

## STATE-OF-THE-ART REVIEW

# IVUmed: A Nonprofit Model for Surgical Training in Low-Resource Countries

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### Abstract

**BACKGROUND** Low- and middle-income countries (LMICs) face both training and infrastructural challenges for surgical care, particularly for specialty care, such as for urology. Practitioners charged with caring for these patients have few options for basic or advanced training.

**OBJECTIVES** IVUmed, a nonprofit organization, has for 20 years supported urological educational programs in 30 LMICs by coordinating a network of US and international academic and private providers, institutions, industry partners, and professional societies.

**METHODS** IVUmed's motto, "Teach One, Reach Many" has emphasized a teach-the-teacher approach. Program partners, such as Hopital General de Grand Yoff in Dakar, Senegal, have advanced from little urological subspecialty availability to having the capacity to treat a wide range of conditions while also teaching surgeons from Senegal and neighboring countries.

**CONCLUSIONS** Long-term program commitments; effective communication; and a shared vision among the program site, the coordinating nongovernmental organization, and supporting organizations facilitate the development of thriving surgical teaching programs capable of serving local communities and conducting outreach training.

**KEY WORDS** surgery, medical education, capacity-building, global health, low-resource, collaboration, Senegal

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## BACKGROUND

For 2 decades, IVUmed (formerly International Volunteers in Urology) has worked to increase access to quality surgical care in low-resource areas of the world. The World Health Organization estimates that 2 billion people lack access to even basic surgical care, and the availability of surgical specialties like urology, IVUmed's area of expertise, is even more restricted.<sup>1</sup> The disparities in access to service globally are striking. For instance, IVUmed is based in the Intermountain

West of the United States, which has 5 pediatric urologists to serve a population of less than 10 million.<sup>2</sup> Meanwhile, sub-Saharan Africa, with a population of nearly 1 billion, has no fellowship-trained pediatric urologists outside of South Africa.

To help meet the demand for care in low-resource settings, IVUmed has developed a model for building teaching programs capable of meeting the need for local surgical care and training. It has refined its surgical education model over 20 years to account for site-specific conditions and variations in the 30

countries in which it has operated. To meet the educational needs of practicing surgeons, IVUmed's principle platform is onsite surgical workshops. The first decade was spent refining the actual process of teaching surgery in low-resource settings. Subsequently, the focus has evolved to building self-sustaining programs in individual locations. IVUmed now works with a broad network of partner organizations to implement a strategic plan for building a network of educational programs oriented toward providing regional training services in selected geographic areas. The model remains similar throughout many program sites, although details of the programs differ somewhat among locations.

IVUmed's mission is to make quality urological care available worldwide by providing medical and surgical education in low-resource areas. Its success is based on uniting peers and strengthening relationships among medical providers with a common shared purpose of ensuring access to quality urological care. This process involves the following:

- Connecting physicians and nurses in low-resource settings with experienced colleagues for peer-to-peer interaction;
- Providing hands-on education through ongoing onsite surgical workshops;
- Building self-reliant surgical teaching programs capable of providing local and regional education;
- Serving as the chosen provider of care and education in partnership with multiple global urological organizations; and
- Identifying, supporting, and developing future generations of IVUmed volunteers and host colleagues.

IVUmed was founded to address the enormous global need for urological training and care in low-resource parts of the world. In 1992, in response to demand for pediatric urology training and services, the plastic surgery group ReSurge (then Interplast) invited IVUmed's founder, Catherine deVries, MD, to accompany them to Honduras. Pediatric urological conditions are up to 10 times more common than cleft lip and palate, but they often remain untreated because of the global lack of surgeons trained in the field.<sup>3,4</sup> General urologists and general surgeons often are not trained in pediatrics, and pediatric surgeons often lack training in urology. Children suffering from congenital urological conditions, disease, or injuries often slip through the cracks of local health care systems. Dr. deVries and her colleagues conducted pediatric urology workshops in conjunction

with ReSurge's plastic surgery work from 1992 to 1995. Demand among host providers then necessitated the establishment of an organization focused solely on urology education. To focus more intensively on urology and to help make care more widely available, IVUmed was founded as an independent nonprofit organization in 1995. IVUmed expanded its work to Vietnam, where its partner program in Ho Chi Minh City grew from having virtually no pediatric urology to performing 1000 cases per year and training up to 15 physicians each year. Since then, the nonprofit has grown to cover virtually all areas of urology and to reach >30 countries worldwide, becoming a leading organization dedicated to teaching urology in resource-poor areas of the world.

#### PROGRAM SITE SELECTION AND ESTABLISHMENT OF PARTNERSHIPS

IVUmed responds to requests for its services from urology providers and their institutions, who have identified areas of urological care for which there exists local need but insufficient professional training. IVUmed selects program sites that have active physician training programs and sufficient facilities, typically large teaching hospitals. A potential program site's geographical location is also considered, including safety, security, and stability, as IVUmed programs seek long-term engagements for training and program development to take root.

The organization's model for building surgical capacity in low-resource settings is based on intensive hands-on training with experts in urological subfields. Fellowship-trained pediatric urologists, reconstructive urologists, female urologists, urological oncologists, and others work with IVUmed partners in host teaching hospitals to build local expertise in the urological subspecialties for which training has been requested. Other experts, such as nurses and anesthesiologists round out the IVUmed teams to facilitate training in these vital areas of support. IVUmed teams typically consist of 2 to 3 surgeons, 2 anesthesia staff, 2 to 3 nurses, and 1 to 2 support personnel for recordkeeping and research. Each workshop is designed to focus on a subfield of urology, with an emphasis on a particular type of case or condition. More common conditions are the focus of early workshops to address larger portions of host caseloads, such as hypospadias repair for pediatric urology training or urethral stricture repair for adult reconstructive urology. Each site develops a program plan with IVUmed experts for each subfield and

for its overall urology training program. Surgical workshops occur 1 to 3 times per year in each site and are supplemented by distance education and consultation services. The connections between the IVUmed surgeons and the host staff allow for consultation on selected clinical cases to choose the appropriate treatment between the workshops. Moreover, treatment outcomes after the workshops are shared through these connections.

Although complete specialization in 1 subfield of urology often is not practical or even possible for surgeons in low-resource settings due to their own caseloads and low staffing levels, greater expertise and specialization within a surgeon's workload helps to increase quality and availability of care and training in each program setting. This goal is pursued through a competency-based training offered by IVUmed. Training is offered onsite rather than via a formal fellowship that would require individual trained urologists to travel abroad.

### SURGICAL TRAINING

IVUmed training is multidimensional. Following a request for its services, volunteers and staff conduct a site visit and assessment. Once needs and goals have been outlined, teams engage in a series of surgical workshops spanning 6 to 14 days each, over many years. Typical partnerships involve advanced training of surgeons in urological subspecialties such as pediatric, reconstructive, or endourology. Sometimes, training involves non-urologists, such as teaching pediatric urology to pediatric surgeons or general urology to general surgeons. The aims of each partnership involve sufficient skills transfer over time for host partners to perform the surgeries taught and to train their residents and colleagues. Each partner site receives:

- Hands-on training in the operating room and hospital wards;
- Instruction on the latest medical and surgical information; and
- Distance education, consultation, and support.

In the intervals between workshops, consultation and other means of instruction and support help ensure that partners progress toward their training goals. Telehealth technology supports distance education and collaboration using modules comprised of surgical video, lectures, medical animation, and testing. Although patient care is primarily the responsibility of host providers, IVUmed teams follow the same safety protocols observed in their

home institutions. The organization has a medical services committee that oversees program planning and reviews safety measures for both volunteers traveling and patients served.

### REGIONAL TRAINING APPROACH

IVUmed works with its global partners to establish urology centers of excellence that serve as training centers for multiple countries in their respective geographic regions. This designation denotes partner hospitals with training programs that have advanced to the stage of providing service independent of IVUmed workshops, training residents within their institution, and offering training to providers from neighboring countries. Dakar, Senegal was IVUmed's first center of excellence and hosts trainees from throughout Francophone West Africa. IVUmed began work with Hopital General de Grand Yoff (HOGGY) in 2009, first in pediatric urology and presently in reconstructive urology. Additional centers of excellence are in development in Central, East and Anglophone West Africa and have the potential to reach communities in need throughout the continent. Training centers in Southeast Asia, the Caribbean, and South America will also further advance IVUmed's "Teach One, Reach Many" approach to global surgery capacity building.

In addition to Dakar, Senegal, examples of potential centers of excellence include:

- Kigali, Rwanda: regional center for East and Central Africa, including hard to reach conflict zones;
- Ho Chi Minh City, Vietnam: training center for Southeast Asia;
- Accra, Ghana: training center for Anglophone West Africa;
- Lusaka, Zambia: training center for Southern Africa; and
- San Fernando, Trinidad: training center for the Caribbean, including IVUmed's partners in Haiti (Fig. 1).

### PARTNER ORGANIZATIONS

In addition to program site providers, volunteer experts, and their respective institutions, key program partners include international urological and surgical colleges and associations. These organizations provide educational materials, credentialing, as well as outreach, logistical, and material support.

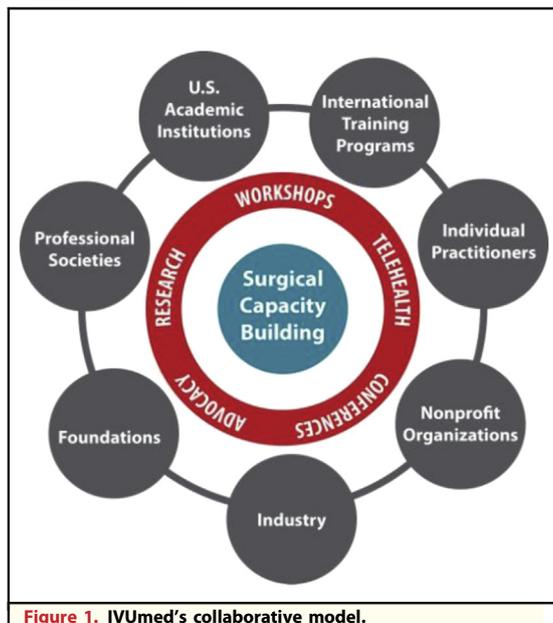


Figure 1. IVUmed's collaborative model.

## A SUCCESSFUL PARTNERSHIP: HOPITAL GENERAL DE GRAND YOFF

A prime example of a developing center of excellence is HOGGY in Dakar, Senegal. Since 2009, the program has grown to include pediatric and reconstructive urology with further programs in endourology and urologic oncology planned. Local urologists have advanced to full diagnosis and management of the majority of cases and, most significantly, hosting and providing training to dozens of urology trainees from 10 countries throughout Africa. This greatly expands the reach and efficiency of IVUmed's collaborative model. The success of this center is reinforced by the status of SIU center of excellence and offering fellowship training for many African urologists. International collaboration allows a diversity of subspecialty training. In this respect, the Dakar Center is a great resource and opportunity for future regional collaboration.

In Africa, for example, The Pan African Urological Surgeons Association (PAUSA) guide program strategy and efforts. Each training center partnering with IVUmed has goal of becoming a long-term solution to the need for urological training and care in its community as well as the surrounding region. Partner organizations like the Société Internationale d'Urologie (SIU), the American Urological Association (AUA), and PAUSA help advance this global vision.

IVUmed connects a network of partners around the world, capitalizing on a diversity of strengths. This network incorporates IVUmed's onsite training expertise with educational offerings, scholarships, research, and online materials made available by the SIU and the AUA. SIU, for example, supports long-term fellowship opportunities coupled with visiting professorships to give program participants more intensive surgical training.

IVUmed works with regional associations to develop training curricula and strategic planning. The College of Surgeons of East, Central, and Southern Africa (COSECSA) has asked IVUmed to help provide the urology portion of its surgical curriculum. COSECSA's vision aligns with those of IVUmed, SIU, and PAUSA to develop centers of excellence where medical professionals from countries throughout a given region can receive training. Participants take their skills back to the teaching hospitals and district hospitals in their home communities.

## LESSONS LEARNED

Although IVUmed puts significant effort into screening potential program sites before, during, and after site visits, the degree to which a site can succeed often cannot be gauged until onsite work has progressed. Two surgical workshops after the site visit is typically a key time to evaluate how a site is performing, what changes need to be made, and even whether work in that location should be suspended or postponed. Factors influencing these decisions include the degree of institutional support and any changes in local conditions involving safety or security.

Key elements that help make for a successful program site include the following:

- Long-term memorandum of understanding with the hospital administration and, if possible, the country's ministry of health outlining the roles and responsibilities of each party;
- Program activities responding to local demand are much more likely to resonate with host participants than those instituted from outside;
- Strong departmental leadership providing support for program logistics and keen interest in the professional development of the department's personnel;
- Sufficient institutional infrastructure, including adequate equipment and supplies as well as personnel dedicated to maintenance;

- Partnerships with relevant medical industry to help fill equipment and supply gaps and to evaluate and support supply chains;
- Partnerships with regional colleges of surgeons to provide credentialing and other academic support of training activities;
- Partnerships with relevant national and international medical societies for development of educational materials, promotion of training activities, credentialing of program sites, and provision of scholarships for program participants from low- and middle-income countries;
- Clear and regular communication between nongovernmental organizations (NGOs) and host participants of program goals and expectations; and
- Communication with supporting personnel not directly organizing program activities, such as anesthesia and nursing for surgical workshops, is essential as intensive training activities can be taxing; these other individuals and departments must also accept the process.

Management of less productive sites can become positive with sufficient diplomacy. For example, if administrative or environmental issues prevent effective execution of program activities, interested participants can be invited to workshops held in nearby countries. Communication with the former site can be maintained and digital training materials shared to keep lines of communication open for future collaboration. Also, sites that offer challenges to program activities may have the potential to move forward through adding new partners in the site. For example, if the local urologists are less committed to pediatric urological care, inviting the local

pediatric surgeons may inject life into that particular program.

## CONCLUSION

Surgical training, like any health care education program, is complex. Program development, site assessment, designing educational materials and curricula, and program logistics all include many challenging aspects. A clear vision of the program, meeting locally expressed demand for services, has the potential to make a significant impact in areas of the world most in need. IVUmed was founded in response to clear demand, and continues to operate in sites that reach out for its services. Also, before its establishment as an independent NGO, IVUmed's founder operated under the umbrella of another, experienced organization providing similar services. This model, although not always possible, provides a path for a new organization to learn from the wisdom of another group without having to make the same mistakes. Each global health organization is unique in many ways but also shares many attributes with others. Collaboration helps a new organization learn from others as it finds its own way within its particular niche in global health. Working with organizations with similar missions and goals not only strengthens the work of each, but also helps avoid the consequences of redundancy and NGO competition. Finally, surgical training takes time. IVUmed has a history spanning 2 decades, and yet it still has much more work ahead of it. Working on the ground finding successful ways of working in challenging circumstances will help ensure the longevity of the organization as well as the lasting effects of its efforts.

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