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**Program/Project Purpose:** Clinician-performed point of care ultrasound (POCUS) can have a significant impact on patient management, especially in settings where other imaging is not readily available. Currently, widespread lack of training in low and middle income countries (LMICs) prevents ultrasound (US) from reaching its full potential as an effective diagnostic tool. We describe a pilot study of a novel, POCUS training curriculum, implementation program, and an assessment tool for POCUS knowledge.

**Structure/Method/Design:** This is a retrospective review of an educational intervention and curriculum description. 2 cohorts of physicians were trained using this curriculum, 10 in 2013 and 21 in 2014. Rwandan and Burundian Medical Directors selected physicians for the training based on a reported self-interest in ultrasound. Fellowship trained emergency physicians from the USA taught course participants the POCUS curriculum (Table 2) over a 70-hour period (Table 1). Course evaluation included pre and post training confidence surveys as well as pre and post training knowledge exams (multiple choice, image recognition and interpretation).

**Outcomes & Evaluation:** The unique curriculum increased participants' scores on a POCUS knowledge test (Figure 1). Confidence in performing several common POCUS applications also increased (Figure 2). Specifically, confidence increased greatly when performing POCUS 2nd and 3rd trimester OB/GYN exams, procedural evaluation for thoracentesis, DVT exams and skin/soft tissue ultrasound (Figure 2). Gains were also seen in understanding mechanics, physics and artifacts of ultrasound. Participants' confidence in teaching the exams they learned in this curriculum also increased, with the greatest gains in applications relating to thoracentesis and DVT (figure 3). Overall, on a 1-5 Likert Scale of agreement, participants reported an increase in feeling prepared to use US from 3 (SD=0.7) to 3.9 (SD=0.3) and an increase in preparedness to teach US from 2.4 (SD= 1) to 3.6 (SD =0.6).

**Going Forward:** This paper describes a novel curriculum and its efficacy in POCUS education for health care providers in a remote international setting. Our data suggest it is possible to improve provider confidence and POCUS knowledge through a focused educational intervention.

**Funding:** This study was not funded.

**Abstract #:** 02ETC076

### Application of a systems thinking lens to the design of effective and sustainable scale-up of national community health programs

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**Background:** Community Health Worker (CHW) programs vary in terms of work environment, training scope and duration, remuneration level, supervision, tasks, and integration within the health system, but a defining characteristic of CHWs is their provision of services outside of health facilities, within homes, villages, and/or at community gatherings to serve as a bridge between the community and health facility. A fragmented system of NGO-funded, vertical, single-disease focused CHW programs exists in many countries, but there is renewed interest by some Ministries of Health and donors to formalize an integrated, national cadre of CHWs that functions across a wide spectrum of preventative and curative activities. There are no shortage of conceptual frameworks which describe various relationships between components of a CHW system; however, these

frameworks fail to capture the dynamism and complexity of these systems. Therefore, the aim of this research was to apply a systems thinking perspective to a hypothetical CHW program to understand the core dynamics driving the existing fragmented phenomena, and to identify sub-system areas of import for designing and implementing a national-level, integrated CHW program.

**Methods:** A causal loop diagram (CLD) is a tool used to qualitatively map out a mental model of a system, with a focus on interactions between actors and variables, including cause and effect mechanisms, feedback loops, and emerging relationships. Two CLDs for the fragmented and integrated CHW system were developed utilizing several static conceptual frameworks to identify relevant variables and relationships between the community, CHW performance and national integration of CHW programs within the health system. Directionality of relationships was confirmed by literature review, for example on the key drivers of CHW motivation, quality of care, and trust in the community.

**Findings:** A range of relationships at the community, programmatic implementation, and policy level were explored within the two CLDs (fragmented and integrated CHW systems). Several potential feedback loops were identified, including a reinforcing relationship between CHW motivation and community trust in CHWs, and a balancing relationship between donor financing, workload, and retention. CLDs applied in a real-world context may help decipher why some CHW programs stagnate despite ample donor funding and robust Ministry of Health commitment.

**Interpretation:** This research represents the first step in application of a systems thinking lens to facilitate understanding about the complex, dynamic nature of CHW programs. Further research using a participatory model building approach with key stakeholders is necessary to validate the CLD, followed by a quantitative adaptation using stock and flow diagramming.

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### REW - re-entry workshops: Supporting students to integrate their global health experiences upon their return

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**Program/Project Purpose:** While global health placements are recognized to be a rich learning experience for students while they are on placement, there is also a rich learning experience to be had upon their return. Additionally, global health placements often generate ethical, social and emotional challenges for students upon their return. The importance of pre-departure training has been recognized, however the importance of supporting students upon their return from global health experiences has received little attention, despite the challenges faced by students. Re-integration learning and challenges may be enhanced through academic supervision and support. Aim: To share experiences with the introduction of re-entry workshops (REW) for students in healthcare disciplines.

**Structure/Method/Design:** Students within a Global Health Studies (GHS) concentration of a MSc. in nursing program work with vulnerable populations, both at home and abroad. These students were offered REW in addition to the usual pre-departure workshop and ongoing support while on placement. Participating students spent 3.5 months in a global health partnership site (Africa, SE-Asia, Caribbean, South America, and Canadian aboriginal

community), completing both clinical and research components. The REW consisted of one session/month for three months. Each session lasted 3 hours and was facilitated by graduates of the GHS concentration.

**Outcomes & Evaluation:** The REW highlighted many challenges that students experienced in their return home. The sessions offered an opportunity for students to share positive aspects of their experience as well as many challenges experienced while on placement and since their return, in a respectful, non-judgmental environment. Prominent themes include: Disillusionment with humanitarian work Difficult transition when returning to structured life of school in Canada Challenge of being the “GHS” students, difficulty re-integrating in peer groups within classroom setting The ever-present concern about entering the workforce after graduation Social media, and the impacts (both positive and negative) of maintaining contact with friends and colleagues from GHS placement Lobster analogy to help conceptualize feelings of vulnerability when returning to Canada (Growing a new shell ie. Integrating their new experience, they remain vulnerable until the new shell hardens) Pressure of wearing the “University hat”, representing not only the university, but also Canada Importance of re-integrating coping mechanisms when returning from placement, ex. extra-curricular activities, physical activity, entertainment Risk of PTSD, signs and symptoms, and where to seek assistance Through the experience of facilitating these re-entry workshops several strategies were noted as supporting students: meeting together as a group functioned as a support network normalizing and sharing personal experiences alleviated some of the emotional challenges

**Going Forward:** Providing re-entry support to students in healthcare disciplines upon their return from global health settings is crucial in encouraging a smoother re-integration and is useful in detecting mental health issues that require intervention/support.

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### **International graduate training program in one health at the university of Saskatchewan, Saskatoon, Canada: A two year assessment**

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**Program/Project Purpose:** In 2012, with a NSERC CREATE grant, the University of Saskatchewan established a new Training Program in Infectious Disease, Food Safety and Public Policy. The one year program provides supplementary training to selected MSc and PhD students registered in thesis-based graduate programs in the natural, health and social sciences. The program aims to enhance student skills in collaborative, interdisciplinary problem-solving for professional practice in Team Science in the field of One Health.

**Structure/Method/Design:** Students participate in a 3 CU Problem-based Learning (PBL) One Health course, a 3 CU Seminar Series, a week-long Summer School, and a 3 month externship. We present two years’ experience in the implementation and evaluation of the program, in particular with the PBL course and Seminar Series. From January-June, 2013 and 2014, a total of 31 graduate students from 8 disciplines, 4 universities in 3 countries (Canada, Germany, India) participated in the two courses by video-conference. Students were divided into groups of 6-8 facilitated by a faculty member. Several case studies were examined over the two years: Nipah and

West Nile Virus outbreaks, water contamination in an aboriginal community, an international incident of food poisoning, and two student-developed cases. In the Seminar Series, pairs of students collaborated on the presentation and discussion of a key dilemma or breakthrough in the field of One Health. At the end of each course, all students completed an anonymous on-line questionnaire and participated in focus group discussions with a non-faculty facilitator.

**Outcomes & Evaluation:** The recommendations for the PBL course the first year were to provide: 1.) Training to assist students in group processes (communication, conflict resolution), 2.) Frameworks for the analysis of case studies. Changes to the curriculum in Year 2: 1.) The Policy Sciences Framework (Lasswell 1970) was introduced and applied to an illustrative initial case study, 2.) Four interactive seminars were added to the course on the topics of collaboration, communication and policy development. Student evaluation following the Year 2 emphasized: 1.) The need for experience applying a range of frameworks to the solution of complex problems, together with explicit learning outcomes for each case, 2.) Further training to optimize group dynamics, and 3.) A need to accurately reflect individual contribution to group assignments.

**Going Forward:** Ongoing challenges include: promoting effective small group dynamics across distance, time zones, and cultures; employing case studies that accurately reflect complex reality but still provide students with a sense of closure and achievement in addressing

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### **Contraception choices of refugee women in Philadelphia: A retrospective and observational study examining barriers, beliefs, and practices**

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**Background:** Few studies look at family planning choices of refugee women recently resettled in the United States. At Jefferson Family Medical Associates (JFMA) in Philadelphia, we provide healthcare to many Bhutanese, Burmese, and Iraqi (NMI) refugee women. Our study was designed to identify their contraception choices and to elucidate knowledge base, cultural preferences, and socioeconomic factors influencing their family planning choices.

**Methods:** A two-part mixed methods study was conducted after IRB approval by Thomas Jefferson University. 1) Retrospective chart abstraction: Data on contraception methods and counseling for 324 NMI women ages 18-60 seen at JFMA between July 1, 2007 –December 31, 2012 was abstracted from the EMR. The primary outcome was prevalence of contraception use. The secondary outcome was documented discussion of contraception counseling. 2) Qualitative Focus groups: Audio - recorded interviews with a translator were conducted with 32 women over the age of 18. The women were recruited from JFMA and the community. Verbal consent was obtained via the translator. The primary objective was to elucidate the factors influencing contraception choices.

**Findings:** Descriptive statistics, Chi-Squared analysis and Kaplan-Meier analysis were performed to analyze the data. Total prevalence of contraception was 44% and Iraqi women were less likely to use contraception ( $p < 0.001$ ); Physician documentation of contraception counseling was absent in 30% of the charts ( $p=0.02$ ). Interviews were coded and themes were outlined and discussed. Major themes in