



Republic of Rwanda
Ministry of Health

4X4 Reform: Executive Summary

Towards Quadrupling the current workforce in 4 years (4x4);
Uplifting Quantity and Quality of care



January 2024

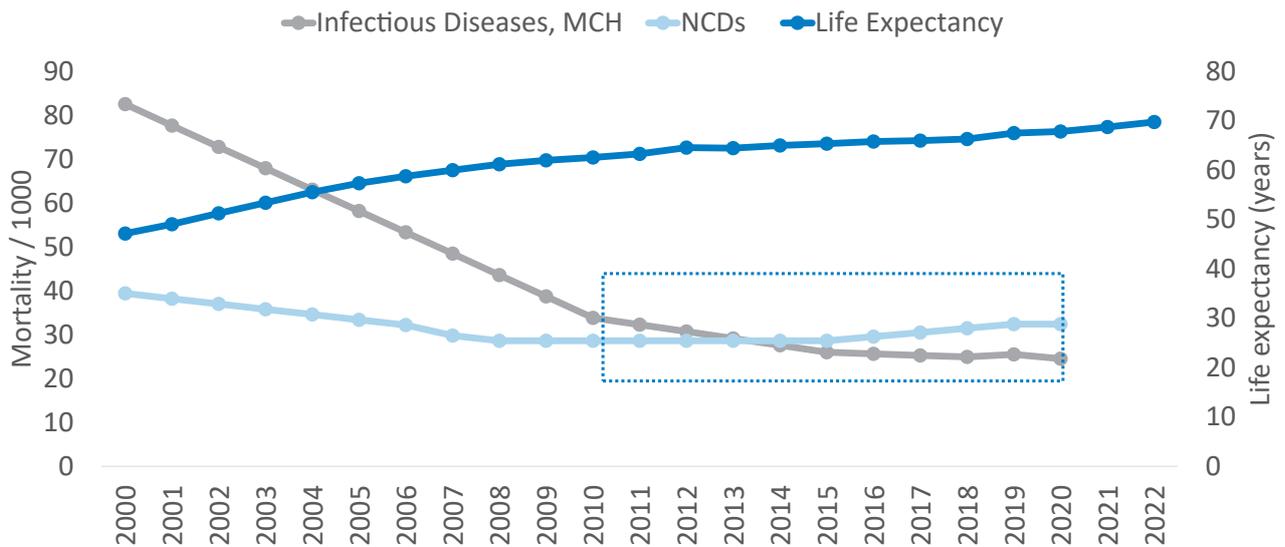


Why the 4x4 reform?

Nearly 30 years ago, the health system in Rwanda completely collapsed during the 1994 Genocide against the Tutsi. The aftermath of the tragedy left the country with a significant depletion in its healthcare workforce, while the burden of disease reached unprecedented levels. During the last 20 years, Rwanda's health system has made remarkable improvements as evidenced by various health outcomes. Most importantly, life expectancy has increased from 50 to 70 years in the last 2 decades, under-5 mortality has dropped to 45 deaths per 1,000 live births, and maternal mortality has dropped from 1,071 to 203 per 100,000 live births while 96% of births are assisted by a skilled healthcare provider (1-3).

In the last decade, primary and secondary care has been strengthened and services have been brought closer to the population, which by extension, has also increased access to specialty services. While these successes have allowed Rwandans to live longer, an emerging threat is posed by the ongoing epidemiological transition, where the exposure to environmental, social and lifestyle related risk factors leads to increased incidence of non-communicable diseases such as diabetes, hypertension, strokes, cancer, etc.

Figure 1: Rise of NCDs mortality in Rwanda

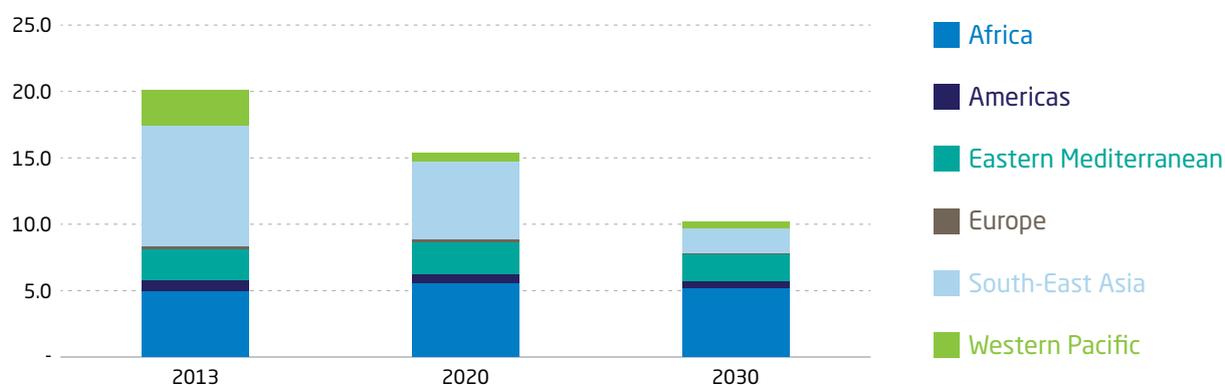


Source: Developed from RPHC4 2023 (1), Rwanda World Bank Database (4), and Ministry of Health HMIS Data 2023 (5).

The rising challenge for the Rwandan health system is to reinforce the Primary Health Care (PHC) structure to be able to detect, treat and manage these diseases early, preventing the need for costly tertiary level advanced care. The backbone of a strengthened PHC is a well-trained, qualified, and sufficient health workforce. However, Rwanda still falls behind the WHO recommended healthcare worker density of 4.45 healthcare workers per 1,000 people (6). The population density of healthcare workers in Rwanda is 1 healthcare worker per 1,000 people. As of December 2023, Rwanda registered close to 28,000 healthcare workers. This number includes 14,816 nurses, 2,137 midwives, 6,831 allied health professionals, 1,302 pharmacists, 102 dental surgeons, 1303 general practitioners, and only 694 specialist doctors, among others. Some specialist areas have 0 to 5 specialists only such as: pediatric surgery, cardiac surgery, pulmonology, and nephrology (7-10).

Without any changes, it will take Rwanda close to 180 years to achieve the recommended healthcare worker to population ratio which threatens to stall and even revert the progress made. In this regard, the Ministry of Health (MOH) has designed a reform to train and ensure availability of a minimum of 4 healthcare workers for every 1,000 people by the next four years called the “4x4” reform. The Human Resources for Health challenge is not only a concern for Rwanda, but an emerging problem worldwide. It is projected that there will be a global shortage of 10 million health workers by 2030 (11). Africa in particular has shown meagre improvement in health workforce density over the past 10 years, and projections for 2030 are bleak if no interventions are implemented.

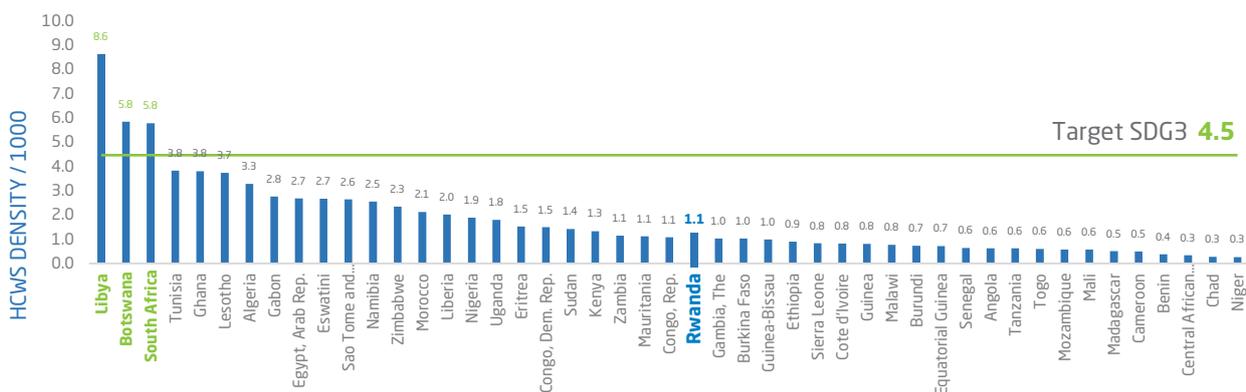
Figure 2: Distribution of the global health workforce shortage by WHO region in 2013, 2020 and projected shortage in 2030



Source: WHO Global Strategy on Human Resources for Health 2022 (11)

Africa remains the region most affected by the shortage of HCWs yet has no projected improvement. On a continental scale, only 3 countries have achieved the SDG recommended target for healthcare worker density: Libya, South Africa and Botswana. Rwanda lags behind with only 1 HCW/1000 people.

Figure 3: Density of health care workers in Africa



Source: Adapted from WHO Global Health Workforce Statistics Database (12)

Rwanda is therefore trying to rapidly grow the health workforce while tackling the epidemiological shift, and addressing the aftermath of COVID-19 on the health workforce. Therefore, the 4x4 reform developed in 2023 was designed to address this pressing need.



What does the 4x4 entail?

The 4x4 reform was approved as a national priority by the Cabinet of the Government of Rwanda on 13th July 2023. The reform sets a goal of quadrupling the number of healthcare workers in the next four years to bring Rwanda closer to the WHO recommended target of healthcare worker density while enabling the country's health sector and medical education to evolve and be sustainable. The 4x4 reform is not a standalone initiative – it builds off the work conducted in the National Strategy for Health Professions Development (NSHPD) 2020-2030 that details the plans necessary to strengthen the primary healthcare workforce in the next 10 years (13). Additionally, it will be implemented alongside other strategic projects in MOH that include strengthening the primary health care system and public health security, championing evidence-based medicine and systems, enhancing leadership management decisions and coordination, and capitalizing on digital integration.

The breakdown of the projected increase in health professionals for the 4x4 reform is presented below:

Table 1: Total increased enrollment and expected graduation for aggregated healthcare cadres

Professional Cadres	Average Annual Enrollment (2020-2022)	Expected Enrollment through 4x4						Total Enrollment by 2028	Total Graduated by 2028
		2023	2024	2025	2026	2027	2028		
Residents & Fellows	72	164	208	208	208	208	208	1,204	897
General Practitioners	203	453	509	515	515	515	515	3,022	1,686
Dental Surgeons	37	60	60	60	60	60	60	360	185
Pharmacists	77	180	320	320	320	320	320	1,780	832
Nurses	648	3,541	3,701	3,712	3,712	3,712	3,712	22,090	15,770
Midwives	72	1,396	1,406	1,417	1,417	1,417	1,417	8,470	5,209
Allied Health Sciences	495	2,146	2,146	2,146	2,146	2,146	2,146	12,876	8,394
Total	1,604	7,940	8,350	8,378	8,378	8,378	8,378	49,802	32,973

Based on analysis of historical data, without the implementation of the 4x4 reform, the projected total enrollment by 2028 would have been merely 11,292 health professional students compared to 49,802 expected by 2028 with the successful implementation of 4x4.



How will the 4x4 be achieved?

1

Increase the quantity and quality of trained health professional students in priority programs

The MOH has a target of enrolling a significant amount of health professionals in higher learning institutions in areas of highest priority: medical specialization, midwifery, nurse anesthesia, radiology imaging technology, dental therapy, ophthalmology and biomedical laboratory. These areas have the largest gaps in enrollment and are a critical workforce required to address the existing burden of diseases in Rwanda. Specialty programs in oncology, cardiology, nephrology and neonatology are also prioritized for doctors and nurses.

2

Recapture local faculty and hire visiting faculty to fill immediate teaching needs

In a gap assessment conducted by the MOH, limited numbers of qualified faculty was a significant challenge shared by both public and private institutions. Additionally, with the goal to produce higher numbers of qualified students, an accompanying increase in faculty hires is necessary. Through the 4x4 reform, the MOH and partners will support the recruitment and hiring of faculty for medical schools, nursing & midwifery schools, and teaching hospitals. One of the key activities for this outcome will be to redeploy local health professionals from public and private health facilities to attributed teaching roles at teaching hospitals and training sites. For outstanding needs, foreign faculty will also be hired to fill current immediate gaps as more local faculty are trained.

3

Improve training capacity and teaching facility sites

Aligned with the previous outcomes, the 4x4 reform emphasizes the need to improve the infrastructure of existing facilities and expand their capacity to accommodate additional students, staff, and programs. The MOH and partners will facilitate medical schools to expand training facilities and infrastructure development according to set quality standards. The MOH will also liaise with other key ministries and agencies to support implementation of 4x4 through improved infrastructure and equipment procurement. Ten level two teaching hospitals will be upgraded and will be equipped and staffed to serve as training sites while also uplifting care to patients.

4

Coordination of the 4x4 reform implementation

Critical to ensuring the successful implementation of the 4x4 reform will be to ensure strong coordination and monitoring to optimize desired outcomes and to measure the impact of the reform. The Health Workforce Development (HWD) department at the MOH will lead the day-to-day coordination of all participating institutions



and ensure quality medical education provision. Key activities include the development of a human resources for health information system to seamlessly track all programs and allow MOH to better plan and allocate key cadres according to the changing burden of disease in the country.

Additionally, a steering committee co-chaired by the Minister of Health and the Minister of Education has been established. It brings together the leaders of all participating teaching institutions, Director Generals of teaching hospitals, and Chairpersons of professional councils and meets quarterly to assess the progress of the 4x4 reform implementation. Finally, a forum of development partners supporting the 4x4 reform has also been established for resource mobilization and coordination of implementation efforts.

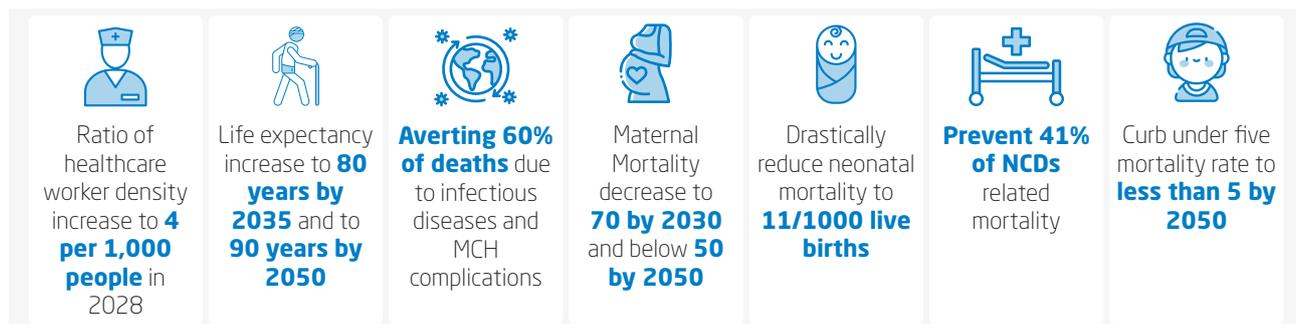


What are the expected outcomes?

With the successful implementation of the 4x4 reform, an additional 32,973 health professionals will have graduated from their respective programs and join the national health workforce by 2028. The 4x4 reform will be implemented along other strategic initiatives of the Ministry of Health including:

- **Retention and Motivation Incentives** to ensure that present and incoming healthcare workers are well motivated and can be retained in the health system as they train future cadres.
- **The Community Health Service Program (CHSP)** reform that aims to maximize the delivery of community health services offered at the household/community level by introducing a new cadre of certified Community Public Health Workers (CPHWs), expanding provision of services offered by CHWs and strengthening the overall CHSP system.
- **The Kigali Health City** initiative that is creating a comprehensive and integrated health city ecosystem in Masaka to complement the ongoing health development projects with the ultimate goal of improving specialized care within the country and the continent at large.
- **Strategic Equipment and Medicine Acquisition** approach that is developing strategic acquisition partnerships with leading healthcare technology manufacturers to ensure timely and cost-effective availability of all needed equipment, medicines and technology.
- **Modernization of Emergency Medical Services** by improving timely response and coordination of health emergencies across the country leveraging technology.

In harmony with these other strategic reforms being implemented, the Ministry of Health expects the following outcomes:





Who is involved?

The inception of the 4x4 reform stemmed from the MOH during the development of Ministerial strategic priorities 2023-2025 that include a strategic pillar on strengthening human resources for health. Due to the focus on training and education, the Ministry of Education (MINEDUC) and the Higher Education Council (HEC) were brought into its co-development. As a regulatory agency, HEC is responsible for monitoring and evaluating the quality and standard of all higher learning provision and is thus vital in ensuring quality teaching in the participating schools. Currently, 13 higher learning institutions are contributing to the reform by training the targeted annual numbers of health professional graduates. Four professional councils are also involved in the 4x4 reform as they coordinate the licensing and registration of trained health professionals. Finally, 15 Teaching Hospitals, under the MOH, form an integral part of the clinical training aspect and are thus part of the 4x4 implementation as well. All participating institutions signed a Synergy MoU for the 4x4 reform emphasizing the commitment to work together and share knowledge and resources where needed to increase Rwanda's health workforce. Currently, four development partners are also involved in funding and providing technical support for the 4x4 reform: Susan Thompson Buffet Foundation (STBF), Clinton Health Access Initiative (CHAI), Management Science for Health (MSH), and the United Nations Population Fund (UNFPA). As health education requires concerted efforts across various stakeholders, the MOH welcomes more partners and institutions to participate in the implementation of the reform. The following diagram depicts all institutions participating in the 4x4 reform through clinical training, academic training, and licensing:

Table 2: Participating Institutions in 4x4 reform

Teaching Hospitals	Training Institutions	Professional Councils
<ul style="list-style-type: none"> ◊ King Faisal Hospital ◊ Ndera Neuropsychiatric Teaching Hospital ◊ Rwanda Military Hospital ◊ University Teaching Hospital of Butare (CHUB) ◊ University Teaching Hospital of Kigali (CHUK) ◊ Butaro Level II Teaching Hospital ◊ Byumba Level II Teaching Hospital ◊ Kabgayi Level II Teaching Hospital ◊ Kibagabaga Level II Teaching Hospital ◊ Kibogora Level II Teaching Hospital ◊ Kibungo Level II Teaching Hospital ◊ Kibuye Level II Teaching Hospital ◊ Nyamata Level II Teaching Hospital ◊ Ruhengeri Level II Teaching Hospital ◊ Rwamagana Level II Teaching Hospital 	<ul style="list-style-type: none"> ◊ Adventist University of Central Africa (AUCA) ◊ Catholic University of Rwanda (CUR) ◊ East African Christian College (EACC) ◊ Institute of Applied Sciences Ruhengeri (INES) ◊ Institut Catholique de Kabgayi (ICK) ◊ IRCAD Africa ◊ Kibogora Polytechnic (KP) ◊ Mount Kigali University Rwanda (MKUR) ◊ Ruli Higher Institute of Health (RHIH) ◊ Rwanda International Institute of Ophthalmology (RIIO) ◊ University of Gitwe (UG) ◊ University of Global Health Equity (UGHE) ◊ University of Rwanda – College of Medicine and Health Sciences (UR/CMHS) 	<ul style="list-style-type: none"> ◊ National Council of Nurses and Midwives (NCNM) ◊ National Pharmacy Council (NPC) ◊ Rwanda Allied Health Professions Council (RAHPC) ◊ Rwanda Medical and Dental Councils (RMDC)



How much is the investment required?

Through the proposed strategies, the 4x4 reform is expected to train and graduate an additional **32,973** students across various professional cadres out of **49,802** enrolled students by 2028. The reform is estimated to cost **USD 395,297,026** over 4 years across the four key strategies. This makes the average estimated investment around **USD 7,937** per student.

The table below (Table 3) details the total budget needed to implement the 4x4 reform listed by the four strategy areas. The total budget has been calculated through consultative costing workshops with training institutions and includes all the relevant details related to health professional training programs.

Wherever possible, conservative budgeting was used to promote cost effectiveness.

Table 3: Total investment for 4x4 reform

Strategy Areas	Total Budget (USD) over 4 years
1. Increase the quantity and quality of trained health professional students in priority programs	141,288,063
2. Recapture local faculty and hire visiting faculty to fill Immediate teaching needs	172,847,301
3. Improve training capacity and teaching facility sites	80,992,886
4. Coordination of the 4x4 reform implementation	168,776
Grand Total	395,297,026

Hiring new faculty in rare fields is the biggest cost driver, accounting for 44% of the total budget. Support to students for increased enrollment also accounts for 36% of the budget and about 20% of the total cost is related to laboratory, infrastructure and equipment needs.

Figure 4: 4X4 Investment Overview



Conclusion

The 4x4 reform has been prepared and reviewed extensively through a series of consultations with the Ministry of Education (MINEDUC), Ministry of Finance (MINECOFIN), partners in the health sector and teaching institutions. The strategy was endorsed by the Government of Rwanda Cabinet on July 13th, 2023 for immediate implementation. On 2nd November 2023, 31 institutions including 13 Higher Learning Institutions, 14 Teaching Hospitals and 4 professional councils signed a Synergy MOU for the 4x4 reform emphasizing the commitment to work together and share knowledge and resources where needed to increase Rwanda's health workforce.

To achieve the expected results, the Ministry of Health and Ministry of Education will continue to work hand in hand with key stakeholders and partners in health education to increase enrollment in different fields of health, improve the standard of care, and bolster clinical research.

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