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PERSONAL OPINION

Is there value to sub-specialty training in sub-Saharan Africa?

EO Orang'o,[1] S Sinasac,[2] P Itsura,[1] P Tonui,[1] B Rosen,[3] A Covens[4]

[1] Moi University School of Medicine, Moi Teaching and Referral Hospital, Eldoret, Kenya
[2] University of Toronto, Trillium Health Partners, Toronto, Canada
[3] William Beaumont Hospital, Detroit, MI, USA
[4] University of Toronto, Sunnybrook Health Sciences Centre, Toronto, Canada
Corresponding author, email: sarahsinasac@gmail.com

Over the past three decades, Africa has focused on combatting infectious diseases, such as tuberculosis, malaria, and HIV/AIDS. As treatment strategies for infectious diseases have improved over time, life expectancy has increased, shifting the burden to chronic diseases, such as cancer. The WHO has now identified non-communicable diseases, including cancer, as the new epidemic in sub-Saharan Africa[1]. Cancer incidence and mortality are increasing rapidly in low and middle-income countries (LMIC) as compared to high-income countries. By 2020, it is predicted that 70% of all new cancers worldwide will occur in LMIC[2]. In 2012 850 000 new cancers were diagnosed in Africa, and over one million new cancers are predicted on the continent by 2020[2–4]. Developing effective strategies to prevent, detect and treat this growing number of cancer cases poses a great challenge. There is an ongoing lack of resources, and little awareness of the need among policymakers and the general public. In addition, there is a severe shortage of health care personnel in sub-Sharan Africa[5–7]. With limited resources and a growing need to treat complex malignancies, is it feasible for LMIC to train subspecialists in oncology?

Gynecologic Cancers in Kenya

Cervical cancer is the most common malignancy among women in Kenya, and has the highest mortality rate of any cancer in the country[3]. The high mortality rate is related to the advanced stage at which most women present due to a lack of organized screening programs, and the high burden of HIV/AIDS in Western Kenya[7]. Mortality is also related to constraints in treatment capacity including a lack of facilities, medical expertise, and limited access to radiation therapy[8]. This is in stark contrast to the low incidence and mortality rates seen in high-income countries where prevention, screening and treatment strategies are well-established[4].

The University of Toronto joined the Academic Model Providing Access To Healthcare (AMPATH) in 2007 as a North American lead in Reproductive Health at Moi University in Eldoret, Kenya. The significant burden of cervical cancer in the region was identified as a priority for the partnership early on, and AMPATH infrastructure was leveraged to build the cervical cancer screening and gynecologic oncology programs. This work took place in phases.

Initial Phase: Organization and Screening

Canadian Gynecologic Oncologists began participating on the ground in clinical activity at Moi Teaching and Referral Hospital (MTRH) in Eldoret, Kenya in 2008. This led to the establishment a dedicated clinic for oncology apart from the general gynecology clinics. Two local gynecologists with an interest in caring for women with cancers were identified and encouraged to work in this clinic, thus providing them the opportunity to gain experience. Mentorship was provided on an ongoing basis from the Canadian Gynecologic Oncologists both remotely and on the ground. In 2009, a cervical cancer screening study propelled the development of an organized screening program. Nurses were trained to perform screening using visualization of the cervix with acetic acid (VIA). Those who screen positive are treated with cryotherapy in the same visit if they are eligible (see-and-treat protocol). If they are ineligible, they are scheduled for colposcopy and LEEP as appropriate by a trained gynecologist. From one initial cervical cancer screening clinic at MTRH, a total of 12 clinics have since been established in the surrounding region serving an estimated population of approximately four million people. Outreach screening clinics are run by nurses and medical officers. Residents and fellows rotate through these clinics regularly to provide colposcopy, biopsy, and LEEP as indicated. To date 72 000 women have been screened for cervical cancer, 1150 treated with cryotherapy and 775 treated with LEEP.

Second Phase: Intensive Surgical Training

Establishing cervical cancer screening led to an increase in the detection of early stage cervical cancers. These cases are often best treated with surgery, specifically radical hysterectomy and pelvic lymphadenectomy, which is not in the skill set of most general gynecologists. Therefore, in 2010, two gynecologists from MTRH were trained in the technique. Teaching modules were provided for study. These included indications, detailed steps of the technique, common complications, and post-operative care. Canadian Gynecologic Oncologists then travelled to MTRH to provide on the ground mentorship initially over a

two-week intensive period. A number of cases were collected, and the gynecologists worked closely with the mentor during the training phase to perform a total of seven radical hysterectomies. A competency-based evaluation model was used, and increasing independence was offered as they became proficient in the steps of the procedure. Subsequent to this two week intensive training, ongoing remote support was offered in the form of specific case discussion with the mentors. Canadian Gynecologic Oncologists continued to provide regular on the ground support in two month intervals thereafter.

Third Phase: Comprehensive Gynecologic Oncology Fellowship Training

In 2012, a formal two-year clinical fellowship training program in Gynecologic Oncology was established. A curriculum was developed to include training in surgery, medical oncology, palliative care, radiation oncology, epidemiology and communication training. Curriculum development was facilitated through the Society of Gynecologic Oncology of Canada (GOC), and accreditation was obtained through Moi University. North American visiting faculty were present at MTRH for two weeks every other month for the first two years of the fellowship program. This frequency decreased over time as local faculty were trained and took over the mentorship role for fellows. Fellows were also supported to come to Toronto for a two month rotation in medical oncology, radiation oncology, pathology, and palliative care during their fellowship. Overall, however, the focus was on training within the local setting so that training would be commensurate with the local case mix, surgical approach and access to resources. Since 2015, six physicians have completed the training and two are currently in training. Of the trained Gynecologic Oncologists, five are working in Kenya - three are now faculty at Moi University and continue to run the fellowship program, one works in Kisumu, one in Garissa. Another works in Kampala, Uganda where she has helped start the first Gynecologic Oncology fellowship program in that country. Two fellows will graduate this year from the fellowship program in Uganda.

The MTRH Gynecologic Oncology training program was selected to join the International Gynecologic Cancer Society (IGCS) Global Curriculum and Mentorship Program as a pilot site in early 2017. Participating in the IGCS Global Curriculum has enriched the fellowship training, and connects participating faculty and fellows through a monthly tumor board teleconference utilizing Project ECHO (Extension for Community Healthcare Outcomes). These meetings include 45 minutes of case presentations and 15 minutes of didactic lecture from North American faculty. Fellows are also required to maintain a log of all surgical cases through an online database platform (REDCap) that is regularly reviewed by local and international faculty.

Fourth Phase: Transition from Learners to Fellowship Program Managers

The guiding principle of this program from the outset was sustainability. The goal for the fellowship program was that it would eventually be run independently by leaders in Gynecologic Oncology who had been trained at Moi University, and this has been the program's greatest achievement. North American Gynecologic Oncologists continue to be engaged in the fellowship program by participating in monthly tumour board rounds, by providing clinical mentorship of fellows during visits to Kenya, in sponsoring fellows for North American elective training, and in the discussion of strategic planning for the program. The day to day operations of the fellowship program, however, are now solely led by the faculty at Moi University.

New patients seen in Gynecologic Oncology clinic at MTRH

	Cervix	Ovary	Endometrium	GTN	Vulva	Vagina	Uterine Sarcomas
2010	52	22	0	4	2	1	0
2011	78	30	11	8	9	0	0
2012	164	26	7	12	3	0	0
2013	171	64	25	9	13	2	1
2014	177	54	32	20	7	1	2
2015	189	46	27	15	16	2	6
2016	186	33	28	11	8	1	3
2017	178	61	13	16	13	2	2
Totals	1195	336	143	95	71	9	14

Research

Research has been integrated into the program since its inception. The establishment of a dedicated database for all gynecologic malignancies has helped document the progress achieved thus far. The group has been successful in attracting over $2 million (CAD) in grants since the partnerships inception. Forty-five academic presentations have been given at local, national and international meetings. The group has also produced twenty-five publications in peer-reviewed journals[9-34].

Future Directions

While much has been achieved thus far, ongoing strategies are needed to continue to increase access to care for women with gynecologic malignancies. The program leaders aim to engage the Kenyan Ministry of Health to develop a country-wide strategy for the care of women with cancer. By bringing to light the need for resources, leaders trained by the fellowship program aim to have a voice in health policy decision-making in the country. Cervical cancer prevention and screening strategies are of particular importance in this regard. The lessons learned in the development of this subspecialty program at Moi University can potentially be used as a model to develop similar programs at other academic institutions elsewhere in Kenya or in other LMICs. Lastly, Gynecologic Oncology practice changes rapidly, and this partnership facilitates the participation of the Kenyan Gynecologic Oncologists in the international Gynecologic Oncology community, ensuring that the care received in Kenya is based on the best evidence-based practices utilized worldwide.

Summary

The partnership between the University of Toronto and Moi University through the AMPATH consortium has demonstrated that it is feasible to develop sustainable subspecialty Gynecologic Oncology training in sub-Saharan Africa. The physicians who trained through this program have been retained in the region, thus increasing the expertise in Gynecologic Oncology in East Africa. As a result, many women in the region have undergone screening and prevention for cervical cancer, and access to high quality surgical, medical, and palliative oncologic care for gynecologic malignancies has dramatically increased over time. In the future, the program hopes to engage the Ministry of Health in policy and program development to continue to increase access to care.

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