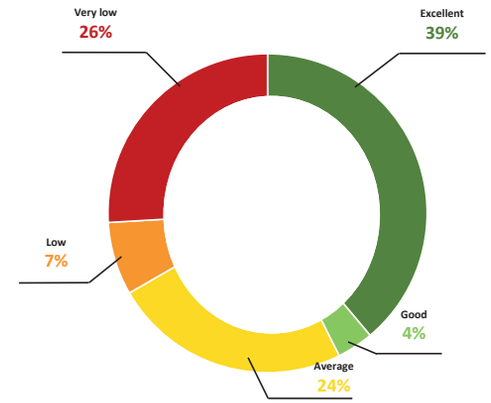
The child health performance map presents a middle-high performance, with almost all indicators that have improved over the last year. The only indicator that has been decreasing, although the excellent performance, is the percentage of deaths among SAM cases aged 6-59 months (C7M.9).

Regarding the tuberculosis pathway, the prevention and treatment phases stand at the same level as the previous year, with a very low performance attained by the percentage of treatments with isoniazide (IDPT01). Similar poor performance is observed for the percentage of positive Xpert (IDPT06), the percentage of interrupted treatments (IDPT12) and the percentage of cured patients (IDPT09). Instead, the diagnosis and outcome phases have improved even though the evaluation is still bad.

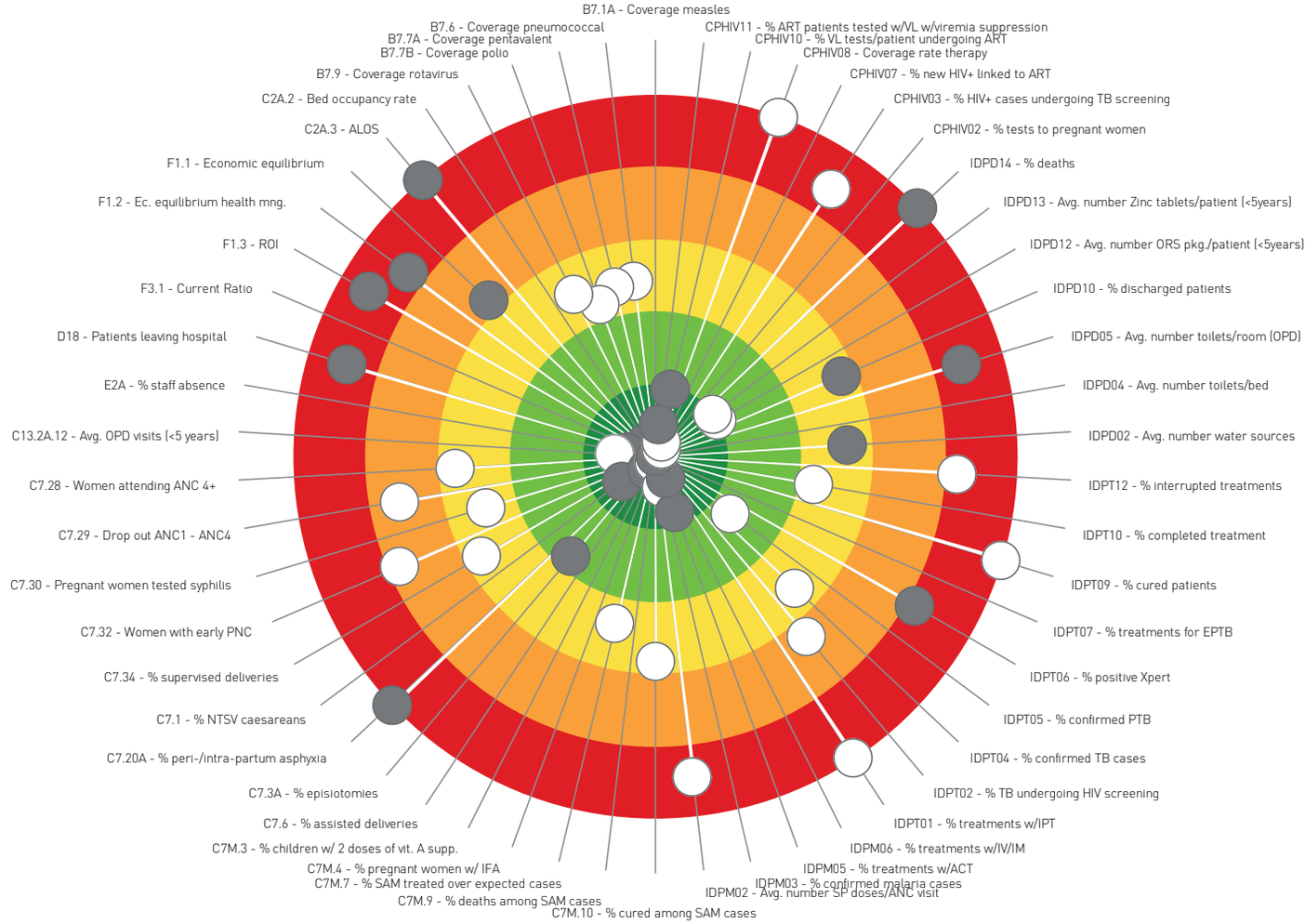
Comparing the evaluation data 2023 with data from the previous year for the gastroenteritis pathway, the performance map shows that the vaccination coverage of rotavirus (B7.9) has improved; however, the diagnosis phase has slightly worsened, particularly with regards to the percentage of discharged patients for diarrhoea and gastroenteritis (IDPD10).

FFinally, the chronic HIV care pathway. In the screening phase, there was a strong improvement in the percentage of performed tests on pregnant women (CPHIV02) while, for the other indicators, there has been a slight decrease. Additionally, in the treatment phase, the HIV+ patients on treatment indicator (CPHIV07) have improved.

The donut chart below summarizes the proportion of evaluated indicators for each performance level.

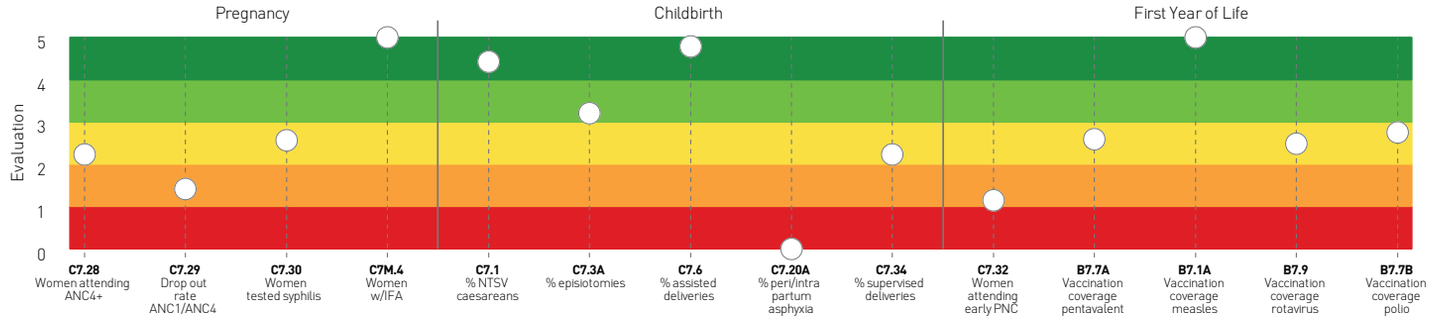


DARTBOARD
Napak District
Year 2022

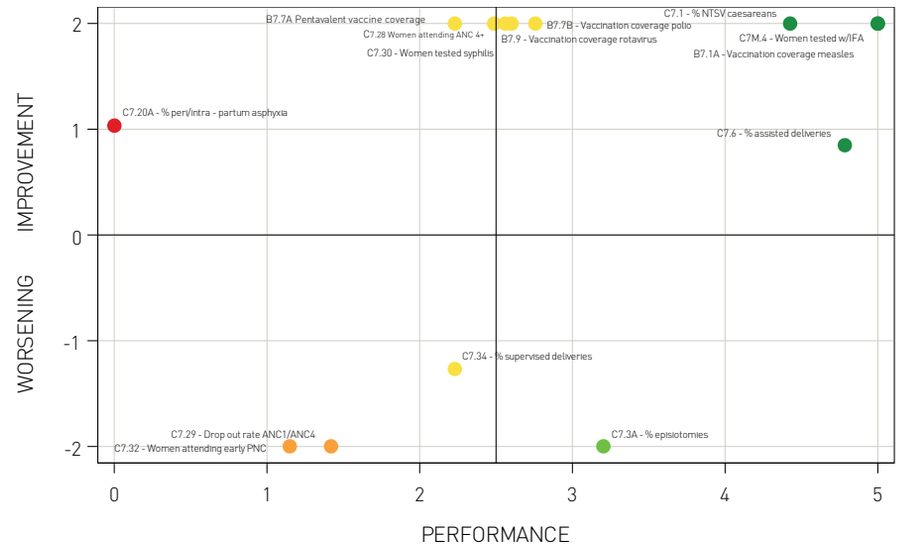


Please note that, as explained in the methodological section, the grey dots on the dartboard refer to the hospital evaluation, while the white dots refer to the health district evaluation.

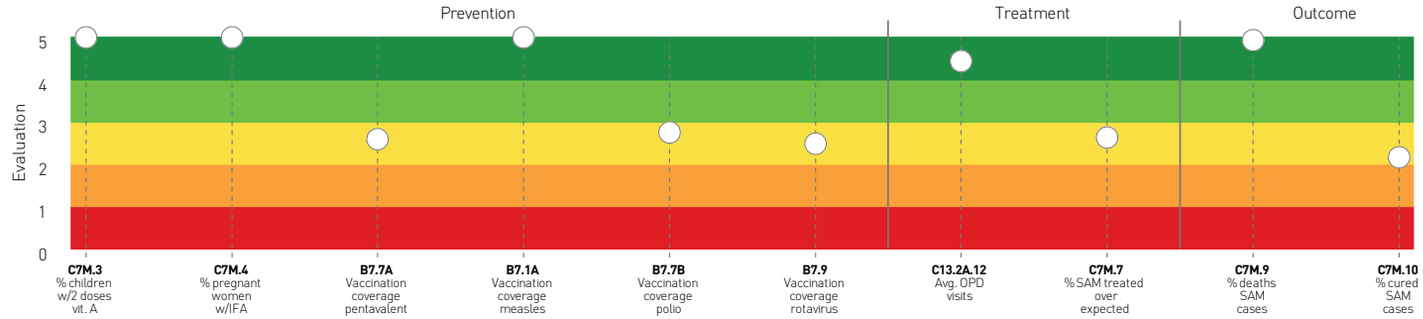
MATERNAL AND CHILD CARE PATHWAY
Napak District
Year 2022

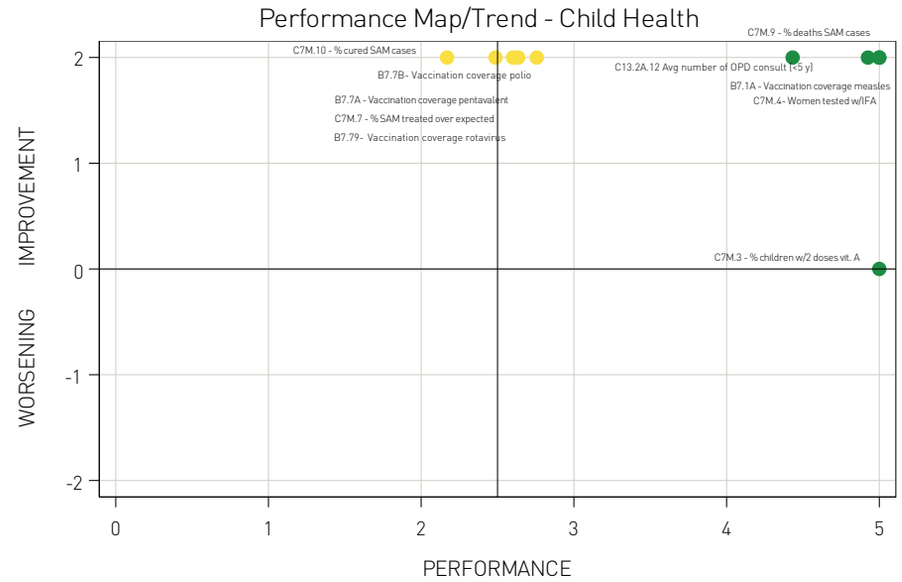


Performance Map/Trend - Mother and Child care

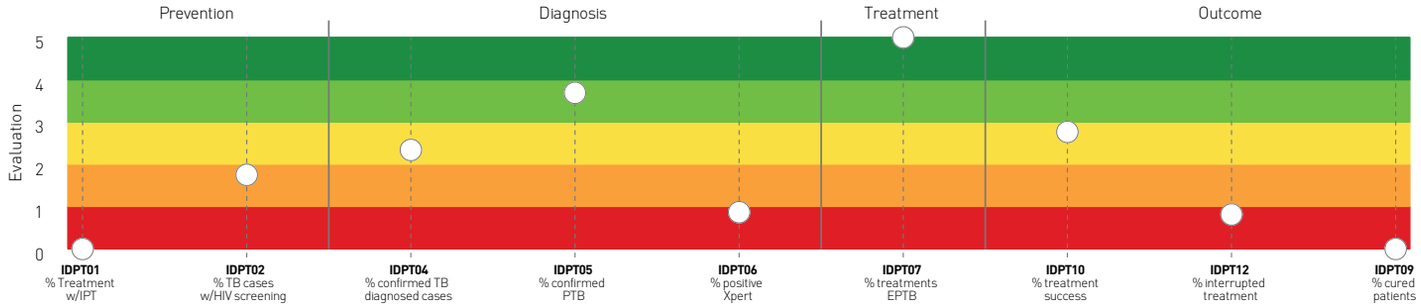


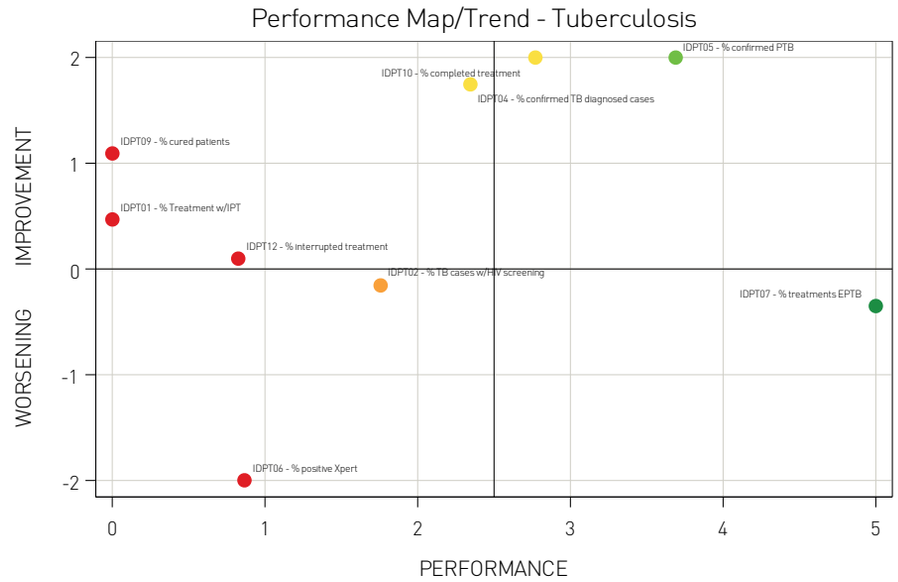
CHILD HEALTH CARE PATHWAY
Napak District
Year 2022



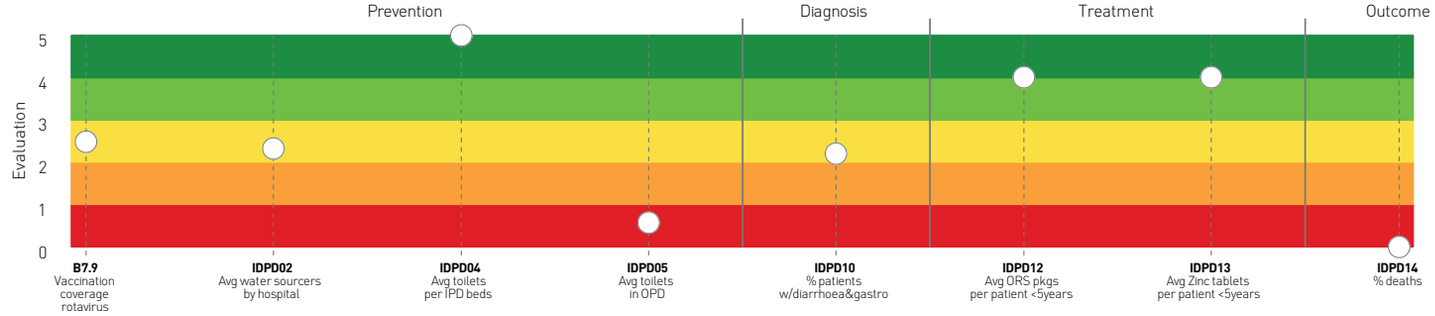


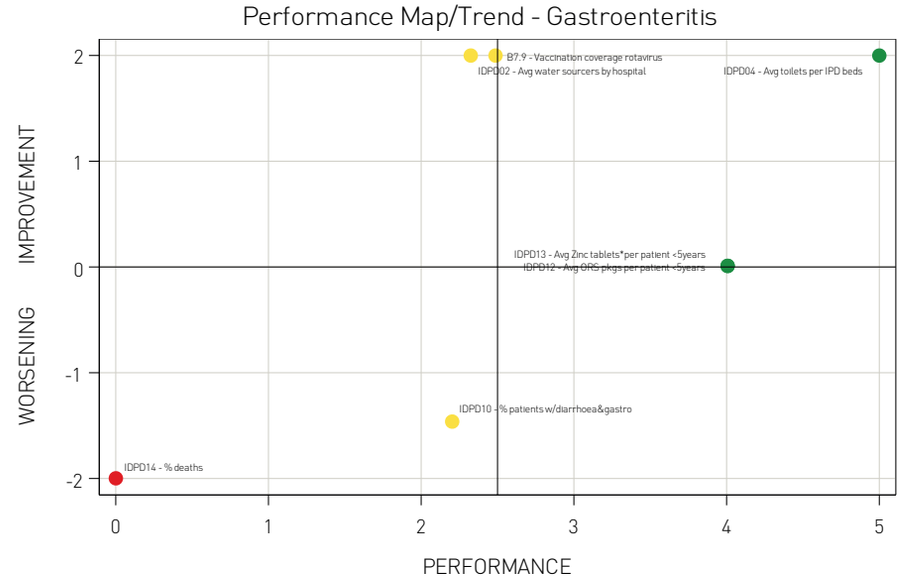
INFECTIOUS DISEASES: TUBERCULOSIS CARE PATHWAY
Napak District
Year 2022



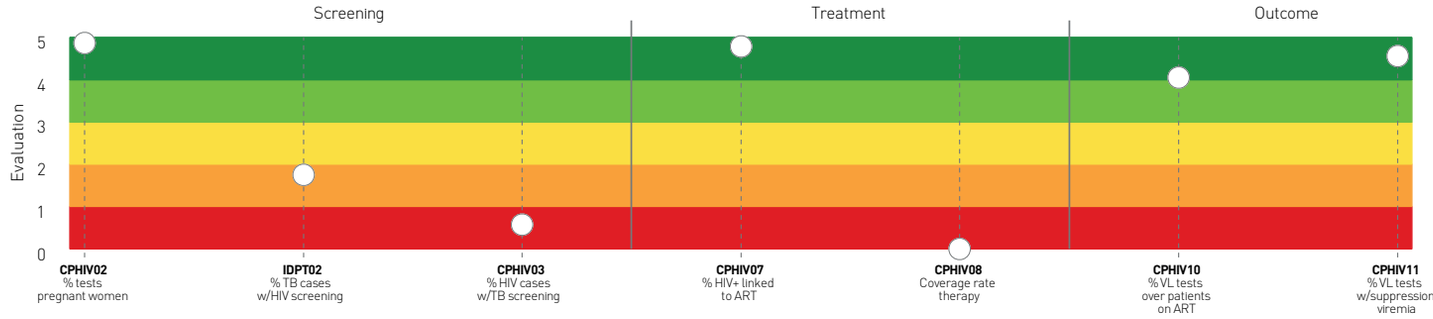


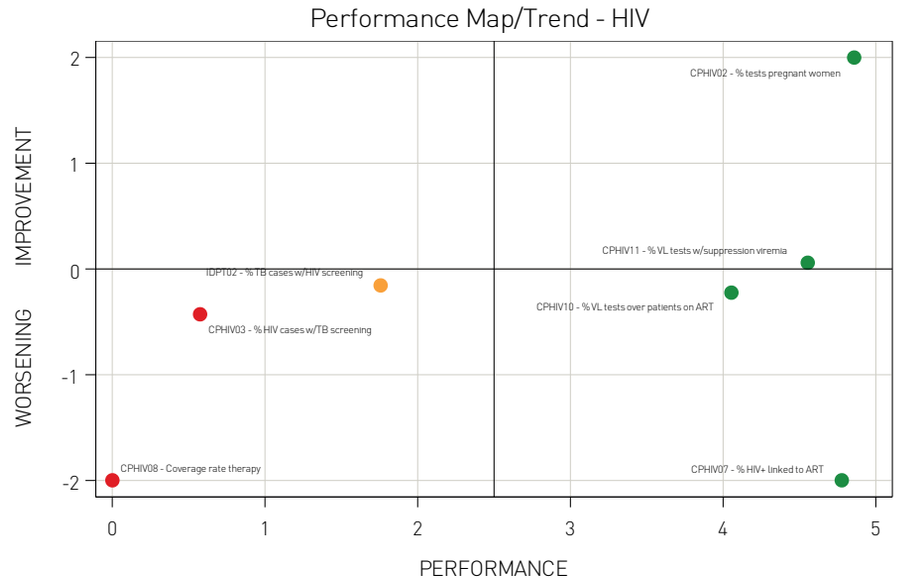
INFECTIOUS DISEASES: GASTROENTERITIS CARE PATHWAY
Napak District
Year 2022





CHRONIC HIV CARE PATHWAY
Napak District
Year 2022





UGANDA

Oyam District

The Uganda's Health System

The governance of health system is decentralized, being shared according to mutual agreements between the Central Government (national level) and the local governments (district level)(5).

It is characterized by a mixed financing model, which includes multiple financing sources: government budget financed by general taxation at various federal levels, external funding by international and national agencies and NGOs, and private funding, such as OOP or payments by social insurance companies. According to the World Health Organization (WHO) (2), in 2020 general Government and OOP expenditures amounted for 17% and 37.4% of the total health expenditure, respectively. In terms of expenditure per capita expressed in PPP US$, the domestic general Government expenditure on health was equal to 16$ and the OOP one equal to 35.4$.

The current health care system is structured according to three levels of services delivery: i) health subdistricts composed of village health teams, health centres or hospitals; ii) regional referral hospitals; and iii) national referral hospitals.

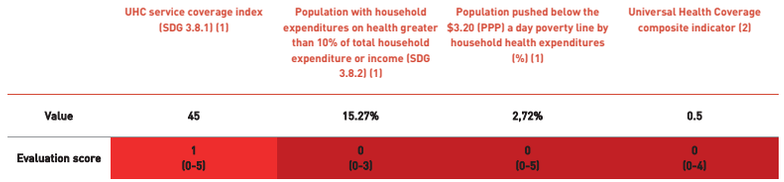
In addition to the abovementioned macroeconomic figures, the following indicators at macro level were considered, in order to evaluate the level of attainment to the Universal Health Coverage (UHC) principle. For this purpose, the scale elaborated by the Italian National Institute of Health (3) was used, which includes three indicators covering two dimensions, namely Universality and Financial Protection.

The dimension of Universality is expressed by the WHO UHC Service Coverage Index (SCI), reported on a dimensionless scale from 0 to 100 and computed as the geometric mean of 14 tracer indicators regarding health service coverage and referring to the four components of service coverage: i) reproductive, maternal, new born and child health; ii) infectious diseases; iii) non-communicable diseases; and iv) service capacity and access.

The dimension of Financial Protection is expressed by two indicators, namely the proportion of the population with household expenditures on health greater than 10% of total household expenditure or income and the proportion of the population pushed below the $3.20 a day poverty line by household health expenditures. Each of the three indicators has been associated with an evaluation score, based on a division into classes by source of reference and with every evaluation band associated with a colour (from red for the worst performance to green for the best).

The unique indicator of UHC is calculated as the mean of the three scores, in which the SCI weights 100% of its value, while the financial protection indicators weight each 50% of its value. Therefore, UHC is calculated as [(A+B/2+C/2)/2]. There are five bands of UHC performance, associated with five coloured bands, from red to dark green (Figure 4).

Figure 4. *UHC Index*



Sources:
[1] WHO, Global Health Observatory, 2017-2020
[2] La copertura sanitaria universale nel mondo. Istruzioni per l'uso: una logica di confronto, Higher Health Institute (HHI), 2020.

Oyam District

The Oyam District is in a rural region in the northern part of the country and in 2022 registered an estimated population of approximately 485,300. In comparison to the Napak District, the Oyam District covers a territory with a higher density of population and healthcare services are provided by 30 health facilities, including the reference Pope John XXIII – Aber (Aber) Hospital, a private not-for-profit hospital.

Aber Hospital offers both clinical and community-based services. Clinical services are provided through four inpatients departments: Internal Medicine, Obstetrics and Gynaecology, Paediatrics and surgery. The hospital also has an outpatient department with Diagnostic Laboratory, Diagnostic Imaging, Antenatal Clinic an HIV/AIDS Clinic. In 2022 the hospital provided a total of 42,496 outpatient visits, 10,958 admissions and a total of 2,972 deliveries.

From the macro to the micro perspective

Four indicators were included regarding details of OOP expenditures at hospital level. Table 4 reports the ratio of OOP and revenues, the ratio of OOP and number of patients stays, expressed by Inpatient Days Equivalent, and the ratio of OOP and Standard Unit of Output (SUO), and the ratio of OOP and number of residents in the Oyam District.

Table 4. *OOP ratios in Oyam District - Aber Hospital*

	Value
Percentage of revenues from OOP fees over total hospital's revenues (in %)	33%
OOP hospital's revenues per Inpatient days equivalent*, PPP (current international $)	$7.7
OOP hospital's revenues per Standard Unit of Output (SUO)**, PPP (current international $)	$8.3
OOP hospital's revenues per capita***, PPP (current international $)	$3.5

** It is expressed as the sum of inpatient days and the number of outpatient visits multiplied by a standard coefficient equal to 4.*
*** The SUO is expressed as the number of inpatients multiplied by a std. coefficient of 15, the number of OPD visits multiplied by 1, the number of deliveries multiplied by 5, the number of vaccinations by 0.2, and the number of ANC visits multiplied by 0.5.*
**** It refers to the estimated resident population in the reference Catchment Area.*

The Performance of Oyam District in 2022

The aim of the present section is to interpret the performance of the health system. The indicators calculated at residence level include the joint contribution of the health district and reference hospital, whilst the indicators calculated at hospital level illustrate specifically the hospital performance. The performance of the health district and the hospital is reported on the dartboard by means of white and grey dots, respectively. More particularly, the dartboard and the staves summarize and represent graphically the performance of the local health system, while the performance maps, associated with the respective care pathways, provide a view of the evolution of performance in trend.

The dartboard shows a quite dispersed configuration of indicators. There are some aspects that should be analysed carefully. At health district level, although a slight improvement, vaccination coverages for all vaccine-preventable diseases show an overall low performance. Regarding HIV treatment, the coverage rate of ART therapy (CPHIV08) should be monitored. Other indicators to be checked are related to the prevention, diagnosis, and TB outcome phases, respectively the percentage of treatments with Isoniazide (IDPT01) and the percentage of confirmed TB cases on diagnosed cases (IDPT04).

Comparing the evaluation data of 2023 with the evaluation data of the previous year for the maternal and child care pathway, the indicators that require special attention lay along the pregnancy and the first year of life phases. Particularly, the indicator characterised by a low performance that has been decreasing over the last year is the percentage of women tested with iron folic acid IFA (C7M.4). Even the percentage of assisted deliveries, although performing well, has been decreasing over the last year.

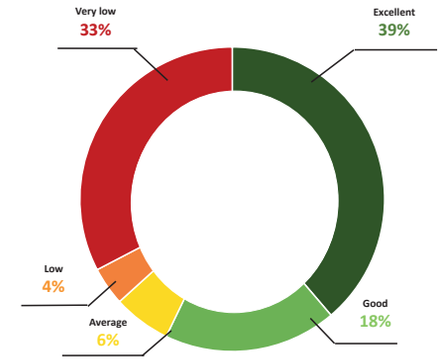
Regarding the child health care pathway, there are three indicators that require special attention, as they show a decreasing trend over the past year: the percentage of SAM treated over expected (C7M.7), the percentage of women tested with IFA (C7M.4) and, even if with a high performance, the percentage of cured among SAM cases aged 6-59 months (C7M.10). In particular, it is worth mentioning the improvement of the percentage of children who have received two doses of vitamin A (C7M.3).

For the tuberculosis pathway, the indicators populating the first two phases of the pathway, namely prevention and diagnosis, performed quite low over the last year. On the other hand, the treatment and outcome phases of the pathway have indicators scoring high in evaluation points with the percentage of cured patients that has highly increased over the last year (IDPT09).

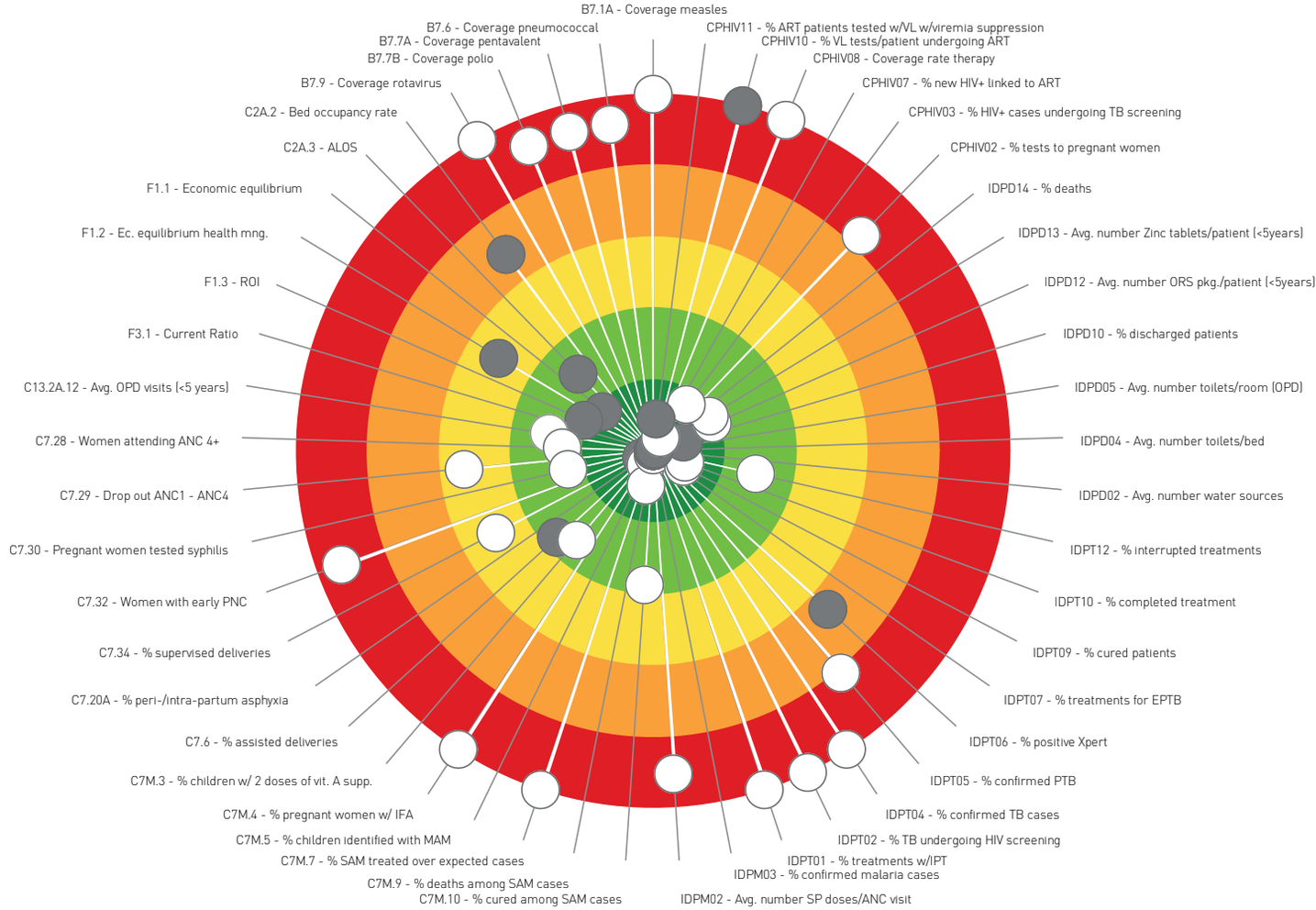
For the gastroenteritis pathway, all the indicators are still performing very well, apart from the vaccination coverage for the rotavirus (B7.9).

TThe stave of the chronic HIV pathway is characterised by various ups and downs along the various phases of the pathway. There is evidence of a slight decrease in the screening phase over the last year; however, the percentage of new HIV+ linked to ART (CPHIV07) of the treatment phase has improved.

The donut chart below summarizes the proportion of evaluated indicators for each performance level.

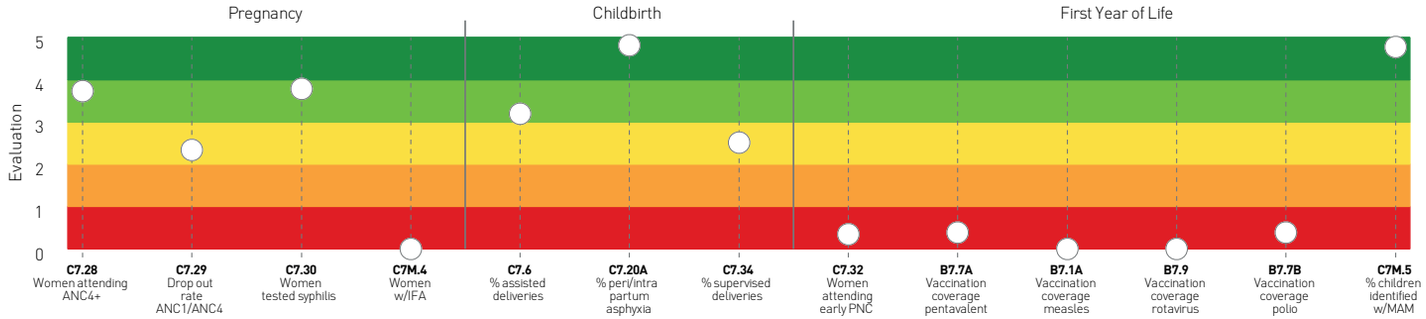


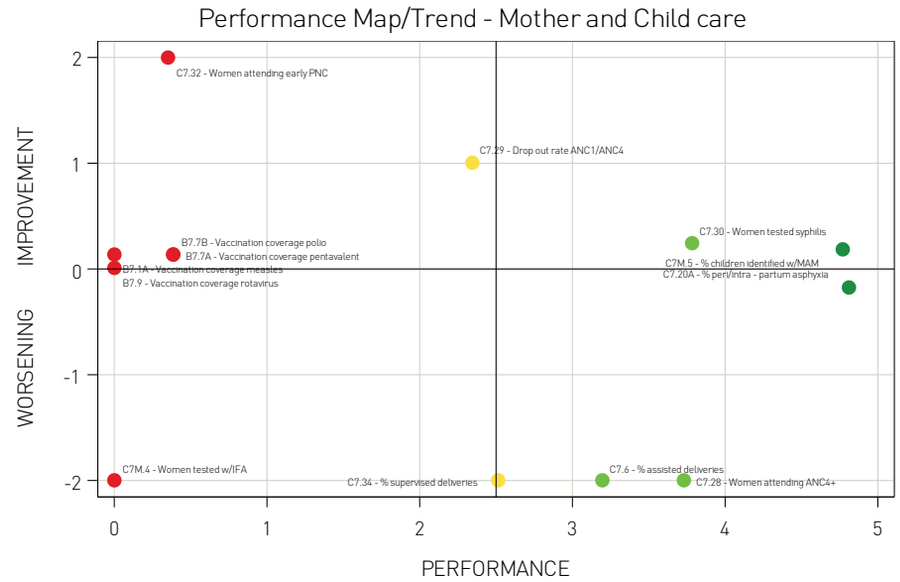
DARTBOARD
Oyam District
Year 2022



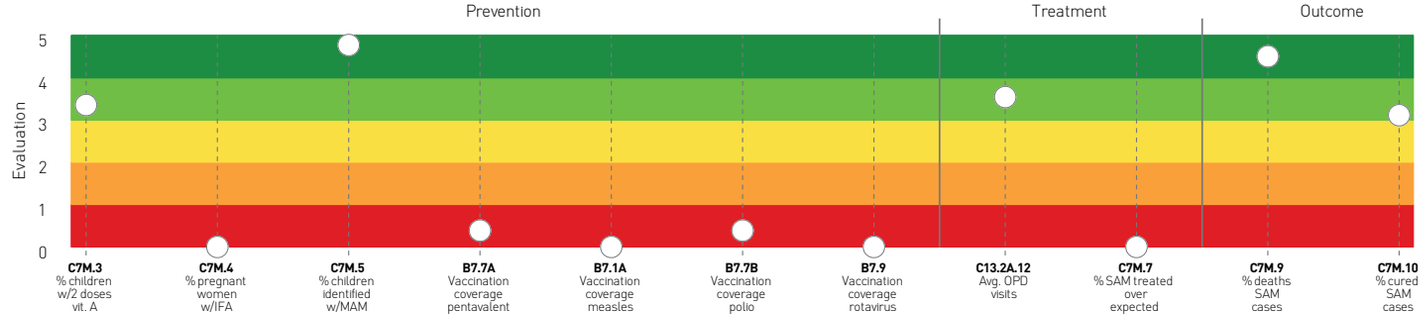
Please note that, as explained in the methodological section, the grey dots on the dartboard refer to the hospital evaluation, while the white dots refer to the health district evaluation.

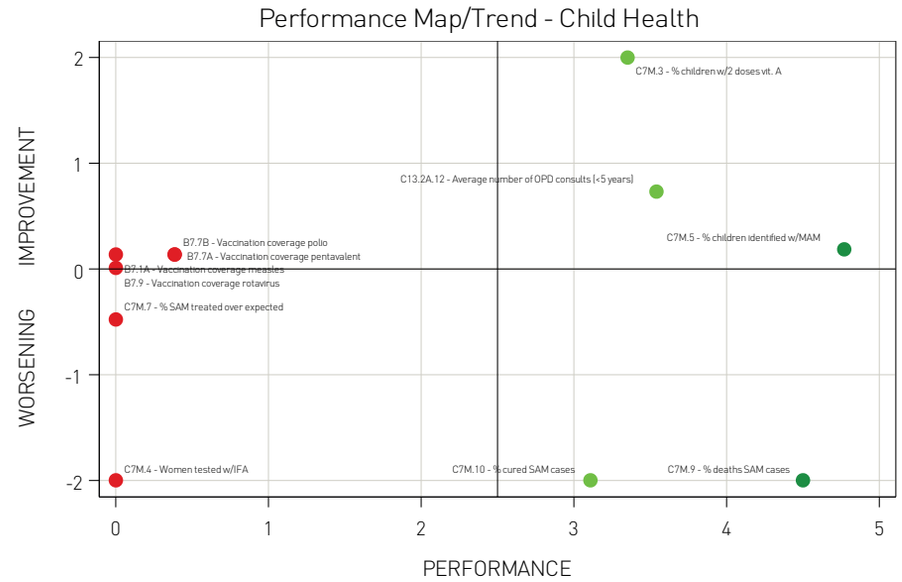
MATERNAL AND CHILD CARE PATHWAY
Oyam District
Year 2022



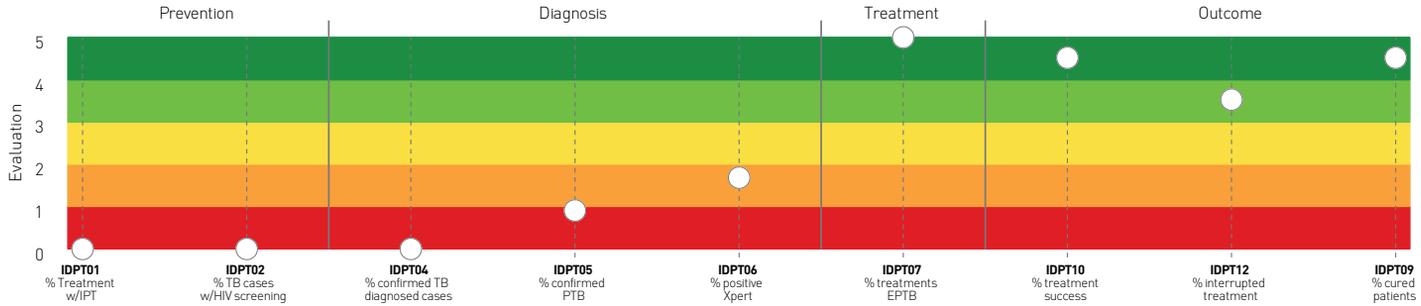


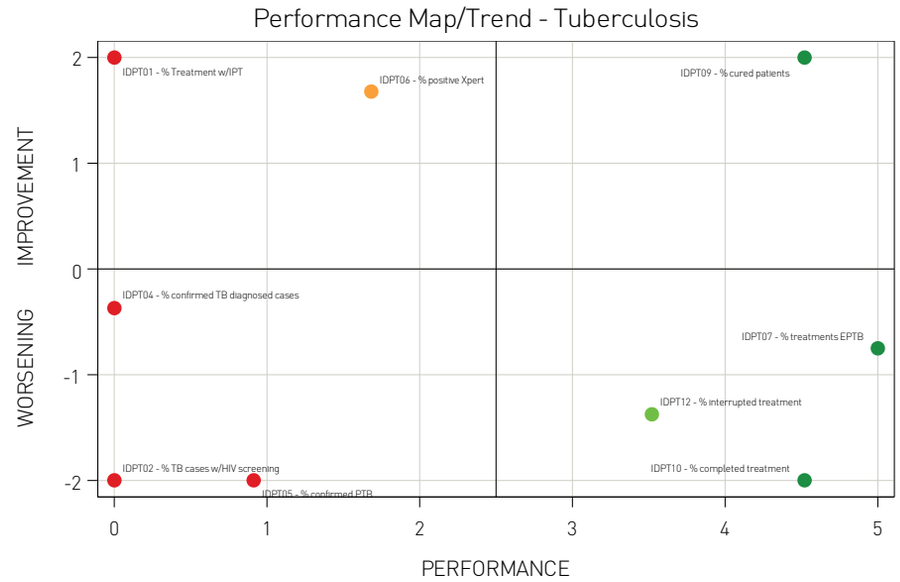
CHILD HEALTH CARE PATHWAY
Oyam District
Year 2022



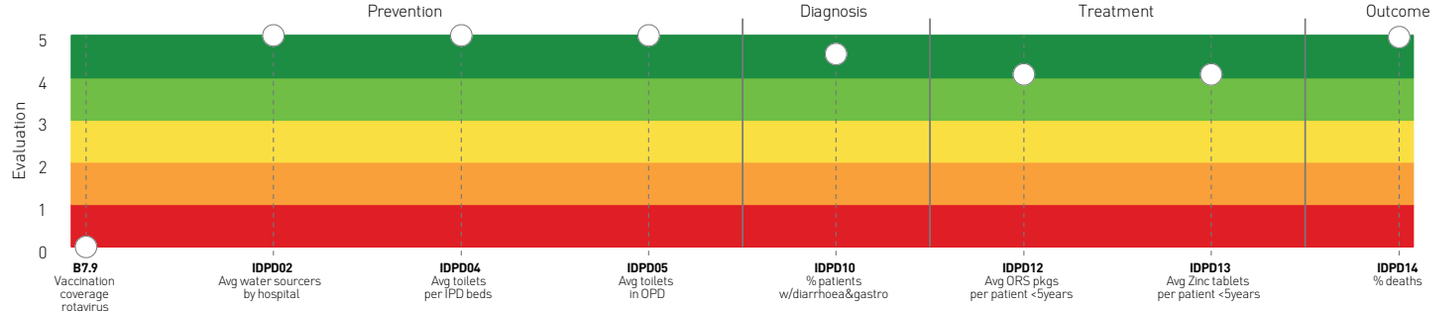


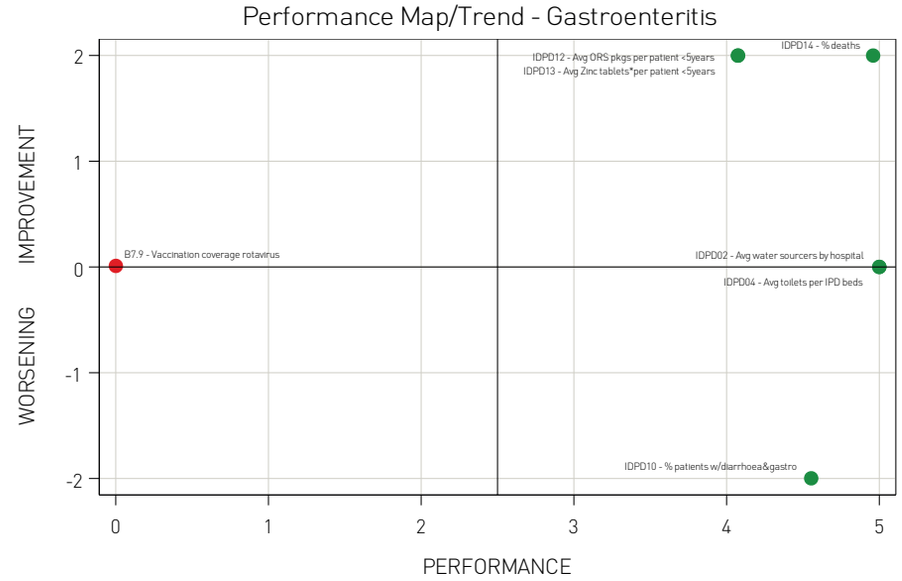
INFECTIOUS DISEASES: TUBERCULOSIS CARE PATHWAY
Oyam District
Year 2022



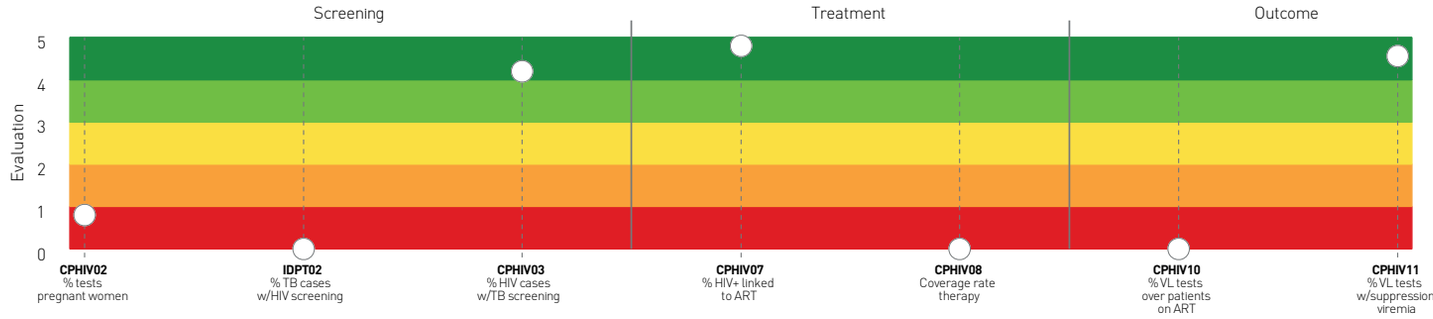


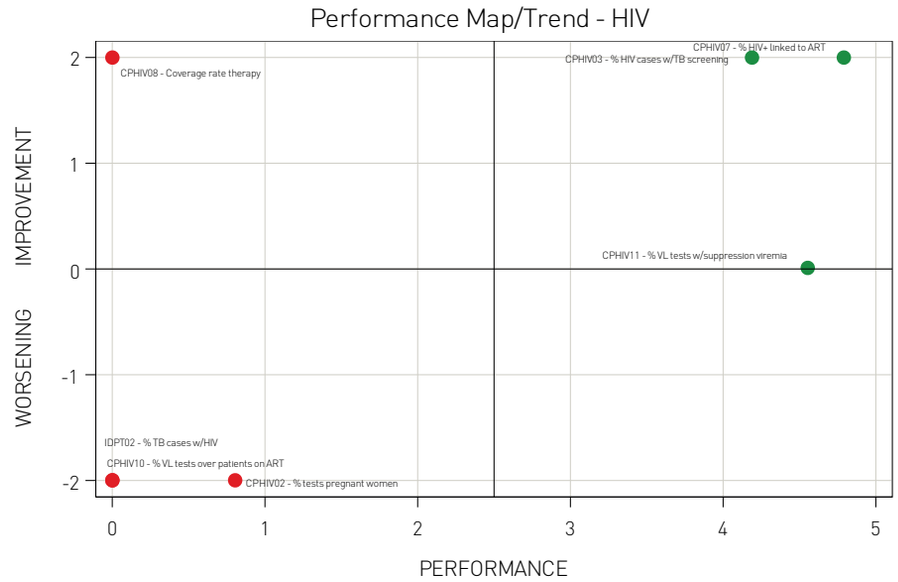
INFECTIOUS DISEASES: GASTROENTERITIS CARE PATHWAY
Oyam District
Year 2022





CHRONIC HIV CARE PATHWAY
Oyam District
Year 2022





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3. Marchetti G, Marco S, Declich S, Dente MG, Ferrelli R, Tosti ME. La copertura sanitaria universale nel mondo. Istruzioni per l'uso: una logica di confronto. 2020.
4. World Health Organization. Primary Health Care Systems (Primasys). Comprehensive case study from United Republic of Tanzania [Internet]. World Health Organization. 2017. Available from: http://www.who.int/alliance-hpsr
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4

INDICATORS
2020 - 2022

management sanità

DOCTORS WITH AFRICA CUAMM

REGIONAL HEALTH STRATEGIES

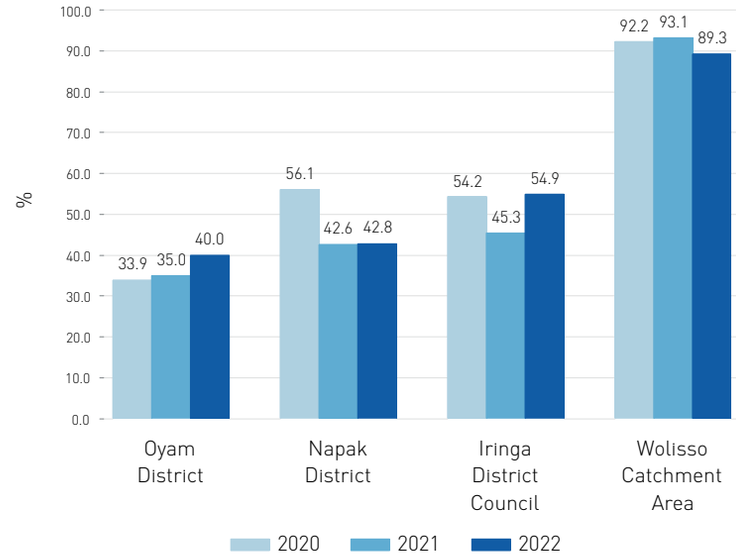
management sanità

DOCTORS WITH AFRICA CUAMM

B7.10 Vaccination coverage for tetanus (reproductive women)

Computational level : Residence

According to WHO recommendation, all women giving birth should be protected against tetanus. A dose of tetanus toxoid should be given at first contact or as early as possible in pregnancy. If the mother is not immunized with the correct number of doses of tetanus toxoid vaccine, neither she nor her newborn infant are protected against tetanus at delivery. This indicator is an observation indicator. It is expressed as a ratio between the number of women who received at least two doses of vaccine to prevent tetanus during their pregnancy, as recommended by WHO, and the overall number of expected deliveries in the reference area.

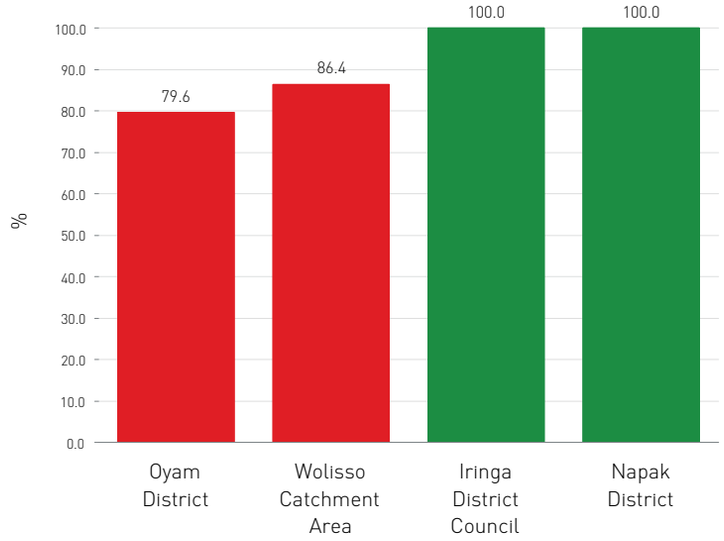


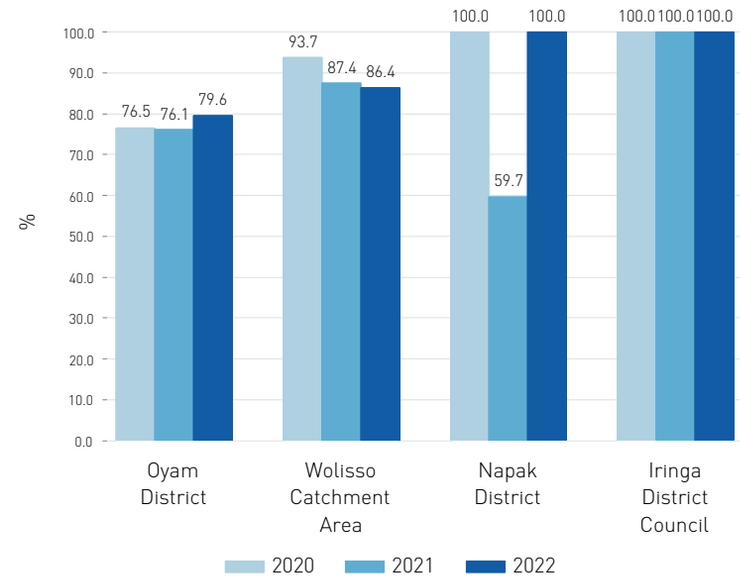
Numerator	Number of pregnant women who have received protetictive doses of TT (x100)
Denominator	Number of expected deliveries
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic source)

B7.1A Vaccination coverage for measles

Computational level : Residence

Measles is a highly contagious disease caused by a virus, which usually results in a high fever and rash, and can lead to blindness, encephalitis or death. This vaccine is a single vaccine preventing measles. The calculation of vaccine coverage for measles is the ratio between the percentage of vaccination cycles completed each year, and the number of children aged less than one year. The goal was fixed to 98% coverage of the target population based on the guidelines followed in the IRPES.



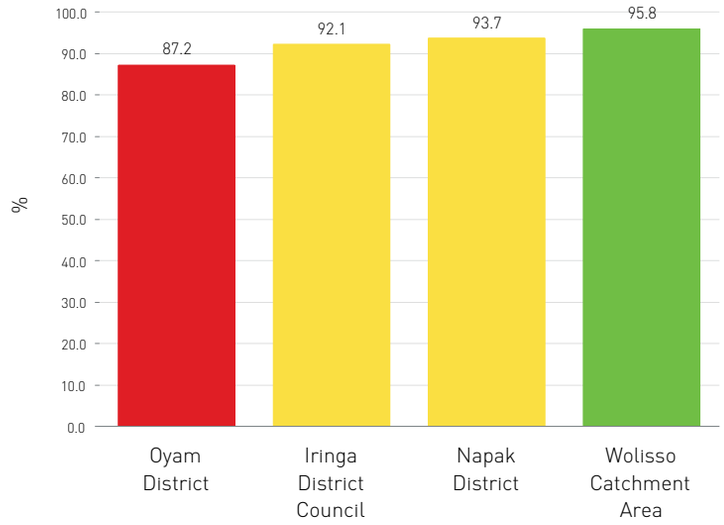


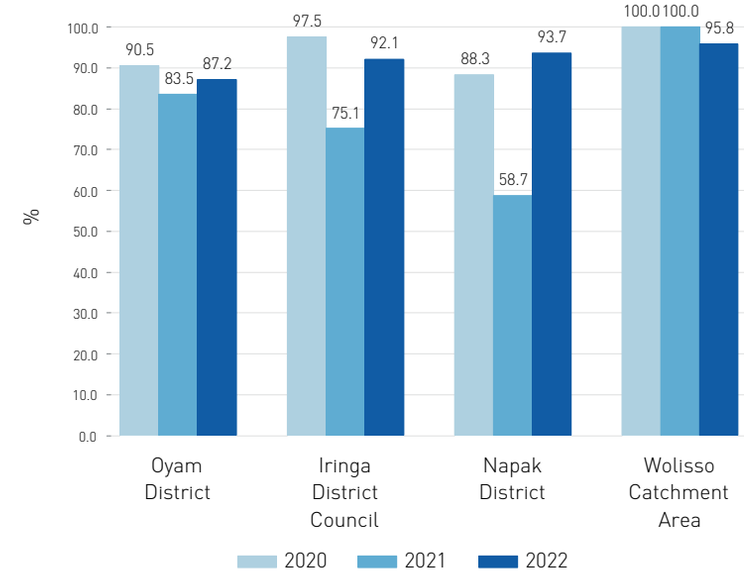
Numerator	Number of children under one year of age who have received measles vaccine (x100)
Denominator	Estimated number of infants aged less than 1 year
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic source)

B7.6 Vaccination coverage against pneumococcal (PCV)

Computational level : Residence

Pneumococcus (Streptococcus pneumoniae) belongs to a family of bacteria with approximately 80 subtypes, some of which are responsible for infections in childhood. Transmitted from person to person through saliva droplets, the bacterium is often found in the throat and nose of many healthy individuals, without producing symptoms. However, if it gets into the bloodstream, it can cause the so-called "invasive pneumococcal disease". Although this serious infection can affect people of all ages, the under-twos and especially chronic disease sufferers are mostly at risk. The availability of a safe, effective vaccine is the most important prevention tool against the most serious pneumococcal diseases in children. The goal was fixed to 98% coverage of the target population based on the guidelines followed in the IRPES.



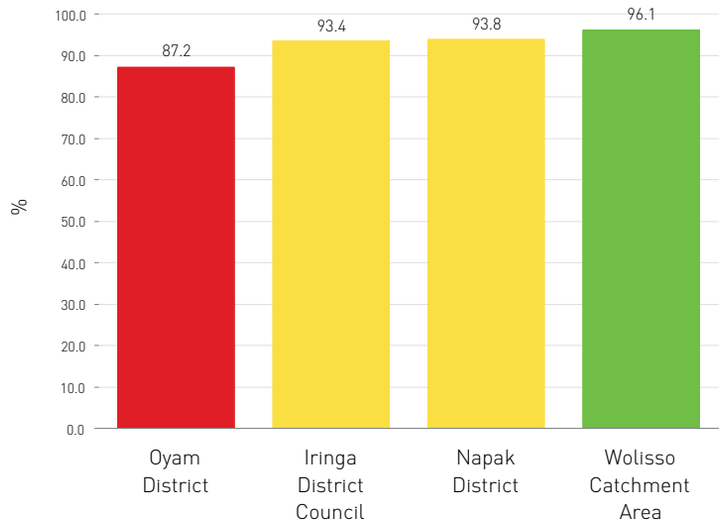


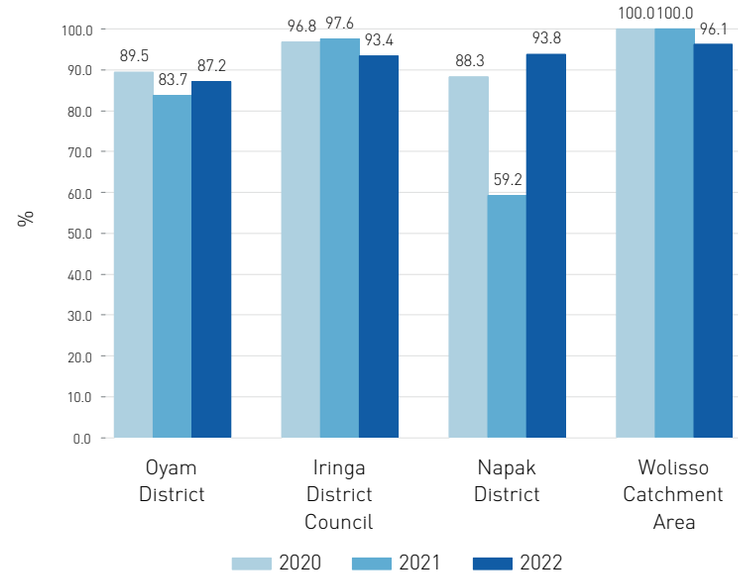
Numerator	Number of children under one year of age who have received third dose of pneumococcal vaccine (x100)
Denominator	Estimated number of infants aged less than 1 year
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic source)

B7.7A Pentavalent vaccine coverage (HIB; diphteria; pertussis, tetanus, HBV)

Computational level : Residence

Immunization is one of the most important public health interventions and a cost effective strategy to control the infectious diseases especially in children. Pentavalent vaccine contains 5 antigens designed to protect against pertussis, tetanus, diphtheria, viral hepatitis B and Haemophilus influenzae type B. The goal was fixed to 98% coverage of the target population based on the guidelines followed in the IRPES.



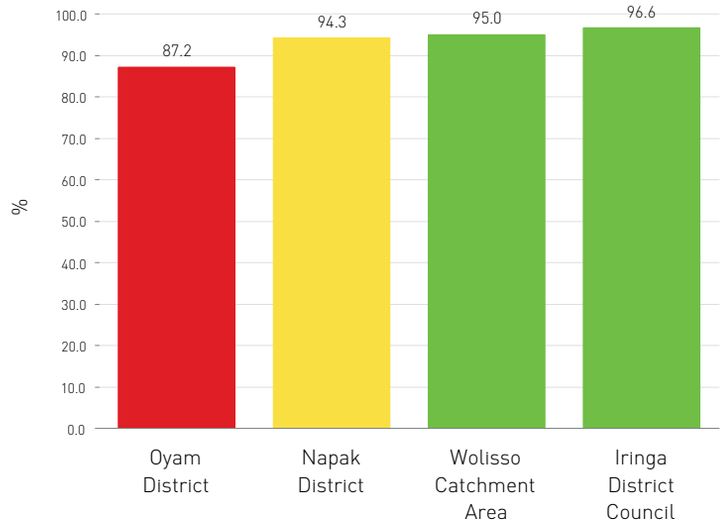


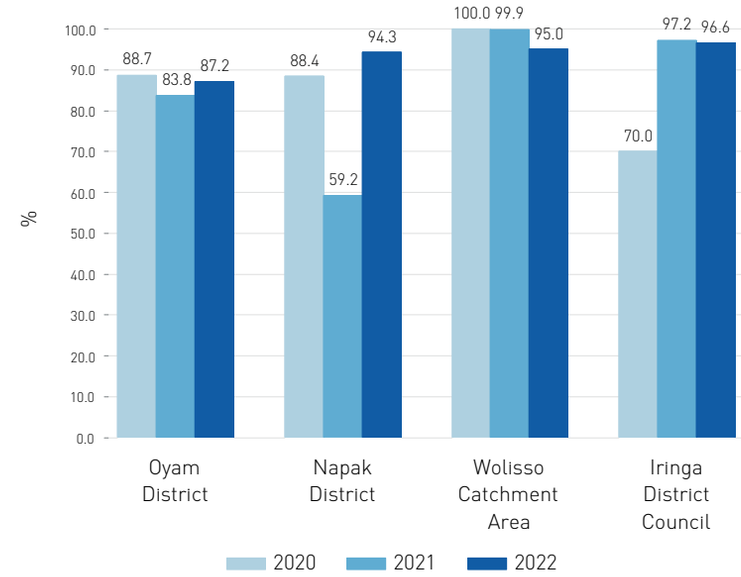
Numerator	Number of children under one year of age who have received third dose of pentavalent vaccine (x100)
Denominator	Estimated number of infants aged less than 1 year
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic source)

B7.7B Vaccination coverage for polio

Computational level : Residence

Polio is a highly infectious viral disease that can cause irreversible paralysis. According to WHO data, in 2013, 84% of infants around the world received 3 doses of polio vaccine. This indicator is expressed as a ratio between the children that received at least three doses of vaccine to prevent polio in the reference year and the overall number of children aged less than one year. The goal was fixed to 98% coverage of the target population based on the guidelines followed in the IRPES.



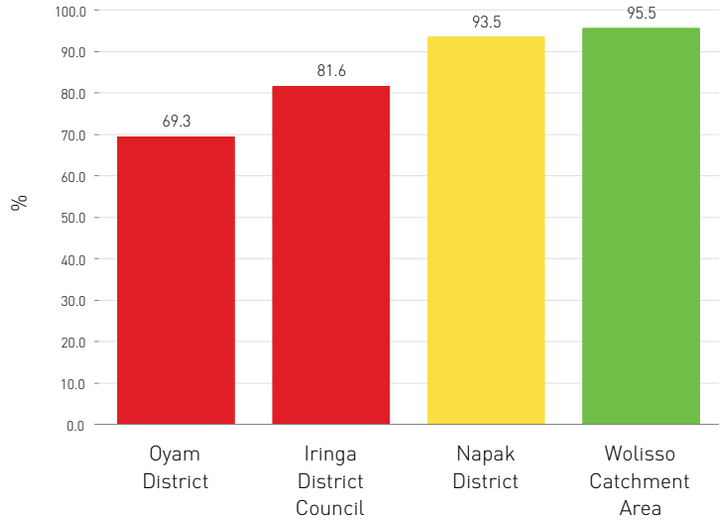


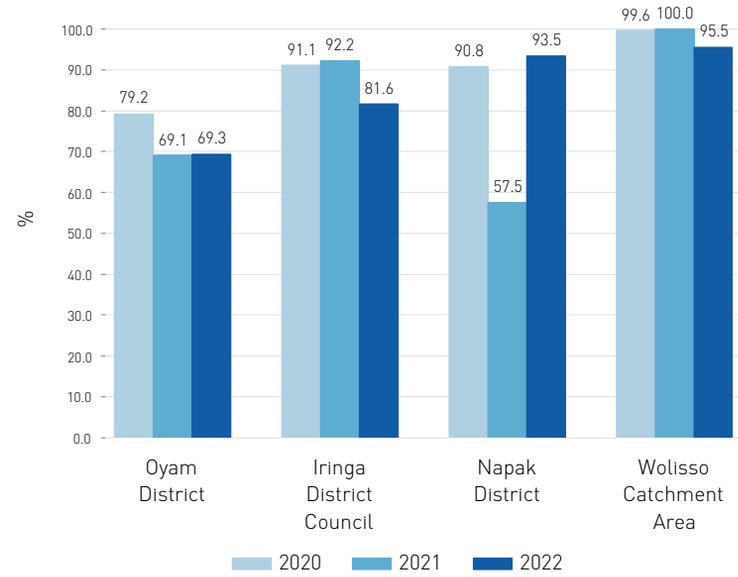
Numerator	Number of surviving infants who have received three doses of oral polio vaccine (x100)
Denominator	Estimated number of infants aged less than 1 year
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic source)

B7.9 Vaccination coverage for rotavirus

Computational level : Residence

Since 2009 the WHO recommends the use of rotavirus vaccines in all national immunization programs and at the end of 2018 rotavirus vaccine was introduced in 101 countries. This indicator is expressed as a ratio between the children that received at least two doses of vaccine to prevent rotavirus in the reference year and the overall number of children aged less than one year. The goal was fixed to 98% coverage of the target population based on the guidelines followed in the IRPES.



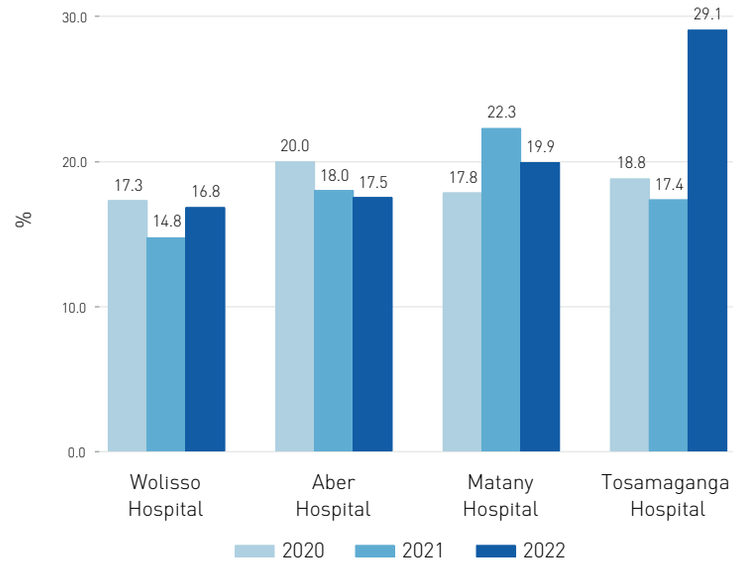


Numerator	Number of children under one year of age who have received 2nd dose of Rotavirus vaccine (x100)
Denominator	Estimated number of infants aged less than 1 year
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic source)

C30.3.1.2 Percentage of hospital admissions for patients resident in other districts

Computational level : Hospital

This measure monitors the percentage of hospital discharges delivered to patients resident in other districts. In LMICs there are many factors that can influence this ratio and, because of the complexity of the interrelatedness of such factors, this indicator is considered as an observation indicator. Attraction can be considered for each specific context and the same conclusion can not be drawn for every setting.

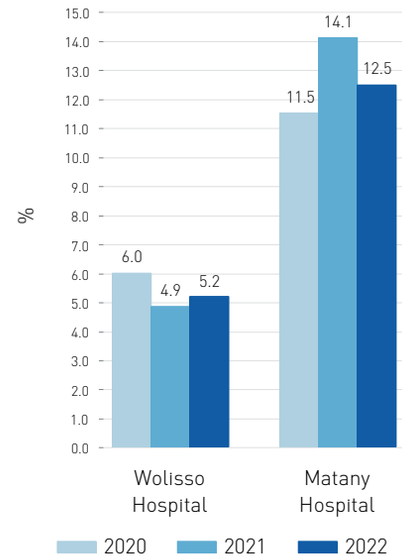


Numerator	Number of admissions for patients resident in other districts (x100)
Denominator	Number of inpatients
Sources	Wolisso hospital's registers (electronic source); Matany hospital's registers (electronic source); Tosamaganga hospital's registers (paper - based source); Aber hospital's registers (paper - based source)/Ugandan eHMIS/DHIS2 (electronic source)

C30.3.2.2 Percentage of hospital admissions for patients resident in other districts - Complex cases

Computational level : Hospital

This measure monitors the percentage of hospital discharges delivered to patients resident in other districts for complex related diseases. In LMICs there are many factors that can influence this ratio and, because of the complexity of the interrelatedness of such factors, this indicator is considered as an observation indicator. Attraction can be considered for each specific context and the same conclusion can not be drawn for every setting. The definition of " Complex and non complex condition" is based on individual experience and judgement considering the setting as well as the selection of diagnosis available in that specific context and present in the diangosis list of local HMIS. In the future, a more accurate codes diagnosis and defintion of complex/non complex with a broader consensus among physicians is envisaged.



Numerator	Number of admissions for patients resident in other districts – complex cases (x100)
Denominator	Number of inpatients
Sources	Wolisso hospital's registers (electronic source); Matany hospital's registers (electronic source)

EFFICIENCY AND SUSTAINABILITY

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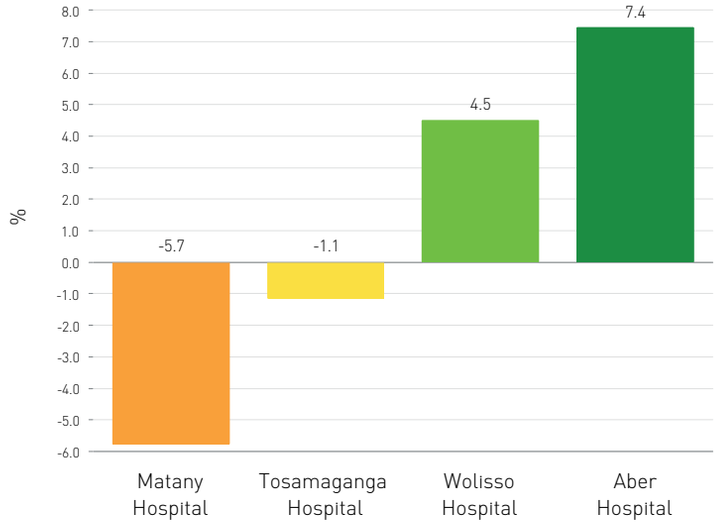
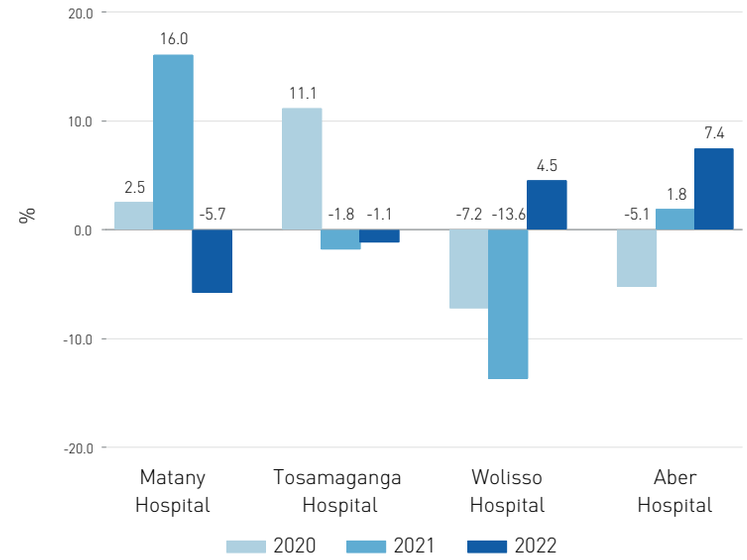
F1.1 General economic equilibrium

Computational level : Hospital

The general economic equilibrium is computed as a ratio between the net income and total revenues as reported in the hospital income statement. The indicator shows the ability of the management to lead hospital activities supporting costs in terms of budget, by considering the effect of all operations. The reference standard was established starting from the indications followed in the PES of the Tuscany Region, Italy.



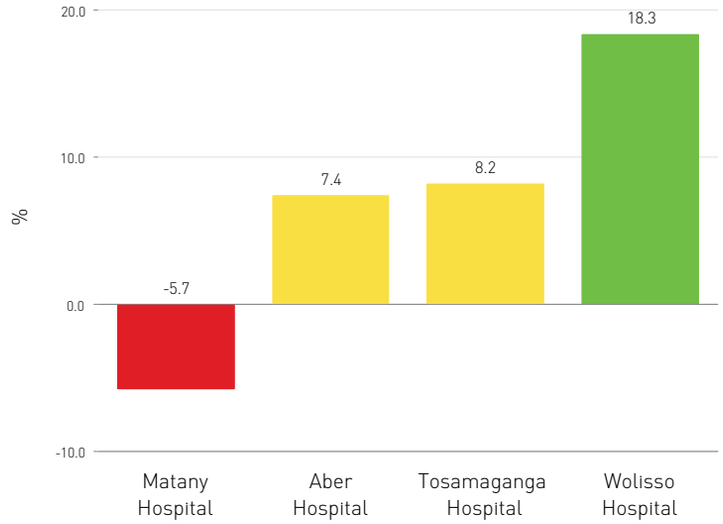


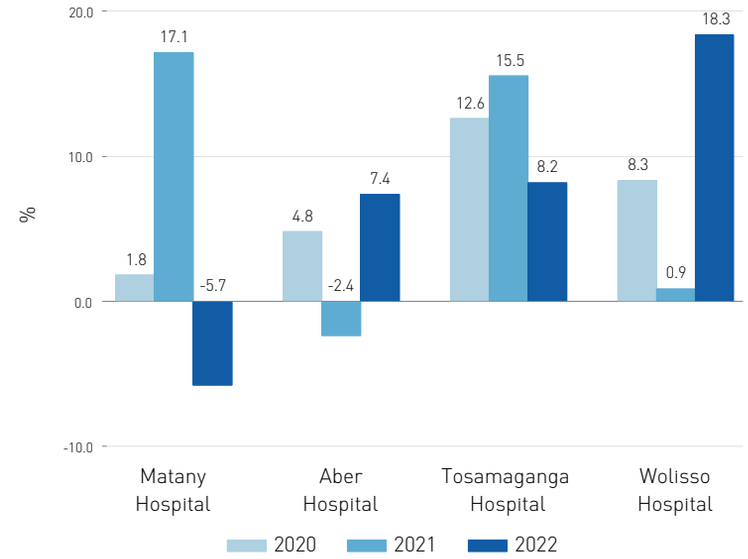
Numerator	Net income (x100)
Denominator	Total revenues
Sources	Hospitals income statements

F1.2 Economic equilibrium of health management

Computational level : Hospital

This indicator shows the hospital's ability to reach the economic balance relative to core operations, excluding either extraordinary factors (capital gains or contingent liabilities), or the positive or negative results based on the other operations. It is the ratio between health net margin (that is the equivalent of the EBITDA), calculated as the difference between revenues and operational costs. This index, widely used at international level, is known as Return on Sales ("ROS"). The reference standard was established starting from the indications followed in the PES of the Tuscany Region, Italy.



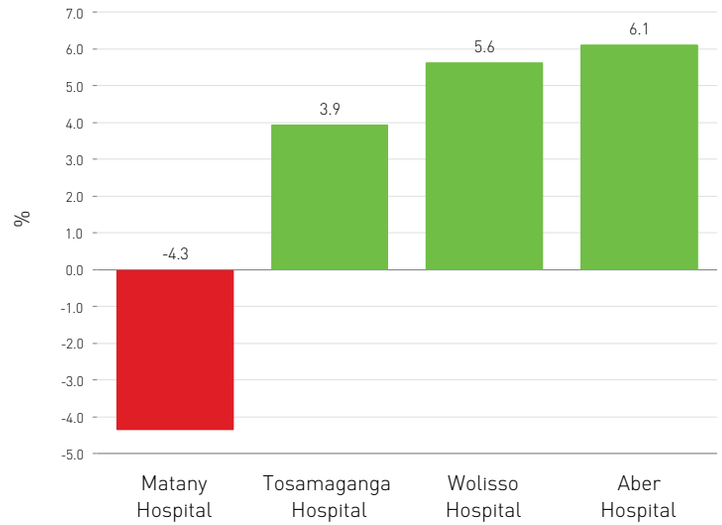


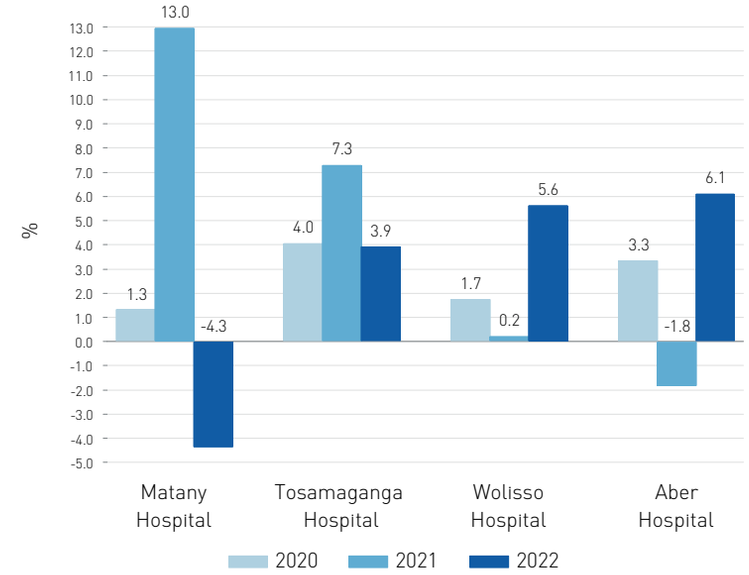
Numerator	Earnings before interest and taxes (EBIT) (x100)
Denominator	Total revenues
Sources	Hospitals income statements

F1.3 Return on Investment (ROI)

Computational level : Hospital

This indicator is calculated as the ratio between the health net margin (difference between revenues and operational costs) and the capital invested. This indicator shows the efficiency of using the capital invested, that is equivalent to the return on investment ("ROI"). In the healthcare sector, in particular, it explains the necessity to guarantee continuously investments and the possibility to provide citizens with excellent services with adequate resources allocation. The reference standard was established starting from the indications followed in the PES of the Tuscany Region, Italy.



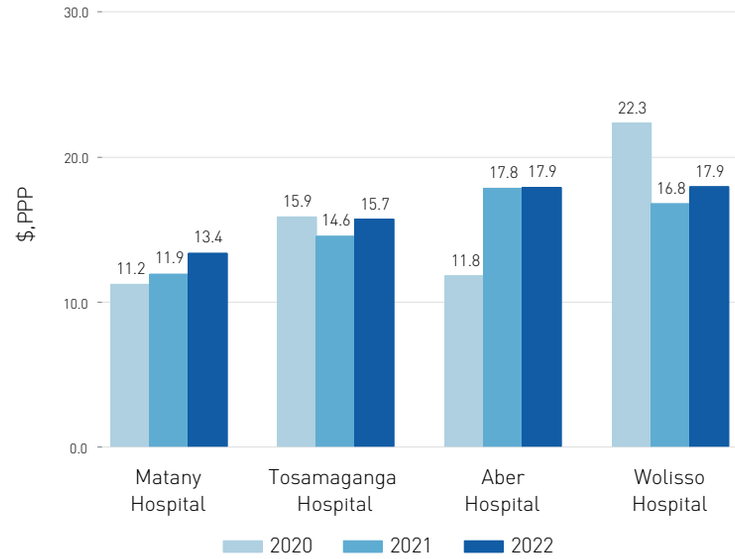


Numerator	Earnings before interest and taxes (EBIT) (x100)
Denominator	Total assets
Sources	Hospitals income statements and Hospitals balance sheets

F17.1A.1 Average cost for Inpatient Day Equivalent, PPP (current international $)

Computational level : Hospital

This indicator measures the average inpatient cost at the hospital level. It is calculated as the total running expenses related to healthcare activities divided by the inpatient day equivalent, expressed as the sum of inpatient days and the number of outpatient visits multiplied by a standard coefficient equal to 4. Secondly, in order to compare values between the different hospitals, all the average costs were adjusted according to the Purchasing Power Parity (PPP) conversion factor provided by the World Bank for each involved country.

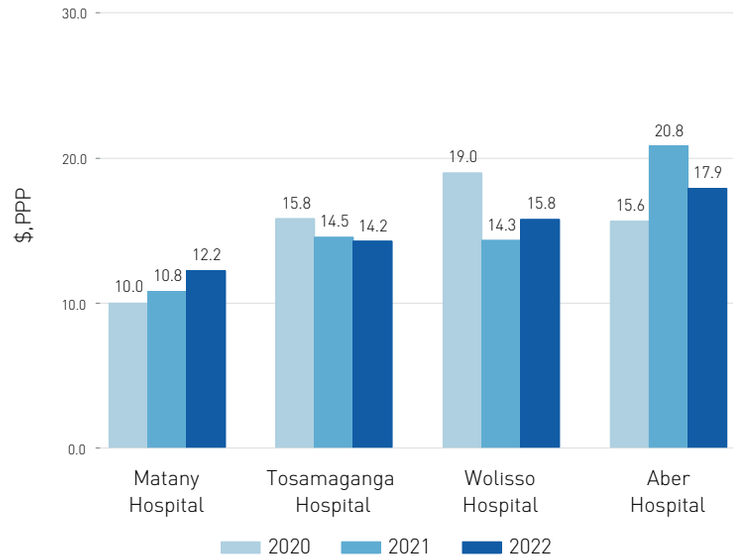


Numerator	Total running costs
Denominator	Inpatient Day Equivalent
Sources	Hospitals income statements and hospitals registers (electronic sources)

F17.1A.2 Average cost for Inpatient Day Equivalent (without D&A), PPP (current international $)

Computational level : Hospital

This indicator measures the average inpatient cost at the hospital level at the net of depreciation and amortization (D&A). It is calculated as the total running expenses related to healthcare activities (excluded D&A) divided by the inpatient day equivalent, expressed as the sum of inpatient days and the number of outpatient visits multiplied by a standard coefficient equal to 4. Secondly, in order to compare values between the different hospitals, all the average costs were adjusted according to the Purchasing Power Parity (PPP) conversion factor provided by the World Bank for each involved country.

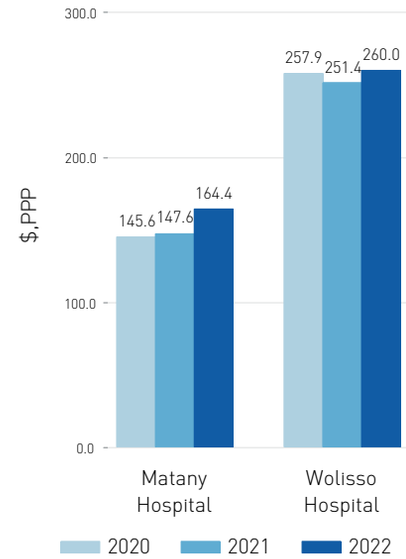


Numerator	Total running costs (excluding D&A expenses)
Denominator	Inpatient Day Equivalent
Sources	Hospitals income statements and hospitals registers (electronic sources)

F17.3.1A Average cost for specialized care per procedure, PPP (current international $)

Computational level : Hospital

This indicator monitors the average inpatient cost at the hospital level for specialized services. It is calculated as the total running expenses related to specialized activities divided by the reference accesses. In order to compare values between the different hospitals, all the average costs were adjusted according to the Purchasing Power Parity (PPP) conversion factor provided by the World Bank for each involved country.

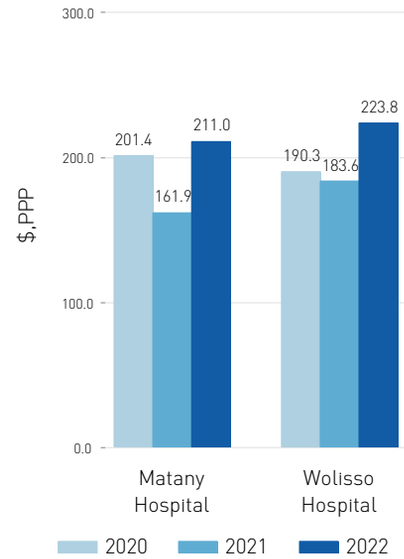


Numerator	Costs related to specialized care
Denominator	N. of accesses
Sources	Hospitals income statements and hospitals registers (electronic sources)

F17.3.1.1 Average cost for specialized care per procedure - medical department, PPP (current international $)

Computational level : Hospital

This indicator monitors the average inpatient cost at the hospital level for specialized services in the medical department. It is calculated as the total running expenses related to specialized activities in the medical department divided by the reference accesses. In order to compare values between the different hospitals, all the average costs were adjusted according to the Purchasing Power Parity (PPP) conversion factor provided by the World Bank for each involved country.

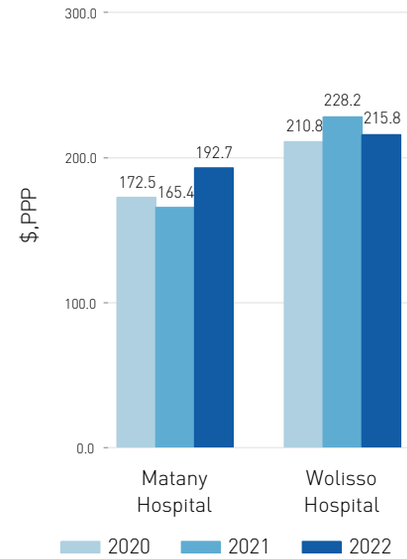


Numerator	Costs related to specialized care (medical department)
Denominator	N. of accesses (medical department)
Sources	Hospitals income statements and hospitals registers (electronic sources)

F17.3.1.3 Average cost for specialized care per procedure - operating theatre, PPP (current international $)

Computational level : Hospital

This indicator monitors the average inpatient cost at the hospital level for specialized services (all major operations) in the operating theatre. It is calculated as the total running expenses related to specialized activities in the operating theatre divided by the reference accesses. In order to compare values between the different hospitals, all the average costs were adjusted according to the Purchasing Power Parity (PPP) conversion factor provided by the World Bank for each involved country.

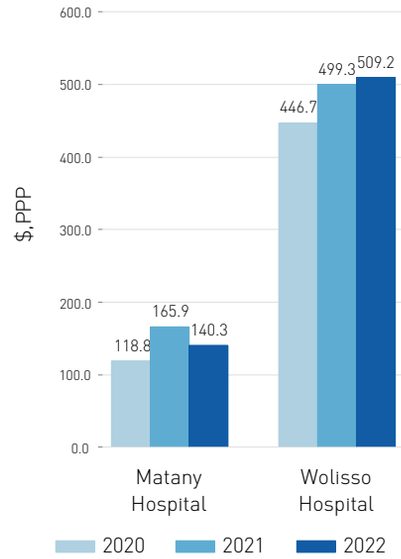


Numerator	Costs related to specialized care (operating theatre)
Denominator	N. of accesses (operating theatre)
Sources	Hospitals income statements and hospitals registers (electronic sources)

F17.3.1.4 Average cost for specialized care per procedure - department of surgery, PPP (current international $)

Computational level : Hospital

This indicator monitors the average inpatient cost at the hospital level for specialized services in the surgery department. It is calculated as the total running expenses related to specialized activities in the surgery department divided by the reference accesses. In order to compare values between the different hospitals, all the average costs were adjusted according to the Purchasing Power Parity (PPP) conversion factor provided by the World Bank for each involved country.

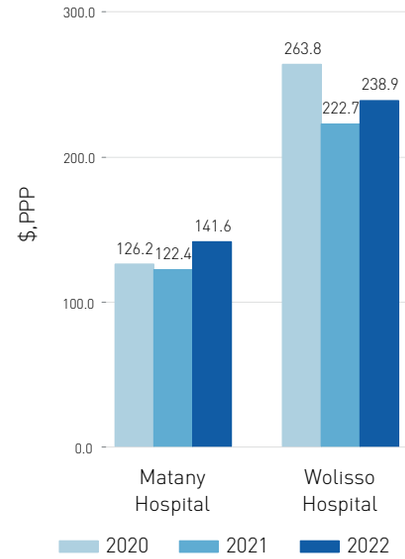


Numerator	Costs related to specialized care (department of surgery)
Denominator	N. of accesses (department of surgery)
Sources	Hospitals income statements and hospitals registers (electronic sources)

F17.3.1.5 Average cost for specialized care per procedure - maternity department, PPP (current international $)

Computational level : Hospital

This indicator monitors the average inpatient cost at the hospital level for specialized services in the maternity department. It is calculated as the total running expenses related to specialized activities in the maternity department divided by the reference accesses. In order to compare values between the different hospitals, all the average costs were adjusted according to the Purchasing Power Parity (PPP) conversion factor provided by the World Bank for each involved country.

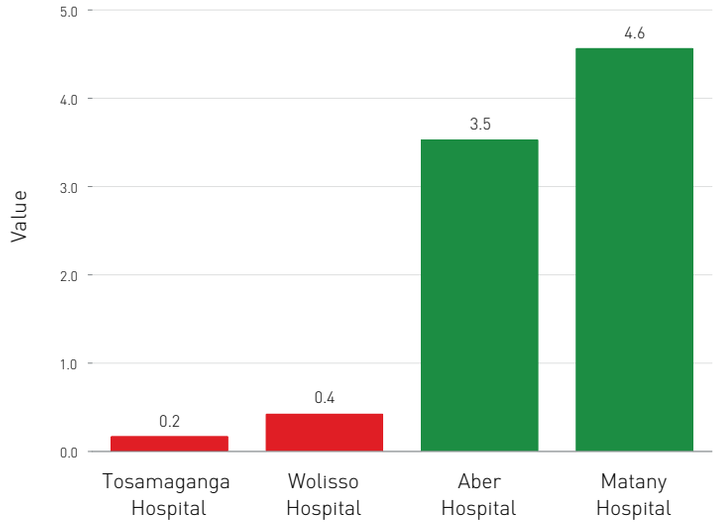


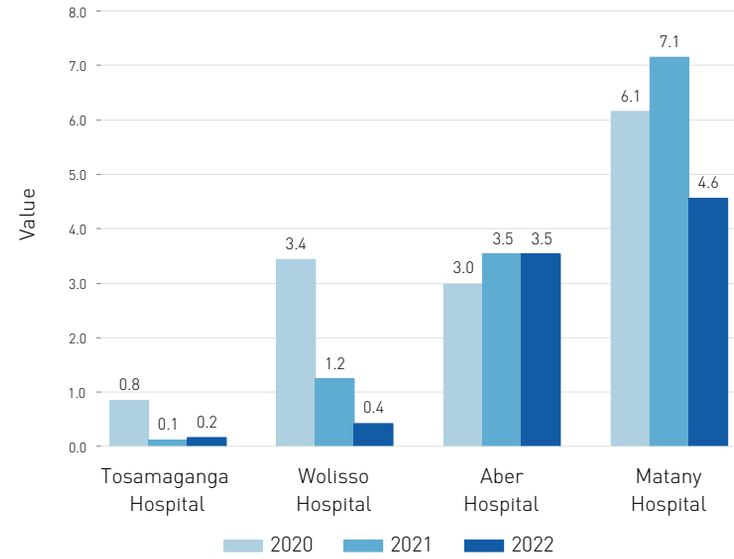
Numerator	Costs related to specialized care (maternity department)
Denominator	N. of accesses (maternity department)
Sources	Hospitals income statements and hospitals registers (electronic sources)

F3.1 Current Ratio

Computational level : Hospital

The current ratio assesses the hospital's solvency, intended as the ability to cope with short-term commitments through ordinary activities, namely short-term credits, cash, and inventories. The sources of data are extracted from the balance sheet. The reference standard was established starting from the indications followed in the PES of the Tuscany Region.



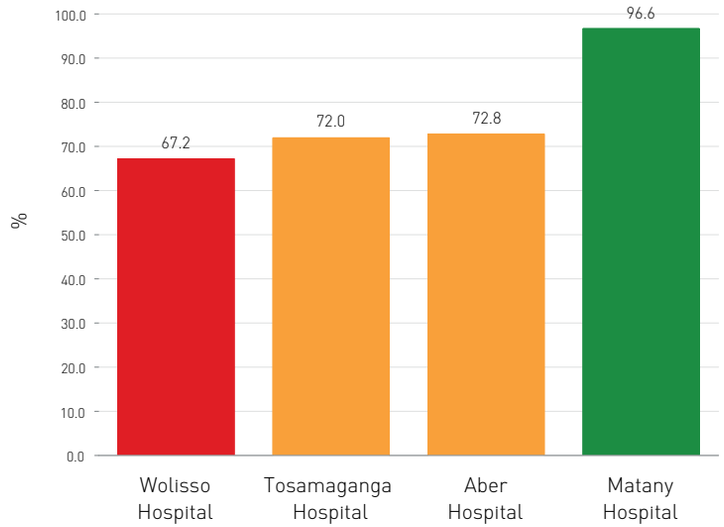


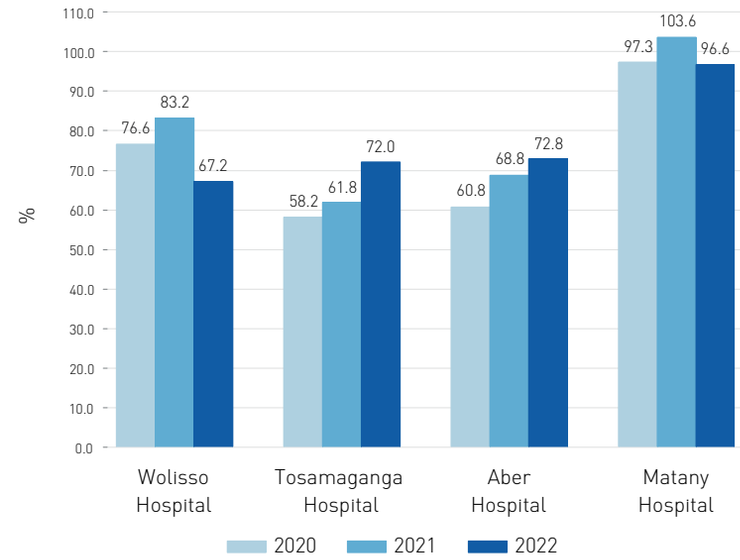
Numerator	Current Assets
Denominator	Current Liabilities
Sources	Hospitals balance sheets

C2A.2 Bed occupancy rate

Computational level : Hospital

The bed occupancy rate ("BOR") indicates the percentage ratio between the effective inpatient days and the total number of possible days of admissions (that are calculated by multiplying the number of beds by the days of the reference year). In an operational perspective, the BOR allows to understand the degree of efficiency by which hospitalizations are planned and managed and the resources used.



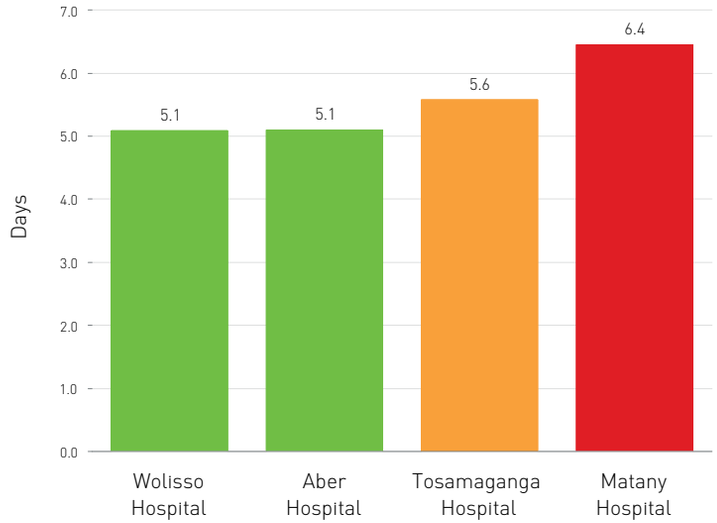


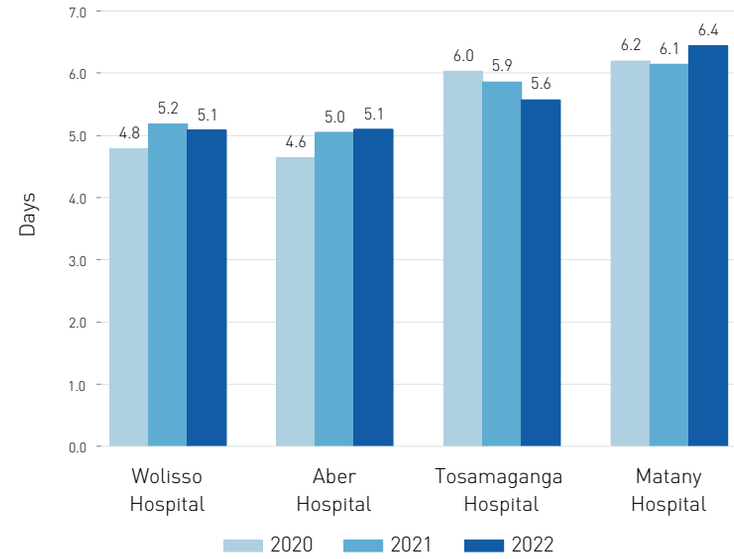
Numerator	Number of inpatient days (x100)
Denominator	Number of inpatient beds x 365 days
Sources	Wolisso hospital's registers (electronic source); Matany hospital's registers (electronic source); Tosamaganga hospital's registers (paper-based source); Ugandan eHMIS/DHIS2 (electronic source)

C2A.3 Average lenght of stay (ALOS) - inpatients

Computational level : Hospital

The average length of stay in hospitals (ALOS) can be considered as an indicator of efficiency. All other factors being equal, a shorter stay will reduce the cost per discharge and shift care from inpatient to less expensive post-acute settings. The ALOS refers to the average number of days that patients spend in hospital and it is expressed as the ratio between number of inpatient days and number of inpatients. The OECD argues that longer stays in hospital could be determined by inefficient hospital processes causing delays in providing treatment; or by errors and poor-quality care or poor care co-ordination that cause patients' need for further treatment or recovery time.





Numerator	Number of inpatient days
Denominator	Number of inpatients (x365)
Sources	Wolisso hospital's registers (electronic source); Matany hospital's registers (electronic source); Tosamaganga hospital's registers (paper-based source); Ugandan eHMIS/DHIS2 (electronic source)

USERS, STAFF AND COMMUNICATION

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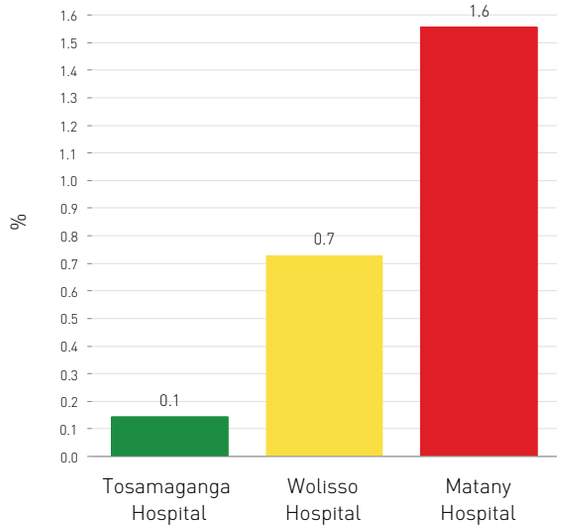
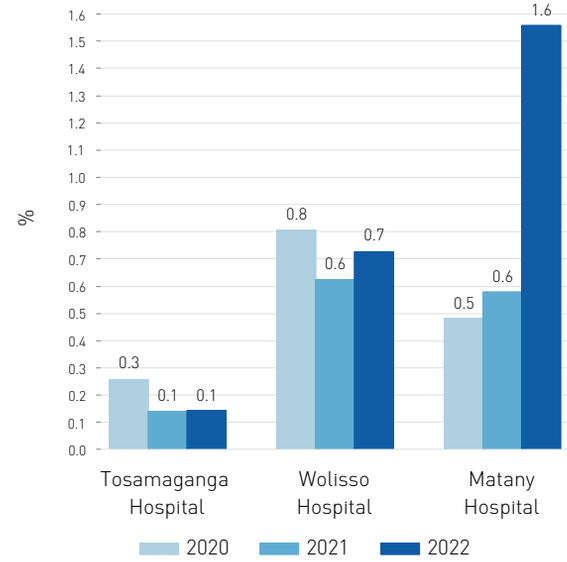
DOCTORS WITH AFRICA CUAMM

D18 Percentage of hospitalized patients leaving against medical advice

Computational level : Hospital

The patient can choose to "abandon" the hospital (the so called "self discharge"). The motivations behind such a decision may vary. This indicator has been included in the performance evaluation system. Since, in the majority of cases, this phenomenon can be considered as a proxy for patient dissatisfaction or it may be associated with social and antropological reasons. The standard was fixed based on the guidelines followed in the IRPES Network.



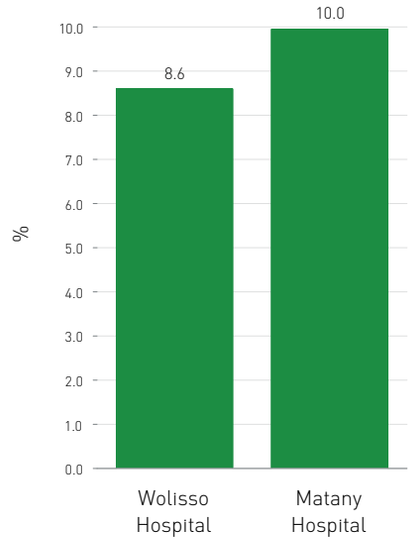


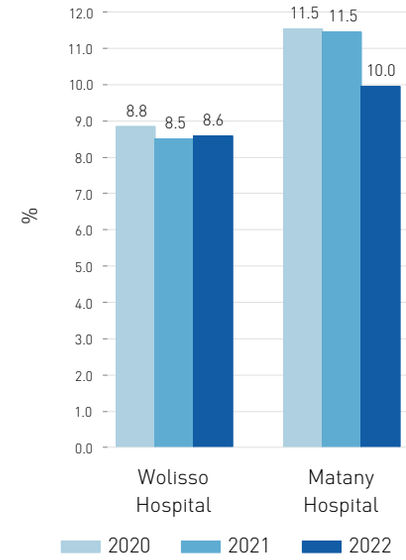
Numerator	Number of hospitalized patients leaving against medical advice (x100)
Denominator	Number of admissions
Sources	Wolisso hospital's registers (electronic source); Matany hospital's registers (electronic source); Tosamaganga hospital's registers (paper - based source); Aber hospital's registers (paper - based source)

E2A Percentage of staff absence

Computational level : Hospital

This indicator monitors the percentage of staff absence and it is considered a proxy of the organizational climate. The indicator is computed as the ratio between the days of absence for public holidays, annual leave, maternal leave and paternity leave, sick leave and the number of working days net of taken holidays. The standard was fixed based on the guidelines followed in the IRPES Network.



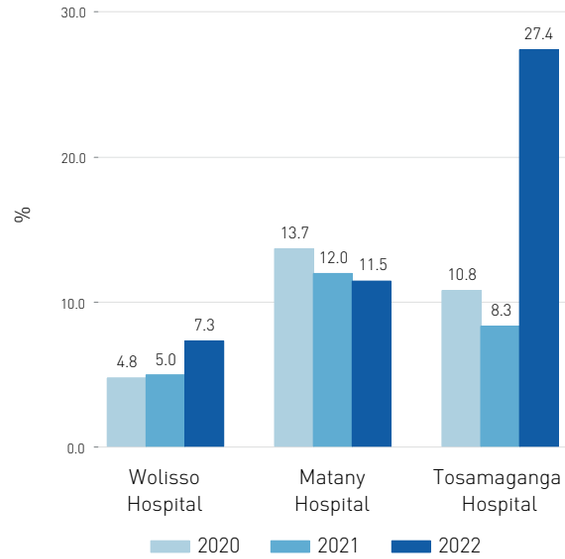


Numerator	Number of days of absence (x100)
Denominator	N. of working days (net of taken holidays) of all hospital's employees
Sources	Hospitals registers - human resources department (electronic sources)

E3 Employee annual turnover rate

Computational level : Hospital

The employee turnover rate measures the number of employees who leave the hospital during the year over the average number of personnel employed in the same year.

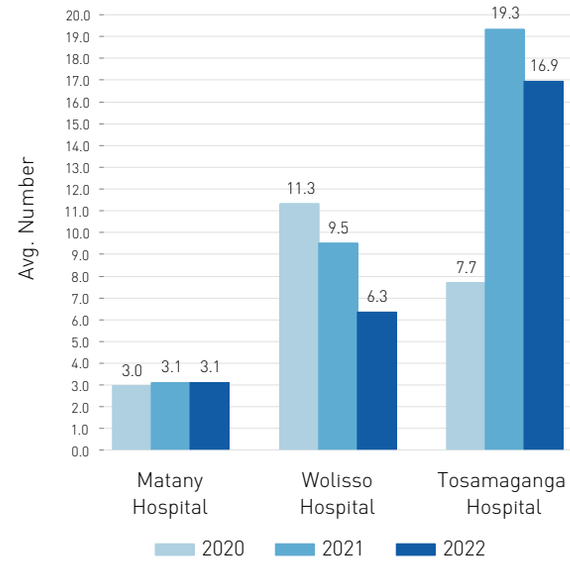


Numerator	Number of employees who left during the year (x100)
Denominator	(Beginning + ending number of employees)/2
Sources	Hospitals registers - human resources department (electronic and paper-based sources)

E4 Average number of training hours per employee

Computational level : Hospital

This indicator illustrates the number of training hours delivered to all hospital's employees. We include internal/external and voluntary/mandatory training programs.



Numerator	Number of training hours delivered to all hospital's employees
Denominator	Number of hospital's employees
Sources	Hospitals registers - human resources department (electronic and paper-based sources)

EMERGENCY CARE

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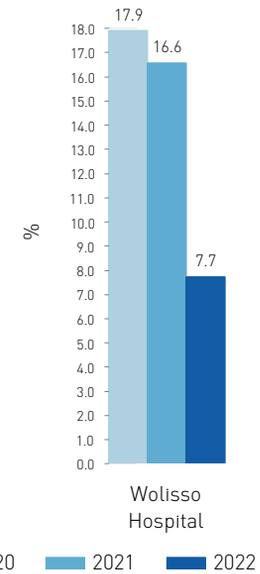
C16.10A Percentage of repeated admissions in Emergency Department within 96 hours

Computational level : Hospital

Repeated admissions in Emergency Department within a short period of time may be due to ineffective and poor quality care by the Emergency Department. This indicator monitors the percentage of patients who are re-admitted in the Emergency Department (ED) within 96 hours since the last access, on the total number of accesses to the ED registered.



Numerator	Repeated admissions in Emergency Department within 96 hours (x100)
Denominator	Number of admissions in Emergency Department (for any reason)
Sources	Hospital's register - emergency department (electronic source)

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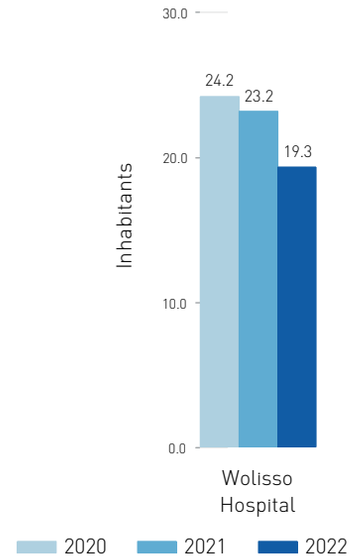
C8B.1A Emergency room access rate, per 1.000 residents

Computational level : Hospital

Admission rates to Emergency Department (ED) indicate the ratio between the overall number of accesses to ED of resident population and the residence population. This indicator does not monitor the activites of the ED but it is an indicator that indirectly measures the efficacy to respond to demand for care in the reference area.

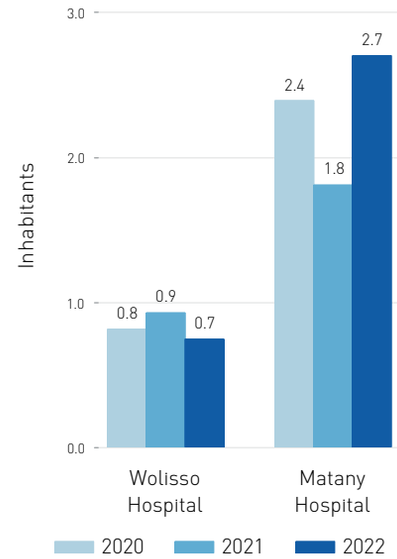


Numerator	Number of admissions in ED (x1.000)
Denominator	Estimated resident population
Sources	Hospital's emergency department register and Ethiopian HMIS/DHIS2 (electronic sources)

C17.1.4.8A Hospitalization rate for hospital admissions over 15 days, per 1.000 residents

Computational level : Hospital

This indicator illustrates the rate of admissions lasting more than 15 days. It is calculated based on the reference population and not on the number of admissions. This indicator can be linked with the inefficiency or lack of district services that should take in charge patients in the post-acute phase. There may also be other contextual factors, also with reference to population groups, affecting this indicator that is not therefore evaluated.

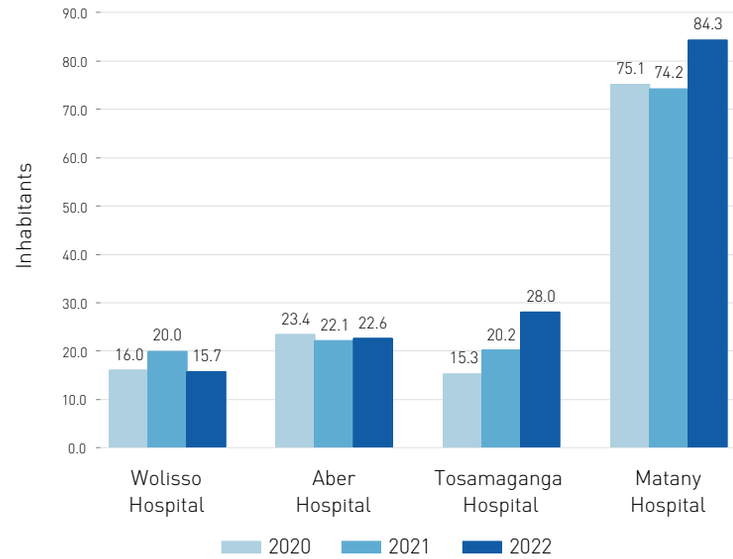


Numerator	Number of discharged patients with hospital admissions over 15 days (x1.000)
Denominator	Estimated resident population (> 1 year)
Sources	Wolisso hospital's registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany hospital's registers and Ugandan eHMIS/DHIS2 (electronic sources)

C1.1A Hospitalization rate, per 1.000 residents

Computational level : Hospital

The role of hospitals has progressively changed from being the place of reference for any kind of health problems to organizations able to provide care in response to acute and complex problems. Excessive recourse to hospitals implies an inappropriate use of resources. In LMICs hospitalization rates may vary according to a number of factors that can be interrelated and coxtext-specific. The denominator consists of the admissions of residence in that specific reference area.

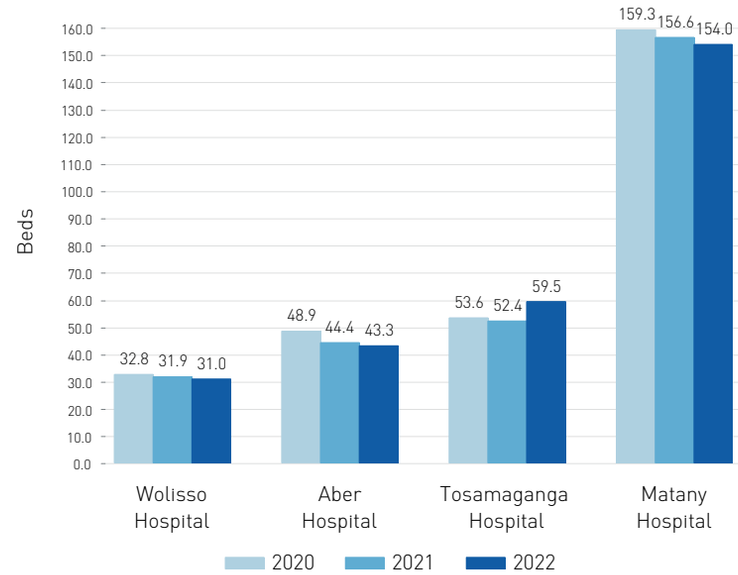


Numerator	Number of hospital admissions (x 1.000)
Denominator	Estimated resident population
Sources	Wolisso hospital's registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany hospital's registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga hospital's registers (paper-based source) and Tanzanian DHIS2 (electronic source); Ugandan eHMIS/DHIS2 (electronic source)

C1.1B Number of hospital beds per 100.000 residents

Computational level : Hospital

This indicator shows the number of hospital beds per 100.000 residents, according to the reference population. It provides a measure of the resources availability to deliver inpatients services, in terms of number of beds that are maintained, staffed and immediately available for use.

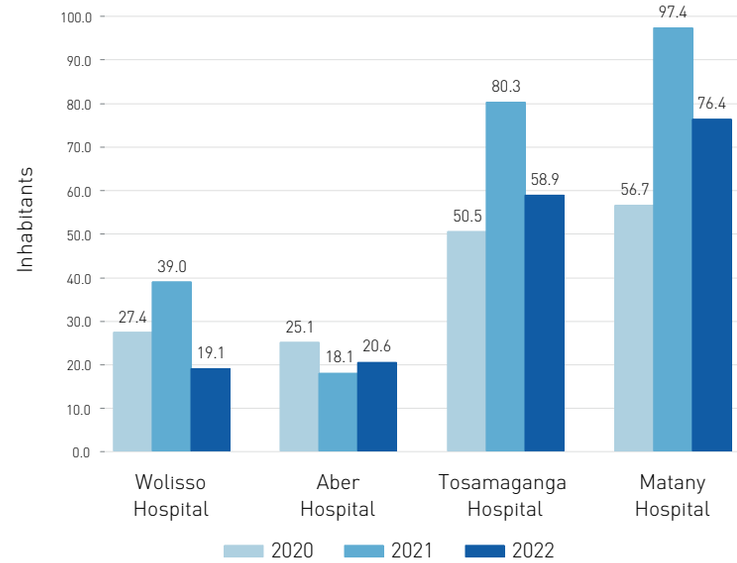


Numerator	Number of hospital beds (x 100.000)
Denominator	Estimated resident population
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C11A.1.1A Heart failure hospitalization rate per 100.000 residents (>15 years)

Computational level : Hospital

In LMICs, as in HICs, the prevalence of heart failure has gradually increased. The challenge is to treat heart failures at residence level. Indeed, more accurate assessment of primary care appropriateness and effectiveness requires the addition of further information regarding the complexity of the cases considered. The denominator consists of the estimation of residents in that specific reference area. It is standardized by 100.000 inhabitants from the reference area.

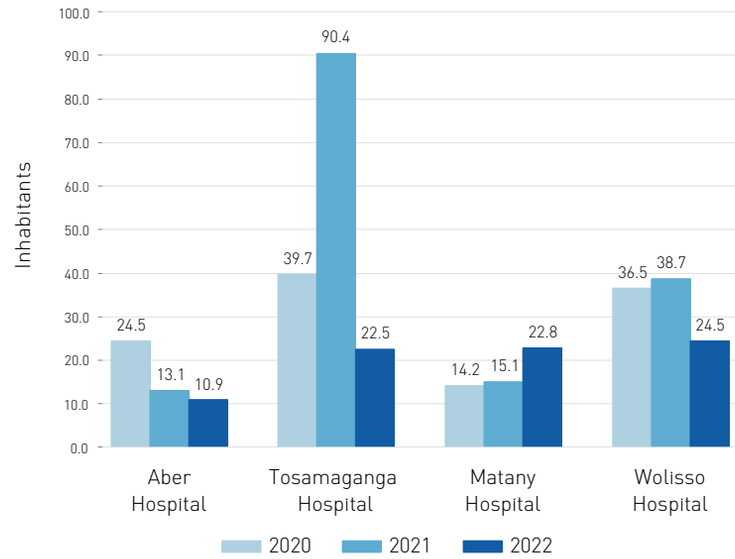


Numerator	Number of hospitalizations for heart failure per 100.000 residents aged >15 years
Denominator	Estimated number of residents (>15 years)
Sources	Wolisso hospital's registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany hospital's registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga hospital's registers (paper-based source) and Tanzanian DHIS2 (electronic source); Ugandan eHMIS/DHIS2 (electronic source)

C11A.2.1A Diabetes hospitalization rate per 100.000 residents (>15 years)

Computational level : Hospital

Diabetes is a chronic disease that can give rise to complications in the long-term, if not properly and constantly controlled. Decompensated diabetes may require hospitalization. Integrated disease management combining prevention, diagnosis and treatment is fundamental to avoid worsening of clinical conditions and subsequent hospitalization. The diabetes hospitalization rate is used as a proxy to monitor primary care organizational appropriateness. The denominator consists of the estimation of residents in that specific reference area. It is standardized by 100.000 inhabitants from the reference area.

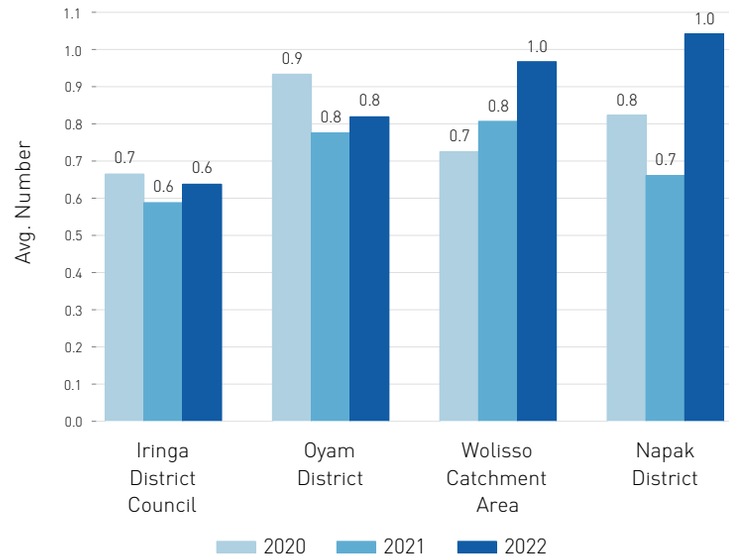


Numerator	Number of hospitalizations for diabetes per 100.000 residents aged >15 years
Denominator	Estimated number of residents (>15 years)
Sources	Wolisso hospital's registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany hospital's registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga hospital's registers (paper-based source) and Tanzanian DHIS2 (electronic source); Ugandan eHMIS/DHIS2 (electronic source)

C13.2A Average number of outpatient consults, per resident

Computational level : Residence

This indicator is an observation indicator. It measures the average number of consultations in the reference area, including all health centers and the respective hospital. It offers an overview of the number of visits provided in the reference area over the three years.

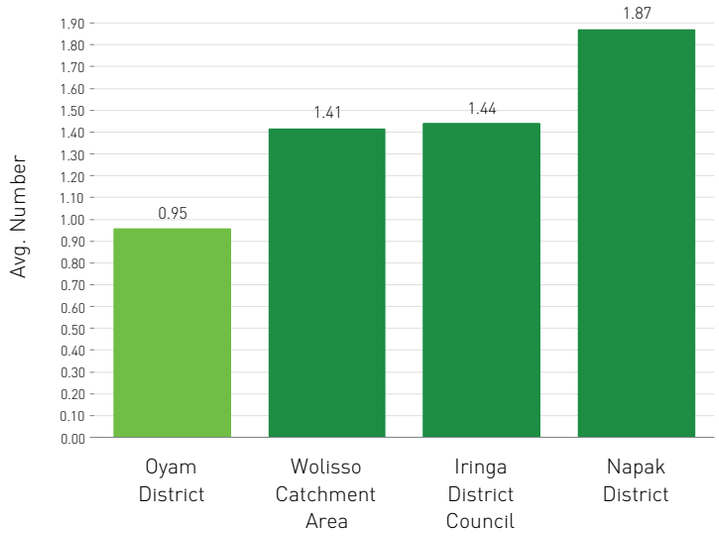


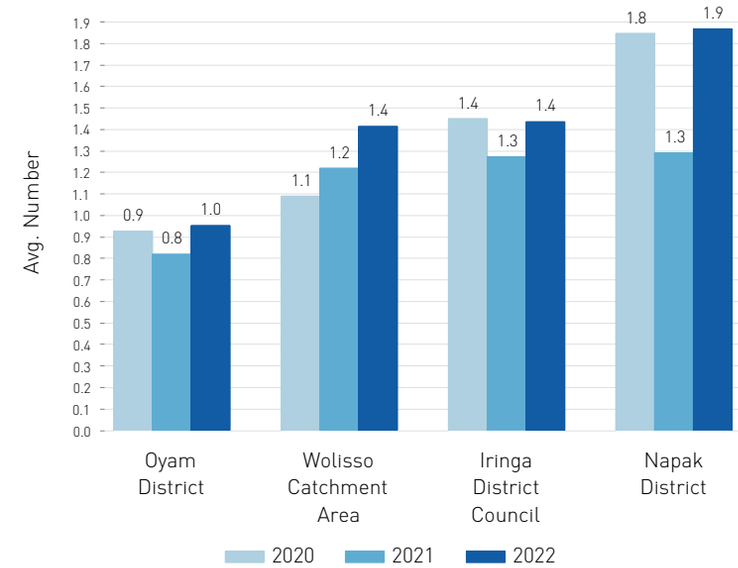
Numerator	Number of outpatient consults
Denominator	Estimated resident population
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C13.2A.12 Average number of outpatient consults (<5 years), per resident

Computational level : Residence

This indicator measures and evaluates the average number of consultations of children aged less than 5 years. It offers an overview of the consultation rate provided in the reference area, including all health centers and the respective hospital.
The target adopted was fixed according to the United Nations Office for the Coordination of Humanitarian Affairs (OCHA).



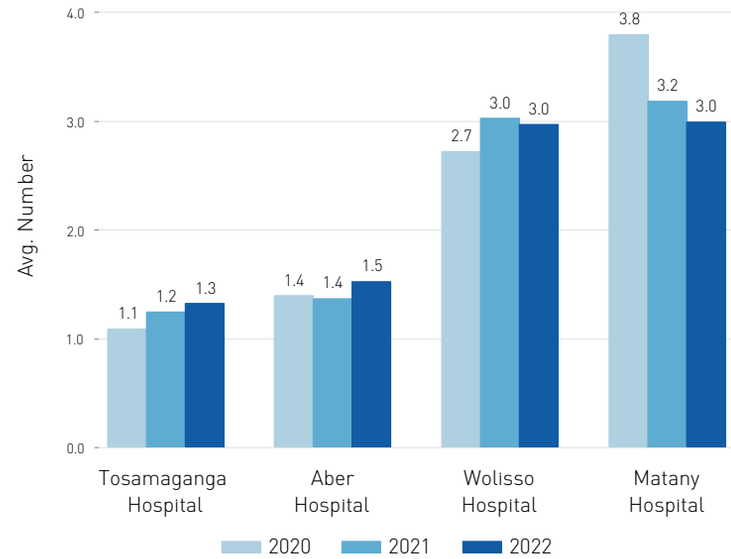


Numerator	Number of outpatient consults for residents aged <5 years
Denominator	Estimated number of residents (<5 years)
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C13.2B Average number of diagnostic procedures per patient (lab tests)

Computational level : Hospital

This indicator is an observation indicator. It measures the average number of lab tests in the hospital insisting on the reference area. It includes examinations for HIV, malaria and tuberculosis. It offers an overview of the number of lab tests provided in the reference hospital over the three years.

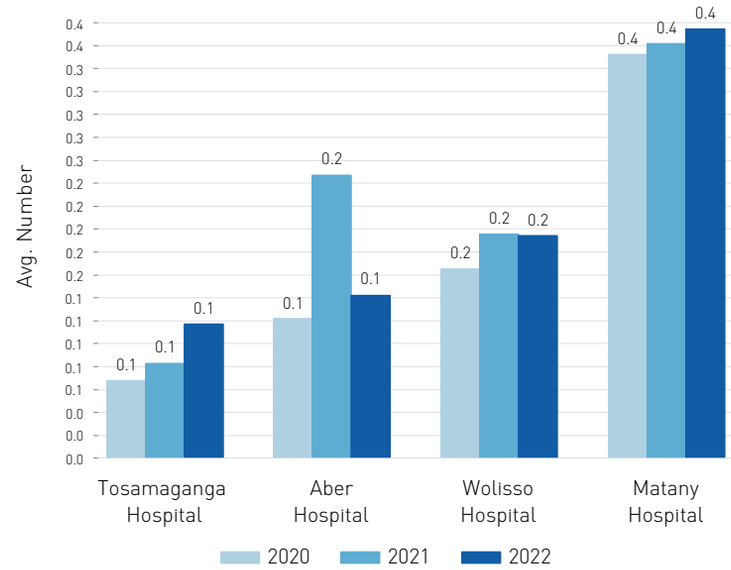


Numerator	Number of diagnostic procedures (laboratory tests)
Denominator	Number of patient discharges (OPD and IPD)
Sources	Hospitals registers - laboratory departments (electronic/paper-based); Wolisso hospital's registers (electronic source); Matany hospital's registers (electronic source); Tosamaganga hospital's registers (paper-based source); Ugandan eHMIS/DHIS2 (electronic source)

C13.2C Average number of diagnostic procedures per patient (imaging)

Computational level : Hospital

This indicator is an observation indicator. It measures the average number of diagnostic imaging in the hospital insisting on the reference area. It includes both ultrasounds and x-rays examinations. It offers an overview of the number of diagnostic imaging provided in the reference hospital over the three years.

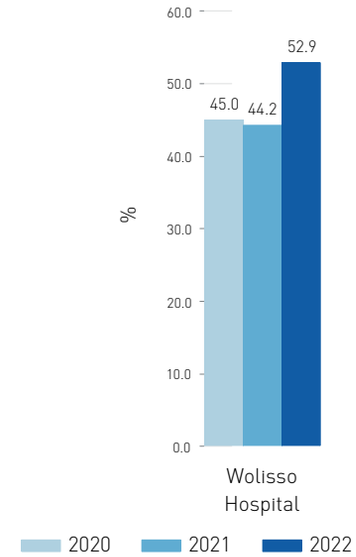


Numerator	Number of diagnostic procedures (imaging procedures)
Denominator	Number of patient discharges (OPD and IPD)
Sources	Hospitals registers - diagnostic departments(electronic/paper-based); Wolisso hospital's registers (electronic source); Matany hospital's registers (electronic source); Tosamaganga hospital's registers (paper-based source); Ugandan eHMIS/DHIS2 (electronic source)

C16.4 Percentage of admissions in Emergency Department hospitalised within 8 hours

Computational level : Hospital

The indicator allows evaluation of the effectiveness of the hospital as a whole, monitoring promptness in the management of patients who are referred by the Emergency Department (ED) for hospitalization or other medical exams. The indicator measures the percentage of patients with a length of stay in the ED of less than 8 hours, from the moment of the triage to discharge or transfer to another deparment.

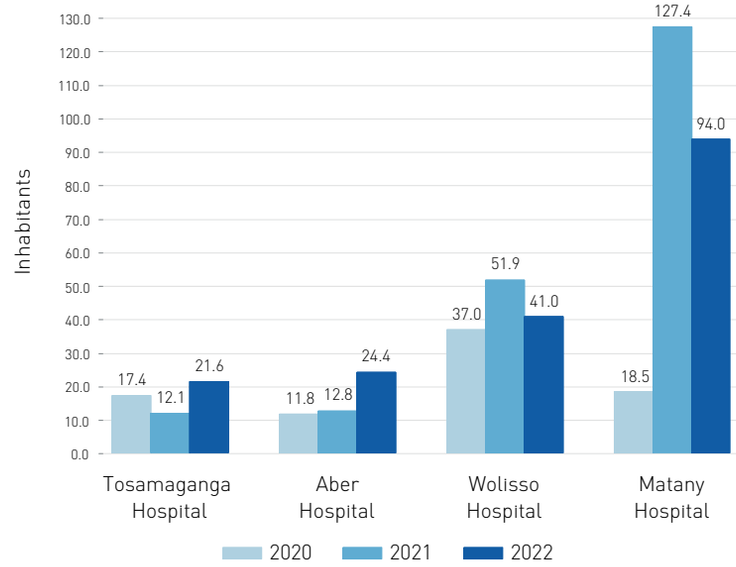


Numerator	Number of patients referred to one clinical or surgical hospital' department with a length of stay in ED of less than 8 hours (x100)
Denominator	Total number of patients referred to one clinical or surgical hospital' department from ED
Sources	Hospital's register - emergency department and hospital's registers (electronic sources)

C18.9A Hysterectomy hospitalization rate, per 100.000 residents (women > 15 years)

Computational level : Hospital

Hysterectomy is the surgical removal of the uterus and cervix. This indicator measures the percentage of women aged more than 15 years who underwent hysterectomy procedure for both benign and malignant cases. It is standardized by 100.000 inhabitants from the reference area.*



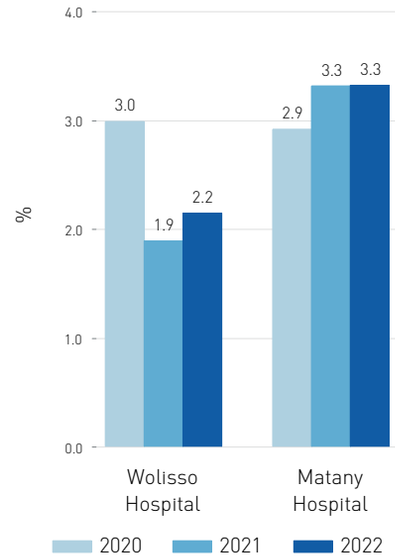
Numerator	**Number of hospitalizations for hysterectomy procedures (>15 years) (x100.000)**
Denominator	**Estimated number of resident women aged > 15 years**
Sources	**Hospitals registers - surgical department (paper - based sources) and Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)**

*Please note that the substantial increase in the value of the indicator for Matany hospital, for the year 2021, is due to the organisation of surgical camps during the reporting year.

C5.1E.A Repeated hospital admissions for any causes

Computational level : Hospital

If appropriately treated, the patient should not be re-admitted before one month of discharge. The indicator measures the number of patients readmitted to a hospital within 30 days of the previous admission for any cases. The causes of re-admission can be due to individual and contextual factors and the indicator is not evaluated.

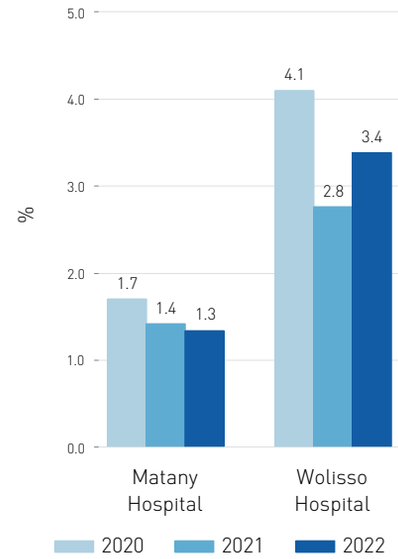


Numerator	Number of repeated hospital admissions within 30 days for any causes (x100)
Denominator	Number of admissions
Sources	Hospitals registers (electronic sources)

C5.1E.A1 Repeated hospital admissions for any causes (medical department)

Computational level : Hospital

The general indicator of repeated hospital admissions for any causes is here focused on medical problems. The indicator measures the number of patients readmitted to a hospital within 30 days of the previous admission for any causes in medical department. If appropriately treated in this department, the patient should not be re-admitted before one month of discharge.

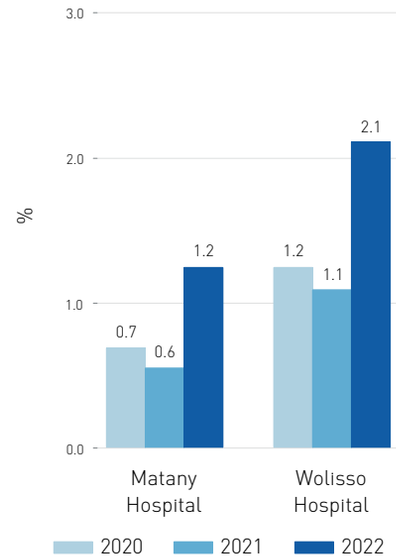


Numerator	Number of repeated hospital admissions within 30 days for any causes (medical department) (x100)
Denominator	Number of admissions (medical department)
Sources	Hospitals registers - medical department (electronic sources)

C5.1E.A2 Repeated hospital admissions for any causes (surgical department)

Computational level : Hospital

The general indicator of repeated hospital admissions for any causes is here focused on surgical problems. The indicator measures the number of patients readmitted to a hospital within 30 days of the previous admission for any causes in surgical department. If appropriately treated in this department, the patient should not be re-admitted before one month of discharge.

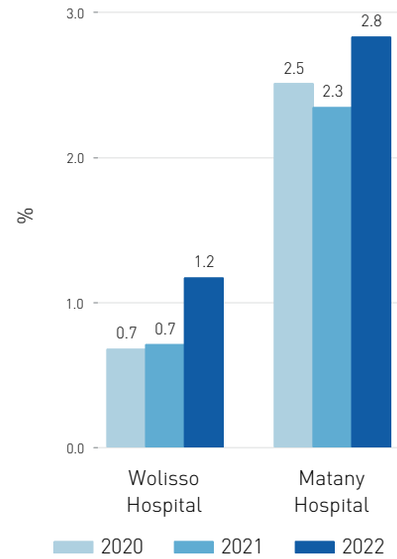


Numerator	Number of repeated hospital admissions within 30 days for any causes (surgical department) (x100)
Denominator	Number of admissions (surgical department)
Sources	Hospitals registers - surgical department (electronic sources)

C5.1E.A3 Repeated hospital admissions for any causes (maternity department)

Computational level : Hospital

The general indicator of repeated hospital admissions for any causes is here focused on maternal health problems. The indicator measures the number of patients readmitted to a hospital within 30 days of the previous admission for any causes in maternity department. If appropriately treated in this department, the patient should not be re-admitted before one month of discharge.

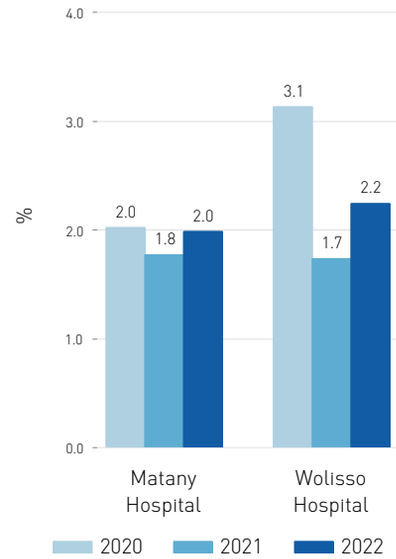


Numerator	Number of repeated hospital admissions within 30 days for any causes (maternity department) (x100)
Denominator	Number of admissions (maternity department)
Sources	Hospitals registers - maternity department (electronic sources)

C6.4.1A Infection rate due to surgical wounds (emergency and elective surgery procedures)

Computational level : Hospital

Surgical wound infection is a major subgroup of all nosocomial infections that are considered a serious public health risk and drain of resources from the health care system. The indicator monitors the infection rate due to surgical wounds assessed after at least 5 days from the surgical intervention.

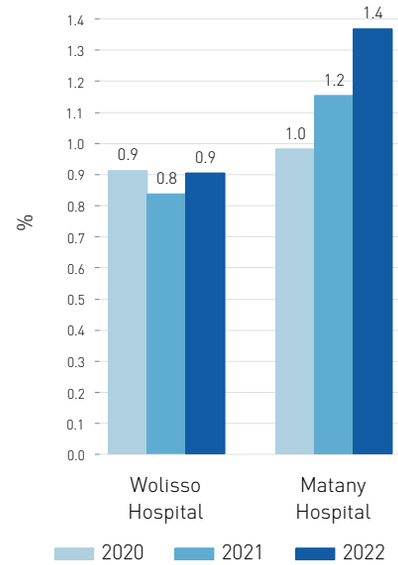


Numerator	Number of wound infections in patients assessed after at least 5 inpatient days (x100)
Denominator	Number of surgical patients with at least 5 inpatient days
Sources	Hospitals registers - surgical department (electronic sources)

C6.4.2A Inpatient mortality rate in low-mortality cases

Computational level : Hospital

Inpatient mortality rate can be considered as a predictor of the quality of care, but it requires adjustment for severity of illness. This indicator illustrates the inpatient mortality rate due to low-mortality causes. The definition of low-mortality cases was defined internally according to the hospital coding system. In the future a more accurate codes diagnosis and defintion of complex/non complex with a broader consensus among physicians is envisaged.

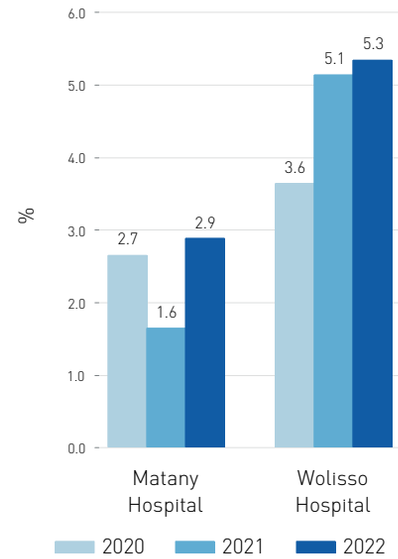


Numerator	Number of patients died with low complex cases mortality (x100)
Denominator	Number of discharged patients with low complex cases mortality
Sources	Hospitals registers - surgical department (electronic sources)

C6.4.2B Inpatient mortality rate in high-mortality cases

Computational level : Hospital

Inpatient mortality rate can be considered as a predictor of the quality of care, but it requires adjustment for severity of illness. This indicator illustrates the inpatient mortality rate due to high-mortality causes. The definition of high-mortality cases was defined internally according to the hospital coding systems and individual experience and judgement. In the future a more accurate codes diagnosis and defintion of complex/non complex with a broader consensus among physicians is envisaged.



Numerator	Number of patients died with high complex cases mortality (x100)
Denominator	Number of discharged patients with high complex cases
Sources	Hospitals registers - surgical department (electronic sources)

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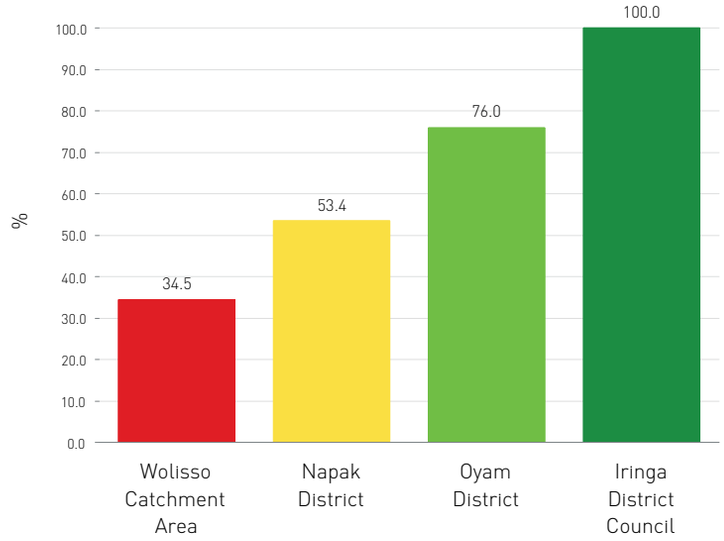
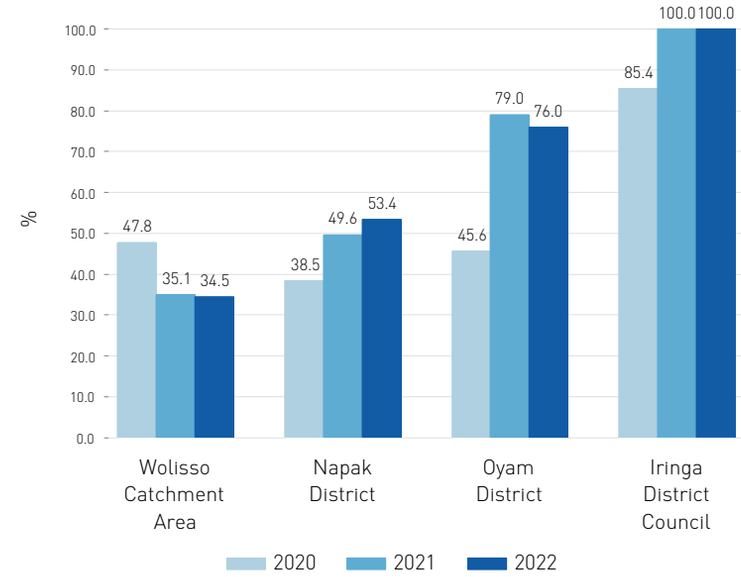
C7.28 Proportion of pregnant women who attended ANC 4+ during the current pregnancy

Computational level : Residence

The indicator measures the number of pregnant women who attended more than four antenatal care (ANC) visits in the reference area with respect to the total number of expected deliveries in the reference year. The rationale of this indicator comes from the guidelines of the WHO that recommended a minimum of four antenatal care contacts (actually eight) to reduce perinatal mortality and improve women's experience of care. It was also used as an indicator for assessing maternal health in the context of the Millennium Development Goals (MDGs). The target adopted was fixed taking into account the WHO standards and the average value of this indicator among African countries.



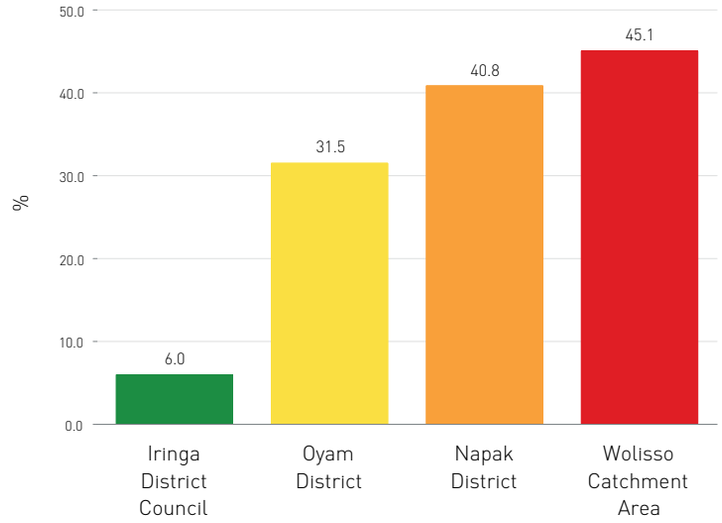


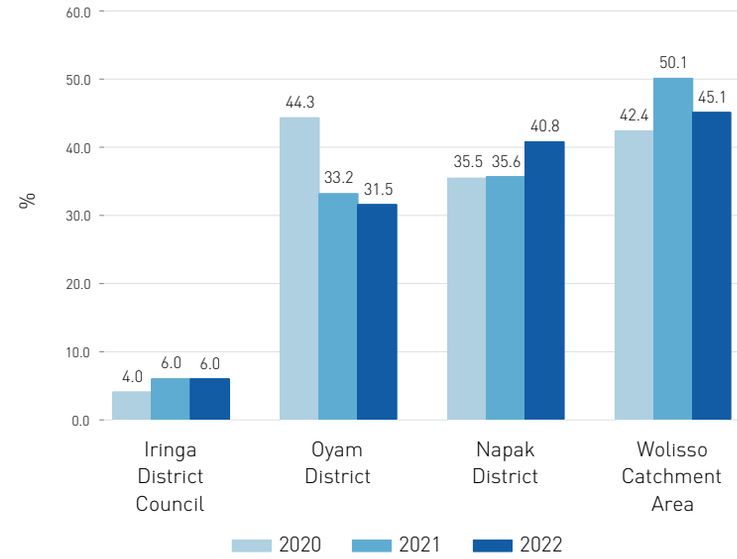
Numerator	Number of pregnant women who attended more than four ANC (x100)
Denominator	Total number of expected pregnancies
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7.29 Drop out Rate of ANC1 to ANC4

Computational level : Residence

This indicator provides a view of the drop-out rate from ANC visits, namely the rate of pregnant women who did not attend up to 4 ANC visits in the reference area. The indicator contributes to capture pregnant women attending at least one ANC visit with a live birth within the reference area who were unable to attend the recommended four ANC visits and to point out the missed opportunity for health services to retain pregnant women within maternal care pathway. The target adopted was fixed taking into account the WHO standards and the average value of this indicator among African countries.



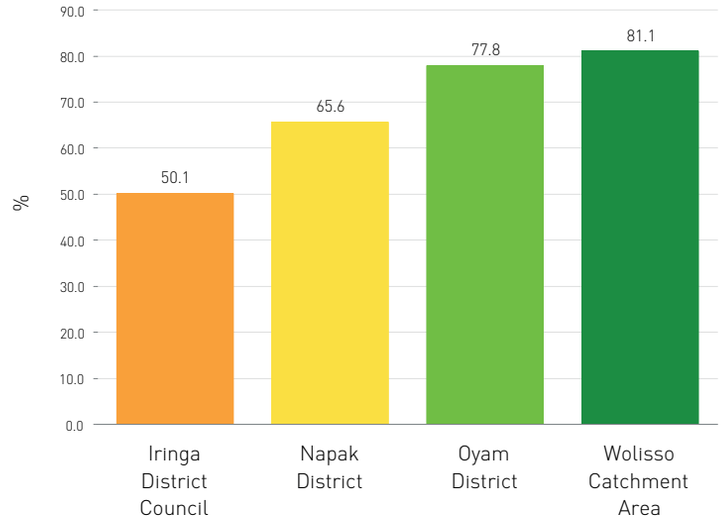


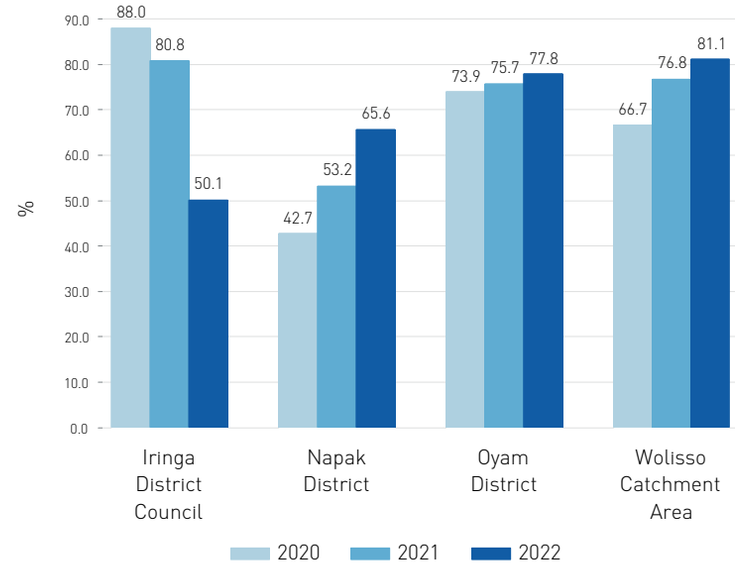
Numerator	(ANC visits I -ANC visits IV) (x100)
Denominator	ANC visits I
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7.30 Proportion of pregnant women tested for syphilis

Computational level : Residence

Syphilis testing and treatment during pregnancy can effectively prevent adverse pregnancy outcomes related to syphilis. The WHO recommends the syphilis testing of all pregnant women within the basic ANC package in order to eliminate mother-to-child transmission of syphilis. This indicator shows the percentage of pregnant women who are tested for syphilis in the reference area. It is considered as a proxy of the quality of care because the output depends on the correct functioning of a wide series of healthcare activities. The target adopted was fixed taking into account the WHO standards and the average value of this indicator among African countries.



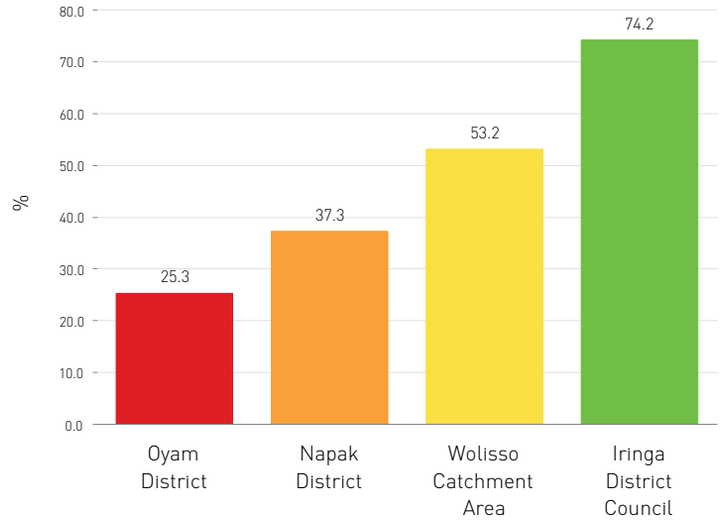


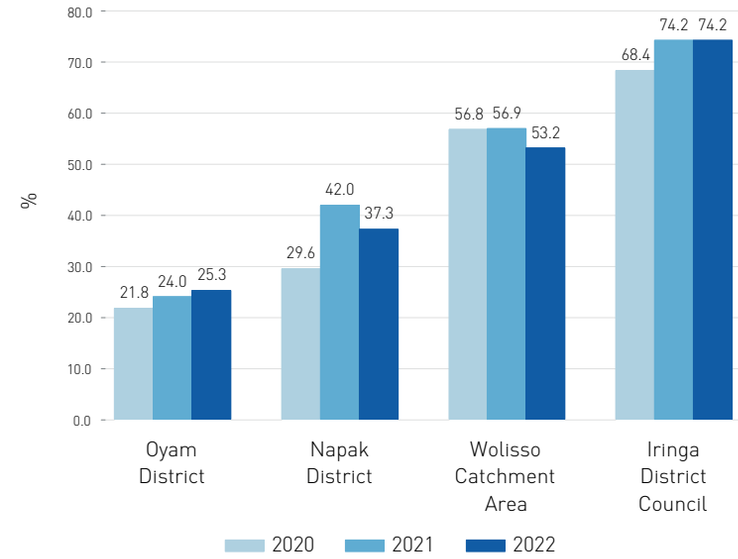
Numerator	Number of pregnant women tested for syphilis (x100)
Denominator	Total number of pregnant mothers who attended at least one ANC visit
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7.32 Proportion of women with early PNC

Computational level : Residence

The postnatal period is critical to the health and survival of a mother and her newborn, especially during the hours and days after birth. According to the WHO, lack of care in this vulnerable time period may result into death or disability as well as missed opportunities to promote healthy behaviours, affecting women, newborns, and children. This indicator illustrates the percentage of women who received at least one postnatal care visit within 7 days from childbirth with respect to the total number of expected deliveries in the reference year. The target adopted was fixed taking into account the WHO standards and the average value of this indicator among African countries.



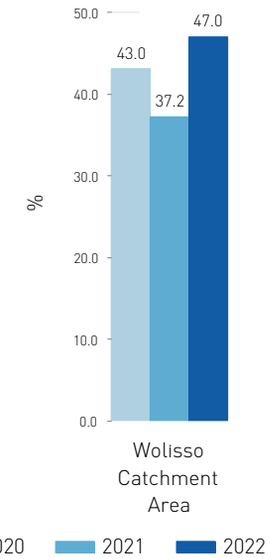


Numerator	Number of postnatal visits within 7 days of delivery (x 100)
Denominator	Number of expected deliveries
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7.31 Percentage of avoidable referrals

Computational level : Residence

The referral system is particularly important in pregnancy care and childbirth for providing access to emergency obstetric care. However, the referral system should be used appropriately. The indicator is an observation indicator and it expresses the percentage of referrals from the residential health centers to the reference hospital that were evaluated as avoidable by a public health officer. This indicator is available only in the Wolisso area because these processes are monitored only there.

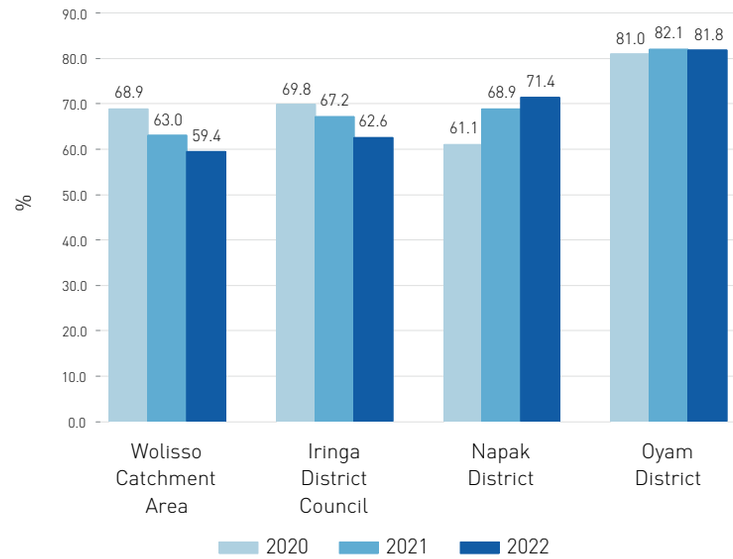


Numerator	Number of avoidable referrals (x100)
Denominator	Total number of referrals
Sources	Hospital's registers - public health department (paper-based source)

C7.33A Percentage of deliveries in lower level units

Computational level : Residence

This indicator expresses the percentage of deliveries which were performed at residential level and not in the hospital with respect to the total number of effective deliveries. It helps to monitor the proportion of deliveries that are managed in health centers at residence level. It is an observation indicator.

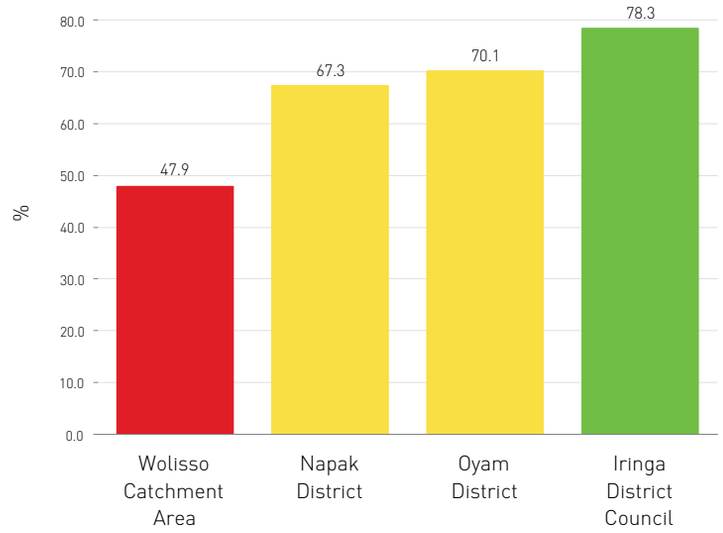


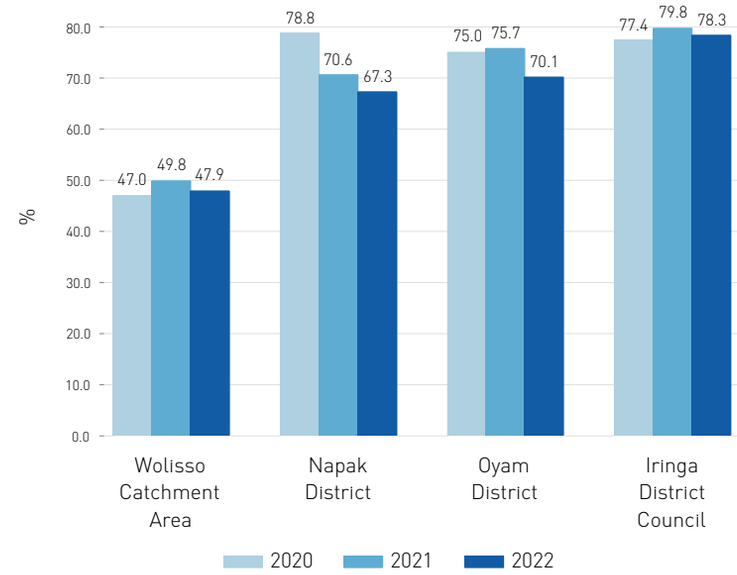
Numerator	Number of deliveries performed in HCs (x100)
Denominator	Total number of deliveries
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7.34 Percentage of supervised deliveries in the catchment area (deliveries in the reference hospital and in the district lower level units)

Computational level : Residence

Supervised delivery has the potential to improve birth outcomes for both women and newborns since it should ensure safe birth, by reducing both actual and potential complications. This indicator shows the percentage of supervised deliveries performed by skilled health professionals both in the reference hospital and in lower level units with respect to the total number of expected deliveries in the reference area. The target adopted was fixed taking into account the WHO standards and the average value of this indicator among African countries.



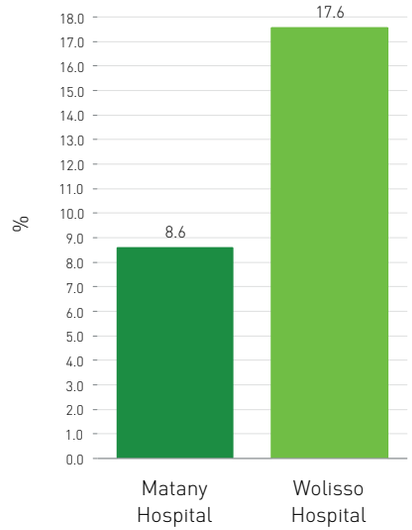


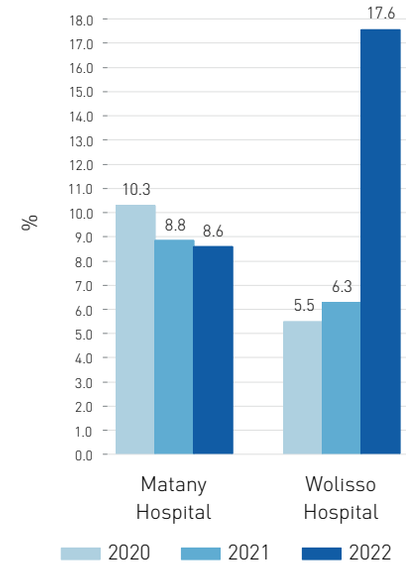
Numerator	Number of total assisted deliveries (x100)
Denominator	Number of expected deliveries
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7.1 Percentage of C-section deliveries (NTSV)

Computational level : Hospital

The American College of Gynaecologists and Obstetricians suggests using a specific indicator that limits the analysis to the NTSV case-mix (Nulliparous, Term, Singleton, Vertex - NTSV), in order to compare hospital performance. This measure is also required by the Joint Commission. The percentage of caesarean section NTSV deliveries represents the most appropriate indicator to evaluate the quality of maternal care pathways delivered at hospital level.



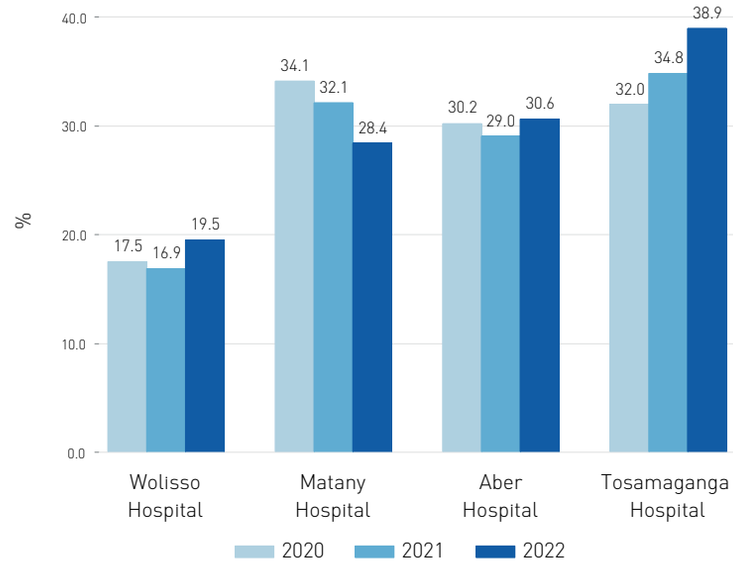


Numerator	Number of C-section NTSV deliveries (x100)
Denominator	Number of NTSV deliveries
Sources	Hospitals registers - maternity department (electronic sources)

C7.1.1 Percentage of caesareans

Computational level : Hospital

Although data comparison of caesarean sections among hospitals is more critical when including deliveries due to the variability between different groups of pregnant women, it is important to monitor the use of a caesarean section. This indicator expresses the raw percentage of deliveries performed with a caesarean section (all cases included). To evaluate this indicator, the target proposed by the WHO was adopted, which is fixed equal to 15%. The same target is currently in use in the IRPES Network as well.

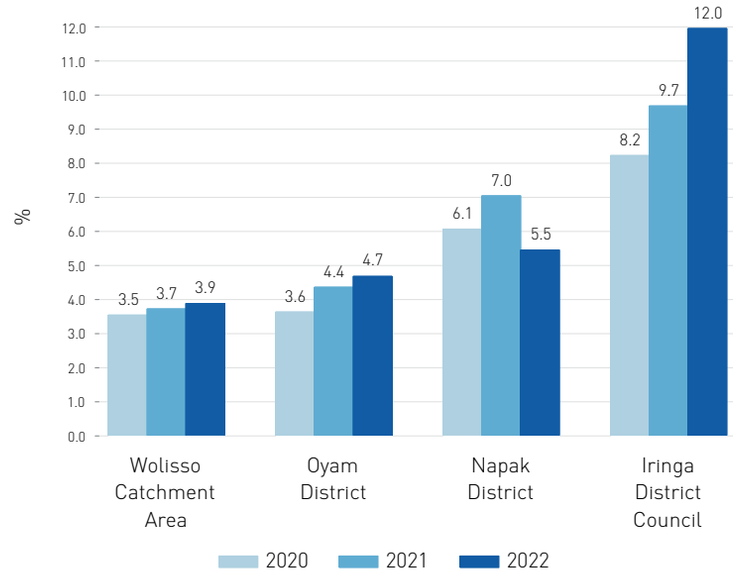


Numerator	Number of caesareans (x100)
Denominator	Number of deliveries
Sources	Hospitals registers - maternity department (paper-based and electronic sources)

C7.1.1A Percentage of caesareans over expected deliveries

Computational level : Residence

The indicator presented here completes the battery of indicators on caesarean section interventions, offering an overview no longer restricted to hospital level but extended to health district level. Since this year is the first year of introduction of the indicator, in order to carry out a more thorough check of the quality of the data in the years to come, the indicator is presented as an observation indicator.

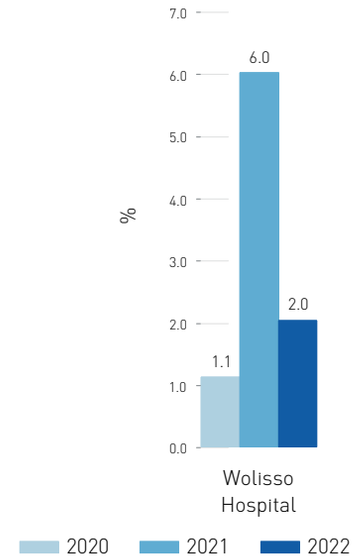


Numerator	Number of caesareans in the health district (x100)
Denominator	Number of expected deliveries
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7.1.4 Percentage of elective caesareans (NTSV)

Computational level : Hospital

Considering the progressive rise of cesarean section rate in many countries, which is not associated with improvement in perinatal mortality or morbidity, the rationale of the indicator is to monitor the elective cesareans among the NTSV deliveries. This indicator refers to group 2b of the Robson Classification: NTSV deliveries (Nulliparous, Term, Singleton, Vertex - NTSV) with elective C-section. It measures the percentage of elective C-sections out of the total of NTSV deliveries and it is an observation indicator.

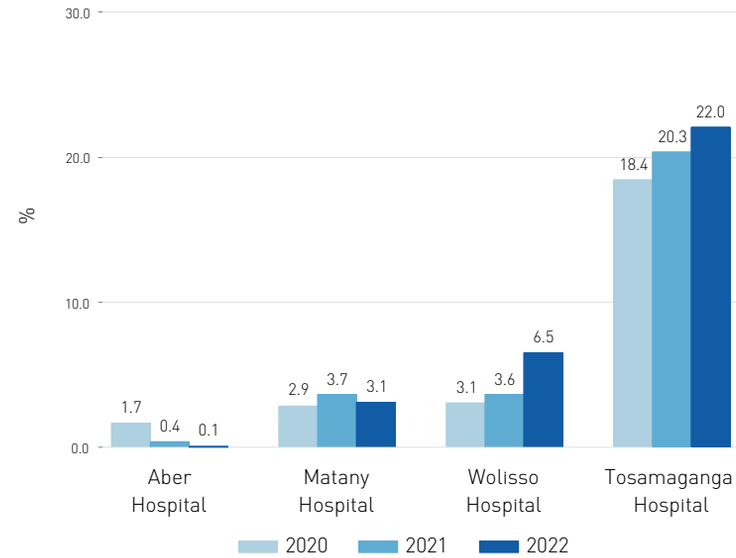


Numerator	Number of elective C-section NTSV deliveries (x100)
Denominator	Number of NTSV deliveries
Sources	Hospitals registers - maternity department (electronic sources)

C7.1.4A Percentage of elective caesareans

Computational level : Hospital

Considering the progressive rise of cesarean section rate in many countries, which is not associated with improvement in perinatal mortality or morbidity, the rationale of the indicator is to monitor the elective caesareans. This indicator expresses the percentage of deliveries performed with an elective caesarean section (all cases included). It is an observation indicator.

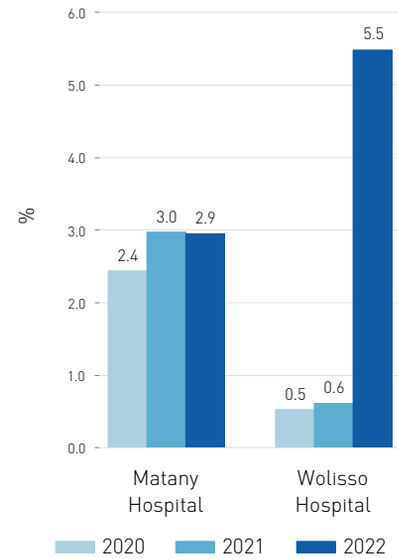


Numerator	Number of elective C-section deliveries (x100)
Denominator	Number of deliveries
Sources	Hospitals registers - maternity department (paper-based and electronic sources)

C7.2 Percentage of induced labours

Computational level : Hospital

Induction of labour is defined as the process of artificially stimulating the uterus to start labour. Induced labours should be used under specific medical indications only. However, the percentage of induced labours has been increasing in the last years in high income countries, as well as in some low- and middle-income countries. This indicator measures the induced labours on the total number of deliveries at hospital level and it is an observaton indicator.

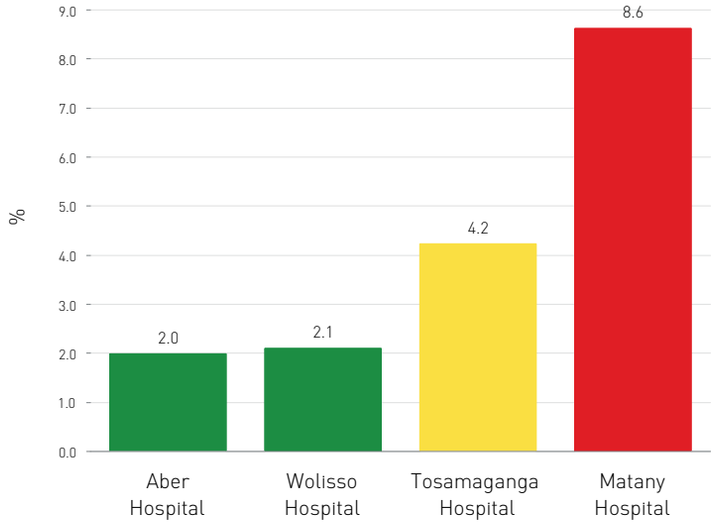


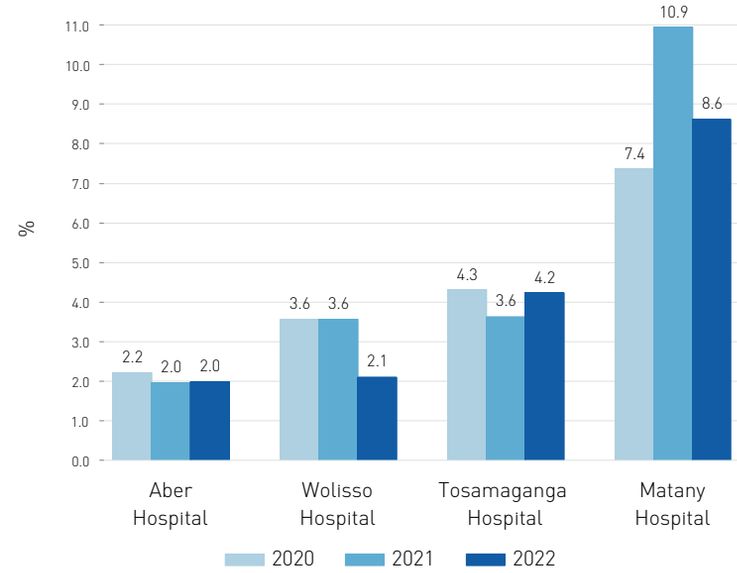
Numerator	Number of induced labours (x100)
Denominator	Number of deliveries
Sources	Hospitals registers - maternity department (paper-based and electronic sources)

C7.20A Percentage of peri-/intra-partum asphyxia

Computational level : Hospital

This indicator contributes to evaluate the services during the childbirth measuring the severe peri/intrapartum asphyxia. Birth asphyxia is caused by a lack of oxygen to organ systems due to a hypoxic or ischemic insult that occurs within close temporal proximity to labor (peripartum) and delivery (intrapartum). It is one of the primary causes of early neonatal mortality. The indicator refers to full-term births (>=37 weeks) with severe asphyxia or subject to hypothermia. In absence of a pre-defined standard, evaluation was performed starting from benchmarking data assessment.



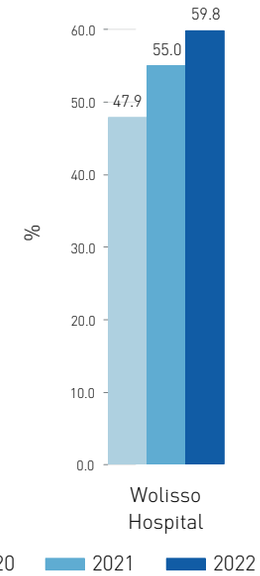


Numerator	Number of newborn children with a diagnosis of severe peri-/intra-partum asphyxia in NICU (Neonatal Intensive Care Unit) (x100)
Denominator	Number of newborn children
Sources	Hospitals paediatric registers (paper-based and electronic sources)

C7.3 Percentage of episiotomies (NTSV)

Computational level : Hospital

Episiotomy is a frequently used intervention during vaginal delivery. It has become a routine practice even without evidence of its effectiveness both in the short- and in the medium- and long-term. Indeed, according to the WHO policies, routine or liberal use of episiotomy is not recommended for women undergoing spontaneous vaginal birth. This indicator focuses only on nulliparous, term, singleton, vertex (NTSV) deliveries with episiotomies. It is an observaton indicator.

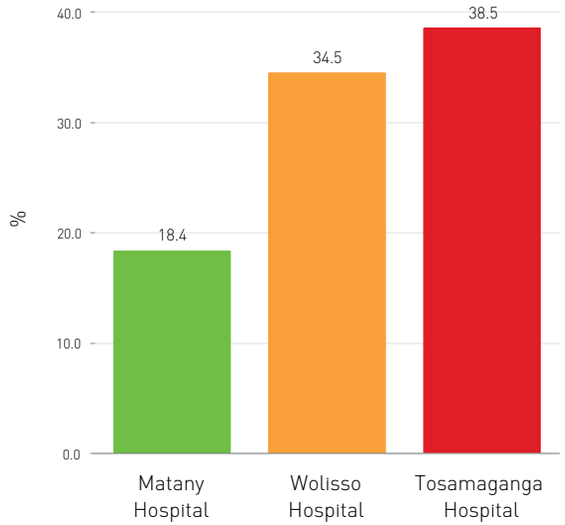


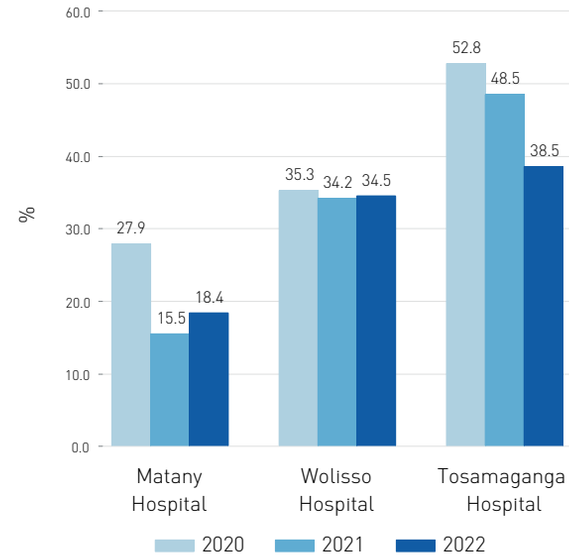
Numerator	Number of NTSV episiotomies performed (x100)
Denominator	Number of NTSV deliveries
Sources	Hospitals registers - maternity department (electronic sources)

C7.3A Percentage of episiotomies

Computational level : Hospital

Episiotomy is a frequently used intervention during vaginal delivery. It has become a routine practice even without evidence of its effectiveness both in the short, in the medium and long-term. Indeed, according to the WHO policies, routine or liberal use of episiotomy is not recommended for women undergoing spontaneous vaginal birth. This indicator expresses the percentage of episiotomies performed, when considering all the vaginal deliveries in the reference year at the hospital level. The standard of 12% was fixed based on the standard emerging from the benchmarking in the IRPES Network.



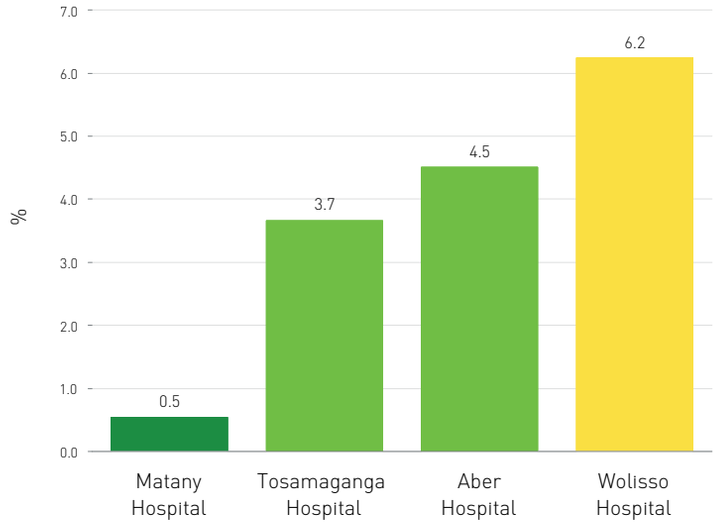


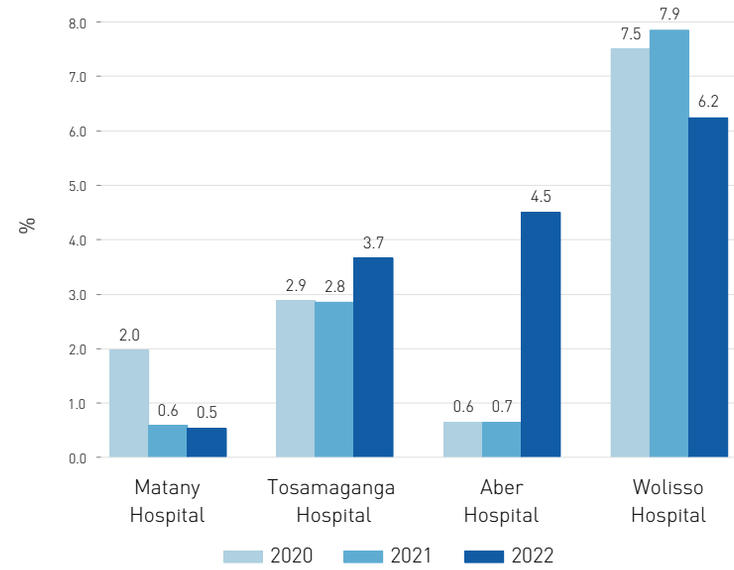
Numerator	Number of episiotomies performed for vaginal deliveries (x100)
Denominator	Number of vaginal deliveries
Sources	Hospitals registers - maternity department (paper-based and electronic sources)

C7.6 Percentage of assisted deliveries (forceps or ventouse)

Computational level : Hospital

Operative vaginal births refer to deliveries of the fetal head assisted either by vacuum extractor or by forceps. The indicator shows the percentage of vaginal assisted deliveries performed through the use of forceps or ventouse. It should be considered together with the percentage of caesarean births, in order to identify any possible correlation between a lower percentage of caesarean births and an increased use of operative deliveries. The standard of 2,5% was fixed based on the guidelines followed in the IRPES Network.



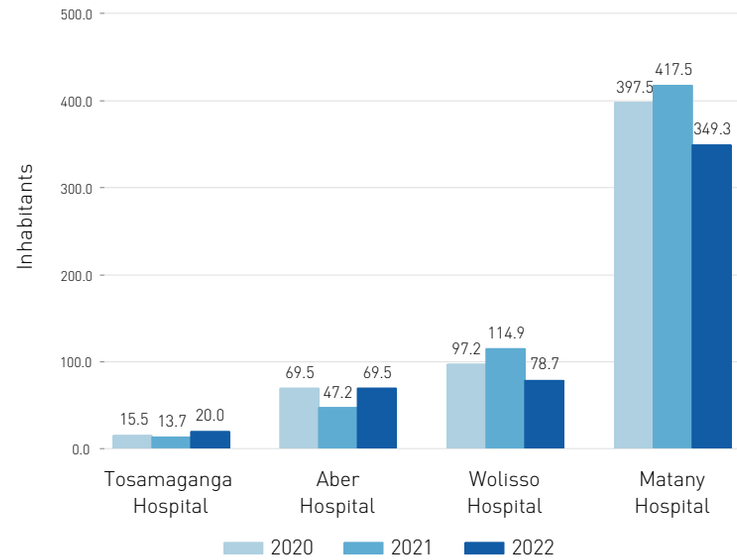


Numerator	Number of vaginal deliveries with forceps or ventouse (x100)
Denominator	Number of vaginal deliveries
Sources	Hospitals registers - maternity department (paper-based and electronic sources)

C7.7.1 Paediatric hospitalization rate (<1 year) , per 1.000 residents

Computational level : Hospital

The rationale of measuring hospitalization rate of children aged less than 1 year is to monitor how health organisations are able to answer to the children's health needs. In high income countries, the purpose is to keep hospitalizations low and prefer care at district level. In the areas of interest, this indicator may depend on the interconnectedness of a number of clinical, social and cultural factors peculiar of different contexts of analysis. For this reason it is an observation indicator.

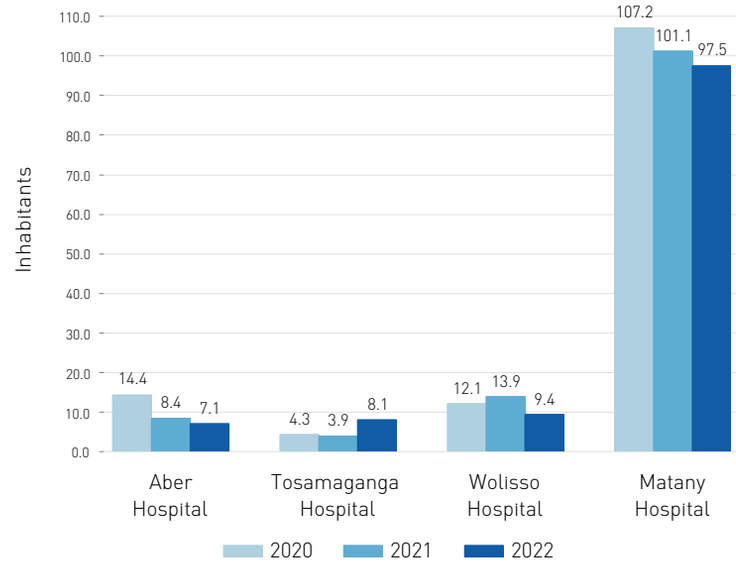


Numerator	Number of hospitalizations (< 1 year) (x1.000)
Denominator	Estimated resident population (<1 year)
Sources	Wolisso paediatric registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany paediatric registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga paediatric registers and Tanzanian DHIS2 (paper - based and electronic sources); Aber paediatric registers and Ugandan eHMIS/DHIS2 (paper - based and electronic sources)

C7.7A Paediatric hospitalization rate (<15 years), per 1.000 residents

Computational level : Hospital

The rationale of measuring hospitalization rate of children aged less than 12 year is to monitor how health organisations are able to answer to the children's health needs. In high -income countries, the purpose is to keep hospitalizations low and prefer care at district level. The hospitalization rate of children in paediatric age (from 0 to 12) is standardized by 1.000 inhabitants from the reference area. In the districts of interest, this indicator may depend on the interconnectedness of a number of clinical, social and cultural factors peculiar of different contexts of analysis. For this reason it is an observation indicator.

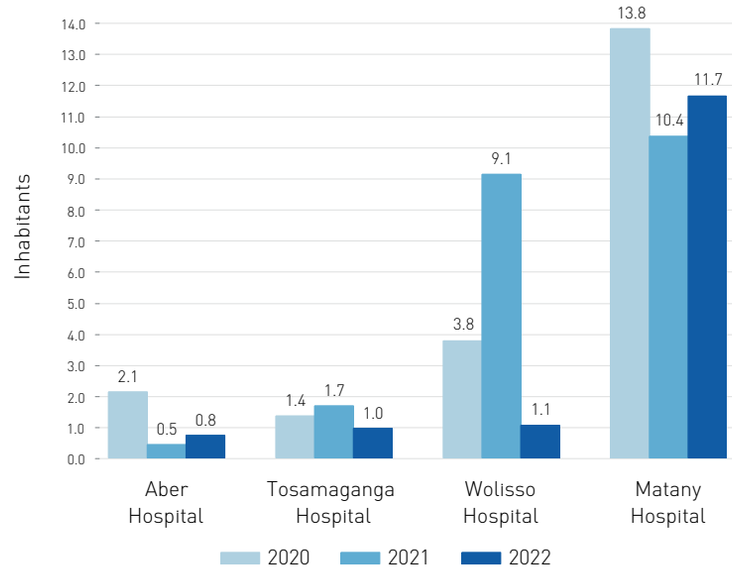


Numerator	Number of hospitalizations (<15 years) (x1.000)
Denominator	Estimated resident population (<15 years)
Sources	Wolisso paediatric registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany paediatric registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga paediatric registers and Tanzanian DHIS2 (paper - based and electronic sources); Aber paediatric registers and Ugandan eHMIS/DHIS2 (paper - based and electronic sources)

C7D.19.1A Paediatric hospitalization rate for ARI (0-5 years), per 1.000 residents

Computational level : Hospital

In low-income countries, acute respiratory infections (ARI) are an important cause of hospitalization of children younger than 5 years. The hospitalization rate of children aged from 0 to 5 years for ARIs may depend on the interconnectedness of a number of clinical, social and cultural factors peculiar of different contexts of analysis. This indicator is standardized by 1.000 inhabitants from the reference area and it is an observation indicator.

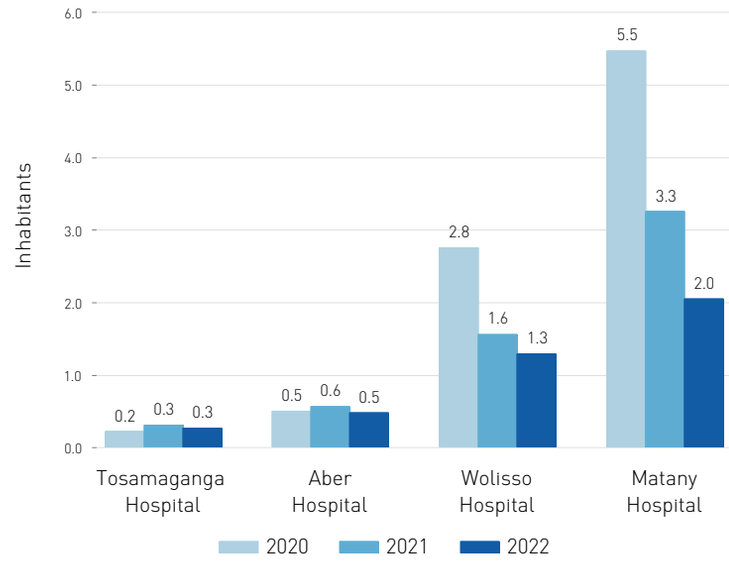


Numerator	Number of hospitalizations for ARI (0-5 years) (x1.000)
Denominator	Estimated resident population (<5 years)
Sources	Wolisso paediatric registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany paediatric registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga paediatric registers and Tanzanian DHIS2 (paper - based and electronic sources); Aber paediatric registers and Ugandan eHMIS/DHIS2 (paper - based and electronic sources)

C7D.19.2A Paediatric hospitalization rate for gastroenteritis (<15 years), per 1.000 residents

Computational level : Hospital

In low-income countries each year millions of children die because of acute gastroenteritis. Treatment at district level should be provided for these diseases and hospitalization is recommended for children who do not respond to oral rehydration therapy. The hospitalization rate of children aged less than 15 years for gastroenteritis may depend on the interconnectedness of a number of clinical, social and cultural factors peculiar of different contexts of analysis. This indicator is standardized by 1.000 inhabitants from the reference area. It is an observation indicator.

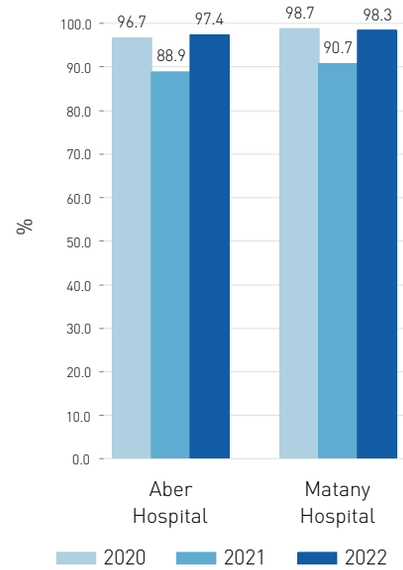


Numerator	Number of hospitalizations for gastroenteritis (<15 years) (x1.000)
Denominator	Estimated resident population (<15 years)
Sources	Wolisso paediatric registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany paediatric registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga paediatric registers and Tanzanian DHIS2 (paper - based and electronic sources); Aber paediatric registers and Ugandan eHMIS/DHIS2 (paper - based and electronic sources)

C7M.2 Percentage of women who have started breastfeeding within one hour (or by the end of discharge)

Computational level : Hospital

Early initiation of breastfeeding confers a host of benefits. Putting newborns to the breast necessitates skin-to-skin contact, and this closeness between mother and baby in the moments after delivery provides both short- and long-term benefits. Immediate skin-to-skin contact helps regulate the body temperature of newborns and allows their bodies to be populated with beneficial bacteria from their mother's skin. Putting babies to the breast within an hour of birth is strongly predictive of future exclusive breastfeeding. Children who are not put to the breast within the first hour after birth face a higher risk of common infections and death.

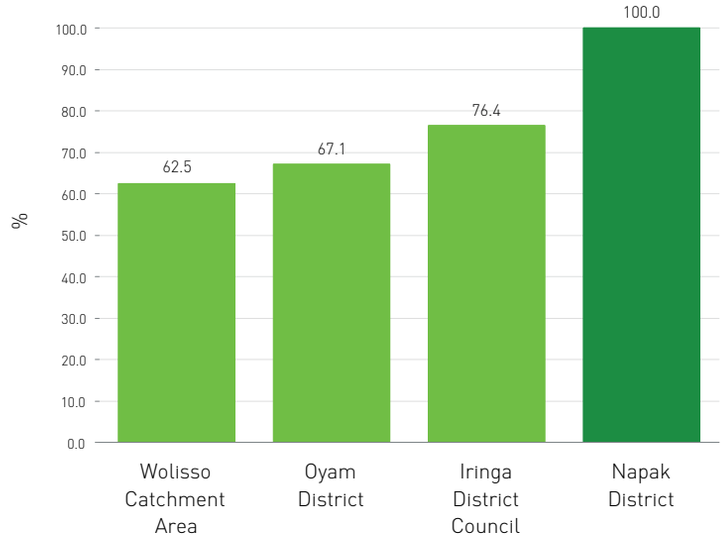


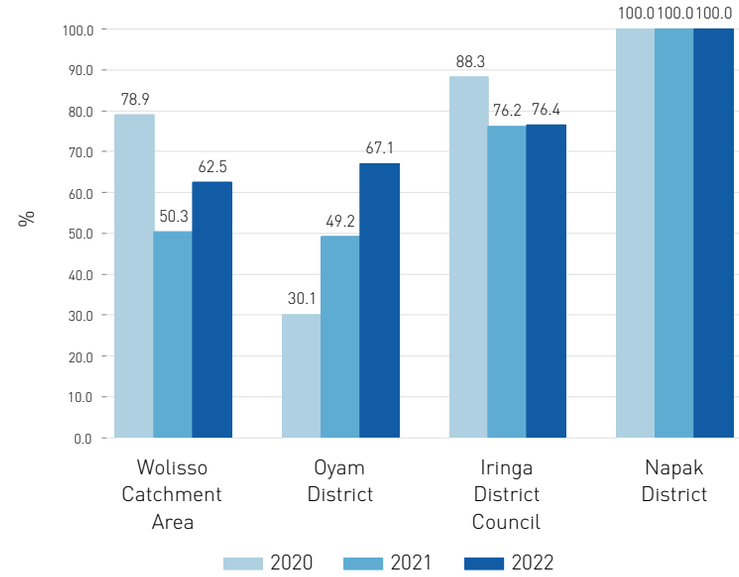
Numerator	Number of mothers who have started Breast Feeding within 1 hour (or by the end of discharge) (x100)
Denominator	Number of assisted deliveries
Sources	Matany registers - maternity department (electronic and paper-based sources), Aber - maternity department (electronic and paper-based sources)

C7M.3 Percentage of children aged 6-59 months who received two doses of vitamin A supplementation

Computational level : Residence

Vitamin A is vital to child health and immune function. In settings where vitamin A deficiency is a public health problem, vitamin A supplementation is recommended in infants and children aged 6-59 months as a public health intervention to reduce child morbidity and mortality. Supplementation with vitamin A is a safe, cost-effective and efficient means for eliminating deficiency of this vitamin and improving child survival. Measuring the proportion of children who have received two doses of vitamin A within the past year can be used to monitor coverage of interventions aimed at increasing child survival rates. The evaluation reference standard was fixed according to the UNICEF global database 2021.



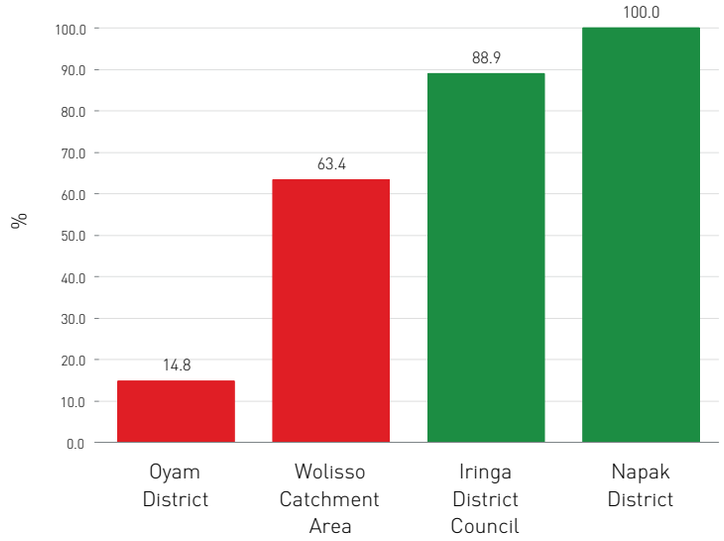


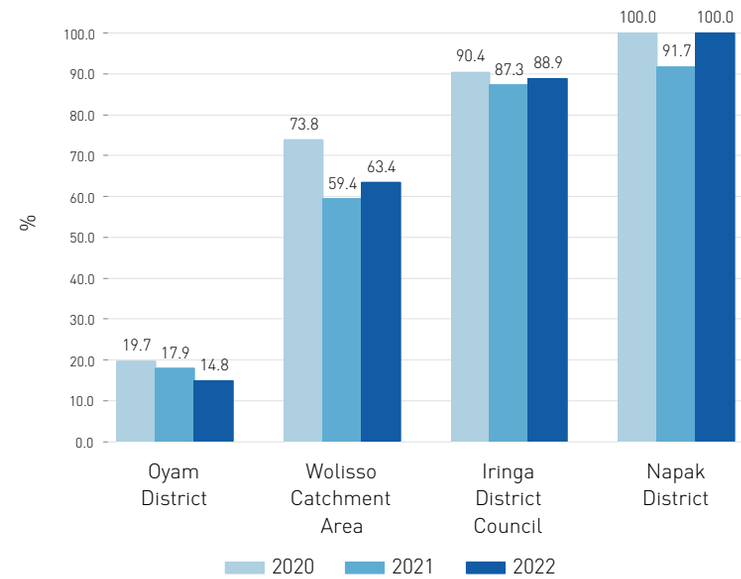
Numerator	Number of children aged 6-59 months who received two doses of vitamin A supplementation (x100)
Denominator	Total number of children aged 6-59 months in the reference area
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7M.4 Percentage of pregnant women who received any iron folic acid (IFA) in the reporting period

Computational level : Residence

This indicator measures the percentage of mothers receiving any IFA over the total number of ANC visits. Iron deficiency is a common nutrient deficiency and the resulting iron deficiency anemia is a major contributor to the global burden of disease. Anemia is a common problem among women in reproductive age, especially in low- and middle-income countries where low dietary intake of bioavailable iron combined with endemic infectious diseases such as helminthiasis puts women at increased risk in the preconception period. Low preconception hemoglobin and ferritin levels increase the risk of poor fetal growth and low birth weight. Anemia during pregnancy is associated with increased risks for maternal mortality, premature birth, and low birth weight. The evaluation reference standard was fixed according to data distribution in benchmarking.





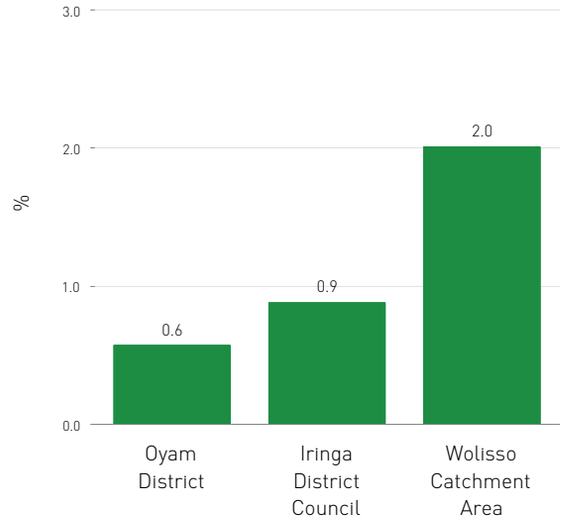
Numerator	Number of pregnant women who received any IFA in the reporting period (x100)
Denominator	Total number of ANC visits*
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

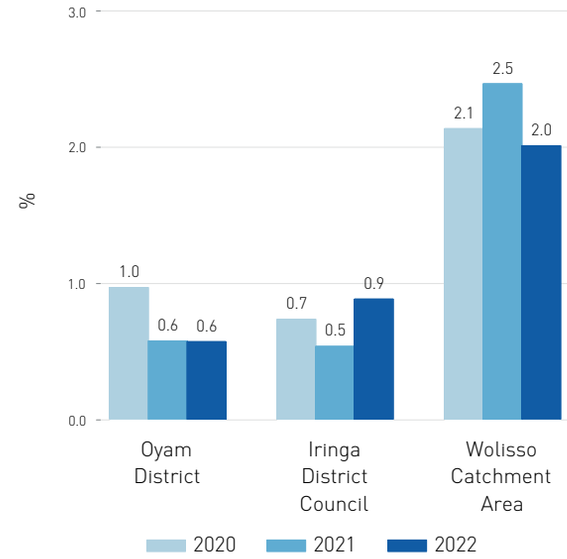
* With respect to Oyam and Napak districts, the denominator refers to the number of ANC first instead of total number of ANC visits since Ugandan DHIS2 collects only the number of pregnant women receiving at least 30 IFA during ANC first contact.

C7M.5 Percentage of children aged 6-59 months screened for malnutrition and identified with Moderate Acute Malnutrition (MAM)

Computational level : Residence

Wasting in children is a symptom of acute undernutrition, usually as a consequence of insufficient food intake or a high incidence of infectious diseases, especially diarrhoea. In turn, wasting impairs the functioning of the immune system and can lead to increased severity and duration of, and susceptibility to, infectious diseases, and an increased risk of death. Children with moderate acute malnutrition (MAM) if not identified timely, can progress into SAM. The main aim of screening program for detecting malnourished children is to prevent mortality. The evaluation reference standard was fixed according to the UNICEF global database 2021.



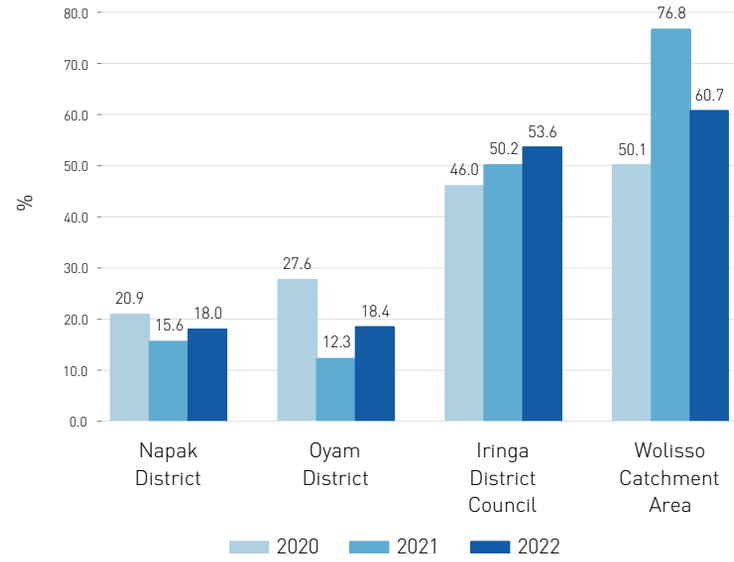


Numerator	Number of children aged 6-59 months screened for malnutrition and identified with MAM (x100)
Denominator	Total number of children aged 6-59 months in the reference area
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2 (electronic sources)

C7M.6 Percentage of complicated SAM amongst children aged 6-59 months treated in the Integrated Management of Acute Malnutrition (IMAM) programme

Computational level : Residence

IMAM is an integrated program to fight back against acute malnutrition. It is a nutritional program designed especially for children of 6-59 months of age and has four components: Community Outreach/mobilization; Outpatient treatment of SAM without complication; In-patient treatment of SAM with complication; and Management of Moderate Acute Malnutrition. This indicator aims to measure the health system's ability to include children identified with SAM within the treatment program.

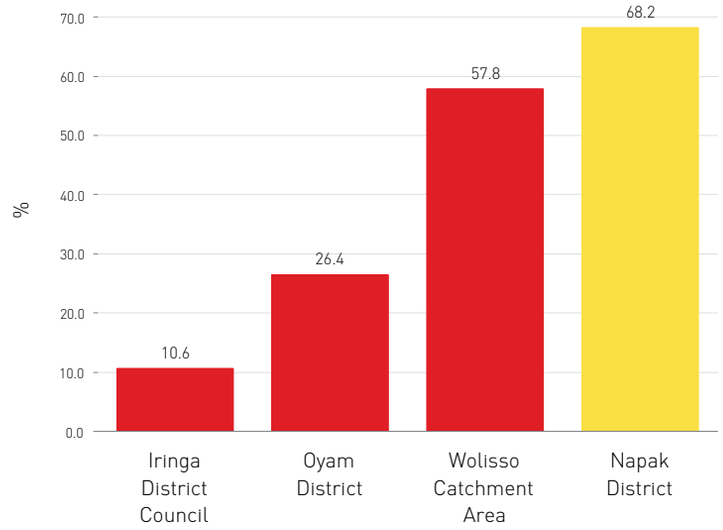


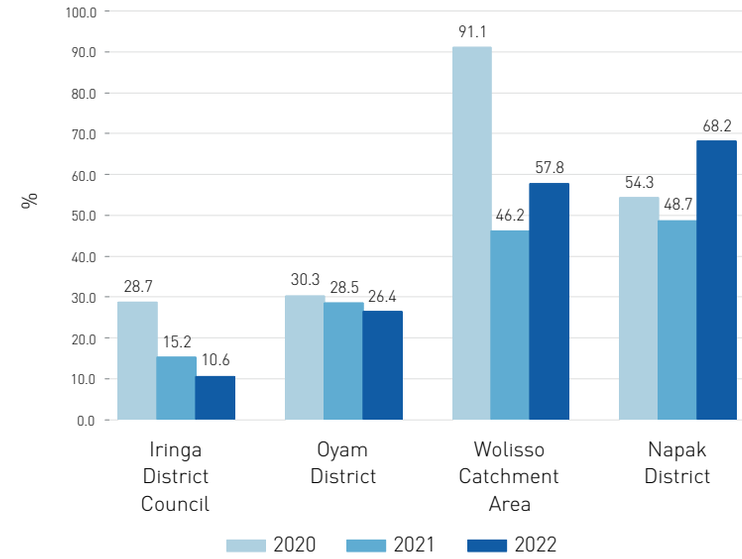
Numerator	Number of children aged 6-59 months with SAM admitted for treatment in the programme in the reporting period (x100)
Denominator	Total number of SAM patients aged 6-59 months (OTP + SC)
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7M.7 Percentage of children aged 6-59 months with SAM who were treated over expected cases in the reference area

Computational level : Residence

All patients with SAM as defined above should be admitted for therapeutic treatment in either an outpatient therapeutic programme (OTP) or Stabilization Centre (SC), depending on the presence or absence of medical complications and appetite. This indicator aims at measuring the health system's ability to reach and treat children with SAM in the targeted reference area based on the regional prevalence estimates available from the IMAM Guidelines Uganda (reference population * prevalence * 2,6).



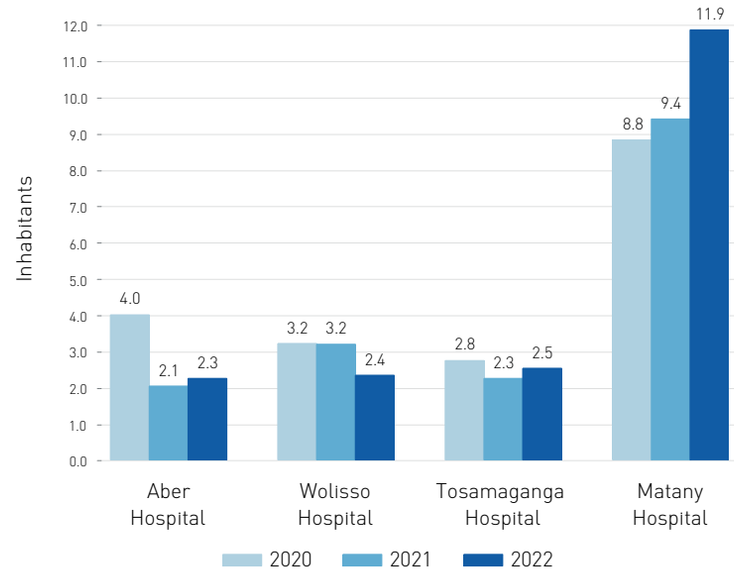


Numerator	Number of children aged 6-59 months with SAM admitted into outpatient therapeutic program (x100)
Denominator	Estimated number of children aged 6-59 months with SAM in the reference area
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7M.8 Hospitalization rate of children aged 6-59 months for SAM, per 1.000 inhabitants

Computational level : Hospital

Guidelines classify uncomplicated and complicated SAM according to the absence or presence of medical complications. Currently, only children with complications such as edema, lack of appetite, or infections are hospitalized for nutritional rehabilitation. The hospitalization rate is standardized by 1.000 inhabitants from the reference area and it may depend on the interconnectedness of a number of clinical, social and cultural factors peculiar of different contexts of analysis.

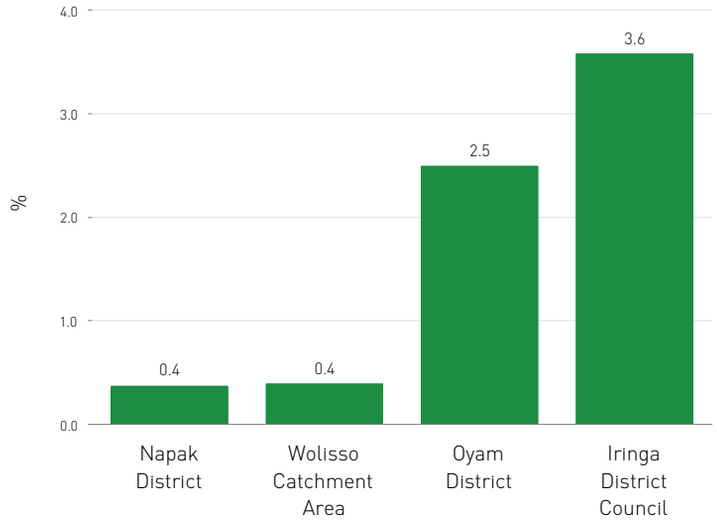


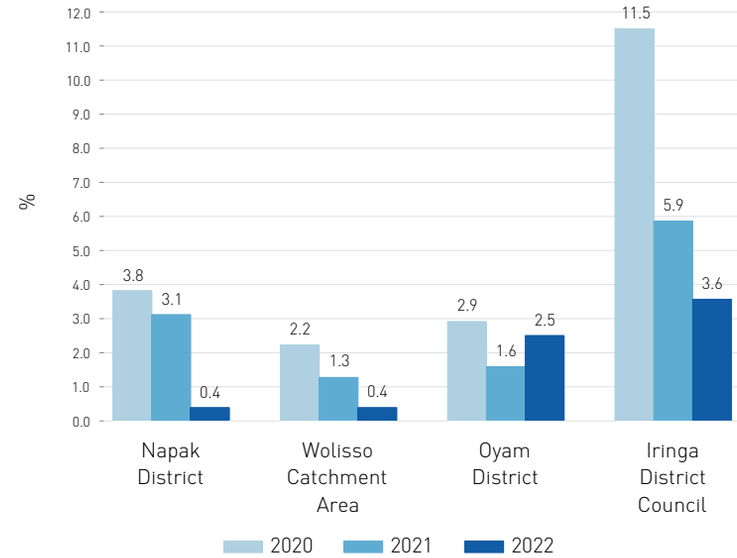
Numerator	Number of children aged 6-59 months admitted with SAM (x1.000)
Denominator	Total number of children aged 6-59 months in the reference area
Sources	Wolisso paediatric registers (electronic sources), Matany paediatric registers (electronic sources), Tosamaganga paediatric registers (paper - based and electronic sources), Aber paediatric registers (paper - based and electronic sources)

C7M.9 Percentage of deaths among SAM cases aged 6-59 months (Outpatient Therapeutic Programme + Stabilization Centre)

Computational level : Residence

It has been estimated that more than one-fourth of SAM deaths occur during hospitalization. Studies suggest that the possible causes for high mortality rate could be attributed to the severity of illness at presentation, comorbidities and faulty in management. This indicator is calculated to evaluate the percentage of deaths among patients with a diagnosis of SAM treated by the health system. It gives therefore an indication of the capacity and quality of care at hospital level where the complicate and severe cases are managed. The standard was fixed according to the Sphere project data.



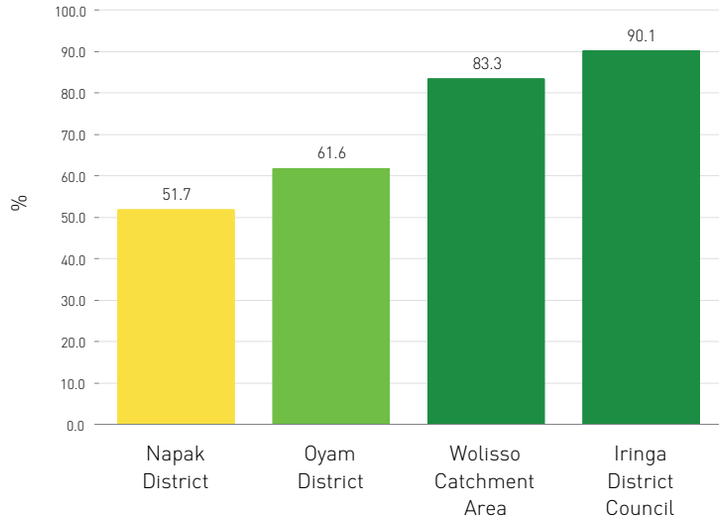


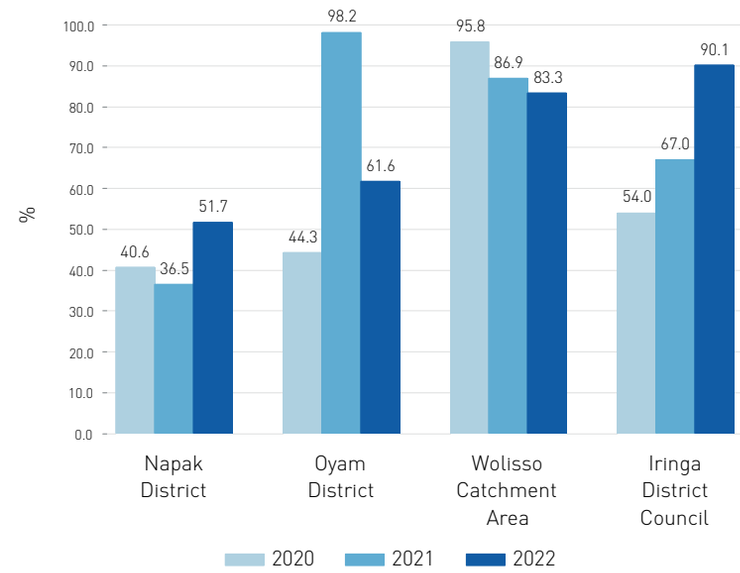
Numerator	Number of deaths among SAM cases aged 6-59 months (OTP + SC)
Denominator	Total number of SAM patients aged 6-59 months (OTP + SC)
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

C7M.10 Percentage of cured among SAM cases aged 6-59 months (Outpatient Therapeutic Programme + Stabilization Centre)

Computational level : Residence

This indicator shows the percentage of cured SAM patients over the total number of SAM patients under treatment. Patients are defined "cured" when the child has reached adequate anthropometric levels that SAM is no longer diagnosed. The standard was fixed according to the Sphere project data.





Numerator	Number of cured among SAM cases aged 6-59 months (OTP + SC)
Denominator	Total number of SAM patients aged 6-59 months (OTP + SC)
Sources	Ethiopian HMIS/DHIS2, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

INFECTIOUS DISEASES

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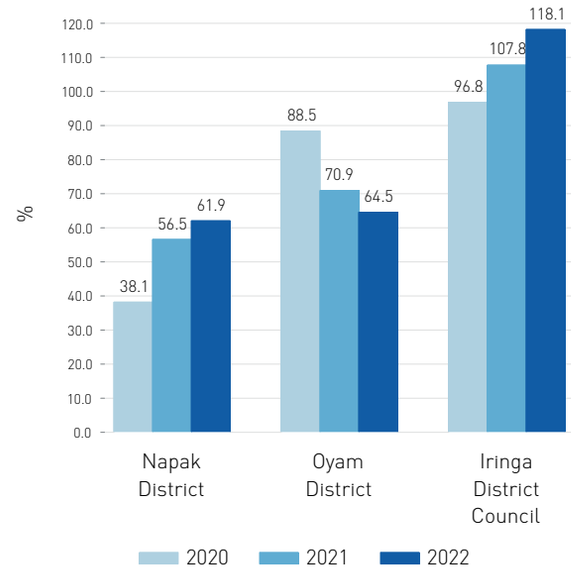
IDPM01 Percentage of Long Lasting Insecticidal Nets (LLIN) distributed

Computational level : Residence

This indicator is an observation indicator. It expresses the percentage of ANC visits during which a LLIN was delivered to pregnant women for protection against malaria.

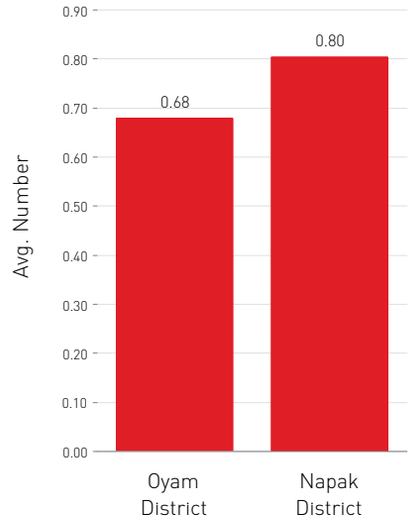


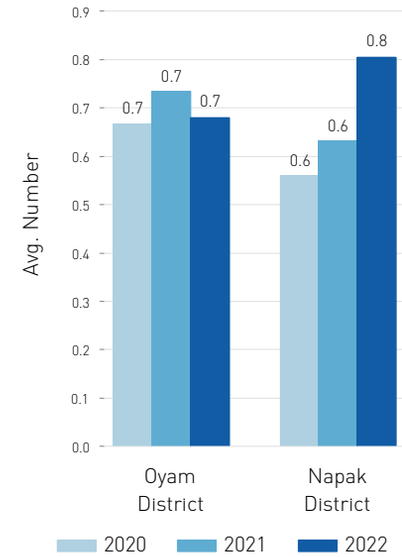
Numerator	LLINs distribuited (x100)
Denominator	Number of first ANC visits
Sources	Ugandan eHMIS/DHIS2 (electronic source)

IDPM02 Average number of sulfadoxine-pyrimethamine (SP) doses per ANC visit

Computational level : Residence

The indicator shows, in terms of average number, how many sulfadoxine-pyrimethamine (SP) doses were administered to pregnant women with respect to the total number of expected deliveries in the reference area. The standard of 3 doses per expected delivery was fixed based on the WHO guidelines.



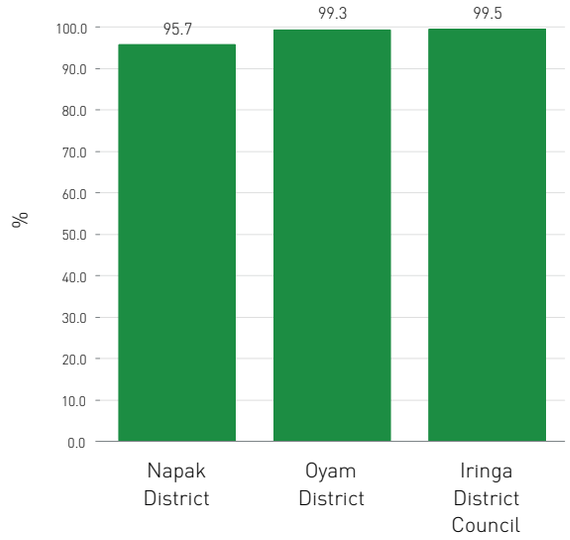


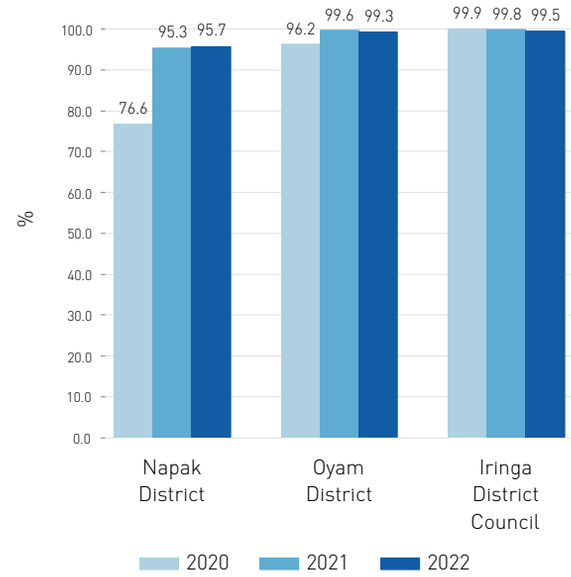
Numerator	Number of SP doses
Denominator	Number of total ANC visits
Sources	Ugandan eHMIS/DHIS2 (electronic source)

IDPM03 Percentage of confirmed malaria cases (BS+RDT)

Computational level : Residence

This indicator measures the percentage of malaria cases that were confirmed following the blood smear (BS) on a microscope slide and rapid diagnostic testing (RDT) examinations with respect of the total number of diagnosis of malaria cases. The standard of 90% was fixed based on the WHO standard.



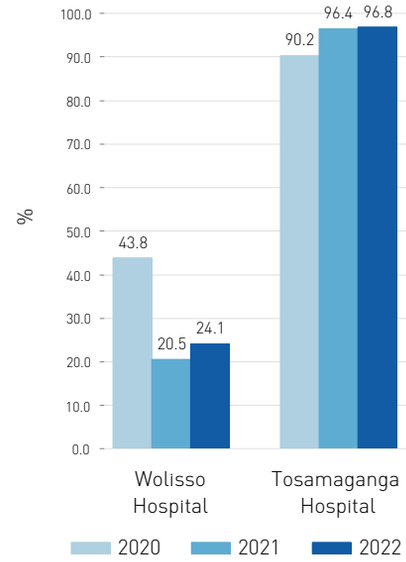


Numerator	Malaria cases confirmed (BS+RDT) (x100)
Denominator	Total number of diagnosis of malaria cases
Sources	Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPM04 Percentage of discharges for severe malaria

Computational level : Hospital

This indicator is an observation indicator at the hospital level. It provides the percentage of the total number of discharged patients with a diagnosis of severe malaria over the total number of patients discharged with a diagnosis of malaria. However, the indicator may depend on how severe malaria is defined and on the possibility to capture it correctly from the HIMS system, without mixing severe with non severe cases.

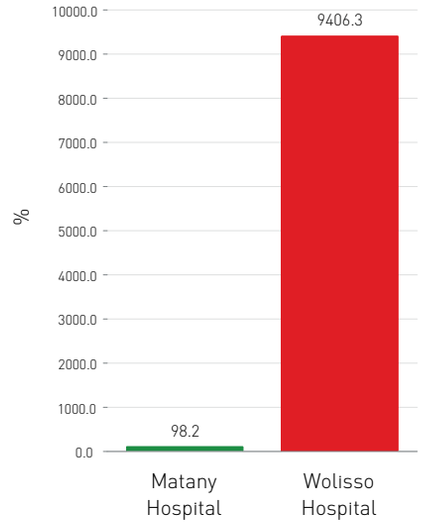


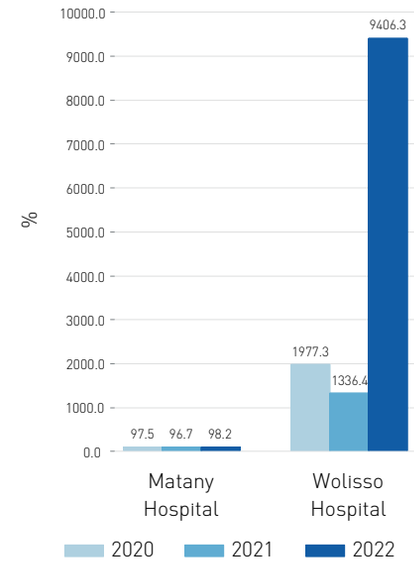
Numerator	Number of discharged with a diagnosis of severe malaria (x100)
Denominator	Number of patients discharged with malaria
Sources	Hospitals registers - medical departments (electronic sources)

IDPM05 Percentage of treatments with ACT*

Computational level : Hospital

This indicator shows the percentage of patients treated with artemisinin-based combination therapy (ACT) over the total number of cases affected by malaria at the hospital level both in inpatient and outpatient deparments (IPD and OPD). The indicator plays a crucial role in defining the appropriateness of the treatment and helps identify problems of over/under treatment. The standard of 90% was fixed based on the WHO standard.





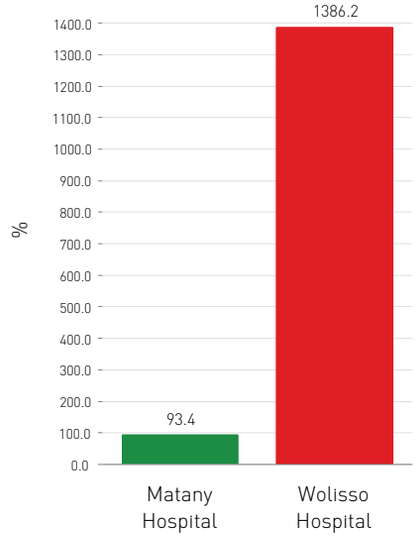
Numerator	Number of treatments with ACT (x100)
Denominator	Total number of malaria cases
Sources	Hospitals registers - medical departments (electronic sources)

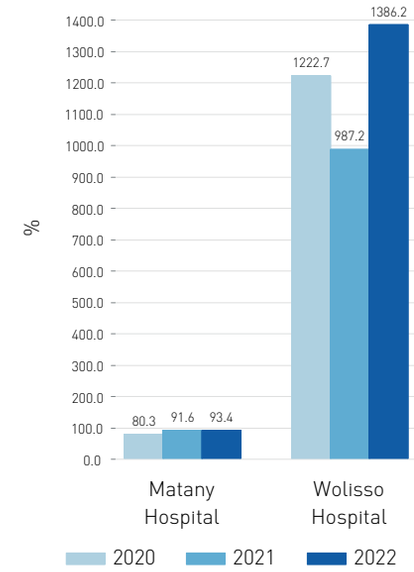
* With respect to Wolisso Hospital, it is worth noticing that this indicator shows a very high discrepancy among the number of tratments with ACT and the number of diagnoses of malaria. The number has been verified and we confirm that it is correct.

IDPM06 Percentage of IV/IM (parenteral artesunate or Quinine) treatments*

Computational level : Hospital

This indicator shows the percentage of patients treated with intravenous artesunate/parenteral quinine treatments over the total number of cases affected by malaria at the hospital level. The indicator plays a crucial role in defining the appropriateness of the treatment and helps identify problems of over/under treatment. The standard of 90% was fixed based on the WHO standard.





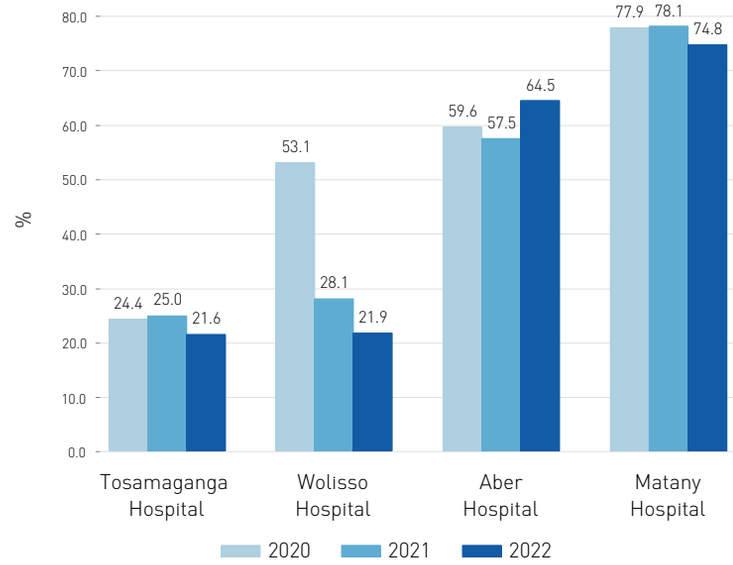
Numerator	Number of intravenous artesunate/parenteral quinine treatments (x100)
Denominator	Number of discharged patients with confirmed malaria
Sources	Hospitals registers - medical departments (electronic sources)

* With respect to Wolisso Hospital, it is worth noticing that this indicator shows a very high discrepancy between the number of IV/IM tratments and the number of discharged patients with confirmed malaria. The number has been verified and we confirm that it is correct.

IDPM07 Percentage of malaria cases (< 5 years)

Computational level : Hospital

This indicator is an observation indicator at the hospital level. It gives the percentage of malaria cases in children aged less than five years over the total number of malaria inpatients. This indicator can be considered as a proxy of indication of endemic/ or epidemic situation of malaria in the reference area. If the situation is endemic, children are more affected than adults; this difference decreases if the situation is epidemic.

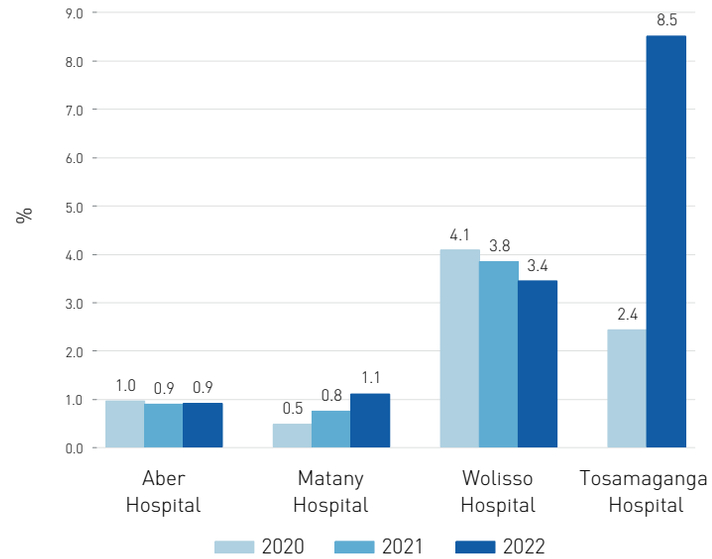


Numerator	Number of inpatients with malaria (children < 5 years) (x100)
Denominator	Number of inpatients with malaria
Sources	Hospitals registers - medical departments (electronic sources)

IDPM08 Percentage of deaths for malaria

Computational level : Hospital

This indicator is an observation indicator at the hospital level. It gives the percentage of deaths due to malaria over the total number of discharges for malaria.

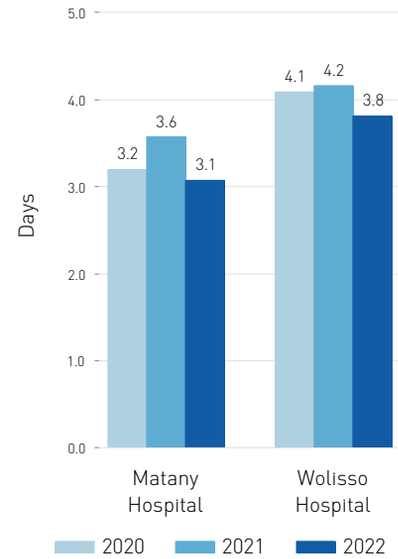


Numerator	Number of deaths with malaria (all ages) (x100)
Denominator	Number of discharged patients for malaria
Sources	Hospitals registers - medical departments (electronic sources); Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPM09 ALOS (malaria cases)

Computational level : Hospital

This indicator is an observation indicator at the hospital level. It provides a view of the average lenght of stay (ALOS) in hospital due to malaria. The indicator can be a proxy of severity of malaria cases treated at hospital level and, if compared with the percentage of severe malaria treated patients (indicator IDPM04), it can raise questions about the appropriateness of the defintion of severe malaria.

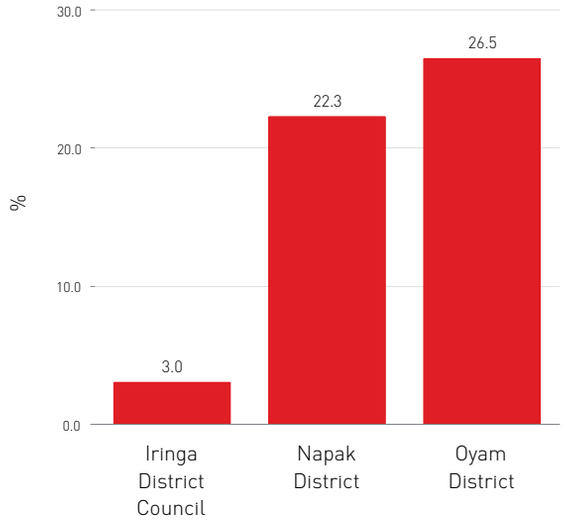


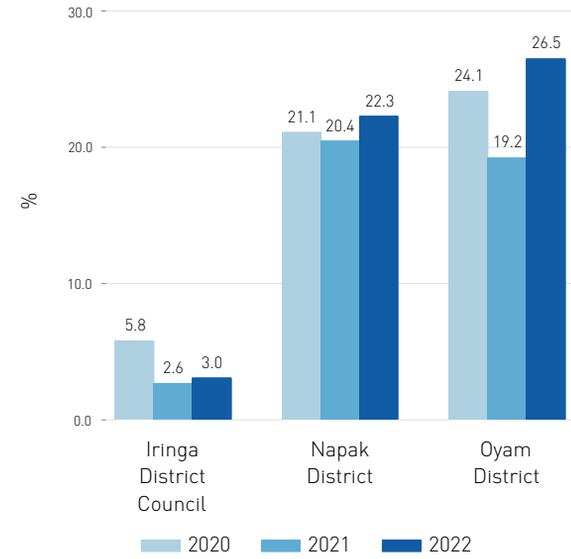
Numerator	Number of inpatient days for malaria
Denominator	Number of inpatients for malaria
Sources	Hospitals registers - medical departments (electronic sources)

IDPT01 Percentage of treatments with isoniazide (IPT)

Computational level : Residence

The indicator shows the percentage of isoniazide preventive therapy (IPT) in children aged less than five years. It represents a proxy of the ability of the system to perform contact tracing at the residence level, identifying patients eligible for prophylaxis as well as the possible infected ones, thus reducing the spreading of the disease. The standard of 90% was fixed based on the WHO standard.



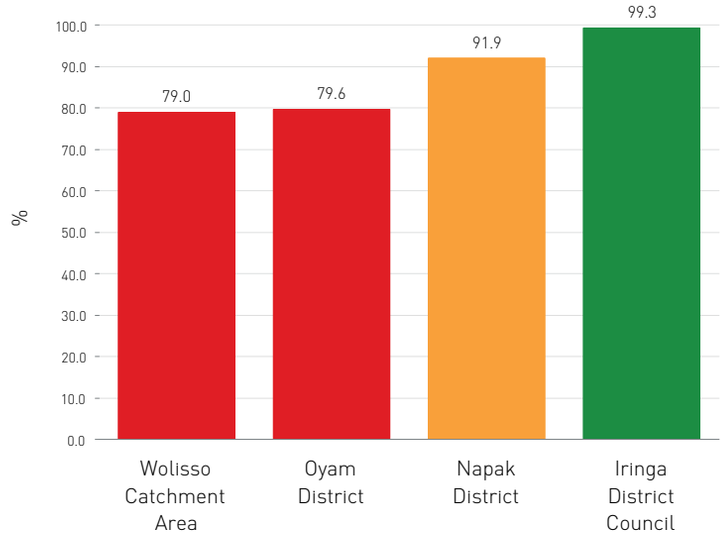


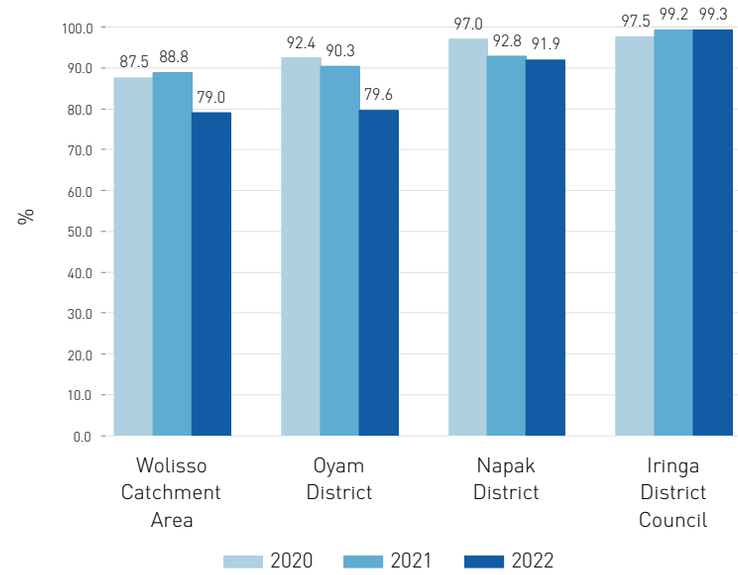
Numerator	Number of treatments with isoniazide (IPT) (x100)
Denominator	Total number of eligible treatments
Sources	Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPT02 Percentage of TB cases undergoing the HIV screening

Computational level : Residence

This indicator expresses the percentage of TB patients who underwent an HIV screening during the reference year over the total number of patients diagnosed with TB in the reference area. The standard of 98% was fixed based on the WHO standard.



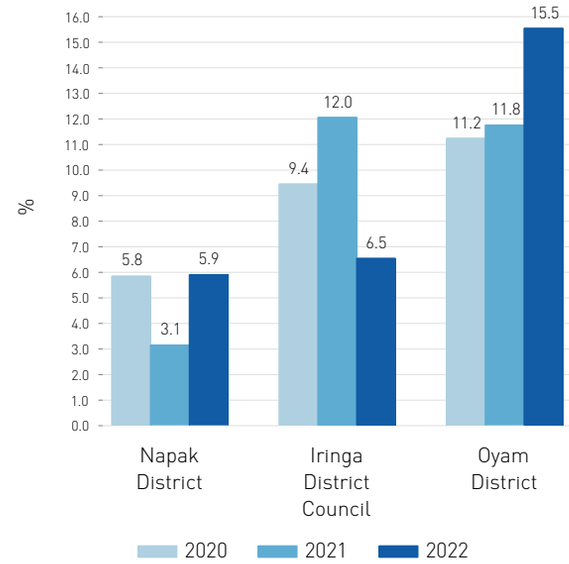


Numerator	Number of TB cases undergoing the HIV screening (x100)
Denominator	Number of TB diagnosed patients
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPT03 Percentage of positive TB cases on number of tests

Computational level : Residence

This is an observation indicator at the residence level. It shows the percentage of positive diagnoses of TB confirmed through lab tests or Xperts with respect to the total number of tests performed over presumptive cases. It gives an indication of the capability of selecting potential positive cases and, consequently, it helps evaluate the quality of the laboratory processes.

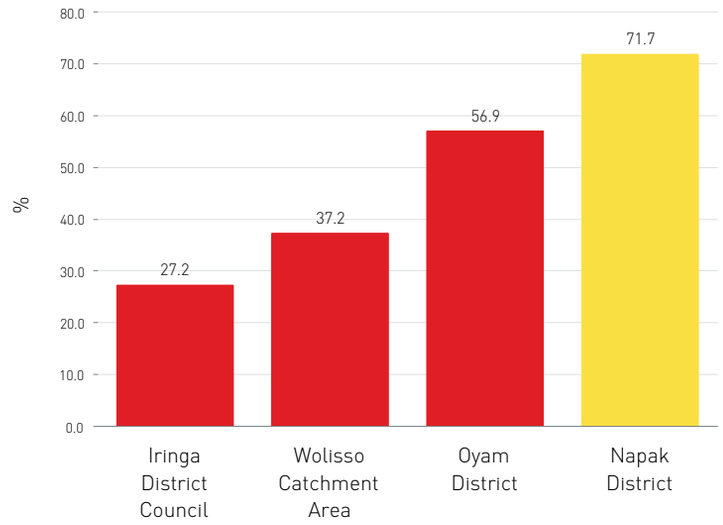


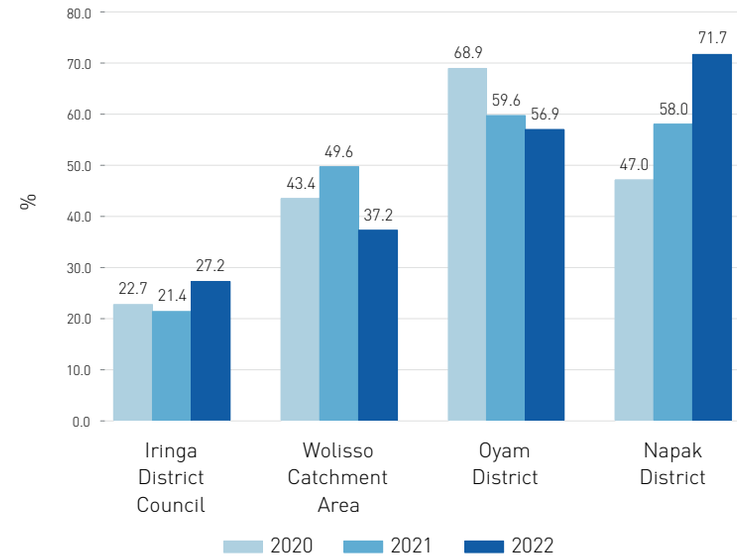
Numerator	Number of positive TB cases (confirmed by lab tests or Xpert) (x100)
Denominator	Number of tests (presumptive cases)
Sources	Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources) and WHO global tuberculosis reports

IDPT04 Percentage of confirmed TB cases on diagnosed cases

Computational level : Residence

This indicator expresses the percentage of bacteriologically confirmed polmunary TB patients (PTB) over the total number of patients diagnosed with TB in the reference year. The standard of 80% was fixed based on the WHO standard.



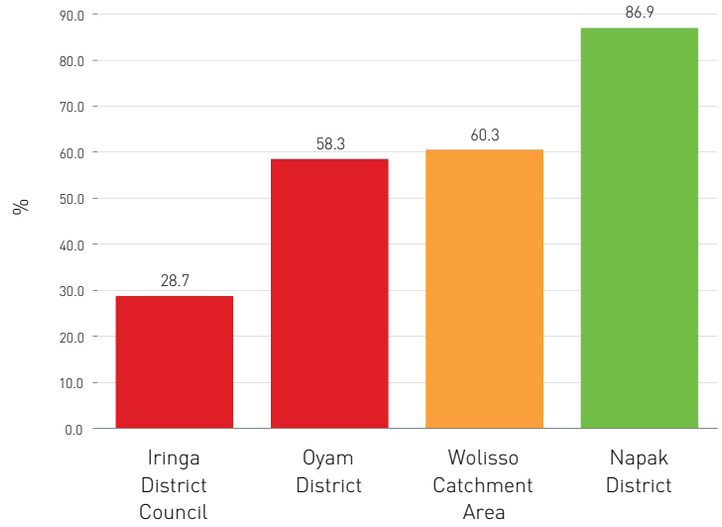


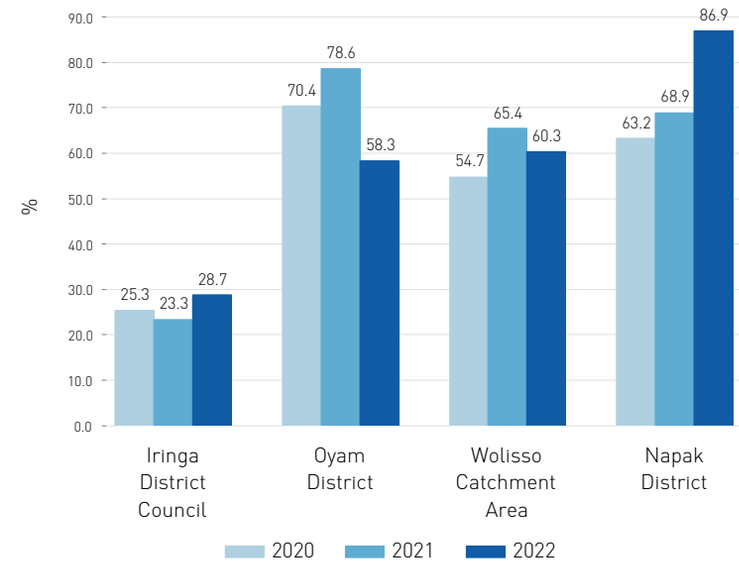
Numerator	Number of positive PTB cases (bacteriologically confirmed) (x100)
Denominator	Number of TB diagnosed patients
Sources	Hospitals registers - laboratory departments (electronic and paper-based sources)

IDPT05 Percentage of confirmed PTB

Computational level : Residence

This indicator expresses the percentage of bacteriologically confirmed polmunary TB patients (PTB) over the PTB cases in the reference year. It evaluates the diagnostic capacity, including the diagnosis of other pulmonary conditions in addition to TB. The standard of 90% was fixed based on the WHO standard.



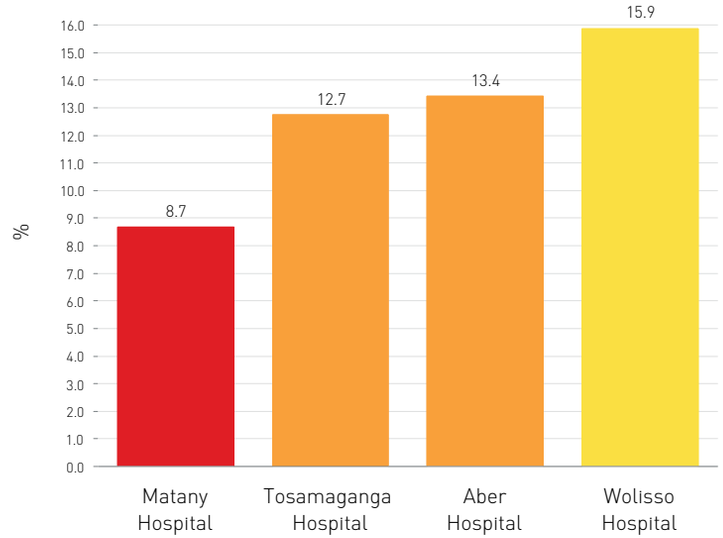


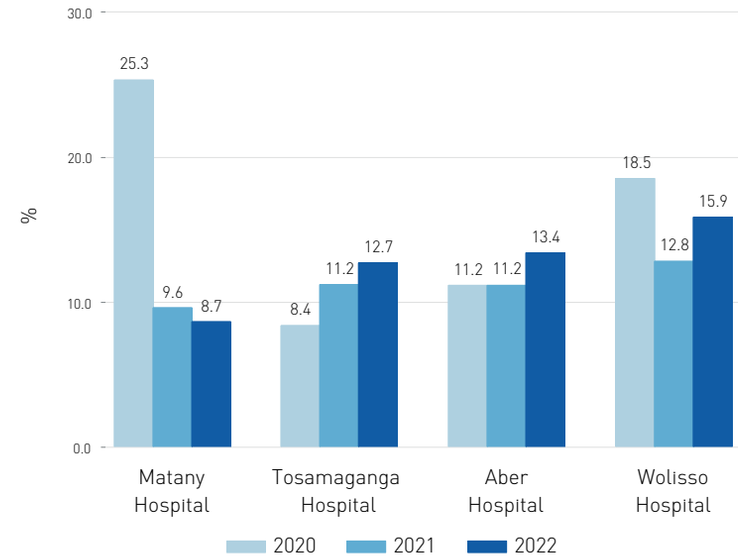
Numerator	Number of positive PTB cases (bacteriologically confirmed) (x100)
Denominator	Number of PTB cases
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPT06 Percentage of positive Xpert cases

Computational level : Hospital

This indicator expresses the percentage of positive Xpert cases over the total number of Xpert examinations performed in the reference year. It is related to the utilization of Xpert in an efficient way. Xpert has to be used only according to strict indications in order to get the appropriate measures of positive cases. The standard of 25% was fixed based on the WHO standard.



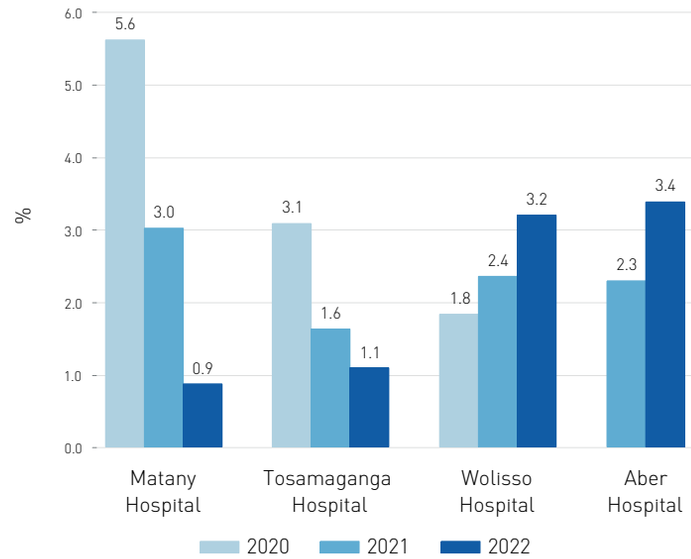


Numerator	Numer of positive Xpert cases (x100)
Denominator	Number of Xpert cases
Sources	Hospitals registers - laboratory departments (electronic and paper-based sources)

IDPT06.1 Percentage of positive Xpert RR

Computational level : Hospital

This is an observation indicator at the residence level. It shows the percentage of positive Xpert rifampicin-resistance (RR) over the total number of positive TB cases diagnosed with Xpert.

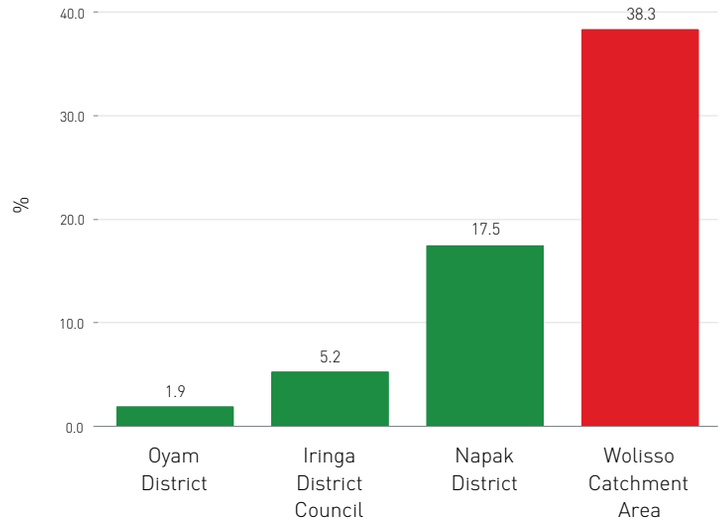


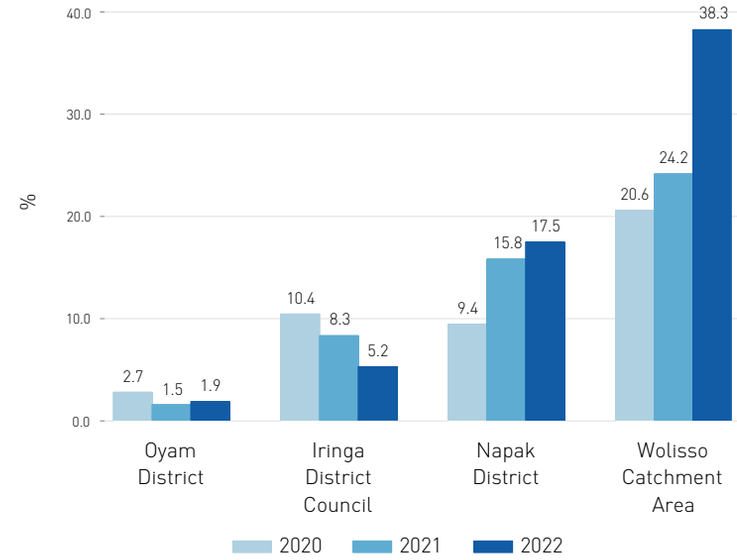
Numerator	Number of positive Xpert RR (x100)
Denominator	Number of positive Xpert
Sources	Hospitals registers - laboratory departments (electronic and paper-based sources)

IDPT07 Percentage of treatments for extrapulmunary TB

Computational level : Residence

The indicator expresses the percentage of patients treated for extra-pulmonary TB (EPTB) over the total number of TB diagnoses in the reference year at the residence level. It gives an evaluation of the diagnostic capacity and it helps diagnose other conditions in addition to extrapulmonary TB. The standard of 22,5% was fixed based on the WHO indications according to local epidemiological context analysis.



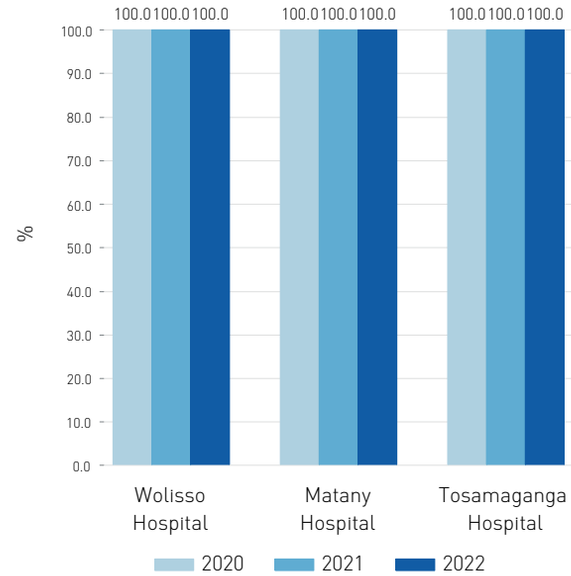


Numerator	Number of treatments “initiated” for extrapolmunary TB (x100)
Denominator	Number of TB diagnoses
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPT08 Percentage of PTB MDR initiated treatments

Computational level : Hospital

This indicator is an observation indicator at the hospital level. It is calculated as the ratio between the number of multidrug-resistant (MDR) initiated treatments and the number of multidrug-resistant (MDR) diagnoses.

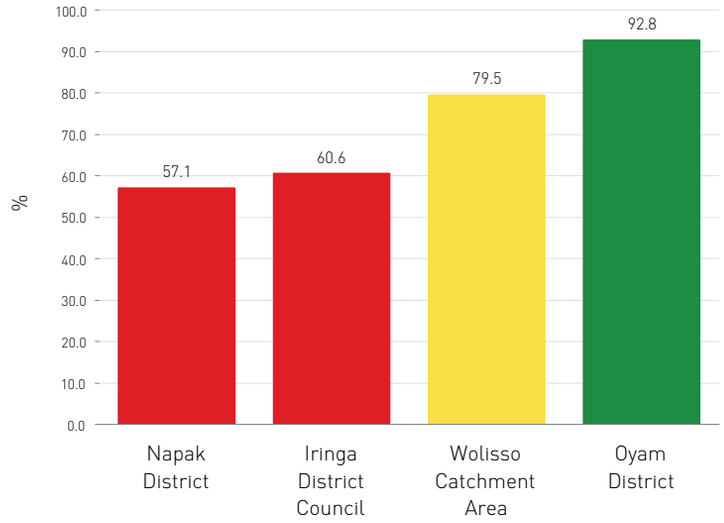


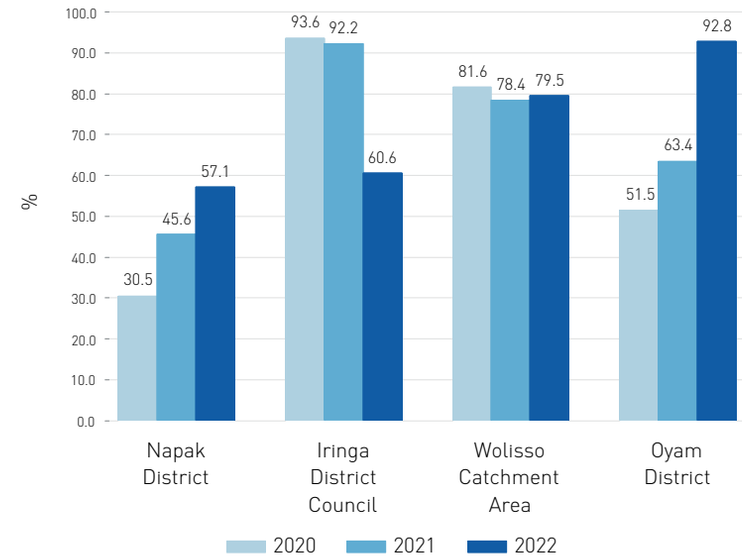
Numerator	Number of MDR initiated treatments (x100)
Denominator	Number of MDR TB diagnoses
Sources	Hospitals registers - laboratory departments (electronic and paper-based sources)

IDPT09 Percentage of TB cured patients

Computational level : Residence

This indicator shows the percentage of cured TB patients under treatment over the total number of bacteriologically confirmed polmunary TB patients. Patients are defined "cured" when they are negative for two times consequently in three months. The standard of 85% was fixed based on the WHO guidelines.



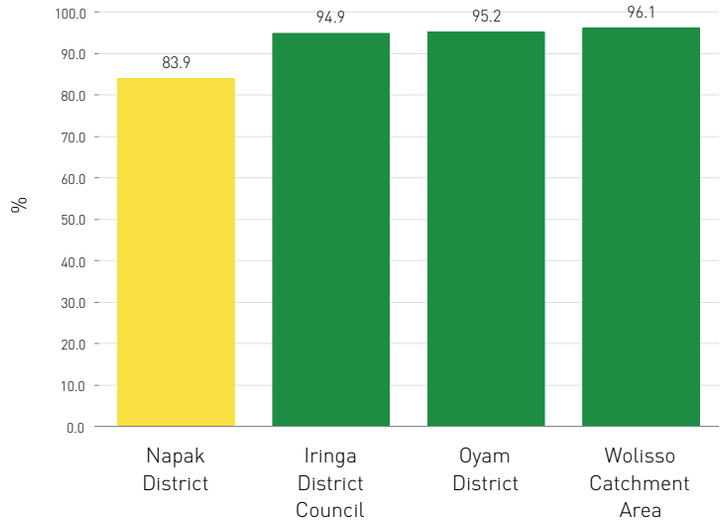


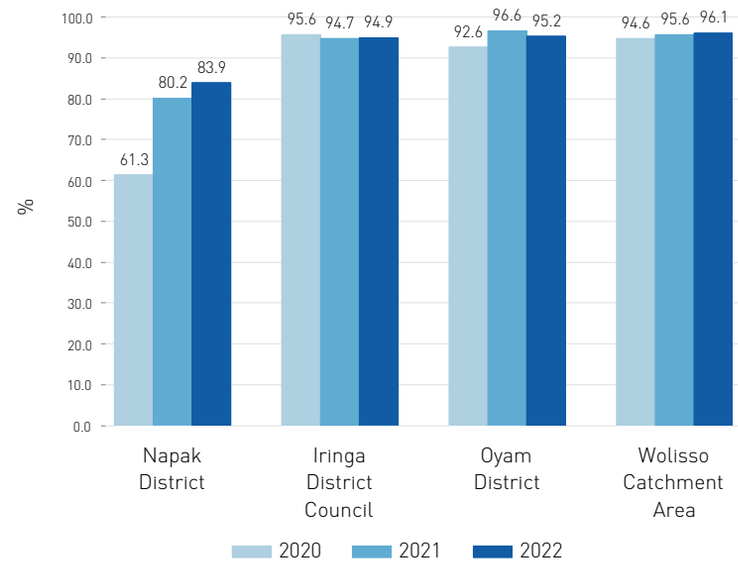
Numerator	Number of cured patients (x100)
Denominator	Number of PTB+ (bacteriologically confirmed)
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPT10 Percentage of TB completed treatments

Computational level : Residence

This indicator shows the percentage of TB patients who completed the treatment in the reference period over the total number of TB patients under treatment. The standard of 90% was fixed based on the WHO guidelines.



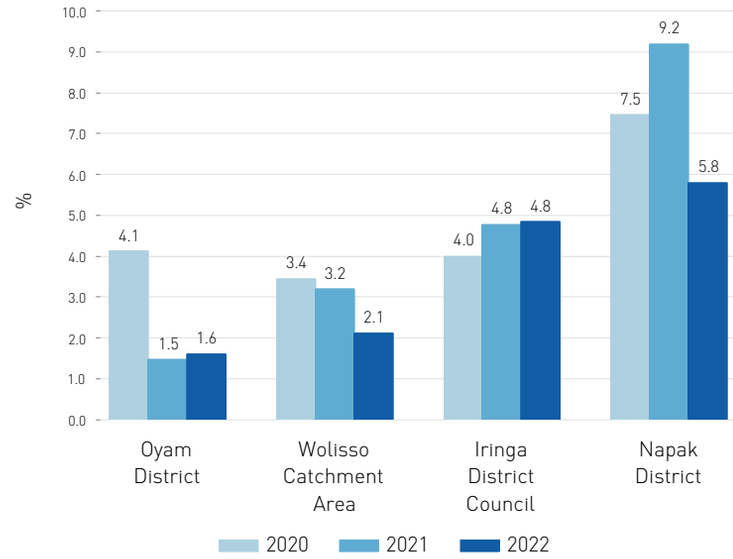


Numerator	Number of completed treatments (x100)
Denominator	Number of treated cases
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPT11 Percentage of TB deaths

Computational level : Residence

This indicator is an observation indicator at the residential level. It expresses the percentage of TB patients who died in the reference year over the total number of TB patients under treatment.

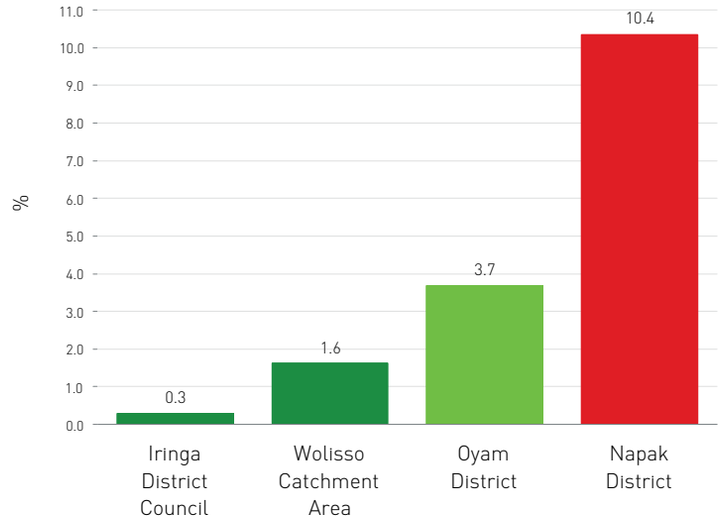


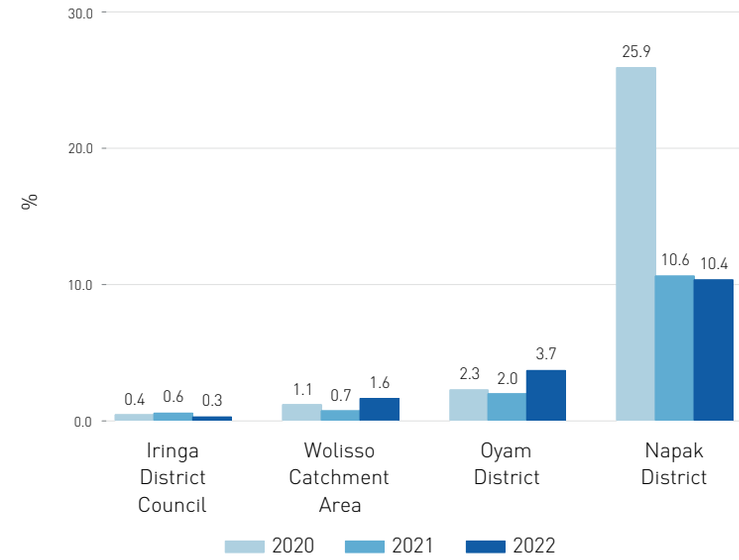
Numerator	Number of deaths (x100)
Denominator	Number of treated cases
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPT12 Percentage of TB interrupted treatments

Computational level : Residence

This indicator gives the percentage of TB patients who interruprted the treatment in the reference year (all causes included) over the total number of TB patients under treatment. The standard of 2,5% was fixed based on the WHO guidelines.



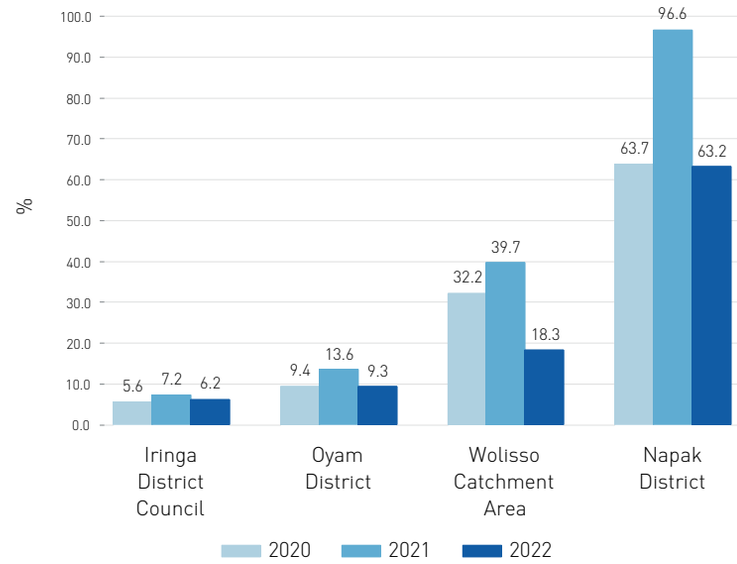


Numerator	Number of interrupted treatments (x100)
Denominator	Number of treated cases
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPT13 Percentage of admitted patients due to TB

Computational level : Residence

This indicator is an observation indicator at the hospital level and it shows the percentage of TB patients who were admitted in the reference hospital in the reference year. It gives an idea of the relevance of the hospital in terms of overall diagnostic capacity of the health system.

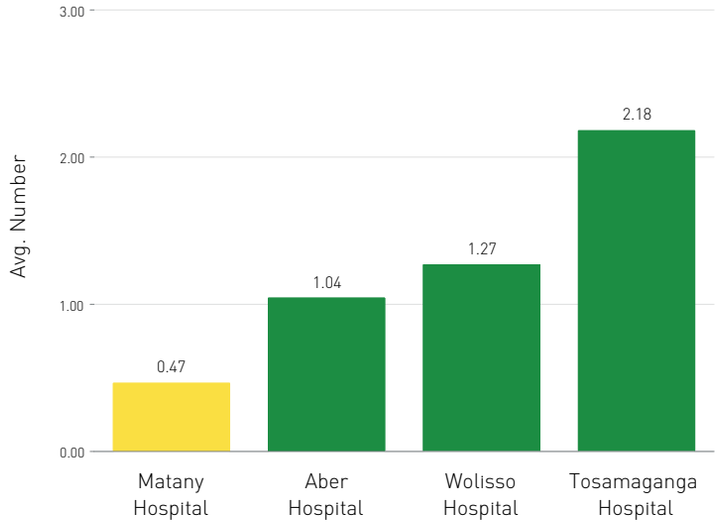


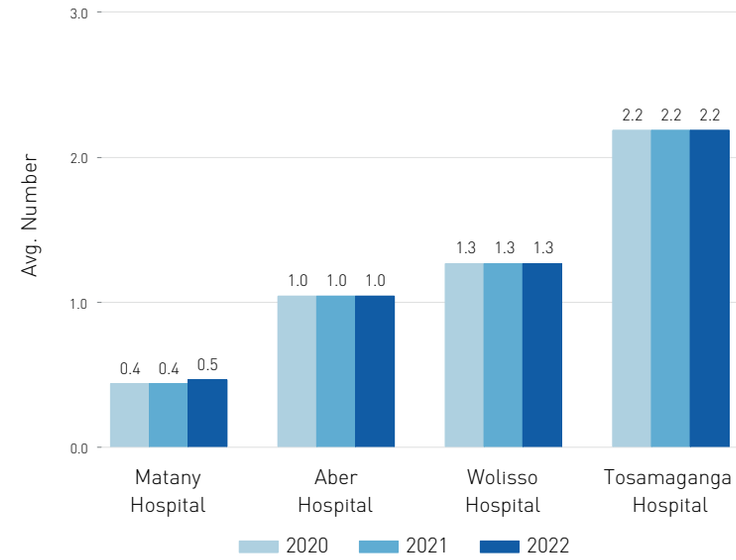
Numerator	Number of admitted patients for TB in reference hospital (x100)
Denominator	Total number of TB cases at residence level
Sources	Hospitals registers - medical departments (electronic sources) and Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPD02 Average number of water sources by Hospital

Computational level : Hospital

This indicator is calculated to evaluate the average number of water taps by each hospital room. The standard number equals 0,8 according to the Infection Prevention Control (IPC) of the WHO Framework.





Numerator	Number of water taps
Denominator	Total wards and outpatient rooms
Sources	Hospital tecnhical departments

IDPD03 Availability of a hand washing programme (Hospital)

Computational level : Hospital

This is a qualitative indicator that results from the answers provided to the following question: "Does the hospital have an hand washing programme?", with possible answer options "Yes" or "No".

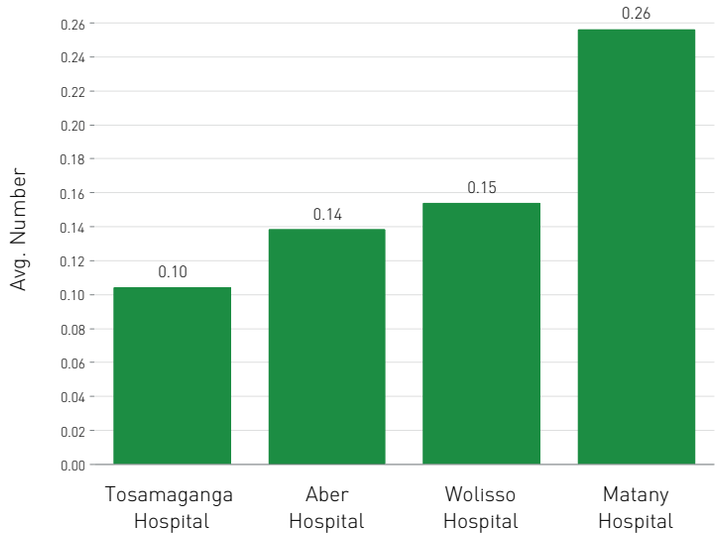
Hospital	Availability of an hand washing programme
St. Luke Hospital - Wolisso Hospital	NO
Tosamaganga District Designated Hospital	NO
St. Kizito - Matany Hospital	YES
Pope John XIII - Aber Hospital	NO

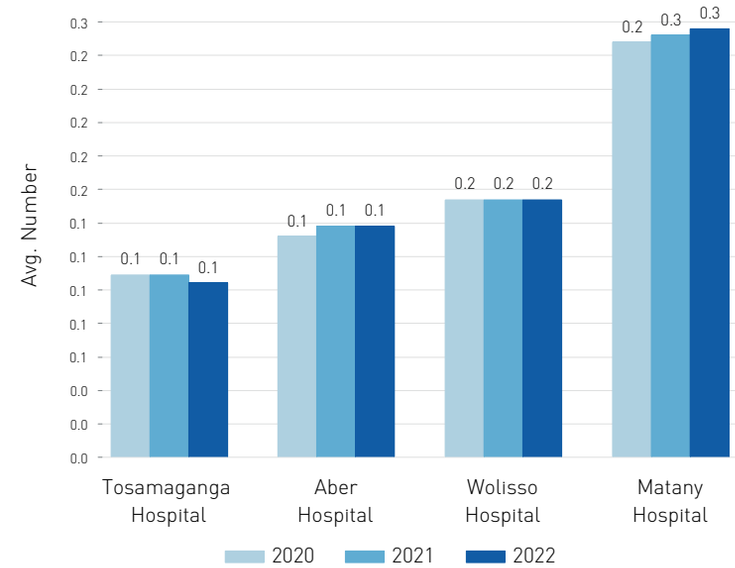
Numerator	-
Denominator	-
Sources	Hospital tecnhical departments

IDPD04 Average number of toilets per bed in IPD

Computational level : Hospital

This indicator is calculated to evaluate the average number of toilets by hospital bed. The standard equals 0,05 (namely one toilet every 20 beds) according to the Infection Prevention Control (IPC) of the WHO Framework.



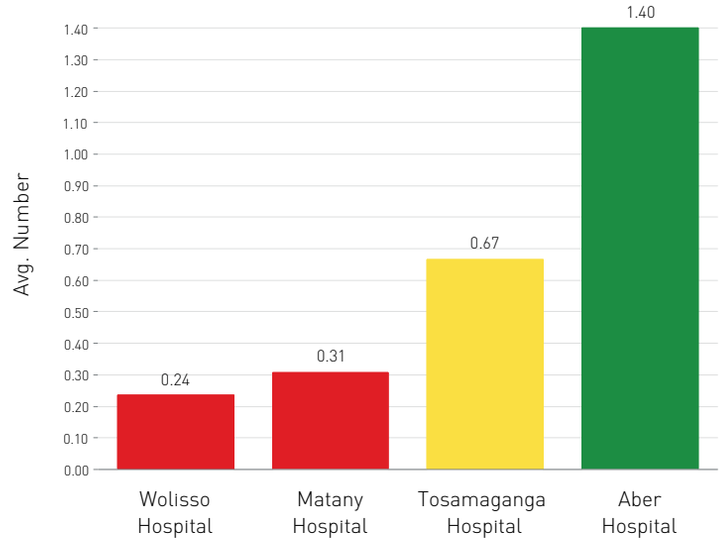


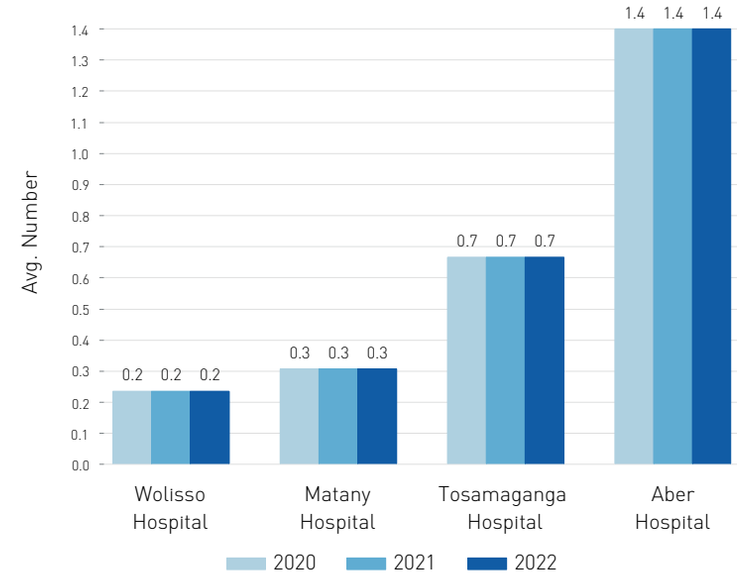
Numerator	Number of toilets
Denominator	Number of beds
Sources	Hospital tecnhical departments

IDPD05 Average number of toilets in OPD per number of rooms

Computational level : Hospital

This indicator is calculated to evaluate the average number of toilets per number of rooms in the outpatient department (OPD). The standard number equals 0,80 according to the Infection Prevention Control (IPC) of the WHO Framework.



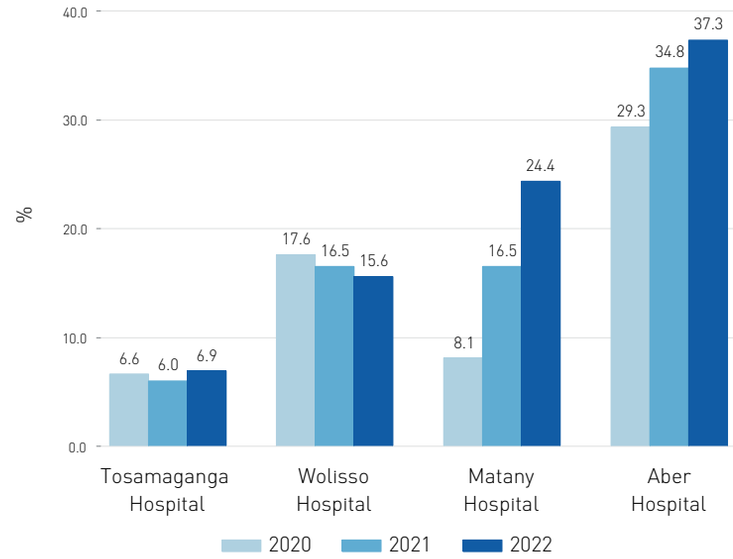


Numerator	Number of toilets in outpatient department (OPD)
Denominator	Number of rooms in outpatient department (OPD)
Sources	Hospital tecnhical departments

IDPD06 Percentage of positive stool tests (for parasites)

Computational level : Hospital

This indicator is an observation indicator and it expresses the percentage of positive stool tests over the total number of faeces examinations provided by the laboratories of the reference hospital.

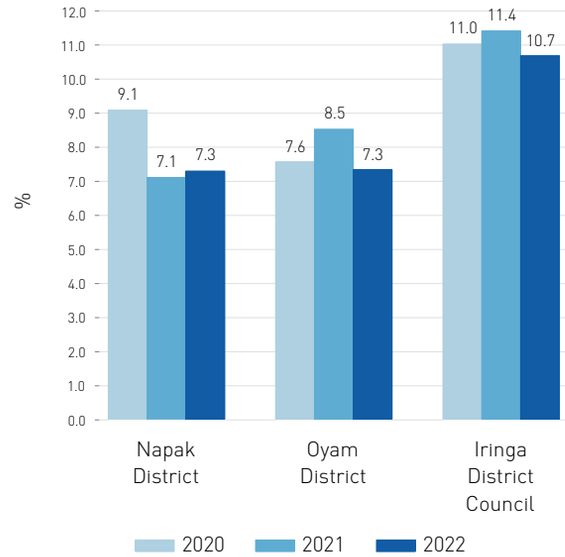


Numerator	Number of positive stool tests (for parasites) (x100)
Denominator	Total faeces examinations
Sources	Hospitals registers - laboratory departments (electronic and paper-based sources)

IDPD07 Percentage of gastroenteritis diagnosed (<5 years - Outpatient)

Computational level : Residence

This indicator is an observation indicator at the residential level and provides the percentage of patients (aged less than five years) who were diagnosed with gastroenteritis in the reference year.

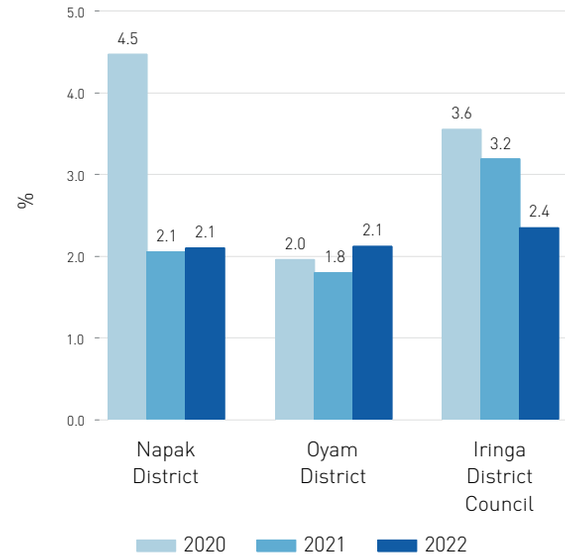


Numerator	Number of gastroenteritis diagnosed (<5 years) in OPD and HCs (x100)
Denominator	Number of OPD and HCs access for children <5yr
Sources	Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPD08 Percentage of gastroenteritis diagnosed (>5 years - Outpatient)

Computational level : Residence

This indicator is an observation indicator at the residential level and provides the percentage of patients (aged more than five years) who were diagnosed with gastroenteritis in the reference year.

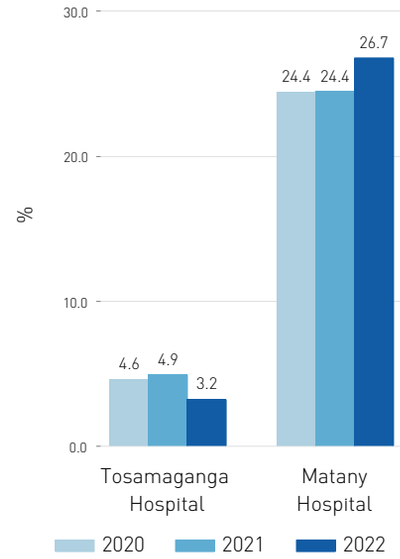


Numerator	Number of gastroenteritis diagnosed (>5 years) in OPD and HCs (x100)
Denominator	Number of OPD and HCs access >5yr
Sources	Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPD09 Percentage of diarrhoea cases with severe dehydration due to gastroenteritis and diarrhoea

Computational level : Hospital

This indicator is an observation indicator at the hospital level and reports the percentage of patients diagnosed with severe dehydration due to gastroenteritis and diarrhoea. It gives an indication of the relevance of the complicated cases as a proxy of preventive measure or management of early conditions. Also, it depends on the ability of the HMIS to capture the severe cases.

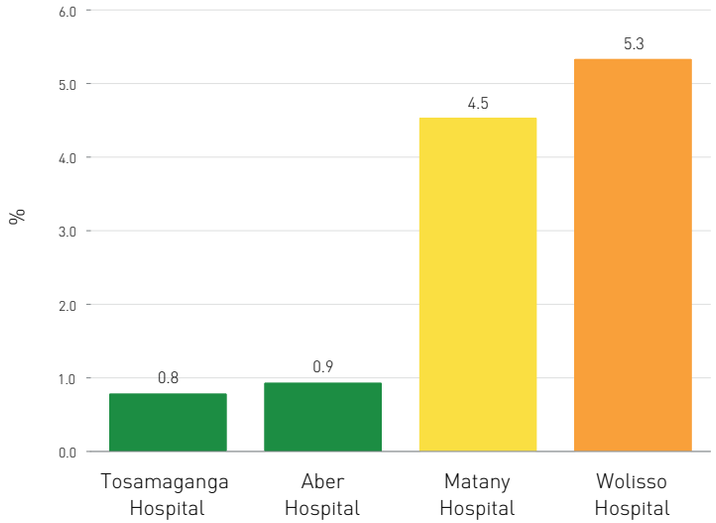


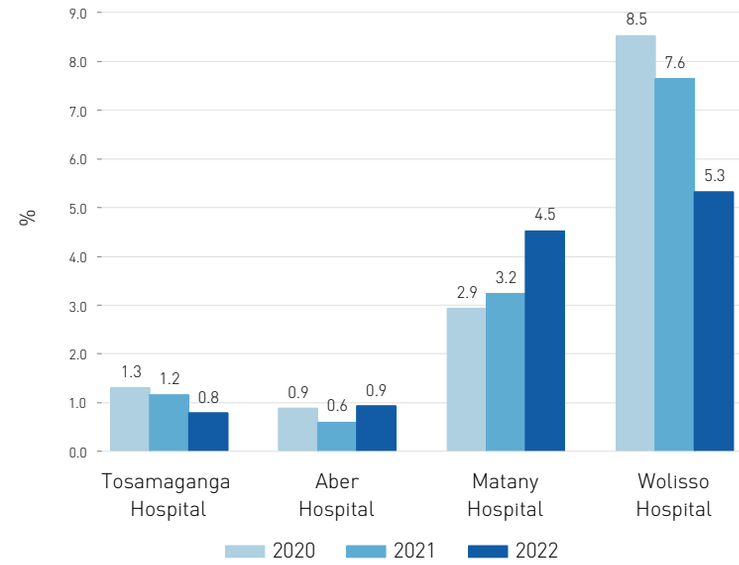
Numerator	Number of diarrhoea cases with severe dehydration (x100)
Denominator	Total number of cases
Sources	Wolisso and Matany hospital's registers, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPD10 Percentage of discharged patients for diarrhoea and gastroenteritis

Computational level : Hospital

This indicator is calculated to evaluate the percentage of discharged patients for diarrhoea and gastroenteritis over the total number of patients discharged from the hospital during the reference year. The standard was fixed starting from benchmarking data assessment. It is therefore a proxy of appropriateness of admissions that should be only for moderate/ severe cases.



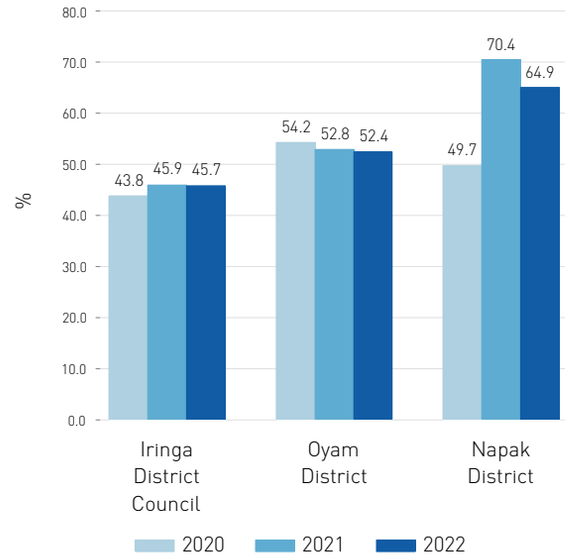


Numerator	Number of discharged patients for diarrhoea and gastroenteritis (x100)
Denominator	Total number of discharged patients (adults and children)
Sources	Wolisso and Matany hospital's registers, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPD11 Percentage of diarrhoea cases (<5 years)

Computational level : Residence

This indicator is an observation indicator at the residential level and provides the percentage of patients (aged less than five years) who were diagnosed with diarrhoea in the reference year.

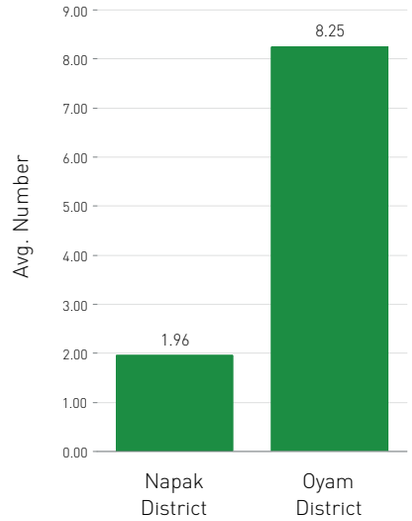


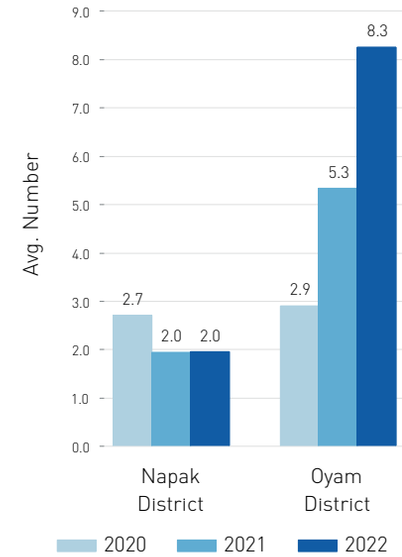
Numerator	Number of diarrhoea cases (<5 years - acute cases) (x100)
Denominator	Total number of diarrhoea cases
Sources	Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPD12 Average number of ORS packages delivered per patient with diarrhoea (<5years)

Computational level : Residence

This indicator measures the average number of Oral Rehydration Salts (ORS) tablets delivered to patients (aged less than five years) at the residential level. The standard of one tablet per patient was fixed according to the WHO guidelines.



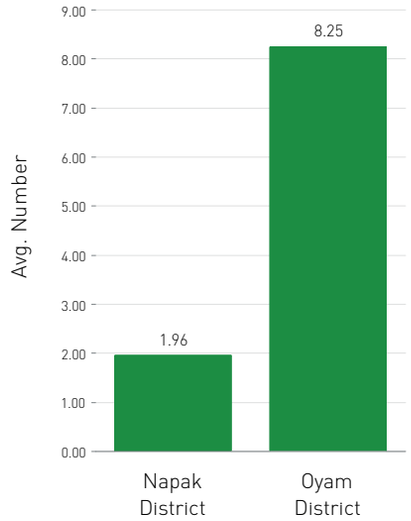


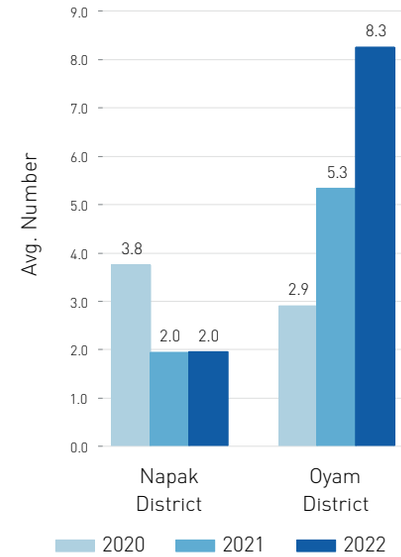
Numerator	Number of ORS packages delivered (Hospital + Health Centers) (<5 years)
Denominator	Total number of diarrhoea cases (<5 years)
Sources	Ugandan eHMIS/DHIS2 (electronic sources)

IDPD13 Average number of Zinc Tablets doses delivered per patient with diarrhoea (<5years)

Computational level : Residence

This indicator measures the average number of Zinc tablets delivered to patients (aged less than five years) at the residential level. The standard of one tablet per patient was fixed according to the WHO guidelines.



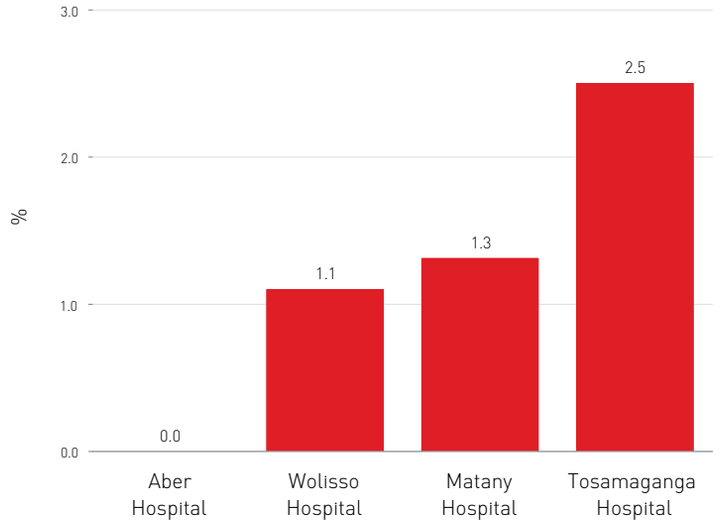


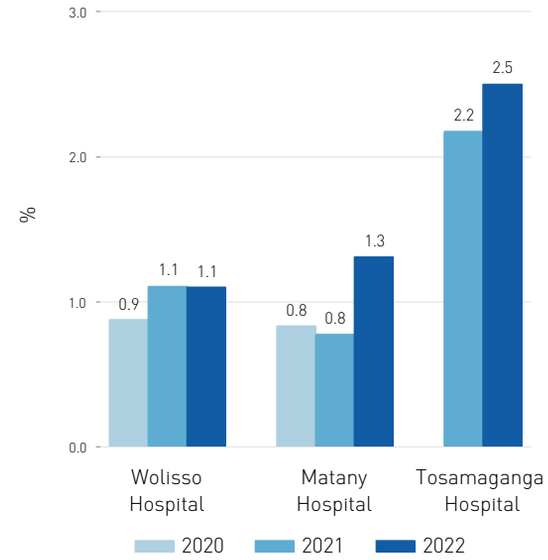
Numerator	Number of Zinc Tablets doses delivered (Hospital + Health Centers) (<5 years)
Denominator	Total number of diarrhoea cases (<5 years)
Sources	Ugandan eHMIS/DHIS2 (electronic sources)

IDPD14 Percentage of deaths with a diagnosis of gastroenteritis

Computational level : Hospital

This indicator is calculated to evaluate the percentage of deaths with a diagnosis of gastroenteritis and diarrhoea in the reference hospital among patients aged less than five years. The standard of 0,4% was fixed starting from benchmarking data assessment.



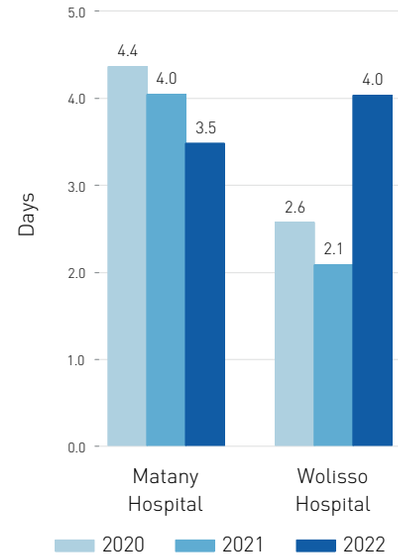


Numerator	Number of deaths diagnosed with gastroenteritis (patients aged < 5 years) (x100)
Denominator	Number of discharged patients with a diagnosis of gastroenteritis (patients aged < 5 years)
Sources	Wolisso and Matany hospitals registers, Tanzanian DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

IDPD15 ALOS for gastroenteritis

Computational level : Hospital

This indicator is an observation indicator at the hospital level. It provides a view of the average lenght of stay (ALOS) in hospital due to gastroenteritis. It is a proxy of appropriateness of admission: when ALOS decreases, probably too many less severe cases are admitted.



Numerator	Number of inpatient days for gastroenteritis
Denominator	Total number of inpatients (for gastroenteritis)
Sources	Wolisso and Matany hospitals registers - medical department (electronic sources)

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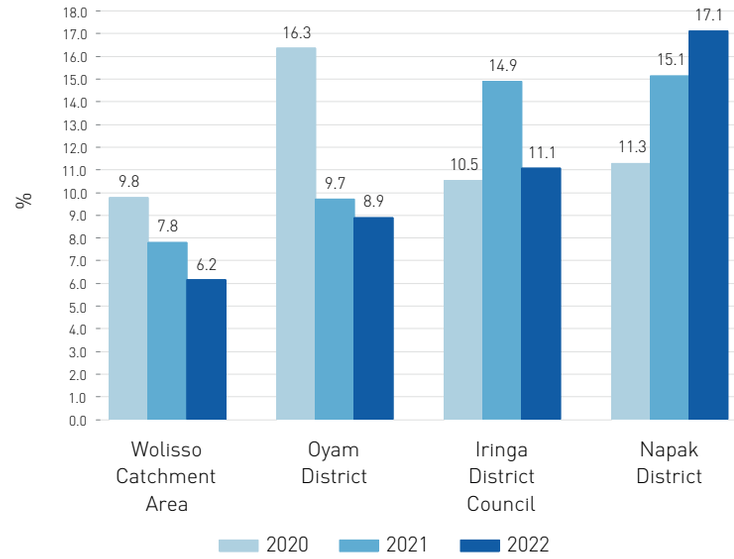
CPHIV01 Percentage of HIV screening coverage

Computational level : Residence

This indicator is an observation indicator and it illustrates the percentage of HIV screening coverage, expressed as the ratio between the total number of tests and the number of admissions in the outpatient department both in the reference hospital and in the lower level units.

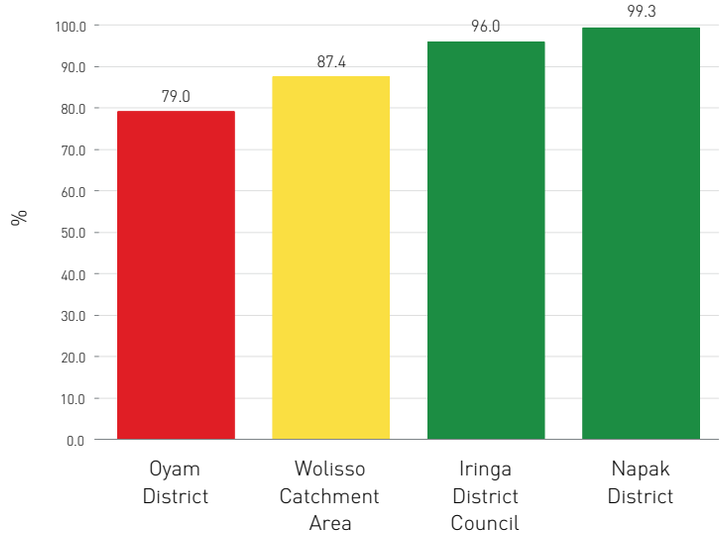


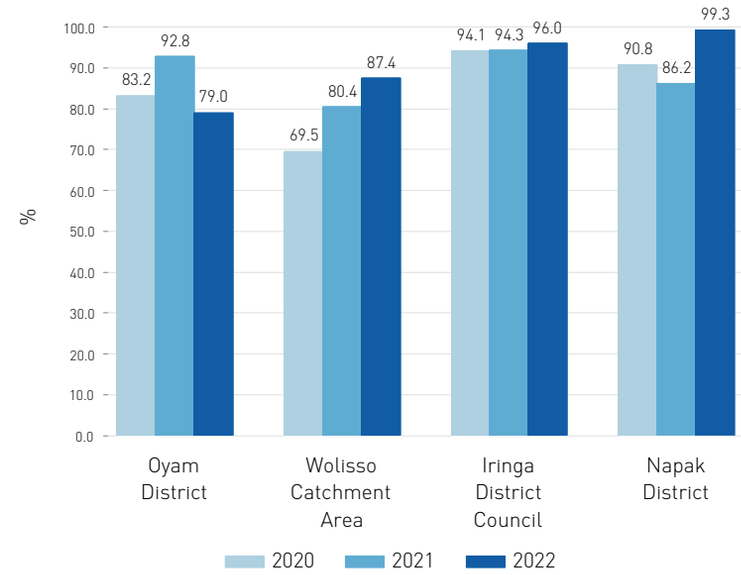
Numerator	Number of performed tests (x100)
Denominator	Number of admissions in OPD (hospital and HCs) and IPD
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV02 Percentage of performed tests to pregnant women

Computational level : Residence

This indicator is calculated to evaluate the HIV screening coverage among pregnant women followed at hospital and discrict level. The standard of 95% was fixed according to the WHO guidelines.



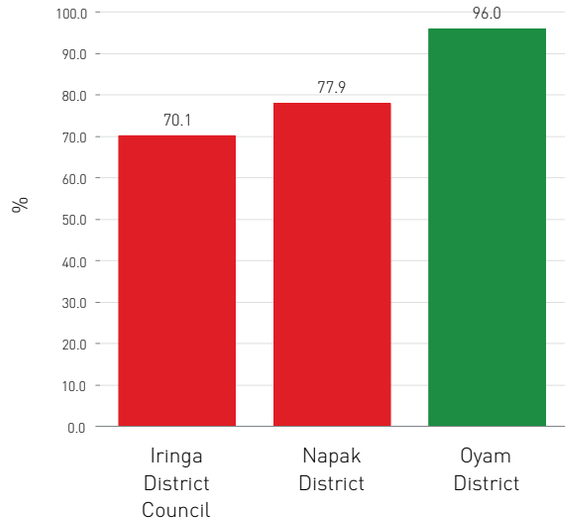


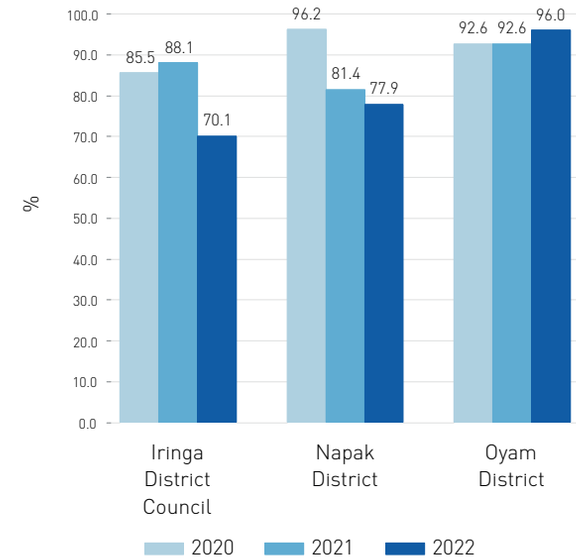
Numerator	Number of HIV performed tests to pregnant women followed at residence level (x100)
Denominator	Total number of pregnant women with at least one ANC visit
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV03 Percentage of HIV positive cases undergoing the TB screening

Computational level : Residence

This indicator expresses the percentage of HIV positive patients who underwent a TB screening by means of all testing methods (sputum, symptom questionnaire, Xpert) during the reference year over the total number of HIV positive patients diagnosed in the reference area. The standard of 98% was fixed based on the WHO standard.



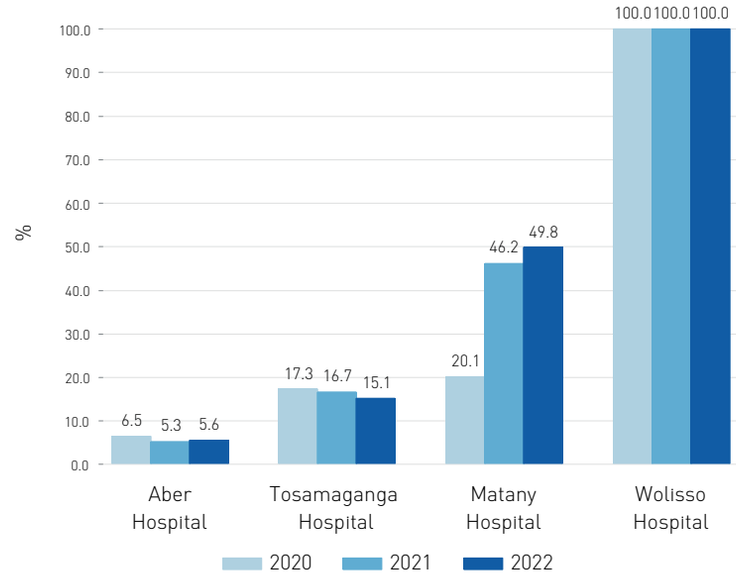


Numerator	Number of HIV cases undergoing the TB screening (sputum, symptom questionnaire, Xpert) (x100)
Denominator	Number of HIV+ cases
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV03.1 Percentage of HIV patients screened for TB with Xpert

Computational level : Hospital

This indicator is an observation indicator and represents a specific trait of the indicator CPHIV03, relative to the percentage of HIV positive patients who undewent TB screening only with Xpert. Such measure is then divided by the total number of HIV positive patients screened for TB.

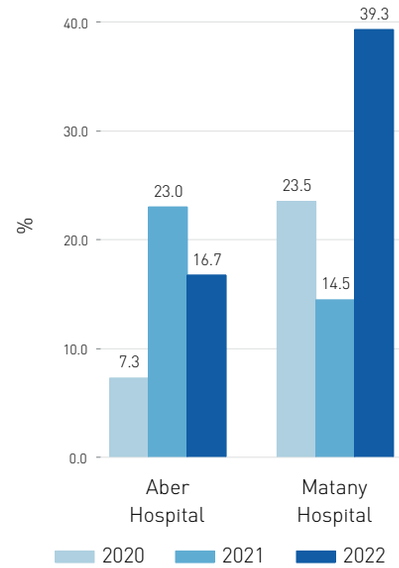


Numerator	Number of HIV patients screened with Xpert for TB (x100)
Denominator	Number of HIV + screened patients for TB
Sources	Hospitals registers - laboratory departments (electronic and paper-based sources) and Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV04 Percentage of new diagnosed patients with CD4 < 350cell/ml

Computational level : Hospital

This indicator is an observation indicator that includes all those cases of HIV diagnosis with CD4 less than 350 cell/ml. It can be used as a proxy of the inability of the healthcare system to timely take care of these patients.

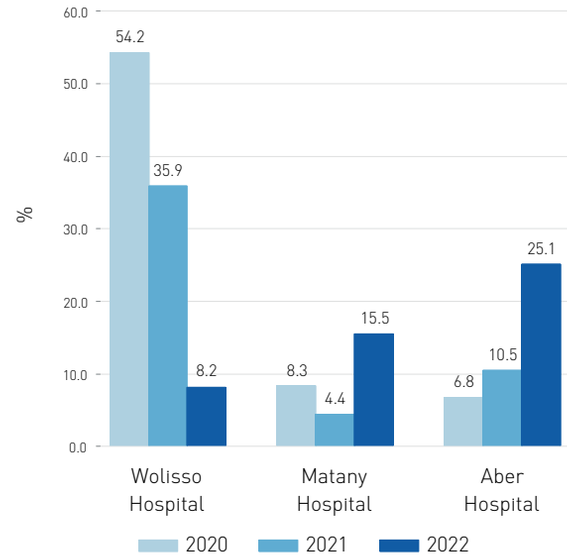


Numerator	Number of diagnosed patients with CD4 < 350cell/ml (x100)
Denominator	Number of new diagnosed HIV+ patients
Sources	Hospitals registers - laboratory departments (electronic and paper-based sources) and Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV05 Percentage of HIV+ patients with opportunistic infections (or advanced HIV)

Computational level : Hospital

This indicator is an observation indicator and it expresses the percentage of positive HIV patients diagnosed with opportunistic infections. It can be used as a proxy of the inability of the healthcare system to timely take care of these patients.

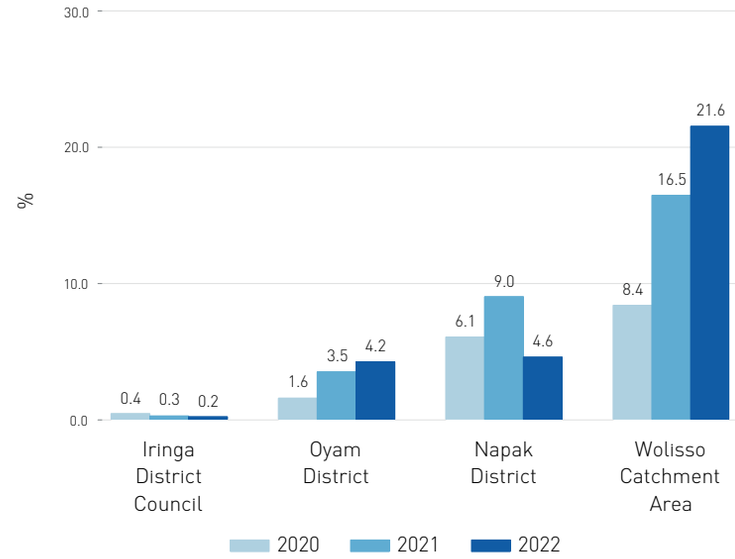


Numerator	Number of HIV+ patients with opportunistic infections diagnosed at the time of HIV diagnosis (x100)
Denominator	Number of new HIV+ patients diagnosed
Sources	Hospitals registers - laboratory departments (electronic and paper-based sources) and Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV06 Percentage of malnourished patients followed in an HIV unit

Computational level : Residence

This indicator is an observation indicator and it repors the percentage of malnourished patients that are currently followed in ART clinic at residence level.

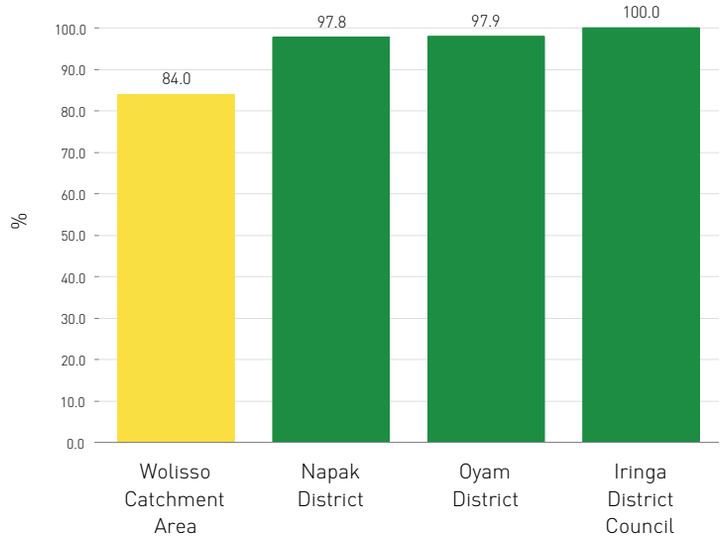


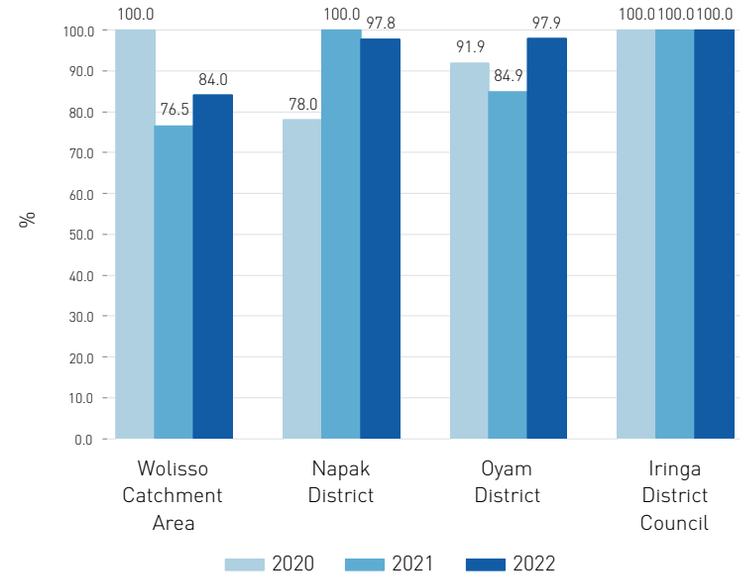
Numerator	Number of HIV+ malnourished patients currently on ART in a HIV unit (x100)
Denominator	Number of patients currently in HIV unit
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV07 Percentage of new HIV+ linked to ART

Computational level : Residence

This indicator is calculated to evaluate the percentage of positive HIV cases who started the therapy in an ART clinic at the residential level, over the total number of HIV patients tested positive during the reference year. The standard of 90% was fixed based on the WHO standard.



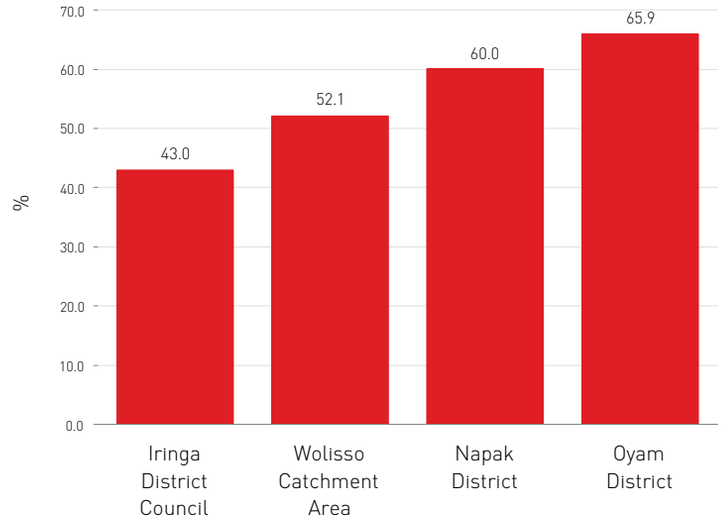


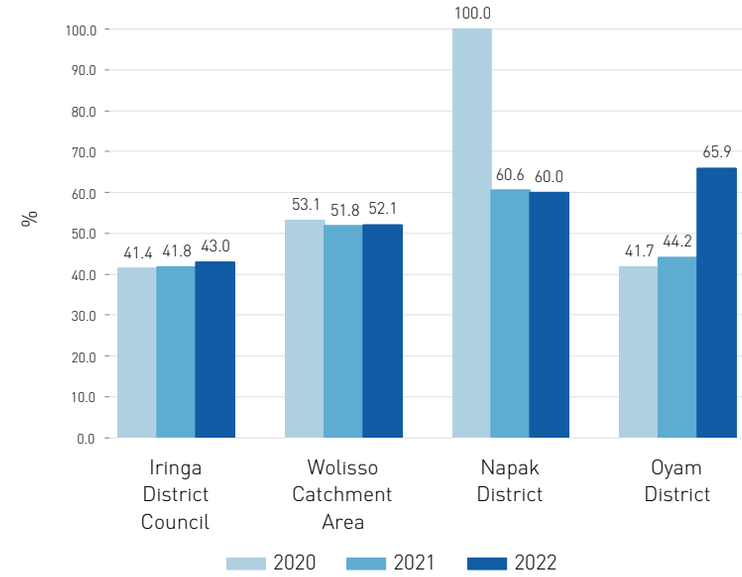
Numerator	Number of HIV+ starting ART (x100)
Denominator	Number of new patients tested HIV+ in OPD and IPD
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV08 Coverage rate of the therapy

Computational level : Residence

This indicator is measured to estimate the coverage rate of the therapy, by setting a ratio between the number of positive patients that are currently followed in an ART clinic and an estimation of the prevalence of the HIV among residents in the reference area. The standard of 95% was fixed based on the WHO standard.



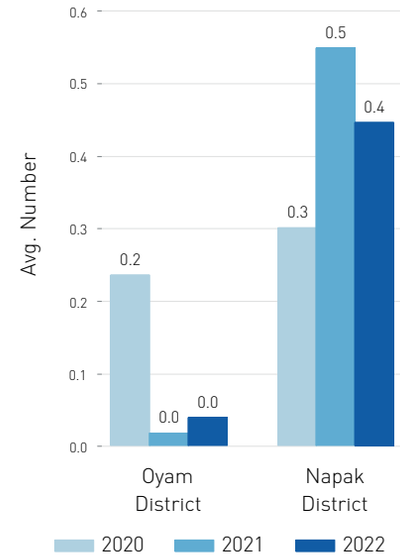


Numerator	Number of HIV+ patients currently on ART therapy (x100)
Denominator	Number of HIV+ residents (estimated)
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV09 Average number of nutritional supplements delivered per patient currently on ART therapy

Computational level : Residence

This indicator is an observation indicator and it measures the average number of nutritional supplements delivered, such as Plumpinat, enriched flavour, to each HIV patient currently followed in an ART clinic in the reference area.

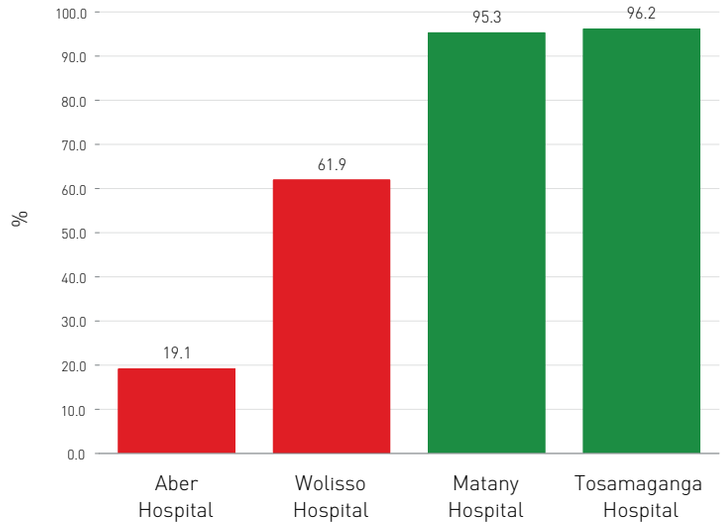


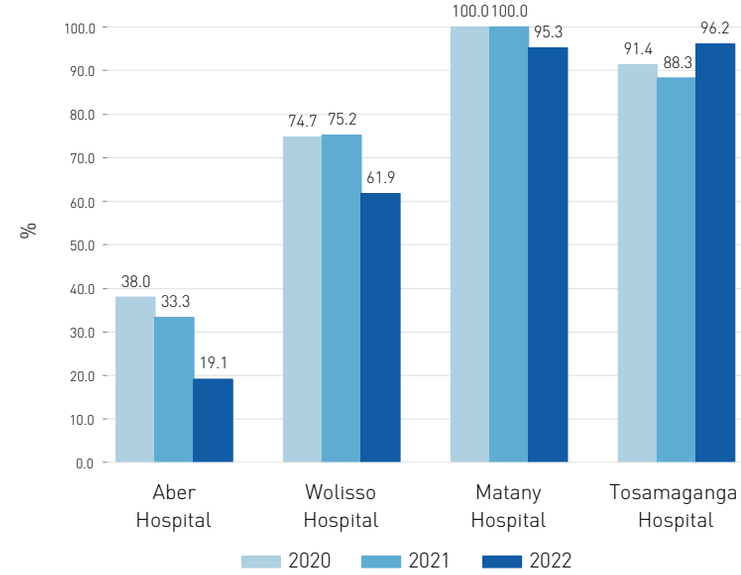
Numerator	Number of nutritional supplements (Plumpinat, enriched flawour ect.) delivered
Denominator	Number of patients currently on ART therapy
Sources	Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV10 Percentage of VL tests over the patients undergoing ART therapy

Computational level : Hospital

This indicator provides the percentage of patients undergoing viral load (VL) tests over those that are currently followed in the ART clinic of the reference hospital. This indicator is calculated only at hospital level because data for the reference area were not available. The standard of 95% was fixed based on the WHO standard.



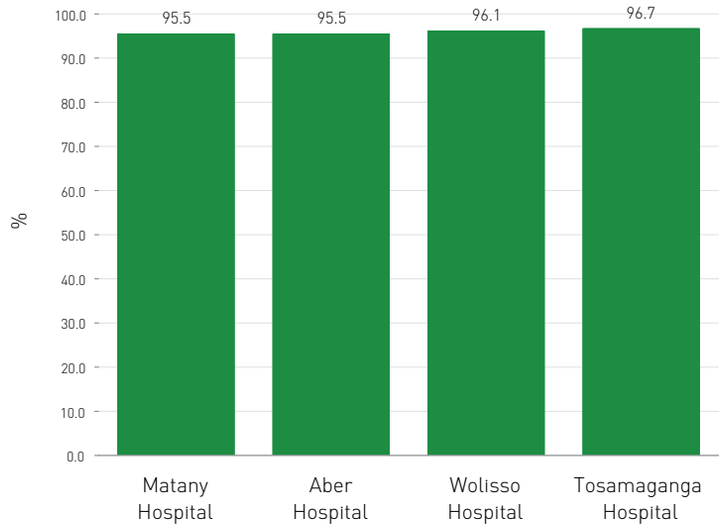


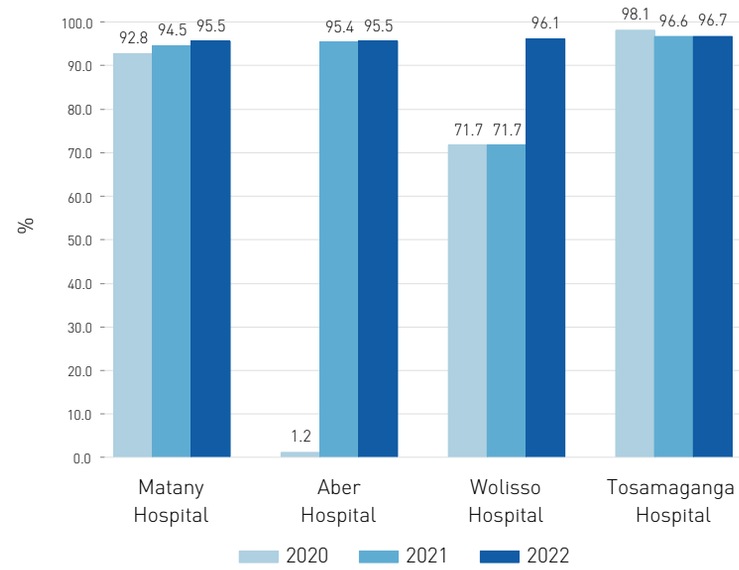
Numerator	Number of patients undergoing VL tests (x100)
Denominator	Number of patients currently on ART therapy
Sources	Hospitals registers - ART clinic/CDC departments (paper-based sources) and Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV11 Percentage of patients undergoing ART therapy and tested with VL with suppression of viremia

Computational level : Hospital

This indicator provides the percentage of patients undergoing viral load (VL) tests with viremia suppression over those that are currently followed in the ART clinic of the reference hospital and were tested with a VL test within the last 12 months. This indicator is calculated only at hospital level because data for the reference area were not available. The standard of 90% was fixed based on the WHO standard and clinical protocol implemented by the health authorities involved in the present study.



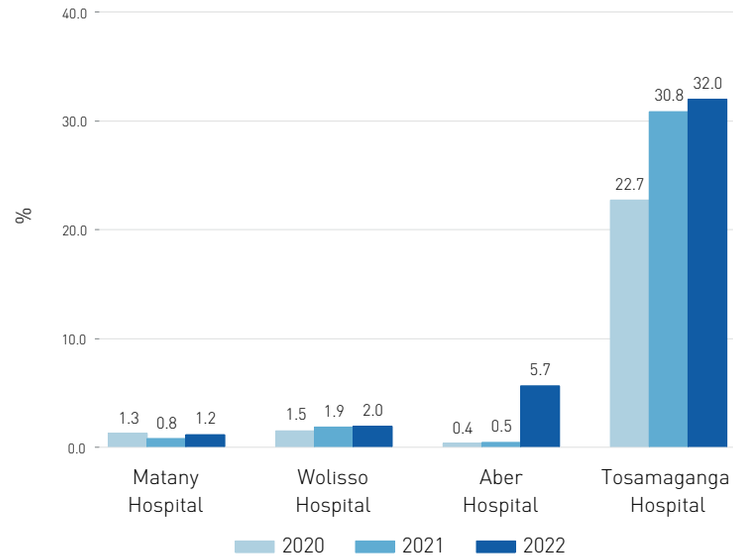


Numerator	Number of patients undergoing VL tests with viremia suppression (x100)
Denominator	Number of patients currently on ART therapy and tested with VL within last 12 months
Sources	Hospitals registers - ART clinic/CDC departments (paper-based sources) and Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV12 Percentage of deaths undergoing ART therapy (within 12 months)

Computational level : Hospital

This indicator is an observation indicator at the residential level that expresses the percentage of HIV patients who died while undergoing an ART therapy in the reference area within the last 12 months.

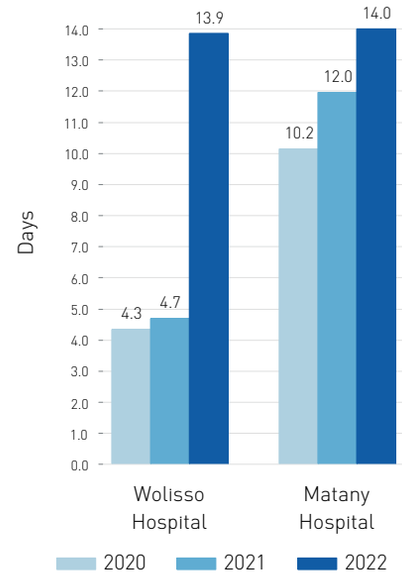


Numerator	Number of patients undergoing ART therapy who died within 12 months from the beginning of the therapy (x100)
Denominator	Number of patients who started ART therapy as of at least 12 months
Sources	Ethiopian HMIS/DHIS2, Tanzanian ETL/DHIS2, Ugandan eHMIS/DHIS2 (electronic sources)

CPHIV13 ALOS (HIV admitted patients)

Computational level : Hospital

This indicator is an observation indicator at the hospital level and it provides a view of the average lenght of stay (ALOS) in hospital due to HIV related health issues and complications.

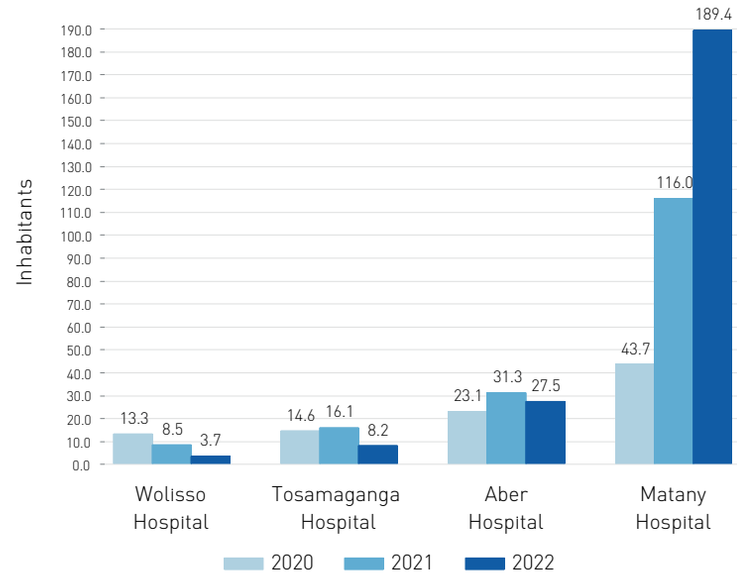


Numerator	Number of inpatient days for HIV and its complication
Denominator	Number of inpatients for HIV and its complications
Sources	Wolisso and Matany hospitals registers - medical department (electronic sources)

CP02 Hospitalization rate for chronic liver diseases, per 100.000 residents (>15 years)

Computational level : Hospital

This is an observation indicator at the hospital level that provides the hospitalization rate for chronic liver diseases standardized by 100.000 residents in the reference area aged more than 15 years.

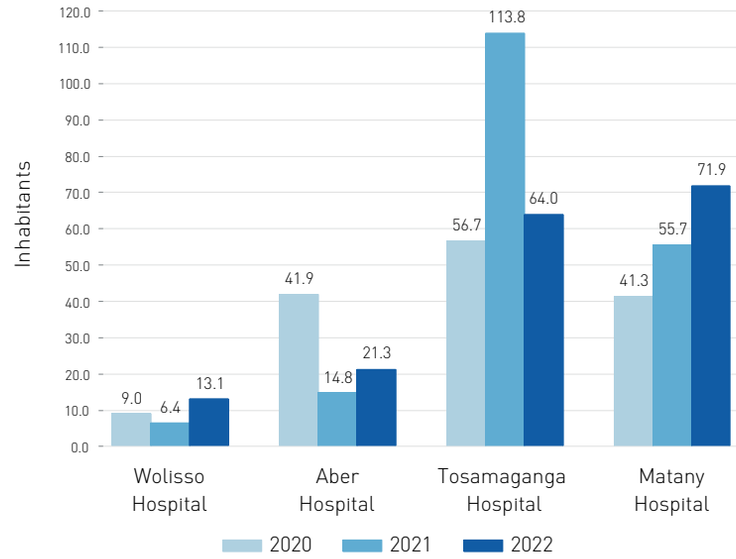


Numerator	Number of admissions for Chronic Liver Diseases (x100.000)
Denominator	Estimated resident population (>15 years)
Sources	Wolisso hospital's registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany hospital's registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga hospital's registers (paper-based source) and Tanzanian DHIS2 (electronic source); Ugandan eHMIS/DHIS2 (electronic source)

CP05 Hospitalization rate of hypertension cases, per 100.000 residents (>15 years)

Computational level : Hospital

This is an observation indicator at the hospital level that provides the hospitalization rate for hypertension standardized by 100.000 residents in the reference area aged more than 15 years.

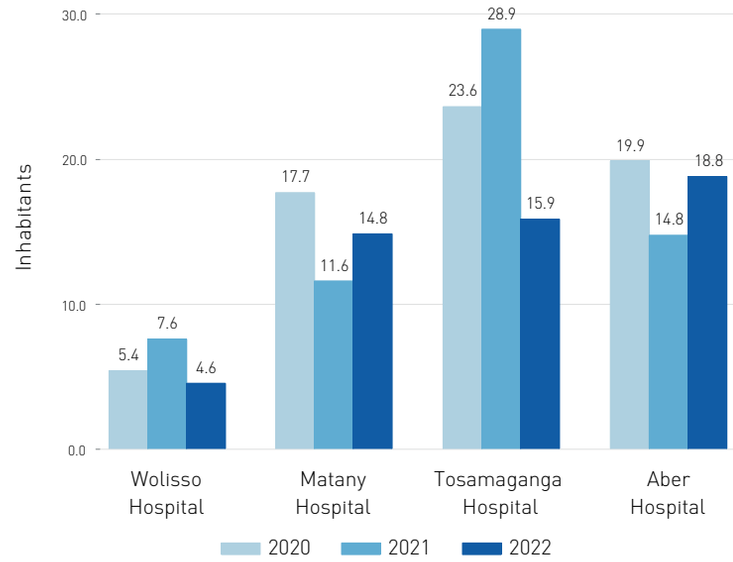


Numerator	Number of admissions for Hypertension (x100.000)
Denominator	Estimated resident population (>15 years)
Sources	Wolisso hospital's registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany hospital's registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga hospital's registers (paper-based source) and Tanzanian DHIS2 (electronic source); Ugandan eHMIS/DHIS2 (electronic source)

CP06 Hospitalization rate for stroke, per 100.000 residents (>15 years)

Computational level : Hospital

This is an observation indicator at the hospital level that provides the hospitalization rate for stroke in patients older than 20 years standardized by 100.000 residents in the reference area aged more than 15 years.



Numerator	Number of admissions for stroke (> 20 years) (x100.000)
Denominator	Estimated resident population (>15 years)
Sources	Wolisso hospital's registers and Ethiopian HMIS/DHIS2 (electronic sources); Matany hospital's registers and Ugandan eHMIS/DHIS2 (electronic sources); Tosamaganga hospital's registers (paper-based source) and Tanzanian DHIS2 (electronic source); Ugandan eHMIS/DHIS2 (electronic source)

The Management and Healthcare Laboratory (MeS), established in 2004 by the Sant'Anna School of Advanced Studies in Pisa, carries out research and educational activities in health economics and management in collaboration with public and private healthcare institutions at regional, national and international level.
Its mission consists of enhancing the founding logics of the national health system, studying and evaluating its specificities, comparing different regional and international systems, building organizational and management innovation aimed at improving citizens' health, and training managers and professionals of healthcare institutions.

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ISBN: 979-12-5486-113-4