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The desired Rwandan health care provider: development and delivery of undergraduate social and community medicine training

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What works well in primary care education in your locality, region or country?
- The new undergraduate social and community medicine training (iSOCO) in Rwanda focuses on crosscutting skills, knowledge and attitudes in primary health care delivery.

What challenges have you faced?
- Challenges faced include programme sustainability (PHC), large student group teaching, limited resources and students being unfamiliar with the new online teaching platform with unstable internet accessibility.

How have you addressed them?
- The iSOCO development and teaching team was motivated to work with the limited resources available and to develop an innovative training with available resources. Strong focus of the Ministry of Health on PHC, the need of the College of Medicine and Health Sciences to become more socially accountable and long-term commitment of external partners increased the programme sustainability.

What is the generalisable learning?
- When students are exposed to the principles of PHC and social and community medicine early in the medical education, it is more likely they will become patient-centred and community-oriented health care providers who are good communicators, collaborators, managers, scholars, health advocates and professionals, as described in the 'desired Rwandan health care. provider'

KEYWORDS Undergraduate; medical education; community medicine training; primary health care; socially accountable; curriculum review; Africa; Rwanda

Introduction

Worldwide, medical schools have been moving from teaching the biomedical model to the biopsychosocial model, making students more socially accountable and responsive to health as described in the WHO definition: 'a total physical, mental and social wellbeing'.[1] The Frenk Report emphasises transformative teaching to produce enlightened change agents 'competent to participate in patient and population centred health systems as members of locally responsive and globally connected teams'.[2] Furthermore, the 'Global Consensus for Social Accountability of Medical Schools' stresses the importance of equity, quality, relevance, cost-effectiveness, social justice, community engagement, cultural sensitivity, mutual transformation, access to education, altruism and responsiveness.[3] Both reports urge the importance of person- and community-centred care. Health education institutions in developing countries and the systems that support them should find strategies to transform their teaching framework accordingly.

Rwandan health care system

Rwanda's Vision 2020 Strategy includes policies that target increased accessibility, improved quality and reduced costs for the poorest.[4] Studies demonstrate that health systems based on an effective PHC model are more likely to achieve the three outcomes above.[5,6] Over recent years, the Rwandan MoH has developed a PHC system with three community health workers in each village,[7,8] who have a strong focus on under-5 community case management (C-IMCI),[9] universal health coverage strategy through

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Adjusted from the 2005 CanMEDS physician competency framework

Figure 1. The desired Rwandan health care provider.

community-based health insurance[8,10] and a system of upgrading nurses through formal education.[11,12] There is a huge shortage of medical doctors working in clinical care, who are therefore based in referral and district hospitals,[13,14] and not in community health centres. Doctors in district hospitals are occasionally expected to assist with overseeing care in health centres, and in general will refer patients back to their community care setting. Therefore, it is vital they understand the PHC teams operating in the districts. Consequently, the University of Rwanda has recently enhanced efforts to increase the knowledge and skills and improve the professional values, attitudes and behaviours of their medical graduates towards PHC.

Curriculum review at the school of medicine and pharmacy, University of Rwanda

In early 2014, in response to the need to increase the quality and quantity of doctors, the University of Rwanda, School of Medicine and Pharmacy, undertook a curriculum review. As a result, the number of study years was reduced from 6 to 5, while the total number of weeks of study increased, and the intake of medical students doubled to 200. At the same time, all departments were required to develop improved teaching and learning strategies.

For this new curriculum, the 2005 CanMEDS physician competency framework was modified to develop students into 'the desired Rwandan health care provider' (Figure 1).[15]

The CanMEDS framework was developed by the Royal College of Physicians and Surgeons of Canada to describe the knowledge, attitudes and skills required of physicians to achieve better patient outcomes;[16] during the curriculum review, this framework was adjusted to describe the roles of the future Rwandan medical doctors as a tool that should be integrated in all classes for students to connect their present learning with their future roles. At the core of the framework, the future desired Rwandan health care provider is patient-centred and community-oriented. They apply their health care knowledge, professional attitude and clinical and procedural skills in a way that connects them with the patients, the community, their colleagues and the environment. The leaves of the framework describe six key roles of the graduates:

- Be an effective communicator and health educator for the patients.
- Work collaboratively in the health care team as a colleague and mentor.
- Integrate organisation of the health care system in daily practice.
- Use expertise and influence to advocate for the well-being of patients and communities.
- Be a lifelong learner and researcher and teacher.
- Work in a professional and ethical way.[16]

To improve coordination, collaboration and coherence in health professional education, the seven public higher learning institutions in Rwanda were merged in 2013, placing all health professions training in one CMHS.[17] Pharmacy and dental students are taught alongside medical students for the first 2 years. Finally, a fully integrated social and community medicine training was introduced to the new multidisciplinary curriculum.

Developing an integrated social and community medicine training (iSOCO)

Since 2011, the Discipline of Primary Health Care (formerly known as the Department of Family and Community Medicine, FAMCO) has delivered community medicine training in the final years of the undergraduate medical curriculum, with highly positive evaluation from students and colleagues. The 2014 curriculum review gave an opportunity to raise awareness in social and community medicine throughout the undergraduate medical curriculum.

A team from different schools in the CMHS together with international collaborators compared similar programmes from universities within Africa and beyond and developed the iSOCO training framework (Figure 2). They formulated overall and yearly objectives, distributed topics and teaching methods over the 5-year curriculum and developed the teaching framework and material.

The objective of the integrated social and community medicine training (iSOCO) is to develop doctors who are responsive to the needs of their patients and their communities. The curriculum in the first two years is classroom based and provides a basic foundation of knowledge. In years 3 and 4, iSOCO adds skill

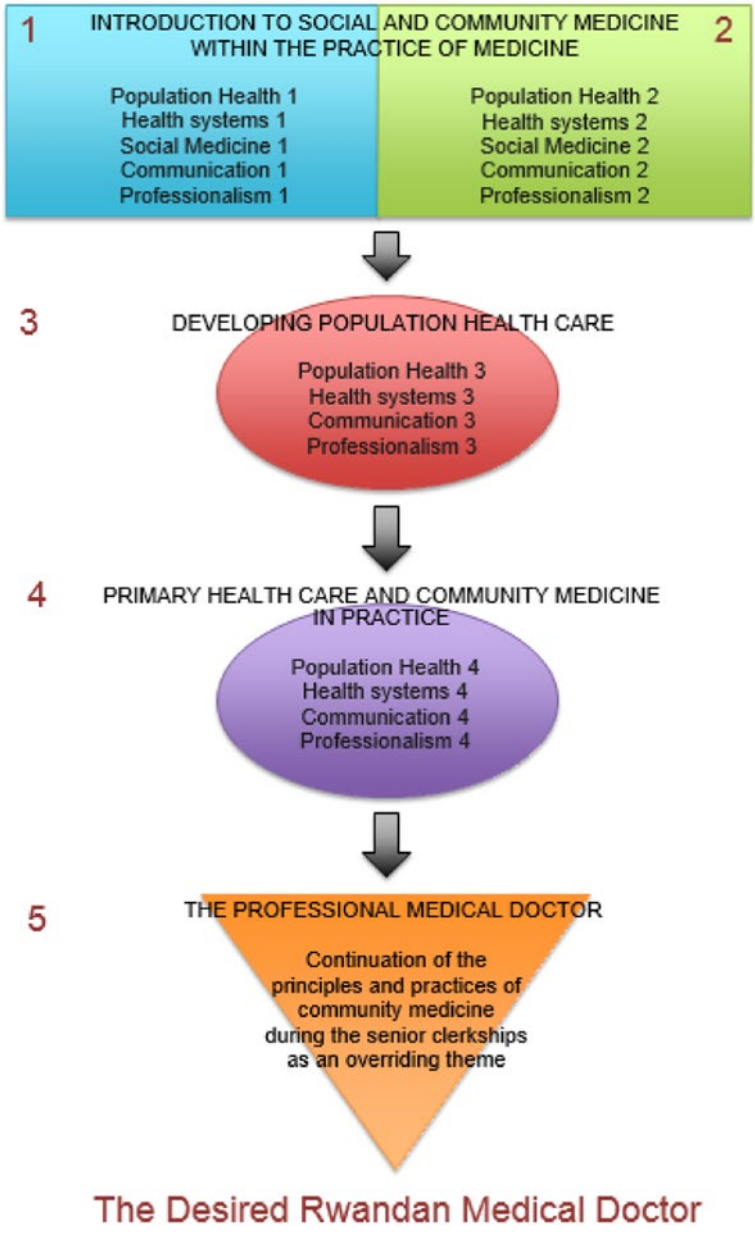

Figure 2. The 5 year iSOCO training framework.

development by taking students to the field and exposing them to daily practice, while training them to connect knowledge with reality. In the senior clerkships of year 5, students are supported to use their PHC knowledge, skills and orientation gained in previous years as they progress to their final examinations with the attitude of the desired Rwandan medical doctor.

Innovative teaching and learning methods

Anecdotally, most students in Rwanda come from a secondary school background emphasising teacher-directed, rote learning with limited development of critical thinking skills and little self-responsibility, group work and ICT-training. In order to enhance learning outcomes, the School of Medicine and Pharmacy uses several teaching methods that may be seen as innovative in this context, and has introduced the online Moodle learning platform, used extensively in the iSOCO training for sharing teaching material, providing individual and group assignments, and assessments. As an example, in early May 2015, 227 of 238 (95.4%) students were able to submit their online test.

The online teaching and learning tool is used to support the flipped classroom model.[18] Instead of using the available four hours each week for lectures, teachers use a 1:2:1 approach: one hour of individual preparation outside of the classroom using online material; two hours in the classroom with interactive lectures, discussions

and case presentations; and finally, 1 hour of reflection in mixed discipline groups outside of the classroom with assignments to hand in online.[19] The online material includes in-house videos and audio files, e.g. a series of interviews with key colleagues on the importance of different domains of the desired Rwandan Health Care Provider framework.[20]

In years 3 and 4, the training uses peer education, problem-based learning[21] and reflection to enrich field experience. Year 3 (medical students only) is focused on population health, connecting groups of students to specific communities for field visits as well as applying community-research and quality-improvement principles. In year 4, small groups of students spend four consecutive weeks in a rural setting to understand the unique issues and challenges of health care at the levels of a community, a community health centre and a district hospital, as well as the Rwandan health care system. It is key that students build trust with, and respect for patients through getting to understand their lives better.[22–24]

In year 5, there are no iSOCO curriculum hours. The Discipline of Primary Health Care aims to support students in their professional development offering relevant online material on principles of social and community medicine, applicable in the clinical contexts of their final-year clerkships.

Approaching challenges

The training development and implementation presented several challenges and opportunities. The development team developed a series of strategies to ensure successful implementation based on a SWOT analysis (Table 1).

One important challenge is programme sustainability, including development and delivery. The CMHS allocated a substantial amount of teaching credits to the iSOCO training and strongly supports it, though with no internal funding, the development efforts need to use external resources. The team consists mainly of volunteer professionals participating in the training development

Table 1. SWOT analysis of the iSOCO training development and implementation.

Strengths	Weaknesses
• Strong focus of the Rwandan MoH on strengthening PHC • Support from leadership at CMHS • Adequate teaching credits allocated by CMHS • Strong team spirit with people from different health professions • Several team members with experience in health professions education and curriculum development • Regular advice from external colleagues • Weekly team meetings • Encouragement of CMHS to use innovative teaching methods like Moodle and flipped classroom method	• High turnover of voluntary team members due to short-term stays in Rwanda • Sustainability issues: • Lack of funding from the University for faculty • Few Rwandan team members • Few qualified teachers • Accelerated curriculum review process with short deadlines • Students not familiar with online self-directed learning • Large groups to teach • Lack of facilities and tutors to teach in smaller groups • Examining values and attitudes is complicated
Opportunities	**Threats/challenges**
• Developing a training aligned with MoH policies • Pioneering a biopsychosocial training model in a traditionally biomedical field • Advocating the crosscutting importance of social and community medicine to other departments • Preparing health providers for future postgraduate studies in PHC • Preparing health providers for future orientation to remote and rural areas • Creating new teaching material including video and audio • Support from international universities and iNGOs	• Funding for facilities and faculty is external • Unpredictable internet quality at times for students • Long distances for faculty to travel to teaching sites

meetings, complemented by international experts. These conditions have been leading to a high degree of turnover in the working team, which together with an uncertainty about availability of qualified local community medicine teachers poses a challenge for training delivery.

One approach has been to design training materials that can easily be applied by new teachers. This includes making clear teaching objectives, guidelines for teachers, study material for the students and classroom material for each week of the training. Further, the Moodle learning platform eased HR demands for certain tasks such as mid-term examinations.

Another challenge is developing innovative teaching methods for 240 students. Students are divided in 2 large groups, and lecturers deliver the same session twice. Interactive lectures with discussion moments in class increase student participation.[25] In the future, it is planned that senior students will mentor the student group reflections for junior students, providing a mutual learning opportunity.

A third challenge is student use of online material. Although most students have access to a computer or smart device, at times there can be limited access to internet. Active participation is new to most students. Our flipped classroom with an online platform means greater responsibility by students for preparing and learning, group tasks, use of online material, assignments and examinations. Briefing and coaching students in these tasks is ongoing. In-course tests are a stimulus to use the online material, and teachers use mini-exams to motivate students to prepare themselves and to use the online platform to assess knowledge.

The teachers and developers continuously review and adjust the training material and methods to the learners' needs.

Conclusion

Developing a new, innovative social and community medicine training in a low-resource setting is exciting and challenging. Funding, faculty and sustainability remain an issue. However, continuous moral support from college leadership, strong focus on PHC from the MoH, long-term commitment to support from external partners and positive student evaluations give us confidence the training will continue to advance in the coming years. Continuous internal and external evaluations are important for improvements.

Students need exposure to the principles and practice of socially accountable health care as early as possible, putting patient and community in the centre. This way the future generations of Rwandan physicians will be more oriented to community medicine, to build the essential PHC capacity and to meet the needs of the Rwandan community.

Competing interests

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article. The authors want the readers to realise that this is looked at from an academic standpoint informed by the global discourse on the next health care professional as we do not have any policy person on the author list.

Author's contributions

MF, VC, MS and IM were part of the development of the training as described here. MF drafted the first version of the article. MF, VC and MS discussed the content of the article in depth from this first version and wrote the second draft. PK, IM, PK and PC read and reviewed the second draft extensively and made useful changes. The final draft was again read by all authors, and necessary changes were made.

MF is a Dutch physician who has worked in African health professional education for 10 years and specifically in Rwanda for 5 years, as the acting head of Discipline of Primary Health Care CMHS, University of Rwanda. VC is a Rwandan family physician who is working together with MS, a Danish family physician in training, in a joint PhD programme to explore mentoring in Rwandan health centres by medical doctors. PK is a Ugandan surgeon who has been dean of the School of Medicine and Pharmacy at the University of Rwanda since 2012. IM is a Ugandan dentist who has been the dean of the School of Dentistry since 2013. PK is a Danish family physician, supervising VC and MS in their PhD's. PC is a Scottish family physician and educationalist who has been the principal of the CMHS at the University of Rwanda since 2013.

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