Promoting Health Equity Through Purposeful Design and Professionalization of Resident Global Health Electives in Obstetrics and Gynecology

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OBJECTIVE: To design an Obstetrics and Gynecology (OBGYN) residency elective in global health that meets ACGME standards and simultaneously promotes health equity.

DESIGN: A 4-week elective was established for US residents in a high-volume African district hospital that served as a site for OBGYN rotations for the national internship training program. Clear clinical, operative, and teaching requirements were delineated for US OBGYN residents. Resident formal didactic outputs were incorporated into the intern OBGYN curriculum. The program was evaluated through assessment of resident experience and contribution to local training, as well as assessment of intern competency in OBGYN.

SETTING: Scottish Livingstone Hospital, a public district hospital in Molepolole, Botswana.

PARTICIPANTS: Second- to fourth-year OBGYN residents from US training programs, working with Batswana medical interns under on-site faculty supervision.

RESULTS: From May 2016 to June 2018, 18 residents from 9 US OBGYN residency programs participated in the elective. Under supervision, US residents performed 116 major and 77 minor gynecologic surgeries, and teach-assisted Batswana interns and medical officers in 76 cesarean deliveries. Residents led or contributed significantly to 25 didactic education sessions as part of the formal intern OBGYN curriculum. During this period, 24 Batswana interns rotated through the hospital's department of OBGYN, and all 24 trainees met required OBGYN competencies prior to completing their internship.

CONCLUSIONS: Matching US resident demand for global health experiences to equitable global health programming while maintaining ACGME training guidelines poses a challenge to OBGYN residency training programs. This elective provides a model OBGYN global health elective that addresses host-identified needs, broadens residents' skills, and meets standards for postgraduate OBGYN training. Purposeful global health electives for US residents embedded in longitudinal programs provide an opportunity for residents to contribute to broader global health efforts that promote health equity. (J Surg Ed 76:1594–1604. © 2019 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

ABBREVIATIONS: ACGME, Accreditation Council for Graduate Medical Education APGO, Association of Professors of Gynecology and Obstetrics BHP, Botswana Harvard AIDS Initiative Partnership BIDMC, Beth Israel Deaconess Medical Center CREOG, Council of Resident Education in Obstetrics and Gynecology LMICs,

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COMPETENCIES: Practice-Based Learning and Improvement, Systems-Based Practice

BACKGROUND

The growing interest in global health electives among Obstetrics and Gynecology (OBGYN) residents in the United States parallels broader trends among medical trainees.[1,2] Global health electives in low- and middle-income countries (LMICs) have the potential to broaden US resident education in multiple ways: strengthening residents' clinical skills and judgment, improving resource utilization, and participating in care of patients with diverse pathology.[3,4]

Global health electives also provide an opportunity for residents to participate in broader efforts to advance health equity across the globe.[5] Health equity—the reduction and ultimate elimination of disparities in health and its socioeconomic and political determinants[6]—is a priority of global health programs at many US academic medical institutions.[7,8] Academic programming committed to health equity demands that the goals and needs of LMIC partners be prioritized alongside those of the participating US academic institution.[9] At present, there are no professional guidelines regarding design of global health electives for OBGYN to promote health equity. Models for programming are lacking in current literature.

A focus on global health equity for trainees in OBGYN is perhaps more critical than in other fields of medicine. The global burden of maternal morbidity and mortality falls disproportionately on the very LMICs where global health trainee electives are often hosted.[10] At the same time, there is an inverse relationship between the extent of unmet women's health needs and access to skilled obstetrician-gynecologists (OBGYNs).[11] Global health electives for US residents may thus provide an opportunity to strengthen the next generation of LMIC-based OBGYNs who will work to address these disparities.[12]

Currently, most US-based OBGYN residents participate in elective-based programs that are not integrated into longitudinal programming aimed at contributing to clinical or educational capacity in the partnering country.[13] More than 75% of US-based Accreditation Council for Graduate Medical Education (ACGME)-accredited OBGYN residency programs report their residents have participated in global health experiences, yet few OBGYN residency programs offer formal global health curricula or ACGME standards of elective supervision.[14,15] Residents engaged in clinical electives in LMICs risk encountering ethical dilemmas around provision of clinical care in settings where they are unfamiliar with resources and local clinical protocols. Lack of adequate preparation and adequate supervision in such settings may result in devastating effects on patients, local care teams, and trainees themselves.[16]

Here, we describe a global health elective for US OBGYN residents within the framework of a long-standing international academic partnership in Botswana. The program aims to promote health equity by addressing locally identified disparities in clinical training and access to skilled women's healthcare in the public healthcare system. We explore how working within an equity framework while maintaining the rigor of ACGME standards impacts global health training for US residents.

MATERIALS AND METHODS

The Botswana Harvard AIDS Initiative Partnership and Host-Identified Needs

The Botswana Harvard AIDS Institute Partnership (BHP) is a locally registered nonprofit institution in Botswana, which has a pre-existing formal collaboration with Harvard University and the Botswana Ministry of Health and Wellness. BHP has conducted research and supported clinical capacity building in Botswana since 1996. Beth Israel Deaconess Medical Center (BIDMC) works in collaboration with BHP, and has provided a full-time internal medicine specialist at Scottish Livingstone Hospital in Kweneng East District since 2011. In 2015, BHP and BIDMC, in collaboration with the leadership of Scottish Livingstone Hospital, elaborated a need to improve women's healthcare in the district, specifically by supporting a full-time OBGYN faculty member to provide clinical training and care. This need was identified because while significant progress was made in reducing maternal mortality in Botswana from 325 per 100,000 live births in 1990 to 135 per 100,000 live births in 2005, maternal mortality began rising again in 2006. By 2014, maternal mortality was at 152 per 100,000 live births, and the Kweneng East region where Scottish Livingstone Hospital is located carried a high district-level burden.[17,18] The partners thus advocated for BIDMC to support an OBGYN faculty to work in the district full-time, and in 2016 the Department of OBGYN at BIDMC committed to support a full-time, on-site faculty member.

Local Healthcare Setting

Botswana's public health system is staffed primarily by medical officers—medical doctors who have completed

1 year of internship training equivalent to a transitional year, but have not undergone further postgraduate specialization. Medical doctors who go on to complete a residency training program in pediatrics, medicine, surgery, OBGYN, or other fields are considered "specialists" in their field and serve as "consultants" to medical officers. Specialists work primarily at district hospitals, which serve as referral hospitals for their respective districts, and tertiary referral hospitals, which serve as regional referral centers. While medical officers serve as the primary staff at district and referral hospitals, the majority of medical officers in Botswana practice in community clinics and primary hospitals without specialist supervision. Thus, in their 1 year of internship training, medical officers in Botswana are expected to become skilled in basic OBGYN and surgical procedures.

Given the level of independent practice expected of medical officers, recent efforts at the national level in Botswana (and in many African countries) have focused on improving the quality of internship training, through the creation of a highly structured program, known in Botswana as the Medical Internship Training Program. All interns maintain a logbook to document procedures and clinical competences in each field. After internship, medical officers are expected to independently provide a broad range of OBGYN outpatient and inpatient care, including performing cesarean deliveries and dilation and curettage procedures.[19] Aside from the logbook of procedures, there is no standardized internship educational curriculum in Obstetrics and Gynecology.[20] There is currently no OBGYN residency training program in Botswana.

The Clinical Site

Scottish Livingstone Hospital is a 350-bed district hospital approximately 60 km from Gaborone, the capital of Botswana. The annual obstetric volume is approximately 3000 deliveries per year. The OBGYN services consist of gynecology, antenatal, postnatal, and labor wards. There are 1 to 2 OBGYN specialists, 2 to 3 interns, 1 to 5 medical officers, and 6 to 9 midwives providing clinical services across these wards at any given time. Midwives primarily staff the labor ward, and a medical officer is called for any patients with high-risk conditions or complicated labor courses or deliveries. The hospital has 2 functional operating rooms. In addition to emergent surgeries, OBGYN consultants perform elective surgeries twice weekly, including both scheduled cesarean deliveries and open gynecology cases. Medical officers independently perform primary and first repeat cesarean deliveries; OBGYN consultants perform high-risk cesarean deliveries and gynecologic cases. The hospital has a blood bank, laboratory facilities, ultrasound, and x-ray services on-site. There is an intensive care unit with 6 beds and 4 ventilators.

Development of the Elective for US Obstetrics and Gynecology Residents

In 2016, a full-time OBGYN faculty physician joined BHP and the OBGYN department at Scottish Livingstone Hospital to provide clinical care, lead clinical training capacity-building efforts in OBGYN, and develop a clinical elective for US residents. She was responsible for the administration and supervision of internship training within Scottish Livingstone Hospital and for oversight of the US resident elective.

The elective for US OBGYN residents was offered to second-, third- and fourth-year US OBGYN residents for a minimum of 4 weeks, with the opportunity to participate in supervised clinical care. Rotating residents join the on-site clinical teams, and are incorporated into daily clinical activities. Resident clinical duties include: participation in gynecology consultation and high-risk obstetric clinics, gynecologic surgeries and cesarean deliveries with a supervising attending, and ward teaching rounds. In addition, residents are required to lead formal educational sessions for the interns and medical officers at the hospital.

Application, Orientation, and Evaluation

Residents from any US OBGYN residency training program may apply to participate in the elective for a minimum of 4 weeks. Required application materials include a curriculum vitae, personal statement, and a letter of support from the residency program director. Applications are screened by the on-site faculty member and approved by core faculty members of the BIDMC OBGYN Division of Global and Community Health. To ensure adequate supervision per ACGME guidelines, a maximum of 2 OBGYN residents are scheduled at any given time. Accepted residents are required to submit proof of malpractice coverage while working internationally. A Program Elective Agreement is signed between the graduate medical education offices at BIDMC and the resident's academic institution.

Residents are responsible for the costs associated with the elective, including international airfare, meals, emergency evacuation insurance, and medical malpractice (if their institutional coverage does not apply overseas). Residents are offered comfortable and safe accommodation in a BHP house and pay a housing and logistics fee to support the cost and maintenance of the house to the program. No specific vaccinations or medication prophylaxis are required for travel to Botswana; postexposure prophylaxis is available in government hospitals free of charge. Total cost for residents is

between $2000 and $2500 USD. BIDMC departments have funds available that their residents can apply for, and residents from other programs have had variable experiences in obtaining funding to cover the costs associated with the elective.

Prior to the elective, residents are provided with standardized pretravel orientation materials covering travel and medical licensing logistics, safety and security, information about Botswana and its health system, and information specific to the clinical setting. In addition to review of these required preparatory materials, residents are provided a link to the Association of Professors of Gynecology and Obstetrics/Council of Resident Education in Obstetrics and Gynecology (APGO/CREOG) modules on clinical care in low-resource settings as additional, optional reading.[21] On arrival in Botswana, the program coordinator orients residents to program logistics, schedules, housing policies, and security guidelines. All rotating residents obtain their Botswana medical license prior to participating in clinical care. To obtain this, they must provide a notarized copy of their medical school diploma, evidence of successful completion of an internship, proof of their active medical license, a letter of good standing from their licensing board if the license was granted more than 6 months prior, 2 professional references, and a curriculum vitae. Licenses are usually granted the first week of the resident's rotation.

At the midpoint and end of their elective, all residents are provided an opportunity to give and receive feedback with the Rotation Director. At the end of the rotation, residents are evaluated using the ACGME's Milestone framework and all residents are asked to complete an online anonymous survey about their experience. This survey includes questions assessing their impression of the impact of the elective on both services and training at the site, as well as their own personal and professional development.

Development of an Obstetrics and Gynecology Internship Curriculum for Batswana Trainees

Batswana interns who rotate on the OBGYN services at Scottish Livingstone Hospital are expected to acquire procedural competencies through participation in outpatient clinic, inpatient ward duties, and surgical duties on the OBGYN services. Competencies include a broad range of hands-on skills such as manual removal of the placenta, cesarean deliveries, dilation and evacuation, and placement of intrauterine devices. Successfully performed procedures are "signed off" by supervising medical officers or specialists. Once interns graduate to medical officers, they are expected to perform these competencies independently.

The Medical Internship Training Program regulations require all internship training sites to conduct a minimum of 2 hours of formal education per week. Through the BHP program at Scottish Livingstone Hospital, this has been expanded to 1 hour of daily protected didactic time. Teaching session formats include intern reports, lectures, morbidity and mortality conferences, case-based discussions, and skills workshops. Prior to the establishment of the OBGYN capacity-building program, OBGYN specialist-led sessions were given rarely and on an ad hoc basis.

During the 2016 to 2017 academic year, a standardized OBGYN curriculum for interns rotating at Scottish Livingstone Hospital was developed by the on-site faculty and rotating US OBGYN residents. A set of high-priority, practical topics were identified in collaboration with partners at other internship training sites in Botswana and designed to complement the acquisition of their required Medical Internship Training Program competencies (Table 1). Didactic and skill-based sessions were prioritized to provide evidence-based guidance on the diagnosis and management of common OBGYN conditions and emergencies. The OBGYN curriculum was piloted during the 2017 to 2018 academic year, with didactic and skills sessions delivered by rotating US OBGYN residents and the Rotation Director.

Program Evaluation

The program was evaluated through both quantitative and qualitative methods. Resident case logs were maintained to document volume and breadth of clinical and surgical case exposure. Resident surveys were analyzed using a modified grounded method to evaluate resident experience. Intern attendance at formal didactic sessions delivered by rotating residents was documented and resident didactic presentations were edited to a standard format and compiled into the intern curriculum. Interns were evaluated according to the national guidelines.

RESULTS

From May 2016 to June 2018, 18 residents from 9 US-based OBGYN residency programs participated in the global health elective at Scottish Livingstone Hospital. In total, residents participated in 116 major and 77 minor gynecologic surgeries. Operations included: total abdominal hysterectomies (85), adnexal surgery (28), myomectomies (25), vulvar excisions (12), dilation and curettage (11), tubal sterilizations (9), cesarean hysterectomies (6), cone biopsies (3), and other minor procedures (14) (Table 2). Indications for surgery included routine conditions such as symptomatic fibroids, menorrhagia, and cervical dysplasia, in addition to rare

TABLE 1. Core Curricular Topics for Batswana Interns

Presentation Style	Topic	Objectives	Required Competency
In-service lecture	Cesarean delivery	Steps of surgery Intraoperative decision-making Complications	Perform cesarean delivery
	Induction of labor	Indications Methods Complications	Manage vaginal deliveries
	Management of labor	Review stages of labor and labor curves Identify prolonged and arrested labor Labor interventions	Manage vaginal deliveries
	Preterm labor/ Preterm premature rupture of membranes	Evaluation Role of steroids, tocolysis, and latency antibiotics	Manage pregnant patients
	Hypertension in pregnancy	Spectrum of hypertensive disease in pregnancy Manage hypertension and hypertensive emergencies	Manage pregnant patients
	Medical comorbidities in pregnancy	Gestational diabetes mellitus Thyroid disease Seizure disorder Peripartum cardiomyopathy	Manage pregnant patients
	Obstetric hemorrhage	Diagnosis and management of antepartum and postpartum hemorrhage	Perform vaginal deliveries, cesarean deliveries, and manual removal of the placenta
	Contraception	Methods Contraindications, risks, and benefits Noncontraceptive uses of hormonal contraception	Manage gynecologic patients
	Sexually transmitted infections	Diagnosis Management Complications	Manage gynecologic patients
	Early pregnancy bleeding	Ectopic pregnancy Missed, incomplete, spontaneous, and septic abortion	Manage gynecologic patients Perform dilation and evacuation
	Abnormal uterine bleeding	Diagnosis Management	Manage gynecologic patients
	Adnexal masses	Diagnosis Management	Manage gynecologic patients Assist in ectopic pregnancy
	Gynecologic malignancies	Common presentations Evaluation and referral Overview of treatment	Manage gynecologic patients
	Cervical cancer	Screening Diagnosis Treatment	Manage gynecologic patients
	Surgical complications	Diagnosis Management	Assist in gynecologic laparotomies
Skills sessions	Fetal heartrate monitoring	Fetal heartrate monitoring interpretation Decision-making	Manage vaginal deliveries
	Shoulder dystocia	Diagnosis Management	
	Breech vaginal delivery	Indications and contraindications Maneuvers for spontaneous delivery Breech extraction	
	Postpartum hemorrhage	Manual removal of the placenta Balloon tamponade Uterine artery ligation and compression sutures	Perform vaginal deliveries, cesarean deliveries, and manual removal of the placenta

(*continued*)

TABLE 1 (*continued*)

Presentation Style	Topic	Objectives	Required Competency
	Perineal laceration repair	Degree of perineal lacerations Repair of lacerations	Perform episiotomy repairs
	Ultrasound	Pelvic ultrasound Basic OB ultrasound	Management of obstetric and gynecologic patients
	Dilation and evacuation	Papaya practical model Manual vacuum aspiration	Perform dilation and evacuation
	Surgical skills	Identification and uses of instruments Knot tying	Assist in gynecologic laparotomy

conditions, such as abdominal pregnancy. Residents also participated in 76 cesarean deliveries in which they teach-assisted a medical officer or intern. Residents' clinical exposure frequently included conditions that are common in Botswana, but rare in their residency training experience, such as advanced cervical cancer, pelvic tuberculosis, HIV-related diseases, eclampsia, gestational trophoblastic neoplasia, as well as more severe pathology related to septic abortion and obstetric hemorrhage.

Following the rotation, 14 of 18 (78%) responded to an anonymous electronic survey. Of those surveys, 1 was incomplete and data are presented for 13 respondents. Postelective surveys were not a requirement for residents to complete in order to maintain anonymity of responses. In addition to clinical care, all residents reported participating in the development and provision of educational sessions, as well as bedside teaching with interns and medical officers. Residents rated their impact as "very positive" or "somewhat positive" on clinical care (13/13, 100%), medical officer capacity (12/13, 92%), and intern capacity (10/13, 77%). Residents rated their own development as "very positive" or "somewhat positive" in the following areas: clinical acumen (13/13, 100%), surgical skills (13/13, 100%), confidence in making clinical decisions (12/13, 92%), and impact on awareness of resource utilization in caring for patients (13/13, 100%). All residents reported a positive impression of the partnership with Scottish Livingstone Hospital after participating in the elective, and that they would recommend the elective to other residents. Nine of 13 (69%) residents reported that the elective had influenced them to consider including global health in their future careers. The survey did not directly assess whether the elective had negatively impacted a pre-existing desire to pursue a career in global health.

TABLE 2. US Resident Surgical Experience

Surgery	Volume
Total abdominal hysterectomy	85
Cesarean hysterectomy	6
Open myomectomy	25
Open adnexal surgery	28
Vulvar excisions	12
Dilation and curettage	11
Tubal sterilization	9
Cone biopsy	3
Cesarean sections	76

In qualitative responses, residents consistently cited the elective's impact on their awareness of resource utilization. Residents reported:

> "Understanding the resources available and how to best utilize them was challenging. Adapting my own previous experience to their current training and resources available was something that I had to consistently work on but became a good challenge for myself."

> "It definitely came as a shock to me to see the amount of difference between the United States and Botswana medical practice just based on resources and gave me much needed perspective on how things work around the world."

Another resident thought the most challenging aspect was:

> "Translating my knowledge of guidelines into practice with limited resources."

Residents reported the teaching and surgical experience as the most rewarding aspects of the rotation. At the same time, residents reported learning from their medical officer counterparts when faced with limited resources. One resident's best experience was:

> "Operating with medical officers and each of us learning from one another in cases."

Residents reported a greater sense of autonomy during their elective compared to their home institutions, while at the same time having adequate supervision (13/13, 100%). They did struggle with the hierarchy of relationships within the hospital between doctors and

trainees at various levels, as well as midwives and nurses. Because there was no one in a resident role in the hospital previously, it was unclear if they were peers to the medical officers or serving as consultants to them. Areas identified for improvement included a more comprehensive orientation to the wards, hospital systems and patient charts, as well as establishment of more structured schedules and teaching rounds.

Each resident prepared and presented an intern didactic session as part of the development of the standardized curriculum. A total of 24 formal educational sessions were given. In addition to formal clinical education, residents provided bedside teaching, most notably in complex antepartum conditions, ultrasound, interpretation of cardiotocographs, and labor management.

During the same period (May 2016 to June 2018), 24 Batswana interns rotated through the Scottish Livingstone Hospital department of OBGYN. The interns participated in formal educational sessions with an average attendance of 80%. In total, interns delivered 38 OBGYN intern reports and gave 7 formal OBGYN morbidity and mortality conferences with faculty supervision. Though 7 interns required extension of internship for up to 6 months beyond the planned 12-month timeframe, all of whom were required to spend some of that time in OBGYN to achieve competency, all interns met required OBGYN competencies by the end of their internship. The impact of the structured training curriculum on intern performance is currently being evaluated.

DISCUSSION

As part of a long-term academic collaboration and capacity-building program in Botswana, we developed a short-term elective for US OBGYN residents to support programming that meets the needs of the host institution and host country. The program aims to build clinical capacity of Batswana trainees and practitioners as well as to provide high-quality clinical care to patients. We believe this is made possible by the committed, continuous on-site presence of a full-time OBGYN faculty physician based in Botswana, which facilitates a dynamic understanding of the host setting and institutional partnership, and serves as a bridge for short-term rotations so that residents can contribute in a meaningful way. This continuity provides a larger framework for US residents so that they can contextualize their knowledge and understand their role in the promotion of health equity.

Through collection of resident data, we were able to better understand how an international OBGYN clinical elective specifically adds to overall US resident education. The elective provides broad surgical experience and exposure to clinical conditions uncommon in the US. Residents have the opportunity to serve as resident-as-teachers earlier in their training and experience a greater degree of autonomy while still having adequate supervision. Perhaps most importantly, residents consistently cited their improved understanding of resource utilization, which pushed them to think critically beyond clinical guidelines and tailor treatment plans accordingly.

The matching of the clinical and educational programming for US residents to Batswana training needs is fundamental to the program's core mission of promoting health equity. While US residents contribute to the training of Batswana interns and medical officers, their own training is enhanced by Batswana doctors who teach them about patients' clinical and cultural context, maximal utilization of available resources, and navigation of the local healthcare system. While most doctors in Botswana lack advanced specialty training, they are required to have a wide scope of practice, respond quickly in emergencies, and improvise when resources are not available. Working alongside them, US residents have the opportunity to learn how resource limitations may be mitigated by clinical resourcefulness.

At the same time, the integration of these 2 educational programs is not perfect. We have learned that team dynamics must be monitored to ensure that each member's role is understood and that learning opportunities for Batswana trainees and doctors are prioritized.

Resident global health electives in LMICs do not de facto promote health equity. There is a need to address health equity as a value in global health programming. Specific guidelines to promote health equity call for training programs to ensure their activities are developed in a framework that fosters bidirectional participatory relationships, builds local clinical capacity and long-term sustainability, and promotes cultural humility among its trainees.[22,23] Our model reflects 3 of these 4 core principles: development of a bidirectional participatory relationship, contribution to local clinical capacity building, and promotion of long-term sustainability. The fourth, cultural humility, is an individual competency that is challenging to measure, but that we strive to model through our collaboration and practice in Botswana.

To date, little has been written about professional guidelines and program design for US OBGYN resident global health electives.[24] The ACGME Resident Review Committee has clear supervision guidelines for residents in training, the standards of which apply to global health electives.[25,26] Evaluation criteria and assessment of competency in global health, however, has not been standardized. The APGO Committee on Global Health has developed competency-based objectives in global underserved women's health to guide global health education and training for OBGYN residents.[27] Our global health elective meets many of the specific competencies

TABLE 3. Elective Experiences as Related to ACME Milestones and Competencies, and APGO/CREOG Global Health Competencies

Educational Opportunities Offered Through the BIDMC Global Health Elective	Current ACGME Milestone	ACGME Competencies	APGO/CREOG Competencies in Global Underserved Women's Health
Consulting on the antepartum service and in high-risk obstetrics clinic	Antepartum care and complications of pregnancy	PC	Outline the approach (presentation, workup, management, treatment barriers) to pregnant woman with the following presentations in global health settings and immigrant and refugee communities: Routine prenatal care, labor, obstructed labor, HIV and aids, tuberculosis, malnutrition, anemia, hypertensive disorders of pregnancy
Consulting on labor ward	Care of patients in the intrapartum period	PC	
Consulting on the postpartum service	Care of patients in the postpartum period	PC	
Cesarean deliveries, breech vaginal deliveries, repair of higher order lacerations	Obstetrical technical skills	PC	Compare and contrast the presentation and management of the above pregnant and nonpregnant conditions in the United States vs global settings
First responders to neonatal resuscitations	Immediate care of the newborn	PC	-
Performing hysterectomy, myomectomy, open adnexal surgeries	Gynecology technical skills: laparotomy	PC	Describe the indications, risks, and benefits of surgical interventions for relevant obstetrics-gynecologic conditions in the global health setting
Participating in gynecologic consultation clinic	Ambulatory gynecology	PC	Outline the approach (presentation, workup, management, treatment barriers) to the nonpregnant woman with the following presentations in global health settings: Ectopic pregnancy, unintended pregnancy, infertility, STDs, abnormal bleeding, pelvic pain, vaginal discharge, menopausal symptoms, acute abdomen, cervical dysplasia, and gynecologic cancers
Management of gynecologic inpatients and outpatients	Abdominal/Pelvic Pain	MK	
	Abnormal uterine bleeding	MK	
	Pelvic mass	MK	
Participation in maternal morbidity and mortality conferences	Patient safety and systems approach to medical errors	SBP	Describe the major causes and known effective interventions for prevention and treatment of maternal morbidity and mortality around the world
Resource utilization management	Cost-effective care and patient advocacy	SBP	Articulate barriers to healthcare in global health settings, vulnerable populations in the United States, and immigrant and refugee communities
Contextualization of data to particular resource setting	Self-directed learning/ critical appraisal of medical literature	PBLI	-
Participation in departmental QI initiatives	Quality improvement process	PBLI	-
Modeling compassionate clinical care	Compassion, integrity and respect for others	P	Demonstrate respect for the unique cultures, values, and roles of patients and family members in global health settings
Navigating patient decision-making in different culture	Respect for patient privacy, autonomy, patient-physician relationship	P	

(*continued*)

TABLE 3 (*continued*)

Educational Opportunities Offered Through the BIDMC Global Health Elective	Current ACGME Milestone	ACGME Competencies	APGO/CREOG Competencies in Global Underserved Women's Health
Communication with families about complex medical issues through interpreters and in a different cultural context	Communication with patients and families	ICS	
Working in a cross-cultural teams, with doctors, midwives, nurses, and other healthcare staff	Communication with physicians and other health professionals and teamwork	ICS	Compare and contrast the roles and responsibilities of professional colleagues (e.g., physicians, nurses, social work) in a global health setting to your home environment
Engages in shared decision-making with patients in multidisciplinary teams	Informed consent and shared decision-making	ICS	Recognize ethical dilemmas frequently experienced during global health work, when working with vulnerable populations, or both

PC, patient care; MK, medical knowledge; SBP, systems based learning; PBLI, practice-based learning and improvement; P, professionalism; ICS, interpersonal and communication skills.

proposed in the APGO objectives. At the same time, we evaluate residents within the ACGME's Milestone framework, which is designed to evaluate residents according to expected progression and acquisition of competencies over the course of their residency. By bridging the competencies and linking them to specific elective activities, we demonstrate how global health electives contribute to the overall training of residents (Table 3). Our OBGYN resident elective models a global health elective that meets US postgraduate medical education requirements and serves to professionalize resident global health training within a structured framework for preparation, orientation, supervision, and evaluation.

There are limitations to our program. The impact of broader capacity-building efforts would ideally be measured in health outcomes; however, after training at our institution, interns, medical officers, and residents are posted to different sites, making measurement of patient- and population-level health outcomes difficult to assess.[28,29] Feedback and evaluation of rotating US residents and the elective program by Batswana faculty and trainees are not collected in a standardized fashion, which limits our conclusions about the bilateral nature of the elective. Further research is underway to assess host experience. Finally, while US trainees are allowed to practice in LMICs with varying degrees of supervision, regulations in US academic institutions limit the ability for doctors from LMICs to participate in similar exchange rotations in the United States. While our program offers the opportunity for international trainees and providers to participate in self-funded observerships at BIDMC, visiting medical professionals cannot participate in direct patient care. This limitation highlights an inherent lack of equity and obstacle to creating a truly bilateral exchange.

The generalizability to other academic institutions may also be limited. While this collaboration has been made possible through strong institutional support, there are several challenges to developing and sustaining effective and professional global health electives for OBGYN residents. Institutional linkages do exist across US and LMIC OBGYN academic institutions with a strong focus on contributing to training programs in LMICs; however, funding to support global health work is frequently cited as an obstacle to sustaining on-going programming.[30] Because these programs do not generate departmental income, either grant funding or creative funding models are necessary to support such collaborations. Additionally, within the growing field of academic OBGYN, there are known challenges to maintaining careers in academic global health, thus limiting faculty contributions to long-term programs that promote health equity.[31,32] Addressing these issues at academic institutions will be necessary to maintain professional global health training and practice in academic OBGYN. Finally, establishing standards and measures through our existing professional bodies will be essential to the professionalization of global health education and training in OBGYN.

CONCLUSIONS

The demand for global health training among US OBGYN residents needs to be met with robust resident elective programs that promote health equity. Thoughtful programming, training standards, appropriate clinical supervision, and mentorship are essential. This model

demonstrates the ability of programs to meet those requirements and provide residents with the opportunity to develop their own skills and capacity in global health, while addressing needs identified by the LMIC host.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

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SUPPLEMENTARY INFORMATION

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jsurg.2019.05.019.