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Mission and role modelling in producing a fit-for-purpose rural health workforce: perspectives from an international community of practice

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Inequities in the distribution of human resources in health around the world have long been a topic of concern and discussion. There is an absolute shortage of health care providers in many parts of the world, notably in sub-Saharan Africa and parts of the Asia–Pacific region.[1] However, here and in other areas the problem is that the available health care workforce is maldistributed, both geographically and in terms of specialty.[2,3] Understanding these issues and their drivers is an important step in developing, implementing and evaluating potential solutions, but both the understanding and the solutions need to be contextualised to region and circumstance.[3]

Health professional educational institutions can be important engines in driving social and educational change and innovation to ensure that their products (medical, nursing and other health professional graduates) are fit for purpose in terms of meeting the needs of the populations that they serve.[4] Recognition of this potential has led the World Health Organization to focus on its agenda of transformative health professional education, to consciously improve access to health services by distributing the health workforce and aligning its competencies with evolving health needs on the way to addressing the broader social determinants of health.[5] Importantly, to deliver socially accountable health professional education, educational institutions must hold themselves accountable for delivering appropriate health professionals, and for working in partnership to strengthen the health system and the quality of care that it delivers. Investment in training of the health workforce and strong primary health care delivers real economic value.[6]

The Training for Health Equity Network: learning from each other

The Training for Health Equity Network (THEnet; thenetcommunity.org), which was founded in 2008, is a community of practice that now includes 13 medical and health professional schools, selected on the basis of their commitment to social accountability. Located primarily in rural and underserved areas of nine countries (low and high income), they share a commitment to producing and supporting health workforces that will meet the needs of the communities they serve (Box 1). These schools share the aims of: recruiting students from underserved and under-represented populations; providing primary care-focused curricula; delivering medical programs mainly in underserved areas and within communities; and providing postgraduate training to address local health workforce needs.[7,8]

THEnet is a collaborative learning network, where members share challenges across sectors and countries, and partner schools learn from and share with other innovative schools worldwide. Research and evaluation using a self-critical lens helps members to understand how best to improve health equity and how to maintain accountability for outcomes.[7,8]

Collaboration and commitment: building an evidence base

As a learning network that aims to influence health systems and share lessons between partners, THEnet considered how best to measure progress towards, and outcomes of, social accountability in its early work. Collaborative creation of THEnet's Evaluation Framework for Socially Accountable Health Professional Education was its foundational work, which involved careful attention to the use of plain language and definitions that can be used and adapted across many contexts.[8,9] This work has since been adapted and expanded to create other widely used frameworks, such as the Indicators for Social Accountability Tool, and has been incorporated into medical accreditation standards worldwide.[10,11]

THEnet partner schools share a commitment to finding out where graduates work and the difference that they make. Measuring impact is important. The THEnet evidence group conducts a program of research, including the THEnet Graduate Outcome Study — a prospective cohort study of more than 6000 learners enrolled across partner schools, from which data have been received from nine schools in seven countries.[12] The THEnet Evidence Group designed the study to correlate learner characteristics and practice intentions at entry to and exit from medical school, and then follow these graduates into postgraduate practice for up to 10 years, to determine the location and discipline of their actual practice. In recognition of our work in this area, THEnet has contributed to white papers for the Pan American Health Organization and a recent WHO handbook on the rationale and strategies for graduate tracking.[13]

These data have highlighted that, relative to other medical schools, THEnet partner schools deliberately use diverse selection processes to ensure that their learner cohort has sociodemographic characteristics that are much more similar to the population they serve.[12] Data have confirmed the association between rural or low socio-economic background and intention to practise in rural and remote areas, and that this is maintained from entry to exit from medical school.[14,15] Importantly, for learners in low and middle income schools in South Africa, Sudan and the Philippines,

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* Reproduced from Murray et al[7] under a CC BY 4.0 license. † Founding school; recently withdrew from THEnet.

these demographic determinants are significantly associated with lower desire to emigrate after graduation, and thus contribute to a desire to meet the health needs of their home country.[15]

In response to local need, THEnet members have also designed and collaborated on studies of work readiness of graduates, perceptions of social accountability among faculty and students, impact on the health system, impact on health outcomes, and social return on investment.[16-21] The evidence base produced by THEnet collectively, from studies involving partnerships between two or more partner schools from different contexts, is summarised in Box 2.

Our research shows promising outcomes from THEnet partner schools in terms of: intending to practise and actually practising in rural, remote and underserved areas; practice in generalist disciplines rather than subspecialties; broadening health teams to include community-based health workers and other mid-level providers; and health professionals remaining in low and middle income countries rather than emigrating.[15,18] Longer term data from some schools suggest that practice intentions translate well into actual practice.[25]

Global lessons: building a rural and remote health workforce

By summarising and integrating evidence from our collective work and the experience of partner schools in diverse locations, we identified consistent findings that may help produce a fit-for-purpose global health workforce (Box 2).

Locating health professional education institutions in remote, rural and regional areas is a key factor in terms of producing a fit-for-practice rural and remote health workforce. In addition, providing a contextualised primary care-focused curriculum to a diverse body of students who are largely from remote, rural and regional areas themselves is important. Using these approaches has become known as training health professionals "from, in, with and for" the rural and remote communities that we would like them to serve.[4]

However, lessons from pioneering schools suggest that these approaches are necessary but not sufficient — that the building blocks necessary for success are broader still.[26] A vital common factor is a clearly expressed and widely understood mission for each school, which is linked to meeting the health needs of the population served. Also, committed and charismatic leadership that conveys each school's mission to its faculty and students is essential. Likewise, schools need diversity among the staff and the teaching body, including a wide variety of inspiring community-based and primary care practitioners or generalists, to mitigate against the hidden hospital-centric curriculum that often deters students from pursuing careers in primary care.[27] In addition, exposing learners to a wide variety of inspirational rural and remote service providers provides motivation and encouragement to both mentors and mentees.

Two further critical elements for producing a fit-for-purpose global health workforce are: learning in and with rural communities; and recognising the role of community members as teachers, particularly with respect to the social and cultural determinants of health. Working alongside community extension officers, Aboriginal or Torres Strait Islander health workers and practitioners, community nurses, or other mid-level health professionals is critical for these aspects of learning.[28] In all of these areas, increasing skills in telehealth and digitally assisted education — accelerated by the coronavirus disease 2019 (COVID-19) pandemic — can help build a rural and remote health workforce.[7] However, we believe that nothing can replace the impact of a rural longitudinal placement.

Future priorities: measuring impacts and outcomes of school activities

THEnet's partner schools have cooperated to produce a significant collective contribution to the evidence base on approaches to education that can help build a rural and remote health workforce. They have highlighted important factors which can help ensure that we deliver on our collective social accountability mandate. However, there is still much work to do as we strive to measure and critically reflect on the impact of our activities on the health of individuals, communities and populations, and on strengthening the health system.

We have started to develop and apply novel approaches to measure social return on investment — in settings within Australia, the Philippines and Canada — with a view to extending this to a broader range of schools. It is important to measure the economic and social impact of school activities and outcomes for communities. Current work is also focused on measuring the impact of a learning health system and is looking at how we can build a chain of association from health professional education activities to

2 Summary of evidence collaboratively produced by Training for Health Equity Network (THEnet) partner schools, from studies on building a rural and remote health workforce that involved partnerships between two or more partner schools from different contexts

Publication (schools involved)	Methods and main findings	Implications
THEnet's evaluation framework		
Larkins SL, et al (2013)[8] (JCU, ELAM, Ghent U, UPM-SHS, ADZU, WSU, FU, NOSM U)	• THEnet's Evaluation Framework for Socially Accountable Health Professional Education was developed as a tool to assist schools in assessing progress towards social accountability. The framework considers three questions: ▸ How does our school work? ▸ What do we do? ▸ What difference do we make?	• The evaluation framework proceeded to pilot testing, and is now widely used and cited.
Ross SJ, et al (2014)[9] (JCU, FU, NOSM U, ADZU, UPM-SHS)	• THEnet's evaluation framework was piloted at five THEnet partner schools. • It was found to be relevant, acceptable and feasible across the schools.	• The evaluation framework can be used by health professional education schools as a tool to facilitate critical evaluation of school performance, progress and capacity towards social accountability, and to identify and inform improvements.
THEnet Graduate Outcome Study		
Larkins S, et al (2015)[12] (JCU, Ghent U, WSU, Gezira U, ADZU, NOSM U)	• An analysis of 944 first year learners from five THEnet partner schools was conducted. • THEnet partner schools used various selection strategies: quota-based approaches, use of selection criteria, involvement of community, and marketing the school to attract learners. • The demographic profiles of first year learners were reflective of their respective populations (eg, in terms of socio-economic status and population group). • A high proportion of learners intended to practise in underserved communities, and there were associations between rural origin and intent to practise in rural populations.	• Diversity of the learner cohort is influenced by wider policy and school selection strategies. THEnet partner schools used broad selection strategies that selected a diverse and representative learner cohort. A high proportion of these learners were from underserved backgrounds and expressed higher intention to practise in rural populations, potentially addressing workforce maldistribution.
Larkins S, et al (2018)[14] (JCU, NOSM U, Ghent U, Gezira U, WSU, ADZU, FU, UPM-SHS)	• Entry and exit data for 3346 learners from eight THEnet partner schools were analysed. • A positive association between rural background and intention to practise in a rural location was found in entry and exit cohorts. • Positive associations were found between intention to practise in rural locations and the following: rural background, low parental income and attending medical school in a regional location. Positive associations were also found between intention to work abroad and the following: urban background and high parental income. • A higher proportion of learners intended to practise in family medicine or general practice at exit than at entry.	• Strategies focusing on social accountability in health professional education have positive impacts on intention to practise in rural populations and in family medicine, and are likely to help address workforce maldistribution.
Johnston K, et al (2020)[15] (JCU, ADZU, Gezira, WSU, UPM-SHS, PAHS, NOSM U, FU)	• Data were analysed for 5078 learners from eight THEnet partner schools participating in the Graduate Outcome Study, including: 3849 learners at entry; 1229 learners at exit; 149 learners for whom entry and exit data were available; and 2041 learners from five schools in LMICs (Sudan, South Africa, the Philippines, Nepal). • Differences were found between schools in high income countries and LMICs, in terms of wider policy support for general practice or family medicine postgraduate programs in high income countries. • Intention to practise in rural areas was associated with: rural background at entry and exit, attending medical school in a LMIC (AOR at exit, 2.01), and being female (AOR at exit, 1.80). • Intention to practise in general practice or family medicine was lower for learners in schools in LMICs than for those in schools in high income countries. • Intention to work abroad for learners in schools in LMICs reduced over medical schooling.	• In LMICs, strengthening the rural health workforce involves: locating schools in rural and regional areas; active recruitment of learners with rural backgrounds; and a curriculum with a focus on primary health care, and which is supported by postgraduate training programs. • Levers in health professional education for building a rural health workforce (rural background, low income background, medical school located in a regional area) may be more powerful in LMICs and could encourage learners to serve in rural areas and in their country.

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Publication (schools involved)	Methods and main findings	Implications
Understandings of social accountability		
Preston R, et al (2016)[22] (FU, JCU, ADZU, UPM-SHS)	• Interviews were conducted with 75 stakeholders (staff, faculty, students, health workers, members of the community) at four THEnet partner schools. • Social accountability was perceived to be meeting workforce, community and health needs through learning and service in underserved communities by students and graduates. The concept may be explicit in a mission statement and/or seen as a moral obligation shown through service and beginning with values. • The nature and content of school programs shaped social accountability, including student selection, involvement of communities in decision making and use of a curriculum that addresses the needs of underserved populations.	• Social accountability as a concept is not universal and should continue to be challenged and debated. • Understanding of social accountability may be limited, even when enacted in school programs. Differences in understanding affect the ability of a school to work towards social accountability. • Values-based understanding of social accountability may not be shared at an institutional level, and an explicit mission could isolate those who do not share it. A mixture of both is needed.
Ellaway RH, et al (2018)[17] (NOSM U, Ghent U, JCU, FU, UNM, Gezira U, UPM-SHS, WSU)	• Mission statements were analysed, and interviews were conducted with 72 senior learners at eight THEnet schools. • Social mission was expressed explicitly and was central to identity at some schools. • Social mission was reflected in: various modes of compulsory community service activities; optional community components; role modelling by faculty; and admission processes. • Learners understood their school's social mission in terms of community, social justice in medicine and particular communities, and workforce distribution. • Learners internalised the social mission through sensitisation (via institutional culture and curriculum), through personal experiences and by exposure to influential role models.	• Translation of the social mission to students' perceptions is variable and affected by how explicit the school social mission is, how it is reflected in the education program, other institutional drivers and the processes that students use to internalise the social mission.
Impact and outcomes		
Reeve C, et al (2017)[23] (FU, JCU, ADZU, UPM-SHS)	• A systematic review on the impact of health professional schools with a social accountability mandate was conducted. • Socially accountable education included: selection processes that admit learners from local rural areas; partnerships between communities, health services and schools; and positive rural experiences through educational activities and clinical placements. • Positive impacts of rural placement and training in communities were seen, including effects on competencies, learning experiences, and attitudes to general practice and/or community service. Longer rural placements were associated with increased likelihood of rural practice. • Having learners based in rural communities was shown to have positive impacts for rural communities.	• Overall, there is a lack of studies about the impact of socially accountable medical education. • Learning and attitudes towards communities are positively influenced through longitudinal placements in rural areas. • Other relevant inputs are: selection strategies aimed at recruiting learners from underserved populations; mandatory placement in rural communities; and undertaking health projects in communities.
Halili S Jr, et al (2017)[18] (ADZU, JCU, FU)	• Graduate outcomes of a socially accountable THEnet partner school in the Philippines were compared with those for a conventional medical school in the Philippines. • ADZU learners had lower family incomes, were more likely to become doctors to help others, were more likely to have attended ADZU due to the curriculum, and were more likely to intend to practise in family medicine at graduation than learners at the conventional school. • ADZU graduates were less likely to be practising in family medicine and more likely to be practising in paediatrics. They were more likely to be working as a rural or municipal health officer or as a generalist medical officer than graduates of the conventional school. • ADZU graduates were likely to have positive attitudes towards practice in communities.	• The socially accountable, community-engaged medical education model at ADZU has produced graduates who have positive attitudes to communities and health equity, and who practise in areas and fields of need in the Philippines.

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Publication (schools involved)	Methods and main findings	Implications
Siega-Sur JL, et al (2017)[19] (UPM-SHS, JCU, FU)	• The motivation for community-based service, preparedness to address local health issues, career choices and practice location of graduates from a THEnet partner school were compared with those for graduates from a conventional school. • UPM-SHS graduates had more positive attitudes to community service and were more likely to work in rural areas and at rural government health services than graduates from the conventional school.	• The UPM-SHS social accountability philosophy drives student selection strategies that include community nominations, social contracts with communities to support students, and extended community-based training. This approach is successful in developing a fit-for-purpose, professional workforce that is committed to working with rural communities.
Woolley T, et al (2018)[20] (JCU, ADZU, UPM-SHS, FU)	• The population and socio-economic profiles of practice locations for graduates of two THEnet partner schools and two conventional schools were compared. • ADZU and UPM-SHS graduates were more likely to practise in communities with populations of less than 100 000 and low income communities compared with those from conventional schools.	• Two THEnet partner schools have increased medical coverage in rural and economically disadvantaged areas in two regions of the Philippines. Policies that support rurally bonded places were filling workforce gaps.
Woolley T, et al (2018)[21] (JCU, ADZU, UPM-SHS, FU)	• A non-randomised controlled study was conducted to compare child and maternal health outcomes in five communities served by graduates and student interns who had been trained at THEnet partner schools and conventionally trained graduates. A total of 494 mothers were surveyed. • Mothers in communities served by ADZU and UPM-SHS graduates and interns were more likely than mothers in communities served by conventionally trained graduates to report: discussing results of prenatal samples; having their first prenatal check-up before 4 months' gestation; doctor-assisted birth of their youngest child; receiving timely newborn and postnatal care across all USAID-recommended core elements; their youngest child being in the normal birthweight range; and still breastfeeding their youngest child when they were 6 months of age.	• Graduates and student interns of ADZU and UPM-SHS are: strengthening child and maternal health services in some communities served by these two schools, increasing access to child and maternal health services for economically disadvantaged mothers; and producing positive child health outcomes. • This study added to evidence showing that socially accountable education helps address health workforce maldistribution and benefits underserved populations.
Woolley T, et al (2019)[16] (JCU, UNM, Gezira U)	• A total of 184 hospital and community facility staff were surveyed; they rated key competencies of graduates from three THEnet partner schools and those of graduates from conventional schools. • Graduates (postgraduate year 1) of three THEnet partner schools were rated above average for overall performance, work readiness, overall clinical skills, teamwork, professional attitudes and commitment to health equity.	• Workplace-based training in community and local hospital settings and a socially accountable curriculum that focuses on health equity produces work-ready graduates with locally relevant competencies.
Woolley T, et al (2020)[24] (JCU, NOSM U)	• The impact of postgraduate training location on practice in the service area of the medical school was examined by surveying 149 JCU graduates (specialist doctors and fellows) and 400 fully licensed NOSM U-trained doctors. • 38% of JCU graduates were practising in the school's service area. For family practitioners, general specialists and subspecialists, regional training was positively associated with practice in the service area. Family practitioners were more likely to practise in the service area than general specialists and subspecialists. • 92% of family practitioners who completed undergraduate and postgraduate training at NOSM U were practising in the school's service area compared with 54% who completed only postgraduate training at NOSM U. 30% of general speciality graduates were practising in the service area.	• Location of postgraduate training is positively associated with later practice location — two socially accountable medical schools found that a training pathway for family practitioners in the school's service area was associated with later practice location in the school's service area. • The findings support specialty training programs based in rural and regional centres, with rotations for trainees into city locations when required.

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Publication (schools involved)	Methods and main findings	Implications
Murray R, et al (2022)[7] (JCU, ADZU, PAHS, UPM-SHS, NOSM U, Ghent U, UNM)	• In a perspective piece, the authors reflected on the implications of COVID-19 in terms of speeding up uptake of equity-promoting initiatives, such as distributed education and telehealth. • Interruptions to medical education during the COVID-19 pandemic have highlighted inequities across the health and health education systems, and prompted new and increased use of online learning (including for clinical skills), use of online examinations, and deployment of students to aid in the health response to COVID-19.	• The COVID-19 pandemic presents an opportunity to disrupt conventional approaches to medical education and consider how necessary adaptations can drive change that is beneficial for medical education and health equity. • Lessons from THEnet partner schools provide guidance on successful innovations to achieve these aims.

ADZU = School of Medicine, Ateneo de Zamboanga University; AOR = adjusted odds ratio; COVID-19 = coronavirus disease 2019; ELAM = Latin American School of Medicine; FU = Flinders University; Gezira U = Faculty of Medicine, Gezira University; Ghent U = Ghent University; JCU = College of Medicine and Dentistry, James Cook University; LMICs = low and middle income countries; NOSM U = NOSM University (formerly known as Northern Ontario School of Medicine); PAHS = Patan Academy of Health Sciences; UNM = University of New Mexico; UPM-SHS = School of Health Sciences, University of the Philippines Manila, Leyte; USAID = United States Agency for International Development; WSU = Walter Sisulu University. ◆

accessibility of health services (and other markers of quality of care) through to improved health outcomes. Despite marked differences in the settings where THEnet's partner schools operate, similarities in approach provide lessons that may support more equitable distribution of the health and medical workforce into the future.

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