

# General surgery in a district hospital in Tajikistan: clinical impact of a partnership between visiting volunteers and host specialists

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After the collapse of the Soviet Union and 5 years of civil war, health care services in Tajikistan are in disarray. Nongovernmental organizations are playing a key role in recovery programs. A group of volunteer physicians from the West went to Khorog General Hospital in the Pamiri mountains to establish a dialogue with their physician counterparts, recommend evidence-based best practice appropriate for local conditions, and reintroduce a culture of continuing medical education. The arrangements included a group visit to Khorog for 3 weeks annually over 3 years. In this article we describe the experiences of the 2 general surgeons attached to the group in the second year and the status of the partnership 1 year later.

Suite à l'effondrement de l'Union soviétique et à cinq ans de guerre civile, les services de santé du Tadjikistan sont en désarroi. Des organisations non gouvernementales jouent un rôle clé dans les programmes de relance. Des médecins bénévoles de l'Occident ont visité l'hôpital général de Khorog dans les montagnes Pamiri pour amorcer un dialogue avec leurs homologues, recommander les meilleures pratiques factuelles indiquées dans la conjoncture locale et rétablir une culture d'éducation médicale continue. Les mesures prévoient une visite de groupe de trois semaines à Khorog chaque année au cours d'une période de trois ans. Dans le présent article, nous décrivons l'expérience de deux chirurgiens généraux qui faisaient partie du groupe au cours de la deuxième année ainsi que l'état du partenariat un an plus tard.

Tajikistan is a landlocked country with Afghanistan to the south and China to the east. It lies on the ancient "Silk Road," which runs from China through to Samarkand and Bhukara and into Russia and Europe. With the collapse of the Soviet Union, Tajikistan became independent in September 1991. A civil war immediately erupted, with factions roughly divided into ethnic groups. During this war, which was largely unreported in the Western press, up to 60 000 people lost their lives and 500 000 were displaced. Some degree of stability has been evident

since 1997, when a reconciliation government was established. Tajikistan has a population of 6 million of whom 65% are Tajik, 25% Uzbek and 3.5% Russian. Of this population, 85% are Muslims. There is an extraordinary 98% literacy rate, a consequence of the Soviet influence in this strategically vital country.<sup>1</sup> Since independence, however, the economy has collapsed, and health care services have been disrupted. Life expectancy has fallen, and the infant mortality is 27.6 per 1000 live births compared with Canada's 5.5 per 1000.<sup>2,3</sup>

Nongovernmental organizations

have played a significant part in the slowly recovering economy. In the Pamiri mountains, the Aga Khan Health Services (AKHS) started a 3-year "Essential Hospital Services" program in 1999.<sup>4</sup> Part of this program included an international clinical partnership comprising 15 volunteer physicians, representing 9 specialties from Canada, the United States and Europe. The principal aim was for them to connect and communicate with their Tajik counterparts in Khorog, the district capital of the province of Badakhshan. In 2001, 2 general surgeons were included.

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### International clinical partnership

The sponsors for the 3-year program were AKHS and the Swiss Development Corporation. In Canada, the Canadian International Development Agency matches funds raised for this type of work. Fifteen specialist physicians and 3 administrators (the visiting clinical partners [VCPs]) volunteered their time to implement the program. Three annual visits were included in addition to significant time between visits that was spent on planning. The partnership concept was deliberate, as the intent was not to provide specialty expertise but to partner with the local specialists and exchange ideas with them on current theory and practice. The visits in the first year incorporated a 6-specialty team. In the second year, a 9-specialty team included the 2 general surgeons. In Khorog, 80 Tajik physicians were designated as host clinical partners, and 35 physicians came in from district hospitals to participate.

The guiding principles included local capacity building, empowerment and self-sustainability.

The key premise for success was the establishment of enduring relationships between the visiting and host specialists. The intention was to initiate a dialogue, through interpreters, on common surgical conditions in Khorog and to compare the practice of the surgeons there with Western clinical practice. A culture of continuous learning was to be re-established with grand rounds, seminars and access to a learning resource centre. To facilitate this exercise, instruments, sutures, English language textbooks and other items were donated in advance of each visit.

#### *Khorog General Hospital*

The population in the province of Bhadakshan is estimated at 240 000, of which 40 000 live in Khorog. Most of these are Tajik Pamiris. Languages spoken are Russian and Tajik

with local dialects and strong variation from valley to valley. The Khorog General Hospital (KGH), a 550-bed institution, consists of 2- and 3-storey concrete buildings that house the wards. The latter are split into specialties and are effectively self-contained, having an operating room on each surgical floor. Seven general surgeons were on staff in September 2001; 1 has since retired. The chief surgeon performs most of the surgery. There is presently 1 senior semi-retired surgeon who assists at operations. Another surgeon is fully trained and has vascular training, although the VCPs did not see any vascular procedures performed. Three junior surgeons have functions similar to residents. The general surgical ward consists of 15 rooms with a total of 45 beds. The head nurse has 40 staff nurses under her, and there are 20 allied health and other staff. There are 2 "dressing" rooms, one for changing clean dressings, the other for dirty dressings.

The general surgery operating room has 2 tables with standard overhead lights. Instruments are of Russian origin, and most of them are quite large and heavy (Fig. 1). Drapes are made of woven brown material resembling sackcloth. The gowns were of a similar material but were recently replaced by donated items. Drapes, gowns and instruments are sterilized in an ancient autoclave. Masks, caps and rubber boots are worn. The anteroom to the operating room contains scrub sinks in which hands and forearms are washed in soap and water and then dipped into an alcohol solution to provide asepsis. The operative area is prepared with an iodine and alcohol solution, and draping is effected before the surgeons don their gloves. Intermittently during the procedures, surgeons wash their gloves in alcohol solution.

Other surgical services include a urology and a pediatric surgery ward, each self-contained. Diagnostic imaging is available, with ultrasonography being the predominant tech-

nique. There is a shortage of film so fluoroscopy is commonly used. Endoscopy is not available.

In this regional hospital, the general surgical ward admitted 717 patients in 2000 and 1007 in 2001 (Table 1). The in-hospital mortality



FIG. 1. Instrument tray for an open cholecystectomy in the general surgery operating room at the Khorog General Hospital.

Table 1

#### Data Related to the General Surgery Area of the Khorog General Hospital for 2000 and 2001

Data	Year	
	2000	2001
General surgery area		
Beds, no.	45	50
Occupancy, %	66.6	68.9
Patients*		
Admitted	717	1007
Discharged	708	981
Transferred	6	18
Average length of stay, d	14.3	14.5
Mortality, %	0.3	0.7
Died in hospital	3	8

\*Number of patients unless otherwise indicated.

is extremely low, but very sick patients usually go home to die. Lengths of stay are extremely long by Western standards, but patients coming in from outlying areas have nowhere to stay and so are admitted to the hospital. Convalescence presents a similar problem. Of approximately 8 cases a week, 5 are emergent and 3 elective (Table 2). The most common indications for general surgery are identified in Table 3, for emergency surgery in Table 4 and for elective procedures in Table 5; elective surgical procedures are performed 2 or 3 times a week and are often delayed as the surgeons wait for the only oxygen tank, which is doing the rounds of the operating rooms in the institution.

Of particular interest to North American surgeons was the total absence of oncologic surgery at the KGH. The Soviet system had, in fact, built a separate hospital for oncology in which there was a single physician, who carried out all the surgical procedures as well as medical interventions. Cancer patients present late in Khorog, and curative procedures are rare, but chemotherapy is available, and patients are sent to Dushanbe (the capital city) for radiation therapy. The VCPs recommended that oncology be incorporated into the KGH and that the general surgeons should be directly involved in oncologic surgery. This recommendation is presently being implemented.

**Table 2**
**Data Related to General Surgery Procedures Done at the Khorog General Hospital in 2000 and 2001**

Data	Year	
	2000	2001
Total procedures, no.	442	427
Emergency	282	248
Elective	160	179
Complication rate, %	3.3	5.0
Deaths, no.	3	4
Postoperative mortality, %	0.6	0.9

**Common surgical conditions**

One of the first exercises for the visiting clinical partners was to identify common surgical conditions at the institution. In general surgery, we discussed the management of symptomatic cholelithiasis, pyloric stenosis, perforated peptic ulcer and upper gastrointestinal bleeding. The VCPs also covered empyema and pulmonary echinococcal disease, which is endemic in this part of the world. The format for the discussion was to identify the local method of diagnosis and management, to describe North American management, to recommend changes, if any, taking into account the available resources and funding, and to identify best practice for the KGH. The chief surgeon had to concur with the advice and agree with recommendations about key activities and target dates as well as indicators for assessing progress.

As an example, at KGH, symptomatic cholelithiasis was confirmed by ultrasonography, and the surgeon then performed an open cholecystec-

tomy always using a midline incision. Following suture ligation of the cystic duct and artery, the gallbladder was bluntly removed from the gallbladder bed. As one might expect, an inordinate amount of time was spent obtaining hemostasis. Unipolar cautery was available from an old Bovie-type machine. Closure was in 4 layers, and a tube drain was invariably placed. Avoidance of the subcostal or Kocher incision was based on a concern that this incision would result in a high incidence of incisional hernias.

After discussion there was mutual agreement that technical improve-

**Table 3**
**Most Common Diagnoses Made on Patients Admitted to the General Surgical Ward at the Khorog General Hospital in 2000 and 2001**

Diagnosis	Year; no. of diagnoses	
	2000	2001
Appendicitis	111	110
Peptic ulcer	101	114
Peritonitis	67	70
Acute cholecystitis	60	81
Bowel obstruction	54	65
Inguinal hernia	50	42
Thoracic injury	34	16
Hemorrhoids	25	44
Vein injury/disease	18	7
Perianal abscess	16	11
Soft-tissue abscess	15	17
Lung abscess	12	17
Cellulitis	14	6
Paronychia	13	8
Upper gastrointestinal hemorrhage	10	5
Burns or cold injury	8	18

**Table 4**
**Most Common Diagnoses Made Leading to Emergency General Surgical Procedures at the Khorog General Hospital in 2000 and 2001**

Diagnosis	Year; no. of diagnoses	
	2000	2001
Acute appendicitis	103	108
Abscess (incised and drained)	71	56
Perforated peptic ulcer	18	18
Bleeding peptic ulcer	9	2
Bowel infarction or strangulation	9	4
Empyema	8	8
Bowel obstruction due to adhesions	6	5
Strangulated or incarcerated inguinal hernia	6	7
Acute cholecystitis	2	6

**Table 5**
**Most Common Diagnoses Made Leading to Elective General Surgical Procedures at the Khorog General Hospital in 2000 and 2001**

Diagnosis	Year; no. of diagnoses	
	2000	2001
Inguinal hernia repair	44	34
Open cholecystectomy	24	23
Partial gastrectomy	18	25
Hemorrhoidectomy	13	22
Diagnostic laparoscopy	11	10
Thoracotomy for echinococcal cyst	6	6

ments could be instituted. Before we arrived in Khorog, a Valleylab Force 2 electrocautery generator had been donated and shipped. On the basis of the discussion and observations during a procedure, the chief surgeon recognized that he could use a subcostal or midline incision, with unipolar cautery for the incision and for removing the gallbladder from the gallbladder bed, with little bleeding. The fascia could be sutured with continuous Vicryl or silk. Subcuticular closure of skin with absorbable monofilament suture was possible. He could also avoid placing a drain unless specifically indicated. Following the first visit in 2001, this change in practice was instituted. The average time for an open cholecystectomy before this change, based on a random sample of 10 cases, was 91 minutes (median 90 min, range from 55–130 min). It is now 51 minutes ( $n = 25$ , median 50 min, range from 35–100 min).

Other common diagnoses included pyloric stenosis, perforation and hemorrhage. Before discussion, there was a high gastrectomy rate, and it was evident that there was little knowledge among the surgeons of the role of *Helicobacter pylori*. VCP recommendations therefore included the perioperative use of H<sub>2</sub> receptor antagonists, the avoidance of gastrectomy when possible and postoperative therapy for *Helicobacter* using the available drugs, which included ranitidine, amoxicillin and metronidazole. Partial gastrectomies are still performed for pyloric stenosis, but not for perforated or bleeding peptic ulcers.

#### **Perioperative antibiotics: a patient care initiative**

For each specialty, the VCPs were asked to concentrate on 1 or 2 specific initiatives that would have the most beneficial impact on the practice of medicine or surgery in the Khorog environment. In general surgery, the VCPs noted that there was indiscriminate

use of antibiotics perioperatively. Sometimes antibiotics would be given for several days preoperatively and often prolonged postoperatively. Dosing regimens were inadequate, particularly for gentamicin. From Department of Surgery records, the wound infection rate did not seem particularly high (recorded as 3%), but we agreed that it was important to move toward evidence-based antibiotic use. A classification of operative procedures into clean, clean-contaminated and contaminated was introduced.<sup>5</sup> The rationale for loading doses and dosing intervals was described. Recommendations for pre- and postoperatively administered antibiotics for specific procedures were made. A data collection form was devised that included the operating room classification of procedures, operations performed, perioperative antibiotic usage and postoperative infections. Using the form, the chief surgeon submitted a monthly record by email. In September 2001, there were clearly attempts to change practice, but either the timing or the dosing of the antibiotics was inaccurate. Feedback was provided monthly by the VCPs, and by June 2002 there was 88% compliance with the recommendations.

#### **Continuing medical education**

During the Soviet era, each physician received 3 weeks of continuing medical education (CME) annually. Physicians travelled to St. Petersburg or Moscow for courses in surgical practice. With the civil war and subsequent depressed economy, there was little activity to maintain clinical skills or keep up with the literature. Russian textbooks on site were over 10 years old. Tajik physicians, prior to the establishment of the AKHS initiatives, had minimal access to medical literature in English and only had sporadic access to new technology or the Internet. One of the most impressive impacts of the AKHS involvement in Khorog has been training

in the English language (for access to the English language literature) and in computer skills. Presently only email is available via local telephone lines from the capital and via satellite but, in the near future, Internet access will become a reality. When that occurs, visits from volunteer physicians may become less important.

During the VCP visits, the concept of grand rounds was re-established. Staff from each of the visiting specialties presented a topic during the first week, and the host partners presented a separate topic during the second week. Both presentations were done in a classic grand rounds format in an auditorium in the local government building. PowerPoint presentations were used and were translated into Russian or English by local interpreters. The grand rounds reinforced the concept of teamwork and communication between the specialties. Preparation for the rounds reinforced the idea of accessing the available literature and enhanced computer skills.

#### **Unresolved issues**

The host clinical partners were delighted to have VCPs on site and appreciated the exchange of information. The VCPs were universally impressed by the effectiveness of the surgical interventions in the absence of resources. Unfortunately, both funding and bioengineering backup are in short supply, such that high technology (e.g., laparoscopic equipment) is unlikely to be a practical option until the economy recovers. A gastroscope is likely to be the next acquisition.

Like every health care organization, the KGH is involved in institutional politics that include interdepartmental rivalry and distrust of the administrative structure. Government participation in this whole exercise is distant, and there is no money. An individual surgeon gets paid the equivalent of Can\$10 a month. In

the absence of adequate salaries, an underground economy is active and flourishes. Unfortunately, it seems likely that elective treatment may depend on the patient's ability to pay.<sup>6</sup>

On Sept. 9, 2001, Khorog celebrated the 10th anniversary of the independence of Tajikistan from the Soviet Union. There were 2 days of celebrations and, in classic Soviet fashion, a parade with hospital staff, including doctors and visiting partners, participating. Two days later, the 9/11 tragedy occurred in New York. There was concern about the situation as immediately across the Panj river in the distal part of the valley is northern Afghanistan. However, the whole of this northern area is occupied by what was then known as the Northern Alliance, and nothing untoward happened.

### Conclusions

Nongovernmental organizations

such as the AKHS are playing an essential part in the economic recovery and the re-establishment of social order in Tajikistan. Visiting volunteer physicians have concentrated on establishing relationships to boost morale and provide a sense of hope to beleaguered physicians with few resources. During the visits, evidence-based medical and surgical practice were discussed and promoted. This approach differs from that of other organizations such as *Médecins Sans Frontières*, which usually provide physician manpower to service the population. The volunteers introduced sustainable medical models of best practice and encouraged a culture of continuous learning. Contact with host specialist colleagues has been maintained by email in between visits. The results are encouraging, with significant changes in practice. This innovative approach draws on multiple partners and provides for an ongoing sustainable relationship.

Specialist–specialist contact in this form is an effective educational tool.

Competing interests: None declared.

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