Human Resources for Health Graduate Tracking Studies: Policy Implications

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I. Executive Summary

An appropriately trained health workforce located close to where people live is required to achieve universal health and access to quality people-centered health services for all (WHO 2016, PAHO 2017). Currently, there are 400 million people globally who lack access to one or more essential health services, with underserved populations found across all countries. It is increasingly clear that merely increasing the number of health workers trained without focusing on the types of practice and practice locations graduates choose is unlikely to result in their equitable distribution in underserved regions. To track progress and determine which educational and institutional strategies are most likely to produce the health workforce that a region or country needs and thereby guide policymaking, it is important to track and assess graduate outcomes over time.

The objective of this White Paper is to introduce Human Resources for Health (HRH) graduate tracking studies, explain why they are important, how they fit into the global health and sustainable development policy context, and how they can help governments and institutions identify effective strategies to help address complex HRH challenges both at national and institutional levels. These studies measure the graduate outcomes of HRH education and training to support evidence-based policymaking. These outcomes include where graduates practice, the type of practice they choose, the populations they serve, and the services and care that these graduates provide. These studies are called Human Resources for Health graduate tracking and outcomes studies, hereinafter called "HRH tracking studies".

This paper describes HRH tracking studies as a systematic process that collects, monitors, and evaluates data and information on health workforce graduates' personal, educational and career characteristics over the life course. These studies take into account that graduate career and working pathways are influenced by policies for health workforce development, institutional and educational strategies and experiences, national regulatory and policy environments as well as broader initiatives aimed at implementing universal health coverage and strengthening health systems. To date, evidence from tracking study efforts has been generated from medical education and high-income countries. These studies often fail to consider contextual factors that influence graduate

outcomes. (Larkins et al., 2018) This paper builds on current tracking studies and new thinking as part of the 2030 Agenda for Sustainable Development, including HRH and the education sector, to reflect on why it is important to frame tracking studies within a life-long learning approach.

HRH tracking studies can contribute to both the development of progressive, reliable, up-to-date health workforce information systems, and the strengthening of institutional capacity to collect, analyze and manage data needed to support evidence- based institutional and educational policies and strategies. This can in turn can support and facilitate policy dialogue across sectors, as well as institutional mechanisms or bodies to coordinate an intersectoral health workforce agenda.

Graduate tracking and outcome studies allow health workforce planners and education institutions to identify which aspects of the students' characteristics and components of a program can influence graduate career choices and practice intentions and locations over time, and how education and training can be designed to inform these choices within a lifelong learning framework.

The first section provides the rationale for tracking studies. It describes how they can promote greater understanding of the impact of student selection criteria and admission policies and key aspects of health workforce education and training such as community based-engaged and distributed learning has on practice intentions and eventual practice. It addresses the issue of faculty selection and the equitable access to lifelong learning opportunities for faculty and teaching staff that is relevant to the evolving health-care needs of their communities that the institution serves. This section also explains how intersectoral HRH data collection and analysis can help align, develop, and monitor the effect of policies and plans on the creation and maintenance of interprofessional teams with the right competencies are addressing people's health needs, wherever they live. Tracking studies can also help guide intersectoral negotiations among ministries, government agencies and other stakeholders.

The next section presents a framework for systematic data collection on learners and graduates that can help stakeholders better identify and understand complex HRH policy

issues, guide implementation of interventions, and assess the impact of action. This section reviews the predominant types and approaches of HRH graduate tracking, and outlines the possibilities and limitations.

The final section introduces the Training for Health Equity Network (THEnet) Graduate Outcomes Study, an international prospective cohort study tracking more than 5000 learners in six countries throughout training and ten years into practice as part of the longitudinal impact assessment. THEnet is an international community of practice of twelve health professional schools with a social accountability mandate. Using evidence from THEnet schools, the final section illustrates how social accountability can frame the development and implementation of a model for HRH graduate tracking and outcome studies at national and institutional levels in a coherent and consistent manner.

This paper provides a companion to the second White Paper on “How to Plan a Human Resources for Health Graduate Tracking Study” which outlines how to plan studies that track graduates of health professional education institutions.

II. Introduction: making the case

HRH tracking studies which measure the graduate outcomes of pre-service education and training can contribute to the development and implementation of progressive, reliable, up-to-date health workforce information systems, and strengthen institutional capacity to collect, analyze and manage the data needed to support evidence-based policies and strategies. These studies allow health workforce planners and pre-service education institutions to identify which aspects of the students' characteristics and components of a program can influence graduate career choices and practice intentions and locations over time, and how education and training can be designed to inform these choices within a lifelong learning approach.

Human Resources for Health graduate tracking studies; what they are, and why they are important?

HRH tracking studies; what they are?

Human Resources for Health (HRH) are defined as "the stock of all individuals engaged in the promotion, protection or improvement of population health (WHO 2000). This establishes a common understanding of the term human resources for health and provides the basis for a broad and comprehensive approach for an intersectoral health workforce education agenda. HRH tracking studies are a systematic process that collects, monitors, and evaluates data and information on the personal, educational and career characteristics of health workforce graduates over time. The graduate outcomes that are measured include where graduates practice, the type of practice they choose, the populations they serve, and the services that these graduates provide. These studies take into account that graduate career and working pathways are influenced by policies for health workforce development and efforts to strengthen health systems, as well as broader initiatives to implement universal health coverage at global, national, and local levels.

HRH tracking studies; why they are important?

An appropriately trained health workforce located close to where people live is required to achieve universal health and access to quality health services for all (WHO 2016, PAHO 2017). Currently, there are 400 million people globally who lack access to one or more essential health services, with underserved populations found across all countries.

HRH is recognized as being central to government and community-led efforts to tackle complex health, social, economic, environmental and development challenges. Yet there is a global HRH crisis with critical shortages in numbers and quality, and geographical distribution of health workers particularly at the first level of care. While the context can vary, there are common challenges across countries including weak intersectoral governance and planning, lack of regulatory frameworks as well as limited data collection, sharing or coordinated management across the health and education sectors (WHO 2017a). Other limitations include the poor alignment of the objectives of health workforce education plans with the objectives of established national health plans (WHO 2017b). In many places there are concerns about quality of training and the relevance of pre-service academic programs in relation to population health needs, as well as equitable access to lifelong learning opportunities, which in turn impacts professional practice (Bhopal, 2017; Tikly & Barrett, 2011; Wilson-Strydom & Okkolin, 2016)[1,2]. This is compounded by national health workforce information systems that do not supply sufficient or 'right time, right place' information to monitor and evaluate HRH to effectively support decision-making.

Health workforce shortages and deficiencies are compounded by weak commitment to allocate adequate budgetary resources for investments in transformative education, skills and job creation, as well as a chronic under-investment in education and training of health workers in many countries (PAHO 2017). Yet, most efforts to reduce health workforce shortages focus on increasing production of health workers and on strategies to incentivize recruitment and retention in under-served areas. Little or no attention is paid to how career choices, practice locations and intentions and uptake of lifelong learning opportunities could be affected by students' personal characteristics such as their origin, social background and previous educational training, or institutional and educational strategies. (WHO 2017b). Another aspect that is frequently overlooked is the issue of faculty selection and the equitable access to lifelong learning for faculty and teaching staff that is relevant to the evolving health-care needs of their communities.

There is an increasing body of evidence which demonstrates that both the policy environment, and the learning and training environment including how and where health workers are trained not affects only the competencies that they gain, but where and the

type of practice they choose after graduation. Evidence is steadily accumulating that demonstrates that a students' up-bringing or background, early career intentions, and their educational experience (educational content, delivery modality, and location of learning) all affect career choices and subsequent practice characteristics (Carter2016; Noone et al. 2016; Rozendo et al. 2017; Sabo et al. 2015).

This highlights the need for a more comprehensive and intersectoral approach to understanding HRH as emphasized by policy briefs on health workforce education prepared for the report of UN High-level Commission on Health Employment and Economic Growth (Fisher et al. 2017; Palsdottir et al. 2017). These papers emphasized the significant gaps in data and information concerning pre-entry and entry into, and graduation from, health workforce education and training institutions. Without studies to track graduates over the life course and analyze outcomes, policy makers and education institutions have limited information on which to guide policy-making or develop institutional and educational strategies to address the shortage and maldistribution of health workers. For instance, while education and training institutions produce the workforce, they rarely assess the alignment between career choices of their graduates and the priorities of local health services or community health needs. To achieve this alignment, education and training institutions must implement systems to methodically track their students' personal characteristics, the particularities of their training and learning, the relevance of their graduates' demonstrated competencies, career choices and practice location, and compare these outcomes with the capacity and the capability of health services to address local population health needs. This alignment requires a shift to accepting that education and health systems are indivisible complex adaptive systems, rather viewing them as separate systems with many well defined, connected parts and predictable relationships.

This requires that HRH planning and processes will need to adopt education sector-wide approaches to collecting information and data. This will assist in reducing duplication, as well as producing dividends in terms of the inter-operability and compatibility of data and evidence. HRH tracking studies should extend to the early years to include education sector data on early childhood development, primary and secondary education, as well as technical and vocational education and training, and adult education. A combination of

approaches is needed to effectively evaluate impact of education interventions and track graduates longitudinally.

Relevance to global and national sectoral and intersectoral policies and practice

The scale and interdependency of the challenges, such as climate change, air pollution, mass population movements and the technological revolution facing in societies' calls for a "cogent, integrated approach to education governance that is sector-wide, cross-sectoral and multi-level and which places people at the centre" (UNESCO 2019).

Recent global and regional reports supporting the implementing the 2030 Agenda for Sustainable Development are helping to reshape health and education systems and health labor markets towards the achievement of people- and community-centered universal health coverage (WHO 2017b, WHO 2016). Within this process the education sector is highlighting the relevance of lifelong learning as both a conceptual approach and an organizing principle to address to such contemporary challenges. HRH tracking studies need to take into account new thinking around lifelong learning and the evolving policy and social dialogue around an intersectoral health workforce agenda. The report of the United Nations High-level Commission for Health Employment and Economic Growth (UN ComHEEG) recommends an intersectoral approach to HRH; firstly, within the heath sector through efforts to address Sustainable Development Goal (SDG) target 3c[1]; secondly, between the health sector and education sector (SDG 4[2]) including lifelong learning opportunities, and thirdly, across other sectors with focused attention in gender equality (SDG 5) and decent work and economic growth (SDG 8). The *WHO Global Strategy on Human Resources for Health: Workforce 2030, GSHRH* (WHO 2016) establishes an enabling environment for governments, health workforce education and training institutions and communities to undertake tracking of graduates. WHO GSHRH 2020 milestones include calls for health workforce registries that "track health workforce stock, education, distribution, flows, demand, capacity and remuneration" (WHO 2016; p9). WHO's National Health Workforce Accounts (WHO NHWA) – a set of indicators to support achievement of Universal Health

[1] Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States, https://sustainabledevelopment.un.org/sdg3
[2] Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, https://sustainabledevelopment.un.org/sdg4

Coverage, Sustainable Development Goals and other health objectives underpin both the WHO GSHRH and UN ComHEEG. WHO NHWA provides the basis for coordinating data collection and analysis from the education system and the health system. Longitudinal HRH graduate tracking and outcome studies could catalyse these efforts.

The idea of tracking graduates is also included in and aligned with Pan American Health Organization's (PAHO; 2017) *Strategy on Human Resources for Universal Access to Health and Universal Health Coverage*. This strategy sets out three strategic lines of action and interventions to guide and support the development of HRH policies and plans. The first line of action is: "Strengthen and consolidate governance and leadership in human resources for health" that includes …development of human resources information systems that include the analysis of professional mobility and forecasting of medium- and long-term needs(PAHO 2017; p6). The second line of action is: "Develop conditions and capacities in human resources for health to expand access to health and health coverage, with equity and quality" (PAHO 2017; p7). In the third line of action, PAHO calls for "partner[ing] with the education sector to respond to the needs of health systems in transformation toward universal access to health and universal health coverage" (PAHO 2017; p8). Consistent with these recommendations, HRH graduate tracking and outcome studies could enable more accurate and timely assessment of whether strategies and actions being implemented are achieving the desired results.

It should be recognized that global and national policies, regulations and funding schemes can act as barriers and enablers for achieving an equitable distribution of health workforce. Hence to guide policymaking and investment, HRH tracking studies should be designed and analyzed taking into account global, regional, national and local policy contexts. Context-tracking efforts that consider context as well as education inputs, processes and outcomes could identify key sectoral and inter-sectoral interventions and leverage points that could facilitate greater returns on HRH investment.

The benefits of adopting HRH tracking studies

There are a range of benefits to health systems and institutions that implement longitudinal HRH tracking analysis systems. At a national level, HRH tracking data can help improve health workforce development and training to address health service priorities, target investment and allocation of adequate budgetary resources, and contribute to achieving Universal Health Coverage. Health workforce training institutions and their programs create the health workforce and so can either enable or hinder the implementation of health systems goals. Institutions have a professional and social obligation to implement graduate tracking studies to continually account for the quality of their graduates, relevance of curricula, and the effectiveness of training processes. Efforts have been made to develop national systems to track graduate outcomes. Countries such as Australia, New Zealand, Great Britain and Canada are already beginning to track graduates at national levels to guide the response to future health workforce needs, including optimal distribution of clinical disciplines; geographic locations of practice, more specifically in rural and under-served regions; and the services offered.

Case study 1. Findings from THEnet partner health professional education schools

The rationale for conducting graduate tracking studies for socially accountable health professions institutions (SAPHE) is summarized in a recent policy brief on socially accountable education to the United Nation's High-level Commission on Health Employment and Economic Growth (Palsdottir, et al., 2017). The policy brief highlights evidence on the positive role of SAPHE in improving the availability, distribution and impact of health workers. There is clear evidence that targeted selection policies aimed at increasing socio-economic, ethnic and geographical diversity of students have positive effects on their postgraduate distribution and career choices (Policy brief 10-13). SAHPE graduate tracking programs have confirmed a range of positive health workforce outcomes, including: positive intentions toward practice with rural and/or under-served populations at course graduation, equitable HPE admission and recruitment processes, acquisition of locally-appropriate skill (or competencies) sets, positive attitudes to community service, and deployment and retention of graduates in areas of need.

At an institutional level, the health workforce training institution can i) confirm that key targets with respect to graduate outcomes are being achieved, ii) strengthen and enhance graduate feedback mechanisms to guide and inform the development and implementation of instructional reforms, and iii) ensure that their program continues to address evolving local health and health workforce needs.

In addition, analysis of the tracking data can determine if graduates' current career choices are influenced by personal characteristics and/or undergraduate experiences associated with the institution's curriculum and training activities. Longitudinal graduate tracking data including practice data collected via non-conventional channels for example social media can provide opportunities for the institution to collect feedback from graduates on how to improve the institution's curricula and training activities, and/or facilitate quantitative and qualitative research around key health workforce priorities. Individual health workforce training institutions may be reluctant to implement graduate tracking systems because of the additional burden on resources and extra time required.

III. Methods and approaches of HRH graduate tracking and outcome studies

Methods

Tracking studies typically use one or more of the three study designs described below. The first two designs: retrospective cohort and cross-sectional cohort studies, lack a longitudinal or tracking component. However, these studies often provide equivalent data (albeit with some inherent biases) and can help justify the need for a full tracking study. In addition, many longitudinal cohort studies (the third design) start off as retrospective or cross-sectional cohort studies, and often continue to use retrospective or cross-sectional designs to supplement the ongoing tracking studies. It is common to use two or all three designs at the same time, to collect data on the past (retrospective), present (cross-sectional or longitudinal) or future (longitudinal).

All three cohort designs can provide information on the students and graduates of a school. However, all cohort studies are subject to a variety of biases that can limit the ability to generalize to other schools from a single study (Mann 2003; Mamdani et al. 2005; Normand

et al. 2005; Rochon et al. 2005). For instance, selection bias is a common limitation of cohort studies: students are either selected into the program or self-select into the program and this limits the ability to generalize or to establish causal relationships. For example, a student who undertakes rural placements may be more likely to set up practice in a rural location, but it is not known whether the rural placement influences the student towards rural practice or whether the student sought rural placements because he or she intended to practice in a rural area (Hogenbirk et al. 2011). In this example, causality can run in either direction. Typically, cohort studies that seek to investigate causal relationships require comparison groups and measures of confounders or similar variables, as explained below. A multi-school multi-cohort study, such as the THEnet Graduate Outcomes Study (described below) can help extend results and improve generalizability. A recent study of socially accountable schools in the Philippine context offered interesting evidence of positive impact of graduate outcomes socially accountable schools, using comparison groups. (Halili et al., 2017 and Siega-Sur et al.,2017)

HRH graduate tracking at the institutional level

Deciding what to track, why, how and with whom, follows from the institution's vision, mission, mandate and resources situated within the context of the health system's needs and goals. Notably, health system's needs and goals include: i) offering health services and improving health over the entire population regardless of geographic locations and socio-economic groups; ii) assuring social and financial risk protection in health for all groups; iii) providing services in the manner that people want or desire and engages people as active partners (responsiveness and people-centered); and iv) ensuring efficiency in health services delivery.

One example of an analytical, longitudinal national health workforce graduate tracking effort is the *Medical Schools Outcomes Database (MSOD) and Longitudinal Tracking Project* in Australia and New Zealand. In 2004, the 19 medical schools in Australia and New Zealand agreed on a minimum data set to be collected from students commencing a medical program. The MSOD dataset now has over 30,000 participants, who initially enrolled in medical school, with the first cohort now having reached postgraduate year (PGY) 5. MSOD aims to investigate how the characteristics of students entering the medical school, their

experiences while at university and their pathways through pre-vocational and vocational training have influenced their career destinations. This was achieved via the collection of very minimal personal demographic data and career aspirations. It has assisted in evaluating outcomes of medical education programs with specified workforce objectives (including rural and other areas of workforce need), assisting in medical workforce planning, and providing a national research resource (Dowell et al, 2018).

In addition, there are a number of longitudinal, descriptive (qualitative data) national HRH graduate tracking systems which do not link their graduate outcomes with educational processes at HRH institutions. In the Australian context, this includes the Medicine in Australia: Balancing Employment and Life (MABEL) and the Australian Health Practitioner Regulation Agency (AHPRA). The Canadian context includes the Canadian Post Medical Degree (MD) Education Registry (CAPER), which has gathered graduate training data (since 1989) and publishes statistical trends for more than 80 specialty and subspecialty training fields, including all family medicine, medical, surgical and laboratory disciplines. CAPER covers residency and fellowship programs at all Canadian medical schools and gives a long-term picture of the numbers and types of physicians moving through Canada's post-M.D. training system. It also tracks graduates' location of practice 1, 3, 5, 10, 15 and 20 years into their practice (v). The United States context includes the Research on Medical Education Outcomes (ROMEO) registry.

Social Accountability and graduate tracking

As outlined in the Appendix, socially accountable health professional education (SAPHE) institutions implement nearly half of the institutional HRH graduate tracking programs identified. This illustrates the earlier point that health professionals' education institutions established with a strong social mission recognize the importance of graduate tracking.

Social accountability of medical schools is defined by WHO as "the obligation to direct their research, education and service activities towards addressing the priority health concerns of the community, region, and / or nation they serve" (Boelen and Heck 1995). A more recent adaption of social accountability defines it as "institutions that train health workers design their education, research and service activities to meet health needs of the

communities they serve—with priorities jointly defined by government, services providers and others including the populations in greatest need". Health professional education institutions (schools) that aspire to social accountability all have a mission to train a fit-for-purpose health workforce. From a social accountability perspective, a fit-for-purpose health workforce increases health equity within local health systems by deliberately addressing the priority health needs of local, medically underserviced populations by engaging people and communities as active partners, and by ensuring people get the services they want and need with minimal financial hardship. This means recruiting students who are likely to practice in underserviced regions, and then providing them with curricula, role models, and clinical placements to ensure that graduates have the knowledge, attitudes, and skills to address the priority health needs of local populations.

Tracking across contexts: multi-institutional and multi-country HRH graduate tracking study

In 2008, a group of 11 schools (now 12 schools) of medicine and health sciences that share a mission of social accountability founded Training for Health Equity Network (THEnet) a global community of practice. Each of these schools, located in high and low resource environments on five continents, committed to hold themselves accountable for producing, deploying and retaining a health workforce with knowledge, attitudes and skills that equip them to respond to the priority health needs of the populations they serve, with a focus on the needs of underserved populations.

Together with the participating schools, THEnet developed a common evaluation framework for social accountability in health professional education. This allows all schools to use it for continuous quality improvement and to critically reflect on their progress towards social accountability (Larkins et al. 2013). The Framework on Socially Accountable Health Workforce Education, tested at five schools (Ross et al. 2014), has several key components, aspirations and indicators arranged under the four overarching questions: 1) Who do we serve and what are their needs? 2) How does our school work? 3) What do we do? and 4) What difference do we make? Under this fourth question, a critical key component is: Where are our graduates and what are they doing? To address this question, THEnet and its partners developed a graduate tracking project and tools applicable across

contexts and continents. Broadly, three assumptions about education inputs, processes and their effects on outputs and outcomes underpin graduate tracking of health professional education institutions with a social accountability mandate:

- The more socially accountable the school's mission, educational inputs and processes, the more likely that the school will produce competent, people-centered and fit-for-purpose graduates ready to advance health equity in the communities they serve,
- The more that the school's graduates are people-centered, fit-for-purpose and attuned to health equity, the more likely they are to serve in the health system's medically underserved communities,
- The more that the school's graduates are equitably distributed in the health system, the more likely they are to reduce health inequalities and improve population health.

Currently, THEnet Graduate Outcomes Study (GOS) tools are actively in use at eight of the THEnet schools in six countries and five continents. To date, THEnet has data from more than 5,000 learners across these settings, building a rich and powerful dataset (Larkins et al. 2018). Specific selection strategies at THEnet schools appear to be successful in recruiting a population of students more representative of the broader population than most medical schools (Larkins et al 2015; 2018). A high proportion of study respondents at these schools come from rural and disadvantaged backgrounds and these respondents are more likely than others to express their intention to work in under-served locations after graduation at both entry and exit from medical school. After adjusting for confounders, rural background and low-income background were the most important predictors of intent to practice in a rural location. Importantly, for schools in the Philippines and Africa, intention to emigrate was less likely for respondents from low-income and rural backgrounds (Larkins et al 2018).

IV. Conclusion

An appropriately trained health workforce located close to where people live is required to achieve universal health and access to quality people-centered health services for all (WHO 2016, PAHO 2017). To track progress and determine which policies and strategies are most likely to produce the health workforce that a region or country needs, it is essential to track and assess graduate outcomes over time.

Tracking graduate outcomes over time provides evidence guide national and institutional policies and strategies, further strengthened by comparing data from across countries and health system contexts. Data and information from institutions who have implemented social accountable health workforce education illustrate how health workforce planners and training institutions are able to better measure, understand and identify which aspects of the students' characteristics and components of the program influence graduate career choices, practice location and intentions, and how the training can be designed to inform these choices. These findings to date support the assertion that broadening selection strategies for health workforce education to ensure that a broad cohort of students are selected, then training them in the locations where they are needed to serve, with a curriculum based on priority health needs can bear dividends in terms of practice intentions and the nurturing of a fit-for-purpose health workforce.

The systematic, longitudinal collection, monitoring and evaluation of data and information on health workforce graduates' personal, educational and career characteristics over time is a neglected part of HRH policy and planning processes. HRH graduate tracking and analysis can help align, develop and monitor the effect of policies and plans to ensure that interprofessional teams with the right competencies are addressing people's health needs, wherever they live. It can also inform intersectoral policy dialogue across line ministries, government agencies and other stakeholders, as well as help inform global and regional intersectoral policy decision-making. However HRH graduate tracking cannot directly measure changes in health systems as a result of graduate activities, nor importantly does it directly measure access to health services nor actual health impacts. However, they can form a solid basis for conducting more in-depth studies to examine impact.

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