Author	Year	Author origins	Countries involved	Healthcare professions involved	Educational intervention	Pedagogical approaches and delivery methods
Aarabi	2015	1st = HIC 2nd = HIC	USA; Haiti	Educator = doctor Learner = doctor (n = not stated)	This program placed a fully trained pediatric surgeon at an established rural hospital, both to temporarily serve that community and to teach local surgeons pediatric surgical care. Post for one year, 147 operations performed over 12 weeks in Haiti. Haitian residents were typically in their final year of training and Haitian residents and staff typically did not operate with the Fellow on minor cases. American residents were typically in their junior years and, for cases that were educational for both Haitian and American residents or staff, the Haitian surgeon acted as co-surgeon while the American resident acted as assistant surgeon.	Paedogogical: experiential; peer teaching Delivery: in-person 1:1 and to group.
Albert	2015	1st = HIC 2nd = HIC	Cambodia; USA	Educator = doctor Learner = doctor (n = not stated)	A three-step initiative targeting training in mechanical ventilation: Week 1: Initial e-teaching session: Video conferences, syllabus, learning Objectives Weeks 1–2: e-learning, formative e-assessment: Online tutorials, relevant chapters of textbooks and reference articles, pocket cards covering (1) respiratory physiology, (2) respiratory critical illness, and (3) basic principles in MV; clinical case–based MCQs Week 3: Subsequent e-teaching sessions: Targeted, interactive clinical case examples; unstructured question-and-answer time Week 4: Summative e-assessment: MCQs (single best answer format, "type A") 'Train the trainer' programme also in progress.	Paedogogical : facilitated learning Delivery: electronic distance learning using including personal student contact
Alfonso	2018	1st = HIC 2nd = LMIC	Thailand; Malaysia; Indonesia; Iran; USA	Educator = doctor Learner = doctor (n = approx. 300 in total)	5-tiered intervention for psychiatrists during an 18-month fellowship: 1. Multiple full-day in-person workshops to improve clinical skills 2. 1-semester advanced psychodynamic psychotherapy course 3. Training psychodynamic psychotherapy supervisors – workshops 4. On-going education through review of journal readings 5. Creating an international mentorship program Developed collaboratively over five years. Made culturally appropriate.	Pedogogical: experiential learning, 'traditional' approaches, facilitated learning. Delivery: mixture of face-to-face delivery and electronic distance learning,

					Also psychodynamic psychotherapy fellowships in Iran. 18 months. Mixture of taught elements and 400 hours in practice.	
Bell	2014	1st = HIC 2nd = HIC	Ghana; USA	Educator = nurse Learner = nurse (n=25)	12-month Diploma programme to teach critical skills necessary for emergency nurse training in low-resource settings. For nurses working – or planning to work – in accident and emergency settings and allows them to study whilst working. Thirty module programme. Delivered 2 weeks per month when participants released from work. Includes a train-the-trainer element.	Paedogogical: facilitated learning, experiential learning, 'traditional' approaches. Delivery: mixture of face-to-face delivery and electronic distance learning.
Binanay	2015	1st = HIC 2nd = LMIC	USA; Kenya	Educator = doctor, nurse, pharmacist Learner = doctor, nurse, ECG technician (and administrative staff) (number not stated). (n = not stated)	3 year program for Kenyan doctors (gradually specialised in cardiology), nurses and ECG technicians within the Kenyan hospital. Different grades, training and levels of experience. Plus administrative staff. Educational developments structured using the WHO Organisational Framework for Action. Used a multi-disciplinary approach to setting up a CCU plus educating staff in other key areas e.g. emergency admissions to recognise when CCU is needed. Also the related aspects such as equipment and finance plus leadership education for administrative staff. Training the cardiac workforce began with a focus on the outpatient and diagnostic settings, while developing the more robust capacity required for a specialized cardiac inpatient unit. We produced a clinical curriculum in general cardiology for the physician workforce and hired a senior U.S. cardiologist willing to spend the majority of each year in Kenya as clinical lead. Three Kenyan cardiology fellows were recruited over 3 successive years, joined by medical officers (similar to U.S. intern graduates) and registrars (similar to U.S. residents). One sonographer sent on placement to another Kenyan hospital, plus formal and informal training in South Africa and US. Nurses – BLS and ALS training and specific 6 week cardiology programme. Also developed necessary infrastructure e.g. medicines, equipment, procedures and protocols. Arranged financial support. Electronic records system established.	Paedogogical: collaborative, constructivist, peer teaching Delivery: in-person 1:1 and to group

Cameron	2015	1st = HIC 2nd = HIC	Canada; Guyana	Educator = doctor Learner = doctor (n=14)	2.5-year Postgraduate Diploma in Surgery curriculum focused on local diseases and resources. Each module was delivered in two weeks by visiting Canadian doctors. Post-course support was provided by Skype. Participants the took a residency for 6 months prior to graduation, followed by one-year postgraduate experience. Local faculty took over delivery of the program.	Paedogogical: facilitated learning; experiential learning; collaborative learning; 'traditional' approaches. Delivery: in-person delivery to a group; in-person delivery 1:1; electronic distance learning using including personal student contact.
Cameron	2017	1st = HIC 2nd = HIC	Canada; Guyana	Educator = doctor Learner = doctor (n = 10)	3 year Master of Paediatrics program for qualified Guyanan doctors. Includes a series of one to three month rotations in paediatric inpatient wards, neonatal nursery, outpatient clinics and available subspecialty areas (see Table 2), as well as participation in case-based learning, journal clubs, academic half-day teaching sessions, case presentations, research/scholarly projects and development of evidence-based clinical protocols. Assessment includes monthly written evaluations by local supervisors, ongoing brief clinical encounter feedback, written tests following each teaching block, and an annual written and OSCE exam.	Paedogogical: facilitated, collaborative, experiential, integrated, peer teaching Delivery: in-person 1:1 and to group, electronic distance learning including person learner contact
Cancedda	2014	1st = HIC 2nd = HIC	USA; Rwanda	Educator = not specified Learner = doctor, nurse, community health worker (n = 65 plus)	Formal education programmes (leading to advanced degrees) and in-service programmes (CPD) in Rwanda developed as a result of partnership between Rwandan MoH, a US NGO, a US medical school and a US hospital. Also mentoring and supervision programmes. New curricula developed for various health professionals incl. doctors, nurses, community health workers and AHPs. No further details.	Paedogogical: not specified Delivery: not specified
Cancedda	2018	1st = HIC 2nd = HIC	USA; Rwanda	Educator = not specified '99 visiting US faculty' Learner = Doctor, nurse, midwife, dentist (also administrators). (n = 4600 by 2019) (note: not all post-graduate CPD)	The HRH (Human Resources for Health) Program is an innovative and ambitious 7-year health professional training initiative led by the Government of Rwanda and funded by the US President's Emergency Plan for AIDS Relief through the Centers for Disease Control and Prevention (CDC) and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) with an initial budget of approximately US$150 million. The key features of the HRH Program are the product of broader changes and progress in the fields of global health and health workforce education over the past ten years. Many of these features are aligned with the United Nations' Sustainable Development Goals, are shared with other US	Paedogogical: not specified Delivery: not specified

					Government-funded health professional training initiatives in sub-Saharan Africa. The primary goal of the HRH Program is to train a large, diverse, and competent health workforce in Rwanda. The HRH Program also seeks to strengthen the capacity of academic institutions in Rwanda to sustain the training programs initiated and supported by the HRH Program.	
Conway	2017	1st = HIC 2nd = HIC	USA; Ghana; Malawi; Tanzania; Nicaragua; Nepal	Educator = doctor Learner = doctor (n = over 100 attendees from 12 different east African countries on Tanzanian course).	Surgical Management and Reconstructive Training (SMART) course. This can be tailored to meet local needs and also includes a 'train-the-trainer' component. Duration not specified. Also options for one month LMIC global health electives for USA students and for 2-4 week observerships in USA for LMIC learners. Also developing research with LMIC partners.	Paedogogical: collaborative, reflective, experiential, facilitated Delivery: in-person 1:1 and to group, electronic distance including individual learner contact and provision of resources
Deckelbaum	2014	1st = HIC 2nd = HIC	Rwanda; Canada	Educator = doctor Learner = doctor (n=not specified)	Surgical education partnership between the National University of Rwanda and the Centre for Global Surgery at the McGill University Health Centre. 21 two-week modules developed covering locally relevant general surgery topics, with Canadian surgeons who have relevant expertise functioning as moderators for the modules. Each module contains 6 hours of didactic lectures, 2 hours of case presentation, 2 hours of morbidity and mortality rounds and 1 hour of module evaluations, with operative teaching provided on elective operating room (OR) days and emergency cases. From program implementation in January 2011 to January 2014, 21 modules have been completed.	Paedogogical: collaborative learning; experiential learning; 'traditional' approaches. Delivery: in-person to group; in-person 1:1;
Dapueto	2018	1st = LMIC 2nd = LMIC	Uruguay; USA	Educator = doctor Learner = doctor, nurse, social worker, psychologist (n=359)	Delivered over 5 years. The educational intervention consisted of three rounds of activities between 2010and 2015 consisting of: (1) lectures on physician health, professional, and disruptive behaviors (2010); (2) a theatre play on physicians' unprofessional behaviors, its determinants, and the strategies to remediate (2013); and (3) skills-based workshops on professionalism, sexual boundaries, and physicians' health and its impact on patient safety (2015). Unclear how long each activity lasted.	Paedogogical: collaborative learning; experiential learning; 'traditional' approaches. Delivery: in-person to group;
Foster	2009	1st = HIC 2nd = HIC	Fiji; Australia	Educator = nurse Learner = nurse (n=22 completed)	Done over a one-year period. Four theoretical subjects with 300 h/8 weeks of teaching intensives in total, and 20 weeks clinical experience in a range of mental health settings including inpatient, outpatient, day	Paedogogical: 'traditional' approaches; facilitated learning; integrated

					care/rehabilitation, and community. At least 4 of the 20 weeks were to be in a community mental health setting. By the end of the program, students also needed to successfully complete eight clinical competencies while on clinical placement. The competencies were those deemed important by the key stakeholders.	learning; experiential learning Delivery: In-person to group; in-person 1:1.
Heller	2007	1st = HIC 2nd = LMIC	Open to any HIC or LMIC	Open to any healthcare professions as educators or learners (n = not stated)	Describes plans – and initial progress- for setting up an open access resource for use by LMICs. This will use donated materials and be appropriate for a variety of health professionals. In a partnership across the global and digital divides, the People's Open Access Education Initiative (http://peoples-uni.org) has been established to embrace three aspects. First, identifying open-access materials linked to the competences required to tackle public health problems, with subsequent modifications to the materials by teachers and students to reflect local issues. Second, teaching through online facilitation by volunteers in conjunction with members of local universities. Third, accrediting learned competences.	Pedogogical: facilitated learning. Delivery: electronic distance learning with and without personal learner support.
Hojnski	1998	1st = HIC 2nd = HIC	Armenia; USA	Educators = doctor, nurse, emergency medical technician, paramedic Learner = doctor, nurse, ambulance driver, police, fire service military (n=1800) (495 doctors, 951 nurses, 354 other)	Two-week (100 hrs) program in either pre-hospital or in-hospital emergency care. Mixture of didactic lectures, practical skills training and a special review of disaster management. Further curriculum around interface with EMS teams and emergency department personnel, triage, facility design and record keeping. Includes train-the-trainer.	Paedogogical: facilitated learning; 'traditional' approaches. Delivery: in-person delivery to group.
Johnson	2007	1st = HIC 2nd = LMIC	USA; Eritrea	Educator = nurse, midwife Learner = nurse, midwife (n = 10)	Contextualisation of a US program to provide culturally-appropriate post-graduate midwifery education and develop advance practitioners. Undertaken over 4 semesters.	Paedogogical: experiential, traditional Delivery: in-person to group, electronic distance learning including 1:1 student contact
Kemp	2001	1st = HIC 2nd = LMIC	Uganda; UK	Educator = nurse Learner = nurse (n=13)	Staff development programme. Five modules delivered over 12 months. Module delivery/assessment comprised 12 lectures/ tutorials , a written assignment and a practical assessment. The five modules included:	Paedogogical: collaborative learning;

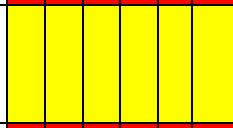
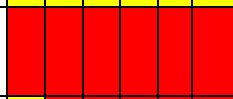
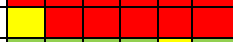
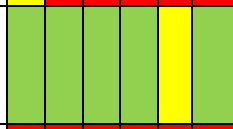
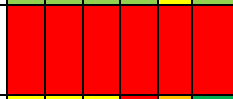
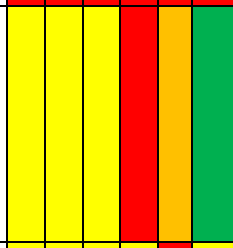
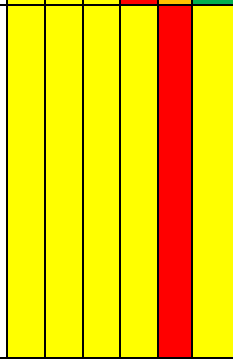
					1.Education ± a shorthand for the extension of information collecting and writing skills and the development of evidence based reporting in nursing practice, 2. Teaching and assessing others in clinical practice, 3. Infection control, 4. Nursing care of children, 5. Pre-, peri- and post-operative care of patients undergoing surgery.	experiential learning; 'traditional' approaches. Delivery: in-person to group;
Keyes	1999	1st = HIC 2nd = LMIC	USA; Costa Rica	Educator = doctor Learner = doctor (n = 21)	Two phase intervention: **Phase 1** – educational preparation of a medical school in Costa Rica to prepare physicians to deliver a post-grad emergency department training for doctors in phase 2. **Phase 2** a year long training programme supported by US and delivered by locally trained physicians in Costa Rica.	Paedogogical: facilitated, integrated, peer teaching Delivery: in-person to group, distance learning
Manske	2017	1st + HIC 2nd = LMIC	USA; Nicaragua	Educator = doctor Learner = doctor (n = 1 plus unspecified number of residents)	For one Nicaraguan paediatric hand surgeon. US surgeons visit for a week, twice a year to see patients and undertake surgery with Nicaraguan colleague. They also train Nicaraguan residents. Nicaraguan surgeon visits to the US every 1–2 years for 2–3 weeks where he observes clinic and surgery, as part of a planned educational program. Purpose is to train the Nicaraguan surgeon to the same standards as US counterparts in circumstances where he cannot be accepted for hand-on training in the US due to differences in medical/surgical education between the two countries.	Paedogogical: experiential, peer teaching Deliver: in-person 1:1, distance delivery
Mutabdzic	2013	1st + HIC 2nd = LMIC	Canada; Botswana	Educator = doctor Learner = doctor (Design of program, not yet run)	The paper explains how analysis of surgical logs from Botswanan surgeons was used to design a locally-relevant surgical education and training program for doctors.	Pedogogical: not stated Deliver: not stated Currently in design stages of the program only.
Nicoll	2001	1st = HIC 2nd = HIC	UK, Sweden, Netherlands, Malawi, Thailand, Ethiopia	Educator = doctor, nurse, and others Learner = doctor, nurse, sonographer and others (n = not stated)	A report of three projects to illustrate the key components of sustainable international health exchanges between a HIC and an LMIC to improve knowledge and skills and improve standards of child health. Projects are supported by various international agencies e.g. WHO, UNICEF, Tropical Health and Education Trust) THET, International Health Exchange (IHE). Varying length of time, typically 3 – 8 weeks.	Pedogogical: facilitated, integrated Delivery: mixture of face-to-face and distance.
O'Flynn	2017	1st = HIC 2nd = HIC	Republic of Ireland; Burundi, Malawi, Mozambique, Uganda, Ethiopia,	Educator = doctor Learner = doctor (n = 360)	Training of Surgeons in medical education and as trainers in East, Central, and Southern Africa. Undertaken in conjunction with the African organisation COSECSA which promotes post-graduate surgical education. The Medical Education Train the Trainers program covered theories of adult teaching and learning with application in practice; different approaches to training on the job and management of training needs; presentation skills and other methods in teaching particular clinical skills;	Paedogogical: facilitated, integrated Delivery: on-line and face-to-face.

			Rwanda, Tanzania, Zambia, Zimbabwe, Kenya.		preparation, delivery, and evaluation of on the job training programmes; and assessment and delivery of feedback. A total of 6 modules were developed and subsequently hosted on COSECSA's Surgical training platform—www.schoolforsurgeons.net which has been developed by the RCSI/COSECSA collaboration. Online course plus 1-2 days face-to-face followed by 2 x 5 day master trainer course face-to-face.	
Riley	2019	1st=HIC 2nd=HIC	Ethiopia; Vietnam; Zambia; India; USA	Educator = nurse, midwife Learner = nurse, nursing student, community health worker, midwife (n=145 completed).	Helping Babies Breathe (HBB) programme tailored to specific country needs. Delivered to groups of 2 – 5 participants with a facilitator. Includes: 1. Didactic teaching and skills demonstration 2. Role play 3. Skills practice using low-tech neonatal simulators 4. Observed skills competency 5. Scenario skills assessment Ethopia and Zambia: student led workshops, workshops. India: on-site training at hospital, train the trainer workshops for HBB protocol, workshops on management and transport of asphyxiated infants. Vietnam: faculty development workshops in university setting , HBB training sessions in hospital.	Paedogogical: facilitated learning; collaborative learning; 'traditional' approaches. Delivery: in-person delivery to group;
Sanders	2016	1st = HIC 2nd = LMIC	USA, Zambia	Educator = doctor Learner = doctor (no participants – plan for a future programme only)	Report on developing a 4 year post-graduate training program for Zambian doctors in family medicine. Program structure developed by consensus between HIC and LMIC partners. The establishment of family medicine in Zambia took 2 years of focused effort by a dedicated group of academics to complete the founda-tional first steps. These include: (1) defining what sort of family medicine physician will result from the school's training, (2) securing buy-in from the country's health workforce stakeholders, (3) the creation of a curriculum around which training can be organized, and (4) recruiting faculty and trainees.	Paedogogical: facilitated, experiential, traditional Delivery: face-to-face to group, distance learning
Sjernswärd	1990	1st = HIC (single author)	Sri Lanka; Zimbabwe: Switzerland (WHO)	Educator = doctor, radio-physics teacher Learner = doctor (n = 13) (Sri Lanka = 3 per year. Zimbabwe = 10 (4 from	WHO development in conjunction with national governments and external donors. National and regional training courses in radiotherapy and oncology. Sri Lanka: 5 year program leading to the M.D. (Radiotherapy and Oncology) of the Post Graduate Institute of Medicine, University of Colombo, and to	Paedogogical: 'traditional' approaches; experiential learning. Delivery: not specified.

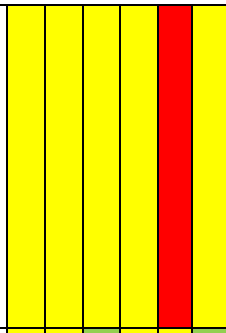
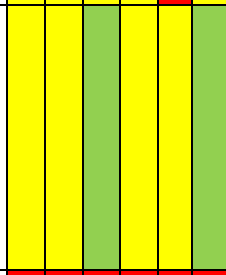
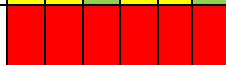
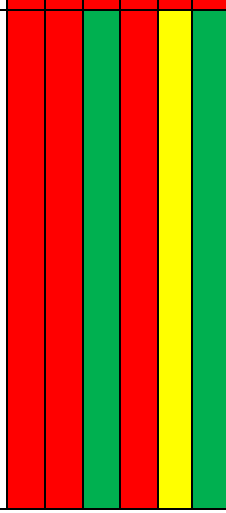
				Zimbabwe, 6 from other African English-speaking nations))	board certification for the status of Consultant in Radiotherapy and Oncology: 1st stage = 12 months in-service at the cancer hospital with lectures followed by written and oral exams. 2nd stage = 24 months in service leading to M.D. degree Followed by 12 months study abroad and 12 months as an Assistant in Radiotherapy and Oncology. Can reach board certification as Consultant in Radiotherapy and Oncology following dissertation. Zimbabwe: four year program run by WHO consultants leading to a qualification in radiotherapy. No further information given.	
Smith	2007	1st = HIC 2nd = HIC	USA, Iran	Educator = doctor Learner = doctor, nurses (This paper reports a range of initiatives, including a total of 12 Iranian doctors who undertook training in US, and 135 Iranian doctors who received training in Iran from visiting US experts in emergency medicine.)	Collaborative development of post-graduate emergency medical training. Includes staff exchanges (8 Iranian trainees visited the US for 8 months training). They returned to Iran in late 2001 and successfully started the first EM residency training program at Iran University of Medical Sciences in Tehran. Currently, a group of four Iranian physicians is enrolled at George Washington University to complete a full EM residency training program. In return, multiple faculty from George Washington University and Penn State University had the opportunity to visit different universities and hospitals in Iran. They also met with authorities in the Ministry of Health, including the minister and his deputies, and university chancellors to share experiences on EM improvement throughout the country. 2 week emergency medicine training program for Iranian doctors and nurses run for 135 trainees. Symposium workshops by US faculty on emergency ultrasonography, difficult airway management, advanced trauma life support, and advanced cardiac life support. The primary goal of the partnership has been to improve EM through a process of education and training, which had to be practical and self-sustaining for the advancement of health care into the future.	Paedogogical: 'traditional' approaches. Delivery: in person to group.
Tuggle	2017	1st = HIC 2nd = HIC	USA, Zimbabwe	Educator = nurse Learner = nurse (n = 16 nurses and 17 doctors initially)	1.Contextualisation and delivery of ATLS and ATNC courses in Zimbabwe. 2 days program. 2.Delivery of ATNC faculty courses (9 nurses from previous program) to endure sustainable delivery. 64 nurses have now completed the ATNC.	Paedogogical: traditional, experiential Delivery: face-to-face to group, distance learning

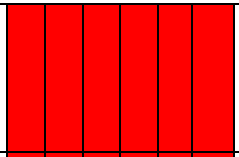
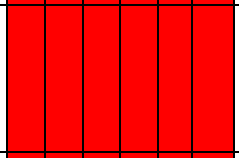
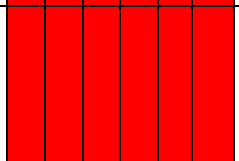
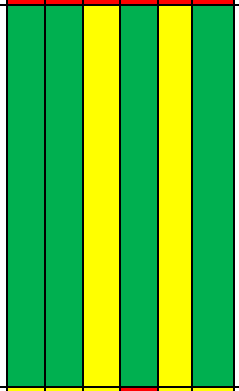
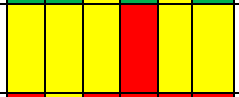
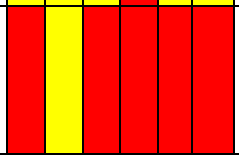
Vandenberg	2009	1st = HIC 2nd = LMIC	Canada, Yemen	Educator = doctor Learner = doctor (n = not stated)	Discusses development of the National Oncology Program in Yemen through collaboration between Canadian and Yemeni oncologists. There is a dire shortage of health workers in all medical fields and no specific in-country oncology training programs currently exist. Proposed program includes: 1. Implementing a month-long observer program in Canada for Yemeni oncologists so that they may appreciate practices that enhance cancer care, including safety standards, multidisciplinary case conferences, guidelines for care, and protocols for treatment. 2. Enhancing the training and number of positions for cancer-related health professions. The highest training priorities include pathology technologists, pathologists, surgeons, and pediatric oncologists. Specialty training is best done using high quality more cost-effective regional training programs in the Middle East.	Paedogogical and delivery methods not discussed.
Winterton	1998	HIC (single author paper)	UK, Vietnam	Educator = speech and language therapist Learner = 'from health, education and parents' (n = 8)	Discusses development and evaluation of training in communication therapy developed in Vietnam over a two year period using a wider approach to treatment than a medical one. The content of the program is explained. There were some reported changes in attitudes towards speech and language problems. Applying learning and skills in practice was variable.	Paedogogical: facilitated, reflective, traditional Delivery: in-person to group

Author	Year	Perceived barriers	Perceived enablers	Quality indices*						Level of collaboration (DeSantis)
				E	CU	S	P	C	S	
Aarabi	2015	Lack of appropriate care provision model; lack of resources – including staff;	Interest and determination of individuals involved.							1,2
Albert	2015	Adapting materials and teaching to meet local needs; cost/finances; need for some travel which is costly ad takes time	Technology to support distance teaching and learning; existing partnership framework; good collaborative working relationships.							1,2
Alfonso	2018	Staff availability (attendees); adapting materials and teaching/learning approaches to be culturally appropriate; making the programme self-sustaining	Available technology to bridge the learning gaps; interest and drive from attendees and educators; there are more fundamental similarities than differences between cultures re. psychiatric needs							1,2,3
Bell	2014	Low resource setting; recruiting HIC staff to travel and work in the LMIC; lack of respect for professional nurses; changing the healthcare culture.	Building sustainability into the programme; free, open access course materials; good collaborative relationships; integrating the programme into the existing healthcare system; mutual benefits for institutions involved; good, regular communication between collaborators.							1,2,3
Binanay	2015	Lack of resources e.g. facilities, equipment, trained staff; lack of funding e.g NCDs, educational programmes, staff,	Philanthropic donors; frameworks e.g. from WHO; AMPATH twinning process; multidisciplinary engagement with stakeholders;							1,2,3
Camerson	2015	Developing effective partnerships and leadership; ensuring program sustainability; reconciling staff aspirations with national needs; staff retention in country (incentives provided).								1,2,3
Cameron	2017	Staff moving overseas; lack of specialist programs; lack of financial support and dedicated study time; time e.g. to develop mentorship and support with trainees.	Training staff locally improves retention; developing local faculty to deliver training; contextualising materials and assessment approaches; fostering retention e.g. on-site delivery in LMIC; adequate funding; developing research skills in LMIC staff to investigate local issues; importance of face-to-face meetings; don't focus on one profession and include admin staff							1,2,3,4
Cancedda	2014	Staff shortages/high patient:staff ratio;	Establishing long-term ties and relationships e.g. through partnerships and exchanges; clear roles and responsibilities for partners; health delivery framework and equity agenda; mentorship and supervision at point of care and developing competencies (not new knowledge); sustainable, not short-term, training and infrastructure; reciprocity; sharing e.g. knowledge, materials, experience.							1,2

Cancedda	2014	Staff retention	Twinning programmes – training, research and health-service delivery collaborations; flexibility in funding; sustainability e.g. HIC strengthens capacity of LMIC institutions, retention of local graduates, strengthen non-academic domains e.g. admin, large number of small funding sources gives flexibility.		1
Conway	2017	Lack of models of academic collaboration for appropriate field; need to adapt programmes to local contexts; lack of evaluations to assess program impacts; financial sustainability	The IGOT model/structure		1,2
Deckelbaum	2014	Staff migration from LMIC; feasibility of travel and teaching for HIC staff; making context and delivery relevant to the local context; funding	Addressing staff skills and retention through capacity building; distance learning technology		2
Dapueto	2018	Improving professionalism and relationships	Positive international collaborative partnership.		2
Foster	2009	Navigating the differences between the respective countries' social, cultural, health care structures and nursing practices; varied mental health experience in LMIC staff;	Programme graduates now in key roles to assist with future collaborations.		2,3
Heller	2007	Access to training e.g. costs, location, availability; new 'program' approach e.g. materials, teachers, accreditation, organisation.	Improved elearn options e.g. materials, better internet access, distance support for learners.		2
Hojnoski	1998	Contextualising training, curriculum and facilities for LMIC; unreliable electricity supply; ensuring flexibility in curriculum as solutions to medical problems may vary according to equipment available; language barriers – need to translate materials into local languages; lack of necessary equipment and supplies and medication to implement what has been taught/learned.	Enthusiasm of collaborators.		1,2,3,4
Johnson	2007	Distance and time differences; different technological infrastructure e.g. lack of computers and internet, sluggish connections when occur hampering use of facilities e.g. on-line journals; inability to contact assessors easily by email as no personal address; healthcare differences; cultural differences – need to make programs and materials locally relevant; educational resources lacking e.g. study space, labs, books	For distance learning: 1.ensure bilateral understanding of the differences between the health care and educational systems in the partner countries. 2.select appropriate educational technology considering both technical and human factors. 3.ensure that students and faculty are sufficiently prepared for success. 4.maintain a strong focus on clinical education. 5. Remain flexible through program implementation, working together with students to adjust the program to address local needs and challenges.; more site visits for LMIC partner to understand local context and requirements; 1.Ensure that partners understand their respective health		2

			care and education systems. Graduates must be prepared for appropriate practice within their countries. All educational resources and assignments should be reviewed to ensure that they meet the program educational objectives while remaining relevant and appropriate to the education and health care systems in which the student will study and practice. 2. Select the appropriate educational technologies. Internet connectivity remains problematic in many developing countries, and programs relying on continuous access to the Internet are likely to fail. Consider facility-based learning management systems residing on local area networks with periodic synchronization as necessary to transfer information between faculty and students and update student resources. Judicioususe of synchronous communication via telephone or computer instant messaging will enhance the student–faculty relationship and should be explored whenever feasible. 3. Ensure that students and faculty are sufficiently prepared for success. Students need to be adequately oriented by faculty, and this should be done in person whenever possible. Faculty must understand both the students and the context for their study and eventual practice. The conditions of practice in resource-poor settings are likely to be very different from practice in the United States, and the curriculum must reflect this. 4. Maintain a strong focus on clinical education. The clinical competency of the graduate cannot be ensured without sufficient faculty preceptor collaboration. Ideally, periodic faculty visits to the developing country would enhance communication and improve the understanding of the students' clinical experiences. Synchronous conferences focusing on the clinical evaluation criterion should be held between faculty, preceptor, and student on a regular and predetermined schedule.							

			5. Finally, plan ahead but be flexible. Students in the developing world face challenges often beyond the comprehension of seasoned faculty in the United States. Academic and clinical resources may be transient. Students may have significant life stresses affecting their ability to study and learn. Computer and electronic technologies that are taken for granted in the developed world may be slow and unreliable. Be prepared for change and work with students to find creative solutions to their problems.		
Kemp	2001	Need to contextualise education for local context; different institutional structures (impact on communication, understanding of what happening and how it works). Can result in frustration; nature of relationships between collaborating institutions e.g. HIC may expect this to be exclusive, LMIC may not. HIC institutions may be competitive between one another; opportunities for reciprocal staff/learner visits.	Creativity and improvisation in LMIC born of lack of resources and funding; enthusiasm of collaborators and participants.		1,2,3
Keyes	1999	Structures which account for new roles and expertise e.g. lack of financial reimbursement	Flexibility e.g. changing delivery approach according to need.		1
Manske	2017	Different caseload and types of cases in HIC and LMIC; lack of transferability of qualifications hampering training options abroad; resources e.g. lack of specialist equipment such as MRI scanners; sustainability -Direct provision of surgical services (i.e., “parachute trips”) does not expand the skills or ability of local providers. Most US fellowships for foreign medical providers are limited to observerships, which do not allow hands-on training, and the provision of surgical services is not conducted in the context of their local resources, often relying on expensive technology that is not available in their home institution. Finally, international conferences and courses, like observerships, require substantial commitment of both time and resources, which is not feasible for many providers.	Sustainability - direct provision of surgical services (mission trips of visiting surgeons to resource-poor countries); fellowships (medical providers from resource-poor countries travel to the US to obtain experience and training not available in their home country); and attendance at international conferences and courses (which provide learning opportunities in the form of lectures and surgical simulations) Each of these strategies, while beneficial, has certain limitations. In contrast, the training model we have implemented in Nicaragua results in sustainable delivery of health-care services to children with hand conditions.		1,2

Mutabdzic	2013	Making education relevant important differences in the scope of general surgery and the knowledge and skills required by general surgeons in Botswana compared with their North American counterparts; need to make program locally relevant.	Sustainability e.g. local training to promote staff retention;		2
Nicoll	2001	Electronic commuications/systems can present challenges e.g. slow communications; lack of staff time from HIC; difficulty for LMIC staff being able to work in HIC facilities; getting new ideas accepted when LMIC staff return home e.g. hierarchy;	Make partnership mutually beneficial; include research skills and projects which relevant to improving/changing local practice; electronic communications and systems also present options; staff exchanges to work together; staff exchanges as part of training programmes in HIC;		1,2
O'Flynn	2017	Technology e.g. internet bandwidth, reliability of connections;	Sustainability – train up-skilled LMIC staff as educators; DVD as alternative to on-line; A gap in surgical training is the training of surgeons as clinical teachers and educators. _ Pedagogical training of surgical trainers allows for reflective practice and network development. _ Training is feasible when delivered as a blended learning program. _ Sustainability of training courses is enhanced when core learning content is online, builds on existing surgical training systems and has Master training embedded in the home countries.		1, 2
Riley	2019	Reaching remote communities; language barriers and ensuring proficient translation (used interpreters in workshops); sustainability e.g. provided equipment so training could continue and become self-sustaining, education re. equipment usage and storage; making the programme culturally relevant; establishing trust and buy-in; determining exactly what is needed, cultivating global citizenship and leadership in HIC (used students to deliver in some cases); travel and acclimatization; getting staff released from work to attend; when and how to provide updates to keep knowledge and skills current	Low-tech approach makes it flexible and adaptable; potential sustainability through training trainers.		1,2,3
Sanders	2016		Access to relevant stakeholders – need someone with the contacts and influence to access these; stakeholder buy-in to support new programs.		2
Sjernswärd	1990	Design strategies to make best use of available resources; reducing mortality rates; lack of (appropriately trained) staff; 'brain drain' – overseas training needed as no home programmes then fail to return; tailoring programmes to individual	WHO-supported programme so expertise and funding available.		1,2

		country needs and contexts to address illnesses and stages of development ; lack of equipment.								
Smith	2007	Politics e.g. staff from Iran visiting USA; making the program locally relevant; resources; financial e.g. staff, equipment, facilities.	The work of individuals making connections and contacts; support e.g. government, international funding.							1, 2
Tuggle	2017	Differences in teaching facilities and equipment; lack of technology for teaching and learning e.g. internet,	Understanding how a country works and what resources it has available is critically important to appropriately apply the teaching process. Items that are frequently disposable in our health care system might not even be available in other countries; dedication of local staff; sustainability – train/assess local trainers.							1
Vandenberg	2009	Language difficulties; Understanding culture; Lack of organizational structure; Isolation; Professional shortage; Treatment cost; Establishing trust; Technical support; Geographic Isolation; Low GDP; Personalization of misfortune; Technologies disrupt basic values; Corruption; Resistance to change	Common language; Government support; Less bureaucracy; Strong personal values; Strong belief in Western medicine and science; Openness to outside suggestions; Desire to improve situation/self criticism; Key contacts with government and business; Technology jump; Strong family and tribal units.							1
Winterton	1998	Cultural e.g. communication strategies, expectations, material development, daily routines and health/education structures; language.	Translation of materials; needs assessment; learner support; regular evaluation; cultural awareness; advanced training skills in educators.							2

***Quality Indices**

E– Educational underpinning Cu – Curriculum S– Setting P - Pedagogy C – Content S – Strength of conclusion

Green = low risk of bias Yellow = unclear risk of bias Red = high risk of bias