Ghana postgraduate obstetrics/gynecology collaborative residency training program: Success story and model for Africa

Cecil A. Klufio, MBBS, E. Y. Kwawukume, MBBS, K. A. Danso, MBBS, John J. Sciarra, MD, PHD, and Timothy Johnson, MD
Accra and Kumasi, Ghana, Chicago, Ill, and Ann Arbor, Mich

OBJECTIVE: We describe a residency program in Ghana that was developed to train obstetrics/gynecologist specialists for Ghana and the subregion to promote and manage the reproductive health of women and to reduce a high maternal mortality rate.

STUDY DESIGN: The Carnegie-supported program, begun in 1989, is a 5-year residency in the two medical schools in Ghana, but with one central coordinating office. It has features that equip the graduate resident to practice in his/her environment. The fourth year of the program is unique: the resident attends a hospital management course for 3 months, goes for a clinical rotation in the United States or United Kingdom for 3 months, and moves to live and work in a rural district hospital for 6 months.

RESULTS: The success rate of the Ghanaian residents in the examination of the West African College of Surgeons has been three to four times higher than the overall pass rate. As of October 2002, the program had produced 26 specialists, all of whom are practicing in Ghana. In contrast, of 30 specialists who were trained abroad between 1960 and 1980, only 3 specialist had returned home by the end of the 1980s. The current chairpersons of the two medical schools are graduates of the program. Carnegie financial support for the program came to an end in January 2000, but the Ghana Ministry of Health has increased its support enthusiastically. The program is being sustained. Maternal mortality and morbidity rates are falling slowly in the two teaching hospitals; case fatality rates have been reduced markedly. New residents are entering the program and are progressing to completion.

CONCLUSION: The program has been an unqualified success and merits replication. (Am J Obstet Gynecol 2003;189:692-6)

Key words: Ghana, postgraduate obstetrics/gynecology training program, collaboration

This is the story of an eminently successful collaboration between the American College of Obstetricians and Gynecologists (ACOG), the Royal College of Obstetricians and Gynecologists (RCOG), the Department for International Development of Britain, the Carnegie Corporation of New York, two Ghanaian medical schools, and the government of Ghana. Ghana is proud of the achievements of the Ghana Postgraduate Obstetrics/Gynecology Program, and all members of ACOG and RCOG should also feel proud because of its pivotal role in the creation and establishment of this program.

This article also makes a plea for collaboration between individual institutions in the United States and this program, for the mutual benefit of both.

With an area of 92,000 square miles (238,540 km²), Ghana is roughly the size of Minnesota. The population is just >18 million people and is projected to reach 26.5 million people in 2025 (Ghana 2000 National Census). The 15 countries of western Africa, including Ghana, are among countries with the highest maternal mortality rates in the world. With the use of different methods, Ghana’s maternal mortality rate has been estimated at 50 to 700 per 100,000 live births. In 1990, the lifetime risk of maternal death was estimated at 1 in 18.1 In stark contrast, the average maternal mortality rate and the lifetime risk of maternal death in the developed world, including the United States, are <15 per 100,000 live births and ≤1 in 2000, respectively (Table 1).2-5

Obstetrician/gynecologists, as leaders of the reproductive health team, have a crucial role to play in any effort that aims to reduce maternal morbidity and mortality rates. Apart from providing effective reproductive health care and safe motherhood and treating obstetric emergencies, the specialist obstetrician in West Africa promotes women’s health in many important ways. He/she is the
leader of the reproductive health team, trains other health workers, is an advocate of women’s health and women’s rights, and participates actively in public health education programs.

Before the program was established in 1989, all specialists were trained abroad, chiefly in the United Kingdom. The Ghana government and the host countries provided funding for training. In the United Kingdom, the British Council and the RCOG were responsible directly for management of the training.

Unfortunately, as the economy of Ghana deteriorated, more and more of the trained specialists refused to return home. They stayed on in the countries in which they had trained or went to greener pastures, such as Middle Eastern countries.

By 1980, of 50 sponsored Ghanaian physicians who had qualified as specialist obstetrician/gynecologists, only 3 had returned home. By the early 1980s, the situation had become so intolerable that the British Council and the RCOG threatened to withdraw their sponsorship and support and insisted that the training should be done in Ghana.

Unfortunately, at that time, Ghana did not have the manpower or necessary facilities to undertake a residency training program that was based entirely in the country.

**Methods**

In 1986, after a visit to the medical schools in Ghana while on assignment from the Johns Hopkins University, Dr Timothy Johnson learned of the problem and contacted the executive director of ACOG, Dr Warren Pearse, and the late Dr Tom Elkins. In conjunction with Professor J. O. Martey and Dr J. B. Wilson from Ghana, a proposal for a grant to provide financial support for a residency program in Ghana was submitted to the Carnegie Corporation of New York. The proposal was successful.

In 1987, a meeting was held in the RCOG offices in London to discuss the modalities for setting up a full residency program in Ghana. The participants at the meeting were officials from all the entities that were involved. The aims of the program are listed in Table II.

The goals of the program included setting up a residency program in the obstetrics/gynecology departments of the University of Ghana Medical School, which is situated at the Korle-Bu Teaching Hospital, Accra, and at the Kwanse Nkrumah University of Science and Technology School of Medical Sciences, situated at the Komfo Anokye Teaching Hospital, Kumasi. To achieve these goals, a local management committee was assembled to oversee the running of the program in the two centers. An external advisory board to advise the management committee and facilitate visiting professorships and the external attachment of residents was formed. The advisory board consisted of representatives from the Carnegie Corporation of New York, the ACOG, and the RCOG. Libraries and teaching aids were acquired for the two obstetrics/gynecology departments. Teaching visits by professors from the ACOG, the RCOG, and the West African College of Surgeons (WACS) were arranged. Ghanaian specialists from overseas were recruited to strengthen the faculties in Accra and Kumasi. A structured tutorial system and a clinical course that was tailored to the needs of the subregion were designed to satisfy the requirements for the Fellowship of the West African College of Surgeons (FWACS).

The FWACS is the board certification awarded by the WACS to residents who satisfy the training requirements of the College and who pass all three examinations for the FWACS. It was recognized as a world-class examination and was acceptable preferentially to physicians in the subregion.

The structure of the Ghana Postgraduate Obstetrics/Gynecology program is outlined in Table III. The duration of the training is 5 years; at the end of the 5-year training, the successful resident is awarded the FWACS.

An innovative and unique part of the program is the Community 4th Year Rotation. During year 4, the resident attends a course in hospital management at the Ghana Institute of Management and Public

---

**Table I. Ghana: Selected demographic and health indices**

| Area: 92,100 square miles |
| Population: 18.3 million people |
| Maternal mortality rate/100,000 live births: 586 |
| Lifetime risk of maternal death: 1 in 18 |

- Underlying causes of high maternal morbidity and mortality:
  1. Delay in seeking help (patients and their relatives have no confidence in conventional medicine)
  2. Delay in reaching health facility because the facility is inaccessible (too far or no motorable roads), there is no transport, or there is no money to pay for transportation or to pay health facility fees
  3. Delay in the institution of correct treatment in health facility; inadequate training of health personnel or personnel or unavailability of essential equipment or materials

---

**Table II. Aims of the program**

- Train specialists who, during their training, will continue to serve Ghanaian women
- Produce high-quality specialists who, because they are trained in-country, will know the obstetric and gynecologic problems in West Africa and how to prevent and treat these problems
- Produce specialists who will work to lower the high maternal mortality rates and reduce the even higher maternal morbidity rates and to improve the reproductive health of women in Ghana
- Build the capacity of local faculty in the 2 medical schools in clinical work, teaching, and research
Table III. Structure of the Ghana postgraduate obstetrics/gynecology program

<table>
<thead>
<tr>
<th>Year</th>
<th>Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rotations in basic sciences and obstetrics/gynecology; basic sciences FWACS Examination</td>
</tr>
<tr>
<td>2</td>
<td>Rotations in general surgery, urology, neonatology, and anesthesiology</td>
</tr>
<tr>
<td>3</td>
<td>Obstetrics/gynecology; Part I: FWACS examination at end of year</td>
</tr>
<tr>
<td>4</td>
<td>Three months in a hospital management course in the United States or the United Kingdom; 6 months in rural Ghana</td>
</tr>
<tr>
<td>5</td>
<td>Senior obstetrics/gynecology; training; Part II: FWACS Examination at end of year</td>
</tr>
</tbody>
</table>

Administration. The resident learns the general principles of management (with emphasis on hospital administration) and learns basic computer skills. This course prepares the resident for any administrative position that he/she may occupy later in his/her career. In addition, the resident participates in an external attachment in the United Kingdom or the United States in an observer capacity for 3 months. The objective is to give the resident the opportunity to observe contemporary, standard obstetrics and gynecology and technologic advances in obstetrics and gynecology. This broadens the resident's perspective of the specialty and puts the training program in the context of global obstetrics and gynecology. The continued viability of the external attachment depends on the goodwill of the external supervisors and the generosity of the host institutions. Ghana is grateful for their help and solicits further partners and sites. The most important component of the Community 4th Year Rotation is the rural district hospital posting for 6 months. During this posting, the resident lives and works in the rural district hospital, "giving something back" to the rural community and learning about the conditions of the women in the rural areas. A supervisor visits the resident monthly to assess his/her progress and assists the resident to treat patients who need gynecologic operations that the resident has not acquired the proficiency to perform on his/her own. They develop at least one clinical research project. Because of the Community 4th Year Rotation, the Ghana Postgraduate Obstetrics/Gynecology Program is a year longer than the 4 years that are required for the FWACS. The residents do not consider this a disadvantage; they love it and look forward to it.

Results

The successes of the program have been impressive. From 1989 to 2002, the program recruited 75 residents; 26 residents have completed the program and achieved the FWACS. Only 1 resident dropped out. The program continues to attract dedicated residents with academic promise. As of now, Accra has 23 residents and Kumasi has 25 residents. All the 26 specialists are practicing in Ghana, which reflects a 100% retention rate (Table IV). Apart from providing care, they are leaders, trainers, and advocates of women’s health. The success rates of our residents in FWACS examinations are three to four times higher than the rates of other candidates. Currently, 48 residents are at various levels of training. One resident resigned from the program after 4 years to pursue a political career. He subsequently became the Minister of Health of Ghana.

At the beginning, recruitment into the program was low. However, because of the success of the pioneers, their clinical proficiency and academic performance became evident, and recruitment increased. At present, admission into the program has become very competitive.

Table IV. Status of 26 program graduates

<table>
<thead>
<tr>
<th>Institution</th>
<th>Graduates (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korle-Bu Teaching Hospital</td>
<td>10</td>
</tr>
<tr>
<td>Komfo Anokye Teaching Hospital</td>
<td>6</td>
</tr>
<tr>
<td>Ministry of Health non-teaching hospitals/ polyclinics</td>
<td>4</td>
</tr>
<tr>
<td>Police/military hospitals</td>
<td>3</td>
</tr>
<tr>
<td>Private practice</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
</tr>
</tbody>
</table>

Comment

The impact of the program on the two medical schools and on women’s health in Ghana has been substantial. Of a faculty of 16 in the Korle-Bu Teaching Hospital, Accra, 9 faculty members are graduates of the program. At the Komfo Anokye Teaching Hospital, Kumasi, 6 of 12 faculty members are graduates of the program. This, indeed, is opportune because some of the consultants/lecturers who qualified outside Ghana have retired or are about to retire; at the same time, the two medical schools are admitting an increasing number of students each year. At the University of Ghana Medical School, in the past 5 years, the number of students in each year has increased from 60 to 80. At Kwame Nkrumah University of Science and Technology School of Medical Sciences, the number has increased from 50 to 100. The current chairmen in the departments of both medical schools are graduates of the program.

The performance of undergraduates in examinations has also been impacted positively. Since 1999, there has been a marked improvement in the performance of the medical students in the final obstetrics-gynecology examinations at the two centers, with many students passing at credit level and one or two students with distinction. At each center, the number of failures at each examination has fallen from 2 to only 1 or 2. This improvement is in spite of the continuing increase in student numbers.

There has also been a reduction in the maternal morbidity and mortality rates. Improvement in women’s
reproductive health, as evidenced in reduced maternal morbidity rates and a fall in the maternal mortality rates, is the ultimate aim of the program. Since 1995, the mortality rate has been on the decline at both centers. This can be attributed to the increasing number of residents and faculty members in the two centers, which indisputably has led to improved prenatal and intrapartum care and more effective treatment of obstetric emergencies. However, the improvement has not as yet reflected in national figures.

Residents and faculty have been active in clinical research and have published >35 articles in peer review medical journals. They have presented papers regularly at the WACS Annual Congress and at other international conferences. A paper entitled “Maternal and Perinatal Mortality and Morbidity Associated with Transverse Lie” (Int J Gynecol Obstet 1999;46:11-5) by one of the graduates, Dr. J. D. Seffah, won the International Federation of Gynecology and Obstetrics Prize Award (Special Mention) for Best Article from a Developing Country in 1999. Komfo-Anokye Teaching Hospital took part in the multicenter clinical trials, “Collaborative Eclampsia Trial” and the “Maggie Trial.” The Kumasi center recently reported the results of a collaborative research on the use of umbilical-cord blood for transfusion of children with severe anemia.


A cost-benefit analysis of the program showed that it is far cheaper to train specialists at home than abroad. Also, their services during training are not lost to the country. In 1999, when the number of graduates of the program stood at 17, the cost of training one resident over the 5-year period was computed to be $102,000. The major part of this expenditure went into infrastructure, which included the provision of libraries, teaching aids, computers, and visiting professorships. Some of these, such as the recruitment of local faculty and the purchase of vehicles, are nonrecurring costs. Therefore, as the number of graduates increases, the cost per graduate will continue to fall.

Carnegie Corporation grants made it possible for us to found and establish the program. Ghana will always be grateful to the Carnegie Corporation, which terminated its support in 2000. The people and government of Ghana are sustaining the program. Table V outlines the lessons that were taught during the development of the program.

Although the program has been an overwhelming success, we have also learned that it is taking longer than anticipated to achieve some meaningful results.

As Table I shows, "delay" is the one preventable factor in maternal deaths in Ghana. To reduce our high maternal mortality rates, we must take obstetric care services closer to the people and build the confidence of our people in the obstetric services.

The role of the obstetrics/gynecology specialist is crucial in reproductive health. By providing effective life-saving care, he/she will cause the reputation of the health facility to grow, and the public’s confidence in the facility will increase. By educating the public and acting as an advocate for women’s health, he/she will improve the usage of the facility. Through training of lower-level junior doctors and midwives, the obstetrics/gynecology specialist will help these health care givers to improve their life-saving skills and overall clinical competence.

Our next challenge is to have at least one specialist in every regional hospital, in every district hospital, and in every major polyclinic that provides obstetric service. Close contact with the lone specialist will be maintained by regular visits from the base teaching hospital to the regional and district hospitals and polyclinics, which will prevent the lone specialist from feeling that he/she has been forgotten in the “wilderness”; the visits will provide continuing education. Transport will be the key to the success of this arrangement.

The program participants thank all the institutions and persons who contributed to the creation and success of the program, especially the following: Carnegie Corporation NY; the Department for International Development, UK; ACOG; RCOG; the External Advisory Board; the external attachment supervisors; the visiting professors; the sponsors of vesicovaginal fistula repair training, and the donors of equipment, books, and material. We thank the following institutions and persons for supporting the project: from ACOG: Prof. J. J. Sciarra, Prof T. E. Ekin ( decease ), Prof T. R. B. Johnson, Prof Lewis Wall, Dr. J. G. Blythe, and Prof G. Cundiff; from RCOG: Prof. J. B. Lawson ( deceased ), Prof J. MacVicar,

Table V. Lessons learned/model

| The program has been effective because of |
| Adaptation of the western system to suit the Ghanaian context |
| Collaborative effort and hard work from all partners and stakeholders |
| Emphasis on the community component |
| External rotation to gain exposure to the western medical practice system and to build confidence |
| We have also learned that it takes longer than anticipated to achieve meaningful results; goals began to be achieved at about 5 to 10 years. |

...
REFERENCES


