

Surgical Care in Jamaica in the Laparoendoscopic Era: Challenges and Future Prospects for Developing Nations

Joseph Martin Plummer, DM
 Patrick Oral Roberts, DM
 Pierre Anthony Leake, DM
 Derek Ian Mitchell, DM, FACS

Abstract

In an era of technology-dependent surgery, Jamaica and other developing countries must deal with the wide disparity between their surgical practices and those of developed nations. Although there is still a place for the well-trained surgeon, the current emphasis in developed nations is less on the individual surgeon and more on the surgery team and system, with increasing costs despite diminishing government support. At the University of the West Indies, we are challenged to continue providing appropriate service and training for the Caribbean region, but we hope that a combination of fellowship-trained team leaders and partnerships with resource-rich institutions will enable us to meet this challenge and to meet the health care needs of our populace.

Background

Jamaica, with an area of 11,424 km², is the largest of the English-speaking Caribbean islands. By air, it is 90 minutes (900 km) from Miami, Florida, and 30 minutes (150 km) south of Cuba.¹ The most recent statistics indicate that Jamaica has a population of approximately 2.7 million persons, with more than 1 million living in the area of Kingston, its capital city.

The premier university in the Caribbean is the University of the West Indies (UWI). It was founded at the Mona campus in Kingston in 1948 with 33 medical students.^{2,3} At present, there are additional campuses in St Augustine (Trinidad and Tobago), Cave Hill (Barbados), and Montego Bay (Jamaica) and a clinical training site in Nassau, Bahamas. The UWI serves more than 17 English-speaking countries and territories in the Caribbean and accepts students from all parts of the Americas and from as far away as South Africa. The size of the medical faculty has increased significantly over the years, with 300 medical students accepted at the Mona campus in the academic

year 2009-2010. Even though the university is less than a century old, it has produced 14 regional prime ministers, premiers, and governor generals; three Nobel Laureates (Derek Walcott, literature; Arthur Lewis, economics; and Anthony Chen, peace); one Miss World; and one director general of the Pan American Health Organization.

In its charter, UWI stated that the main purpose of its medical school was providing undergraduate medical training to satisfy the needs of the region. Initially, graduate training in surgery for English-speaking Caribbean nationals consisted of local supervised experience, followed by courses and examinations in the United Kingdom (UK) or enrollment in a North American residency program. There were problems with this arrangement, however. Those who became fellows of the British Royal Colleges usually returned to practice in the region, but the British examinations were designed to select candidates for training but not to assess their suitability for specialist appointment. Few such positions have been available to Caribbean nationals since the entry of the UK into the European Union in 1993. However, North American training programs provided both suitable exit-level qualification and the opportunity for more immediately rewarding practice appointments, with the result that few graduates returned to practice in the Caribbean.⁴

In the 1970s, a graduate surgery program was started at the UWI, Mona, first in general surgery and later in otorhinolaryngology, producing the first graduate in 1977. In the 1990s, residency training programs were implemented in orthopedics, urology, neurosurgery, cardiothoracic surgery, and pediatric surgery.⁴ Since 1977, the surgery programs have produced more than 100 graduates. The majority have remained in Jamaica and the Caribbean region. Seventy-five percent of the current surgical attending staff at the UWI are graduates of the surgery program. In 2006, the first female

Joseph Martin Plummer, DM, is a Lecturer in Surgery, Radiology, Anesthesia, and Intensive Care at the University of the West Indies in Kingston, Jamaica. E-mail: joseph_plummer@yahoo.com.

Patrick Oral Roberts, DM, is a Fellow in Surgical Oncology at the University of Toronto, Ontario, Canada. E-mail: paorro@yahoo.com.

Pierre Anthony Leake, DM, is a Fellow in Minimally Invasive Surgery at the University of Toronto and the University Health Network Toronto Western Hospital, in Toronto, Ontario, Canada. E-mail: paeleake@yahoo.com.

Derek Ian Mitchell, DM, FACS, is a Senior Lecturer in Surgery, Radiology, Anesthesia, and Intensive Care at the University of the West Indies in Kingston, Jamaica. E-mail: derekmitchell@mac.com.

general surgeon, a graduate of Yale University, was appointed a staff member and is the first surgeon trained in North America to have joined the department in the last three decades.⁵

Organization of the Health System in Jamaica

The Jamaican health system offers primary, secondary, and tertiary care. There is a private and public (government) health care system. Ambulatory care at the community level is delivered through an islandwide network of 343 health centers. Secondary and tertiary care is offered via 23 government and 8 private hospitals, in addition to the University Hospital of the West Indies (UHWI). All together, they have a combined capacity of 4802 general-care and 28 intensive-care beds. Private-sector health services are provided through an extensive network of professionals offering specialist services and by family practitioners across the island.⁶

The UHWI is the premier teaching hospital in the English-speaking Caribbean. It comprises some 520 beds; all surgery specialties are represented, and most surgical procedures are offered. It is the only hospital in Jamaica at which adult open-heart surgery is performed and is one of three referral centers for neurosurgery. At the UHWI, there are some 4500 elective admissions each year to the various surgical units and 1100 trauma admissions.⁴ The vast majority of trauma admissions are done at the Kingston Public Hospital, the largest and oldest hospital in the English-speaking Caribbean and an important site for medical training on the island.

Financing Health Care in Jamaica

Since April 2008, health care at the 340 public health clinics and the 23 public hospitals (excluding the UHWI) has been free to all members of the general public; at that time, user fees that were introduced previously as a cost-sharing measure were abolished.⁷ For the 2010 national budget, 4% was projected to be spent on health—a decrease from 7% in 1998 and 4.7% in 2000.⁶ Health-sector financing comes primarily from governmental budgetary allocations that are supplemented by user fees (at the UHWI) and inputs from nongovernmental organizations and international development partners. Jamaica does not qualify for much donor funding because it falls in the category of lower-middle-income countries.⁷ The downturn in the global economy that began in late 2007 and the devaluation of the Jamaican dollar will likely further impair the government's ability to provide adequate health services to its citizens.

Challenges in the Implementation and Delivery of Care and Education in the Era of High Technology

The health sector is faced with a shortage of health care personnel in many key areas. The total vacancy for registered nurses increased from 17% in 2003 to 26% in 2004.⁶ A recent World Bank report showed that the annual attrition rate of nurses from the English-speaking Caribbean area was 8%, with out-migration being the main cause. Canada, the UK, and the US represented the primary destination countries. The number of nurses trained in the region who were working abroad was three times the number working in the English-speaking Caribbean area. This ratio of migrant nurses to those who are locally trained is without parallel elsewhere in the world.⁸ Not only did it appear that emigration caused significant shortages of nurses in the region, but also the brightest nurses were the ones leaving to work abroad.⁸

Jamaica has a high crime rate and ranks second in the world for number of murders per capita.⁹ Trauma and the care of patients with injuries consumes up to 70% of surgical time at some hospitals and accounts for 30% of hospital budgets.⁴ The bulk of those affected are young (but often unemployed) men, and they contribute little to hospital resources.¹⁰

The National Blood Transfusion Service serves both public and private clients and receives blood from 10 collection centers. It is estimated that 50,000 units of blood are needed to meet annual demands in Jamaica. However, in 2008, only 26,300 units were collected, and just 30% came from voluntary donors.¹¹ The shortage of blood products leads to delays in performing elective surgeries that will require transfusion. This shortage of blood is even further compounded by the nation's high level of traumatic injuries.

There is a need for computerization of the health facilities in Jamaica. Most of the hospitals in Jamaica lack Internet access, an electronic database, and an inventory system. Our practice of medicine is largely paper based. This affects the ability to obtain and share information among hospitals, private health care facilities, and the health ministry and the rapidity of information exchanges. The lack of a database hinders the availability and quality of data that can be retrieved to conduct quality-control audits or other studies. Many times, inefficiencies in this system adversely affect patient care.

Though state-of-the-art technologies such as computed tomography, magnetic resonance imaging, and nuclear scanning are available in Jamaica, they are

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predominantly available from private health care services. Importantly, they are also available at the three tertiary-care regional hospitals (UHWI, Kingston Public Hospital, and Cornwall Regional Hospital). Although this may hinder the ability of physicians in the smaller hospitals to confirm a diagnosis, especially if the patient cannot afford these tests privately, an efficient referral and transport system to the tertiary-care hospitals for investigations will reduce risks to patients. Sometimes this can take days to effect. Also because of financial constraints, servicing and maintenance of these machines in the public sector is often lacking, leading to downtimes of weeks to months.

New technologies are often expensive, and with lack of adequate funding for capital expenditures, technology is sometimes not a priority even if proven cost-effective in the long term. With a relatively small population and a nonperforming economy, aggressive marketing, incentives, discounts, and payment plans are not readily available from the large medical companies to Jamaica and the Caribbean region. In fact, major industry players such as Johnson & Johnson and Covidien do not have a direct presence locally. Instead, their technologies are often sourced and supplied by a third party (a local company) with an expected markup in price. These companies operate in an unregulated environment and often cannot provide servicing or technical support and cannot enforce warranties. An example of this is the fact that colonoscopic and laparoscopic equipment must be sent to the US for servicing and repairs. This has resulted in many new pieces of medical equipment going into storage when repairs are required, with some returns on investments never materializing. Understandably, this makes hospital administrators less enthusiastic about acquiring any subsequent new technology.

The implementation of new technologies in Jamaica has been challenging. Even though laparoscopic cholecystectomy was introduced in 1993, it took approximately 15 years for the technology to be applied to appendectomy and colon surgery.¹² However, the gynecology service at UHWI now performs a significant number of operations laparoscopically. These two services could do more to share resources, thus consolidating accumulated experience, and by the exchange of information on best practices, they could make the learning curve shallower and reduce the local challenges in implementing new technology. Although each specialty has its unique issues, there are many common issues, such as anesthetic considerations, the availability of energy devices (Li-

gaSure [Covidien, Mansfield, MA] and the Harmonic Scalpel [Ethicon Endo-Surgery, Cincinnati, OH]), standardization of protocols to mandate single-use disposable products, postoperative care, education, simulation-training, and research. These could be effectively addressed through a multidisciplinary integrated team approach.¹³

The implementation of new technology can disrupt well-established hospital routines and create additional stress for staff.¹⁴ The combination of a high turnover rate of operating-room (OR) nurses and the national shortage of nurses in general means that nurses may not get to acquire all of the necessary skills, because they must constantly assist across subspecialties. This state of affairs places both new and experienced nurses in a situation of nonstop, intense learning, which can be very stressful and frustrating for the surgical team implementing the new technology. The surgeon may be further stressed by the fact that procedure complication rates are increased because of poor or inadequate assistance. Without proper planning and coordination from all members of the team, inefficiencies may multiply at a time when skeptics are watching. A poor outcome can affect how well the new technology is embraced by patients, by other surgeons, and by the institution, regardless of what the published literature says.

The last hospital to be built by the government was erected in 1974. Even though hospitals have been refurbished, the physical environment, which includes the layout and size of ORs, is less than sufficient for most new technologies. Many times there are not enough electrical outlets, and electrical voltage is improper. This leads to entangled electrical extension cords in ORs, increasing the risk of accidents. In addition, the ORs are often too small to accommodate several pieces of new equipment at any one time, such as monitors, fluoroscopic machines, and electrosurgical units.

A major obstacle to the implementation of new technology in Jamaica is funding. A free health care system without a national health insurance program and a small percentage of the population with private health insurance has made it less attractive for the private sector to invest in the public system. It is difficult to recover and earn returns on investment because patients cannot be charged. A private-sector partnership, however, must be explored at the UHWI, because that would involve fees for services.

Even though there are enough physicians in Jamaica, there is a major need for subspecialty training and

the formation of subspecialty high-volume centers of excellence. We are well aware that even in the US, the majority of general surgical procedures are done by community-based surgeons in low-volume practices; still, there are numerous examples of high-volume academic centers that are generating the next generation of innovative academic surgeons.¹⁵ This exposure to the developed world and subspecialty training is required not only for surgeons, but also for such groups as nurses, anesthetists, and intensivists.

Recent Progress in Implementing New Technology

In spite of the difficulties faced by the health care sector in Jamaica, there has been recent progress. There is some basis on which to build, regarding both infrastructure and personnel. For example, all of our general surgery staff and chief residents recently successfully completed the Society of Gastrointestinal Endoscopic Surgeons Fundamentals of Laparoscopic Surgery examinations after completing online training with the International Centre for Telesimulation and Innovation in Medical Education at the University of Toronto. All surgeons in training undergo structured instruction in basic laparoscopic techniques. Laparoscopic cholecystectomy has been a part of the general surgery training¹⁶ since 1993, patients with rectal cancer have neoadjuvant therapy when indicated, and total mesorectal excision is part of the standard training of the surgical residents in the UWI training program. These developments are oftentimes lacking in developing countries and in some middle-income countries such as South Africa.¹⁷ In addition, lower gastrointestinal endoscopy is now a part of training for general surgical residents. These latter developments came about because one of our UWI graduates who is a current staff member received colorectal fellowship training. Accordingly, other centers across the country and other Caribbean nations now refer to the UWI patients who require colorectal surgery. Currently, there are five Jamaican surgery graduates pursuing fellowship training in North America. Should they return to practice in Jamaica, they will be associated with residents training at the UWI (three in minimally invasive surgery, one in surgical oncology, and one in vascular surgery). In addition, there is another graduate in England doing hepatobiliary surgery.

A long-term strategic development plan is being implemented for the surgery services in Jamaica and at UWI. Now that some surgeons have obtained fellowships overseas, other critical needs for subspecialty

training should be identified and sought. Most of the current fellowships are organized by individual surgeons; although this is commendable, if the process is not properly coordinated, there could be an oversupply in some subspecialties and a shortage in others. This strategic planning should also be applied to training and keeping highly qualified nurses in the local institutions.

This increase in specialist training further opens the possibility of health tourism. Developing countries can begin to attract patients from the developed world with high-quality care at a fraction of the cost associated with developed countries. The modern medical tourist industry is determined by market forces, and although countries such as India have an early start, there is a large Jamaican community in the diaspora that can combine the benefits of a visit home with an elective procedure.

The Future

Currently, two surgical fellows are in training in Canada and are expected to rejoin the Department of Surgery at UHWI. The areas of training are surgical oncology and minimally invasive surgery. This should lead to the ability to offer procedures such as liver resections, other complex operations for cancers, and more laparoscopic procedures. The strategic plan includes the development of disease-based teams in centers of high academic merit for patient care and surgical training. Research will only grow in this environment. Already, we have received funding for a colorectal cancer registry to document familial cancers in our population. Once the registry has been established, it will be the only one for a population of predominantly African descent. We hope that there will be other, similar initiatives.

Creative methods of fundraising and cooperation with private partnerships will have to be explored amidst encouragement of a culture of philanthropy, something that is often lacking in the developing world. The purchasing of refurbished medical equipment and collaboration with hospitals in highly industrialized countries that are replacing equipment in good functional condition must be explored. The type and quality of medical equipment replaced and disposed of in some developed nations could revolutionize health care and have a major impact in the Caribbean. We should be not only seeking fellowships for subspecialist surgeons and elective positions for residents but also organizing courses and work experiences overseas for nurses. The administrative staff must also be a part of this renewal process so that we will all be working for

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a common cause. This personnel development may also be achieved by collaboration with other universities and hospitals, leading to working visits and courses in the Caribbean, and we are actively seeking such partners in highly industrialized nations. ♦

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

Acknowledgment

Katharine O'Moore-Klopf, ELS, of KOK Edit provided editorial assistance.

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A Merciful Art

Surgery should be a merciful art;
the cleaner and gentler the act of operating,
the less the patient suffers.

— Berkeley George Andrew Moynihan, 1865-1936,
English Surgeon and Professor of Clinical Surgery