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Poster Abstracts

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Strengthening Research Capacity and Supervision for MD students: A new partnership between the Sudan Medical Specialization Board and the Centre for Global Health

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Topic/issue/problem: Strengthening the education, management, and performance of Human Resources for Health (HRH) are all identified as priority areas in Sudan's National Health Sector strategies (2012-2016). In line with the mission and strategic direction of the Sudan Medical Specialization Board (SMSB) to improve the performance of the health system through standardized and monitored training, accredited training sites, qualified and committed trainers, and competent professional trainees, a new partnership was proposed between the SMSB and the Centre for Global Health, Trinity College Dublin.

Objectives and methods: The initial visit aimed to explore the possibility of establishing a new partnership between the Centre for Global Health, Trinity College Dublin (CGH) and the Sudan Medical Specialisation Board (SMSB). This aim was achieved through two primary objectives. First, a series of meetings conducted to explore the possibility of establishing partnership between the two institutions. Second, as the partnership was determined possible, a joint situational analysis workshop was conducted in the Sudan, the outcome of which identified priority interventions to support research capacity at the SMSB.

Results and findings: The main results of the training needs assessment workshop, was to improve the capacity for research among MD candidates, through improving supervision; increase the research integrity; increase the appreciation for research and publication output.

Lessons to date: As the SMSB spearheads the production of specialized doctors and allied health professions for the entire country, this partnership will have consequences for health service delivery in Sudan.

Main messages: The overall goal of this partnership is to strengthen existing health systems through improvements to human resources for health training/education and research in Sudan. We anticipate that this partnership will contribute to a wide range of improvements in health system and HRH through the establishment of a stronger evidence base, directed institutional research, and capacity building within the SMSB.

AGABA, Allan. IntraHealth International, Uganda

We're All in This Together: Doctors, Nurses, Pharmacists, and Allied Health Professionals Improve Health Professional Regulation in Uganda

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Issue: Regulatory systems in many low- and middle-income countries are weak and unqualified providers abound. In Uganda, four health professional councils (HPCs) govern health worker registration and licensing, codes of conduct, continuing education, and discipline. Yet many health professionals do not register or renew their licenses, and councils are challenged to implement their mandates in rural regions.

Objectives/Methods: Uganda established district health supervisory authorities (DHSAs) in all 112 districts. Each HPC delegates a trained representative to collectively track, register, and license health professionals and private facilities within their district and oversee codes of conduct compliance. This approach aligns with government decentralization and leverages limited HPC resources. IntraHealth, with USAID funding, evaluated DHSAs to assess effectiveness against set performance indicators.

Results: The evaluation identified 70% of districts having well-functioning DHSAs in 2016, an improvement from 34% in 2015 as the concept took hold. The number of health workers with valid licenses increased 22% over a two-year period and the number of private clinics duly registered increased as others not meeting regulatory criteria were closed. Quack practitioners are more easily identified and disciplined.

Lessons:

- DHSAs felt local monitoring caused health workers to take registration and licensing more seriously.
- DHSAs appreciated joint facility visits across medical disciplines so they could cover multiple types of health professionals.
- National-level coordination among HPCs is needed to support DHSAs functions.

Main messages: HPCs working together to perform regulatory functions at district level adds credibility, supports coordination, mitigates against political interference, and leverages resources. This collective, local approach can enhance regulatory compliance and protect the public against unlicensed practitioners.

Gender equity: DHSAs support gender equity as the nurses and midwives council (predominantly female) is accorded equal status for regulatory oversight of their profession as are medical and dental professionals (predominantly male).

AJUEBOR, Onyema. World Health Organization, Switzerland

Educating and training health workers to tackle antimicrobial resistance: *Towards a WHO global interprofessional competency framework and prototype curricula*

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Problem: The misuse and overuse of antimicrobials over the past fifty years has accelerated the development of resistance to antimicrobial agents. Effectively tackling AMR requires health workers who are equipped with the right competencies to appropriately use antimicrobials. However, varying availability, standards, quality and levels of implementation of AMR educational curricula/programmes across countries (particularly lower resource settings) have continued to hamper progress on scaling up health workers efforts to control AMR.

Objectives and methods: The main objective is to ensure the availability of global resources for AMR education and training by developing an interprofessional competency framework and a global prototype curricula. A mapping exercise of existing AMR educational resources was recently conducted by WHO followed by a consultation meeting with leading AMR education experts from all WHO regions.

Results and findings: 91 educational initiatives related to AMR were identified by the mapping exercise. The marked diversity in the types, comprehensiveness and approaches of the different initiatives revealed a clear lack of globally agreed normative guidance to define AMR programmatic elements and curricula contents of education institutions globally.

Lessons to date: There is an opportunity to optimize health workforce performance to control AMR by ensuring that minimum AMR standards incorporate the principles of interprofessional education and span all relevant AMR control competency domains.

Main messages: Addressing AMR education and training requires policy planners and educators in countries to embed AMR minimum standards and competencies in their education and training curricula. WHO in collaboration with partners have taken steps to lead and coordinate strategic efforts as a means to help achieve the first objectives of the global action plan on AMR and the Global strategy on Human Resources for Health: Workforce 2030.

ALHAJRI, Noora. George Washington University, United States of America

A guide through the path to Social Accountability (SA): Constructing ISAT (Indicators for Social Accountability Tool)

Social Accountability (SA) is about directing health professions education, research and service towards priority health concerns of the community. It is also one of the main challenges of schools of health professions that value the importance of improving quality and equity in health care delivery.

Objectives: To present the construction process of a diagnostic tool that schools of health professions education could use to assess their progress towards SA.

Methods: In recent years, three reference groups have proposed indicators on SA, mainly aimed to the “recognition of excellence”: ASPIRE (International Recognition of Excellence in Education) THENet (Training for Health Equity Network) and the Beyond Flexner Alliance. However, there was a need to develop a tool that could be used by medical schools initiating their transformation path towards SA. In June 2017, PAHO/WHO brought together a number of international experts in measurement tools for SA. Participants worked in small groups to establish the core components for SA and then to agree on milestones, standards and indicators for each component, resulting on the instrument ISAT (Indicators for Social Accountability Tool)

Results: The ISAT contemplates six core components: 1) Student recruitment, selection to guarantee diversity and gender equity; 2) Faculty recruitment and development; 3) Educational program (curriculum content, learning methods and location of educational experiences); 4) Research activities; 5) Governance and community engagement; 6) Societal impact.

Each core component is divided in four developmental phases (traditional no reform, social responsibility, social responsiveness and social accountability) and accompanied by milestones, standards and indicators, as appropriate.

Lessons: Implement a socially accountable health educational program needs a clear set of directives and indicators that serve as a road map for health intuitions.

Message: A new set of core indicators for schools that are interested in transforming their education towards SA is available .

ALI, Muna. United Nations Population Fund (UNFPA), South Africa

A delink trend between skilled birth attendance and maternal mortality ratio: historical analysis from 23 East and Southern Africa countries

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Despite global consensus Skilled Birth Attendance (SBA) considered as gold standard for reducing Maternal Mortality Ratio (MMR), evidence from East and Southern African (ESA) region shows increased SBA does not always lead to reduced MMR. This paper investigates the delink between SBA and MMR to understand factors that compromised the effective coverage. The presentation relates to subtheme 2 Policy and plan and intended to contribute to the overall objective of advancing implementation of the Global Strategy HRH: 2030 workforce.

Regression analysis was done on historic data on SBA and MMR from 23 countries to identify the strength of association between SBA and MMR. Data from SRMNAH workforce assessment in ESA region was utilized to investigate possible factors of delink between SBA and MMR. The analysis includes Availability, Accessibility, Acceptability and Quality (AAAQ) of care which are critical components of effective coverage.

The result showed weak association between SBA and MMR in five countries in the region. Investigation on effective coverage shows these countries share a common feature of less optimal AAAQ of care represented by missing critical intervention from minimum benefit package; not all schools follow standard midwifery curriculum; absence/insufficient legislation, regulation and licencing mechanism; low comprehensive SRMNAH met need; lack national policy that addresses culturally sensitive respectful care; lack coherent national planning instrument to deliver harmonized SRMNAH care.

Enabling environment should be the centre of HRH planning for optimum utilization of skills. The presentation will stimulate negotiation of workforce strategies/plans to emphasize on enabling environment and hence effective coverage. It is well-timed evidence for discussion since many countries in Africa are expected to rush to reduce MMR to meet SDG which poses a risk of compromising effective coverage.

ALLEN, Tammy. Vennue Foundation, United States of America

Building the Global Pharmacy Workforce: A New Education Model to Prevent Disease and Promote Health in Developing Countries

Rationale: In the developing world, the pharmacy is often a patient's only point of access to healthcare. Vennue's workforce education program strengthens the competencies of pharmacy personnel, enabling them to effectively fulfill the spectrum of duties as frontline providers of patient-centered care.

Objectives and methods: Vennue's education program can be implemented through two mutually reinforcing strategies: field based training and a forthcoming digital hub. Locally registered pharmacists lead 20 interactive training modules where education resources are introduced and tailored to local needs. Vennue is also building the first Cloud-based hub to provide pharmacy workers with unprecedented access to professional qualification, educational resources, and networking, therefore advancing adoption of international standards.

Results and findings:

- 86 pharmacy staff in Bangladesh and Nepal benefit from group instruction.
- Workforce knowledge improves 73% across 20 competency areas.
- Patients report 70% greater satisfaction with their pharmacy experience.

(n = 2,600)

- Professional satisfaction increases and likelihood of retention rises.
- Pharmacy safety and efficiency increase with adoption of standard operating procedures.

Lessons: This mutually reinforcing workforce education model strengthens pharmacy workforce capabilities and advances patient care through inclusion of pharmacists and pharmacy support staff on the frontlines of healthcare delivery, thus raising the quality of patient care.

Main messages: Vennue has designed and tested a cost-effective, locally relevant, scalable pharmacy workforce education program. Built on universally-recognized pharmacy practice guidelines, Vennue's model can be stewarded into other countries and will maintain its core value. Vennue's digitally-enabled model holds potential to significantly contribute to building a sufficient and competent global health workforce by leveraging the often-overlooked potential of pharmacists and pharmacy support workers. Vennue empowers all pharmacy workers, cutting across social divisions of gender or race, by equipping them with the skills and knowledge to improve care delivery and ultimately work collaboratively in healthcare provision.

AMORIM LOPES, Mario. FEUP / INESC TEC, Portugal

A labour requirements function for sizing the healthcare workforce

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Ensuring an efficient delivery of healthcare services is crucially dependent on both the prediction of the future demand for healthcare and on the estimation and planning of the Health Human Resources (HHR) needed to properly deliver these services. In this work, we propose a methodology to empirically quantify the relation between the healthcare services and the HHR needed to provide those services. Our approach is based on a translog Labour Requirements Function (LRF) relating the number of physicians with a set of specialty-specific workload and capital variables, ultimately being more suitable to the healthcare field than the traditional production function. Additionally, our methodology considers a flexible functional form, which was found to be superior than the traditional one, accounting for both productivity and technological progress in the delivery of healthcare services. Through an empirical analysis of the Portuguese healthcare system we found that the goodness of fit of the proposed models is very high, with R-squares varying from 61% to 86%. We also show that the Portuguese health system benefits from increasing returns to scale and that the physician's productivity has been increasing over the years. Moreover, other interesting insights were found, such as estimates of the HHR required to meet expected variations in the demand for healthcare services, as well as the possible resource allocations given the opportunity cost of physicians' labour. Additionally, regarding the physician's productivity, we provide further insights about gender differences.

ANTONIO, Carl Abelardo. College of Public Health, University of the Philippines Manila, Philippines

Compulsory service program for health professionals in low- and middle-income countries: A scoping review

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ISSUE: To address maldistribution in human resources for health (HRH), some countries have resorted to the implementation of a compulsory service policy for HRH. The Philippine government is contemplating compulsory service as a policy alternative to address the HRH problem, but is hindered by the absence of information on the different components of such policies.

OBJECTIVES AND METHODS: This scoping review aims to determine the components for compulsory service for selected health professionals in low and middle-income countries (LMIC). Using the method pioneered by Arksey and O'Malley, a search was conducted in MEDLINE, PLoS, Scopus, and ProQuest Central using keywords for “compulsory service”, “return service”, “mandatory service”, “physician”, “dentist”, “nurse”, “midwife”, “physical therapist”, “occupational therapist” and identified LMICs. A total of 6,757 records were retrieved and assessed, of which 41 were deemed eligible and included in the final analysis.

RESULTS AND FINDINGS: Common elements of a compulsory service program are: (a) a comprehensive HRH master plan; (b) clearly articulated program goals; (c) appropriate pre-service education and training; (d) transparent recruitment and placement; (e) strong institutional and system support; (f) competitive benefits and incentives; and (g) active management of HRH exit from the program.

LESSONS TO DATE: A compulsory service policy or program should be viewed as a comprehensive set of interventions that address the entire spectrum of HRH production, retention, and exit. This will necessitate the cooperation of all sectors and stakeholders outside of health if the intervention is to be successful.

MAIN MESSAGES: 1) Different models of compulsory service has been implemented to address HRH issues within LMICs, with varying levels of success. 2) The framework for compulsory service derived from this scoping review indicate that a compulsory service program will need to take into account concerns related to the spectrum of production, retention, and exit of HRH.

BANDA, Amanda. Médecins Sans Frontières.

In Sierra Leone's post-Ebola times, still waiting for effective health workforce strengthening.

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Topic/Issue/Problem: Health systems (HS) inadequacies largely explain spread of West-Africa Ebola epidemic (2014-2016). All three affected countries faced critical healthstaff shortages, before 881 cases and 512 deaths occurred among health workers. With some of worst health indicators worldwide, Sierra Leone has only 2 doctors per 100,000 population. How have promises to strengthen HS post-Ebola and to boost human resources for health (HRH) translated into filling existing HRH-gaps?

Objectives & Methods: Learn from bottleneck analysis and interventions to improve HRH development in Sierra Leone's public sector.

Mixed method approach: analysis staffing numbers, HRH plans, policies; interviews with key informants; review of enabling/blocking factors to adequate health workforce before/after Ebola outbreak.

Results and findings: While in 2016 the country's overall minimum staffing level stood at 16,000, only 9,910 health workers were on MoHS payroll. Additionally 9,120 unsalaried trained health staff work in public healthfacilities as 'volunteers', without official employment status. After graduation, HRH wait between 2 and 10 years to be absorbed. Without adequate pay, volunteers charge informal patient fees, reducing access to care. Shortages are further exacerbated by maldistribution, with 74% of health workforce working in only 10% of facilities, predominantly in urban areas. While Government committed to absorb staff mobilized during Ebola outbreak, uptake was limited to 549 mother-and-child aides in 2016. In addition to professional staff, community workers have been key in fighting Ebola.

Lessons to date: Increased level and speed of HRH recruitment to fill existing gaps into public sector is hampered by underlying structural issues, such as fiscal space limitations. Unresolved, this blocks measures to allow recruitment, remuneration and retention of health workers.

Main messages: After Ebola, many barriers pre-dating outbreak continue to prevent adequate HRH-levels and service delivery, weakening country's capacity to outbreak response. International promises to strengthen post-Ebola HS failed to address major HRH-concerns.

Issue/Problem: In the 2015 Ghana Health Service Annual report, 56% of Ghanaians have access to primary health care through Ghana's Community-based Health Planning and Services (CHPS) program. This study was used to understand the training, preparation and competency HCWs have to perform their job duties to inform CHPS implementation guidelines and HCW pre and in-service training.

Objectives/Methods: A cross-sectional study from five regions in Ghana was conducted using Task Analysis (TA) to assess practices and competencies of nurses and midwives working in CHPS zones in April 2016. A purposive sample of 401 participants who had worked between 6 months and 4 years were drawn from 5 urban and 10 rural districts. Responses to questions on 87 tasks across four dimensions: frequency, criticality (potential health impact), self-rated performance and training location. Analyzed results using Statistical Package for the Social Sciences and MS Excel were disaggregated by clinical cadre and region.

Results: Results indicate HCWs had some level of task-based knowledge, but inadequate skills made them uncomfortable in providing safe, effective services to the community. For example, 89% of CHNs received pre-service training on prevention and management of STIs and 97% stated it was critical, however only 6% were comfortable providing the service.

Lessons: HCW competency should be built through improved pre-service education and on-the-job training in the specific tasks they are required to perform. Supportive supervisory checklists should include all critical tasks performed by HCWs, based on a standard performance protocol.

Main messages: TA provides an innovative way to link HCWs' education to practice, and informs how training should be operationalized to ensure optimum healthcare delivery. Further, TA promotes practice that is safe, effective, and relevant to a country's health needs, and enables practitioners' to improve HCW education and training based on the reality of current practice.

BENEDICT, Leodegard. Benjamin William Mkapa Foundation, United Republic of Tanzania.

Orienting Health care workers on quality improvement to promote facility self-assessment and accountability – Tanzania Experience

Problem: Sustained quality assurance practices in work places are critical to improved quality of service. Baseline assessment on EmONC signal functions conducted in 2014-2015 to 19 health facilities, in 12 districts found indicated: lack of quality improvement (QI) teams, lack of Planned Health Education given to clients and Infection Prevention Control (IPC) Protocols not enforced.

Methodology: Two assessment and orientation visits were conducted in each of the 19 health facilities. The visits aimed at improving management of EmONC signal functions. The Standard Based Management and Recognition (SBMR) tool was used which as adapted from the Government and customized with the focus on availability and functionality of the QI teams, Infection prevention and control standards and facility health education programs.

Key Finding: This resulted to increase in number of facility with active QI teams by 84%, from the baseline with proper documentation, indicator tracking and action items follow up. Increase in facilities providing health education to clients with schedules and lesson guide/plan from 1 to 11 (58%); facilities now have in place emergency trays with essential lifesaving medicines, IPC protocol adherence increase and neonatal resuscitation facilities improved. All of these have contributed to increase in facility delivery by 12% (56% to 68% in 2016)

Lesson learnt: Enabling continuous work related learning environment particularly in rural underserved areas contributes significantly to Health Workers' motivation, performance and ultimately improve delivery of services particularly in EmONC and RMNCH.

Message: Regular conducted supportive supervision to the facilities should focus on creating a sustainable work learning environment and systems, for sustained improvement on service delivery and health workers motivation to deliver instead of one time problem solving/audit focused supervision.

Gender Issues: This submission observe gender as it focuses on improving women well-being during pregnancy and child bearing.

BENNETT, Viv. Public Health England, United Kingdom of Great Britain and Northern Ireland.

All Our Health: embedding and extending prevention, health protection and promotion of well-being and resilience into everyday practice

To change professional practice through specific education, programmes and culture change and embed prevention and population health in all practice across health and care settings overcoming population health challenges and support UN Sustainability Goals.

All Our Health (AoH) aims to maximise the impact of the estimated 2 million health and care professionals (HCPs) in England on improving health outcomes and reducing health inequalities. AoH is shaping, supporting and increasing visibility of health-promoting practice that prevents avoidable illness, protects health and promotes wellbeing and resilience.

At engagement stage of this long-term commitment. Currently communicating with and mobilising workforce. 16,050 people visited resource pages in May. A qualitative research report exploring front line attitudes due in Oct 2017: findings would be presented at session.

Based on what professionals have told us they need we have:

- developed easy access resources to overcome a lack of supporting info and help build confidence to start conversations.
- aligned with complementary programmes/campaigns to avoid confusion/increase impact of messaging.
- provided links on metrics/outcomes to help demonstrate value/impact.
- piloted in some regions/universities as model for professional education

The population health challenges AoH responds to are pertinent to most countries and, while health systems vary, capacity to energise/mobilise HCPs to develop a culture of health and alleviate unsustainable financial and workforce pressures is same everywhere. Each country contains a powerful professional resource that can make long-term health and well-being improvements to society which in time potentially benefit wider social/economic factors.

Each AoH topic requires HCPs to look at health inequalities as a core message and understand wider health/social care issues affecting/influencing people's decisions about their health and ability to self-manage and respond to local population needs and wider factors affecting people's ability to make healthy choices.

BLAUVELT, Carla. VillageReach, United States of America

Improving access to and rational use of medicines through an enhanced pharmacy cadre in Malawi

Co-Authors: Matthew Ziba, VillageReach, MI | Malawi

The health workforce shortage in low and middle-income countries dramatically limits the quality of care and access to essential medicines at the last-mile. While a multitude of factors affects availability of medicines at the service delivery point, shortfalls in human resources, and in the pharmacy workforce in particular, are critical factors in shaping the availability and rational use of medicines. In Malawi, the pharmaceutical workforce is responsible for ensuring quality pharmaceutical care to patients as well as overall medicines and supply chain management. However, trained pharmacy personnel are not available at the health center level, leaving clinical and front-line health workers to manage pharmacies, logistics duties, and dispense direct to patients. To address both quality of care and medicines availability, the MOH and partners implemented a new approach to the training, deployment, and support of an enhanced Pharmacy Assistant (PA) cadre. PAs undergo a 2-year, practicum based, certificate-training program that places them in district hospitals and rural health centers for half of their training period. Since the first class enrolled in 2013, more than 200 PAs have graduated and been deployed to public health centers across the country, improving equitable access to care for remote and underserved communities. The results have been remarkable; dramatic improvements in availability of essential medicines, high quality of dispensing standards, and an 80% reduction in clinician time spent on logistics duties. Investments in the pharmacy support workforce can result in dramatic gains for the health system by freeing up clinician time and improving access to and rational use of medicines at the last-mile of healthcare.

BOURGEAULT, Ivy. University of Ottawa, Canada

Core Competencies of the Human Resources for Health Field: Mapping Skills in Policy, Planning and Management

Topic/Issue/Problem: Human Resources for Health (HRH) are arguably the most important inputs in current and future health service delivery, thus how policy, planning and management effectively align with this key resource will be integral to ongoing systems' response. A coordinated educational program on this area of expertise is needed to better prepare policy makers, planners and managers to address this key area of health delivery. These specific skills are of demand and increasing recognition in a variety of different institutions and organizations, both public and private, within government and civil society. Governments and other funders are increasingly focusing on the many complex issues facing our health professions and their transition into the significant changes that will face future health delivery.

Objectives & Methods: This presentation maps out a draft set of key domains and core competencies for HRH policy, planning and management derived from a series of consultations with academic researchers and HRH policy and practice stakeholders. The draft list is heuristic and is intended to spark interest and discussion among the HRH forum participants from a range of backgrounds.

Findings: Human Resources for Health is an inherently interdisciplinary field of scholarship and practice that draws from the social, economic political and health sciences, population health and demography. Three key yet overlapping thematic areas emerged including HRH policy, planning and management. Cutting across these cross these areas are substantive knowledge domains addressing the micro/practice, meso/organizational and macro policy level knowledge. For each of these issues, there are a range of data resources, and methodological tools for undertaking robust HRH analyses.

Lessons & Main Messages: Mapping the core competencies in the HRH field necessitates cutting across interdisciplinary theoretical and multi-methodological domains.

Gender statement: Recognition of the gendered dimensions of HRH and its contexts are critical to the core competencies.

CAMPBELL, Diana. University of Victoria, Canada

Retirement of Female Healthcare Workers: Issue or Possible Strategy

Co-Authors: Diana Campbell, University of Victoria, CA|Canada; John Barton Cunningham, University of Victoria School of Public Administration and Dispute Resolution, CA|Canada

Impending retirement of senior clinical staff results in insufficient staff to meet population needs or mentor new graduates to do so.

Both retirement and returning to an employment situation after retirement has occurred primarily in this century. Organizational understanding of these phenomena facilitates strategies to mitigate the challenges of an aging workforce.

This qualitative study was conducted in British Columbia, Canada interviewed healthcare providers (mostly nurses) who were planning to retire in the next five to ten years.

The objectives were to explore their plans/feelings about retirement including challenges and strategies to manage those challenges. In addition to exploring the meaning of retirement, participants were asked about life values and non-work goals, health and financial issues, previous transitions, relational satisfaction at work and life.

Preliminary results indicate most:

1. Felt financially prepared for retirement and identified previous successful transition processes, stresses and learning.
2. Want 'give back' or share their knowledge after retirement.
3. Really loved the work that they were doing but were finding full time work difficult.
4. Factors that would influence an earlier than planned retirement were: health problems for themselves or family members; organizational changes; relationship with immediate supervisor;

The main messages relevant to other OECD states with an aging workforce are:

1. Engaging older healthcare workers is one strategy to address the impending shortage of healthcare providers.
2. Organizations can develop processes to support the re-engagement of aging healthcare providers.
3. Organizations can promote a healthy workplace by engaging with aging healthcare providers.

All but one of the participants were female. While there is some literature on transition and retirement in the public sector, many of these studies have predominantly interviewed men. Preliminary analysis suggests that the process of retirement may be different for women than men.

CHAPPY, Edward. Chemonics/HRH2030, United States of America

Debunking Assumptions: Motivation, Retention, and Satisfaction among Health Workers in Jordan

Co-Authors: Edward Chappy, Chemonics/HRH2030, JO|Jordan

In Jordan, approximately 3.78 million people rely on Ministry of Health services. Policymakers and health professionals assert that motivation and retention of health workers is a major problem in MOH facilities; however, there is a lack of reliable data to validate or quantify this assumption.

The research objective was to identify factors influencing retention, satisfaction, and motivation among MOH doctors, nurses, and midwives to inform HRH strategies to improve retention. The mixed-methods research sample included 1,032 workers and 67 managers.

Findings disproved assumptions and showed relatively high retention, with relatively low turnover and low number of vacancies (average 1.2 vacancies per sampled facility). Two-thirds of workers intend to stay for two years while one-third of workers are seeking employment outside of the MOH. Worker motivation was reported as neutral to slightly positive. Doctors, men, younger employees, and less experienced workers were less motivated and more inclined to leave.

A strong HRM system is critical for ensuring high motivation, retention, and satisfaction. HRM factors that positively influenced satisfaction included patient appreciation, interpersonal relationships, and working arrangements. Dissatisfying factors that should be addressed by the MOH to improve retention included insufficient financial incentives, lack of supplies/infrastructure, lack of professional development, excessive workload, disjointed HRM practices, and workplace aggression. These lessons can be applied in other MENA countries.

Key decision makers believe that retention and motivation are problems within the MOH; however, it is important to have empirical evidence to allow key decision makers within the MOH to strategically invest in its workforce to maximize improvements. The MOH can use the research results to improve HRH governance structures by developing evidence-based policies and procedures for improving motivation and retention.

Gender equality and inclusive development concepts were integrated into the research design, including analyzing differences between genders in motivation and retention factors.

COSTA-COUTO, Maria-Helena. Institute of Social Medicine, University of State of Rio de Janeiro, Brazil

Internationalization and the Expansion of the Market on Higher Education for Health

This paper analyses the trend on the internationalization and expansion of the health professionals' Higher Education Institutions, as part of the transition from elite systems to mass systems and the tension between the quantitative and qualitative aspects of the education. These changes are spreading around the world, following the economic and financial changes intrinsic to financial and economic evolution.

The internationalization of Higher Education is oriented towards new knowledge, commercial advantages and increased global competitiveness. The health labour market has become globalized, creating a migratory flow of students, researchers, and faculty. Academic migration patterns display a phenomenon known as the "brain drain", a disproportional flow of researchers from South to North, related to income inequalities, resulting in disadvantages for developing countries.

Health systems face multiple workforce challenges. Growing recognition of these problems has sparked global initiatives emphasizing the scarcity and unequal distribution of health professionals as important elements in healthcare provision, even when supplies and equipment are available. As a result, the WHO and other agencies have called attention to the need for countries to invest in their health workforce training capacities. The majority of the member states in the OECD also experience workforce shortages in health services, partially compensated by international recruitment. Forecasts point to a widening gap between health workforce supply and demand. The scale and content of these changes vary according to the expansion and institutional reconfiguration of educational and health systems, as well. Market expansion for private higher education stirs competition, shapes business clusters, modifies training processes, and raises new public policy challenges. In addition, the expansion of health education requires effective regulatory mechanisms to ensure quality and integrity of the educational process.

DAGOYE, Damtew Woldemariam. Jhpiego, Ethiopia

Intention to leave: a national study of physicians in Ethiopia's public hospitals

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Background: Although the production of physicians has increased markedly in recent years, retaining them in the public sector remains a major challenge. The aim of this study was to assess the level of intention to leave and factors affecting that decision among physicians working in public hospitals in Ethiopia.

Methods: We conducted a national cross-sectional study from May 28 to June 14, 2014. A sample of 432 physicians from 108 hospitals were invited for the study with public hospitals as the primary sampling unit and physicians as the secondary sampling unit. Data were collected through structured interviews. The main variables of interest were intention to leave the current facility in the next one year and its predictors. Descriptive statistics and multivariable logistic regression analysis were done.

Results: A total of 375 physicians from 107 hospitals participated in the study. About half (47.5%) said they intended to leave in the next one year. Intention to leave varied by region, ranging from 29.3% in the urban regions to 53.1% in the least developed regions. Low pay, poor access to higher education, and limited opportunities for promotion were the top most rated reasons for a decision to leave. Overall job dissatisfaction (OR=2.05, 95% CI=1.17-3.57), female sex (OR=1.99, 95% CI=1.07-3.69), working at referral hospital (OR=0.29, 95% CI=0.14-0.60), working in urban regions (OR=0.27, 95% CI=0.08-0.87), and having two years or longer compulsory service requirement (OR=0.48, 95% CI=0.30-0.77) were independently associated with turnover intention.

Main Message: Our results suggest the presence of a concerning level of instability of the physician workforce in the public sector due to both financial and non-financial factors. Addressing these challenges would be required to motivate and sustain physicians in the public sector so that they provide the needed health services to save lives.

DAUWELS-OKUTSU, Shoko. Centre for Population Health Sciences (CePHaS), Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore

Transformative Digital Healthcare Professional Education

Background: In 2013, the World Health Organisation estimated that there is a shortage of approximately 17.4 million health workers worldwide. Education and training for healthcare workers is demanding and linked to meeting many of the SDGs. Digital education may be an efficient and effective novel medium to provide inclusive and equitable quality education/training programs to economically and geographically diverse societies.

Objectives: We aim to synthesize global evidence on digital health education to inform its adoption and use in healthcare professionals education at pre- and post-registration level

Methods: Systematic reviews are currently underway to synthesize the evidence on different domains of digital healthcare professional education. Medline(Ovid), Embase (Elsevier), Cochrane (Wiley), PsycINFO (Ovid), ERIC (Ovid), Cinahl (Ebsco) and Web of Science Core Collection (Thomson Reuters) were searched for studies on digital health education from 1990 to 2016.

Results: The search strategy yielded over 2000 RCTs. We covered different types of digital education such as Offline and Online Education, Digital Game-Based Learning, Massive Open Online Courses, Virtual Reality Environments, Virtual Patient Simulations, Psychomotor Skills Trainers, Serious Games and mLearning. More than 20 systematic reviews are now underway to synthesize all the available evidence.

Conclusion: Preliminary results suggest that evidence base for some of the digital education strategies is stronger and more positive than previously thought.

DE BERNIS, Luc.

L'accréditation des écoles de sages-femmes dans les pays en développement

DESTA, Firew Ayalew. Jhpiego, Ethiopia

Factors affecting nurses' job satisfaction in Ethiopia: A multilevel analysis

Co-Authors: Sharon Kibwana, Damte Woldemariam, Equinet Misganaw, and Mihereteab Teshome

Problem: Poor job conditions and limited resources for nurses can result in low level of job satisfaction, which, in turn, can affect their retention to provide high quality services.

Objectives and Methods: This national study examined the level and predictors of job satisfaction among nurses working in public health facilities of Ethiopia. The study employed a cross-sectional two-stage cluster sampling design. 424 nurses were randomly selected from sample of 125 health facilities. A structured questionnaire asked about overall job satisfaction and job conditions using a 5-point Likert scale. Multilevel analysis was performed to adjust for different clustering effects. Percentages of satisfaction and adjusted odds ratios were calculated to examine the association of factors with levels of overall job satisfaction.

Results and findings: Overall, 60.8% of nurses expressed satisfaction with their jobs. The nurses job satisfaction levels were significantly higher among female (65.6%, $p=0.04$), those younger than 25 years of age (67.8%, $p=0.048$), and nurses with 10+ years of work experience (68.8%, $p=0.007$). Nurses were dissatisfied with salary and benefits (88.1%), availability of supplies and equipment at facilities (80.4%) and training (60.4%). They had low satisfaction with opportunities for promotion (71.7%) and recognition from organization (50.2%). These factors were contributing for overall nurses' job satisfaction at multilevel multi-variable logistic regression analysis.

Lessons to date: Nurses with 5 to 10 years work experience may need special attention to address the high rate of dissatisfaction.

Main message: Policy makers should provide combinations of financial and nonfinancial incentives to improve satisfaction rate for this cadre.

Addressing gender, equity, diversity: The study included health facilities from major and emerging regions. Male and female nurses participated in the study to make gender specific interventions.

DITLOPO, Prudence. Centre for Health Policy, University of the Witwatersrand, South Africa

Understanding the Employment Decisions of a Cohort of Professional Nurses in South Africa

Co-Author: Dr. Duane Blaauw, Senior Researcher, Centre for Health Policy, University of the Witwatersrand, South Africa

Problem: There is limited information from low- and middle-income countries (LMICs) about where nurses who remain in-country choose to work after training, and why they choose certain jobs over others. Such information is necessary to improve national nursing workforce planning and strategy.

Objectives and Methods: This research is part of a longitudinal study monitoring the employment decisions of a cohort of professional nurses in two provinces in South Africa. Previous quantitative analysis found that nurses have increasingly moved from hospitals to clinics and from the public to the private sector. This qualitative study explored the personal and work-environment factors influencing those decisions in more detail. Criterion sampling was used to select 40 professional nurses from the cohort database. Face-to-face interviews were conducted using a narrative guide and thematic content analysis was used for data analysis.

Results: Married female nurses and those with childcare responsibilities based their job location decisions mainly on flexibility of working hours. Work-environment factors contributing to nurses' decisions to move from hospitals to clinics included the frustrations of unfavourable ward rotations and the greater professional autonomy in clinics. "Salary shopping", described as deliberate movement between different private sector facilities negotiating higher salaries, influenced decisions to move from public to private sector. Decisions to remain in the public sector were influenced by job security, employment benefits, and sector loyalty.

Lessons: Nurses employment decisions are influenced by multiple factors. Creating more positive nursing practice environments remains an important priority for retention.

Main Messages: Detailed understanding of the factors influencing nurses' internal movements within a country is critical in informing staffing policy reforms in LMICs.

Gender Statement: Movement of female nurses depended on their marital status and having children. Innovative strategies need to be developed to address these gender inequities and afford female nurses similar opportunities to their male counterparts.

DRENNAN, Jonathan. University College Cork, Ireland

An Evaluation of an Evidence-Based Approach to Determining Safe Nurse Staffing and Skill-Mix

Co-Authors: Jonathan Drennan, University College Cork, EI|Ireland; Peter Griffiths, University of Southampton, UK|United Kingdom of Great Britain and Northern Ireland; Jane Ball, University of Southampton, UK|United Kingdom of Great Britain and Northern Ireland; Anne Scott, National University of Ireland, Galway, EI|Ireland; Christine Duffield, University of Technology Sydney, AS|Australia; Darren Daly, University College Cork, EI|Ireland; Aileen Murphy, University College Cork, EI|Ireland

Topic: Determining safe-staffing levels can be challenging. To address this, the Department of Health in Ireland published the Framework for Safe Nurse Staffing and Skill Mix (DoH 2016). This Framework set out an evidenced-based approach to determining safe nurse staffing levels in in-patient care settings.

Objectives and Methods: To measure the impact of implementing the Framework (Nursing Hours per patient Day (NHPPD), stabilising skill-mix and making the ward nurse leader role fully supervisory) on a number of outcomes.

A before-and-after and interrupted time-series design was used. The sample consisted of multi-day patients from pilot wards within three hospitals chosen to take part in the implementation of the Framework. All nursing staff involved in the provision of patient care were included. Administrative and cross-sectional data were collected. Administrative data was used to measure the association between NHPPD and nursing sensitive outcome indicators (NSOs). The cross-sectional component measured the association between the introduction of the Framework and nurse and patient outcomes.

Results and findings: The results demonstrate an emerging stabilisation of the nursing workforce following the introduction of the Framework; there was an increase in whole time equivalent RNs providing care. This also resulted in a richer skill-mix. There was a substantial reduction in agency nurse usage, a decline in NSOs, increased staff and patient satisfaction and an increase in the quality of care delivered.

Lessons: The results demonstrate that the introduction of the Framework as an approach to determining that the right staff are in the right place and at the right time is having a positive impact on patient, nursing and organisational outcomes.

Main messages: Stabilising the workforce through the introduction of an evidenced-based approach, results in an increase in positive patient, nurse and organisational outcomes.

Diversity: Workforce planning will facilitate the stabilisation of a predominantly female workforce.

DUNLEAVY, Gerard. Centre for Population Health Sciences, Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore.

An additional tool besides your textbook and stethoscope? The use of mobile devices as a learning and work enhancing tool for healthcare professionals: Prospects and challenges

Background: Human resources are essential to improving health-related outcomes. However, a shortage of healthcare workers and a lack of quality education and training persists. Digital learning using mobile devices is mooted as a promising means to train healthcare workers and increase the delivering of evidence-based healthcare practices. Though digital learning has been aggressively adopted in the healthcare field, the factors, barriers and facilitators influencing implementation and use of mobile devices for learning remain unclear.

Objectives: This study aims to synthesise results from qualitative or mixed methods studies to provide insight into factors facilitating or hindering implementation of mLearning strategies in medical and nursing education.

Methods: Eight databases were searched for mixed-method and qualitative studies on mLearning from 1990 to February 2017. Results were synthesised using a framework analysis approach.

Results: 48 articles were selected for inclusion. Findings of this review demonstrated that, processes of mLearning are contingent on the convergence of aspects pertaining to the learner, device and social setting. mLearning was found to be unique to other forms of eLearning owing to the portability of mobile devices. This emerging pedagogical approach was particularly applicable to medical and nursing education, wherein students were expected to merge their practise with learning over the course of their training.

Conclusion: This review highlighted that mLearning could potentially play a more substantial role in medical and nursing education as students were already using mobile devices as a tool in their daily lives, rather than solely as a platform to deliver educational content as is usually the case with eLearning strategies. Mobile devices offered students' multiple functions which were possible to adapt to their own needs; resulting in mLearning strategies being most applicable to practise-based settings, wherein students were expected to multi-task in highly pressurised environments.

GALVIN, Alishea. Jhpeigo, Ghana, Ghana.

Assessing Ghanaian Healthcare Workers' Practice With Task Analysis

Issue/Problem: In the 2015 Ghana Health Service Annual report, 56% of Ghanaians have access to primary health care through Ghana's Community-based Health Planning and Services (CHPS) program. This study was used to understand the training, preparation and competency HCWs have to perform their job duties to inform CHPS implementation guidelines and HCW pre and in-service training.

Objectives/Methods: A cross-sectional study from five regions in Ghana was conducted using Task Analysis (TA) to assess practices and competencies of nurses and midwives working in CHPS zones in April 2016. A purposive sample of 401 participants who had worked between 6 months and 4 years were drawn from 5 urban and 10 rural districts. Responses to questions on 87 tasks across four dimensions: frequency, criticality (potential health impact), self-rated performance and training location. Analyzed results using Statistical Package for the Social Sciences and MS Excel were disaggregated by clinical cadre and region.

Results: Results indicate HCWs had some level of task-based knowledge, but inadequate skills made them uncomfortable in providing safe, effective services to the community. For example, 89% of CHNs received pre-service training on prevention and management of STIs and 97% stated it was critical, however only 6% were comfortable providing the service.

Lessons: HCW competency should be built through improved pre-service education and on-the-job training in the specific tasks they are required to perform. Supportive supervisory checklists should include all critical tasks performed by HCWs, based on a standard performance protocol.

Main messages: TA provides an innovative way to link HCWs' education to practice, and informs how training should be operationalized to ensure optimum healthcare delivery. Further, TA promotes practice that is safe, effective, and relevant to a country's health needs, and enables practitioners' to improve HCW education and training based on the reality of current practice.

GOMEZ, Jacob. Global Health Corps, United States of America

Distributed leadership networks: Adaptive structures for supporting health workers in low-resource environments.

Health leadership networks can offer policy-makers pursuing Workforce 2030 targets a viable avenue of adaptive support for health workers embedded in complex systems. A social network unified in achieving broad health goals facilitates the rapid transfer of information and resources to address knowledge gaps, and enables cross-boundary collaboration. We present findings from Global Health Corps' (GHC) ongoing work to create and support a distributed network of health systems leaders.

We estimate the current structure and function of the GHC alumni network (N=449, 59.7% female) using social network analysis and participant survey responses (46% response) in order to demonstrate the value of distributed leadership for public health in low-resource settings. GHC provides leadership development and in-person and virtual convening's to enable strategic networking following a one-year service fellowship. The growth, diversity and continued activity of the network support educational approaches to develop distributed networks.

64% of respondents, situated in 35 countries, report working with at least one other alum in the past year. On average, each alum worked with 3.8 other GHC alums. Among established collaborations, approximately 32.5% occur between individuals of different citizenships. 76% of GHC alumni continue to work in the public health sector following the GHC fellowship, and 91.7% believe that GHC provides access to a network with skills and perspectives that they would NOT otherwise have been exposed to.

Our evidence indicates that social networks aligned in a common goal can provide support for health professionals, helping facilitate cross-cultural collaboration. Leadership training around strategic networking can facilitate more effective information sharing.

The value of networks as adaptive structures for supporting the anticipated and emergent demands of the health systems workforce should be considered by policy-makers. This submission includes data on a culturally diverse group of health workers, highlighting the role of women in leadership networks for health.

GORE-BOOTH, Julian. World Federation of Societies of Anaesthesiologists (WFSA), United Kingdom of Great Britain and Northern Ireland.

A survey, analysis and country mapping of the global anaesthesia workforce – a neglected crisis

Surgically treatable conditions account for 30% of the global burden of disease, but 1% of health funding. Lack of trained workforce drastically affects access to safe anaesthesia. Examples exist of anaesthesia mortality 1,000 times higher in LICs than in HICs, and density of trained anaesthesia providers 1,000 times lower. UHC can only be achieved with surgical care prioritised within health systems. Data on anaesthesia workforce was limited. This survey represents an important step in evaluating the workforce gap, alongside an advocacy and planning tool.

Over 2015-2016 WFSA collected information on physician anaesthesia provider (PAP) and non-physician anaesthesia provider (NPAP) numbers, distribution, training. Data was categorised by WHO region and World Bank income group. Member societies received a guide and online survey in English, French, Spanish. Respondents were contacted for verification. Analysis of the findings will be published in *Anesthesia & Analgesia*. An interactive map is available at <http://www.wfsahq.org/workforce-map>

153 countries responded (97.5% of world population). There are 436,596 PAPs globally. Density of PAPs ranged from an average of 17.96/100,000 in HICs to 0.19/100,000 in LICs. 77 countries reported a PAP density of < 5 per 100,000. With NPAPs included, 70 countries reported a total provider number of < 5 per 100,000. The map now has data from 190 countries.

The crisis is deeper than previously thought. Both PAPs and NPAPs are essential. Disaggregating data (by gender, urban/rural, private/public) would add value.

The anaesthesia workforce crisis is severe, particularly across Sub-Saharan Africa and SE Asia. 136,000 additional PAPs are needed to achieve minimum density of 5 per 100,000 globally, an interim target linked to the recommendations of the Lancet Commission on Global Surgery and WHA Resolution 68.15

Significant investment in the anaesthesia workforce is required.

WFSA is committed to gender equity. The submission highlights the need for disaggregated data by gender.

HLABANO, Boniface. Amref Health Africa, South Africa

**Community Health Workers (CHWs) as core agents to address non communicable diseases (NCDs):
The South African Experience**

Problem: South Africa's Human Resource (HR) Health Strategy (2011) estimates that less than 50% of people with hypertension and/or diabetes know their status; of those who do, only 50% are on treatment. Less than 50% of those people on treatment have their blood sugar levels and or blood pressure managed. The main reason for this state of affairs is not just the gross shortage of skilled health workers to prevent, screen, diagnose, manage, follow up and retain people in care; but the shortage of community based health workers to carry out mobilisation, awareness and sensitisation on NCDs.

Objectives and Methods: In partnership with GlaxoSmithKline, Amref Health Africa in South Africa is implementing a 3-year project (2016 to 2019) to enhance prevention, management and control of non-communicable diseases (NCDs) in the community and in health facilities in Gauteng and Limpopo provinces. One of the project's strategies is to train 300 community health workers (CHWs) through a one-year accredited course. CHWs are equipped with skills, knowledge to promote health and wellness for increased awareness and subsequent screening for NCDs.

Results/Findings: 7 months into their training, the first batch of 120 CHWs have directly reached 24,915 people (8,976 males and 15,939 females) at community level with messages and education around NCDs. 15,639 (63%) have gone ahead to screen for hypertension and blood sugar (6,436 males and 9,203 females).

Lessons: Early results show that training and deployment of CHWs has potential to strengthen community knowledge and awareness of NCDs as well as increasing early detection and referral for care, treatment and management.

Main messages: The project presents an excellent Public-Private Partnership that can help scale up the development of the health workforce in the majority of Developing Countries in addressing challenges that hamper early screening, diagnosis, treatment and adherence to treatment for NCDs.

HUTCH, Avril. Royal College of Surgeons in Ireland, Ireland

The Brain Drain Myth: Retention of Specialist Surgical Graduates in East, Central and Southern Africa 1974-2013

Co-Authors: Avril Hutch, Royal College of Surgeons in Ireland, EI | Ireland

Topic: This study assesses retention of specialist surgical graduates from training programmes across eight countries in East, Central and Southern Africa from 1974 - 2013. It addresses the gap in existing data by analysing retention rates of surgical graduates by comparing graduating institution to current location. Data were assessed by country, region, specialty and gender with a view to informing national and regional healthcare and education strategies.

Objectives & Methods: Twenty-five institutions train surgeons in the ten countries covered by the College of Surgeons of East, Central and Southern Africa (COSECSA) - 24 Universities and the College itself. These institutions were requested in November 2014 to supply details of graduates from their postgraduate surgical training programmes. Complete graduate lists were returned by the College and 14 universities by March 2016. These surgical graduates were compared against the database of current practising surgeons in the region held by COSECSA. Data were crosschecked against medical council registers, surgical society records, and with members and fellows of COSECSA.

Results & Findings: Data were incomplete for 126 surgical graduates. Of the remaining 1029 surgical graduates, 85.5% were retained in the country they trained in, while 89.0% were retained within the COSECSA region. Ninety-four percent (93.7%) were retained within Africa. Of the eight countries, Malawi had the highest retention rate with 100% of surgical graduates remaining in-country, while Zimbabwe had the lowest rate with 71.4% remaining.

Lessons/Main Message: High surgical graduate retention rates across the region indicate that the expansion of national surgical training initiatives is an effective solution to addressing the surgical workforce shortage in East, Central and Southern Africa and counters long-held arguments regarding brain drain in this region.

Gender, Equity, Diversity: Overall, 93.2% of surgical graduates were male and 6.8% were female. There are equivalent retention rates for male and female graduates.

IBRAHIM, Nuha. Center for Global Health, Trinity College Dublin, Ireland.

Understanding the effect of Work Environment Factors on Burnout and Performance of Doctors and Nurses in Maternal Public Hospitals in Khartoum, Sudan

Introduction: The performance of health workers is mostly affected by their physical and mental wellbeing. Research has shown that the wellbeing of health professionals is associated negatively with high levels of stress and burnout in their work environment. In particular, hospitals in low-resource settings in low- and middle-income countries face significant challenges including shortages of health workers and financial constraints.

Aim of the study: This study examined the psychological mechanisms that explain how work environment characteristics affect burnout of health professionals in public maternity hospitals in Khartoum, Sudan

Methodology: The study was carried out using a cross-sectional survey with a sample of 473 [doctors=246, nurses = 227] working in maternal health services in public hospitals in Khartoum, Sudan

Data Analysis: Structural Equation Modeling (SEM) was used to examine the direct effect of work environment on performance and the indirect effect of work environment on performance through burnout as a mediator.

Results: Significant relationships were identified between demographic variables (cadre, age, marital status) and perception of the work environment, levels of burnout, and levels of performance. Work environment was found to predict the levels of burnout of health workers negatively. Work environment not only affected the burnout of health professionals but it also significantly affected their performance. Moreover, the results demonstrated that burnout had both a direct and indirect effects on performance, indicating the possibility of burnout as a mediating factor.

Doctors and nurses showed significant differences regarding the level of burnout and satisfaction about the work environment.

Implications: Findings help to cost-effective design interventions to improve the workplace, reduce burnout and increase performance in public hospitals in urban Sudan and similar contexts, i.e., minimise job ambiguity and improve professional relations between doctors and nurses.

ILOZUMBA, Onaedo. Vrije University, Amsterdam, Netherlands

“I am not telling. The mobile is telling”: Factors Influencing the Outcomes of a Community Health Worker mHealth Intervention in India

Co-Authors: Onaedo Ilozumba, Vrije University, Amsterdam, NL|Netherlands; Marjolein Dieleman, Vrije University, Amsterdam, NL|Netherlands; Nadine Kraamwinkel, Vrije University, Amsterdam, NL|Netherlands; Sara Van Belle, Institute of Tropical Medicine, Antwerp, BE|Belgium; Murari Chaudoury, NEEDS NGO, India, IN|India; Jacqueline.E.W Broerse, Vrije University, NL|Netherlands

Problem: Improving maternal health outcomes remains a priority in Low and Middle Income Countries. With the rapid proliferation of mobile health technologies, there is an increased interest in understanding how these technologies can effectively improve maternal health outcomes.

Objectives and Methods: This mixed-methods study aimed at understanding factors that influence the effectiveness of a mobile health intervention in Deoghar, India. Quantitative (a questionnaire with 740 women who received the intervention and survey of 57 community health workers who utilised the intervention) and qualitative (47 interviews and 11 group discussions with Community health workers, pregnant and lactating women, men and key informants) methods were used.

Results and findings: Results were grouped following three categories: (1) perceptions and experiences of community health workers utilising the mHealth technology; (2) community health worker related outcomes; and (3) contextual factors that influence maternal health-seeking behaviors. The overall response of community health workers and community members to the intervention was positive.

Lessons to date: Mobile health applications are promising interventions for improving the performance of community health workers and health-seeking behaviour of pregnant women. However, the contextual factors play a crucial role in intervention outcome and need to be explicated by program developers during intervention design and implementation.

Main messages: mHealth interventions are limited in their impact on maternal health outcomes as their effect is mediated by cultural barriers (e.g. the performance of household duties, arranging childcare) and transportation barriers (or lack of access to transportation)

In the Indian context, husbands and mother-in-laws are important decision-makers regarding maternal health care. mHealth interventions in similar context should also target these groups, in addition to pregnant women and community health workers.

Gender statement: CHW in this region are female and deal predominantly with women. However women's poor autonomy limits the effectiveness of health interventions.

IRVINE, Dan. World Vision International, United Arab Emirates

Estimating economic value of Community Health Workers' volunteer time for counseling pregnant women and mothers of children under 2 in Kenya, Cambodia, Zambia and Guatemala

Co-Authors: Armen Martirosyan, World Vision International, AE|United Arab Emirates; Dan Irvine, World Vision International, US|United States of America; Anna Paden, World Vision International, US|United States of America; Polly Walker, World Vision International, UK|United Kingdom of Great Britain and Northern Ireland; Antonio Trujillo, Johns Hopkins Bloomberg School of Public Health, US|United States of America; Annette Ghee, World Vision International, US|United States of America

Today volunteer Community Health Workers (CHW) represent a major driving force for delivering health services to remote communities, yet because they fall outside the formal health service their contribution has not been well assessed in terms of cost-efficiency.

World Vision has conducted cost-efficiency analysis (CEA) of volunteer CHWs working in its multi-country maternal and child health programme in Kenya, Cambodia, Zambia and Guatemala. We monetized all volunteer work to ensure that unremunerated investments in programme delivery are included in CEA analysis. As a base monetary value for CHW volunteer labor we used the published minimum wage per hour found in the local labor market in each country.

Average time spent by CHWs to carry out counseling to pregnant women and mothers of children under 2 for the period of 2014 – 2016 was estimated at around 90 minutes in Zambia, 55 minutes in Kenya, 50 minutes in Cambodia and 72 minutes in Guatemala. Average counseling session duration varied considerably depending on the stage of pregnancy or childhood in response to the scope of content to be covered in that session. On average CHW time allocated to each visit to provide counseling was valued at USD \$4 in Zambia, \$1 in Kenya, \$1 in Cambodia and \$2.7 in Guatemala.

These initial findings shed light on CHWs workforce dynamics and provide insights for designing proper reward system to be able to motivate and incentivize them. It is also important to know whether investments in training and management of volunteer CHWs is more efficient comparing with paid workforce.

- The work of volunteer CHWs should be valued and monetized to enable improved national workforce planning.
- Economic valuation of volunteer CHWs is only one part of a complex system and should be viewed within a holistic picture of the CHWs workforce environment.

IYER, Ashwin. Bill and Melinda Gates Foundation, India

Lessons from 2 years of instating review mechanisms at state, district and block level in Bihar, India

JAIN, Meenakshi. IntraHealth International, India

Addressing Public Health Workforce Challenges through a Web-Based Human Resources Information System: Lessons from Bihar, India

A critical gap in the governance of Bihar's health system, which serves the public health requirements of ~120 million citizens, is the lack of structured review mechanisms to establish accountability across the length and breadth of the Health Department. Since early 2015, the BMGF-funded Technical Support Unit (TSU) to the Government of Bihar has experimented with various avatars of such mechanisms; the Government has now adopted review cadences for State and District administration (through dashboards and supportive supervision portal) and Block administrators (through monthly clinical reviews at PHCs).

This poster highlights the evolution of such mechanisms, results from program evaluations on the adoption of such mechanisms, and learnings for other technical support programs facing similar challenges. Qualitative evaluations show that through field-level facilitation by TSU staff, over the last 20 months since the launch of RMNCH+A dashboards ~60% districts now review progress of Health Department at least once every quarter. Case studies of Clinical reviews at Block PHCs facilitated by TSU Block Managers have shown the impact of these simplistic review mechanisms on improving staff accountability for clinical outcomes. Competency assessment of mid-level managers also show ~20% managers scoring themselves poorly on use of data for planning and monitoring, which is now feeding itself into structured training modules for the Govt. Health Department staff.

The key takeaway from this body of work is that simple review mechanisms at any level, which focus on a short list of key indicators that can be continuously evaluated, can help state, district and block-level administrators identify key challenges (technical, programmatic and geographic), which when coupled by on-ground technical support can help drive de-bottlenecking of such issues. However, this process requires a top-down push (and repeated doses of it) till administrators see the value of such review mechanisms and start driving it themselves

KAMANGA, Aniset. Clinton Health Access Initiative, Zambia.

Attracting and Retaining Health Workers in Rural Zambia: Qualitative Assessment of Potential Policy Interventions

Background: The health worker shortage in Zambia has been severe in rural and remote areas, which has negatively influenced the health outlook especially in terms of its national performance indicators. Recruitment and retention of health workers in these underserved areas has been a major challenge for the Ministry of Health.

Methods: 25 semi-structured, in-depth interviews were conducted among health workers from two purposefully selected provinces with facilities from rural and remote areas. 30 focus group discussions (FGD) were conducted with 278 students, including 210 nursing and midwifery students, 21 clinical officer students, and 17 medical doctor students. The interviews and FGDs elicited descriptions of incentives from participants, which they believed, would motivate them to stay in rural and remote areas. At the end of each interview or FGD, participants ranked the top four incentives that would influence their job choices.

Results: The data from this study revealed health worker interest both in incentives that improve the quality of life of health workers in rural areas as well as in incentives that improve health services provided at facilities. Participants reported that their choices about rural job retention would be influenced by salary and other material incentives such as quality housing with electricity. Other incentives that emerged included transport, continuing professional development opportunities, facility equipment and medications.

Conclusions: These results provide information about the job preferences of health workers in Zambia and types of job characteristics that will help address disparities in health worker recruitment and retention in rural and remote areas. The evidence suggests that while monetary incentives are important, adequate housing, transport, professional development opportunities and facility equipment are also important for health workers when deciding whether to work in these areas.

KIMEU, Anastasiah. Amref Health Africa, Kenya

The NCD Crisis in Sub-Saharan Africa: Scaling up Numbers and Skills of Health Workforce for Effective Management and Control of Diabetes and Childhood Asthma

Problem: The Kenya Diabetes Management Information Centre (2012) estimates Central (29.4%), Eastern (10.0%), Western (9.0%), and Coast (7.5%) regions of Kenya to have varying diabetes prevalence. Skilled health workforce with a capacity to manage and control diabetes and childhood asthma in Kenya is insufficient. The Amref Health Africa and GlaxoSmithKline partnership project aims to scale up training of 2,500 health workers using blended approach.

Objectives and Methods: To train facility and community level health workforce in Nyeri, Kilifi, Kakamega and Nairobi counties using instructor-led workshops and e/mLearning. Courses were updated and converted for online/offline learning.

Results and Findings: A baseline survey revealed that 80% (466/582) of facility level workers had smart phones and 46% accessed various online courses (266/582). Kakamega HCWs reported 42.5% (13/266) access, followed by Nyeri (26%-68/266) and Nairobi (25%-66 /266). Kilifi reported 7.1%(19/266). 198 Community Health Assistants (70M, 128F) were trained on use of mobile platform, who further trained 1,102 (425M, 627F) Community Health Volunteers (CHVs) on diabetes and childhood asthma. Preliminary findings indicate that 120 trained CHVs from Nairobi County referred new and old clients to link facilities. 262 trained facility HCWs (86M, 178F) on management and control of diabetes and childhood asthma using instructor-led format, enrolled 277 facility workers (90M, 187F) on offline e/mlearning. Nyeri was highest (101-38M, 63F) in enrolment followed by Nairobi (65-23M, 42F), Kilifi (63-21M, 42F) and Kakamega (48-19M, 29F). Login status showed 97% (98) in Nyeri, Kakamega (67%-32), Kilifi (63%-40) and Nairobi (31%-20).

Lessons to date: Investment in blended approach increases access to online/offline learning.

Key messages: 1) Engagement of HCW has potential to increase enrolment of peers on e/mLearning 2) Community level workers increase access to diabetes and asthma care.

This submission addresses multidisciplinary approach to training in diverse counties while mainstreaming gender.

KOYIET, Phiona. World Vision Kenya, Kenya

Building Kenya's Ministry of Health (MOH) workforce for community mental health care

Co-Authors: Phiona Koyiet, World Vision Kenya, KE|Kenya; Alison Schafer, World Vision International, AS|Australia; Jeannette Ulate, World Vision Canada, CA|Canada

The Problem: In 2016 World Vision and partners demonstrated effectiveness of Problem Management Plus (PM+) - a brief transdiagnostic mental health intervention for delivery by Community Health Volunteers (CHVs). With Kenya's growing demand for, but limited mental health care workforce and services, PM+ offered Kenya's MOH opportunity to task shift mental health care to primary and community levels; however, scaling-up an intervention like PM+ has not been previously achieved.

Objectives/Methods: The project objective was to establish a PM+ Framework aligned with Kenya's Mental Health Policy (2015-2030) for "affordable, equitable, accessible, sustainable and good quality" mental health care; accounting for women, men, gender roles and community diversity. Funded by Grand Challenges Canada, the programme piloted the framework in four Kenya counties to: increase availability of PM+ services; build capacity of Kenya's community health workforce; and sustain CHVs to deliver mental health care.

Results: The PM+ Framework facilitated national and county ministries to scale-up the intervention and build capacity of the health workforce, including 20 PM+ Master Trainers, 150 Primary Health Care Workers as PM+ Trainers/Supervisors and 1,560 CHVs as PM+ Providers. During the pilot, 4,680 clients will be reached, of which 60% will be women.

Lessons: Kenya's MoH has led the implementation of a sustainable model for task shifting community mental health care. However, continued investment will be needed to consolidate gains, promote mental health care, change health-seeking behaviours and advocate for satisfactory compensation for CHVs work.

Main Messages: Kenya's unique approach addressed shortages of skilled mental health personnel, built capacity of the primary and community health workforce and offered learnings for future task shifting and scale-up of community mental health care that addresses diversity of needs.

LANGE, Isabelle. London School of Hygiene and Tropical Medicine, United Kingdom of Great Britain and Northern Ireland

The role of untrained health workers in private sector maternity services in India

Co-Authors: Isabelle Lange, London School of Hygiene and Tropical Medicine, UK|United Kingdom of Great Britain and Northern Ireland; Sunita Singh, Independent researcher, IN|India; Sunita Bhadauria, Independent consultant, IN|India; Loveday Penn-Kekana, London School of Hygiene and Tropical Medicine, UK|United Kingdom of Great Britain and Northern Ireland

Problem: In India, the private sector is a major provider of antenatal and delivery care. While the employment of unqualified health workers is not condoned there, the reality is that these staff are critical to the provision of clinical care.

Objective: To analyse the roles of unqualified staff in private maternal care and understand their experiences and professional trajectories.

Methodology: Interviews with staff, patients and clinic directors; one week participant observation in twelve facilities in Uttar Pradesh and Rajasthan; followed by ethnographic research over six months in two of these facilities.

Results: In all clinics offering delivery care, we observed unqualified individuals performing key clinical duties. Directors emphasized that even if their staff had undertaken formal training, any valuable learning was done on the job due to subpar private nursing education. Staff cited the main motivations to pursue training as a means of eventually gaining permanent public sector employment, or to be “licensed to make mistakes”, but most could not afford it. Both qualified and unqualified staff felt trapped and experienced tensions surrounding the performance of unnecessary medical procedures, working long hours, and a lack of professional rights.

Lessons to date: An unregulated private sector creates challenging work conditions for both qualified and unqualified health staff. Efforts to improve quality of care and staff rights should include a review of training programs and develop techniques to work with private providers.

Main messages: This research demonstrates ethnography’s value in exploring health workers’ roles beyond their clinical performance. Lack of formal training combined with unregulated facilities can lead to compromised medical care and marginalised staff, placing them in positions where both their and patients’ needs are not met.

Statement: Equity and diversity are addressed by giving voice to health workers often marginalised in the work force: those without recourse to professional support.

LIU, Xiaoyun. Peking University Health Science Center, China (People's Republic of)

Cohort study of medical students with compulsory rural services in China

Co-Authors: Xiaoyun Liu, Peking University Health Science Center, BC| Botswana

The disparity of human resources for health (HRH) between urban and rural areas, and between hospital and primary health care is getting large in China. In 2010, the national government issued a medical education policy to train 5000 rural medical students with compulsory rural services after five years' free education. The study aims to evaluate the process and effectiveness of this policy. We collaborate with 4 medical universities in central and western China to set up a cohort of 744 medical students in the program. Baseline survey and follow-up survey one year after graduation were conducted to investigate the process of admission, training and deployment of medical students, and the rate of contract fulfillment to work in rural township health centers (THC). Results: 73% of medical students were from rural background among the 2010 batch, the proportion declined to 63.8% in 2011 batch. About 20% students did not know the policy details. In 2010, 72% students signed contract with their hometown county in 2010, declining to 55% in 2011. The inconsistency between Service County and Hometown County was especially high in Qinghai province where in the admission process, students with high score in college entrance examination were allowed to choose their service county first. Upon graduation, <2% student reported willingness to work at THC, but the follow-up survey showed 99% fulfilled their contract. Compulsory regulations were reported as main reason for the high fulfillment rate. Conclusions: This special medical education program with compulsory rural service well fits into the context of rural China where HRH were in high needs but with less financial incentive to attract them. Serious barriers were found in the policy implementation process. Majority medical graduates fulfilled contract to work in the rural health facility, though with very low willingness to do so.

MENGISTU, Samuel. Jhpiego, Ethiopia

Identifying needs for strengthening health professionals regulation in Ethiopia

Issues/Problems: Strengthening Human Resources for Health is one of the critical elements for health system strengthening building block for health professionals' regulation. Health regulation governing health professionals aims to ensure fitness-for-practice of health care providers and safeguard patients from unethical medical practices

Objectives and Methods: This session intends to share Ethiopia's experiences in improving regulation of health professionals' regulation. With technical assistance HRH project, GoE/Jhpiego undertook a regulation study to inform policy to strengthen regulation systems. A national cross-sectional study was conducted in March 2015 on health professionals' regulation experience.

Results: A total of 554 health professionals, 23 PAs, 35 IST centers, and 31 health leaders participated in this study. Close to 68% of respondents reported that they were registered. Professionals who renewed professional license accounted for only 27.2%. CPD participation in the past twelve months was 59.2%. Most PAs and IST centers (93 %) reported conducting CPD/in-service training. Awareness of health professionals' scope-of-practice directive drafted by regulatory body was 48%; among those who were aware of this directive, 88% read the draft document. About 22% of respondents ever practiced beyond the perceived scope-of-practice, and nearly 44% of respondents reported that they encountered other professionals practicing beyond their scope-of-practice. It is shown that 54.9 % of respondents have read ethical code of conduct.

Lesson learnt: health professionals may not be keeping up-to-date. Policy documents stating scope of practice of professional's categories should be available to aware their scope. Ensuring ethical code of conduct are not standardized.

Main Message: Regulatory bodies need to give a due emphasis for health professionals' regulation schemes and ensure their implementation as these are very crucial for the quality of health care.

Gender, equity & diversity: Standards and policy documents should consider gender disparities and made interventions gender responsive.

MOLLA, Yohannes. Jhpiego, Ethiopia

Evaluating Graduating Anesthetists' Competency

Problem: The Government of Ethiopia (GoE) is trying to improve access to safe surgery through rapidly expanding the number of anesthesia schools. Anesthetists have been identified as a priority cadre and the GoE wanted to ensure this cadre is fit-for-purpose. Considering this, the GoE with support from the USAID-funded Strengthening Human Resources for Health (HRH) Project performed a baseline competency assessment.

Objective and Methods: A cross-sectional study was conducted in 2016 to evaluate changes in graduate anesthetists' competency following the 2013 baseline assessment and targeted interventions. Key competencies were directly observed using a standardized checklist in 10 Objectively Structured Clinical Examination (OSCE) stations. A self-administered questionnaire was also used to collect perception related data. Mean percentage score at each OSCE station and linear regressions were used for interpretations.

Results: Overall competency of graduates at end-line increased from baseline (65.7% versus 61.5%, $p < 0.001$) with varied mean percentage scores across stations with a maximum at Lumbar puncture (80%) and a relatively lowest on chest examination (55.8%). Attending university training program was associated with better performance while unlike baseline no significant association was observed with gender. Clinical practice environment has shown an overall significant improvement by almost 20 percentage points from baseline though no difference in the percentage of graduates who performed 200 or more intubations.

Lesson to date: Schools' efforts to strengthen clinical education have led to a modest overall competency improvement. To ensure sufficient competency at graduation, clinical teaching shall be well-designed and structured.

Main message:

- School efforts to improve competency require significant attention to adequate clinical practice during pre-service education.
- Coaching for newly deployed anesthetists may be an important strategy for ensuring competence.

Gender, Equity and Diversity: This study involved male and female graduates in four different regions of the country.

MORITA, Maria Celeste. State University of Londrina, Brazil

Profile and trends of dentistry feminization in Brazil

Co-Authors: Rodrigo Boranga, Master Degree Student, and HRH Observatory FOUSP-ABENO, Brazil; Maria Ercília Araujo, FOUSP. University of Sao Paulo, Brazil; Francisco Eduardo Campos, Federal University of Minas Gerais, Brazil; Ana Estela Haddad, University of Sao Paulo and HRH Observatory FOUSP-ABENO, Brazil

The number of female dentists in Brazil was of little significance until the decades of 70's and 80's. The observed change, resulting in the reversing of the male predominance trend in Dentistry in Brazil, responds to many factors. Some of them are the progressive access of women to the labor market and the expansion of female education in the elementary levels.

The aim of this study was to analyze 155.312 Brazilian women profile, out of 268.512 dentists, all over the country, in terms of geographic distribution, migration, postgraduate choices, and income. We also looked at trends in dental school enrollments. Data are drawn from different sources: Ministry of Health and Ministry of Education, National Council of Dentistry and Internal Revenue Service of Brazil. The proportion of female dentists in Brazil increased steadily during the 1990s, and became the majority since 2000. Women now constitute up to 64% of dental school intakes. They are concentrated in certain specialties (87% in Pediatric Dentistry, only 20% in Surgery), and distributed unequally between geographic regions. Women are 55% in the higher revenue class studied in contrast to the male superiority observed in all Brazilian population. Except for the choice of specialties, no gender differences are observed in all variables studied and the same imbalance, observed in male and female dentists, must be addressed by public policies. These results point out to the growth of women participation in the profession, which can have an impact in the medium and long-term professional practice standard in choice of specialties, in the process of work, among others. There is a need for further research to explore if there are any other implications of the increasing number of women in Brazilian dentistry to provide evidence-based policies in oral health human resource development.

MUKAMI, Diana. Amref Health Africa, Zambia.

Business unusual for an increased, more responsive health workforce in Zambia

Co-Authors: Diana Mukami, Amref Health Africa, ZA|Zambia; Luka Sakwimba, ChildFund Zambia, ZA|Zambia

Problem: Youth unemployment remains high in Zambia at 10.5%. Skilled HRH in rural, remote locations remain a challenge with only 38% of the health workforce serving rural populations and the rest concentrated in urban areas, coupled with limited training capacity. Opportunities exist to harness the demographic dividend while tackling the HRH challenge. 2010 MOH data shows that Zambia has only 50% of the health workforce needed to deliver basic health services. The staff-to-population ratio is as low as one nurse per 1,500 people against WHO's recommended ratio of 1 to 700. Hence the need to adapt innovative approaches to increase health worker numbers and decrease unemployment.

Objective: To create gainful employment opportunities for youth, while addressing gaps in Zambia's capacity.

Methods: A partnership between ChildFund, Amref Health Africa and the Zambia government co-created a solution combining lifeskills and eLearning with existing curricula to train youth to become nurses, clinical officers. Continuous improvement is informed by continuous evaluations using the Kirkpatrick model.

Significance of topic: Transforming existing curricula to create a more responsive health workforce.

Results/Findings: 891 nurses/clinical officers enrolled onto the 3-year programmes, with 131 graduating in 2017. 34% eLearners versus 78% classroom-based students rely on face-to-face sessions for learning. No significant difference found in academic performance between eLearners and classroom-based students in theoretical exams. Although the eLearners passed, classroom-based students performed better (1-7%) in practical exams, indicating need to enrich practical sessions for eLearners. Dropout rates for both groups similar. Challenges faced by both groups are similar such as limited clinical placements, but eLearners face additional challenge of limited accommodation. Use of eLearning with lifeskills component leads to qualified, employable health workers.

Lessons: Continuous re-engineering crucial to successful, non-traditional approach to HRH development

Main messages: Calculated risks with previously untried approaches can be key to hitting pay dirt

MURPHY, Georgina. OHSCAR, University of Oxford, United Kingdom of Great Britain and Northern Ireland.

Long Term Consequences of Resource Constraints: An Ethnography of Neonatal Nursing in Nairobi

Co-Authors: Jacob McKnight, OHSCAR, University of Oxford, UK|United Kingdom of Great Britain and Northern Ireland; Jacinta Nzinga, KEMRI-Wellcome, KE|Kenya

Topic/issue/problem: Inadequate availability of appropriately skilled human resources has long been a recognised issue in global health. Task-shifting and task-sharing have been mooted as potential solutions, but how have resource constraints moulded the practice of health workers and how might these practices limit the impact of task-shifting?

Objectives/Methods: Our ongoing research in Kenya involves an ethnographic study of neonatal nursing. We aim to provide a detailed picture of day-to-day life on extremely busy New Born Units in Nairobi in order to understand how nurses cope. Our collaborative research relies on hundreds of hours of observation and interviewing and benefits from feedback sessions with the nurses we study.

Lessons: Kenyan neonatal nurses are asked to do the impossible: they work long hours with little supervision, for inadequate and often delayed salaries, in ill-designed wards, staffed by far too few nurses given the pressing need. Burnout is common, but for those nurses who do learn to cope, it becomes necessary to adopt practices that protect them from harm. Nurses have created structured shifts, with set routines and formalised roles that offer normality amongst the maelstrom of urgent need. Their time-keeping is 'flexible'. They become expert at using available human resources, some official others less so, and apply this HR to problems in an ad-hoc way. These solutions often result in sub-optimal care.

Conclusion: Task-shifting and sharing remain important and valid innovations that might help to improve the quality of care. It is our contention however, that while the addition of human resources and materials would certainly help the quality of care, and one might argue that little improvement is possible without them, the reorientation of nurses to a higher standard of provision must also be taken most seriously if task-shifting is to be pursued in this area.

MUSSA ABUJAMRA AITH, Fernando. University of São Paulo, Brazil

Conflicts and possibilities in the regulatory model of health professions in Brazil

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The Brazilian public health system (Sistema Único de Saúde - SUS) is one of the largest universal access health systems in the world, considering that it covers the fifth largest national population in the world within the fifth largest territory on the globe. Among its challenges, health professions regulation takes a strategic place in the political agenda. Brazil has thirteen professional councils, with important regulatory autonomy. These councils dispute de regulatory field on health professions with other state institutions, such as the ministries of Health and Education. This framework of institutions could potentially entice regulatory conflicts. The absence of a superior public body for regulation and harmonization of this set of rules have been causing an increase of judicial disputes between these institutions. This work analyses health professions regulation in Brazil and present a general picture of the existing conflicts. The methods consisted in identifying the set of rules and institutions regarding regulation and in searching all judicial conflicts in Brazilian higher courts involving health professional councils and regulatory conflicts. The results are a presentation of regulatory institutions and their functioning, the identification of judicial conflicts involving regulatory issues, and a qualitative comparison with the Australian model of health workforce regulation, which has its own agency, and the French model, in which the professional councils have less autonomy in relation to the national government. Finally, the paper presents and analyses a detailed judicial conflict related to the program “Mais Médicos para o Brasil”, public policy executed in partnership with Pan American Health Organization -PAHO to bring doctors of other nationalities to work in primary health care in regions with a lack of medical workforce.

NKHOMA, Levison. Clinton Health Access Initiative, Malawi.

Determining health worker staffing requirements through demand-based modeling in Malawi

Problem: The Government of Malawi's commitment to effective planning of Human Resources for Health (HRH) requires an understanding of current workforce availability, the number of health workers required now and in the future, and prioritization of strategies to optimize workforce to improve health outcomes. Quantifying workforce demand, through a demand-based workload analysis, provides realistic workforce targets and a valuable decision making tool for health sector leadership.

Methods: A workload-based demand model was used to quantify the need for health workers in terms of number, composition, and distribution across the country's public sector health facilities and provide evidence to enable policy-makers to determine the optimal allocation of the existing health workforce and inform future staffing. The model, built in excel, drew on a comprehensive set of local data sources including facility-level staffing data, health service delivery data, and time-motion observations.

Results: Significant health care gaps exist but differ in severity across cadres, districts and facility types. At the end of 2014, Malawi was operating with 60% (9,046) of the health workers required to meet estimated demand for health services. The largest gaps are found at rural health centers, where 24% (1,476) of the required number of health workers are currently available, and at district hospitals, operating with 54% (1,476) of the required workforce. The results of the analysis have been incorporated into a decision-making tool that can be updated yearly and used for ongoing deployment decisions.

Lessons and main messages: The model provides valuable evidence to strategically address workforce shortages and to develop deployment, re-deployment and retention policies targeted at lower-level facilities where health services are most needed yet most neglected.

Gender, equity and diversity: Universal health coverage can only be achieved if decision-makers have a full understanding of workforce demand in terms of quantity and equitable distribution.

NKHOMA, Levison. Clinton Health Access Initiative, Malawi.

The role of individual and facility-level motivating factors on likelihood of choosing a rural nursing job: a discrete choice experiment in Malawi

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Problem: Inadequate and unequal distribution of health workers is a significant barrier to increasing access to essential health care services in Malawi, with rural areas experiencing the greatest workforce shortages. The Government of Malawi is expanding training of Nurse Midwife Technicians (NMTs) to address critical shortages and improve access to essential maternal and neonatal services. Understanding preferences of new and existing NMTs will help ensure that effective motivating and Incentivizing factors are in place to deploy and retain health workers in rural areas experiencing the greatest need.

Objectives and methods: We designed a discrete choice survey, informed by focus groups and in-depth-interviews, to quantify the impact of six motivating factors on the likelihood of choosing a rural position. Motivating factors included provision of housing, adequate facility quality, supportive management, eligibility for upgrading opportunities, manageable workload, and employment location choice.

Results and findings: The discrete choice survey was administered to 293 NMT students and 179 NMTs in October 2016. Findings show that provision of housing, an individual-level incentive, as well as improved facility quality and supportive facility management, facility-level motivating factors, result in the greatest increase in percentage of NMTs likely to choose a rural job (+15.7, +11.9 and +7.9 percentage points, respectively). Results demonstrate that non-monetary incentives, including improvements to overall work environment, should be considered when designing attractive health sector jobs.

Lessons and main messages: Non-monetary incentives, such as adequate facility quality and supportive facility management, are important motivating factors for rural deployment and retention and may benefit both patients and health workers. Facility and individual-level motivating factors have a comparable impact on likelihood of choosing a rural job.

Gender, equity and diversity: Understanding motivating factors for rural employment will help to create attractive health worker jobs in rural areas, improving equity in access to care for all Malawians.

OKEREKE, Ekechi. Population Council Nigeria, Nigeria

Situation Analysis of in-service training for frontline health workers within two States in Nigeria: lessons for improving maternal, newborn and child health (MNCH) service delivery

Co-Authors: Ekechi Okereke, Population Council Nigeria, NI|Nigeria; Bello Mohammed, World Health Organization Nigeria, NI|Nigeria; Zubairu Iliyasu, Bayero University, Kano Nigeria, NI|Nigeria

Background: Although Nigeria has one of the largest stocks of human resources for health in Africa, it still ranks among countries with the highest maternal, newborn and child mortality rates. Concerns abound that majority of the frontline health workers (FLHWs) in Nigeria are unable to provide top quality health services as a result of poor skills and inadequate opportunities for capacity building.

Objective: To assess the status of in-service training for FLHWs working within two States of Nigeria.

Methods: This study adopted a cross-sectional quantitative design. Pretested interviewer-administered questionnaires were applied to 457 FLHWs (i.e. 218 and 239 FLHWs in Bauchi and Cross-River States respectively) to evaluate the current situation of in-service training for frontline health workers. Data analysis was done using SPSS software.

Results: About 3/4 of the health workers interviewed had ever attended any form of in-service training with about 1/3 attending trainings within the last six months of the study. The top 5 topics covered during trainings as reported by FLHWs include: HIV/AIDS, Immunization, Family Planning, Maternal Health and Child Health. High proportions of health workers perceived 'seniority' as a key factor influencing selection for in-service training, while about 1/3 and 2/3 of health workers in Bauchi and Cross- River States respectively, perceived the selection process as being gender blind. Three out of every five FLHW and over 80% of FLHWs in Bauchi and Cross-River States respectively felt that they 'do not have a say' in the type of in-service training they require. In addition, about 40% of FLHWs in both States reported not being motivated or satisfied with the current status of in-service training within their States.

Conclusion: Strategic planning and effective implementation frameworks for the continuing education of FLHWs are required to improve maternal, newborn and child health service delivery, especially across the developing world.

OKETCHO, Vincent. IntraHealth International, Uganda

Successes and Lessons from the Massive One-Time Recruitment of Health Workers by the Government of Uganda

Co-Authors: Vincent Oketcho, IntraHealth International, UG|Uganda; Allan Agaba, IntraHealth International, UG|Uganda; Andrew Abunyang, Uganda Ministry of Health, UG|Uganda

Issue: In 2011, only 55% of Uganda’s health worker positions were filled. In 2012, the Government of Uganda, with USAID and partners including IntraHealth International, mobilized resources to increase availability of critical cadres. The government allocated UGX 49.5 billion (US\$16 million) for a massive “Surge” recruitment of 7,211 health workers at Health Center (HC) III and HC IV facilities.

Objectives/Methods: Our cross-sectional mixed-methods study examined if and to what extent the Surge resulted in sustained improvements in staffing levels, skills mix, and health worker distribution, and whether it affected volume of service outputs and range of services provided. We conducted the study in 34 districts representing urban, rural, and hard-to-reach areas.

Results: HCIII staffing increased to 81% and HCIV to 111% (2013-14) from 50% and 71% in 2011-12, respectively. Skills mix for key cadres (doctors, clinical officers, nurses, midwives, laboratory staff) improved at both types of facilities. Most (94%) Surge-recruited health workers remained in post 3.5 years after recruitment. Financial considerations (e.g., predictable salary, job security, pension) were strong attraction and retention factors. The additional health workers contributed to increased uptake of key health services. From 2012-13 to 2013-14, new family planning users rose 49%, antenatal care (4th visit) and facility-based deliveries both increased 12%, and new adult and child enrollments for antiretroviral therapy increased 37%.

Lessons: Integrating interventions to attract and retain health workers such as financial incentives, career development opportunities, and improved working conditions will improve effectiveness of future investments.

Main messages: Uganda’s “Surge” represents a successful example of massive, one-time recruitment of health workers, with sustained significant improvement in staffing at primary care facilities.

Gender equity: The study revealed important gender differentials—cadres dominated by females (midwives, nurses) had the highest retention rate (95%), and highest percentage recruited within the district of employment (60% midwives, 52.5% nurses).

OKOROAFOR, Sunny. IntraHealth International, Nigeria

Assessing staffing levels of health facilities for optimal service delivery: Application of workload indicators of staffing needs methodology

Co-Authors: Sunny Okoroafor, IntraHealth International, NI | Nigeria; Maritza Titus, IntraHealth International, WA | Namibia

Problem: Nigeria is faced with shortages and inequitable distribution of health workforce. Currently, primary level facilities; the entry point into the Nigeria health system, are staffed without using any evidence-based method or even the practitioner-to-population ratio threshold, but rather perceived needs based on availability of staff.

Objectives and Methods: With the objectives of determining the staffing levels of 37 primary healthcare centres (PHC) in two States in Nigeria based on workload, a study using the workload indicators of staffing needs (WISN) methodology was conducted. WISN methodology is a cadre-specific and facility-specific health workforce planning tool. It considers the activities occupying a given cadre in a health service delivery level, the time it takes to perform core and associated activities, time available in one year to render services and annual service delivery statistics in the determining needed staffing levels based on workload.

Results: Findings show varying degrees of staffing levels in the selected PHC. Eleven facilities did not have the nurse/midwives cadre. Twenty-six facilities had a shortage of 85 nurse/midwives, and 8% was overstaffed, 15% optimally staffed and 77% understaffed. For the community health workers cadre, the 37 facilities were 80% staffed (with a deficit of 65 CHWs) and 32% of the facilities was overstaffed, 19% optimally staffed and 49% understaffed.

Lessons to date: The study showed severe shortage of critical health workforce at the PHC level impacting on healthcare delivery.

Main messages:

1. Evidence-based planning is necessary for ensuring optimal HRH performance.
2. Use of evidence from WISN for staffing decisions can ultimately contribute to improvements in service delivery and improvement in health indices.

Our recommendations promote gender, inclusion, equity and diversity in taking staffing decisions on the premise that there exists inequity in participation, power and access by social constructs, and this can be addressed by promoting equity.

OLOGUNDE, Rele. Nuffield Department of Orthopaedics Rheumatology and Musculoskeletal Science, University of Oxford, UK, United Kingdom of Great Britain and Northern Ireland

Do trauma courses change practice? A qualitative review of 20 courses in East, Central and Southern Africa

Background: Trauma courses have been shown to improve clinical knowledge and patient outcomes. However, little is known about the individual drivers of change in practice amongst course participants in their home clinic environment.

Methods: Front-line healthcare workers participated in a two-day Primary Trauma Care (PTC) course. Immediately after the course participants completed an evaluation survey on intended change in the management of trauma patients. Six months after the course, participants completed a survey on actual changes that had occurred.

Results: A total of 451 participants were sampled, with 321 responding at 6 months, from 40 courses across East, Central and Southern Africa. The most commonly reported intended change was the adoption of an ABCDE/systematic approach (53%). Six months after the course, 92.7% of respondents reported that they had made changes in their management, with adoption of an ABCDE/systematic approach (50.0%) remaining most common. 77% of participants reported an improvement in departmental trauma management, 26% reported an increase in staffing, 29% an increase in equipment and 68% of participants had gone on to train other healthcare workers in PTC.

Conclusion: The findings suggest that PTC courses not only improve individual management of trauma patients but also but is also associated with beneficial effects for participants' host institutions with regards to staffing, equipment and training.

OLUOCH, Tom. US Centers for Disease Control and Prevention (CDC), United States of America

Using an innovative assessment framework for targeted performance improvement and enhanced data use for HRH decisions in low and middle income countries

Co-Authors: Tom Oluoch, US Centers for Disease Control and Prevention (CDC), US|United States of America; Diana Frymus, US Agency for International Development (USAID), US|United States of America; Travis Lim, US Centers for Disease Control and Prevention (CDC), US|United States of America

Problem: Despite extensive investment in Human Resources Information Systems (HRIS) by key global partners including the US President's Emergency Plan for AIDS Relief (PEPFAR) to enhance data use for HRH decisions, lack of a systematic way to assess HRIS to inform priorities for improvements remains a barrier to achieving HRH goals.

Objectives and Methods: We adapted the Capability Maturity Model (CMM) process improvement methodology within the context of HRIS performance improvement and applied various WHO and eHealth frameworks to define key HRH functions and 5-point maturity stages reflecting the degree of optimization of HRIS processes. The resulting assessment framework enables countries identify gaps in their HRIS. As part of annual PEPFAR monitoring data, HRH and information systems experts in eight sub-Saharan Africa and Caribbean countries assessed the maturity of HRIS support for each of eight HRH functions (pre-service education, registration and licensure, staffing gaps and needs, payroll, personnel action, in-service training, workforce exit, and workforce registry) and eight enabling capacities (data use, interoperability, human capacity, sustainable financing, data quality, standards, decentralization and technology infrastructure) in 2015 and 2016.

Results: Six of eight countries recorded increases in overall score of HRIS maturity. The majority of countries had advanced scores in staffing needs and gaps, and workforce exit. The category with greatest improvement was government tracking of in-service training while the least advanced function was registration and licensure. Key gaps in enabling capacities were sustainable financing and interoperability.

Lessons: The data suggests that most PEPFAR-supported countries focused improvement efforts on staffing gaps and in-service training data.

Message: Intuitive frameworks can help low-income countries identify gaps in data and enabling capacities for targeted performance improvements to achieve HRH goals.

Gender: The framework provides evidence on HRH by cadre, skills and geographic distribution to enable appropriate corrective HRH action to ensure equity.

PARSLEY, Sally. London School of Hygiene & Tropical Medicine, United Kingdom of Great Britain and Northern Ireland

Open borders for eye health education

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Problem: 285 million people are visually impaired, 90% is in low and middle-income countries (LMICs) and 80% is treatable or preventable. The Global Action Plan 2014-2019 recognises that more, flexible, lifelong public health eye care (PHEC) training is needed to enable comprehensive, equitable services and strengthen eye health systems.

Methods: Delivered world's first Massive Open Online Course (MOOC) in PHEC. 6 week course with relevance to all cadres. Materials licensed as lightweight, downloadable Open Educational Resources (OER). PHEC stakeholders contributed content, promoted course and mentored learners.

Pre and post course surveys, analytics, follow up survey after 1 year gathered data on:

- Learner demographics, motivation, engagement
- Career and educational benefits post course
- Use of OER to support teaching practice and build training capacity.

Findings:

- 3,541 joiners, 2,166 learners, 109 countries. 68% from LMICs, 81% health/social care workers, 53% women, 68% 1st online course.
- 76% identified work or career benefits as motivation. 66% engaged with $\geq 50\%$ of at least 1 week, 34% completed $\geq 50\%$, 12% completed 100% of course. 96% satisfied or very satisfied.
- Impact at 1 year: 85% reported educational benefits, 72% career benefits, 85% had applied learning to practice. 72% used OER for teaching and learning.

Lessons learned:

- Careful design and successful stakeholder engagement needed to reach and engage LMICs eye health workers in PHEC training using a MOOC.
- Follow up surveys can be used to explore impact from MOOC learning.

Main messages:

- Appropriately designed MOOCs can deliver PHEC training at scale, support educational capacity building and have a direct impact on eye health practice.
- Potential for further insight into impact through data sharing, further follow up and methodological development.
- Addressing gender, equity and diversity: Open education reaches beyond institutional boundaries to offer training to health workers who might otherwise not be able to engage.

PERERA, Camila. Trinity College Dublin, Ireland

Scalable psychological interventions for reducing psychological distress in migrants, refugees and asylum seekers: a systematic literature review.

Problem: Simplified, trans-diagnostic and para-professionally delivered therapies contribute to reducing mental health disparities and coping with human resources shortages. If effective, scalable psychological interventions could represent an innovative way of meeting an increasing demand of mental health care from forced migrants.

Objectives and Methods: This review will present evidence on the effectiveness of scalable psychological interventions that aim to reduce psychological distress among migrants, refugees and asylum seekers. Experts will be consulted to construct a clear definition of scalable psychological interventions. Quantitative studies will be screened from Medline, Embase, PubMed, Scopus and GreyLit and specialist databases PsychINFO and CINAHL. The reference lists from selected studies will also be screened. Narrative synthesis using NVivo will be conducted to analyse the results from the selected studies. When assessing the effectiveness of these interventions in reducing psychological distress in the population, the study will highlight any differences in effectiveness resulting from delivery by different cadres of workers. In addition, this study will also gather evidence on different outcomes relating to level of training, supervision and responsibilities assigned to health workers.

Results: Pilot testing of the search criteria indicate that there is a limited number of studies on the subject. Results are preliminary.

Main messages: The aim of this poster presentation is to present evidence on the effectiveness of a type of interventions which may contribute to improvements on coverage and cost-effectiveness of mental health care to a vulnerable population while also identifying what the implementation of this model of intervention implies for the available human resources. Attention will be paid to findings on specific population groups such as women (both receiving and delivering the intervention) and people with disabilities. The review will consider evidence from high and low and middle income countries.

PEREYRA-ELIAS, Reneé. Escuela de Medicina, Universidad Peruana de Ciencias Aplicadas, Lima, Perú., Peru

Gender differences regarding income expectations among medical students from 11 Latin American countries

Introduction: There is still a gender gap in the salaries of comparably-trained physicians. Own individual income expectations may contribute to this gap.

Aim: To evaluate gender differences regarding income expectations among medical students from 11 Latin American countries.

Methods: We performed a secondary data analysis of a cross-sectional multi-country study (2011-2012), which surveyed first- and fifth-year medical students from 63 medical schools in 11 Spanish-speaking countries. The primary outcome was the self-report of the monthly income expectation in US dollars (USD), ten years after graduating from medical school. We compared the medians from female and male students through multivariable median regression, adjusted by year of study (first vs fifth) and university funding (private vs public).

Results: About 70% (7741/11072) of students reported their income expectation: Bolivia (n=968), Chile (n=463), Colombia (n=963), Costa Rica (n=86), Ecuador (n=1025), El Salvador (n=80), Honduras (n=700), Mexico (n=157), Paraguay (n=99), Peru (n=2733), Venezuela (n=467). Half (48%) of these participants were women; 37% were fifth-year students and 35% were enrolled in private universities. Women's median of salary expectation (USD) was significantly lower than the median of their male counterparts in Bolivia (1000 vs 1500; $p=0.001$), Colombia (3375 vs 4375; $p=0.001$), El Salvador (2375 vs 4375; $p=0.001$), Paraguay (3000 vs 5000; $p=0.015$) and Peru (2000 vs 2500; $p=0.001$). There were no statistically significant differences between female and male students in Chile (3375 vs 3875; $p=0.252$), Costa Rica (3500 for both genders; $p=0.999$), Ecuador (2625 vs 2325; $p=0.057$), Honduras (2375 vs 2875; $p=0.098$), Mexico (3375 vs 2375; $p=0.084$) and Venezuela (5000 for both genders; $p=0.999$).

Main messages: Female medical students expect less earnings ten years after graduating from medical schools than their male peers in several Latin American countries.

This matter could also be addressed to close the gender pay gap and achieve equity.

POWER, Jessica. Centre for Global Health, Trinity College Dublin., Ireland

Towards a Core Set of Clinical Skills for Health-Related Community Based Rehabilitation in Low and Middle Income Countries

Topic/issue/problem: This research identifies a core set of clinical skills for working in a Community Based Rehabilitation (CBR) setting, and discusses whether they are appropriate for task shifting to a new or an alternative cadre of rehabilitation workers.

Objectives and Methods: The study focussed on work activities relating to the health component of the CBR Matrix. 40 health professionals working in CBR in Low and Middle Income Countries (LMIC) were surveyed to discover the clinical skills that were used most frequently during the past 3 months and to determine which of these skills were deemed most important in a CBR setting. This research will add to the sub-theme of aligning education and utilization of skills to optimize workforce performance by presenting research which builds on a proper skill mix for health workers in a CBR setting.

Results and findings: A core set of clinical skills for health-related CBR work in LMIC were identified: advocacy and sensitisation; assessment, monitoring and reporting; behavioural and cognitive interventions; collaboration and referral; communication; continuing professional development; education; gait training; group work; home-based rehabilitation; manual therapy; neuro-facilitation techniques; positioning; prescription of strengthening exercises; prescription of stretching programmes; provision of aids, assistive devices and technologies; psychosocial support; recreational therapy; self-care; sensory interventions; supervision; upper body rehabilitation; vocational rehabilitation and working with families.

Lessons to date: A core set of skills for health related CBR could be identified.

Main messages: These skills may be considered in the development of training programmes for new or alternative cadres of CBR workers, using a task-shifting model including appropriate support, supervision and referral mechanisms.

Evidence based skill sets for CBR workers can increase quality of services for women with disabilities. CBR is a community based approach which can allow for equitable access for persons with disabilities.

PRUST, Margaret. Clinton Health Access Initiative, United States of America

Role of non-monetary incentives in recruiting and retaining health workers in rural areas: A discrete choice experiment in Zambia

Problem: Zambia's government has recognized that the persistent shortage of health workers is the country's greatest obstacle to achieving its health goals. The country is currently operating with less than 50% of the required number of clinicians, and past retention policies have had limited impact on strengthening the workforce in the most underserved areas.

Methods: We conducted a discrete choice experiment (DCE) to measure the impact of job characteristics on the likelihood of job uptake to inform health worker recruitment and retention policies. Hypothetical job profiles were developed through focus groups and expert consultations, allowing respondents to select rural and urban locations based on: salary, educational incentives, housing, transportation, medical equipment. The influence of incentives was estimated using condition logit regression.

Results: The questionnaire was conducted with 474 students and health workers across Zambia. While urban jobs were preferred to rural jobs (OR 1.39, 95%CI 1.11-1.75), the following incentives strongly influenced job choice in rural areas: education leave after four years with full scholarship compared to leave after two years with no scholarship (OR 1.98, 95%CI 1.69-2.32) and superior housing compared to basic housing allowance (OR 5.04, 95%CI 4.12-6.18). Facility improvements such as transportation and equipment, which have the potential to have broader effects on health outcomes, also significantly influenced job choice.

Lessons: Our results explore meaningful differences in preferences across five cadres and various levels of career experience as well as the willingness-to-pay for incentives. Other countries should consider the role of non-monetary incentives.

Main messages: Non-monetary incentives such as housing and education are important motivators of health worker job choice. Various cadres have differing preferences for job incentives.

Gender, equity and diversity: Results explore differences in job preferences by demographic characteristics. Strengthening the rural workforce can make access to health services for the Zambian population more equitable.

ROSS, Simone. The Training for Health Equity Network, Australia.

The community and regional impact of graduates from Ateneo de Zamboanga University School of Medicine, Philippines.

Co-Authors: Simone Ross, The Training for Health Equity Network, AS|Australia; Fortunato Cristobal, Ateneo de Zamboanga University, RP|Philippines; Torres Woolley, James Cook University, AS|Australia; Servando Halili Jr, Ateneo de Zamboanga University, RP|Philippines; Carole Reeve, James Cook University, AS|Australia; Andre-Jacques Neusy, Training for Health Equity Network, US|United States of America

Topic: Workforce shortages and mal-distribution of health professionals highlight the need for training institutions to produce graduates willing to address health inequities by providing quality health care in disadvantaged regions. The Ateneo de Zamboanga University School of Medicine (ADZU-SOM) in the Zamboanga Peninsula region of the Philippines has taken on the challenge of addressing these imbalances.

Objectives and Methods: The Training for Health Equity Network, along with partner schools (see author's institutions above), collected evidence of ADZU-SOM student and graduate impact on local health workforce and communities. This project included a retrospective graduate study (RGS) and community impact study (CIS) investigating key child and maternal health indicators for recent mothers.

Findings: The RGS showed ADZU-SOM graduates, versus conventional medical school graduates, had significantly ($p<0.05$) more positive attitudes to community service, were more likely to be Rural Health Officers ($p<0.001$), generalist Medical Officers ($p<0.001$) and Municipal Health Officers ($p=0.003$), and practice in both smaller ($<100,000$ population) and lower income communities ($p<0.001$, respectively).

Recent mothers from communities serviced by ADZU-SOM trained students and doctors, versus mothers from communities serviced by conventionally-trained doctors, were more likely to have: the results of their urine and blood samples discussed ($p<0.001$, respectively); received their first post-natal check-up within 7 days of birth ($p<0.001$); a youngest child with normal ($>2,500g$) birthweight ($p=0.008$); and full immunizations for Polio ($p<0.001$), Hepatitis B ($p<0.001$), Measles ($p=0.008$) and Diphtheria/Pertussis/Tetanus ($p<0.001$).

Lessons: ADZU-SOM graduates are meeting the local health workforce and community healthcare needs of Western Mindanao.

Main message: The findings reflect the recommendations of the 'Global Strategy on Human Resources for Health: Workforce 2030' with the importance of providing community access to quality and equitable health services.

This study addresses the health care needs of recent mothers, and also shows the quality and equitable health services of graduates from the ADZU-SOM

SALSBERG, Edward. George Washington University Health Workforce Institute and School of Nursing, United States of America.

A Tool to Understand Workforce Trends and Needs: Surveying New Health and Social Services Graduates

Co-Authors: Edward Salsberg, George Washington University Health Workforce Institute and School of Nursing, US|United States of America; Leo Quigley, George Washington University, Health Workforce Institute, US|United States of America

Topic: Planning for HRH requires data on the supply, distribution and demand for specific occupations, but this information is not easy to obtain.

Objective/Methods: The George Washington University Health Workforce Institute has developed and refined a survey of new graduates of health and social service programs to help inform the professions, policy makers, educational programs, and health and social service organizations about the current supply, distribution and use of these workers. The basic approach is to identify all or a sample of schools/programs in the occupation and to ask them to assist either by forwarding the survey to graduates or providing graduates' contact information. The survey can be administered just before the students graduate or several months later if permanent addresses or emails are available. The survey includes questions about graduates' education/demographic background, their experience in the job market, their new positions, and their longer-term career plans.

Results and Findings: Over the past several years the GW-HWI has developed and refined this approach to workforce surveys on behalf of a number of physician specialties and expanded their use to social workers and nurse practitioners. These surveys provide a tested, low cost design template for the study of other occupations.

Lessons: This type of survey, if conducted annually or periodically, provides valuable insights into trends and changes in each occupation. This survey provides rich data on the profile of the occupation by gender and diversity as well as the variations in jobs and job opportunities by gender and diversity.

Main Messages: A survey of recent graduates of health and social services programs can provide valuable information on the health and social services workforce.

The presentation will summarize the process, content and use of the findings from this survey methodology to inform HRH policies and programs.

SCHOLL, Mary. Royal College of Surgeons in Ireland, Ireland

Experiences of non-physician clinicians delivering essential surgery in under-served rural areas of Zambia

Co-Authors: Jakub Gajewski, Royal College of Surgeons in Ireland, EI|Ireland; Carol Mweemba, Surgical Society of Zambia, ZA|Zambia; Mweene Cheelo, Surgical Society of Zambia, ZA|Zambia; Leon Bijlmakers, Radboud University, NL|Netherlands; Tracey McCauley, Royal College of Surgeons in Ireland, EI|Ireland; John Kachimba, Surgical Society of Zambia, ZA|Zambia; Gerald Mwapasa, College of Medicine Malawi, MI|Malawi; Eric Borgstein, College of Medicine, MI|Malawi; Ruairi Brugha, Royal College of Surgeons in Ireland, EI|Ireland

Problem: To battle the challenge of poor access to safe surgery for rural populations, in 2002 Zambia introduced a new national cadre of non-physician clinicians called Medical Licentiates (MLs). MLs are trained in essential surgery to meet rural dwellers' emergency and elective surgical needs and have been deployed to almost all district hospitals, country-wide.

Objectives and Methods: This qualitative study aimed to provide insight into the professional experiences and relationships of MLs, as they worked alongside Medical Officers (MOs). 43 individuals, including trainers, supervising surgeons, MLs, MOs, hospital managers and nurses were interviewed.

Findings: MLs provide informal surgical training to MOs, which is often MOs' first exposure to surgery. However, MLs faced professional recognition problems which sometimes impeded them using their surgical skills. While many MOs valued MLs' surgical skills, some felt professionally threatened by them; and lack of clear role distinction between MLs and MOs created tensions around seniority. Lack of career paths for MLs was a threat to programme sustainability.

Lessons to date: Zambia's ML programme provides useful lessons for the sustainability and success of NPC programmes in Africa. National authorities need to establish career paths and attend to the professional recognition challenges faced by MLs, as identified in this study, if the sustainability of this model for providing access to essential services to rural populations is to be assured.

Main message: In-depth research into the achievements and challenges of innovative national workforce programmes is essential for national and cross-country lesson learning. While new cadres can deliver essential services, appropriate to African districts, this research highlights the need for professional recognition, career paths and more attention to embedding them within the hospital system.

Statement: The evaluated programme is essential to achieving access to surgical care, including emergency obstetrics, for neglected populations in Africa.

SEWANKAMBO, Nelson. Makerere University College of Health Sciences, Uganda.

The future of medical education in Uganda: An ecosystem analysis perspective

Co-Authors: Nelson Sewankambo, Makerere University College of Health Sciences, UG|Uganda; David Mafigiri, Makerere University College of Humanities and Social Sciences, UG|Uganda

Background: Global and continental calls for adaptation of medical education (ME) to 21st century needs are steadily having effect. We focus on Uganda as a case study to highlight some of some system changes that may be considered in planning change in ME.

Objective: To assess the contextual factors that are shaping the future roles of doctors in Uganda.

Methods: A study utilizing desk review of both peer-reviewed and grey literature since 2000 on medicine and ME in Uganda complimented by key informant interviews.

Results: Eight categories of system-wide changes impacting the future roles of doctors in Uganda and need to be considered in adapting pre-service ME have been identified:

- a. The evolution of doctors' roles: consumer needs, viewing clinical care as one of many options including non-clinical tasks, leadership/management, research, business, entrepreneurship or leaving medicine entirely.
- b. Pre-university education to motivate and prepare students to choose medicine
- c. ME admission patterns and environment that shapes character, attitudes, professionalism, competencies, written and hidden curriculum, the learning resources/facilities, and role models.
- d. Sources of funding ME: many students don't receive state funding or government loans. Dependency on family support minimizes student commitment to the public sector and service to society.
- e. Employment opportunities: Level of satisfaction with employment terms and conditions, the work environment, and widening private sector opportunities;
- f. The Open society/globalization with IT facilitating access to external resources/ information, networks; global health student exchanges, and consciousness of the global market.
- g. Global trends including resource flows from international sources like PEPFAR and their influence on trainees' mind frame or cultural attitude to medicine and ME.
- h. The country's policy environment or lack there-of affecting any of the above categories.

Conclusion: Future planning for medical education requires taking an ecosystem approach that assesses various system factors and engaging stake holders.

SEWANKAMBO, Nelson. Makerere University College of Health Sciences, Uganda.

Research Administrators: A Critical Component in Training Health Researchers at Makerere University in the NURTURE Program

SMITH, Brian. SickKids Centre for Global Child Health, The Hospital for Sick Children, Canada

Key factors to develop clinically orientated health human resources through nursing education programs and partnership

Topic: The SickKids Centre for Global Child Health (CGCH) partners with governments, health facilities, health professional associations & academic training institutions in LMICs to strengthen paediatric nursing education systems that enhance the skills, confidence and leadership abilities of paediatric nurses. Opportunities to enhance nursing and institutional capacity exist when education focuses on clinically orientated teaching that addresses the gap between academic education and clinical practice.

Methods: CGCH education programming is developed collaboratively with partners and involves innovative in-class teaching and simulation, combined with intensive clinical learning to ensure nurses of all levels are able to effectively translate theory into practice. The CGCH currently works with partners in Sub-Saharan Africa to develop and deliver post-basic paediatric programming aimed at building the leadership and capacity of nurses to provide superior clinical care for children and adolescents.

Results & Lessons Learned: Evaluation of current partnerships demonstrate that clinically oriented teaching combined with a focus on sustainability builds the capacity of both the nursing trainees and the training institutions, and can be achieved by:

1. Supporting new clinical teaching roles. Program graduates are enlisted as preceptors and clinical educators for subsequent trainings thus ensuring that trainees are mentored by individuals with appropriate experience, academic linkages and practical skills;
2. Use of competency based education and novel assessment approaches including OSCEs using standardized patients, simulation and competency checklists;
3. Ensuring financial and non-financial mechanisms are in place so that institutions develop self-sustaining processes.

Gender: Education programs that focus on elevating the quality of advanced practice skills help to raise the professionalism of nurses, most of whom are female, supporting graduates to be agents of change within local health systems.

Message: Using innovative clinical orientated teaching methods with a focus on sustainability can enhance knowledge and practical skills of graduates as well as institutional capacity.

SODHI-HELOU, Sumeet. Dignitas International, Canada

Optimizing the diabetes cascade of care for indigenous people through utilization of community health care workers in the Sioux Lookout Area in Northwestern Ontario, Canada

Co-Authors: Sumeet Sodhi-Helou, Dignitas International, CA|Canada; Ben Chan, Dignitas International, CA|Canada; Janet Gordon, Sioux Lookout First Nations Health Authority, CA|Canada

Issue: First Nations in Northern Ontario experience a high burden of diabetes and face barriers to accessing healthcare, including: geographic isolation, limited human and financial resources, medical staff turnover, and lack of culturally safe care. Community Health Worker (CHW) programs have been successfully deployed globally to address health needs in this context.

Objectives and Methods: Our team, a partnership between an international non-governmental organization and an indigenous-led health authority, developed, implemented and evaluated a CHW Diabetes Pilot Program. The goal of this initiative was to provide existing CHWs with training, mentorship and capacity building for supporting diabetes management. CHWs in four communities participated in a 3-day training followed by a mentorship period. Quality improvement methods were utilized to measure performance and foster improved practice. A web platform, called CHWConnect, was also created, to provide a knowledge sharing space for current and future trainees.

Results and Findings: Eleven CHWs were trained, and 6 completed the mentorship program. The training program was rated with high satisfaction among CHW trainees and their supervisors, and by allied health colleagues.

Lessons to date: Trainees and their supervisors noted that there were challenges in applying new skills and knowledge into practice when returning to their communities: some CHWs did not have basic prerequisite skills prior to training (e.g. literacy), inadequate supervision after mentorship period ended, high turnover of nursing and other clinical staff leading to incomplete integration of CHWs with medical teams, and competing community health priorities with regards to CHW tasks.

Main messages: Developing successful training and capacity building for CHWs requires sustained engagement and frequent support from community leaders, mentors and peers. Integration of CHWs within a medical team is also essential to achieving desired outcomes.

Gender, equity and diversity: Greater than 60% of trainees were female, and all trainees self-identified as First Nations.

SOHNEN, Eleanor (Nora). FHI 360, United States of America

The Integrated Health Project in Burundi- Development and application of an interoperable health workforce training database

Co-Authors: Yves Maniragaba, FHI 360, BY|Burundi; Kayla Stankevitz, FHI 360, US|United States of America; Rachel Deussom, FHI 360, US|United States of America

Problem: In low- and middle-income countries with insufficient quality and quantity of health workers, evidence-based capacity building of the health workforce is important to strengthen health systems and improve health outcomes. Often, large proportions of health project budgets are invested in trainings, yet training records are often paper-based, uncoordinated, and misaligned with national information systems.

Objectives: To describe the development and application of an interoperable health workforce training database, and present results of training coverage across gender, geography, technical area, and cadre, relative to the existing health workforce.

Methods: A digital database was developed to track learners trained and trainings completed under the USAID-funded Integrated Health Project in Burundi. The database was designed to align with the Burundian Ministry of Public Health and Fight Against AIDS (MPHFA)'s national health worker database to support interoperability. Database data were analyzed relative to MPHFA's health workforce data to examine project coverage.

Results and findings: Data were collected from September 2014 through March 2017 in four provinces of Burundi. In total, 228 trainings were completed, with 7,142 unique learners. Many learners completed more than one training, resulting in 11,287 learner sessions. In health centers, 69.3% of health workers in the MPHFA database participated in one or more trainings (73.9% of all male health workers and 62.2% of females). In hospitals, 52.5% of health workers participated, 53.2% of males and 51.6% of females.

Lessons to date: Reliable project training data can be used to help make informed decisions about health workforce training and demonstrate coverage. Interoperability supports country ownership/sustainability when data conforms to national data standards.

Main message: Collecting reliable data on health workforce training can help support the monitoring of in-service training investments, as well as inform national health workforce priorities.

Statement: Data is disaggregated by gender, cadre, and geography.

STAFFORD, Renae. Touch Foundation, United Republic of Tanzania

Enhancement of healthcare workforce performance by a holistic on-the job coaching, mentoring and feedback program after CEmONC training.

Co-Authors: Renae Stafford, Touch Foundation, TZ| United Republic of Tanzania; Edgard Ndaboine, Bugando Medical Center, TZ| United Republic of Tanzania; Sr. Happiness Mbeni, Bugando Medical Center, TZ| United Republic of Tanzania; Sr. Marie Jose Voeten, Sengerema Designated District Hospital, TZ| United Republic of Tanzania; Harusha Simplicio, Sengerema Designated District Hospital, TZ| United Republic of Tanzania

Problem: Healthcare workers (HCW) in low resource settings providing comprehensive emergency obstetric and newborn care (CEmONC) often have little CEmONC training, aren't confident in their skills and don't have support to maintain and enhance skills.

Objectives/methods: HCWs at a rural hospital in Western Tanzania underwent 3 week in-service CEmONC training to enhance skills. Obstetrician and nurse midwife trainers provided didactic and on-the-job skills training and evaluation.

To support skills uptake/retention and confidence, obstetricians/nurse midwives from referral hospital conducted 4 site visits over 6-month period starting 6 weeks after training. Normal labour/childbirth/newborn care, complication management and postpartum care were assessed at each visit using standardized tools. Site assessments were performed at visits 1 and 4. Coaching and mentoring and work with HCWs to develop quality improvement (QI) plans was provided as part of the program.

Results/findings: 86 HCWs were trained. 38 HCW knowledge assessments (KA) and 91 direct observations of service delivered (SD) by 52 HCWs were done. KA scores increased from average of 65.7 to 74.85 between visit 1 and 4.

SD score increased from 81.8% to 87.5% visits 1 to 4. HCWs felt more confident after having received CEmONC training and mentoring and were more eager to receive feedback compared to those HCWs who did not have CEmONC training.

QI led to development of maternal and neonatal assessment checklists, patient experience survey, permanent assignment of physician and permanent duty roster for nurses to labour ward.

Lessons to date: Post-training evaluation, coaching and mentoring is important to skill retention of and SD by HCWs and is valued by HCWs.

Main messages: On-the-job training is useful to enhance skills and confidence for HCWs. Skills are enhanced and confidence is improved by provision of post-training assessment, coaching and mentoring.

Gender/equity/diversity: Multiple cadres, males and females were trained together and received follow-up support.

TABAKOV, Slavik. International Organization for Medical Physics (IOMP), United Kingdom of Great Britain and Northern Ireland

Global Workforce in Medical Physics – Status, Needs and Trends: View of the International Organization for Medical Physics (IOMP)

Medical physicists have important role in contemporary medicine, associated with the effective and safe clinical application of all medical imaging and therapy devices. Medical physicists work mainly in hospitals, but also in Universities, Research Institutions, Regulatory bodies, Industry, etc.

The International Organization for Medical Physics (IOMP) was formed in 1963 and at that time the global number of medical physicists was c.6000. During the following three decades the number of medical physicists has increased to c.12,000 (1995). In this period of time medical physicists have been instrumental for the development of novel medical equipment, including Computed Tomography and Magnetic Resonance Imaging.

The introduction of various novel education systems/courses (e-learning) during the next two decades led to doubling the global number by 2015, reaching c.25,000 in the 86 IOMP member countries. This rapid growth of medical physicists will continue in the next decades.

The recent report of Global Task Force on Radiotherapy for Cancer estimates that, only for the needs of Radiotherapy by 2035, the global number of newly trained medical physicists will be c.17,200 (for High-income countries); c.12,500 (for Upper-middle-income countries); c.7,200 (for Lower-middle-income countries); c.2,400 (for Low-income countries). Adding the needs of medical physicists in the fields of Medical Imaging will result to about tripling the number of medical physicists in the coming two decades (2015-2035).

A specific field of medical physicists is related to Patient and Staff radiation safety. At international level, the Basic Safety Standard (BSS) published by the International Atomic Energy Agency (IAEA) with co-sponsorship by the World Health Organization (WHO) and International Labour Organization (ILO) and other international organizations require medical physicist involvement and have provided specific task lists where medical physics is required. This will further increase the need of medical physicists and the attention of the future workforce planning.

THANDAR, Myat. University of Nursing, Yangon, Myanmar

Developing Nursing Educational Programs to Optimize Workforce Performance: Experience of the University of Nursing (Yangon), Myanmar

TWEHEYO, Raymond. Makerere University School of Public Health, Uganda, Uganda

Reasons and motives for absenteeism among frontline and supervisory healthcare workers in the public and private sector in rural Uganda: Implications for Universal Health Coverage.

Co-Authors: Raymond Tweheyo, Department of Health Policy Planning and Management, Makerere University School of Public Health, Uganda, UG|Uganda; Gavin Daker-White, Centre for Primary Care, Division of Population Health, The University of Manchester, UK, UK|United Kingdom of Great Britain and Northern Ireland; Catherine Reed, Division of Population Health, The University of Manchester, UK, UK|United Kingdom of Great Britain and Northern Ireland; Linda Davies, Centre for Health Economics, Division of Population Health, The University of Manchester, UK, UK|United Kingdom of Great Britain and Northern Ireland; Suzanne Kiwanuka, Department of Health Policy Planning and Management, Makerere University School of Public Health, Uganda, UK|United Kingdom of Great Britain and Northern Ireland; Stephen Campbell, Centre for Primary Care, Division of Population Health, The University of Manchester, UK, UK|United Kingdom of Great Britain and Northern Ireland

Problem: Since 2006, Uganda has had the highest rate of health workforce absenteeism in sub-Saharan Africa at 48%, estimated as the proportion of healthcare workers unavailable on duty at one or two audit visits. From 2010, the Ministry of Health prioritised reduction of health workforce absenteeism by half, but there is limited progress to date, due to a lack of strategy, undermined by a lack of understanding of the underlying causation.

Objectives and Methods: To explore the reasons and motives for absenteeism from the perspective of frontline healthcare workers and their supervisors in rural public and private not-for-profit health facilities of Uganda.

A qualitative study was used employing case study methodology for the sampling strategy and principles of grounded theory for data collection and analysis. A case was defined as a rural referral level healthcare facility. Purposive recruitment was done from five health facilities (two hospitals; one private, and three health centre level IV; one private) in three rural districts of Central Uganda. A total of 95 participants were involved through 47 digital-audio-recorded in-depth interviews and 08 focus groups. Data management was done in NVIVO 10.

Findings: Health workforce absenteeism was either individually motivated, or externally influenced. Individual motivation arose from perceptions of salary inadequacy, entitlement to absence, financial pressures from living costs and a desire for career progression. External influences related to: health system inefficiencies such as salary delays and omissions, inadequate or no accommodation, poor maintenance of infrastructure, equipment and stock-outs of essential medicines and sundries. Additionally, socially-constructed pressures existed such as gendered child and elderly care responsibility, attendance to social events such as burials, weddings, and social class expectations.

Main message: The main underlying contributor to absenteeism is weak health workforce governance, particularly in the public sector. Attendance monitoring, strict supervision and sanctioning of absence mitigated private-sector absenteeism.

UGWA, Emmanuel. JHPIEGO, Nigeria.

Inadequate human resource capacity and readiness to provide adolescent friendly health services in South-East and North-Central Nigeria.

Co-Authors: Tin Tin Lay , Department of Human Resource for Health Ministry of Health and Sports

Objectives/Method: Nigerian adolescents face major barriers to accessing maternal/newborn care and contraceptives including discrimination against unmarried clients and youth by service providers. This study examines health workers readiness to deliver adolescent friendly services and need to align providers' education and utilization of skills to optimize workforce performance in Nigeria. Ethical approval and informed consent was obtained. This was a descriptive cross sectional study using both quantitative and qualitative methods. Sample size was 623. Data was collected using pretested questionnaires and interview guides. Frequency and Simple percentages were used to report quantitative data and narratives were used for qualitative data.

Result and Findings: Training on adolescent-friendly services occurred 19.6% and 18.35% in both states respectively. Orientation on confidential adolescent-friendly services occurred 29.5 and 19.8% of cases. Providers demonstrate respect when interacting with adolescents in 82.3 and 81%, ensure clients' privacy and confidentiality in 86.7 and 82.9%, and set aside sufficient time for client-provider interaction in 71.5 and 80.7% of cases. Peer educators/counsellors were available in the facility only in 21.6% and 14.6% and providers were assessed using standard checklists in 31 and 28.2% of cases in both states. One respondent said this about why she used a TBA (Baba Jenny) rather than the hospital during child birth,".... and the nurses there always shout at patients, "shut up, who send you this" This one is not like that. Baba Jenny is cheap, they will pet you, encourage you to push all those things not shout or insult that is why."

Lessons to Date: Training on adolescent friendly services are reportedly poor.

Main messages: The health systems needs to give equitable care to adolescents irrespective of their marital status.

Gender, equity and diversity: Addresses equality in provision of care for adolescents who are often disrespected.

WAIJANGO, Peter. Amref Health Africa, Kenya

Leap: A platform that increases access to knowledge and skills among community health workers

Background: Developing countries are facing a severe shortage, and significant skills gap, of frontline health workers. The World Bank recommends 1 physician for every 400 people. However, in Kenya there is 1 physician for every 5,000 people! Community Health Workers (CHWs) are critical components in delivering health services in Kenya. They promote equitable access to health promotion, disease prevention and use of curative services at household level in addition to improving demand and quality of health services and reducing the workload of health workers. However, using the conventional face to face training approach renders CHWs training expensive due to substantial logistics and management costs. Knowledge retention levels are also quite low necessitating refresher trainings every so often.

Objective and Method: To address these challenges, Leap the mHealth platform is a scalable, integrated, mobile learning solution that offers continuous training opportunities, peer collaboration, real time evaluation reports and strengthened supervision of CHWs. Through basic technology, Leap delivers training to CHWs on primary health care, maternal and child health, family planning, non-communicable diseases drawn from the national government curriculum. The platform addresses the need to train, up-skill and develop the capacity of CHWs and their supervisors, who are a critical component in delivering community health services across Kenya.

Results and Findings: Leap has enrolled over 41, 000 CHWs of whom 6,154 from 18 counties have been trained already, reaching over 500,000 household members with much needed health education, basic first aid and referral services. The platform has realized impressive learning and health outcomes which include a learning completion rate of 92% and improved knowledge retention of 15% in comparison to face to face approaches, and a reduction in attrition by 85%.

Lessons: In summary, Leap has transformed and improved health outcomes in the communities through training of the health care workers.

WAITHAKA, Peter. USAID/ Kenya and East Africa, Kenya

Financing Pre-service Training for Sustainable Health Workforce Access in Kenya Rural Areas

Objective: To establish sustainable tuition fee revolving fund to enable students from hard to reach regions join and complete studies in midlevel medical colleges

Rationale: Few students from rural regions join medical courses and are unlikely to complete training due to lack of fees. These are brilliant young people whom if supported could contribute significantly to much needed workforce in this regions. There was need to establish affordable funding mechanism where students could access tuition fees in advance then re-pay once employed. Medical courses graduates in Kenya are in high demand hence these young graduates will easily get into employment.

Method: USAID partnered with GoK's (High-Education-Loans-Board) and private sector to set up Afya-Elimu-Fund. AEF provide loans to students from poor families to join preservice medical colleges. The beneficiaries repay the loan at 4% interest, commencing one year after graduating. With the Seed funds and loans repayments, it AEF can be self-sustaining in the long run. Selection of students who qualify for AEF funding is based on automated system called mean testing criteria. Applicants enter their details online and based on predetermined criteria beneficiaries are selected.

Results: By 2016 December, 9,330 students had benefitted, of which 2,478 had graduated, 274 employed and 118 repaying their loan. Most of the graduates were undertaking internship. The beneficiaries are young people 19 – 25 years. AEF had mobilized KES 523 Million/USD \$ 5.23 million (GOK 59%, 39% USAID and 2% private sector). Challenges include low private sector contribution and, higher demand for loans that outstrip available resources.

Main Messages: GoK contribution has increased significantly hence potential for sustainability. This model can be adopted by other countries in similar situations, to increase access of health workers in rural areas and ensure employment for young people.

50% males and females from rural under-served regions benefitted.

WALSH, Aisling. Royal College of Surgeons in Ireland, Ireland.

Trainees experience of an international medical graduate training initiative (IMGTI) in Ireland

Co-Authors: Aisling Walsh, Royal College of Surgeons in Ireland, EI | Ireland; Ruairi Brugha, Royal College of Surgeons in Ireland, EI | Ireland

Topic: The IMGTI has enabled doctors from low-and middle-income countries to undertake a fixed period of postgraduate hospital training in Ireland, to obtain skills unavailable to trainees in their own countries.

Objectives and methods: This study, using in-depth interviews with 21 trainees from Pakistan, 2016-17, evaluates trainee experiences of IMGTI training in Irish hospitals, to inform programme development and disseminate lessons internationally. An inductive-deductive thematic analysis was conducted using Nvivo 10 software.

Results:

- Trainees entered the programme to gain exposure to more advanced hospital care and clinical skills-training in order to bring these back to Pakistan.
- Trainees' experiences of Irish training were generally positive. Most reported they were treated equally to Irish trainees, and engaged positively with supervisors, staff and the wider community.
- Trainees expected they would rotate to a tertiary hospital to gain more specialised training; however, many remained working in peripheral hospitals.
- Some trainees reported that hospital consultants were not aware of the programme and treated them as non-trainees who undertake only service roles. This, reportedly, improved over time.
- Some trainees reported that their training needs were given less priority than Irish trainees.
- Many interviewees planned to return to Ireland or another European country, after completing the programme in Pakistan; while aiming ultimately to settle in Pakistan.

Lessons learned: The need for more attention to introducing the programme into Irish hospitals; feedback loops from trainees to modify the programme; and measures to track and ensure career paths for trainees returning to Pakistan.

Main messages: The IMGTI demonstrates how a country that relies heavily on international recruitment of doctors can comply with the WHO Global Code of Practice through providing bespoke training with measures to ensure trainees return home to the source country with enhanced skills.

This study addresses global equity and diversity, spanning a source and destination country.

WALSH, Aisling. Royal College of Surgeons in Ireland, Ireland.

Migration and the nursing and midwifery workforce in Ireland – extracting trends from limited data sources

Topic: Reliable health professional ‘stock’ and ‘flow’ data are essential for national monitoring of the WHO Global Code and the Global Strategy on HRH. However, capturing and reporting data on nurse and midwife migration is not a core activity of any Irish national agency, despite large scale inward and outward migration of these professionals since 2000.

Objectives: To examine and report inward and outward flows of nurses and midwives in Ireland based on available routine data; and evaluate potential for strengthening the evidence base.

Methods: Review of annual Nursing and Midwifery Board of Ireland (NMBI) reports, 2007-2014.

Results:

- The numbers of nurses and midwives who registered in Ireland as ‘inactive due to working abroad’ increased by 58.5% (from 5,122 to 8,119).
- Numbers of Certificates of Current Professional Status (verifications of NMBI registration), for Irish registrants seeking to work in the UK, rose from 163 to 743; while numbers of verifications from Australia, Canada nursing-midwifery boards reduced, from very high levels in 2008, when the Irish public sector recruitment moratorium began .
- The top European Union source countries for nurses and midwives registering in Ireland were the UK, followed by Poland; with most non-EU registrants coming from India following active recruitment campaigns there.

Lessons to date:

- Regulatory body registration data, while useful, give only a partial insight into stocks and flows of nurses and midwives working in the Irish health services.
- While nurses and midwives are recognised as distinct professions, routine data are not disaggregated.

Main messages:

- Accurate data on nurses and midwives in post, and their inflow and outflow, are essential, if Ireland is to meet its Global Code and Global Strategy on HRH obligations and milestones.
- Limited flow data suggest increasing nurse and/or midwife stock attrition.
- This study addresses global equity and diversity, spanning a source and destination country.

WHIDDEN, Caroline. Muso Health, Mali

Maximizing CHW Impact through 360 Supervision

Problem: Community Health Workers (CHWs) are essential to the global healthcare workforce, especially in low resource settings where most child deaths occur. Realizing the potential of CHW models is paramount, particularly in light of recent evaluations of CHW-led Integrated Community Case Management (iCCM) that revealed no impact on under-five mortality. Existing iCCM models have failed to meaningfully address CHW supervision. Defining optimal CHW supervision is key to unlocking the potential of this workforce, and saving millions of lives.

Objectives/Methods: Muso, a nonprofit operational research partner of the Malian government, is testing a model to improve CHW performance. Called 360 Supervision, it has four axes: CHW shadowing, patient feedback elicited without the CHW present, CHW Performance Dashboard, and one-to-one feedback. The Dashboard allows supervisors to review CHW performance analytics along three metrics: speed, quantity, and quality. To isolate the impact of the Dashboard, Muso conducted a Randomized Controlled Trial with 8 CHW Supervisors, responsible for 150 CHWs, serving 175,000 people, in periurban Yirimadjo, Mali.

Results/Findings: Preliminary results indicate a 47% increase in home visits, a 20% increase in speed of care, and a 22% increase in care quality, versus 360 Supervision without the Dashboard.

Lessons to date: A robust model of supervision that equips CHW supervisors with real-time CHW performance metrics may improve quality, quantity, and speed of CHW care. As CHW programs scale up globally, investing in supervision may increase the impact and cost-efficiency of national CHW programs.

Main messages

- Dedicated CHW supervision can improve CHW performance, including efficiency and quality of care.
- Mobile health supervision tools, such as Muso's CHW Performance Dashboard, can help CHWs continuously improve the quality, speed, and quantity of the services they provide.

This submission addresses gender, equity, and diversity by reinforcing Malian women's leadership to improve the health of their communities.

WILMINK, Nikhil. Clinton Health Access Initiative, Zambia.

An exploration of facilitators and challenges in the scale-up of a national, public sector community health worker cadre in Zambia: A qualitative study

Background: In 2010 a public sector cadre of Community health workers called Community Health Assistants (CHAs) was created in Zambia through the National Community Health Worker Strategy. This cadre, which aims to expand access to health services, continues to be scaled up to meet the growing demands of Zambia's rural population. We summarize factors that have facilitated the scale-up of the CHA program into a nationwide CHW cadre and challenges of introducing and institutionalizing the cadre within the Zambian health system.

Methods: Semi-structured, individual interviews were held across 5 districts with 16 CHAs and 6 CHA supervisors, and 10 focus group discussions were held with 93 community members. Audio recordings of interviews and focus group discussions were transcribed and thematically coded using Dedoose web-based software.

Results: The study showed that the CHAs play a critical role in providing a wide range of services at the community level, as described by supervisors and community members. Some challenges still remain, that may inhibit the CHAs ability to provide health services effectively. In particular, the respondents highlighted infrequent supervision, lack of medical and non-medical supplies for outreach services, and challenges with the mobile data reporting system.

Conclusions: The study shows that in order to optimize the impact of CHAs or other Community health workers, key health-system support structures need to be functioning effectively, such as supervision, community surveillance systems, supplies, and reporting. The Ministry of Health with support from partners are currently addressing these challenges through nationwide supervisor and community data trainings, as well as advocating for adding Primary Health Care as a specific focus area in the new National Health Strategy Plan 2017-2021. This study contributes to the evidence base on the introduction of formalized Community health worker cadres in developing countries.

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YARMOSHUK, Aaron. The University of the Western Cape, South Africa

Assessing and improving reciprocity in international interuniversity global health partnerships: lessons learned from 125 partnerships of four East African universities

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Topic/issue/problem: Achieving the global strategy on human resources for health requires partnerships from institutional to global levels. Partnering entails transaction costs and all parties must benefit for partnerships to thrive long-term.

Objective and methods: To assess reciprocity in international interuniversity global health partnerships using international relations and sociological literature. Mixed-methods data collection and analysis of 125 international academic partnerships of four East African universities. One hundred and ninety-two representatives from the four focus universities and international partners were consulted. The consultations were transcribed and analysed.

Results and findings: Using international university rankings, the majority of the partnerships were found to be between unequals - two-thirds of the international partners ranked in the top 500. The topped ranked focus university ranked 788. Both specific and diffuse reciprocity were observed. In many cases, however, the partnerships violated the principles of contingency and, especially, equivalence, since in numerous cases the action of one partner did not result in a similar action by the other partner and the exchanges were often not roughly equal. International partnerships often provide opportunities for trainees and faculty alike to explore gender issues in health and institutional development.

Lessons to date: Achieving reciprocity in international interuniversity global health partnerships is challenged by the dissimilar priorities of partners and resources available to them. These challenges may be better addressed through unilateral flow of benefits in reciprocal and chain-generalised exchanges, instead of bilateral flows in negotiated exchanges.

Main messages: International academic health partnerships are often unbalanced in terms of types of activities and outputs benefitting each university. Partnerships must consider the specific needs of each individual representative and institution involved and work to ensure that they are addressed. Formal, contractual negotiations may hinder the development of trust among partners. Partnership outputs should be monitored using simple tracking tools and assessed together.

YIGZAW, Tegbar. Jhpiego, Ethiopia.

Effectiveness of interventions to improve quality of midwifery education in Ethiopia: a Pre-and-Post Study

Co-Authors: Tegbar Yigzaw, Jhpiego, ET|Ethiopia; Girma Temam, Jhpiego, ET|Ethiopia; Mintwab Gelagay, Jhpiego, ET|Ethiopia; Firew Ayalew, Jhpiego, ET|Ethiopia; Damtew Woldemariam, Jhpiego, ET|Ethiopia

Problem: Although Ethiopia increased the number of midwives in the last decade, quality of graduates has been questioned. The Strengthening Human Resources for Health (HRH) Project supported the efforts of the Government to improve both quality and quantity of midwives to ensure access to quality care for mothers and newborns.

Objectives and Methods: We aimed to evaluate effectiveness of the different interventions in improving quality of education using a before-and-after study design. With technical assistance from the HRH Project, capacity building interventions were implemented with 42 midwifery schools including faculty recruitment and development, curriculum strengthening, increasing educational resources, strengthening clinical education, assisting female students, initiating quality measurement and improvement processes, and applying a licensing exam. Baseline data were collected in 2013 from randomly selected graduating students and the same study was repeated in 2016. Student competence was measured using a 10-station objective structured clinical examination. We also interviewed students to assess quality of their learning experiences.

Results and findings: Competence score significantly increased from 52% to 56.6% ($P < 0.001$). The increase was more substantial for university (8.4%) than vocational students (2.3%). However, gender gap in performance did not narrow and median number of births attended by students fell from 11 to 10. Student perceptions of quality of teaching/learning increased for nine out of twelve items. The largest improvements were reported for adequacy of skills lab teaching assistants (91.3%) and their effectiveness in supporting learning (70.6%).

Lessons to date: Our results suggest that the capacity building interventions have contributed to improving quality of graduates but also highlight additional efforts are needed for greater impact.

Main message: Our paper presents evaluation evidence on effectiveness of interventions to improve quality of education, which will be relevant for many countries that are also grappling with generating sufficient numbers of competent midwives.

ZHANG, Min. Peking Union Medical College / Chinese Academy of Medical Sciences, China (People's Republic of).

Study on intervention of bloodborne pathogen exposure in a general hospital

Topic: Effective prevention and intervention measures of occupational exposure to bloodborne pathogen in a general hospital.

Objective: To improve the awareness and knowledge of bloodborne pathogen exposure protection, reduce the contact incidence (including sharp injuries, contacting with the broken skin and mucous membrane contact), and increase the self-reporting rate of bloodborne pathogen exposure among healthcare workers in an investigated hospital.

Methods: The project was based on previous investigations in a general hospital. After comparing the personnel structure and departments distribution of 727 HCWs pre-intervention and 614 HCWs post-intervention, we selected several departments in which the healthcare workers with a higher risk of occupational exposure to bloodborne pathogens. Together with the management team, we took a comprehensive intervention in the hospital, including perfecting the occupational health prevention and control system, improving related files, and providing knowledge training, discussion and field guidance. After the intervention, we conducted a cross-sectional investigation and compared the pre-and-post intervention score of protection knowledge awareness, post-exposure self-reporting, and the number of occupational exposure to bloodborne pathogens incidence.

Results: Through the intervention, the overall score of the 14 knowledge points emphasized in training showed a significant difference($P < 0.05$). The total contact incidence of bloodborne pathogen exposure reduced from 81.57 persons/100 persons per year to 43.81 persons/100 persons per year, the RR of bloodborne pathogen exposure in the former investigation was 1.86 times of that in the latter investigation, the self-reported incidence increased from 2.06 persons/100 persons per year to 9.45 persons/100 persons per year. Self-reporting rate after exposure increased from 0.47% to 9.65%.

Conclusion: The interventions described can significantly improve the awareness and knowledge of bloodborne pathogen exposure protection, effectively reduce the contact incidence of bloodborne pathogen exposure, and increase the self-reported incidence among the healthcare workers.

ZHANG, Min. Peking Union Medical College / Chinese Academy of Medical Sciences, China (People's Republic of)

Chinese laws and regulations on workplace violence in healthcare settings : Analysis and policy recommendations

Topic: The laws and regulations on workplace violence in healthcare settings in China.

Objective: To analyse Chinese laws and regulations on workplace violence in healthcare settings and provide policy recommendations.

Method: The legal databases of CNKI, Wanfang, Lawyee and PKUlaw were searched with keywords: “medical dispute” or “doctor-patient dispute” or “medical order”. The laws and regulations, department measures, local laws and government regulations were collected and analysed.

Result: In China, eight laws, two administrative regulations, two department measures, 15 local laws and measures for protecting health-care workers from workplace violence were collected; they constitute the legal foundation of prevention and control of workplace violence in healthcare settings. During 2009-2017, 12 notices were issued by the National Health and Family Planning Commission jointly with other national authorities on the medical order maintenance. These notices emphasised the increased punishment for “violent crime” against healthcare workers and patients, through organisational, environmental and engineered interventions.

Lessons learnt: Gaps in existing legislations have been identified. Neither consistent definitions of workplace violence, nor specific laws and technical standards for preventing workplace violence in healthcare settings have been issued in China. Furthermore, occupational hazards of psychological violence have not been included in the National occupational disease classification and catalogue.

Main messages: Violence against health workers is unacceptable, which is clearly provided in the current laws and regulations in China. Further efforts are needed:

- Promoting the legislation and law enforcement, with an alignment of the various definitions and provisions of workplace violence;
- Creating the occupational safety and health culture among health workers, to emphasise the "zero-tolerance towards workplace violence" in health services;
- Conducting interventions in pilot hospitals to prevent violence against health workers;
- Leveraging with international cooperation and multi-sectoral professional networks at the national level, to enhance evidence-based policy making.